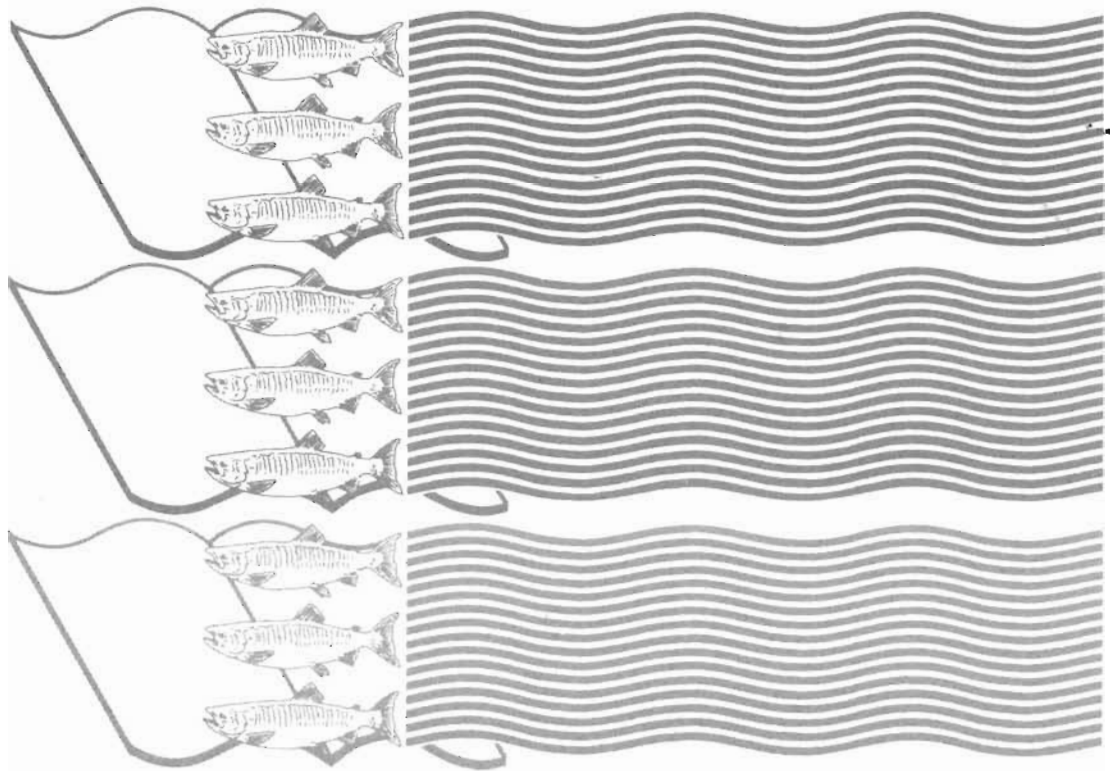


# Fishery Publication Index, 1980-85

## Technical Memorandum Index, 1972-85

Cynthia S. Martin  
Shelley E. Arenas  
Jacki A. Guffey  
Joni M. Packard



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service

The major responsibilities of the National Marine Fisheries Service (NMFS) are to monitor and assess the abundance and geographic distribution of fishery resources, to understand and predict fluctuations in the quantity and distribution of these resources, and to establish levels for their optimum use. NMFS is also charged with the development and implementation of policies for managing national fishing grounds, development and enforcement of domestic fisheries regulations, surveillance of foreign fishing off United States coastal waters, and the development and enforcement of international fishery agreements and policies. NMFS also assists the fishing industry through marketing service and economic analysis programs, and mortgage insurance and vessel construction subsidies. It collects, analyzes, and publishes statistics on various phases of the industry.

The NOAA Technical Report NMFS series was established in 1983 to replace two subcategories of the Technical Reports series: "Special Scientific Report—Fisheries" and "Circular." The series contains the following types of reports: Scientific investigations that document long-term continuing programs of NMFS; intensive scientific reports on studies of restricted scope; papers on applied fishery problems; technical reports of general interest intended to aid conservation and management; reports that review in considerable detail and at a high technical level certain broad areas of research; and technical papers originating in economics studies and from management investigations. Since this is a formal series, all submitted papers receive peer review and those accepted receive professional editing before publication.

Copies of NOAA Technical Reports NMFS are available free in limited numbers to governmental agencies, both Federal and State. They are also available in exchange for other scientific and technical publications in the marine sciences. Individual copies may be obtained from: U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. Although the contents have not been copyrighted and may be reprinted entirely, reference to source is appreciated.

13. Guidelines for reducing porpoise mortality in tuna purse seining, by James M. Coe, David B. Holts, and Richard W. Butler. September 1984, 16 p.
14. Synopsis of biological data on shortnose sturgeon, *Acipenser brevirostrum* LeSueur 1818, by Michael J. Dadswell, Bruce D. Taubert, Thomas S. Squires, Donald Marchette, and Jack Buckley. October 1984, 45 p.
15. Chaetognatha of the Caribbean sea and adjacent areas, by Harding B. Michel. October 1984, 33 p.
16. Proceedings of the Ninth and Tenth U.S.-Japan Meetings on Aquaculture, by Carl J. Sindermann (editor). November 1984, 92 p.
17. Identification and estimation of size from the beaks of 18 species of cephalopods from the Pacific Ocean, by Gary A. Wolff. November 1984, 50 p.
18. A temporal and spatial study of invertebrate communities associated with hard-bottom habitats in the South Atlantic Bight, by E. L. Wenner, P. Hinde, D. M. Knott, and R. F. Van Dolah. November 1984, 104 p.
19. Synopsis of biological data on spottail pinfish, *Diplodus holbrooki* (Pisces: Sparidae), by George H. Darcy. January 1985, 11 p.
20. Ichthyoplankton of the Continental Shelf near Kodiak Island, Alaska, by Arthur W. Kendall, Jr., and Jean R. Dunn. January 1985, 89 p.
21. Annotated bibliography on hypoxia and its effects on marine life, with emphasis on the Gulf of Mexico, by Maurice L. Renaud. February 1985, 9 p.
22. Congrid eels of the eastern Pacific and key to their Leptocephali, by Solomon N. Raju. February 1985, 19 p.
23. Synopsis of biological data on the pinfish, *Lagodon rhomboides* (Pisces: Sparidae), by George H. Darcy. February 1985, 32 p.
24. Temperature conditions in the cold pool 1977-81: A comparison between southern New England and New York transects, by Steven K. Cook. February 1985, 22 p.
25. Parasitology and pathology of marine organisms of the world ocean, by William J. Hargis, Jr. (editor). March 1985, 135 p.
26. Synopsis of biological data on the sand perch, *Diplectrum formosum* (Pisces: Serranidae), by George H. Darcy. March 1985, 21 p.
27. Proceedings of the Eleventh U.S.-Japan Meeting on Aquaculture, Salmon Enhancement, Tokyo, Japan, October 19-20, 1982, by Carl J. Sindermann (editor). March 1985, 102 p.
28. Review of geographical stocks of tropical dolphins (*Stenella* spp. and *Delphinus delphis*) in the eastern Pacific, by William F. Perrin, Michael D. Scott, G. Jay Walker, and Virginia L. Cass. March 1985, 28 p.
29. Prevalence, intensity, longevity, and persistence of *Anisakis* sp. larvae and *Lacistorhynchus tenuis* metacystodes in San Francisco striped bass, by Mike Moser, Judy A. Sakanari, Carol A. Reilly, and Jeannette Whipple. April 1985, 4 p.
30. Synopsis of biological data on the pink shrimp, *Pandalus borealis* Krøyer, 1838, by Sandra E. Shumway, Herbert C. Perkins, Daniel F. Schick, and Alden P. Stickney. May 1985, 57 p.
31. Shark catches from selected fisheries off the U.S. east coast, by Emory D. Anderson, John G. Casey, John J. Hoey, and W. N. Witzell. July 1985, 22 p.
32. Nutrient Distributions for Georges Bank and adjacent waters in 1979, by A. F. J. Draxler, A. Matte, R. Waldhauer, and J. E. O'Reilly. July 1985, 34 p.
33. Marine flora and fauna of the Northeastern United States. Echinodermata: Echinoidea, by D. Keith Serafy and F. Julian Fell. September 1985, 27 p.
34. Additions to a revision of the shark genus *Carcharhinus*: Synonymy of *Aprionodon* and *Hypoprion*, and description of a new species of *Carcharhinus* (Carcharhinidae), by J. A. F. Garrick. November 1985, 26 p.
35. Synoptic review of the literature on the Southern oyster drill *Thais haemastoma floridana*, by Philip A. Butler. November 1985, 9 p.
36. An egg production method for estimating spawning biomass of pelagic fish: Application to the northern anchovy, *Engraulis mordax*, by Reuben Lasker (editor). December 1985, 99 p.
37. A histopathologic evaluation of gross lesions excised from commercially important North Atlantic marine fishes, by Robert A. Murchelano, Linda Despres-Patanjo, and John Ziskowski. March 1986, 14 p.
38. Fishery atlas of the northwestern Hawaiian Islands, by Richard N. Uchida and James H. Uchiyama (editors). September 1986, 142 p.
39. Survey of fish protective facilities at water withdrawal sites on the Snake and Columbia Rivers, by George A. Swan, Tommy G. Withrow, and Donn L. Park. April 1986, 34 p.
40. Potential impact of ocean thermal energy conversion (OTEC) on fisheries, by Edward P. Myers, Donald E. Hoss, Walter M. Matsumoto, David S. Peters, Michael P. Seki, Richard N. Uchida, John D. Ditmars, and Robert A. Paddock. June 1986, 33 p.
41. A stationary visual census technique for quantitatively assessing community structure of coral reef fishes, by James A. Bohnsack and Scott P. Bannerot. July 1986, 15 p.
42. Effects of temperature on the biology of the northern shrimp, *Pandalus borealis*, in the Gulf of Maine, by Spencer Apollonio, David K. Stevenson, and Earl E. Dunton, Jr. September 1986, 22 p.
43. Environment and resources of seamounts in the North Pacific, by Richard N. Uchida, Sigeiti Hayasi, and George W. Boehlert (editors). September 1986, 105 p.
44. Synopsis of biological data on the porgies, *Calamus arctifrons* and *C. proridens* (Pisces: Sparidae), by George H. Darcy. September 1986, 19 p.
45. Meristic variation in *Sebastes* (Scorpaenidae), with an analysis of character association and bilateral pattern and their significance in species separation, by Lo-chai Chen. September 1986, 17 p.
46. Distribution and relative abundance of pelagic nonsalmonid nekton off Oregon and Washington 1979-84, by Richard D. Brodeur and William G. Pearcy. December 1986, 85 p.

NOAA Technical Report NMFS 62

**Fishery Publication Index, 1980-85**  
**Technical Memorandum Index, 1972-85**

Cynthia S. Martin  
Shelley E. Arenas  
Jacki A. Guffey  
Joni M. Packard

December 1987



U.S. DEPARTMENT OF COMMERCE

C. William Verity, Jr., Secretary

National Oceanic and Atmospheric Administration

Anthony J. Calio, Administrator

National Marine Fisheries Service

William E. Evans, Assistant Administrator for Fisheries

The National Marine Fisheries Service (NMFS) does not approve, recommend or endorse any proprietary product or proprietary material mentioned in this publication. No reference shall be made to NMFS, or to this publication furnished by NMFS, in any advertising or sales promotion which would indicate or imply that NMFS approves, recommends or endorses any proprietary product or proprietary material mentioned herein, or which has as its purpose an intent to cause directly or indirectly the advertised product to be used or purchased because of this NMFS publication.

# CONTENTS

Introduction 1

Publications Distribution 1

Formal Publications Series 2

*Circular* 2

*Fishery Bulletin* 3

*Marine Fisheries Review* 15

*Special Scientific Report—Fisheries* 22

*Technical Report* 24

*Technical Memorandum Series* 28

Alaska Region 28

Atlantic Estuarine Fisheries Center 28

Auke Bay Laboratory 28

Northeast Fisheries Center 29

Northwest and Alaska Fisheries Center 30

National Marine Fisheries Service Headquarters 33

Northwest Region 33

Southeast Fisheries Center 34

Southeast Region 38

Southwest Fisheries Center 38

Southwest Region 40

Author Index 41

Subject Index 63



# Fisheries Publication Index, 1980-85 Technical Memorandum Index, 1972-85

CYNTHIA S. MARTIN  
SHELLEY E. ARENAS  
JACKI A. GUFFEY  
JONI M. PACKARD

*Scientific Publications Office  
National Marine Fisheries Service, NOAA  
7600 Sand Point Way N.E.  
Seattle, Washington 98115*

## ABSTRACT

The following series of fishery publications produced in calendar years 1980-85 by the Scientific Publications Office of the National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), are listed numerically and indexed by author and subject: *Circular, Fishery Bulletin, Marine Fisheries Review, Special Scientific Report—Fisheries, and Technical Report NMFS*. Also included is an alphanumeric listing of the NOAA Technical Memorandum NMFS series published in calendar years 1972-85 by NMFS regional offices and fisheries centers. Authors and subjects for the Memorandum series are indexed with the other publication series.

## INTRODUCTION

---

This index includes those publication series produced by the Scientific Publications Office of the National Marine Fisheries Service, NOAA, and issued from 1980 through 1985. It also includes the first complete listing of the NOAA Technical Memorandum NMFS Series issued by NMFS regional offices, laboratories, and fisheries centers from 1972 to 1985. The index includes a list of each publication series in numerical order and alphabetical indexes of authors and subjects.

This index is a continuation of the following: *Fishery Publication Index, 1975-79*, NOAA Technical Report NMFS Circular 437; *Fishery Publication Index, 1965-74*, NOAA Technical Report NMFS Circular 400; *Fishery Publication Index 1955-64*, U.S. Fish and Wildlife Service Circular 296; *Fishery Publication Index 1920-54*, U.S. Fish and Wildlife Service Circular 36; and *Publications of the United States Bureau of Fisheries 1871-1940*, U.S. Fish and Wildlife Service Special Scientific Report—Fisheries 284.

## PUBLICATIONS DISTRIBUTION

---

Most publications are distributed free to libraries designated as depository libraries for Government publications; a list of depository libraries may be obtained from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, D.C. 20402. Subscriptions to the two periodicals, *Fishery Bulletin* and *Marine Fisheries Review*, are also available from the Superintendent of Documents in Washington, D.C. Individual sale copies in paper or microfiche form are available from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161. Interested readers should contact the Superintendent of Documents or NTIS directly for current information on availability and pricing, since prepayment is required for sale copies and subscriptions. Occasionally, limited free copies of these publications (except the *Technical Memorandum* series) are available from the Scientific Publications Office, National Marine Fisheries Service, NOAA, 7600 Sand Point Way N.E., Seattle, WA 98115-0070.

*Circular*

The *Circular* series continues a series begun in 1941 and includes semitechnical publications of general and regional interest intended to aid conservation and management. In 1983 this subcategory of technical reports was merged with the *Special Scientific Report—Fisheries* series into the *NOAA Technical Report NMFS* series; *Circular* 451 was the last one issued.

- 430 Guide to identification of some sculpin (*Cottidae*) larvae from marine and brackish waters off Oregon and adjacent areas in the northeast Pacific, by **Sally L. Richardson and Betsy B. Washington**. January 1980, 56 p.
- 431 Guide to some trawl-caught marine fishes from Maine to Cape Hatteras, North Carolina, by **Donald D. Flescher**. March 1980, 34 p.
- 432 Synopsis of biological data on bonitos of the genus *Sarda*, by **Howard O. Yoshida**. May 1980, 50 p.
- 433 Synopsis of biological data on striped bass, *Morone saxatilis* (Walbaum), by **Eileen M. Setzler, Walter R. Boynton, Kathryn V. Wood, Henry H. Zion, Lawrence Lubbers, Nancy K. Mountford, Phyllis Frere, Luther Tucker, and Joseph A. Mihursky**. June 1980, 69 p.
- 434 Osteology, phylogeny, and higher classification of the fishes of the order Plectognathi (Tetraodontiformes), by **James C. Tyler**. October 1980, 422 p.
- 435 Field guide to fishes commonly taken in longline operations in the western north Atlantic Ocean, by **Joseph L. Russo**. January 1981, 51 p.
- 436 Synopsis of biological data on frigate tuna, *Auxis thazard*, and bullet tuna, *A. rochei*, by **Richard N. Uchida**. January 1981, 63 p.
- 437 Fishery Publications Index, 1975-79, by **Lee C. Thorson**. May 1981, 117 p.
- 438 Marine flora and fauna of the northeastern United States. Scleractinia, by **Stephen D. Cairns**. July 1981, 15 p.
- 439 Marine flora and fauna of the northeastern United States. Protozoa: Sarcodina: Benthic Foraminifera, by **Ruth Todd and Doris Low**. June 1981, 51 p.
- 440 Marine flora and fauna of the northeastern United States. Turbellaria: Acoela and Nemertodermatida, by **Louise F. Bush**. July 1981, 71 p.
- 441 Synopsis of the biology of the swordfish, *Xiphias gladius* Linnaeus, by **B. J. Palko, G. L. Beardsley, and W. J. Richards**. November 1981, 21 p.
- 442 Proceedings of the sixth U.S.-Japan meeting on aquaculture, Santa Barbara, California, August 27-28, 1977, by **Carl J. Sindermann** (editor). March 1982, 66 p.
- 1-5 Information on the culture of phytoplankton for aquacultural needs in Japan, by **Yunosuke Saito**.
- 7-12 Recent problems of nori (*Porphyra* spp.) culture in Japan, by **Hitoshi Kito**.
- 13-17 The present status of brown algae culture in Japan, by **Yunosuke Saito**.
- 19-24 The use of phytoplankton for aquaculture needs—a status report, by **William N. Shaw**.
- 25-66 Seaweed cultivation: A review, by **Arthur C. Mathieson**.
- 443 Synopsis of the biological data on dolphin-fishes, *Coryphaena hippurus* Linnaeus and *Coryphaena equiselis* Linnaeus, by **Barbara Jayne Palko, Grant L. Beardsley, and William J. Richards**. April 1982, 28 p.
- 444 Whales, dolphins, and porpoises of the eastern North Pacific and adjacent Arctic waters, a guide to their identification, by **Stephen Leatherwood, Randall R. Reeves, William F. Perrin, and William E. Evans**, with Appendix A on Tagging by **Larry Hobbs**. July 1982, 245 p.
- 445 Sharks of the genus *Carcharhinus*, by **J. A. F. Garrick**. May 1982, 194 p.
- 446 Marine flora and fauna of the northeastern United States. Lichens (Ascomycetes) of the intertidal region, by **Ronald M. Taylor**. August 1982, 26 p.
- 447 Proceedings of the eighth U.S.-Japan meeting on aquaculture at Bellingham, Washington, October 17-18, 1979, Under the Aquaculture Panel, U.S.-Japan Cooperative Program in Natural Resources (UJNR), by **William N. Shaw** (editor). November 1982, 25 p.
- 1 Joint statement of the UJNR Aquaculture Panel, October 18, 1979, Bellingham, Washington, by **William N. Shaw and Shigekatsu Sato**.
- 3-5 Freshwater finfish culture in Japan, by **Shigeru Arai**.
- 7-13 Freshwater development and smoltification in coho salmon from the Columbia River, by **Leroy C. Folmar, Walton W. Dickhoff, Waldo S. Zaugg, and Conrad V. W. Mahnken**.
- 15-19 The use of soybean meal in trout and salmon diets, by **Ronald W. Hardy**.
- 21-22 Freshwater aspects of anadromous salmonid enhancement, by **Rowan W. Gould**.
- 23-25 Catfish aquaculture in the United States, by **Harry K. Dupree**.
- 448 Synopsis of biological data on the grunts *Haemulon aurolineatum* and *H. plumieri* (Pisces: Haemulidae), by **George H. Darcy**. February 1983, 37 p.
- 449 Synopsis of biological data on the pigfish, *Orthopristis chrysoptera* (Pisces: Haemulidae), by **George H. Darcy**. March 1983, 23 p.
- 450 The utility of developmental osteology in taxonomic and systematic studies of teleost larvae: A review, by **Jean R. Dunn**. June 1983, 19 p.
- 451 Synopsis of biological data on skipjack tuna, *Katsuwonus pelamis*, by **Walter M. Matsumoto, Robert A. Skillman, and Andrew E. Dizon**. January 1984, 92 p.



## Fishery Bulletin

The *Fishery Bulletin* contains original research reports and technical notes on investigations in fishery science, engineering, and economics. First established as the *Bulletin of the U.S. Fish Commission* in 1881, this series became the *Bulletin of the Bureau of Fisheries* in 1904 and the *Fishery Bulletin of the Fish and Wildlife Service* in 1941. Separates were issued as documents through volume 46; beginning with volume 47 in 1931 and continuing through volume 62 in 1963, each separate appeared as a numbered bulletin. Starting with volume 63 in 1963, papers were bound together in a single issue of the bulletin instead of being issued individually. In January 1972, beginning with volume 70, number 1, the *Fishery Bulletin* became a periodical, issued quarterly.

### Vol. 78, no. 1, 1980

- 1-12 Life history patterns in marine fishes and their consequences for fisheries management, by **Peter B. Adams**.
- 13-34 Species of *Munidopsis* (Crustacea, Galatheididae) occurring off Oregon and in adjacent waters, by **Julie W. Ambler**.
- 35-50 Using Markov decision models and related techniques for purposes other than simple optimization: Analyzing the consequences of policy alternatives on the management of salmon runs, by **Roy Mendelsohn**.
- 51-58 Organochlorine residues in fishes from the northwest Atlantic Ocean and Gulf of Mexico, by **Virginia F. Stout**.
- 59-87 Systematics and distribution of ceratioid anglerfishes of the family Melanocetidae with the description of a new species from the eastern North Pacific Ocean, by **Theodore W. Pietsch and John P. Van Duzer**.
- 89-101 Early life history of Pacific mackerel, *Scomber japonicus*, by **John R. Hunter and Carol A. Kimbrell**.
- 103-108 Spawning and fecundity of Atlantic mackerel, *Scomber scombrus*, in the Middle Atlantic Bight, by **Wallace W. Morse**.
- 109-117 Respiration and depth control as possible reasons for swimming of northern anchovy, *Engraulis mordax*, yolk-sac larvae, by **Daniel Weihs**.
- 119-136 Descriptions of larval silver perch, *Bairdiella chrysoura*, banded drum, *Larimus fasciatus*, and star drum, *Stellifer lanceolatus* (Sciaenidae), by **Howard Powles**.
- 137-146 Reproductive biology of the vermilion snapper, *Rhomboplites aurorubens*, from North Carolina and South Carolina, by **Churchill B. Grimes and Gene R. Huntsman**.
- 147-158 Observations on early life stages of Atlantic tomcod, *Microgadus tomcod*, by **R. H. Peterson, P. H. Johansen, and J. L. Metcalfe**.
- 159-163 Observations of sea otters digging for clams at Monterey Harbor, California, by **Anson H. Hines and Thomas R. Loughlin**.
- 163-166 Effect of zinc on fin regeneration in the mummichog, *Fundulus heteroclitus*, and its interaction with methylmercury, by **Peddrick Weis and Judith Shulman Weis**.
- 167-169 Southern distribution of the Atlantic whitesided dolphin, *Lagenorhynchus acutus*, in the western North Atlantic, by **Salvatore A. Testaverde and James G. Mead**.
- 169-171 Additional records of the sculpin *Psychrolutes phricus* in the eastern Bering Sea and off Oregon, by **Ann C. Matarese and David L. Stein**.
- 171-177 A recurrent mass stranding of the false killer whale, *Pseudorca crassidens*, in Florida, by **Daniel K. Odell, Edward D. Asper, Joe Baucom, and Larry H. Cornell**.
- 177-179 Occurrence of the finetooth shark, *Carcharhinus isodon*, off Dauphin Island, Alabama, by **Steven Branstetter and Robert L. Shipp**.
- 179-185 Shedding rates of plastic and metal dart tags from Atlantic bluefin tuna, *Thunnus thynnus*, by **Raymond E.**

**Baglin, Jr., Mark I. Farber, William H. Lenarz, and John M. Mason, Jr.**

- 185-190 Influence of Little Goose Dam on upstream movements of adult chinook salmon, *Oncorhynchus tshawytscha*, by **James M. Haynes and Robert H. Gray**.
- 190-195 Maturity, spawning, and fecundity of Atlantic croaker, *Micropogonias undulatus*, occurring north of Cape Hatteras, North Carolina, by **Wallace W. Morse**.
- 196-198 Comparison of sampling devices for the juvenile blue crab, *Callinectes sapidus*, by **Robert E. Miller, Douglas W. Campbell, and Pamela J. Lunsford**.

### Vol. 78, no. 2, 1980

- 203-249 A survey of ciguatera at Enewetak and Bikini, Marshall Islands, with notes on the systematics and food habits of ciguatoxic fishes, by **John E. Randall**.
- 251-265 *Callinectes* (Decapoda: Portunidae) larvae in the Middle Atlantic Bight, 1975-77, by **Peter O. Smyth**.
- 267-276 An analysis of the United States demand for fish meal, by **D. D. Huppert**.
- 277-312 Development and structure of fins and fin supports in dolphin fishes *Coryphaena hippurus* and *Coryphaena equiselis* (Coryphaenidae), by **Thomas Potthoff**.
- 313-335 Larval development of *Euphausia eximia* (Crustacea: Euphausiacea) with notes on its vertical distribution and morphological divergence between populations, by **Margaret D. Knight**.
- 337-352 Feeding ecology of *Lagodon rhomboides* (Pisces: Sparidae): Variation and functional responses, by **Allan W. Stoner**.
- 353-360 Observations on a mass stranding of spinner dolphin, *Stenella longirostris*, from the west coast of Florida, by **James G. Mead, Daniel K. Odell, Randall S. Wells, and Michael D. Scott**.
- 361-377 Annual variability of reef-fish assemblages in kelp forests off Santa Barbara, California, by **Alfred W. Ebeling, Ralph J. Larson, William S. Alevizon, and Richard N. Bray**.
- 379-399 Ceratioid anglerfishes of the Philippine Archipelago, with descriptions of five new species, by **Theodore W. Pietsch and Jeffrey A. Seigel**.
- 401-417 Eggs and larvae of butter sole, *Isopsetta isolepis* (Pleuronectidae), off Oregon and Washington, by **Sally L. Richardson, Jean R. Dunn, and Nancy Anne Naplin**.
- 419-436 Retention of three taxa of postlarval fishes in an intensively flushed tidal estuary, Cape Fear River, North Carolina, by **Michael P. Weinstein, Sidney L. Weiss, Ronald G. Hodson, and Lawrence R. Gerry**.
- 437-454 Relationships between wave disturbance and zonation of benthic invertebrate communities along a subtidal high-energy beach in Monterey Bay, California, by **John S. Oliver, Peter N. Slattery, Larry W. Hulberg, and James W. Nybakken**.

- 455-464 Daily time of spawning of 12 fishes in the Peconic Bays, New York, by **Steven P. Ferraro**.
- 465-473 An improved method to analyze trimethylamine in fish and the interference of ammonia and dimethylamine, by **Fern A. Bullard and Jeff Collins**.
- 475-489 Percentage of starving northern anchovy, *Engraulis mordax*, larvae in the sea as estimated by histological methods, by **Charles P. O'Connell**.
- 491-505 Transportation of chinook salmon, *Oncorhynchus tshawytscha*, and steelhead, *Salmo gairdneri*, smolts in the Columbia River and effects on adult returns, by **Wesley J. Ebel**.
- 507-528 Is ovulation in dolphins, *Stenella longirostris* and *Stenella attenuata*, always copulation-induced?, by **K. Benirschke, Mary L. Johnson, and Rolf J. Benirschke**.
- 529-534 A large, opening-closing midwater trawl for sampling oceanic nekton, and comparison of catches with an Isaacs-Kidd midwater trawl, by **William G. Pearcy**.
- 535-537 Passive behavior by the spotted dolphin, *Stenella attenuata*, in tuna purse seine nets, by **James M. Coe and Warren E. Stuntz**.
- 538-541 Effects of large predators on the field culture of the hard clam, *Mercenaria mercenaria*, by **John N. Kraeuter and Michael Castagna**.
- 541-544 A direct method for estimating northern anchovy, *Engraulis mordax*, spawning biomass, by **Keith Parker**.
- 544-549 Food of the harbor seal, *Phoca vitulina richardsi*, in the Gulf of Alaska, by **Kenneth W. Pitcher**.
- 549-554 Production and growth of subyearling coho salmon, *Oncorhynchus kisutch*, chinook salmon, *Oncorhynchus tshawytscha*, and steelhead, *Salmo gairdneri*, in Orwell Brook, tributary of Salmon River, New York, by **James H. Johnson**.
- Vol. 78, no. 3, 1980** \_\_\_\_\_
- 555-578 A multistage recruitment process in laboratory fish populations: Implications for models of fish population dynamics, by **David G. Hankin**.
- 579-591 Distribution and abundance of *Halobates* species (Insecta: Heteroptera) in the eastern tropical Pacific, by **Lanna Cheng and Eric Shulenberg**.
- 593-601 Occurrence, movements, and distribution of bottlenose dolphin, *Tursiops truncatus*, in southern Texas, by **Susan H. Shane**.
- 603-618 Reproduction of northern anchovy, *Engraulis mordax*, off Oregon and Washington, by **Joanne Lyczkowski Laroche and Sally L. Richardson**.
- 619-640 Diets of fourteen species of vertically migrating mesopelagic fishes in Hawaiian waters, by **Thomas A. Clarke**.
- 641-648 Survival, size, and emergence of pink salmon, *Oncorhynchus gorbuscha*, alevins after short- and long-term exposures to ammonia, by **Stanley D. Rice and Jack E. Bailey**.
- 649-658 Effects of seeding density of pink salmon, *Oncorhynchus gorbuscha*, eggs on water chemistry, fry characteristics, and fry survival in gravel incubators, by **Jack E. Bailey, Stanley D. Rice, Jerome J. Pella, and Sidney G. Taylor**.
- 659-674 Some statistical considerations of the design of trawl surveys for rockfish (Scorpaenidae), by **William H. Lenarz and Peter B. Adams**.
- 675-683 Effects of copper on early life history stages of northern anchovy, *Engraulis mordax*, by **D. W. Rice, Jr., F. L. Harrison, and A. Jearld, Jr.**
- 685-692 Changes in body measurements of larval northern anchovy, *Engraulis mordax*, and other fishes due to handling and preservation, by **Gail H. Theilacker**.
- 693-700 Aspects of larval ecology of *Squilla empusa* (Crustacea, Stomatopoda) in Chesapeake Bay, by **Steven G. Morgan**.
- 701-714 Egg and larval development of the spot, *Leiostomus xanthurus* (Sciaenidae), by **Allyn B. Powell and Herbert R. Gordy**.
- 715-730 Bomolochid copepods parasitic on the eyes of Indo-West Pacific clupeid fishes, by **Roger Cressey and Hillary Boyle Cressey**.
- 731-739 Temperature effects on growth and yolk utilization in yellowtail flounder, *Limanda ferruginea*, yolk-sac larvae, by **W. Hunting Howell**.
- 741-757 Oxygen consumption and hemolymph osmolality of brown shrimp, *Penaeus aztecus*, by **James M. Bishop, James G. Gosselink, and James H. Stone**.
- 759-770 Diel and seasonal variation in abundance and diversity of shallow-water fish populations in Morro Bay, California, by **Michael H. Horn**.
- 771-780 Movements of tagged American lobster, *Homarus americanus*, off Rhode Island, by **Michael J. Fogarty, David V. D. Borden, and Howard J. Russell**.
- 781-788 Factors controlling growth and survival of cultured spot prawn, *Pandalus platyceros*, in Puget Sound, Washington, by **John E. Rensel and Earl F. Prentice**.
- 789-791 Rearing container size affects morphology and nutritional condition of larval jack mackerel, *Trachurus symmetricus*, by **Gail H. Theilacker**.
- 791-796 Effectiveness of metering wheels for measurement of area sampled by beam trawls, by **Robert S. Carney and Andrew G. Carey, Jr.**
- 797-798 Stomach contents and feces as indicators of harbor seal, *Phoca vitulina*, foods in the Gulf of Alaska, by **Kenneth W. Pitcher**.
- 799-805 The 1978 spring recreational catch of Atlantic mackerel, *Scomber scombrus*, off the Middle Atlantic region, by **Darryl J. Christensen and Walter J. Clifford**.
- 805-808 Size and possible origin of sailfin, *Istiophorus platypterus*, from the eastern Atlantic Ocean, by **Grant L. Beardsley**.
- 809-811 Ammonia concentrations in pink salmon, *Oncorhynchus gorbuscha*, redds of Sashin Creek, southeastern Alaska, by **Stanley D. Rice and Jack E. Bailey**.
- 811-816 Egg cannibalism in the northern anchovy, *Engraulis mordax*, by **John R. Hunter and Carol A. Kimbrell**.
- 816-821 Depth distribution and seasonal and diel movements of ratfish, *Hydrolagus colliei*, in Puget Sound, Washington, by **Thomas P. Quinn, Bruce S. Miller, and R. Craig Wingert**.
- 821-826 Detection of petroleum hydrocarbons by the Dungeness crab, *Cancer magister*, by **Walter H. Pearson, Peter C. Sugarman, Dana L. Woodruff, J. W. Blaylock, and Bori L. Olla**.

- 829-841 Influence of water currents and zooplankton densities on daily foraging movements of blacksmith, *Chromis punctipinnis*, a planktivorous reef fish, by **Richard N. Bray**.
- 843-853 Estimated initial population size of the Bering Sea stock of bowhead whale, *Balaena mysticetus*: An iterative method, by **Jeffrey M. Breiwick, Edward D. Mitchell, and Douglas G. Chapman**.
- 855-876 Spawning biomass and early life of northern anchovy, *Engraulis mordax*, in the northern subpopulation off Oregon and Washington, by **Sally L. Richardson**.
- 877-886 Voluntary swimming speeds and respiration rates of a filter-feeding planktivore, the Atlantic menhaden, *Brevoortia tyrannus* (Pisces: Clupeidae), by **Ann G. Durbin, Edward G. Durbin, Peter G. Verity, and Thomas J. Smayda**.
- 887-896 Using Box-Jenkins models to forecast fishery dynamics: Identification, estimation, and checking, by **Roy Mendelsohn**.
- 897-909 Development of larval smooth flounder, *Liopsetta putnami*, with a redescription of development of winter flounder, *Pseudopleuronectes americanus* (Family Pleuronectidae), by **Wayne A. Laroche**.
- 911-922 Seasonality of fishes occupying a surf zone habitat in the northern Gulf of Mexico, by **Timothy Modde and Stephen T. Ross**.
- 923-940 Larval development of Pacific tomcod, *Microgadus proximus*, in the northeast Pacific Ocean with comparative notes on larvae of walleye pollock, *Theragra chalcogramma*, and Pacific cod, *Gadus macrocephalus* (Gadidae), by **Ann C. Matarese, Sally L. Richardson, and Jean R. Dunn**.
- 941-945 Predation by sharks on pinnipeds at the Farallon Islands, by **David G. Ainley, Craig S. Strong, Harriet R. Huber, T. James Lewis, and Stephen H. Morrell**.
- 945-947 In situ observations on reproductive behavior of the long-finned squid, *Loligo pealei*, by **Carolyn A. Griswold and Jerome Prezioso**.
- 947-951 Spawning and sexual maturity of gulf menhaden, *Brevoortia patronus*, by **Robert M. Lewis and Charles M. Roithmayr**.
- 951-959 Food of the Pacific white-sided dolphin, *Lagenorhynchus obliquidens*, Dall's porpoise, *Phocoenoides dalli*, and northern fur seal, *Callorhinus ursinus*, off California and Washington, by **Richard K. Stroud, Clifford H. Fiscus, and Hiroshi Kajimura**.
- 959-964 Spawn and larvae of the Pacific sandfish, *Trichodon trichodon*, by **Jeffrey B. Marliave**.
- 965-968 A radiologic method for examination of the gastrointestinal tract in the Atlantic ridley, *Lepidochelys kempi*, and loggerhead, *Caretta caretta*, marine turtles, by **G. L. McLellan and J. K. Leong**.
- 968-973 Summer food of Pacific cod, *Gadus macrocephalus*, in coastal waters of southeastern Alaska, by **David M. Clausen**.
- 973-977 Use of Griffin's yield model for the Gulf of Mexico shrimp fishery, by **Arvind Khilnani**.
- 977-978 Seasonal spawning cycle of the Pacific butterfish, *Pepilus simillimus* (Stromateidae), by **Stephen R. Goldberg**.
- 979-984 Effects of injuries on spiny lobster, *Panulirus argus*, and implications for fishery management, by **Gary E. Davis**.

- 1-30 Crepuscular and nocturnal activities of Californian near-shore fishes, with consideration of their scotopic visual pigments and the photic environment, by **Edmund S. Hobson, William N. McFarland, and James R. Chess**.
- 31-48 Respiration rates and low-oxygen tolerance limits in skipjack tuna, *Katsuwonus pelamis*, by **Reginald M. Gooding, William H. Neill, and Andrew E. Dizon**.
- 49-68 An analysis of catch and effort data from the U.S. recreational fishery for billfishes (Istiophoridae) in the western North Atlantic Ocean and Gulf of Mexico, 1971-78, by **Grant L. Beardsley and Ramon J. Conser**.
- 69-83 Western Atlantic hagfishes of the genus *Eptatretus* (Myxinidae) with description of two new species, by **Bo Fernholm and Carl L. Hubbs**.
- 85-94 Observations on distribution and life history of skipjack tuna, *Katsuwonus pelamis*, in Australian waters, by **Maurice Blackburn and D. L. Serventy**.
- 95-101 A method for growth curve comparisons, by **Russell F. Kappenman**.
- 103-121 Current knowledge of larvae of sculpins (Pisces: Cottidae and allies) in northeast Pacific genera with notes on inter-generic relationships, by **Sally L. Richardson**.
- 123-130 Growth and age structure of larval Atlantic herring, *Clupea harengus harengus*, in the Sheepscot River estuary, Maine, as determined by daily growth increments in otoliths, by **David W. Townsend and Joseph J. Graham**.
- 131-142 Feeding selectivity of schools of northern anchovy, *Engraulis mordax*, in the Southern California Bight, by **J. Anthony Koslow**.
- 143-150 Burst swimming performance of northern anchovy, *Engraulis mordax*, larvae, by **P. W. Webb and R. T. Corolla**.
- 151-162 Age and growth of skipjack tuna, *Katsuwonus pelamis*, and yellowfin tuna, *Thunnus albacares*, as indicated by daily growth increments of sagittae, by **James H. Uchiyama and Paul Struhsaker**.
- 163-170 Pelagic eggs and larvae of the deepsea sole, *Embassichthys bathybius* (Pisces: Pleuronectidae), with comments on generic affinities, by **Sally L. Richardson**.
- 171-176 Effects of swimming path curvature on the energetics of fish motion, by **Daniel Weihs**.
- 177-182 Description of Stage II zoeae of snow crab, *Chionoecetes bairdi*, (Oxyrhyncha, Majidae) from plankton of lower Cook Inlet, Alaska, by **Evan Haynes**.
- 182-184 Feeding rate of captive adult female northern fur seals, *Callorhinus ursinus*, by **Stephen Spotte and Gary Adams**.
- 185-187 Induced spawning of a tuna, *Euthynnus affinis*, by **Calvin M. Kaya, Andrew E. Dizon, and Sharon D. Hendrix**.
- 187-192 Trophic importance of some marine gadids in northern Alaska and their body-otolith size relationships, by **Kathryn J. Frost and Lloyd F. Lowry**.
- 192-198 Carolinian records for American lobster, *Homarus americanus*, and tropical swimming crab, *Callinectes bocourti*. Postulated means of dispersal, by **Austin B. Williams and David McN. Williams**.
- 198-200 Mortalities of Atlantic herring, *Clupea h. harengus*, smooth flounder, *Liopsetta putnami*, and rainbow smelt, *Osmerus mordax*, larvae exposed to acute thermal shock, by **Seth L. Barker, David W. Townsend, and John S. Hacunda**.

- 200-206 Food of 10 species of northwest Atlantic juvenile groundfish, by **Ray E. Bowman**.
- 207-211 Difference in sex ratios of the anadromous alewife, *Alosa pseudoharengus*, between the top and bottom of a fishway at Damariscotta Lake, Maine, by **David A. Libby**.
- 211-212 Proximate composition and nutritive value of some important food fishes from the Arabian Gulf, by **Manal M. Al-Judaimi, A. K. Jafri, and K. A. George**.
- Vol. 79, no. 2, 1981**
- 215-230 The spawning energetics of female northern anchovy, *Engraulis mordax*, by **J. Roe Hunter and Roderick Leong**.
- 231-257 Development of larvae and juveniles of the rockfishes *Sebastes entomelas* and *S. zacentrus* (Family Scorpaenidae) and occurrence off Oregon, with notes on head spines of *S. mystinus*, *S. flavidus*, and *S. melanops*, by **Wayne A. Laroche and Sally L. Richardson**.
- 259-269 Contribution to the life history of the deep-sea king crab, *Lithodes couesi*, in the Gulf of Alaska, by **David A. Somerton**.
- 271-276 The effect of the bottom on the fast start of flatfish *Citharichthys stigmaeus*, by **P. W. Webb**.
- 277-292 Daily patterns in the activities of swordfish, *Xiphias gladius*, observed by acoustic telemetry, by **Francis G. Carey and Bruce H. Robison**.
- 293-302 Growth rates of North Pacific albacore, *Thunnus alalunga*, based on tag returns, by **R. Michael Laurs and Jerry A. Wetherall**.
- 303-314 Economic feasibility of domestic groundfish harvest from western Alaska waters: A comparison of vessel types, fishing strategies, and processor locations, by **C. M. Lynde**.
- 315-323 A stochastic model for the size of fish schools, by **James Jay Anderson**.
- 325-335 Recruitment and exploitation of gulf menhaden, *Brevoortia patronus*, by **Dean W. Ahrenholz**.
- 337-345 Natural stable carbon isotope tag traces Texas shrimp migrations, by **Brian Fry**.
- 347-349 Annual reproduction, dependency period, and apparent gestation period in two Californian sea otters, *Enhydra lutris*, by **Thomas R. Loughlin, Jack A. Ames, and Judson E. Vandever**.
- 349-352 Mass mortality of female Dungeness crab, *Cancer magister*, on the southern Washington coast, by **Bradley G. Stevens and David A. Armstrong**.
- 353-356 Fishes new to the eastern Bering Sea, by **Mamoru Yabe, Daniel M. Cohen, Kiyoshi Wakabayashi, and Tomio Iwamoto**.
- 356-360 Schooling of the scalloped hammerhead shark, *Sphyrna lewini*, in the Gulf of California, by **A. Peter Klimley and Donald R. Nelson**.
- 360 Cleaning symbiosis between topsmelt, *Atherinops affinis*, and gray whale, *Eschrichtius robustus*, in Laguna San Ignacio, Baja California Sur, Mexico, by **Steven L. Swartz**.
- 360-367 Morphological features of the otoliths of the sailfish, *Istiophorus platypterus*, useful in age determination, by **Richard L. Radtke and J. M. Dean**.
- 367-370 Diel and seasonal movements of white sturgeon, *Acipenser transmontanus*, in the mid-Columbia River, by **James M. Haynes and Robert H. Gray**.
- 370-376 Feeding periodicity and diel variation in diet composition of subyearling coho salmon, *Oncorhynchus kisutch*, and steelhead, *Salmo gairdneri*, in a small stream during summer, by **James H. Johnson and Emily Z. Johnson**.
- 376-383 The occurrence of *Cirolana borealis* (Isopoda) in the hearts of sharks from Atlantic coastal waters of Florida, by **Patricia M. Bird**.
- 383-385 A flushing-coring device for collecting deep-burrowing infaunal bivalves in intertidal sand, by **Mark James Grussendorf**.
- Vol. 79, no. 3, 1981**
- 387-419 The osteology and relationships of the anglerfish genus *Tetrabrachium* with comments on lophiiform classification, by **Theodore W. Pietsch**.
- 421-440 Early zoeal stages of *Lebbeus polaris*, *Eualus suckleyi*, *E. fabricii*, *Spirontocaris arcuata*, *S. ochotensis*, and *Heptacarpus camtschaticus* (Crustacea, Decapoda, Caridea, Hippolytidae) and morphological characterization of zoeae of *Spirontocaris* and related genera, by **Evan Haynes**.
- 441-447 Feeding behavior and biology of young sandbar sharks, *Carcharhinus plumbeus* (Pisces, Carcharhinidae), in Chincoteague Bay, Virginia, by **Robert J. Medved and Joseph A. Marshall**.
- 449-458 Seasonal changes in soft-body component indices and energy reserves in the Atlantic deep-sea scallop, *Placopecten magellanicus*, by **William E. Robinson, William E. Wehling, M. Patricia Morse, and Guy C. McLeod**.
- 459-466 Effects of photoperiod and feeding on daily growth patterns in otoliths of juvenile *Tilapia nilotica*, by **Kuniaki Tanaka, Yasuo Mugiya, and Juro Yamada**.
- 467-472 Prey of the Steller sea lion, *Eumetopias jubatus*, in the Gulf of Alaska, by **Kenneth W. Pitcher**.
- 473-485 Offshore distribution of alewife, *Alosa pseudoharengus*, and blueback herring, *Alosa aestivalis*, along the Atlantic coast, by **Richard J. Neves**.
- 487-506 The complete larval development in the laboratory of *Micropanope sculptipes* (Crustacea, Decapoda, Xanthidae) with a comparison of larval characters in western Atlantic xanthid genera, by **Bryan L. Andryszak and Robert H. Gore**.
- 507-516 Establishment of nonindigenous runs of spring chinook salmon, *Oncorhynchus tshawytscha*, in the Wind River drainage of the Columbia River, 1955-63, by **Roy J. Wahle and Ed Chaney**.
- 517-532 Estimated growth of surface-schooling skipjack tuna, *Katsuwonus pelamis*, and yellowfin tuna, *Thunnus albacares*, from the Papua New Guinea region, by **J. W. J. Wankowski**.
- 533-545 Growth, reproduction, and food habits of olive rockfish, *Sebastes serranoides*, off central California, by **Milton S. Love and William V. Westphal**.
- 547-560 Ovarian cycling frequency and batch fecundity in the queenfish, *Seriophilus politus*: Attributes representative of serial spawning fishes, by **E. E. DeMartini and Robert K. Fountain**.

- 561-562 Seasonal spawning cycle of the black croaker, *Cheilotrema saturnum* (Sciaenidae), by **Stephen R. Goldberg**.
- 562-567 Population growth and censuses of the northern elephant seal, *Mirounga angustirostris*, on the California Channel Islands, 1958-78, by **George A. Antonelis, Jr., Stephen Leatherwood, and Daniel K. Odell**.
- 567-569 Growth characteristics of young-of-the-year walleye, *Stizostedion vitreum vitreum*, in John Day Reservoir on the Columbia River, 1979, by **Dean A. Brege**.
- 569-573 Effects of temperature and salinity on egg hatching and larval survival of red drum, *Sciaenops ocellata*, by **Joan Holt, Robert Godbout, and C. R. Arnold**.
- Vol. 79, no. 4, 1981** \_\_\_\_\_
- 575-599 Marine fisheries of Delaware, by **J. L. McHugh**.
- 601-616 Assimilation efficiency and nitrogen excretion of a filter-feeding planktivore, the Atlantic menhaden, *Brevoortia tyrannus* (Pisces: Clupeidae), by **Edward G. Durbin and Ann G. Durbin**.
- 617-640 Taxonomic status and biology of the bigeye thresher, *Alopias superciliosus*, by **S. H. Gruber and L. J. V. Compagno**.
- 641-647 Impairment of the chemosensory antennular flicking response in the Dungeness crab, *Cancer magister*, by petroleum hydrocarbons, by **Walter H. Pearson, Peter C. Sugarman, Dana L. Woodruff, and Bori L. Olla**.
- 649-669 Reproduction, movements, and population dynamics of the sand seatrout, *Cynoscion arenarius*, by **Philip A. Shlossman and Mark E. Chittenden, Jr.**
- 671-688 Movements and activities of the Atlantic bottlenose dolphin, *Tursiops truncatus*, near Sarasota, Florida, by **A. Blair Irvine, Michael D. Scott, Randall S. Wells, and John H. Kaufmann**.
- 689-703 Maximum yield estimates for the Pacific thread herring, *Opisthonema* spp., fishery in Costa Rica, by **David K. Stevenson and Francisco Carranza**.
- 705-726 Diel-depth distribution of summer ichthyoplankton in the Middle Atlantic Bight, by **Arthur W. Kendall, Jr., and N. A. Naplin**.
- 727-735 Responses of northern anchovy, *Engraulis mordax*, larvae to predation by a biting planktivore, *Amphiprion percula*, by **P. W. Webb**.
- 737-748 Gulf of Mexico shrimp production: A food web hypothesis, by **R. Warren Flint and Nancy N. Rabalais**.
- 749-763 Feeding selectivity of Dover sole, *Microstomus pacificus*, off Oregon, by **Wendy L. Gabriel and William G. Pearcy**.
- 765-774 Cephalopods in the diet of the swordfish, *Xiphias gladius*, from the Florida Straits, by **Ronald B. Toll and Steven C. Hess**.
- 775-788 Trophic relationships among demersal fishes in a coastal area of the Gulf of Maine, by **John S. Hacunda**.
- 789-794 The effects of photoperiod and temperature on laboratory growth of juvenile *Sebastes diploproa* and a comparison with growth in the field, by **George W. Boehlert**.
- 794-796 A correlation between annual catches of Dungeness crab, *Cancer magister*, along the west coast of North America and mean annual sunspot number, by **Milton S. Love and William V. Westphal**.
- 796-800 Fecundity of the American lobster, *Homarus americanus*, in Newfoundland waters, by **G. P. Ennis**.
- 800-806 Mortality of seabirds in high-seas salmon gill nets, by **David G. Ainley, Anthony R. DeGange, Linda L. Jones, and Richard J. Beach**.
- 806-812 Histochemical indications of liver glycogen in samples of emaciated and robust larvae of the northern anchovy, *Engraulis mordax*, by **Charles P. O'Connell and Pedro A. Paloma**.
- Vol. 80, no. 1, 1982** \_\_\_\_\_
- 1-19 Distribution, abundance, and age and growth of the tom-tate, *Haemulon aurolineatum*, along the southeastern United States coast, by **Charles S. Manooch, III, and Charles A. Barans**.
- 21-34 Growth of the ocean quahog, *Arctica islandica*, in the Middle Atlantic Bight, by **Steven A. Murawski, John W. Ropes, and Fredric M. Serchuk**.
- 35-73 Larval development of *Citharichthys cornutus*, *C. gymnorhinus*, *C. spilopterus*, and *Etropus crossotus* (Bothidae), with notes on larval occurrence, by **John W. Tucker, Jr.**
- 75-91 Avoidance of towed nets by the euphausiid *Nematoscelis megalops*, by **P. H. Wiebe, S. H. Boyd, B. M. Davis, and J. L. Cox**.
- 93-104 Age and growth of a pleuronectid, *Parophrys vetulus*, during the pelagic larval period in Oregon coastal waters, by **Joanne Lyczkowski Laroche, Sally L. Richardson, and Andrew A. Rosenberg**.
- 105-119 Phenotypic differences among stocks of hatchery and wild coho salmon, *Oncorhynchus kisutch*, in Oregon, Washington, and California, by **R. C. Hjort and C. B. Schreck**.
- 121-134 Reproductive biology of western Atlantic bluefin tuna, by **Raymond E. Baglin, Jr.**
- 135-143 An evaluation of techniques for tagging small odontocete cetaceans, by **A. B. Irvine, R. S. Wells, and M. D. Scott**.
- 145-150 Offshore winter migration of the Atlantic silverside, *Menidia menidia*, by **David O. Conover and Steven A. Murawski**.
- 150-153 Growth during metamorphosis of English sole, *Parophrys vetulus*, by **Andrew A. Rosenberg and Joanne Lyczkowski Laroche**.
- 153-156 Observations on large white sharks, *Carcharodon carcharias*, off Long Island, New York, by **Harold L. Pratt, Jr., John G. Casey, and Robert B. Conklin**.
- 157 A note on the estimation of trimethylamine in fish muscle, by **D. M. Gibson**.
- 158-160 Snout dimorphism in white sturgeon, *Acipenser transmontanus*, from the Columbia River at Hanford, Washington, by **Dennis W. Crass and Robert H. Gray**.
- Vol. 80, no. 2, 1982** \_\_\_\_\_
- 161-186 Development of the vertebral column, fins and fin supports, branchiostegal rays, and squamation in the swordfish, *Xiphias gladius*, by **Thomas Potthoff and Sharon Kelley**.
- 187-199 Age and growth of larval Atlantic herring, *Clupea harengus* L., in the Gulf of Maine-Georges Bank region based on otolith growth increments, by **R. Gregory Lough, Michael Pennington, George R. Bolz, and Andrew A. Rosenberg**.
- 201-215 Increment formation in the otoliths of embryos, larvae, and juveniles of the mummichog, *Fundulus heteroclitus*, by **R. L. Radtke and J. M. Dean**.

- 217-243 The larval development of *Sergestes similis* Hansen (Crustacea, Decapoda, Sergestidae) reared in the laboratory, by **Margaret Knight and Makoto Omori**.
- 245-252 Growth of juvenile English sole, *Parophrys vetulus*, in estuarine and open coastal nursery grounds, by **Andrew A. Rosenberg**.
- 253-258 Population fluctuations of California sea lions and the Pacific whiting fishery off central California, by **David G. Ainley, Harriet R. Huber, and Kevin M. Bailey**.
- 259-268 Feeding behavior of the humpback whale, *Megaptera novaeangliae*, in the western North Atlantic, by **James H. W. Hain, Gary R. Carter, Scott D. Kraus, Charles A. Mayo, and Howard E. Winn**.
- 269-280 The interrelation of water quality, gill parasites, and gill pathology of some fishes from south Biscayne Bay, Florida, by **Renate H. Skinner**.
- 281-286 The effect of protease inhibitors on proteolysis in parasitized Pacific whiting, *Merluccius productus*, muscle, by **Ruth Miller and John Spinelli**.
- 287-304 Feeding habits of stomiatoid fishes from Hawaiian waters, by **Thomas A. Clarke**.
- 305-313 Description of larvae of the golden king crab, *Lithodes aequispina*, reared in the laboratory, by **Evan Haynes**.
- 315-326 The seasonal cycle of gonadal development in *Arctica islandica* from the southern New England shelf, by **Roger Mann**.
- 327-335 Regeneration of nitrogen by the nekton and its significance in the northwest Africa upwelling ecosystem, by **Terry E. Whittedge**.
- 337-343 The Atlantic sturgeon, *Acipenser oxyrinchus*, in the Delaware River estuary, by **Harold M. Brundage, III, and Robert E. Meadows**.
- 345-355 Larval development of laboratory-reared rosy lip sculpin, *Ascelichthys rhodorus* (Cottidae), by **Ann C. Matarese and Jeffrey B. Marliave**.
- 357-370 A beak key for eight eastern tropical Pacific cephalopod species with relationships between their beak dimensions and size, by **Gary A. Wolff**.
- 371-379 Movement and speed of dolphin schools responding to an approaching ship, by **D. Au and W. Perryman**.
- 381-388 The Strait of Georgia herring fishery: A case history of timely management aided by hydroacoustic surveys, by **Robert J. Trumble, Richard E. Thorne, and Norman A. Lemberg**.
- 389-392 Effects of long-term mercury exposure on hematology of striped bass, *Morone saxatilis*, by **Margaret A. Dawson**.
- 393-396 Rapid and spontaneous maturation, ovulation, and spawning of ova by newly captured skipjack tuna, *Katsuwonus pelamis*, by **Calvin M. Kaya, Andrew E. Dizon, Sharon D. Hendrix, Thomas K. Kazama, and Martina K. K. Queenth**.
- 396-401 Estimating and monitoring incidental dolphin mortality in the eastern tropical Pacific tuna purse seine fishery, by **Nancy C. H. Lo, Joseph E. Powers, and Bruce E. Wahlen**.
- 401-402 White Dall's porpoise sighted in the North Pacific, by **Gerald G. Joyce, John V. Rosapepe, and Junroku Ogasawara**.
- Vol. 80, no. 3, 1982**
- 403-417 Development of eggs and larvae of the white croaker, *Genyonemus lineatus* Ayres (Pisces: Sciaenidae), off the southern California coast, by **William Watson**.
- 419-433 Elemental composition (C, N, H) and energy in growing and starving larvae of *Hyas araneus* (Decapoda, Majidae), by **Klaus Anger and Ralph R. Dawirs**.
- 435-448 A multispecies analysis of the commercial deep-sea handline fishery in Hawaii, by **Stephen Ralston and Jeffrey J. Polovina**.
- 449-459 Development and application of an objective method for classifying long-finned squid, *Loligo pealei*, into sexual maturity stages, by **William K. Macy, III**.
- 461-474 Bioenergetics and growth of striped bass, *Morone saxatilis*, embryos and larvae, by **Maxwell B. Eldridge, Jeannette A. Whipple, and Michael J. Bowers**.
- 475-486 Stock and recruitment relationships in *Panulirus cygnus*, the commercial rock (spiny) lobster of Western Australia, by **G. R. Morgan, B. F. Phillips, and L. M. Joll**.
- 487-500 Spawning, age determination, longevity, and mortality of the silver seatrout, *Cynoscion nothus*, in the Gulf of Mexico, by **Douglas A. DeVries and Mark E. Chittenden, Jr.**
- 501-521 *Cyclograpsus integer* H. Milne Edwards, 1837 (Brachyura, Grapsidae): The complete larval development in the laboratory, with notes on larvae of the genus *Cyclograpsus*, by **Robert H. Gore and Liberta E. Scotto**.
- 523-540 Reproduction, movements, and population dynamics of the longspine porgy, *Stenotomus caprinus*, by **Paul Geoghegan and Mark E. Chittenden, Jr.**
- 541-554 Vertical migration and its effect on dispersal of penaeid shrimp larvae in the Gulf of Carpentaria, Australia, by **Peter C. Rothlisberg**.
- 555-565 Feeding ecology of 0-age flatfishes at a nursery ground on the Oregon coast, by **E. W. Hogue and A. G. Carey, Jr.**
- 567-574 Pressure sensitivity of Atlantic herring, *Clupea harengus* L., larvae, by **David R. Colby, Donald E. Hoss, and J. H. S. Blaxter**.
- 575-588 Feeding ecology of some fishes of the Antarctic Peninsula, by **Robert A. Daniels**.
- 589-598 The early life history of the Pacific hake, *Merluccius productus*, by **Kevin M. Bailey**.
- 599-610 The biology of the white perch, *Morone americana*, in the Hudson River estuary, by **D. W. Bath and J. M. O'Connor**.
- 611-619 Identifying climatic factors influencing commercial fish and shellfish landings in Maryland, by **Robert E. Ulanowicz, Mohammed Liaquat Ali, Alice Vivian, Donald R. Heinle, William A. Richkus, and J. Kevin Summers**.
- 621-630 Aerial surveys for manatees and dolphins in western peninsular Florida, by **A. Blair Irvine, John E. Caffin, and Howard I. Kochman**.
- 631-642 Effect of season and location on the relationship between zooplankton displacement volume and dry weight in the northwest Atlantic, by **Joseph Kane**.
- 642-644 Estimation of equilibrium settlement rates for benthic marine invertebrates: Its application to *Mya arenaria* (Mollusca: Pelecypoda), by **Diane J. Brousseau, Jenny A. Baglivo, and George E. Lang, Jr.**

- 644-648 Growth of juvenile red snapper, *Lutjanus campechanus*, in the northwestern Gulf of Mexico, by **Scott A. Holt and Connie R. Arnold**.
- 648-650 An association between a pelagic octopod, *Argonauta* sp. Linnaeus 1758, and aggregate salps, by **P. T. Banas, D. E. Smith, and D. C. Biggs**.
- 650-651 Migration of a juvenile wolf eel, *Anarrhichthys ocellatus*, from Port Hardy, British Columbia, to Willapa Bay, Washington, by **David R. Miller**.
- Vol. 80, no. 4, 1982**
- 655-686 Qualitative and quantitative nutrient requirements of fishes: A review, by **Mark R. Millikin**.
- 687-701 Analysis of double-tagging experiments, by **Jerry A. Wetherall**.
- 703-734 Four new species of squid (Oegopsida: *Enoploteuthis*) from the central Pacific and a description of adult *Enoploteuthis reticulata*, by **Lourdes Alvina Burgess**.
- 735-743 Life history studies of the sandworm, *Nereis virens* Sars, in the Sheepsfoot Estuary, Maine, by **Edwin P. Creaser and David A. Clifford**.
- 745-759 Diet overlap between Atlantic cod, *Gadus morhua*, silver hake, *Merluccius bilinearis*, and fifteen other northwest Atlantic finfish, by **Richard W. Langton**.
- 761-768 The relationship of winter temperature and spring landings of pink shrimp, *Penaeus duorarum*, in North Carolina, by **William F. Hettler and Alexander J. Chester**.
- 769-790 Seasonal abundance, composition, and productivity of the littoral fish assemblage in upper Newport Bay, California, by **Larry G. Allen**.
- 791-801 Cyclic covariation in the California king salmon, *Oncorhynchus tshawytscha*, silver salmon, *O. kisutch*, and Dungeness crab, *Cancer magister*, fisheries, by **Louis W. Botsford, Richard D. Methot, Jr., and James E. Wilen**.
- 803-812 Swimming kinematics of sharks, by **P. W. Webb and Raymond S. Keyes**.
- 813-825 Population biology of chum salmon, *Oncorhynchus keta*, from the Fraser River, British Columbia, by **Terry D. Beacham and Paul Starr**.
- 827-840 Trophic patterns among larvae of five species of sculpins (Family: Cottidae) in a Maine estuary, by **Joanne Lyczkowski Laroche**.
- 841-851 Food habits of juvenile salmon in the Oregon coastal zone, June 1979, by **William T. Peterson, Richard D. Brodeur, and William G. Percy**.
- 853-862 Spawning and larval development of the hogfish, *Lachnolaimus maximus* (Pisces: Labridae), by **Patrick L. Colin**.
- 863-874 Biology of the whitebone porgy, *Calamus leucosteus*, in the South Atlantic Bight, by **C. Wayne Waltz, William A. Roumillat, and Charles A. Wenner**.
- 875-880 Observations of right whales, *Eubalaena glacialis*, in Cape Cod waters, by **William A. Watkins and William E. Schevill**.
- 881-884 Fecundity of the widow rockfish, *Sebastes entomelas*, off the coast of Oregon, by **George W. Boehlert, W. H. Barss, and P. B. Lamberson**.
- 884-890 A comparative study of autochthonous bacterial flora on the gills of the blue crab, *Callinectes sapidus*, and its environment, by **John A. Babinchak, Daniel Goldmintz, and Gary P. Richards**.
- 891-895 White shark predation on pinnipeds in California coastal waters, by **Burney J. Le Boeuf, Marianne Riedman, and Raymond S. Keyes**.
- 895-902 Vertical stratification of three nearshore southern California larval fishes (*Engraulis mordax*, *Genyonemus lineatus*, and *Seriphys politus*), by **Robert E. Schlotterbeck and David W. Connally**.
- 902-905 Decrease in length at predominant ages during a spawning migration of the alewife, *Alosa pseudoharengus*, by **David A. Libby**.
- 906-907 Seasonal spawning cycle of the longfin sanddab, *Citharichthys xanthostigma* (Bothidae), by **Stephen R. Goldberg**.
- 907-909 Otter trawl sampling bias of the gill parasite, *Lironeca vulgaris* (Isopoda, Cymothoidea), from sanddab hosts, *Citharichthys* spp., by **Gary R. Robinson**.
- Vol. 81, no. 1, 1983**
- 1-13 Changes in size of three dolphin (*Stenella* spp.) populations in the eastern tropical Pacific, by **Tim D. Smith**.
- 15-22 Food habits of yellowtail flounder, *Limanda ferruginea* (Storer), from off the northeastern United States, by **Richard W. Langton**.
- 23-40 Development and distribution of the young of northern smoothtongue, *Leuroglossus schmidti* (Bathylagidae), in the northeast Pacific, with comments on the systematics of the genus *Leuroglossus* Gilbert, by **Jean R. Dunn**.
- 41-50 Delineation of tilefish, *Lopholatilus chamaeleonticeps*, stocks along the United States east coast and in the Gulf of Mexico, by **S. J. Katz, C. B. Grimes, and K. W. Able**.
- 51-60 Effects of behavioral interactions on the catchability of American lobster, *Homarus americanus*, and two species of Cancer crab, by **R. Anne Richards, J. Stanley Cobb, and Michael J. Fogarty**.
- 61-73 The reproductive biology of the Atlantic sharpnose shark, *Rhizoprionodon terraenovae* (Richardson), by **Glenn R. Parsons**.
- 75-84 Variation in the growth rate of *Mya arenaria* and its relationship to the environment as analyzed through principal components analysis and the  $\omega$  parameter of the von Bertalanffy equation, by **Richard S. Appeldoorn**.
- 85-90 Biochemical genetics of Pacific blue marlin, *Makaira nigricans*, from Hawaiian waters, by **James B. Shaklee, Richard W. Brill, and Robin Acerra**.
- 91-96 Stochastic age-frequency estimation using the von Bertalanffy growth equation, by **Norman W. Bartoo and Keith R. Parker**.
- 97-106 Age, growth, and mortality of king mackerel, *Scomberomorus cavalla*, from the southeastern United States, by **Allyn G. Johnson, William A. Fable, Jr., Mark L. Williams, and Lyman E. Barger**.
- 107-119 Review and analysis of the bluefin tuna, *Thunnus thynnus*, fishery in the eastern North Pacific Ocean, by **Doyle A. Hanan**.
- 121-132 Interactions between fur seal populations and fisheries in the Bering Sea, by **Gordon L. Swartzman and Robert T. Haar**.
- 133-141 Age, size, growth, and chemical composition of Atlantic menhaden, *Brevoortia tyrannus*, from Narragansett Bay, Rhode Island, by **Ann Gail Durbin, Edward G. Durbin, Thomas J. Smayda, and Peter G. Verity**.

- 143-148 Homing and fisheries contribution of marked coho salmon, *Oncorhynchus kisutch*, released at two Columbia River locations, by **Robert R. Vreeland and Roy J. Wahle**.
- 148-154 Movement patterns of bonefish, *Albula vulpes*, in Bahamian waters, by **Douglas E. Colton and William S. Alevizon**.
- 154-161 Analyses of feeding in two marine copepods from Santa Monica Bay, California, by **G. S. Kleppel and E. Manzanilla**.
- 161-164 Distribution, size relationships, and food habits of juvenile king-of-the-salmon, *Trachipterus altivelis*, caught off the Oregon coast, by **Jonathan M. Shenker**.
- 165-167 Notes on the marine life of the river lamprey, *Lampetra ayresi*, in Yaquina Bay, Oregon, and the Columbia River estuary, by **Carl E. Bond, Ting T. Kan, and Katherine W. Myers**.
- 168-175 An economic evaluation of the St. Lawrence River-eastern Lake Ontario bass fishery, by **Fredric C. Menz and Donald P. Wilton**.
- Vol. 81, no. 2, 1983**
- 177-199 Energy and nitrogen budgets for the Atlantic menhaden, *Brevoortia tyrannus* (Pisces: Clupeidae), a filter-feeding planktivore, by **Edward G. Durbin and Ann G. Durbin**.
- 201-225 Reproduction and embryonic development of the sand tiger shark, *Odontaspis taurus* (Rafinesque), by **R. Grant Gilmore, Jon W. Dodrill, and Patricia A. Linley**.
- 227-265 Copepods and scombrid fishes: A study in host-parasite relationships, by **Roger F. Cressey, Bruce B. Collette, and Joseph L. Russo**.
- 267-281 Population assessment of the gray whale, *Eschrichtius robustus*, from California shore censuses, 1967-80, by **Stephen B. Reilly, Dale W. Rice, and Allen A. Wolman**.
- 283-289 Mesopelagic fishes eaten by Fraser's dolphin, *Lagenodelphis hosei*, by **Bruce H. Robison and James E. Craddock**.
- 291-301 Abundance, movements, and feeding habits of harbor seals, *Phoca vitulina*, at Netarts and Tillamook Bays, Oregon, by **Robin R. Brown and Bruce R. Mate**.
- 303-321 Variability in median size and age at sexual maturity of Atlantic cod, *Gadus morhua*, on the Scotian Shelf in the northwest Atlantic Ocean, by **Terry D. Beacham**.
- 323-339 Morphology and development of hatchery-cultured American shad, *Alosa sapidissima* (Wilson), by **James R. Johnson and Joseph G. Loesch**.
- 341-355 Seasonal changes in the ovaries of adult yellowtail flounder, *Limanda ferruginea*, by **W. Huntting Howell**.
- 357-362 Size at maturity and fecundity of rock crabs, *Cancer irroratus*, from the Bay of Fundy and southwestern Nova Scotia, by **A. Campbell and M. D. Eagles**.
- 363-374 Long-term variations in the Southern Oscillation, El Niño, and Chilean subtropical rainfall, by **William H. Quinn and Victor T. Neal**.
- 375-387 Percent similarity: The prediction of bias, by **E. L. Venrick**.
- 389-396 Survey of polychlorinated biphenyls in selected finfish species from United States coastal waters, by **Donald F. Gadbois and Richard S. Maney**.
- 396-404 Foods of coastal fishes during brown shrimp, *Penaeus aztecus*, migration from Texas estuaries (June-July 1981), by **Regina Divita, Mischelle Creel, and Peter F. Sheridan**.
- 405-412 The occurrence of spot, *Leiostomus xanthurus*, and Atlantic croaker, *Micropogonias undulatus*, larvae in Onslow Bay and Newport River estuary, North Carolina, by **Robert M. Lewis and Mayo H. Judy**.
- 412-415 Survival and homing of juvenile coho salmon, *Oncorhynchus kisutch*, transported by barge, by **George T. McCabe, Jr., Clifford W. Long, and Steve L. Leek**.
- 415-420 Movement of sablefish, *Anoplopoma fimbria*, in the north-eastern Pacific Ocean as determined by tagging experiments (1971-80), by **Vidar G. Weststad, Kenneth Thorsen, and Sally A. Mizroch**.
- 420-425 Winter and altered spring movements of striped bass in the Savannah River, Georgia, by **Richard G. Dudley and T. Glenn McGahee**.
- 426-428 Intertidal feeding and refuging by cunners, *Tautoglabrus adspersus* (Labridae), by **F. G. Whoriskey, Jr.**
- 429-434 Relative efficiency of two clam rakes and their contrasting impacts on seagrass biomass, by **Charles H. Peterson, Henry C. Summerson, and Stephen R. Fegley**.
- 434-436 *Heterocarpus longirostris* MacGilchrist from the Northern Mariana Islands, by **Robert B. Moffitt**.
- Vol. 81, no. 3, 1983**
- 437-454 Stomach contents of silver hake, *Merluccius bilinearis*, and Atlantic cod, *Gadus morhua*, and estimation of their daily rations, by **E. G. Durbin, A. G. Durbin, R. W. Langton, and R. E. Bowman**.
- 455-472 Factors affecting the distribution, abundance, and survival of *Pandalus jordani* (Decapoda, Pandalidae) larvae off the Oregon coast, by **Peter C. Rothlisberg and Charles B. Miller**.
- 473-481 Effects of benzo(a)pyrene on the early development of California grunion, *Leuresthes tenuis* (Pisces, Atherinidae), by **Delaine L. Winkler, Keith L. Duncan, Jo Ellen Hose, and Harold W. Puffer**.
- 483-500 Simulation of the North Atlantic Ocean drift of *Anguilla leptocephali*, by **James H. Power and James D. McCleave**.
- 501-512 Walrus, *Odobenus rosmarus*, feeding in the Bering Sea: A benthic perspective, by **John S. Oliver, Peter N. Slattery, Edmund F. O'Connor, and Lloyd F. Lowry**.
- 513-522 A comparison of gray whale, *Eschrichtius robustus*, feeding in the Bering Sea and Baja California, by **John S. Oliver, Peter N. Slattery, Mark A. Silberstein, and Edmund F. O'Connor**.
- 523-535 Analyzing the width of daily otolith increments to age the Hawaiian snapper, *Pristipomoides filamentosus*, by **Stephen Ralston and Garret T. Miyamoto**.
- 537-552 Species associations and day-night variability of trawl-caught fishes from the inshore sponge-coral habitat, South Atlantic Bight, by **Charles A. Wenner**.
- 553-568 Reproductive biology of the blue-line tilefish, *Caulolatilus microps*, off North Carolina and South Carolina, by **Jeffrey L. Ross and John V. Merriner**.
- 569-586 Temporal and spatial patterns of nearshore distribution and abundance of the pelagic fishes off San Onofre-Oceanside, California, by **Larry G. Allen and Edward E. DeMartini**.



- 587-597 Reproduction, growth, and other aspects of the biology of the gold spot herring, *Herklotsichthys quadrimaculatus* (Clupeidae), a recent introduction to Hawaii, by **Vern R. Williams and Thomas A. Clarke**.
- 599-611 Age, growth, and sexual maturity of Greenland halibut, *Reinhardtius hippoglossoides* (Walbaum), in the Canadian northwest Atlantic, by **W. R. Bowering**.
- 613-619 Power plant impact assessment: A simple fishery production model approach, by **Alec D. MacCall, Keith R. Parker, Ronald Leithiser, and Bill Jessee**.
- 621-628 The size at sexual maturity of blue king crab, *Paralithodes platypus*, in Alaska, by **David A. Somerton and Richard A. MacIntosh**.
- 629-636 Food habits of Pacific whiting, *Merluccius productus*, off the west coast of North America, 1967 and 1980, by **Patricia A. Livingston**.
- 637-642 Food of walleye pollock, *Theragra chalcogramma*, in an embayment of southeastern Alaska, by **David M. Clausen**.
- 643-647 Summer foods of Texas coastal fishes relative to age and habitat, by **Peter F. Sheridan and David L. Trimm**.
- 647-654 Life history of splittail (Cyprinidae: *Pogonichthys macrolepidotus*) in the Sacramento-San Joaquin estuary, by **Robert A. Daniels and Peter B. Moyle**.
- 654-660 Life history and exploitation of *Macrobrachium faustinum* in a tropical high-gradient river, by **Wayne Hunte and Robin Mahon**.
- 660-662 Incidental catch of harbor porpoise, *Phocoena phocoena* (L.), in herring weirs in Charlotte County, New Brunswick, Canada, by **G. J. D. Smith, A. J. Read, and D. E. Gaskin**.
- 663-666 A technique for tagging deepwater fish, by **C. B. Grimes, S. C. Turner, and K. W. Able**.
- Vol. 81, no. 4, 1983**
- 667-677 Biochemical genetic population structure of yellowfin sole, *Limanda aspera*, of the north Pacific Ocean and Bering Sea, by **W. Stewart Grant, Richard Bakkala, Fred M. Utter, David J. Teel, and Tokimasa Kobayashi**.
- 679-695 Yield per recruit models of some reef fishes of the U.S. South Atlantic Bight, by **Gene R. Huntsman, Charles S. Manooch III, and Churchill B. Grimes**.
- 697-708 Hard clam, *Mercenaria mercenaria*: Shell growth patterns in Chesapeake Bay, by **Lowell W. Fritz and Dexter S. Haven**.
- 709-721 Size, sex ratio, and recruitment in various fisheries of king mackerel, *Scomberomorus cavalla*, in the southeastern United States, by **Lee Trent, Roy O. Williams, Ronald G. Taylor, Carl H. Saloman, and Charles S. Manooch III**.
- 723-732 The estimation of a catch level which stabilizes the parental biomass of an exploited fish stock, by **J. Majkowski and J. Hampton**.
- 733-739 Aspects of reproduction of the blue mussel, *Mytilus edulis* (Pelecypoda: Mytilidae) in Long Island Sound, by **Diane J. Brousseau**.
- 741-750 Seasonal variation in survival of larval northern anchovy, *Engraulis mordax*, estimated from the age of distribution of juveniles, by **Richard D. Methot, Jr.**
- 751-763 Growth, mortality, and age/size structure of the fisheries for tilefish, *Lopholatilus chamaeleonticeps*, in the Middle Atlantic-southern New England region, by **S. C. Turner, C. B. Grimes, and K. W. Able**.
- 765-779 A mark-recapture test of annual periodicity of internal growth band deposition in shells of hard clams, *Mercenaria mercenaria*, from a population along the southeastern United States, by **C. H. Peterson, P. B. Duncan, H. C. Summerson, and G. W. Safrit, Jr.**
- 781-788 Early development of the longhorn sculpin, *Myoxocephalus octodecemspinosus*, by **William A. Walsh and William A. Lund, Jr.**
- 789-801 Fish and shrimp migrations in the northern Gulf of Mexico analyzed using stable C, N, and S isotope ratios, by **Brian Fry**.
- 803-813 Geographic and historic variations in growth of weakfish, *Cynoscion regalis*, in the Middle Atlantic Bight, by **Gary Shepherd and Churchill B. Grimes**.
- 815-826 Interrelationships between juvenile salmonids and non-salmonid fish in the Columbia River Estuary, by **George T. McCabe, Jr., William D. Muir, Robert L. Emmett, and Joseph T. Durkin**.
- 827-836 Growth of larval Atlantic cod, *Gadus morhua*, and haddock, *Melanogrammus aeglefinus*, on Georges Bank, spring 1981, by **George R. Bolz and R. Gregory Lough**.
- 837-846 Distribution of fishes in seagrass meadows: Role of macrophyte biomass and species composition, by **Allan W. Stoner**.
- 847-854 Redescription of larvae of the pigfish, *Orthopristis chrysoptera* Linnaeus (Pisces, Haemulidae), by **William Watson**.
- 855-862 Coherence in zooplankton of a large northwest Atlantic ecosystem, by **K. Sherman, J. R. Green, J. R. Goulet, and L. Ejsymont**.
- 863-882 The mud crab, *Panopeus herbstii*, s.l. partition into six species (Decapoda: Xanthidae), by **Austin B. Williams**.
- 883-885 Electrophoretic analyses of hemocyanins from four species of mud crabs, genus *Panopeus*, with observations on the ecology of *P. obesus*, by **Bolling Sullivan, Katie Miller, Kathleen Singleton, Anthony G. Scheer, and Austin B. Williams**.
- 885-890 Mud crabs of the *Panopeus herbstii* H. M. Edw., s.l., complex in Alabama, U.S.A., by **Robert C. Reames and Austin B. Williams**.
- 890-894 Effect of temperature on rate of embryonic development of walleye pollock, *Theragra chalcogramma*, by **Evan B. Haynes and Steve E. Ignell**.
- 895-898 Helminth parasitism of three larval fishes in the northern Gulf of Mexico, by **John J. Govoni**.
- 898-903 Empirical use of longevity data to estimate mortality rates, by **John M. Hoenig**.
- 903-905 Growth of *Geryon quinque-dens* (Brachyura: Geryonidae) juveniles in the laboratory, by **W. Van Heukelem, M. C. Christman, C. E. Epifanio, and S. D. Sulkin**.
- 906-909 Age and growth of dolphin, *Coryphaena hippurus*, as determined by growth rings in otoliths, by **Hazel A. Oxenford and Wayne Hunte**.
- 910-913 A comparison of aerial, shipboard, and land-based survey methodology for the harbor porpoise, *Phocoena phocoena*, by **Scott D. Kraus, James R. Gilbert, and John H. Prescott**.
- 913-916 Tolerance of five-day-old winter flounder, *Pseudopleuronectes americanus*, larvae to thermal shock, by **Norman Itzkowitz and J. R. Schubel**.
- 916-922 Movements of rockfish (*Sebastes*) tagged in northern Puget Sound, Washington, by **Stephen B. Mathews and Morris W. Barker**.

- 1-19 Documentation of annual growth lines in ocean quahogs, *Arctica islandica* Linné, by **John W. Ropes, Douglas S. Jones, Steven A. Murawski, Fredric M. Serchuk, and Ambrose Jearld, Jr.**
- 21-35 Food of silver hake, *Merluccius bilinearis*, by **Ray E. Bowman.**
- 37-53 Abundance and vertical distribution of fishes in a cobble-bottom kelp forest off San Onofre, California, by **Ralph J. Larson and Edward E. DeMartini.**
- 55-66 The invertebrate assemblage associated with the giant kelp, *Macrocystis pyrifera*, at Santa Catalina Island, California: a general description with emphasis on amphipods, copepods, mysids, and shrimps, by **James A. Coyer.**
- 67-76 Spring and summer prey of California sea lions, *Zalophus californianus*, at San Miguel Island, California, 1978-79, by **George A. Antonelis, Jr., Clifford H. Fiscus, and Robert L. DeLong.**
- 77-84 Larval development of the scup, *Stenotomus chrysops* (Pisces: Sparidae), by **Carolyn A. Griswold, and Thomas W. McKenney.**
- 85-95 Description of eggs, larvae, and early juveniles of gulf menhaden, *Brevoortia patronus*, and comparisons with Atlantic menhaden, *B. tyrannus*, and yellowfin menhaden, *B. smithi*, by **William F. Hettler.**
- 97-111 Distribution of ichthyoplankton off San Onofre, California, and methods for sampling very shallow coastal waters, by **Arthur M. Barnett, Andrew E. Jahn, Peter D. Sertic, and William Watson.**
- 113-120 Ring deposition in the otoliths of larval Pacific herring, *Clupea harengus pallasii*, by **Michael D. McGurk.**
- 121-139 Fishes, fish assemblages, and their seasonal movements in the lower Bay of Fundy and Passamaquoddy Bay, Canada, by **J. Stevenson MacDonald, Michael J. Dadswell, Ralph G. Appy, Gary D. Melvin, and David A. Methven.**
- 141-156 The detection and distribution of larval Arcto-Norwegian cod, *Gadus morhua*, food organisms by an in situ particle counter, by **S. Tilseth and B. Ellertsen.**
- 157-164 Effects of size and time of release on seaward migration of spring chinook salmon, *Oncorhynchus tshawytscha*, by **R. D. Ewing, C. E. Hart, C. A. Fustish, and Greg Concannon.**
- 165-177 Interactive effects of age and environmental modifiers on the production of daily growth increments in otoliths of plainfin midshipman, *Porichthys notatus*, by **Steven E. Campana.**
- 179-198 Aspects of the life history and fishery of the white croaker, *Genyonemus lineatus* (Sciaenidae), off California, by **Milton S. Love, Gerald E. McGowen, William Westphal, Robert J. Lavenberg, and Linda Martin.**
- 199-205 Feeding habits of blacksmith, *Chromis punctipinnis*, associated with a thermal outfall, by **Pamela A. Morris.**
- 207-225 Calibration of dental layers in seven captive Hawaiian spinner dolphins, *Stenella longirostris*, based on tetracycline labeling, by **Albert C. Myrick, Jr., Edward W. Shallenberger, Ingrid Kang, and David B. MacKay.**
- 227-235 Reproduction of the banded drum, *Larimus fasciatus*, in North Carolina, by **Steve W. Ross.**
- 237-242 Marking growth increments in otoliths of larval and juvenile fish by immersion in tetracycline to examine the rate of increment formation, by **P. D. Schmitt.**
- 242-244 Tag-recapture validation of molt and egg extrusion predictions based upon pleopod examination in the American lobster, *Homarus americanus*, by **G. P. Ennis.**
- 244-249 Comparison of physiological and functional size-maturity relationships in two Newfoundland populations of lobsters, *Homarus americanus*, by **G. P. Ennis.**
- 249-251 Conversions between total, fork, and standard lengths in 35 species of *Sebastes* from California, by **Tina Echeverria and William H. Lenarz.**

- 253-267 Size, age, sexual maturity, and sex ratio in ocean quahogs, *Arctica islandica* Linné, off Long Island, New York, by **John W. Ropes, Steven A. Murawski, and Fredric Serchuk.**
- 269-295 Food habits and dietary overlap of some shelf rockfishes (genus *Sebastes*) from the northeastern Pacific Ocean, by **Richard D. Brodeur and William G. Pearcy.**
- 295-313 Species associations and community composition of Middle Atlantic Bight continental shelf demersal fishes, by **J. A. Colvocoresses and J. A. Musick.**
- 315-324 Early zoeal stages of *Placetron wosnessenskii* and *Rhino-lithodes wosnessenskii* (Decapoda, Anomura, Lithodidae) and review of lithodid larvae of the northern North Pacific Ocean, by **Evan B. Haynes.**
- 325-336 Selection of vegetated habitat by brown shrimp, *Penaeus aztecus*, in a Galveston Bay salt marsh, by **Roger J. Zimmerman, Thomas J. Minello, and Gilbert Zamora, Jr.**
- 337-363 Reproduction, movements, and population dynamics of the banded drum, *Larimus fasciatus*, in the Gulf of Mexico, by **Gary W. Standard and Mark E. Chittenden, Jr.**
- 365-373 Implications of investing under different economic conditions on the profitability of Gulf of Mexico shrimp vessels operating out of Texas, by **Ernest Tettey, Christopher Pardy, Wade Griffin, and A. Nelson Swartz.**
- 375-381 Quantitative and qualitative bacteriology of elasmobranch fish from the Gulf of Mexico, by **John D. Buck.**
- 383-389 Distribution and feeding of the horseshoe crab, *Limulus polyphemus*, on the continental shelf off New Jersey, by **Mark L. Botton and Harold H. Haskin.**
- 391-399 Diel variations in the feeding habits of Pacific salmon caught in gill nets during a 24-hour period in the Gulf of Alaska, by **W. Pearcy, T. Nishiyama, T. Fujii, and K. Masuda.**
- 401-410 Arctic char predation on sockeye salmon smolts at Little Togiak River, Alaska, by **Gregory T. Ruggerone and Donald E. Rogers.**
- 411-418 Feeding ecology of walleye, *Stizostedion vitreum vitreum*, in the mid-Columbia River, with emphasis on the interactions between walleye and juvenile anadromous fishes, by **Alec G. Maule and Howard F. Horton.**
- 418-426 Bathymetric distribution, spawning periodicity, sex ratios, and size compositions of the mantis shrimp, *Squilla empusa*, in the northwestern Gulf of Mexico, by **Mark D. Rockett, Gary W. Standard, and Mark E. Chittenden, Jr.**
- 427-434 Distribution, length-weight relationship, and length-frequency data of southern kingfish, *Menticirrhus americanus*, in Mississippi, by **Barbara J. Crowe.**

- 434-440 Scanning electron microscope evidence for yearly growth zones in giant bluefin tuna, *Thunnus thynnus*, otoliths from daily increments, by **Richard Radtke**.
- 440-442 Yearly changes in abundance of harbor seals, *Phoca vitulina*, at a winter haul-out site in Massachusetts, by **P. Michael Payne and David C. Schneider**.
- 443-445 Postovulatory follicle histology of the Pacific sardine, *Sardinops sagax*, from Peru, by **Stephen R. Goldberg, Victor Hugo Alarcon, and Jurgen Alheit**.
- 445-446 A note on spawning of the Pacific market squid, *Loligo opalescens* (Berry, 1911), in the Barkley Sound region, Vancouver Island, Canada, by **Ronald L. Shimek, David Fyfe, Leah Ramsey, Anne Bergey, Joel Elliott, and Stewart Guy**.
- 446-448 Arithmetic versus exponential calculation of mean biomass, by **Sheryan P. Epperly and Walter R. Nelson**.
- Vol. 82, No. 3, 1984**
- 449-453 Density-dependent searching time: implications in surplus-production models, by **Richard E. Condney**.
- 455-467 Community and trophic organization of nekton utilizing shallow marsh habitats, York River, Virginia, by **Stephen M. Smith, James G. Hoff, Steven P. O'Neil, and Michael P. Weinstein**.
- 469-483 Distribution, abundance, and growth of juvenile Dungeness crabs, *Cancer magister*, in Grays Harbor estuary, Washington, by **Bradley G. Stevens and David A. Armstrong**.
- 485-492 Age, growth, and mortality of gray triggerfish, *Balistes capriscus*, from the northeastern Gulf of Mexico, by **Allyn G. Johnson and Carl H. Saloman**.
- 493-500 The effect of disturbance on harbor seal haul out patterns at Bolinas Lagoon, California, by **Sarah G. Allen, David G. Ainley, Gary W. Page, and Christine A. Ribic**.
- 501-511 Reproduction of weakfish, *Cynoscion regalis*, in the New York Bight and evidence for geographically specific life history characteristics, by **Gary R. Shepherd and Churchill B. Grimes**.
- 513-517 Field and laboratory observations on diurnal swim bladder inflation-deflation in larvae of gulf menhaden, *Brevoortia patronus*, by **D. E. Hoss and G. Phonlor**.
- 519-522 Comparison of American eel growth rates from tag returns and length-age analyses, by **Gene S. Helfman, Earl L. Bozeman, and Edward B. Brothers**.
- 523-528 Description of early stage zoeae of *Spirontocaris murdochi* (Decapoda, Hippolytidae) reared in the laboratory, by **Evan B. Haynes**.
- 529-530 Incidence of molting and spawning in the same season in female lobsters, *Homarus americanus*, by **G. P. Ennis**.
- 530-537 Parasites of olive rockfish, *Sebastes serranooides*, (Scorpaenidae) off central California, by **Milton S. Love, Kimberly Shriner, and Pamela Morris**.
- 537-541 Sensitivity of the population growth rate to changes in single life history parameters: its application to *Mya arenaria* (Mollusca: Pelecypoda), by **Diane J. Brousseau and Jenny A. Baglivo**.
- 541-544 The occurrence of piscine erythrocytic necrosis (PEN) in the sea lamprey, *Petromyzon marinus*, from several Maine localities, by **Stuart W. Sherburne**.
- Vol. 82, No. 4, 1984**
- 545-692 Morphology, systematics, and biology of the Spanish mackerels (*Scomberomorus*, Scombridae), by **Bruce B. Collette and Joseph L. Russo**.
- 693-702 Genetic variation and population structure in a spiny lobster, *Panulirus marginatus*, in the Hawaiian archipelago, by **James B. Shaklee and Paul B. Samollow**.
- 703-713 Genetic variation and population structure in a deepwater snapper, *Pristopomoides filamentosus*, in the Hawaiian archipelago, by **James B. Shaklee and Paul B. Samollow**.
- 715-720 Distribution and abundance of *Sicyonia pencillata* Lockington, 1879 in the Gulf of California, with some notes on its biology, by **M. E. Hendricks**.
- Vol. 83, No. 1, 1985**
- 1-79 The rock shrimp genus *Sicyonia* (Crustacea: Decapoda: Penaeoidea) in the eastern Pacific, by **Isabel Pérez Farfante**.
- 81-89 Variability in dimensions of salmonid otolith nuclei: implications for stock identification and microstructure interpretation, by **John D. Neilson, Glen H. Geen, and Brian Chan**.
- 91-101 Effects of feeding regimes and diel temperature cycles on otolith increment formation in juvenile chinook salmon, *Oncorhynchus tshawytscha*, by **John D. Neilson and Glen H. Geen**.
- Vol. 83, No. 2, 1985**
- 103-117 Using objective criteria and multiple regression models for age determination in fishes, by **George W. Boehlert**.
- 119-136 Rates of atresia in the ovary of captive and wild northern anchovy, *Engraulis mordax*, by **J. Roe Hunter and Beverly J. Macewicz**.
- 137-150 Egg production of the central stock of northern anchovy, *Engraulis mordax*, 1951-82, by **Nancy C. H. Lo**.
- 151-170 Vertical structure of nearshore plankton off southern California: a storm and a larval fish food web, by **M. M. Mullin, E. R. Brooks, F. M. H. Reid, J. Napp, and E. F. Stewart**.
- 171-185 Diel and depth variations in the sex-specific abundance, size composition, and food habits of queenfish, *Seriophilus politus* (Sciaenidae), by **Edward E. DeMartini, Larry G. Allen, Robert K. Fountain, and Dale Roberts**.
- 187-193 Reaction of dolphins to a survey vessel: effects on census data, by **Roger P. Hewitt**.
- 195-206 Fin erosion among fishes collected near a southern California municipal wastewater outfall (1971-82), by **Jeffrey N. Cross**.
- Vol. 83, No. 3, 1985**
- 207-217 Confidence limits for population projections when vital rates vary randomly, by **Tim Gerrodette, Daniel Goodman, and Jay Barlow**.
- 219-233 Life history characteristics of *Pandalus montagui* and *Dichelopandalus leptocerus* in Penobscot Bay, Maine, by **David K. Stevenson and Fran Pierce**.
- 253-242 Visual threshold for schooling in northern anchovy, *Engraulis mordax*, by **John Hunter and Ragan Nicholl**.

- 243-251 Distributional patterns of fishes captured aboard commercial passenger fishing vessels along the northern Channel Islands, California, by **Milton S. Love, William Westphal, and Robson A. Collins.**
- 253-289 Morphological development, identification, and biology of larvae of Pandalidae, Hippolytidae, and Crangonidae (Crustacea, Decapoda) of the northern North Pacific Ocean, by **Evan B. Haynes.**
- 289-298 Within-season differences in growth of larval Atlantic herring, *Clupea harengus harengus*, by **Cynthia Jones.**
- 299-311 Seasonal cycles of fat and gonad volume in fish species of northern California rockfish (Scorpaenidae: *Sebastes*), by **Patrick J. Guillemot, Ralph J. Larson, and William H. Lenarz.**
- 313-330 The possible influence of warm core Gulf Stream rings upon shelf water larval fish distribution, by **G. R. Flierl and J. S. Wroblewski.**
- 331-341 Field and laboratory assessment of patterns in fecundity of a multiple spawning fish: the Atlantic silverside *Menidia menidia*, by **David O. Conover.**
- 343-356 Parasites of skipjack tuna, *Katsuwonus pelamis*: fishery implications, by **R. J. G. Lester, A. Barnes, and G. Habib.**
- 357-377 Behavior of bowhead whales, *Balaena mysticetus*, summering in the Beaufort Sea: a description, by **Bernd Würsig, Eleanor M. Dorsey, Mark A. Fraker, Roger S. Payne, and W. John Richardson.**
- 379-393 Food habits of bait-caught skipjack tuna, *Katsuwonus pelamis*, from the southwestern Atlantic Ocean, by **Lisa Ankenbrandt.**
- 395-402 Stomach contents of young sandbar sharks, *Carcharhinus plumbeus*, in Chincoteague Bay, Virginia, by **Robert J. Medved, Charles E. Stillwell, and John J. Casey.**
- 403-412 The spawning cycle of soft-shell clam, *Mya arenaria*, in San Francisco Bay, by **Shelly E. Rosenblum and Thomas M. Niesen.**
- 413-426 Recruitment patterns in young French grunts, *Haemulon flavolineatum* (Family Haemulidae), at St. Croix, Virgin Islands, by **W. N. McFarland, E. B. Brothers, J. C. Ogden, M. J. Shulman, E. L. Bermingham, and N. M. Kotchian-Prentiss.**
- 427-442 The harbor porpoise, *Phocoena phocoena*, in Fish Harbour, New Brunswick, Canada: occupancy, distribution, and movements, by **David E. Gaskin and Alan P. Watson.**
- 443-447 The relationship between tilefish, *Lopholatilus chamaeleonticeps*, abundance and sediment composition off Georgia, by **Gary D. Grossman, Michael J. Harris, and Joseph E. Hightower.**
- 447-457 The development and occurrence of larvae of the longfin Irish lord, *Hemilepidotus zapus* (Cottidae), by **Ann C. Matarese and Beverly M. Vinter.**
- 457-460 An approach to estimating an ecosystem box model, by **Jeffrey J. Polovina and Mark D. Ow.**
- 461-466 Food and feeding of the tomtate, *Haemulon aurolineatum* (Pisces, Haemulidae), in the South Atlantic Bight, by **George R. Sedberry.**
- 467-472 Semilunar reproductive cycles in *Fundulus heteroclitus* (Pisces: Cyprinodontidae) in an area without lunar tidal cycles, by **Anson H. Hines, Kenric E. Osgood, and Joseph J. Miklas.**
- 472-475 Undersea topography and the comparative distribution of two pelagic cetaceans, by **Clifford A. Hui.**
- 475-481 Larval and juvenile growth of sablefish, *Anoplopoma fimbria*, as determined from otolith increments, by **George W. Boehlert and Mary M. Yoklavich.**
- Vol. 83, No. 4, 1985**
- 483-496 Regional variations in the growth and age composition of northern anchovy, *Engraulis mordax*, by **R. H. Parrish, D. L. Mallicoate, and K. F. Mais.**
- 497-505 Parasites of benthic amphipods: microsporidians of *Ampelisca agassizi* (Judd) and some other gammarideans, by **Phyllis T. Johnson.**
- 507-520 Long-term responses of the demersal fish assemblages of Georges Bank, by **William J. Overholtz and Albert V. Tyler.**
- 521-530 Observer effect on incidental dolphin mortality in the eastern tropical Pacific tuna fishery, by **Bruce E. Wahlen and Tim D. Smith.**
- 531-541 Food habits of juvenile rockfishes (*Sebastes*) in a central California kelp forest, by **Michael M. Singer.**
- 543-552 Radio tracking the movements and activities of harbor porpoises, *Phocoena phocoena* (L.), in the Bay of Fundy, Canada, by **Andrew J. Read and David E. Gaskin.**
- 553-567 Early postnatal growth of the spotted dolphin, *Stenella attenuata*, in the offshore eastern tropical Pacific, by **Aleta A. Hohn and P. S. Hammond.**
- 567-574 Factors affecting the growth of undersize western rock lobster, *Panulirus cygnus* George, returned by fishermen to the sea, by **R. S. Brown and N. Caputi.**
- 575-586 Sea scallop fishing impact on American lobsters in the Gulf of St. Lawrence, by **G. S. Jamieson and A. Campbell.**
- 587-599 Age, growth, and distribution of larval spot, *Leiostomus xanthurus*, off North Carolina, by **Stanley M. Warlen and Alexander J. Chester.**
- 601-610 Diet of Pacific cod, *Gadus macrocephalus*, and predation on the northern pink shrimp, *Pandalus borealis*, in Pavlof Bay, Alaska, by **W. D. Albers and P. J. Anderson.**
- 611-621 Vertical distribution of ichthyoplankton off the Oregon coast in spring and summer months, by **George W. Boehlert, Dena M. Gadowski, and Bruce C. Mundy.**
- 623-643 Dolphin habitats in the eastern tropical Pacific, by **David W. K. Au and Wayne L. Perryman.**
- 645-655 Aspects of the life history of the fluffy sculpin, *Oligocottus snyderi*, by **Mary C. Freeman, Nate Neally, and Gary D. Grossman.**
- 657-669 Variability, trends, and biases in reproductive rates of spotted dolphins, *Stenella attenuata*, by **Jay Barlow.**
- 671-677 Annual band deposition within shells of the hard clam *Mercenaria mercenaria*: consistency across habitat near Cape Lookout, North Carolina, by **Charles H. Peterson, P. Bruce Duncan, Henry C. Summerson, and Brian F. Beal.**
- 677-682 Standing stock of juvenile brown shrimp, *Penaeus aztecus*, in Texas coastal ponds, by **Loretta F. Sullivan, Dennis A. Emiliani, and K. Neal Baxter.**
- 682-691 A possible link between coho (silver) salmon enhancement and a decline in central California Dungeness crab abundance, by **David H. Thomas**

- 692-695 The effects of net entanglement on the drag and power output of a California sea lion, *Zalophus californianus*, by **Steven D. Feldkamp**.
- 695-696 Notes on the life history of the catshark, *Scyliorhinus meadi*, by **Glenn R. Parsons**.
- 696-701 A comparison of scale and otolith aging methods for the alewife, *Alosa pseudoharengus*, by **David A. Libby**.
- 701-706 Probable causes of the rapid growth and high fecundity of walleye, *Stizostedion vitreum vitreum*, in the mid-Columbia River, by **Alec G. Maule and Howard F. Horton**.
- 707-711 Biological aspects of the spring breeding migration of snow crabs, *Chionoecetes opilio*, in Bonne Bay, Newfoundland (Canada), by **D. M. Taylor, R. G. Hooper, and G. P. Ennis**.
- 711-716 Feeding, diet, and repeat spawning of blueblack herring, *Alosa aestivalis*, from the Chowan River, North Carolina, by **Robert P. Creed, Jr.**

## Marine Fisheries Review

*Marine Fisheries Review* contains review articles, original research reports, significant progress reports, technical notes, and news on fisheries science, engineering, and economics, commercial and recreational fisheries, marine mammal studies, aquaculture, and U.S. and foreign fisheries developments. Emphasis is on in-depth review articles and practical or applied aspects of marine fisheries.

This series was first initiated in 1939 as the *Fishery Market News*, published monthly by the Bureau of Fisheries. In 1946 the Fish and Wildlife Service renamed it the *Commercial Fisheries Review*; in mid-1972 the title was changed by its publisher, the National Marine Fisheries Service, to its current one. Since April 1983, *Marine Fisheries Review* has been published on a quarterly basis.

### Vol. 42, no. 1, 1980

- 1 Industry outlook for greater utilization of hake products, by **Lee J. Weddig**.
- 2-3 Names of the hakes, by **Daniel M. Cohen**.
- 4-7 World utilization of hake, by **Donald R. Whitaker**.
- 8-11 South American hakes: The resource and its utilization, by **George G. Giddings**.
- 12-20 The silver hake stocks and fishery off the northeastern United States, by **E. D. Anderson, F. E. Lux, and F. P. Almeida**.
- 21-25 Handling whiting aboard fishing vessels, by **Joseph J. Licciardello**.
- 26-31 Silver hake—a prospectus, by **Paul M. Earl**.
- 32-37 Utilization of red hake, by **J. M. Regenstein, H. O. Hultin, M. Fey, and S. D. Kelleher**.
- 38-43 Evaluation of a prototype fish cleaning machine with proposals for a commercial processing line, by **J. M. Mendelsohn and J. G. Callan**.
- 44-49 A survey on whiting fillet blocks, by **Carmine Gorga and Kevin J. Allen**.
- 50-54 Markets for hake, by **Irene S. Gendron**.
- 55-60 Frozen storage characteristics of whiting blocks, by **Joseph J. Licciardello, Elinor M. Ravasi, and Michael G. Allsup**.

### Vol. 42, no. 2, 1980

- 1-7 Costs and returns trends in the Gulf of Mexico shrimp industry, 1971-78, by **John P. Warren and Wade L. Griffin**.
- 8-15 Tridacnid clam stocks on Helen Reef, Palau, Western Caroline Islands, by **Wendy Hirschberger**.
- 16-20 Per capita annual utilization and consumption of fish and shellfish in Hawaii, 1970-77, by **Linda L. Hudgins**.
- 21-25 Polychlorinated biphenyls in fish and shellfish of the Chesapeake Bay, by **Max Eisenberg, Reba Mallman, and Haskell S. Tubiash**.
- 26-29 Bait loss from halibut longline gear observed from a submersible, by **William L. High**.
- 30-36 Three different delivery modes for fresh caught Pacific whiting, *Merluccius productus*, by **Calvin W. Philbin**,

### Vol. 42, no. 3-4, 1980

- 1 Cooperative survey of rockfish and whiting resources off California, Washington, and Oregon, 1977: Introduction, by **Donald R. Gunderson and William H. Lenarz**.
- 2-16 Distribution and abundance of rockfish off Washington, Oregon, and California during 1977, by **Donald R. Gunderson and Terrance M. Sample**.
- 17-33 The distribution, abundance, and biological characteristics of Pacific whiting, *Merluccius productus*, in the California-British Columbia region during July-September 1977, by **Thomas A. Dark, Martin O. Nelson, Jimmie J. Traynor, and Edmund P. Nunnallee**.
- 34-40 Shortbelly rockfish, *Sebastes jordani*: A large unfished resource in waters off California, by **William H. Lenarz**.
- 41-47 Abundance, size and age composition, and growth of Pacific Ocean perch, *Sebastes alutus*, sampled during 1977, by **James T. Golden, Robert L. Demory, and William H. Barss**.
- 48-53 Size composition, age composition, and growth of chili-pepper, *Sebastes goodei*, and bocaccio, *S. paucispinis*, from the 1977 rockfish survey, by **Mark Wilkins**.
- 54-56 Yellowtail rockfish, *Sebastes flavidus*, length and age composition off California, Oregon, and Washington in 1977, by **Michael E. Fraidenburg**.
- 57-63 Size composition, age composition, and growth of canary rockfish, *Sebastes pinniger*, and splitnose rockfish, *S. diploproa*, from the 1977 rockfish survey, by **George W. Boehlert**.
- 64-73 Stock separation of five rockfish species using naturally occurring biochemical genetic markers, by **Lisa N. Wishard, Fred M. Utter, and Donald R. Gunderson**.
- 74-79 Maturation and fecundity of four species of *Sebastes*, by **Donald R. Gunderson, Pamela Callahan, and Bernard Goiney**.
- 80-82 Morphology and distribution patterns of several important species of rockfish (genus *Sebastes*), by **Peter B. Adams**.
- 83-88 Preliminary analysis of Pacific Coast demersal fish assemblages, by **Wendy L. Gabriel and A. V. Tyler**.

**Vol. 42, no. 5, 1980**

- 1-14 Implications of transplantations to aquaculture and ecosystems, by **H. Rosenthal**.  
15-20 The snail resource of the Eastern Bering Sea and its fishery, by **Richard A. MacIntosh**.  
21-35 Groundfish monitoring in sponge-coral areas off the southeastern United States, by **H. Powles and C. A. Barans**.

**Vol. 42, no. 6, 1980**

- 1-14 Environmental factors affecting smoltification and early marine survival of anadromous salmonids, by **Gary A. Wedemeyer, Richard L. Saunders, and W. Craig Clarke**.  
15-24 The efficiency of mollies, *Poecilia mexicana*, as live bait for pole-and-line skipjack fishing: fishing trials in the tropical central Pacific, by **Patrick G. Bryan**.  
25-28 Evaluation of a bypass system for juvenile salmonids at Little Goose Dam, by **Jerrel R. Harmon and Donn L. Park**.  
29-31 Recent observations of a large eddy in the Gulf of Alaska, by **R. K. Reed**.  
32-34 Instrument for determining depth of dehydration of frozen fish, by **John G. Callan and John J. Ryan**.

**Vol. 42, no. 7-8, 1980**

- 1-9 Japan's squid fishing industry, by **William G. Court**.  
10-14 Developments in South American squid fisheries, by **Marcelo Juanico**.  
15-22 Recent developments in the squid, *Illex illecebrosus*, fishery of Newfoundland, Canada, by **Geoffrey V. Hurley**.  
23-38 Biological considerations relevant to the management of squid (*Loligo pealei* and *Illex illecebrosus*) of the northwest Atlantic, by **A. M. T. Lange and M. P. Sissenwine**.  
39-43 Squid catches resulting from trawl surveys off the southeastern United States, by **J. David Whitaker**.  
44-50 Squid fishery in Texas: Biological, economic, and market considerations, by **Raymond F. Hixon, Roger T. Hanlon, Samuel M. Gillespie, and Wade L. Griffin**.  
51-56 Experimental fishing for squid with lights in Nantucket Sound, by **Elizabeth H. Amaral and H. Arnold Carr**.  
57-59 Experimental pair trawling for squid in New England, by **Alan J. Blott**.  
60-66 Experimental jigging for squid off the northeast United States, by **Douglas Long and W. F. Rathjen**.  
67-73 Scanning electron microscopy of squid, *Loligo pealei*: Raw, cooked, and frozen mantle, by **W. Steven Otwell and George G. Giddings**.  
74-76 The quality of squid held in chilled seawater versus conventional shipboard handling, by **Vincent G. Ampola**.  
77-84 Development of a squid skinning and eviscerating system, by **R. Paul Singh and Daniel E. Brown**.  
85-92 "Saki-ika": Dried squid processing equipment and markets, by **Daniel J. Sheehy and Susan F. Vik**.

**Vol. 42, no. 9-10, 1980**

- 1 The bowhead whale: Whaling and biological research (preface).  
2-5 Introduction: A scientific perspective of the bowhead whale problem, by **Michael F. Tillman**.  
5-19 Historical shore-based catch of bowhead whales in the Bering, Chukchi, and Beaufort Seas, by **William M. Marquette and John R. Bockstoce**.

- 20-27 A preliminary estimate of the reduction of the western Arctic bowhead whale population by the pelagic whaling industry: 1848-1915, by **John R. Bockstoce**.  
27-29 Minimal historical size of the western Arctic population of bowhead whales, by **L. L. Eberhardt and J. M. Breiwick**.  
30-36 Sampling strategy for enumerating the western Arctic population of the bowhead whale, by **Bruce D. Krogman**.  
36-46 Spring migration of the western Arctic population of bowhead whales, by **Howard W. Braham, Mark A. Fraker, and Bruce D. Krogman**.  
46-51 Migration of bowhead whales past Cape Lisburne, Alaska, by **David J. Rugh and James C. Cubbage**.  
51-57 Vessel survey for bowhead whales in the Bering and Chukchi Seas, June-July 1978, by **Marilyn Dahlheim, Teresa Bray, and Howard Braham**.  
57-64 Summer distribution of bowhead whales in the Eastern Beaufort Sea, by **Mark A. Fraker and John R. Bockstoce**.  
65-69 Spitsbergen bowhead stock: A short review, by **Randall R. Reeves**.  
70-73 Ingutuk: A morphological variant of the bowhead whale, *Balaena mysticetus*, by **Howard W. Braham, Floyd E. Durham, Gordon H. Jarrell, and Stephen Leatherwood**.  
74-80 External morphology of bowhead fetuses and calves, by **Floyd E. Durham**.  
80-85 Observations of bowhead whales during spring migration, by **Geoffrey M. Carroll and John R. Smithhisler**.  
86-87 Sounds recorded in the presence of an adult and calf bowhead whale, by **D. K. Ljungblad, S. Leatherwood, and M. E. Dahlheim**.  
88-91 Foods utilized by bowhead whales near Barter Island, Alaska, autumn 1979, by **Lloyd F. Lowry and John J. Burns**.  
91-92 Some observations on urine from a bowhead whale, by **W. Medway**.  
92-96 Healed penetrating injury of a bowhead whale, by **Thomas F. Albert, George Migaki, Harold W. Casey, and L. Michael Philo**.

**Vol. 42, no. 11, 1980**

- 1-12 Offshore petroleum resource development and marine mammals: A review and research recommendations, by **J. R. Geraci and D. J. St. Aubin**.  
13-18 A preliminary analysis of the tilefish, *Lopholatilus chamaeleonticeps*, fishery in the Mid-Atlantic Bight, by **C. B. Grimes, K. W. Able, and S. C. Turner**.  
19-25 Preliminary method for estimating marine fisheries enforcement requirements, by **Charles M. Fuss, Jr., Daniel W. Dunn, and Robert M. Spraitz**.  
26-30 The effect of washing on the quality characteristics of minced fresh croaker, *Micropogon undulatus*, held in frozen storage, by **Jamshyd G. Rasekh, Melvin E. Waters, and V. D. Sidwell**.

**Vol. 42, no. 12, 1980**

- 1-11 A review of introductions of exotic oysters and biological planning for new importations, by **Jay D. Andrews**.  
12-17 Social considerations associated with marine recreational fishing under FCMA, by **Chad P. Dawson and Bruce T. Wilkins**.

- 18-27 Trends in ex-vessel value and size composition of annual landings of brown, pink, and white shrimp from the Gulf and South Atlantic Coasts of the United States, by **Charles W. Caillouet and Dennis B. Koi**.
- 28-33 Relationship between ex-vessel value and size composition of annual landings of shrimp from the Gulf and South Atlantic Coasts, by **Charles W. Caillouet, Dennis B. Koi, and William B. Jackson**.
- Vol. 43, no. 1, 1981**
- 1-12 Chlorinated hydrocarbon levels in fishes and shellfishes of the northeastern Pacific Ocean, including the Hawaiian Islands, by **Virginia F. Stout and F. Lee Beezhold**.
- 13-20 The Philippines squid fishery: A review, by **Aniceto M. Hernando, Jr., and Efren Ed. C. Flores**.
- 21-25 Processing wastewater from two mechanized canneries, by **Frederick E. Stone, Harold J. Barnett, Patrick J. Hunter, Glenn C. Roberts, and Richard W. Nelson**.
- 26-33 Initial U.S. exploration of nine Gulf of Alaska seamounts and their associated fish and shellfish resources, by **Steven E. Hughes**.
- Vol. 43, no. 2, 1981**
- 1-8 Culture of Atlantic salmon, *Salmo salar*, in Puget Sound, by **James L. Mighell**.
- 9-19 Guianas-Brazil shrimp fishery and related U.S. research activity, by **Alexander Dragovich**.
- 20-22 Rope culture of the kelp *Laminaria groenlandica* in Alaska, by **Robert J. Ellis and Natasha I. Calvin**.
- 23-24 The impact of the assurance of high quality of seafoods at point of sale, by **Louis J. Ronsivalli, John D. Kaylor, Philip J. McKay, and Carmine Gorga**.
- Vol. 43, no. 3, 1981**
- 1-13 A survey of chlorinated hydrocarbon residues in menhaden fishery products, by **Virginia F. Stout, Clifford R. Houle, and F. Lee Beezhold**.
- 14-19 Acylation of fish protein: Effect of reaction conditions on products, by **Kang-Ho Lee, Herman S. Groninger, and John Spinelli**.
- 20-23 Radio tracking juvenile marine turtles, by **Robert E. Timko and David DeBlanc**.
- Vol. 43, no. 4, 1981**
- 1-15 Low temperature preservation of seafoods: A review, by **Louis J. Ronsivalli and Daniel W. Baker**.
- 16-18 Effect of arterial incisions on the amount of bleeding and flesh quality of rainbow trout, by **Wayne I. Tretsven and Benjamin G. Patten**.
- 19-25 Movement of tagged sea scallops on Georges Bank, by **J. A. Posgay**.
- Vol. 43, no. 5, 1981**
- 1-19 Sampling by U.S. observers on foreign fishing vessels in the eastern Bering Sea and Aleutian Island region, 1977-78, by **Russell Nelson, Jr., Robert French, and Janet Wall**.
- 20-35 Foreign fisheries in the Gulf of Alaska, 1977-78, by **Janet Wall, Robert French, and Russell Nelson, Jr.**
- 36-44 The foreign fisheries off Washington, Oregon, and California, 1977-78, by **Robert French, Russell Nelson, Jr., and Janet Wall**.
- Vol. 43, no. 6, 1981**
- 1-11 Atlantic skipjack tuna: Influences of mean environmental conditions on their vulnerability to surface fishing gear, by **R. H. Evans, D. R. McLain, and R. A. Bauer**.
- 12-16 Burnt tuna: Conditions leading to rapid deterioration in the quality of raw tuna, by **J. L. Cramer, R. M. Nakamura, A. E. Dizon, and W. N. Ikehara**.
- 17-20 Quality of squid, *Illex illecebrosus*, mantles canned in oil, by **Bohdan M. Slabyj, Gordon E. Ramsdell, and Ruth H. True**.
- 21-26 A system to singulate and align squid for packaging and processing, by **D. E. Brown, R. Paul Singh, and R. J. Coffelt**.
- Vol. 43, no. 7, 1981**
- 1-12 The biology, fisheries, and management of the queen conch, *Strombus gigas*, by **Willard N. Brownell and John M. Stevely**.
- 13-19 Habitat and nursery grounds of Pacific rockfish, *Sebastes* spp., in rocky coastal areas of southeastern Alaska, by **H. Richard Carlson and Richard R. Straty**.
- 20-24 Conditional fishery status as a solution to overcapitalization in the Gulf of Mexico shrimp fishery, by **Vito Blomo**.
- Vol. 43, no. 8, 1981**
- 1-11 A biological and economic analysis of the North Carolina charter boat fishery, by **Charles S. Manooch III, Leon E. Abbas, and Jeffrey L. Ross**.
- 12-20 Paying-passenger recreational fisheries of the Florida Gulf Coast and Keys, by **Joan A. Browder, J. Connor Davis, and Eulalie Sullivan**.
- 21-26 Possible temperature effects on charter boat catches of king mackerel and other coastal pelagic species in northwest Florida, by **William A. Fable, Jr., Harold A. Brusher, Lee Trent, and Joe Finnegan, Jr.**
- Vol. 43, no. 9, 1981**
- 1-13 Anchored fish aggregating devices in Hawaiian waters, by **Walter M. Matsumoto, Thomas K. Kazama, and Donald C. Aasted**.
- 14-22 The performance and environmental effects of a hydraulic clam dredge, by **Thomas L. Meyer, Richard A. Cooper, and Kenneth J. Pecci**.
- 23-24 A comparison of rearing costs and returns of selected herbivorous, omnivorous, and carnivorous, aquatic species, by **Yung C. Shang**.
- Vol. 43, no. 10, 1981**
- 1-4 Marine resource management under uncertainty: The case of eastern spinner dolphin depletion, by **James K. Sebenius**.
- 5-8 Spore structure of *Minchinia chitonis*, by **S. J. Ball**.
- 9-14 Histamine formation and honeycombing during decomposition of skipjack tuna, *Katsuwonus pelamis*, at elevated temperatures, by **Hilmer A. Frank, Derrick H. Yoshinaga, and Wai-Kit Nip**.
- 15-22 Physical properties of blue shark useful in designing a skinning machine, by **D. E. Brown, R. Paul Singh, R. E. Garrett, and Barbara Katz**.

**Vol. 43, no. 11, 1981**

- 1-10 A management model of the northwest African cephalopod fishery, by **W. E. Grant, W. L. Griffin, and J. P. Warren**.
- 11-15 Demonstration of advances in Virgin Islands small boat fishing techniques, by **David A. Olsen and Joseph A. LaPlace**.
- 16-20 A corral system for examining pelagic dophin schools, by **Jacqueline G. Jennings, James M. Coe, and Walter F. Gandy**.

**Vol. 43, no. 12, 1981**

- 1-9 Areal distribution of marked Columbia River Basin spring chinook salmon recovered in fisheries and at parent hatcheries, by **Roy J. Wahle, Ed Chaney, and Roger E. Pearson**.
- 10-17 Deepwater shrimp resources in Vanuatu: A preliminary survey off Port Vila, by **Michael G. King**.
- 18-21 Frozen storage stability of whole and headless freshwater prawns, *Macrobrachium rosenbergii*, by **Malcolm B. Hale and Melvin E. Waters**.

**Vol. 44, no. 1, 1982**

- 1-7 An input-output analysis of Maine's fisheries, by **Hugh Briggs, Ralph Townsend, and James Wilson**.
- 8-15 A recommended procedure for assuring the quality of fish fillets at point of consumption, by **Louis J. Ronsivalli**.
- 16-21 The clam-kicking fishery of North Carolina, by **James F. Guthrie and Curtis W. Lewis**.

**Vol. 44, no. 2, 1982**

- 1-10 Predation by marine mammals on squids of the eastern North Pacific Ocean and the Bering Sea, by **Clifford H. Fiscus**.
- 11-16 International awareness for quality seafoods: A survey, by **Carmine Gorga and Louis J. Ronsivalli**.
- 17-20 Extended fresh storage of fishery products with modified atmospheres: A survey, by **Kurt A. Wilhelm**.

**Vol. 44, no. 3, 1982**

- 1-6 Consumer expenditure patterns for fish and shellfish, by **Oral Capps, Jr.**
- 7-11 A study in the use of a high concentration of CO<sub>2</sub> in a modified atmosphere to preserve fresh salmon, by **Harold J. Barnett, Frederick E. Stone, Glenn C. Roberts, Patrick J. Hunter, Richard W. Nelson, and Josephine Kwok**.
- 12-17 Microbiological profile of Pacific shrimp, *Pandalus jordani*, stowed under refrigerated seawater spray, by **J. S. Lee and Edward Kolbe**.
- 18-21 Tagging herring with coded-wire microtags, by **Kenneth J. Krieger**.

**Vol. 44, no. 4, 1982**

- 1-18 The design of an electrohydraulic dredge for clam surveys, by **Ronald Joel Smolowitz and Vernon E. Nulk**.
- 19-24 Satellite sea turtle tracking, by **Robert E. Timko and A. Lawrence Kolz**.

**Vol. 44, no. 5, 1982**

- 1-12 Pacific whiting, *Merluccius productus*: I. Abnormal muscle texture caused by myxosporidian-induced proteolysis, by **Max Patashnik, Herman S. Groninger, Jr., Harold Barnett, George Kudo, and Barbara Koury**.

- 13-20 Radio telemetry of Hawaiian green turtles at their breeding colony, by **Andrew E. Dizon and George H. Balazs**.
- 21-25 Economic analysis of "steam-shock" and "pasteurization" processes for oyster shucking, by **John W. Brown**.

**Vol. 44, no. 6-7, 1982**

- 1 Artificial reefs and marine fisheries enhancement (preface), by **W. Hobart** (editor).
- 2-3 Artificial reefs: Toward a new era in fisheries enhancement?, by **Richard B. Stone**.
- 4-15 The use of designed and prefabricated artificial reefs in the United States, by **Daniel J. Sheehy**.
- 16-23 The Coal-Waste Artificial Reef Program (C-WARP): A new resource potential for fishing reef construction, by **Peter M. J. Woodhead, Jeffrey H. Parker, and Iver W. Duedall**.
- 24-27 Artificial reefs as a resource management option for siting coastal power stations in southern California, by **Robert S. Grove**.
- 28-37 Marine habitat enhancement and urban recreational fishing in Washington, by **Raymond M. Buckley**.
- 38-44 Fish foraging on an artificial reef in Puget Sound, Washington, by **Gregory J. Hueckel and R. Lee Stayton**.
- 45-48 The effects of an artificial reef on resident flatfish populations, by **James M. Walton**.
- 49-52 Food of fish collected on artificial reefs in the New York Bight and off Charleston, South Carolina, by **Frank W. Steimle, Jr., and Larry Ogren**.
- 53-60 Early development of Pendleton Artificial Reef, by **John J. Grant, Kenneth C. Wilson, Allen M. Grover, and Heidi A. Togstad**.

**Vol. 44, no. 8, 1982**

- 1-14 The Atlantic coast surf clam fishery, 1965-1974, by **John W. Ropes**.
- 15-21 Stabilization of the flavor of frozen minced whiting: I. Effect of various antioxidants, by **Joseph J. Licciardello, Elinor M. Ravesi, and Michael G. Allsup**.

**Vol. 44, no. 9-10, 1982**

- 1-4 Effects of the 1981 closure on the Texas shrimp fishery, by **Albert C. Jones, Edward F. Klima, and John R. Poffenberger**.
- 5-15 Relative abundance and size distributions of commercially important shrimp during the 1981 Texas closure, by **Geoffrey A. Matthews**.
- 16-30 A review of the offshore shrimp fishery and the 1981 Texas closure, by **Edward F. Klima, Kenneth N. Baxter, and Frank J. Patella, Jr.**
- 31-37 Impacts on shrimp yields of the 1981 fishery conservation zone closure off Texas, by **Scott Nichols**.
- 38-43 Estimated impacts on ex-vessel brown shrimp prices and value as a result of the Texas closure regulation, by **John R. Poffenberger**.
- 44-49 Comparison of shrimp and finfish catch rates and ratios for Texas and Louisiana, by **Noel H. Watts and Gilmore J. Pellegrin, Jr.**
- 50-54 Shrimp fleet mobility in relation to the 1981 Texas closure, by **Albert C. Jones and James R. Zweifel**.
- 55-57 Survey of ice plants in Louisiana, Mississippi, and Alabama, 1980-81, by **John M. Ward and John R. Poffenberger**.



- Vol. 44, no. 11, 1982**
- 1-10 Frozen seafoods: The economic feasibility of quality assurance to the consumer, by **Carmin Gorga, Burton L. Tinker, Debra Dyer, and Joseph M. Mendelsohn**.
- 11-13 Adult coho salmon recoveries and their Na<sup>+</sup>-K<sup>+</sup> ATPase activity at release, by **Roy J. Wahle and Waldo S. Zaugg**.
- 14-22 Chemical composition and frozen storage stability of spot, *Leiostomus xanthurus*, by **Melvin E. Waters**.
- Vol. 44, no. 12, 1982**
- 1-17 A summary of tissue lesions in aquatic animals induced by controlled exposures to environmental contaminants, chemotherapeutic agents, and potential carcinogens, by **Theodore R. Meyers and Jerry D. Hendricks**.
- 18-22 Quantification of National Marine Fisheries Service habitat conservation efforts in the southeast region of the United States, by **William N. Lindall, Jr., and Gordon W. Thayer**.
- Vol. 45, no. 1, 1983**
- 1-10 Groundfish processing in Massachusetts during the 1970's, by **Daniel Georgianna and Richard Ibara**.
- 11-17 An estimate of harvest by the Texas charter boat fishery, by **Lawrence W. McEachron and Gary C. Matlock**.
- Vol. 45, no. 2, 1983**
- 1-7 Botulism and heat-processed seafoods, by **Joseph J. Licciardello**.
- 8-12 Some effects of Mt. St. Helens volcanic ash on juvenile salmon smolts, by **Timothy W. Newcomb and Thomas A. Flagg**.
- Vol. 45, no. 3, 1983**
- 1-22 To increase oyster production in the northeastern United States, by **Clyde L. MacKenzie, Jr.**
- Vol. 45, no. 4-6, 1983**
- 1-9 Participation of U.S. trawlers in the offshore shrimp fisheries of French Guiana, Surinam, and Guyana, 1978-79, by **Alexander Dragovich and Essie M. Coleman**.
- 10-15 Moving out the learning curve: An analysis of hard clam, *Mercenaria mercenaria*, nursery operations in South Carolina, by **John W. Brown, John J. Manzi, Harry Q. M. Clawson, and Fred S. Stevens**.
- 16-26 Tilefish off South Carolina and Georgia, by **R. A. Low, Jr., G. F. Ulrich, and F. Blum**.
- 27-34 Warm water and southern California recreational fishing: A brief review and prospects for 1983, by **James L. Squire, Jr.**
- 35-39 Isolation of histamine-producing bacteria from frozen tuna, by **Steve L. Taylor and Marci W. Speckhard**.
- 40-44 Nomograph for estimating histamine formation in skipjack tuna at elevated temperatures, by **Hilmer A. Frank, Derrick H. Yoshinaga, and I-Pai Wu**.
- 45-48 Fatty acids and lipid classes of three underutilized species and changes due to canning, by **Malcolm B. Hale and Thomas Brown**.
- Vol. 45, no. 7-9, 1983**
- 1-20 Toward an improved seafood nomenclature system, by **Roy E. Martin, Willard H. Doyle, and James R. Brooker**.
- 21-26 Economic potential for utilizing minced fish in cooked sausage products, by **Richard J. Agnello**.
- 27-33 Chemical composition and frozen storage stability of weakfish, *Cynoscion regalis*, by **Melvin E. Waters**.
- 34-37 Composition, nutritive value, and sensory attributes of fish sticks prepared from minced fish flesh fortified with textured soy proteins, by **Wilmon W. Meinke, Gunnar Finne, Ranzell Nickelson, and Roy Martin**.
- 38-43 Processing technologies and their effects on microbiological properties, thermal processing efficiency, and yield of blue crab, by **Donn R. Ward, Ranzell Nickelson II, Gunnar Finne, and Debra J. Hopson**.
- 44-49 Incidental catch of marine mammals by foreign fishing vessels, 1978-81, by **Thomas R. Loughlin, Lewis Consiglieri, Robert L. DeLong, and Ann T. Actor**.
- 50-55 An economic appraisal of sail-assisted commercial fishing vessels in Hawaiian waters, by **Karl C. Samples**.
- 56-62 Experimental squid jigging off the Washington coast, by **Roger W. Mercer and Michele Bucy**.
- 63-67 Weight frequencies for striped marlin, *Tetrapturus audax*, caught off southern California, by **James L. Squire, Jr.**
- Vol. 45, no. 10-12, 1983**
- 1-25 Ichthyoplankton and fish recruitment studies in large marine ecosystems, by **Kenneth Sherman, Reuben Lasker, William Richards, and Arthur W. Kendall, Jr.**
- 26-41 Shaping and assembling webbing, by **Conrad W. Recksiek**.
- 42-46 A microcomputer program for the calculation of a trawl net section taper, by **David K. Martin and Conrad W. Recksiek**.
- 47-59 Recent developments in Papua New Guinea's tuna fishery, by **David J. Doulman and Andrew Wright**.
- Vol. 46, no. 1, 1984**
- 1-6 U.S. tuna trade summary, 1982, by **Samuel F. Herrick, Jr.**
- 7-12 Oceanographic observations off the Pacific Northwest following the 1982 El Niño event, by **R. K. Reed**.
- 13-18 Ciguatera in the eastern Caribbean, by **David A. Olsen, David W. Nellis, and Richard S. Wood**.
- 19-21 Proximate chemical composition and fatty acids of three small coastal pelagic species, by **Malcolm B. Hale**.
- 22-24 Dungeness crab leg loss in the Columbia River estuary, by **Joseph T. Durkin, Kurt D. Buchanan, and Theodore H. Blahm**.
- Vol. 46, no. 2, 1984**
- 1-17 Groundfish fisheries and research in the vicinity of seamounts in the North Pacific Ocean, by **Richard N. Uchida and Darryl T. Tagami**.
- 18-26 Trapping surveys for the deepwater caridean shrimps, *Heterocarpus laevigatus* and *H. ensifer*, in the Northwestern Hawaiian Islands, by **Reginald M. Gooding**.
- 27-35 Procedures for preparing acetate peels and evidence validating the annual periodicity of growth lines formed in the shells of ocean quahogs, *Arctica islandica*, by **John W. Ropes**.

- 36-39 Evaluation of methods to determine the proportions of fillets and minced fish flesh in mixed fish blocks, by **J. Perry Lane and Thomas J. Connors**.
- 40-42 Relationship between honeycombing and collagen breakdown in skipjack tuna, *Katsuwonus pelamis*, by **Hilmer A. Frank, Mitchel E. Rosenfeld, Derrick H. Yoshinaga, and Wai-Kit Nip**.
- 43-48 Suitability of red hake, *Urophycis chuss*, and silver hake, *Merluccius bilinearis*, for processing into surimi, by **Tyre C. Lanier**.
- 49-52 Investment in Gulf of Mexico shrimp vessels, 1965-77, by **Ernest O. Tettey and Wade L. Griffin**.
- 53-59 Characteristics of the Texas shrimp fleet, 1979-82, by **Judith T. Krauthamer, William E. Grant, and Wade L. Griffin**.
- 60-63 Fish or fish oil in the diet and heart attacks, by **Maurice E. Stansby**.

**Vol. 46, no. 3, 1984** \_\_\_\_\_

- 1-13 Fisheries applications of satellite data in the eastern North Pacific, by **Paul C. Fiedler, Gary B. Smith, and R. Michael Laurs**.
- 14-17 Marine bivalve mollusks as reservoirs of viral finfish pathogens: Significance to marine and anadromous finfish aquaculture, by **Theodore R. Meyers**.
- 18-33 The "tuna-porpoise" problem: NMFS dolphin mortality reduction research, 1970-81, by **James M. Coe, David B. Holts, and Richard W. Butler**.
- 34-43 History of artificial propagation of coho salmon, *Oncorhynchus kisutch*, in the Mid-Columbia River system, by **Roy J. Wahle and Roger E. Pearson**.
- 44-47 Norwegian salmon and trout farming, by **Robert J. Ford**.
- 48-55 Using charterboat catch records for fisheries management, by **Harold A. Brusher, Mark L. Williams, Lee Trent, and Barbara J. Palko**.
- 56-58 The incidental capture of sea turtles in the Atlantic U.S. Fishery Conservation Zone by the Japanese tuna longline fleet, by **W. N. Witzell**.
- 59-61 Encounters of Hawaiian monk seals with fishing gear at Lisianski Island, 1982, by **John R. Henderson**.
- 62-67 Paired open beach seines to study estuarine migrations of juvenile salmon, by **Herbert W. Jaenicke, Adrian G. Celewycz, Jack E. Bailey, and Joseph A. Orsi**.
- 68-70 Nonselectivity of gillnet fishery on jaw-tagged adult steelhead, *Salmo gairdneri*, by **Emil Slatick and Larry Basham**.
- 71-75 Proximate composition of certain Red Sea fishes, by **Rifaat G. M. Hanna**.
- 76-79 Assessing the accuracy of a method to determine the amount of minced fish in mixed mince-fillet fish blocks, by **J. Perry Lane, John J. Ryan, and Robert J. Learson**.

**Vol. 46, no. 4, 1984** \_\_\_\_\_

- 2-6 The status of endangered whales: An overview, by **Howard W. Braham**.
- 7-14 The gray whale, *Eschrichtius robustus*, by **Dale W. Rice, Allen A. Wolman, and Howard W. Braham**.
- 15-19 The blue whale, *Balaenoptera musculus*, by **Sally A. Mizroch, Dale W. Rice, and Jeffrey M. Breiwick**.
- 20-24 The fin whale, *Balaenoptera physalus*, by **Sally A. Mizroch, Dale W. Rice, and Jeffrey M. Breiwick**.

- 25-29 The sei whale, *Balaenoptera borealis*, by **Sally A. Mizroch, Dale W. Rice, and Jeffrey M. Breiwick**.
- 30-37 The humpback whale, *Megaptera novaeangliae*, by **James H. Johnson and Allen A. Wolman**.
- 38-44 The right whale, *Balaena glacialis*, by **Howard W. Braham and Dale W. Rice**.
- 45-53 The bowhead whale, *Balaena mysticetus*, by **Howard W. Braham**.
- 54-64 The sperm whale, *Physeter macrocephalus*, by **Merrill E. Gosho, Dale W. Rice, and Jeffrey M. Breiwick**.
- 65-72 U.S. tuna trade summary, 1983, by **Samuel F. Herrick, Jr. and Steven Koplun**.
- 73-80 Coral reef sanctuaries for trochus shells, by **Gerald A. Heslinga, Obichang Orak, and Marcus Ngiramengior**.

**Vol. 47, no. 1, 1985** \_\_\_\_\_

- 1-8 A genetic method of stock identification in mixed populations of Pacific salmon, *Oncorhynchus* spp., by **George B. Milner, David J. Teel, Fred M. Utter, and Gary A. Winans**.
- 9-12 An ecosystem model evaluation: The importance of fish food habits data, by **Patricia A. Livingston**.
- 13-17 The role of cetaceans in the shelf-edge region of the north-eastern United States, by **James H. W. Hain, Martin A. M. Hyman, Robert D. Kenney, and Howard E. Winn**.
- 18-26 Behavioral factors influencing fish entrapment at offshore cooling-water intake structure in southern California, by **Mark Helvey**.
- 27-35 Predation on released spiny lobster, *Panulirus marginatus*, during tests in the northwestern Hawaiian Islands, by **Reginald M. Gooding**.
- 36-38 Exploitation of California sea lions, *Zalophus californianus*, prior to 1972, by **Virginia L. Cass**.
- 39-42 Scarred Pacific salmon, *Oncorhynchus* spp., at freshwater recovery sites in southeastern Alaska, by **Sidney G. Taylor**.
- 43-47 Examining business turnover in the Texas charter boat fishing industry: 1975-80, by **Robert B. Ditton and David K. Loomis**.
- 48-67 The effect of handling or processing treatments on storage characteristics of fresh spiny dogfish, *Squalus acanthias*, by **Elinor M. Ravesi, Joseph J. Licciardello, Bette E. Tuhkunen, and Ronald C. Lundstrom**.
- 68-72 Storage of dressed chinook salmon, *Oncorhynchus tshawytscha*, in refrigerated freshwater, diluted seawater, seawater, and in ice, by **M. N. Bronstein, R. J. Price, E. M. Strange, E. F. Melvin, C. M. Dewees, and B. B. Wyatt**.
- 73-77 Observations from a preservation and processing study on atka mackerel, *Pleurogrammus monopterygius*, by **Jim W. Conrad, Harold J. Barnett, Fuad M. Teeny, and Richard W. Nelson**.
- 78-82 Keeping quality of fresh and frozen sand lance, *Ammodytes* sp., by **J. J. Licciardello, E. M. Ravesi, and M. G. Allsup**.
- 83-85 The effect of denil fishway length on passage of some non-salmonid fishes, by **Emil Slatick and Larry R. Basham**.

**Vol. 47, no. 2, 1985** \_\_\_\_\_

- 1 Pacific whiting: The resource, the industry, and a management history (introduction), by **Thomas A. Dark**.
- 2-7 Biology and life history of the coastal stock of Pacific whiting, *Merluccius productus*, by **Gary D. Stauffer**.

- 8-15 Recruitment of Pacific whiting, *Merluccius productus*, and the ocean environment, by **Kevin M. Bailey and Robert C. Francis**.
- 16-22 Trophic role of the Pacific whiting, *Merluccius productus*, by **P. A. Livingston and K. M. Bailey**.
- 23-34 Biology and fishery of the Pacific whiting, *Merluccius productus*, in the Strait of Georgia, by **Gordon A. McFarlane and Richard J. Beamish**.
- 35-38 Puget Sound Pacific whiting, *Merluccius productus*, resource and industry: An overview, by **Mark Pederson**.
- 39-41 Historical review of the coastal Pacific whiting, *Merluccius productus*, fishery, by **R. E. Nelson, Jr.**
- 42-46 Economics of the Pacific whiting, *Merluccius productus*, fishery, by **Eric Anderson**.
- 47-54 Harvesting technology in the Pacific whiting, *Merluccius productus*, fishery, by **Charles W. West**.
- 55-59 Parasites as a limiting factor in exploitation of Pacific whiting, *Merluccius productus*, by **Z. Kabata and D. J. Whitaker**.
- 60-74 Preservation and processing characteristics of Pacific whiting, *Merluccius productus*, by **Richard W. Nelson, Harold J. Barnett, and George Kudo**.
- 75-81 Pacific whiting, *Merluccius productus*, stocks off the west coast of Vancouver Island, Canada, by **Richard J. Beamish and Gordon A. McFarlane**.
- 82-94 Results of the coastal Pacific whiting, *Merluccius productus*, survey in 1977 and 1980, by **Martin O. Nelson and Thomas A. Dark**.
- 95-99 History and management of the coastal fishery for Pacific whiting, *Merluccius productus*, by **Robert C. Francis and Anne B. Hollowed**.

**Vol. 47, no. 3, 1985** 

---

- 1-20 Biology of the red sea urchin, *Strongylocentrotus franciscanus*, and its fishery in California, by **Susumu Kato and Stephen C. Schroeter**.
- 21-25 The Columbia River estuary: An important nursery for Dungeness crabs, *Cancer magister*, by **Robert L. Emmett and Joseph T. Durkin**.
- 26-29 Shelf life extension of drawn whole Atlantic cod, *Gadus morhua*, and cod fillets by treatment with potassium sorbate, by **Vincent G. Ampola and Cynthia L. Keller**.
- 30-37 Fatty acid composition of commercial menhaden, *Brevoortia* spp., oils, 1982 and 1983, by **Jeanne D. Joseph**.
- 38-42 Underwater separation of juvenile salmonids by size, by **Michael H. Gessel, Winston E. Farr, and Clifford W. Long**.
- 43-47 Relationship of sea surface temperature isotherm patterns off northwestern Mexico to the catch of striped marlin, *Tetrapturus audax*, off southern California, by **James L. Squire, Jr.**
- 48-53 Recreational albacore, *Thunnus alalunga*, fishery by U. S. west coast commercial passenger fishing vessels, by **Dave Holts**.
- 54-66 Charterboat catch and effort from southeastern U. S. waters, 1983, by **Harold A. Brusher and Barbara J. Palko**.

**Vol. 47, no. 4, 1985** 

---

- 1-10 Molluscan mariculture in the greater Caribbean: An overview, by **Darryl E. Jory and Edwin S. Iversen**.
- 11-18 A synopsis of the Tortugas pink shrimp, *Penaeus duorarum*, fishery, 1981-84, and the impact of the Tortugas Sanctuary, by **Edward F. Klima and Frank J. Patella**.
- 19-25 Fisheries resource assessment of the Mariana Archipelago, 1982-85, by **Jeffrey J. Polovina, Robert B. Moffitt, Stephen Ralston, Paul M. Shiota, and Happy A. Williams**.
- 26-32 A small vessel technique for tracking pelagic fish, by **Kim Holland, Richard Brill, Scott Ferguson, Randolph Chang, and Reuben Yost**.
- 33-42 Ice requirements for chilled seawater systems, by **E. Kolbe, C. Crapo, and K. Hilderbrand**.
- 43-45 Parameters affecting viscosity as a quality control for frozen fish, by **A. J. Borderías, F. Jiménez-Colmenero, and M. Tejada**.

## Special Scientific Report—Fisheries (SSRF)

Established in 1949, this series consists of reports on scientific investigations which document long-term continuing programs of NMFS, and intensive reports on studies of restricted scope. Bibliographies of a specialized nature are also published in this series. In 1983 this subcategory of technical reports was merged with the *Circular* series into the *NOAA Technical Report NMFS* series; SSRF 783 was the last report published.

- 740 Food of fifteen northwest Atlantic gadiform fishes, by **Richard W. Langton and Ray E. Bowman**. February 1980, 23 p.
- 741 Distribution of gammaridean Amphipoda (Crustacea) in the Middle Atlantic Bight region, by **John J. Dickinson, Roland L. Wigley, Richard D. Brodeur, and Susan Brown-Leger**. October 1980, 46 p.
- 742 Water structure at Ocean Weather Station V, northwestern Pacific Ocean, 1966-71, by **D. M. Husby and G. R. Seckel**. October 1980, 56 p.
- 743 Average density index for walleye pollock, *Theragra chalcogramma*, in the Bering Sea, by **Loh-Lee Low and Ikuo Ikeda**. November 1980, 11 p.
- 744 Tunas, oceanography and meteorology of the Pacific, an annotated bibliography, 1950-78, by **Paul N. Sund**. March 1981, 123 p.
- 745 Dorsal mantle length—total weight relationships of squids *Loligo pealei* and *Illex illecebrosus* from the Atlantic coast of the United States, by **Anne M. T. Lange and Karen L. Johnson**. March 1981, 17 p.
- 746 Distribution of Gammaridean Amphipoda (Crustacea) on Georges Bank, by **John J. Dickinson and Roland L. Wigley**. June 1981, 25 p.
- 747 Movement, growth, and mortality of American lobsters, *Homarus americanus*, tagged along the coast of Maine, by **Jay S. Krouse**. September 1981, 12 p.
- 748 Annotated bibliography of the conch genus *Strombus* (Gastropoda, Strombidae) in the western Atlantic Ocean, by **George H. Darcy**. September 1981, 16 p.
- 749 Food of eight Northwest Atlantic pleuronectiform fishes, by **Richard W. Langton and Ray E. Bowman**. September 1981, 16 p.
- 750 World literature to fish hybrids with an analysis by family, species, and hybrid: supplement 1, by **Frank J. Schwartz**. November 1981, 507 p.
- 751 The barge *Ocean 250* gasoline spill, by **Carolyn A. Griswold** (editor). November 1981, 30 p.
- 1-5 The barge *Ocean 250* gasoline spill (Introduction and background information), by **Carolyn A. Griswold**.
- 5-8 Chemical analyses of water and benthic organisms, by **J. L. Lake, C. W. Dimock, C. Norwood, R. Bowen, and B. Kyle**.
- 8-12 Hydrocarbon analyses of plankton samples, by **E. J. Hoffman and J. G. Quinn**.
- 13-15 Chemical analyses of fish samples, by **P. D. Boehm and J. E. Barak**.
- 16-20 Analyses of benthic macrofauna from the area of *Ocean 250* gasoline spill, by **Sheldon D. Pratt**.
- 20-21 Zooplankton community structure in the area of *Ocean 250* gasoline spill, by **Jerome Prezioso and Carolyn A. Griswold**.
- 21-29 Cytological-cytogenetic analyses of fourbeard rockling and yellowtail flounder eggs from plankton at *Ocean 250* gasoline spill, by **J. B. Hughes and A. Crosby Longwell**.
- 752 Movements of tagged summer flounder, *Paralichthys dentatus*, off southern New England, by **F. E. Lux and F. E. Nichy**. December 1981, 16 p.
- 753 Factors influencing ocean catches of salmon, *Oncorhynchus* spp., off Washington and Vancouver Island, by **R. A. Low, Jr. and S. B. Mathews**. January 1982., 12 p.
- 754 Demersal fish resources of the eastern Bering Sea: spring 1976, by **Gary B. Smith and Richard G. Bakkala**. March 1982, 129 p.
- 755 Annotated bibliography and subject index on the summer flounder, *Paralichthys dentatus*, by **Paul G. Scarlett**. March 1982, 12 p.
- 756 Annotated bibliography of the hard clam (*Mercenaria mercenaria*), by **J. L. McHugh, Marjorie W. Sumner, Paul J. Flagg, Douglas W. Lipton, and William J. Behrens**. March 1982, 845 p.
- 757 A profile of the fish and decapod crustacean community in a South Carolina estuarine system prior to flow alteration, by **Elizabeth Lewis Wenner, Malcolm H. Shealy, Jr., and Paul A. Sandifer**. March 1982, 17 p.
- 758 Equipment and techniques for handling northern fur seals, by **Roger L. Gentry and John R. Holt**. July 1982, 15 p.
- 759 Catch temperatures for some important marine species off California, by **James L. Squire, Jr.** August 1982, 19 p.
- 760 Parasite-host records of Alaskan fishes, by **Adam Moles**. September 1982, 41 p.
- 761 Sea level variations at Monterey, California, by **Dale Emil Bretschneider and Douglas R. McLain**. January 1983, 50 p.
- 762 Abundance of pelagic resources off California, 1963-78, as measured by an airborne fish monitoring program, by **James L. Squire, Jr.** February 1983, 75 p.
- 763 Climatology of surface heat fluxes over the California current region, by **Craig S. Nelson and David M. Husby**. February 1983, 155 p.
- 764 Demersal fishes and invertebrates trawled in the northeastern Chukchi and western Beaufort Seas, 1976-77, by **Kathryn J. Frost and Lloyd F. Lowry**. February 1983, 22 p.
- 765 Distribution and abundance of larvae of king crab, *Paralithodes camtschatica*, and pandalid shrimp in the Kachemak Bay area, Alaska, 1972 and 1976, by **Evan Haynes**. April 1983, 64 p.
- 766 An atlas of the distribution and abundance of dominant benthic invertebrates in the New York Bight apex with reviews of their life histories, by **Janice V. Caracciolo and Frank W. Steimle, Jr.** March 1983, 58 p.
- 767 A commercial sampling program for sandworms, *Nereis virens* Sars, and bloodworms, *Glycera dibranchiata* Ehlers, harvested along the Maine coast, by **Edwin P. Creaser, Jr., David A. Clifford, Michael J. Hogan, and David B. Sampson**. April 1983, 56 p.
- 768 Distribution and abundance of East Coast bivalve mollusks based on specimens in the National Marine Fisheries Service Woods Hole Collection, by **Roger B. Theroux and Roland L. Wigley**. June 1983, 172 p.
- 769 Krill and its utilization: a review, by **John D. Kaylor and Robert J. Learson**. July 1983, 10 p.

- 770 Population characteristics of the American lobster, *Homarus americanus*, in eastern Long Island Sound, Connecticut, by **Milan Keser, Donald F. Landers, Jr., and Jeffrey D. Morris**. October 1983, 7 p.
- 771 Mesh size and the New England groundfishery—applications and implications, by **Ronald Joel Smolowitz**. July 1983, 60 p.
- 772 Results of a tagging program to determine migration rates and patterns for black marlin, *Makaira indica*, in the southwest Pacific Ocean, by **James L. Squire, Jr. and Daphne V. Nielsen**. July 1983, 19 p.
- 773 Food habits and trophic relationships of a community of fishes on the Outer Continental Shelf, by **George R. Sedberry**. September 1983, 56 p.
- 774 Distribution of eggs and larvae of Atlantic menhaden, *Brevoortia tyrannus*, along the Atlantic coast of the United States, by **Mayo H. Judy and Robert M. Lewis**. October 1983, 23 p.
- 775 Distribution and relative abundance of American lobster, *Homarus americanus*, larvae: New England investigations during 1974-79, by **Michael J. Fogarty** (editor). September 1983, 64 p.
- 3-8 Distribution and relative abundance of American lobster, *Homarus americanus*, larvae: A review, by **Michael J. Fogarty**.
- 9-14 An overview of larval American lobster, *Homarus americanus*, sampling programs in New England during 1974-79, by **Michael J. Fogarty and Robert Lawton**.
- 15-22 Distribution and abundance of lobster larvae (*Homarus americanus*) in Block Island Sound, by **Brenda Goldberg Bibb, Ronald L. Hersey, and Rocco A. Marcello, Jr.**
- 23-28 Distribution, relative abundance, and seasonal production of American lobster, *Homarus americanus*, larvae in Block Island Sound in 1978, by **Michael J. Fogarty, Martin A. Hyman, George F. Johnson, and Clement A. Griscom**.
- 29-33 Distribution and abundance of larval lobsters (*Homarus americanus*) in Buzzards Bay, Massachusetts, during 1976-79, by **Fred E. Lux, George F. Kelly, and Charles L. Wheeler**.
- 35-40 The spatio-temporal distribution of American lobster, *Homarus americanus*, larvae in the Cape Cod Canal and approaches, by **W. Stephen Collings, Christine Cooper-Sheehan, Sally C. Hughes, and James L. Buckley**.
- 41-46 Observations on the seasonal occurrence, abundance, and distribution of larval lobsters (*Homarus americanus*) in Cape Cod Bay, by **George C. Matthiessen and Michael D. Scherer**.
- 47-52 Distribution and abundance of larval American lobsters, *Homarus americanus* Milne-Edwards, in the western inshore region of Cape Cod Bay, Massachusetts, by **Robert Lawton, Elizabeth Kouloheras, Phillips Brady, Wendell Sides, and Mando Borgatti**.
- 53-57 New Hampshire lobster larvae studies, by **Stephen A. Grabe, John W. Shipman, and Weldon S. Bosworth**.
- 59-61 Abundance and distribution of lobster larvae (*Homarus americanus*) for selected locations in Penobscot Bay, Maine, by **Daniel M. Greenstein, Leigh C. Alexander, and Daryl E. Richter**.
- 63-64 A comparison of lobster larvae sampling using neuston and tucker nets, by **Brenda Goldberg Bibb, Ronald L. Hersey, and Rocco A. Marcello, Jr.**
- 776 Kinds and abundances of fish larvae in the Caribbean Sea and adjacent areas, by **William J. Richards**. May 1984, 54 p.
- 777 A checklist of parasites of California, Oregon, and Washington marine and estuarine fishes, by **Milton S. Love and Mike Moser**. December 1983, 576 p.
- 778 Bowhead and white whale migration, distribution, and abundance in the Bering, Chukchi, and Beaufort Seas, 1975-78, by **Howard W. Braham, Bruce D. Krogman, and Geoffrey M. Carroll**. January 1984, 39 p.
- 779 Opportunistic feeding of the northern fur seal, *Callorhinus ursinus*, in the eastern North Pacific Ocean and eastern Bering Sea, by **Hiroshi Kajimura**. February 1984, 49 p.
- 780 History of scientific study and management of the Alaskan fur seal, *Callorhinus ursinus*, 1786-1964, by **Victor B. Scheffer, Clifford H. Fiscus, and Ethel I. Todd**. March 1984, 70 p.
- 781 An annotated checklist of the fishes of Samoa, by **Richard C. Wass**. May 1984, 43 p.
- 782 A five-year study of seasonal distribution and abundance of fishes and decapod crustaceans in the Cooper River and Charleston Harbor, S.C., prior to diversion, by **E. L. Wenner, W. P. Coon III, M. H. Shealy, Jr., and P. A. Sandifer**. July 1984, 16 p.
- 783 Biomass and density of macrobenthic invertebrates on the U.S. Continental Shelf off Martha's Vineyard, Mass., in relation to environmental factors, by **Don Maurer and Roland L. Wigley**. July 1984, 20 p.

## Technical Report

Established in 1983, this series replaces two subcategories: *Special Scientific Report—Fisheries*, and *Circular*. It contains reports on scientific investigations that document long-term continuing programs of NMFS, intensive scientific reports on studies of restricted scope, papers on applied fishery problems, technical reports of general interest to aid conservation and management, reports that review certain broad areas of research in considerable detail and at a highly technical level, and technical papers originating in economics studies and from management investigations.

- 1 **Synopsis of biological data on the blue crab, *Callinectes sapidus*** Rathbun, by **Mark R. Millikin and Austin B. Williams**. March 1984, 39 p. FAO Fisheries Synopsis No. 138.
- 2 Development of hexagrammids (Pisces: Scorpaeniformes) in the northeastern Pacific Ocean, by **Arthur W. Kendall, Jr. and Beverly Vinter**. March 1984, 44 p.
- 3 Configurations and relative efficiencies of shrimp trawls employed in southeastern United States waters, by **John W. Watson, Jr., Ian K. Workman, Charles W. Taylor, and Anthony F. Serra**. March 1984, 12 p.
- 4 Management of northern fur seals on the Pribilof Islands, Alaska, 1786-1981, by **Alton Y. Roppel**. April 1984, 26 p.
- 5 Net phytoplankton and zooplankton in the New York Bight, January 1976 to February 1978, with comments on the effects of wind, Gulf stream eddies, and slope water intrusions, by **Daniel E. Smith and Jack W. Jossi**. May 1984, 41 p.
- 6 Ichthyoplankton survey of the estuarine and inshore waters of the Florida Everglades, May 1971 to February 1972, by **L. Alan Collins and John H. Finucane**. July 1984, 75 p.
- 7 The feeding ecology of some zooplankters that are important prey items of larval fish, by **Jefferson T. Turner**. July 1984, 28 p.
- 8 Proceedings of the international workshop on age determination of oceanic pelagic fishes: Tunas, billfishes, and sharks, by **Eric D. Prince** (Convener and editor) and **Lynn M. Pulos** (editor). December 1983, 211 pages.
  - 1-17 Age and growth assessment of fish from their calcified structures—techniques and tools, by **John M. Casselman**.
  - 19-24 Some statistical characteristics of ageing data and their ramifications in population analysis of oceanic pelagic fishes, by **Joseph E. Powers**.
  - 25-27 Reduction of bias generated by age-frequency estimation using the von Bertalanffy growth equation, by **Norman V. Bartoo and Keith R. Parker**.
  - 29-33 Validation of age determination estimates: The forgotten requirement, by **Richard J. Beamish and Gordon A. McFarlane**.
  - 35-44 Summary of round table discussions on age validation, by **Edward B. Brothers**.
  - 45-47 Summary of round table discussions on back calculation, by **C. Lavett Smith**.
  - 49-59 Age and growth of young-of-the-year bluefin tuna, *Thunnus thynnus*, from otolith microstructure, by **Edward B. Brothers, Eric D. Prince, and Dennis W. Lee**.
  - 61-69 Interpretation of growth bands on vertebrae and otoliths of Atlantic bluefin tuna, *Thunnus thynnus*, by **Dennis W. Lee, Eric D. Prince, and Michael E. Crow**.
  - 71-75 Age and growth estimation of Atlantic bluefin tuna, *Thunnus thynnus*, using otoliths, by **Peter C. F. Hurley, and T. Derrick Iles**.
  - 77-86 Growth increments on dorsal spines of eastern Atlantic bluefin tuna, *Thunnus thynnus*, and their possible relation to migration patterns, by **G. Compeán-Jimenez and F. X. Bard**.
  - 87-90 Deterministic partitioning of the catch of southern bluefin tuna, *Thunnus maccoyii*, into age classes using an age-length relationship, by **Jacek Majkowski and John Hampton**.
  - 91-97 Progress of age and growth assessment of Atlantic skipjack tuna, *Euthynnus pelamis*, from dorsal fin spines, by **Loic M. Antoine, Jeremy J. Mendoza, and Patrice M. Cayré**.
  - 99-103 Otolith formation and increment deposition in laboratory-reared skipjack tuna, *Euthynnus pelamis*, larvae, by **Richard L. Radtke**.
  - 105-110 Estimating age and growth of little tunny, *Euthynnus alletteratus*, off the coast of Senegal, using dorsal fin spine sections, by **Patrice M. Cayré and Taib Diouf**.
  - 111-115 Comparison of dorsal spines and vertebrae as ageing structures for little tunny, *Euthynnus alletteratus*, from the northeast Gulf of Mexico, by **Allyn G. Johnson**.
  - 117-122 Determining age of young albacore, *Thunnus alalunga*, using dorsal spines, by **A. González-Garcés and A. C. Fariña-Perez**.
  - 123-129 Istiophid otoliths: Extraction, morphology, and possible use as ageing structures, by **Richard L. Radtke**.
  - 131-135 Age and growth of sailfish, *Istiophorus platypterus*, using cross sections from the fourth dorsal fin spine, by **Marion Y. Hedgepeth and John W. Jolley, Jr.**
  - 137-143 Age determination of broadbill swordfish, *Xiphias gladius*, from the Straits of Florida, using anal fin spine sections, by **Steven A. Berkeley and Edward D. Houde**.
  - 145-150 Age estimation and growth of broadbill swordfish, *Xiphias gladius*, from the northwest Atlantic based on external features of otoliths, by **Richard L. Radtke and Peter C. F. Hurley**.
  - 151-156 The potential use of sagittae for estimating age of Atlantic swordfish, *Xiphias gladius*, by **Charles A. Wilson and John M. Dean**.
  - 157-165 Techniques for enhancing vertebral bands in age estimation of California elasmobranchs, by **Gregor M. Cailliet, Linda K. Martin, David Kusher, Patricia Wolf, and Bruce A. Welden**.
  - 167-174 Shark ageing methods and age estimation of scalloped hammerhead, *Sphyrna lewini*, and dusky, *Carcharhinus obscurus*, sharks based on vertebral ring counts, by **Frank J. Schwartz**.
  - 175-177 Age and growth of the shortfin mako, *Isurus oxyrinchus*, by **Harold L. Pratt, Jr. and John G. Casey**.
  - 179-188 Preliminary studies on the age and growth of blue, *Prionace glauca*, common thresher, *Alopias vulpinus*, and shortfin mako, *Isurus oxyrinchus*, sharks from California waters, by **Gregor M. Cailliet, Linda K. Martin, James T. Harvey, David Kusher, and Bruce A. Welden**.

- 189-191 Age and growth of the sandbar shark, *Carcharhinus plumbeus*, from the western North Atlantic, by **John G. Casey, Harold L. Pratt, Jr., and Charles E. Stillwell**.
- 193-205 Biological materials for the study of age and growth in a tropical marine elasmobranch, the lemon shark, *Negaprion brevirostris* (Poey), by **Samuel H. Gruber and Robert G. Stout**.
- 9 Sampling statistics in the Atlantic menhaden fishery, by **Alexander J. Chester**. August 1984, 16 p.
- 10 Proceedings of the seventh U.S.-Japan meeting on aquaculture, marine finfish culture, Tokyo, Japan, October 3-4, 1978, by **Carl J. Sindermann** (editor). August 1984, 31 pages.
- 3-9 Development of biological characters in early stages of seed production of commercially important marine fishes, by **Osamu Fukuhara**.
- 11-16 Present status and future potential of yellowtail culture in Japan, by **Toshihiko Matsusato**.
- 17-20 Present status of red sea bream in Japan, by **Ryo Okamoto**.
- 21-24 Practical problems in finfish culture in Kochi Prefecture, by **Michiko Taniguchi**.
- 25-27 Maturation and spawning of marine finfish, by **C. R. Arnold**.
- 29-31 Striped bass culture in the United States, by **Bob Stevens**.
- 11 Taxonomy of North American fish eimeriidae, by **Steve J. Upton, David W. Redaker, William L. Current, and Donald W. Duszynski**. August 1984, 18 p.
- 12 Soviet-American cooperative research on marine mammals. Volume 1—Pinnipeds, by **Francis H. Fay and Gennadii A. Fedoseev** (editors). September 1984, 104 p.
- 1-4 The US-USSR Marine Mammal Project, by **Robert V. Miller**.
- 5-16 Craniological analysis of harbor and spotted seals of the North Pacific region, by **John J. Burns, Francis H. Fay, and Gennadii A. Fedoseev**.
- 17-24 Comparative biology of harbor seals, *Phoca vitulina* Linnaeus, 1758, of the Commander, Aleutian, and Pribilof Islands, by **John J. Burns and Vitali N. Gol'tsev**.
- 25-47 Habitat partitioning by ice-associated pinnipeds: Distribution and density of seals and walruses in the Bering Sea, April 1976, by **Howard W. Braham, John J. Burns, Gennadii A. Fedoseev, and Bruce D. Krogman**.
- 49-54 Use of nonmetrical characters of skulls of Bering Sea seals in a study of the phenotypic structure of their populations, by **Gennadii A. Fedoseev**.
- 55-59 New information on foods of the spotted seal, *Phoca largha*, in the Bering Sea in spring, by **Yuri A. Bukhtiyarov, Kathryn J. Frost, and Lloyd F. Lowry**.
- 61-65 Helminthological comparison of subpopulations of Bering Sea spotted seals, *Phoca largha* Pallas, by **Semyon L. Delyamure, Mikhail V. Yurakhno, Valentin N. Popov, Larry M. Shults, and Francis H. Fay**.
- 67-76 Abundance and distribution of the Pacific walrus, *Odobenus rosmarus divergens*: Results of the first Soviet-American joint aerial survey, autumn 1975, by **James A. Estes and Vitali N. Gol'tsev**.
- 77-80 An analysis of a hypothetical population of walruses, by **Douglas P. DeMaster**.
- 81-88 Foods of the Pacific walrus in winter and spring in the Bering Sea, by **Francis H. Fay, Yuri A. Bukhtiyarov, Samuel W. Stoker, and Larry M. Shults**.
- 89-99 Time and location of mating and associated behavior of the Pacific walrus, *Odobenus rosmarus divergens* Illiger, by **Francis H. Fay, G. Carleton Ray, and Arkadii A. Kibal'chich**.
- 101-104 A list of American and Soviet institutions possessing collections of osteological specimens from pinnipeds and sea otters, by **Larry J. Hansen, William F. Perrin, Anatoli S. Sokolov, and James G. Mead**.
- 13 Guidelines for reducing porpoise mortality in tuna purse seining, by **James M. Coe, David B. Holts, and Richard W. Butler**. September 1984, 16 p.
- 14 Synopsis of biological data on shortnose sturgeon, *Acipenser brevirostrum* LeSueur 1818, by **Michael J. Dadswell, Bruce D. Taubert, Thomas S. Squiers, Donald Marchette, and Jack Buckley**. October 1984, 45 p. FAO Fisheries Synopsis No. 140.
- 15 Chaetognatha of the Caribbean Sea and adjacent areas, by **Harding B. Michel**. October 1984, 33 p.
- 16 Proceedings of the ninth and tenth U.S.-Japan meetings on aquaculture, by **Carl J. Sindermann** (editor). November 1984, 92 p.
- 3-7 Nutritional requirements and artificial diets of Kuruma shrimp, *Penaeus japonicus*, by **Akio Kanazawa**.
- 17-23 Kuruma shrimp culture in Japan, by **Hiroshi Kurata, Kunihiko Shigueno, and Kenro Yatsuyanagi**.
- 17-23 Structure of a Kuruma shrimp culture pond, by **Toshifumi Noma**.
- 25-33 Major diseases encountered in controlled environment culture of penaeid shrimp at Puerto Peñasco, Soñora, Mexico, by **D. V. Lightner, R. M. Redman, D. A. Danald, R. R. Williams, and L. A. Perez**.
- 35-55 Research and development in freshwater prawn, *Macrobrachium rosenbergii*, culture in the United States: Current status and biological constraints with emphasis on breeding and domestication, by **Spencer Malecha**.
- 57-60 Research and development in maturation and production of penaeid shrimp in the Western Hemisphere, by **Robert A. Shleser and L. Frank Follett**.
- 61-67 An invasive fungus disease of the tanner crab and its aquacultural connotations, by **Albert K. Sparks**.
- 71-72 An attempt to culture the noble scallop, *Mimachlamys nobilis* Reeve, using a microparticulate diet, by **Akio Kanazawa, Shin-ichi Teshima, Mineshi Sakamoto, Hikaru Matsubara, and Takemitsu Abe**.
- 73-81 Recent developments in shellfish culture in southern Japan, by **Kazuhiko Nogami, Osamu Fukuhara, and Satoshi Umezawa**.
- 83-88 Abalone culture in Japan, by **Nagahisa Uki**.
- 89-92 Osmoregulation in marine bivalves, by **Koji Wada**.
- 17 Identification and estimation of size from the beaks of 18 species of cephalopods from the Pacific Ocean, by **Gary A. Wolff**. November 1984, 50 p.
- 18 A temporal and spatial study of invertebrate communities associated with hard-bottom habitats in the South Atlantic Bight, by **E. L. Wenner, P. Hinde, D. M. Knott, and R. F. Van Dolah**. November 1984, 104 p.

- 19 Synopsis of biological data on the spottail pinfish, *Diplodus holbrooki* (Pisces: Sparidae), by **George H. Darcy**. January 1985, 11 p. FAO Fisheries Synopsis No. 142.
- 20 Ichthyoplankton of the continental shelf near Kodiak Island, Alaska, by **Arthur W. Kendall, Jr., and Jean R. Dunn**. January 1985, 89 p.
- 21 Annotated bibliography on hypoxia and its effects on marine life, with emphasis on the Gulf of Mexico, by **Maurice L. Renaud**. February 1985, 9 p.
- 22 Congrid eels of the eastern Pacific and key to their leptocephali, by **Solomon N. Raju**. February 1985, 19 p.
- 23 Synopsis of biological data on the pinfish, *Lagodon rhomboides* (Pisces: Sparidae), by **George H. Darcy**. February 1985, 32 p. FAO Fisheries Synopsis No. 141.
- 24 Temperature conditions in the cold pool 1977-81: A comparison between southern New England and New York transects, by **Steven K. Cook**. February 1985, 22 p.
- 25 Parasitology and pathology of marine organisms of the World Ocean, by **William J. Hargis, Jr.** (editor). March 1985, 135 p.
- 1-3 Introduction, by **William J. Hargis, Jr.** (editor).
- 5-6 Present state and perspectives of Soviet investigations on marine parasitology, by **O. N. Bauer and Yu. I. Polianski**.
- 7-13 Recent studies on marine fish parasites and diseases, by **Carl J. Sindermann**.
- 15-18 Applied and scientific aspects of marine parasitology, by **Yu. V. Kurochkin**.
- 19-23 Use of parasitological data in studies of local groupings of rock grenadier, *Coryphaenoides rupestris* Gunner, by **A. V. Zubchenko**.
- 25-28 Parasitofauna of the fishes of the Falkland-Patagonian region, by **A. V. Gaevskaya, A. A. Kovaliova, and G. N. Rodjuk**.
- 29 Parasitofauna of fishes of the Whale Ridge, by **L. D. Alioshkina, A. V. Gaevskaya, and A. A. Kovaliova**.
- 31-32 Parasitic fauna of the fishes of the Atlantic part of the Antarctic (South Georgia Island and South Shetland Isles), by **G. N. Rodjuk**.
- 33-34 On the parasitofauna of Xiphioidea of the northwest area of the Indian Ocean, by **V. R. Dubina**.
- 35-38 Parasites as indicators of specific features of fish ecology, by **S. M. Kononov and T. E. Butorina**.
- 39 The taxonomic composition and origin of fish helminths in the epipelagic zone of the World Ocean, by **S. E. Pozdnyakov**.
- 41-43 Zoogeographical characteristics of the helminths of fishes from the Antarctic zone of the World Ocean, by **V. N. Lyadov**.
- 45-46 Special features of the helminth fauna of *Helicolenus maculatus* (Cuvier), by **L. P. Tkachuk**.
- 47-48 The flatworm fauna of fishes of the Gulf of Mexico and its genetic relations, by **E. V. Zhukov**.
- 49-51 The influence of helminths on the tissue lipid content of Black Sea anchovy, *Engraulis encrasicolus ponticus*, and bullhead, *Neogobius melanostomus*, during the annual cycle, by **A. M. Shchepkina**.
- 53-54 Certain results of the study of ciliates of the family Trichodinidae (Peritrichida) inhabiting fishes of the seas of the U.S.S.R., by **G. A. Stein**.
- 55-58 Special features of the myxosporidian fauna from sea and ocean fishes, by **A. A. Kovaliova and S. S. Schulman**.
- 59-60 Myxosporidia of fishes of the North Pacific, by **V. K. Krasin**.
- 61-62 Investigations of the ultrastructure and cytochemical peculiarities of *Kudoa quadratum* (Thelohan, 1895), (Myxosporidia, Multivalvulea), by **A. V. Uspenskaya**.
- 63-64 Trematodes of commercial fish of the Pacific of practical importance, by **V. D. Korotaeva**.
- 65 Infestation rate of the young of white sea herring, reared under experimental conditions and caught in the sea, by trematodes, and their pathogenic effect, by **O. F. Ivanchenko and T. A. Grozdilova**.
- 67-72 Trematodes—Didymozoidae fauna, distribution and biology, by **V. M. Nikolaeva**.
- 73 Comparative analysis of monogenean faunas and populations from several Beloniformes fishes, by **L. A. Ghichenok**.
- 75 New data on the capsalid fauna of the World Ocean and questions of its specificity, by **T. P. Egorova**.
- 77 On the taxonomic position of the monogenean, *Pseudaxine mexicana* Meserve, 1938, by **B. Iv. Lebedev**.
- 79-82 Plerocercoids of some Cestoda as bioindicators of the population structure of *Podonema longipes*, by **G. V. Avdeev**.
- 83-84 Development of larval stages of *Bothriocephalus scorpii*, by **A. I. Solonchenko**.
- 85-88 Special features of the geographical distribution and practical significance of the parasitic copepods of fishes of the Pacific, by **V. N. Kazachenko and V. M. Titar**.
- 89-92 Specific features of the distribution of marine parasitic isopod crustaceans of the family Cymothoidae (Isopoda, Flabellifera), by **V. V. Avdeev**.
- 93-97 Pigmented macrophage accumulations (MMC; PMB): Possible monitors of fish health, by **R. E. Wolke, C. J. George, and V. S. Blazer**.
- 99 Infectious diseases of fish involved in marine aquaculture in the Soviet Far East, by **E. G. Potievski, L. A. Tsareva, and V. V. Burlin**.
- 101-107 Recent studies in the United States on parasites and pathogens of marine mollusks with emphasis on diseases of the American oyster, *Crassostrea virginica* Gmelin, by **William J. Hargis, Jr.**
- 109-110 Some aspects of the biology of the trematode, *Proctoeces maculatus*, in connection with the development of mussel farms on the Black Sea, by **V. K. Matshkevski**.
- 111 Special features of the infection of the mollusk, *Littorina rudis* (Maton, 1797), with parthenitae of *Macrophallus pygmaeus* (Levinson, 1881) *neq* Odhner, 1905 and *M. piriformes* (Odhner, 1905) Galaktionov, 1980 (Trematoda: Microphallidae) from the White Sea, by **K. F. Galaktionov**.
- 113-116 The helminth fauna and host-parasite relations of squids *Sthenoteuthis oualaniensis* (Lesson) (Cephalopoda, Ommastrephidae) in the Indian Ocean and the Red Sea, by **N. N. Naidenova, C. M. Nigmatullin, and A. V. Gaevskaya**.
- 117-122 Some parasitological aspects of shrimp culture in the United States, by **Robin M. Overstreet**.



- 123-127 The helminths and commensals of crustaceans of the Black Sea, by **N. N. Naidenova** and **T. N. Mordvinova**.
- 129-135 Achievements of Soviet scientists in investigations of the helminthofauna of marine mammals of the World Ocean, by **S. L. Delamure** and **A. S. Skriabin**.
- 26 Synopsis of biological data on the sand perch, *Diplectrum formosum* (Pisces: Serranidae), by **George H. Darcy**. March 1985, 21 p. FAO Fisheries Synopsis No. 143.
- 27 Proceedings of the eleventh U.S.-Japan meeting on aquaculture, salmon enhancement, Tokyo, Japan, October 19-20, 1982, **Carl J. Sindermann** (editor). March 1985, 102 p.
- 5-9 Methods of measuring and controlling the parr to smolt transformation (smoltification) of juvenile salmon, by **Walton W. Dickhoff**, **Craig Sullivan**, and **Conrad V. W. Mahnken**.
- 11-13 The importance of the environment, stress, and disease relationship in aquaculture, by **Alfred C. Fox**.
- 15-19 Seawater acclimation of premigratory (presmolt) fall chinook salmon: A possible new management strategy?, by **Rowan W. Gould**, **Aldo N. Palmisano**, **Stanley D. Smith**, **Conrad V. W. Mahnken**, **Wally S. Zaugg**, and **Earl F. Prentice**.
- 21-28 Chinook salmon fisheries and enhancement in Alaska: A 1982 overview, by **William R. Heard**.
- 29-32 Systematic genetic selection and breeding in salmonid culture and enhancement programs, by **William K. Hershberger** and **Robert N. Iwamoto**.
- 33-37 Advances in tagging and tracking hatchery salmonids: Coded wire tags, multiple-coded and miniature radio tags, and the passive integrated transponder tag, by **Gerald E. Monan**.
- 39-43 Trends in natural and hatchery production of chinook salmon, by **Donald E. Rogers** and **Ernest O. Salo**.
- 45-53 Hatchery approaches in artificial chum salmon enhancement, by **Osamu Hiroi**.
- 55-65 The migration and ecology of young salmon in early marine life, by **Takahiko Irie**.
- 67-73 Recent information on Europium marking techniques for chum salmon, by **Mamoru Kato**.
- 75-81 Development of seawater net-cage culture and release of chum salmon, by **Akimitsu Koganezawa** and **Minoru Sasaki**.
- 83-86 Technical innovations in chum salmon enhancement with special reference to fry condition and timing of release, by **Hiroshi Mayama**.
- 87-90 Nutritional studies for the development of formulated diet for salmon fry, by **Takeshi Murai**, **Toshio Akiyama**, and **Takeshi Nose**.
- 91-95 Strategies in salmon farming in Japan, by **Soichiro Shirahata**.
- 97-102 An electrophysiological approach to the olfactory recognition of homestream waters in chum salmon, by **Kazuo Ueda**.
- 28 Review of geographical stocks of tropical dolphins (*Stenella* spp. and *Delphinus delphis*) in the eastern Pacific, by **William F. Perrin**, **Michael D. Scott**, **G. Jay Walker**, and **Virginia L. Cass**. March 1985, 28 p.
- 29 Prevalence, intensity, longevity, and persistence of *Anisakis* sp. larvae and *Lacistorhynchus tenuis metacestodes* in San Francisco striped bass, by **Mike Moser**, **Judy A. Sakanari**, **Carol A. Reilly**, and **Jeannette Whipple**. April 1985, 4 p.
- 30 Synopsis of biological data on the pink shrimp, *Pandalus borealis* Krøyer, 1838, by **Sandra E. Shumway**, **Herbert C. Perkins**, **Daniel F. Schick**, and **Alden P. Stickney**. May 1985, 57 p.
- 31 Shark catches from selected fisheries off the U.S. East Coast. July 1985, 22 p.
- 1-14 Analysis of various sources of pelagic shark catches in the Northwest and Western Central Atlantic Ocean and Gulf of Mexico with comments on catches of other large pelagics, by **Emory D. Anderson**.
- 15-19 Estimated catches of large sharks by U.S. recreational fishermen in the Atlantic and Gulf of Mexico, by **John G. Casey** and **John J. Hoey**.
- 21-22 The incidental capture of sharks in the Atlantic United States Fishery Conservation Zone by the Japanese tuna longline fleet, by **W. N. Witzell**.
- 32 Nutrient distributions for Georges Bank and adjacent waters in 1979, by **A. F. J. Draxler**, **A. Matte**, **R. Waldhauer**, and **J. E. O'Reilly**. July 1985, 34 p.
- 33 Marine flora and fauna of the northeastern United States. Echinodermata: Echinoidea, by **D. Keith Serafy** and **F. Julian Fell**. September 1985, 27 p.
- 34 Additions to a revision of the shark genus *Carcharhinus*: Synonymy of *Aprionodon* and *Hypoprion*, and description of a new species of *Carcharhinus* (Carcharhinidae), by **J. A. F. Garrick**. November 1985, 26 p.
- 35 Synoptic review of the literature on the southern oyster drill *Thais haemastoma floridana*, by **Philip A. Butler**. November 1985, 9 p.
- 36 An egg production method for estimating spawning biomass of pelagic fish: Application to the northern anchovy, *Engraulis mordax*, by **Reuben Lasker** (editor). December 1985, 99 p.
- 1-3 Introduction: An egg production method for anchovy biomass assessment, by **Reuben Lasker**.
- 5-6 Biomass model for the egg production method, by **Keith Parker**.
- 7-15 Parameter estimation for an egg production method of northern anchovy biomass assessment, by **Susan Picquelle** and **Gary Stauffer**.
- 17-26 Sea survey design and analysis for an egg production method of anchovy biomass assessment, by **Paul E. Smith** and **Roger P. Hewitt**.
- 27-32 The CalCOFI vertical egg tow (CalVET) net, by **Paul E. Smith**, **William Flerx**, and **Roger P. Hewitt**.
- 33-35 Procedures for sorting, staging, and ageing eggs, by **Gary Stauffer** and **Susan Picquelle**.
- 37-41 Staging anchovy eggs, by **H. Geoffrey Moser** and **Elbert H. Ahlstrom**.
- 43-50 A model for temperature-dependent northern anchovy egg development and an automated procedure for the assignment of age to staged eggs, by **Nancy C. H. Lo**.
- 51-53 A protocol for designing a sea survey for anchovy biomass assessment, by **Roger P. Hewitt**.
- 55-57 Sampling requirements for the adult fish survey, by **Susan Picquelle**.
- 59-61 Spawning frequency of Peruvian anchovies taken with a purse seine, by **Jurgen Alheit**.
- 63-65 Preservation of northern anchovy in formaldehyde solution, by **J. Roe Hunter**.
- 67-77 Batch fecundity in multiple spawning fishes, by **J. Roe Hunter**, **Nancy C. H. Lo**, and **Roderick J. H. Leong**.

- 79-94 Measurement of spawning frequency in multiple spawning fishes, by **J. Roe Hunter and Beverly J. Macewicz**.
- 95-99 Comparison between egg production method and larval census method for fish biomass assessment, by **Roger P. Hewitt**.

## **TECHNICAL MEMORANDUM SERIES**

---

This informal series of monographs was established in 1972 with the purpose of communicating the initial results and work-in-progress of NMFS research projects and supporting data. Each NMFS regional office and fisheries center numbers and publishes its own series of Technical Memoranda. They are listed here alphabetically by region/center and in numerical order within each group. Some publications may be available from the originating regional office or fishery center, while others are available from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161; the NTIS accession number is listed for those available.

### **Alaska Region**

P.O. Box 1668, Juneau, AK 99802

- F/AKR-1** The Japanese high sea salmon mother ship fishery in the North Pacific Ocean: The economic implication of a loss of INPFC constraints, by **Louis E. Quirolo**. 1982, 29 p.
- F/AKR-2** An assessment of the living marine resources of the Central Bering Sea and potential resource use conflicts between commercial fisheries and petroleum development in the Navarin Basin proposed sale number 83, by **Byron F. Morris**. 1981, 232 p.
- F/AKR-3** Living marine resources of the Chukchi Sea: A resource report for the Chukchi Sea oil and gas lease sale number 85, by **Byron F. Morris**. 1981, 118 p.
- F/AKR-4** Living marine resources of the Hope Basin: A resource assessment for the Hope Basin oil and gas lease sale number 86, by **Byron F. Morris**. 1981, 168 p.
- F/AKR-5** Living marine resources of the Gulf of Alaska: A resource assessment for the Gulf of Alaska/Cook Inlet proposed oil and gas lease sale number 88, by **Byron F. Morris, Miles S. Alton, and Howard W. Braham**. 1983, 232 p.

### **Atlantic Estuarine Fisheries Center**

(no longer in operation)

- AEFC-1** Report of the National Marine Fisheries Service Atlantic Estuarine Fisheries Center, fiscal years 1970 and 1971, by **T. R. Rice (director) and Staff**. 1972, 16 p.

### **Auke Bay Laboratory**

P.O. Box 21055, Auke Bay, AK 99821

- ABFL-1** An improved incubator for salmonids and results of preliminary tests of its use, by **Jack E. Bailey and William R. Heard**. 1973, 7 p.
- ABFL-2** A guide to the collection and identification of presmolt Pacific salmon in Alaska with an illustrated key, by **Milton B. Trautman**. 1973, 20 p.
- ABFL-3** Salmon fry production in a gravel incubator hatchery, Auke Creek, Alaska, 1971-72, by **Jack E. Bailey and Sidney G. Taylor**. 1974, 13 p.

### **Northeast Fisheries Center**

Woods Hole, MA 02543

- F/NEC-1** Overview document of the northeast fishery management task force, phase I, by **Richard C. Hennemuth, Brian J. Rothschild, Lee G. Anderson, and William A. Lund, Jr.** 1980, 12 p.
- F/NEC-2** History and status of the Atlantic demersal finfish fishery management plan, by **Guy D. Marchesseault, Richard P. Ruais, and Der-Hsiung Wang**. 1980, 8 p.
- F/NEC-3** Definition of management units, by **Emory D. Anderson and Guy D. Marchesseault**. 1980, 4 p.
- F/NEC-4** Fishery management techniques, a review, by **Michael P. Sissenwine and James E. Kirkley**. 1980, 10 p.

- F/NEC-5** The status of the marine fishery resources of the north-eastern United States, by **Margaret M. McBride and Bradford E. Brown**. 1980, 13 p.
- F/NEC-6** Economic and biological data needs for fisheries management, with particular reference to the New England and mid-Atlantic areas, by **Guy D. Marchesseault, Joseph J. Mueller, and Ivar E. Strand, Jr.** 1980, 10 p.
- F/NEC-7** Methodology for identification and analysis of fishery management options, by **Brian J. Rothschild, Richard C. Hennemuth, Jacob J. Dykstra, Leo C. Murphy, Jr., John C. Bryson, and James D. Ackert**. 1980, 10 p. NTIS Access No. PB81-200834.
- F/NEC-8** Phytoplankton community structure in northeastern coastal waters of the United States. I. October 1978, by **Harold G. Marshall and Myra S. Cohn**. 1981, 14 p. NTIS Access No. PB82-124561.
- F/NEC-9** Phytoplankton community structure in northeastern coastal waters of the United States. II. November 1978, by **Harold G. Marshall and Myra S. Cohn**. 1981, 14 p. NTIS Access No. PB82-124579.
- F/NEC-10** Annual NEMP report on the health of the northeast coastal waters of the United States, 1980, by the **Northeast Monitoring Program**, Report No. NEMP IV 81A-H 0043. 1981, 79 p. NTIS Access No. PB82-124587.
- F/NEC-11** Proceedings of the summer flounder (*Paralichthys dentatus*) age and growth workshop, 20-21 May 1980, Northeast Fisheries Center, Woods Hole, Massachusetts, by **Ronald W. Smith, Louise M. Dery, Paul G. Scarlett, and Ambrose Jerald, Jr.** 1981, 14 p. NTIS Access No. PB 82-174921.
- F/NEC-12** Status of the fishery resources off the northeastern United States for 1981, by **Resource Assessment Division**, Northeast Fisheries Center. 1982, 114 p. NTIS Access No. PB82-184946.
- F/NEC-13** Gulf and Atlantic survey for selected organic pollutants in finfish, by **Paul D. Boehm and Pam Hirtzer**. 1982, 111 p. NTIS Access No. PB 82-254111.
- F/NEC-14** Ecosystem definition and community structure of the macrobenthos of the NEMP monitoring station at Pigeon Hill in the Gulf of Maine, by **Alan W. Hulbert, Kenneth J. Pecci, Jonathan D. Witman, Larry G. Harris, James R. Sears, and Richard A. Cooper**. 1982, 143 p. NTIS Access No. PB83-112474.
- F/NEC-15** Seasonal phytoplankton assemblages in northeastern coastal waters of the United States, by **Harold G. Marshall and Myra S. Cohn**. 1982, 10 p. NTIS Access No. PB83-116715.
- F/NEC-16** Contaminants in New York Bight and Long Island Sound sediments and demersal species, and contaminant effects on benthos, summer 1980, by **Robert N. Reid, John E. O'Reilly, and Vincent S. Zdanowicz** (editors). 1982, 96 p. NTIS Access. No. PB83-152116.
- F/NEC-17** Summary of the physical oceanographic processes and features pertinent to pollution distribution in the coastal and offshore waters of the northeastern United States, Virginia to Maine, by **Merton C. Ingham** (editor). 1982, 166 p. NTIS Access. No. PB83-156364.
- F/NEC-18** Stock discrimination of summer flounder (*Paralichthys dentatus*) in the middle and south Atlantic Bights: Results of a workshop, by **Michael J. Fogarty, Glenn DeLaney, John W. Gillikin, Jr., John C. Poole, Daniel E. Ralph, Paul G. Scarlett, Ronald W. Smith, and Stuart J. Wilk**. 1983, 14 p. NTIS Access. No. PB83-168856.
- F/NEC-19** Environmental benchmark studies in Casco Bay-Portland Harbor, Maine, April 1980, by **Peter F. Larsen, Anne C. Johnson, and Lee F. Doggett**. 1983, 173 p. NTIS Access. No. PB83-184069.
- F/NEC-20** Annual NEMP report on the health of the northeast coastal waters of the United States, 1981, by **Northeast Monitoring Program**, Report No. NEMP IV-82-65. 1983, 86 p. NTIS Access. No. PB83-193912.
- F/NEC-21** MARMAP plankton survey manual, by **Jack W. Jossi and Robert R. Marak**. 1983, 260 p. NTIS Access. No. PB83-210203.
- F/NEC-22** Status of the fishery resources off the northeastern United States for 1982, by **Resource Assessment Division**, Northeast Fisheries Center. 1983, 128 p. NTIS Access. No. PB83-236554.
- F/NEC-23** Nantucket Shoals flux experiment data report I. Hydrography, by **W. Redwood Wright**. 1983, 4 p. NTIS Access. No. PB83-236562.
- F/NEC-24** Residual drift and residence time of Georges Bank surface waters with reference to the distribution, transport, and survival of larval fishes, by **John B. Colton, Jr. and Jacquelyn L. Anderson**. 1983, 44 p. NTIS Access No. PB84-107820.
- F/NEC-25** Gross and histological techniques for bivalve mollusks, by **Dorothy W. Howard and Cecelia S. Smith**. 1983, 107 p.
- F/NEC-26** 106-mile site characterization update, by **John B. Pearce, Don C. Miller, and Carl Berman** (editors). 1983, 483 p. NTIS Access. No. PB84- 118363.
- F/NEC-27** Pelagic distributions of marine birds off the northeastern United States, by **K. D. Powers**. 1983, 201 p. NTIS Access. No. PB84-187871.
- F/NEC-28** Food of seventeen species of northwest Atlantic fish, by **Ray E. Bowman and William L. Michaels**. 1984, 183 p. NTIS Access. No. PB84-219195.
- F/NEC-29** Status of the fishery resources off the northeastern United States for 1983, by **Emory D. Anderson** (editor). 1984, 132 p. NTIS Access. No. PB85-106847.
- F/NEC-30** Recent estimates of adult spawning stock biomass off the northeastern United States from MARMAP ichthyoplankton surveys, by **Peter Berrien, Wallace Morse, and Michael Pennington**. 1984, 111 p. NTIS Access. No. PB85-108991.
- F/NEC-31** Evidence of nearshore summer upwelling off Atlantic City, New Jersey, by **Merton C. Ingham and James Eberwine**. 1984, 10 p.
- F/NEC-32** Secondary production of benthic macrofauna at three stations of Delaware Bay and coastal Delaware, by **Stavros Howe and Wayne Leathem**. 1984, 62 p. NTIS Access. No. PB85-145753/AS.
- F/NEC-33** MARMAP surveys of the continental shelf from Cape Hatteras, North Carolina, to Cape Sable, Nova Scotia (1977-1983). Atlas no. 1. Summary of operations, by **John D. Sibunka and Myron J. Silverman**. 1984, 306 p. NTIS Access. No. PB85-150985/AS.
- F/NEC-34** Oceanology: Biology of the Ocean. Volume 2. Biological productivity of the Ocean, by **M. E. Vinogradov** (editor). First printed by Nauka Press, Moscow, 1977. [transl. Russ. by Albert L. Peabody. Kenneth Sherman, editor, Engl. version, 1985]. 1977, 518 p. NTIS Access. No. PB85-204683/AS.
- F/NEC-35** Annual NEMP report of the health of the northeast coastal waters, 1982, by **John B. Pearce, Carl R. Berman, Jr., and Marlene R. Rosen** (editors). 1985, 68 p. NTIS Access. No. PB85-219129/AS.

- F/NEC-36** Growth and survival of larval fishes in relation to the trophodynamics of Georges Bank cod and haddock, by **G. C. Laurence and R. G. Lough**. 1985, 150 p. NTIS Access. No. PB85-220093/AS.
- F/NEC-37** Regional action plan: Northeast Regional Office and Northeast Fisheries Center, by **Bruce E. Higgins, Ruth Rehfus, John B. Pearce, Robert J. Pawlowski, Robert L. Lippson, Timothy Goodger, Susan M. Roe, and Douglas W. Beach**. 1985, 84 p. NTIS Access. No. PB85-219962/AS.
- F/NEC-38** The shelf/slope front south of Nantucket Shoals and Georges Bank as delineated by satellite infrared imagery and shipboard hydrographic and plankton observations, by **J. B. Colton, Jr., J. L. Anderson, J. E. O'Reilly, C. A. Evans-Zetlin, and H. G. Marshall**. 1985, 22 p. NTIS Access No. PB85-221083/AS.
- F/NEC-39** USA historical catch data, 1904-82, for major Georges Bank fisheries, by **Anne M. T. Lange and Joan E. Palmer**. 1985, 21 p. NTIS Access. No. PB85- 233948/AS.
- F/NEC-40** Indexing the economic health of the U.S. fishing industry's harvesting sector, by **Virgil J. Norton, Morton M. Miller, and Elizabeth Kenney**. 1985, 42 p. NTIS Access. No. PB85-217958/AS.
- F/NEC-41** Calculation of standing stocks and energetic requirements of the Cetaceans of the northeast United States outer continental shelf, by **Robert D. Kenney, Martin A. M. Hyman, and Howard E. Winn**. 1985, 99 p. NTIS Access. No. PB85-239937/AS.
- F/NEC-42** Status of the fishery resources off the northeastern United States for 1985, by the **Conservation and Utilization Division**, Northeast Fisheries Center. 1985, 137 p. NTIS Access. No. PB86-125473/AS.
- Northwest and Alaska Fisheries Center**  
7600 Sand Point Way N.E., Bldg. 4, Bin C15700,  
Seattle, WA 98115-0070
- NWFC-1** Annotated bibliography of interspecific hybridization of fishes of the subfamily Salmonidae, by **James R. Dangel, Paul T. Macy, and Fred C. Withler**. 1973, 48 p.
- F/NWC-2** Food of the Pacific white-sided dolphin, *Lagenorhynchus obliquidens*, Dall's porpoise, *Phocoenoides dalli*, and northern fur seal, *Callorhinus ursinus*, off California and Washington; with appendices on size and food of Dall's porpoise from Alaskan waters, by **Hiroshi Kajimura, Clifford H. Fiscus, and Richard K. Stroud**. 1980, 30 p. NTIS Access. No. PB80-223274.
- F/NWC-3** Summary of northern fur seal data and collection procedures - Vol. 1: Land data of the United States and Soviet Union, by **R. H. Lander** (editor). 1980. NTIS Access. No. PB81-106502.
- F/NWC-4** Summary of northern fur seal data and collection procedures, Vol. 2: Eastern Pacific pelagic data of the United States and Canada, by **R. H. Lander** (editor). 1980. NTIS Access. No. PB81-124513.
- F/NWC-5** Summary of northern fur seal data and collection procedures, Vol. 3: Western Pacific pelagic data of the Soviet Union and Japan, 1958-78 (excluding fur seals sighted), by **R. H. Lander and H. Kajimura** (editors). 1980. NTIS Access. No. PB81- 165904.
- F/NWC-6** Releases of anadromous salmon and trout from U.S. and Canadian Pacific coast rearing facilities, 1960-1976, by **Robert Z. Smith and Roy J. Wahle**. 1981, 441 p. NTIS Access. No. PB82-196452.
- F/NWC-7** Changes in relative abundance and size composition of sablefish in the coastal waters of southeast Alaska 1978-80, by **H. Zenger and S. E. Hughes**. 1981, 27 p. NTIS Access. No. PB81-181935.
- F/NWC-8** Changes in relative abundance and size composition of sablefish in coastal waters of Washington and Oregon, 1979-80, by **N. B. Parks and S. E. Hughes**. 1981, 25 p. NTIS Access. No. PB81-202368.
- F/NWC-9** Economic impacts of the Alaska shellfish fishery: An input/output analysis, by **W. Butcher, J. Buteau, K. Hassenmiller, G. Perry, and S. Staitieh**. 1981, 82 p. NTIS Access. No. PB82-169723.
- F/NWC-10** Gulf of Alaska bottomfish and shellfish resources, by **Miles S. Alton**. 1981, 51 p. NTIS Access. No. PB81-224347.
- F/NWC-11** A summary of foreign Pacific whiting catches and trawl positions in the Washington-California region, 1977-1980, by **Kathleen D. Edwards, Thomas A. Dark, Robert French, Russell Nelson, Jr., and Janet Wall**. 1981, 206 p. NTIS Access. No. PB82-109554.
- F/NWC-12** Transplantation and homing experiments on salmon and steelhead trout in the Columbia River system: Fish of the 1939-44 broods, by **Leonard A. Fulton and Roger E. Pearson**. 1981, 97 p. NTIS Access. No. PB82-124314.
- F/NWC-13** Trawl survey of groundfish resources in the Gulf of Alaska, summer 1978, by **Gene C. Feldman and Craig S. Rose**. 1981, 44 p. NTIS Access. No. PB82-124504.
- F/NWC-14** All-nation removals of groundfish, herring, and shrimp from the east Bering Sea and northeast Pacific Ocean, 1964-1980, by **Sueto Murai, Harold A. Gangmark, and Robert R. French**. 1981, 40 p. NTIS Access. No. PB82-148693.
- F/NWC-15** Estimation of a decreasing population size over time, by **Russell F. Kappenman**. 1981, 7 p. NTIS Access. No. PB82-161191.
- F/NWC-16** Factors affecting bottom trawl behavior: results of experiments with 83/112 eastern trawls towed from the NOAA ship *Miller Freeman*, by **Charles William West**. 1981, 36 p. NTIS Access. No. PB82-150400.
- F/NWC-17** Census of northern sea lions in the central Aleutian Islands, Alaska, 17 June-15 July 1979, with notes on other marine mammals and birds, by **Clifford H. Fiscus, David J. Rugh, and Thomas R. Loughlin**. 1981, 109 p. NTIS Access. No. PB82-146218.
- F/NWC-18** A description of the resource survey data-base system of the NWAFC, 1981, by **Ralph J. Intel and Gary B. Smith**. 1981, 111 p. NTIS Access. No. PB82-161159.
- F/NWC-19** A numerical simulation model of the population dynamics of walleye pollock in a simplified ecosystem. Part I, Model description, by **Charles D. Knechtel and Lewis J. Bledsoe**. 1981, 212 p. NTIS Access. No. PB82-163049.
- F/NWC-20** Relative abundance and size composition of sablefish in coastal waters of southeast Alaska, 1978-81, by **Harold H. Zenger, Jr.** 1981, 42 p. NTIS Access. No. PB82-174566.
- F/NWC-21** Bowhead whale radio tagging feasibility study and review of large cetacean tagging, by **Larry J. Hobbs and Michael E. Goebel**. 1982, 68 p. NTIS Access. No. PB82-193145.

- F/NWC-22** Differences in susceptibility among three stocks of chinook salmon to two isolates of infectious hematopoietic necrosis virus, by **Alex C. Wertheimer and James R. Winton**. 1980, 11 p. NTIS Access. No. PB82-193228.
- F/NWC-23** Trawl survey of groundfish resources off the Aleutian Islands, July-August 1980, by **Lael L. Ronholt, Franklin R. Shaw, and Thomas K. Wilderbuier**. 1982, 84 p. NTIS Access. No. PB82-189986.
- F/NWC-24** Cohort analysis of catch data on Pacific herring in the east Bering Sea, 1959-81, by **Vidar G. Wespestad**. 1982, 18 p. NTIS Access. No. PB82-193947.
- F/NWC-25** Current abundance of Pacific cod in the east Bering Sea and expected abundance in 1982-86, by **Vidar Wespestad, Richard Bakkala, and Jeffrey June**. 1982, 26 p. NTIS Access. No. PB82-202763.
- F/NWC-26** Changes in relative abundance and size composition of sablefish in coastal waters of Washington and Oregon, 1979-81, and California, 1980-81, by **Norman B. Parks**. 1982, 28 p. NTIS Access. No. PB82-202771.
- F/NWC-27** Fluctuations of fish stocks and the consequences of the fluctuations to fishery and its management, by **Taivo Laevastu and Richard Marasco**. 1982, 53 p. NTIS Access. No. PB82-219965.
- F/NWC-28** Squids taken in surface gillnets in the North Pacific Ocean by the Pacific Salmon Investigations Program, 1955-72, by **Clifford H. Fiscus and Roger W. Mercer**. 1982, 32 p. NTIS Access. No. PB82-230590.
- F/NWC-29** Data on fish species from Bering Sea and the Gulf of Alaska—NWAF C species data for ecosystem simulation I, by **Karl Niggol**. 1982, 125 p. NTIS Access. No. PB82-230111.
- F/NWC-30** Data report: 1979 demersal trawl survey of the eastern Bering Sea continental shelf and slope, by **R. G. Bakkala, T. M. Sample, M. S. Bohle, J. A. June, A. M. Shimada and Y. Umeda**. 1982. NTIS Access. No. PB82-257692.
- F/NWC-31** Distribution of groundfish catches of the foreign trawl and longline fisheries in the eastern Bering Sea and Gulf of Alaska, 1977-80, by **V. G. Wespestad, R. Nelson, and B. Gibbs**. 1982. NTIS Access. No. PB83-113514.
- F/NWC-32** Stomach contents of Pacific whiting off Washington and Oregon, April-July 1967, by **P. A. Livingston and M. S. Alton**. 1982. NTIS Access. No. PB83-118489.
- F/NWC-33** The yellowfin sole resource of the eastern Bering Sea—its current and future potential for commercial fisheries, by **R. G. Bakkala, V. G. Wespestad, and L.-L. Low**. 1982. NTIS Access. No. PB83-115501.
- F/NWC-34** Fifty years of cooperation and commitment: 1931-81, by **Rae R. Mitsuoka, Roger E. Pearson, Laura J. Rutledge, and Samuel Waterman**. 1982, 294 p. NTIS Access. No. PB83-150755.
- F/NWC-35** An atlas of demersal fish and invertebrate community structure in the eastern Bering Sea: Part 1, 1978-81, by **G. E. Walters and M. J. McPhail**. 1982. NTIS Access. No. PB83-149484.
- F/NWC-36** Report of the first interorganization bowhead whale research planning and technical coordination meeting, 11-12 March 1982, by **H. W. Braham**. 1982. NTIS Access. No. PB83-149492.
- F/NWC-37** Fur seal investigations, 1981, by **P. Kozloff** (editor). 1982. NTIS Access. No. PB83-154658.
- F/NWC-38** Quantitative relations between fishing mortality, spawning stress mortality and biomass growth rate (computed with numerical model FISHMO), by **T. Laevastu**. 1983. NTIS Access. No. PB83-169995.
- F/NWC-39** Economic analysis of fishing industry energy conservation technology, by **A. N. Swartz**. 1983. NTIS Access. No. PB83-180125.
- F/NWC-40** An atlas of demersal fish and invertebrate community structure in the eastern Bering Sea: Part 2, 1971-77, by **G. E. Walters**. 1983. NTIS Access. No. PB83-189498.
- F/NWC-41** A single species, biomass based, time dependent model for investigating the effects of fishing on the dynamics of fish biomass, by **T. Laevastu and R. J. Marasco**. 1983. NTIS Access. No. PB83-189811.
- F/NWC-42** Condition of groundfish resources of the eastern Bering Sea and Aleutian Islands region in 1982, by **R. Bakkala and L.-L. Low** (editors). 1983. NTIS Access. No. PB83-213439.
- F/NWC-43** Potential use of the Andersen-Ursin multispecies Beverton and Holt model for modeling North Pacific fish interactions, by **P. A. Livingston**. 1983. NTIS Access. No. PB83-194407.
- F/NWC-44** Spawning of twelve groundfish species in the Alaska and Pacific Coast regions, 1975-81, by **W. A. Hirschberger and G. B. Smith**. 1983, 83 p. NTIS Access. No. PB83-210153.
- F/NWC-45** Instructions for conducting a census of bowhead whales from ice-based observation sites near Point Barrow, Alaska, by **B. D. Krogman and D. J. Rugh**. 1983, 61 p. NTIS Access. No. PB83-210187.
- F/NWC-46** Report of the second interorganization bowhead whale research planning and technical coordination meeting, 15-16 December 1982, by **H. W. Braham**. 1983, 44 p. NTIS Access. No. PB83-214726.
- F/NWC-47** The economics of uncertainty: A survey of the literature on uncertainty with particular reference to the fishery, by **S. S. Hanna**. 1983, 200 p. NTIS Access. No. 84-104421.
- F/NWC-48** Bottom trawl survey of canary rockfish, yellowtail rockfish, bocaccio and chilipepper off Washington-California, 1980, by **T. A. Dark, M. E. Wilkins, and K. Edwards**. 1983, 47 p. NTIS Access No. PB84-122613.
- F/NWC-49** Data report: 1980 demersal trawl survey of the eastern Bering Sea continental shelf, by **Y. Umeda and R. Bakkala**. 1983, 181 p. NTIS Access. No. PB84-128891.
- F/NWC-50** A numerical simulation model of the population dynamics of walleye pollock in a simplified ecosystem: Part II, model calibration, validation and exercise, by **C. D. Knechtel and L. J. Bledsoe**. 1983. NTIS Access. No. PB84-132307.
- F/NWC-51** Changes in relative abundance and size composition of sablefish in coastal waters of California, 1980-82, by **N. B. Parks and F. R. Shaw**. 1983, 23 p. NTIS Access. No. PB84-131440.
- F/NWC-52** Condition of groundfish resources of the Gulf of Alaska in 1982, by **D. H. Ito and J. W. Balsiger** (editors). 1983. NTIS Access. No. PB84-136845.
- F/NWC-53** Condition of groundfish resources of the eastern Bering Sea and Aleutian Islands region in 1983, by **R. G. Bakkala and L.-L. Low** (editors). 1984, 193 p. NTIS Access. No. PB84-182120.

- F/NWC-54** Food habits literature of North Pacific marine fishes: A review and selected bibliography, by **P. A. Livingston and B. J. Goiney, Jr.** 1983, 88 p. NTIS Access. No. PB84-189398.
- F/NWC-55** Data report: 1978 bottom trawl survey of eastern Bering Sea groundfish, by **M. S. Bohle and R. G. Bakkala.** 1984, 171 p. NTIS Access. No. PB84-189992.
- F/NWC-56** A data analysis system for monitoring the seaward migration of juvenile salmonids in the Snake-Columbia River system, by **A. E. Giorgi, et al.** 1984. NTIS Access. No. PB84-189893.
- F/NWC-57** Numerical simulation of the effect of interannual temperature fluctuations of fish distribution in the eastern Bering Sea, by **Nancy Pola Swan and W. James Ingraham, Jr.** 1984.
- F/NWC-58** Recommendations for bowhead whale research in 1984, by **Howard W. Braham.** 1984.
- F/NWC-59** Studies of the distribution and abundance of juvenile groundfish in the northwestern Gulf of Alaska, 1980-82: Part I, three-year comparisons, by **Gary B. Smith, Gary E. Walters, Paul A. Raymore, Jr., and Wendy A. Hirschberger.** 1984. 106 p. NTIS Access. No. PB85-108538.
- F/NWC-60** Lectures on the economics of fisheries production, by **Jon Conrad, Dale Squires, and Jim Kirkley.** 1984, 107 p. NTIS Access. No. PB85-106631.
- F/NWC-61** Changes in relative abundance and size composition of sablefish in coastal waters of Washington and Oregon. 1979-83, by **Norman B. Parks.** 1984, 29 p. NTIS Access. No. PB85-108546.
- F/NWC-62** Proceedings of the workshop on walleye pollock and its ecosystem in the eastern Bering Sea, by **Daniel H. Ito.** 1984, 296 p. NTIS Access. No. PB85-138055.
- F/NWC-63** Bibliography on daily food ration of fishes, by **Patricia A. Livingston and Bernard J. Goiney, Jr.** 1984. NTIS Access. No. PB85-185494.
- F/NWC-64** Standard analytical procedures of the NOAA national analytical facility, 1984-85: Extractable toxic organic compounds, by **William D. Macleod, Jr., Donald W. Brown, Andrew J. Friedman, Orlando Maynes, and Ronald W. Pierce.** 1984, 102 p. NTIS Access. No. PB85-126282.
- F/NWC-65** Catalogue of cephalopods at the National Marine Mammal Laboratory, by **Clifford H. Fiscus.** 1984. NTIS Access. No. PB85-186039.
- F/NWC-66** Hydroacoustic surveys and identification of humpback whale forage in Glacier Bay, Stephens Passage, and Frederick Sound, southeastern Alaska, summer 1983, by **Kenneth J. Krieger and Bruce L. Wing.** 1984, 60 p. NTIS Access. No. PB85-183887.
- F/NWC-67** Effects of petroleum hydrocarbons on Alaskan aquatic organisms: A comprehensive review of all oil-effects research on Alaskan fish and invertebrates conducted by the Auke Bay Laboratory, 1970-81, by **Stanley D. Rice, D. Adam Moles, John F. Karinen, Sid Korn, Mark G. Carls, Christine C. Brodersen, Jessica A. Gharrett, and Malin M. Babcock.** 1984, 128 p. NTIS Access. No. PB85-185262.
- F/NWC-68** Effect of diet on laboratory culture of *Pandulus platyceros* larvae (Crustacea: Decapoda), by **Earl F. Prentice, Kurt X. Gores, Conrad V. M. Mahnken, and Herman S. Groninger.** 1984, 29 p. NTIS Access. No. PB85-185510.
- F/NWC-69** Data report: Results of sablefish tagging in waters off the coast of Washington, Oregon and California, 1979-83, by **Franklin R. Shaw.** 1984. NTIS Access. No. PB85-184489.
- F/NWC-70** The 1983 Pacific west coast bottom trawl survey of groundfish resources: Estimates of distribution, abundance, age and length composition, by **Kenneth L. Weinberg, Mark E. Wilkins, and Thomas A. Dark.** 1984. NTIS Access. No. PB85-185726.
- F/NWC-71** Fur seal investigations, 1982, by **Patrick Kozloff.** 1985. NTIS Access No. PB85-186047.
- F/NWC-72** Biological and economic assessment of Pacific ocean perch (*Sebastes alutus*) in waters off Alaska, by **James W. Balsiger, Daniel H. Ito, Daniel K. Kimura, David A. Somerton, and Joseph M. Terry.** 1985. NTIS Access. No. PB86-119609.
- F/NWC-73** Methods for assessing effects of timber harvest on small streams, by **S. W. Johnson and J. Heifetz.** 1985, 33 p.
- F/NWC-74** Beach and purse seine sampling of juvenile salmonids in the Columbia River estuary and ocean plume, 1977-1983: Vol. 1, procedures, sampling effort, and catch data, by **Earl M. Dawley, Richard D. Ledgerwood, and Alvin Jensen.** 1985. NTIS Access. No. PB85-187730.
- F/NWC-75** Beach and purse seine sampling of juvenile salmonids in the Columbia River estuary and ocean plume, 1977-1983: Vol 2, data on marked fish recoveries, by **Earl M. Dawley, Richard D. Ledgerwood, and Alvin Jensen.** 1985. NTIS Access. No. PB85-187722.
- F/NWC-76** Fishing performance of rectangular and conical sablefish traps off southeastern Alaska, by **David M. Clausen and Jeffrey T. Fujioka.** 1985, 22 p. NTIS Access. No. PB86-113495.
- F/NWC-77** Studies of the distribution and abundance of juvenile groundfish in the northwest Gulf of Alaska, 1980-82: Part II, Biological characteristics in the extended region, by **Gary E. Walters, Gary B. Smith, Paul A. Raymore, Jr., and Wendy Hirschberger.** 1985, 103 p. NTIS Access. No. PB86-113370.
- F/NWC-78** Fur seal investigations, 1983, by **Patrick Kozloff.** 1985, 84 p. NTIS Access. No. PB86-113487.
- F/NWC-79** Saffron cod (*Elighinus gracilis*) in western Alaska: The resource and its potential, by **Robert J. Wolotira, Jr.** 1985, 126 p. NTIS Access. No. PB86-117678.
- F/NWC-80** Condition of groundfish resources of the Gulf of Alaska region as assessed in 1984, by **Richard L. Major.** 1985, 219 p. NTIS Access. No. PB86-119864.
- F/NWC-81** Radio-tracking studies on adult chinook salmon and steelhead trout at lower Columbia River hydroelectric dams, 1971-77, by **Kenneth L. Liscom, Gerald E. Monan, Lowell C. Steuhrenberg, and Pamela J. Wilder.** 1985. NTIS Access. No. PB86-119591.
- F/NWC-82** Summaries of Japanese reported longline catches of Pacific cod and sablefish in the Gulf of Alaska, 1978-83, by **Harold H. Zenger, Jr.** 1985. NTIS Access. No. PB86-113917.
- F/NWC-83** Condition of groundfish resources of the Eastern Bering Sea and Aleutian Islands region in 1984, by **Richard G. Bakkala and Loh-Lee Low** (editors). 1985. NTIS Access. No. PB86-120417.
- F/NWC-84** Migrations of juvenile coho salmon, *Oncorhynchus kisutch*, into the Columbia River estuary, 1966-71, by **Joseph T. Durkin and Carl W. Sims.** 1985. NTIS Access. No. PB86-113479.
- F/NWC-85** Results of the 1983 U.S. and U.S.S.R. bottom trawl surveys in the eastern Bering Sea, by **Wendy A. Hirschberger.** 1985. NTIS Access. No. PB86-117074.

- F/NWC-86** Numbers, species, and maturity stages of fish captured with beach seines during spring 1981 and 1982 in some near-shore marine waters of southeastern Alaska, by **Joseph A. Orsi and Joyce H. Landingham**. 1985, 34 p. NTIS Access. No. PB86-113461.
- F/NWC-87** Results of cooperative U.S.—Japan groundfish investigations in the eastern Bering Sea during June–November 1982, by **Richard G. Bakkala, Jimmie J. Traynor, Kazuyuki Teshima, Allen M. Shimada, and Hirotsune Yamaguchi**. 1985. NTIS Access. No. PB86-116472.
- F/NWC-88** Report of the 1981 cooperative U.S.—Japan bottom trawl survey of the eastern Bering Sea continental shelf and slope, by **Terrance M. Sample, Kiyoshi Wakabayashi, Richard G. Bakkala, and Hirotsune Yamaguchi**. 1985. NTIS Access. No. PB86-116464.
- F/NWC-89** Demersal fish and shellfish resources of Norton Sound and adjacent waters during 1979, by **Terrance M. Sample and Robert J. Wolotira, Jr.** 1985. NTIS Access. No. PB86-120755.
- F/NWC-90** Optimal choice of regulatory instrument in a fishery under uncertainty and instrument adjustment constraints, by **Eric E. Anderson**. 1985. NTIS Access. No. PB86-146818.
- F/NWC-91** Salmon stomach contents from the Alaska troll logbook program 1977–84, by **Bruce L. Wing**. 1985, 43 p. NTIS Access. No. PB86-145067.
- F/NWC-92** Standard analytical procedures of the NOAA National Analytical Facility, 1985–1986, by **William D. MacLeod, Jr., Donald W. Brown, Andrew J. Friedman, Douglas G. Burrows, Orlando Maynes, Ronald W. Pearce, Catherine A. Wigren, and Richard G. Bogar**. 1985. NTIS Access. No. PB86-147873.
- F/NWC-93** Survey Report: Cooperative U.S.—Japan Aleutian Islands groundfish trawl survey 1980, by **Thomas K. Wilderbuier, Kiyoshi Wakabayashi, Lael L. Ronholt, and Hirotsune Yamaguchi**. 1985. NTIS Access. No. PB86-147345.
- F/NWC-94** Data report: 1983 bottom trawl survey of the eastern Bering Sea continental shelf, by **Wendy A. Hirschberger**. 1985. NTIS Access. No. PB86-202934.

#### **NMFS Headquarters**

1825 Connecticut Ave. NW, Washington, DC 20235

- OF-1** Seafood marketing problems. Marketing orders and other alternatives for fishermen. (Other information not available at time of publication.) NTIS Access. No. PB297-066/3.
- OF-2** Survey of chain store experience and attitudes concerning the marketing of fresh seafoods. (Other information not available at time of publication.) NTIS Access. No. PB297 014/3.
- OF-3** Marketing bill and its cost components of U.S. food fish market. (Other information not available at time of publication.) NTIS Access. No. PB82-199944.
- OF-4** No information available at time of publication.
- OF-5** Marine environmental conditions off the coasts of the United States, January 1978–March 1979, by **Elizabeth D. Haynes** (editor). 1980, 130 p. NTIS Access. No. PB80-225600.
- OF-6** National artificial reef plan, by **Richard B. Stone** (compiler). 1985, 39 p.

#### **Northwest Region**

7600 Sand Point Way N.E., Bldg. 1, Bin C15700, Seattle, WA 98115-0070

- F/NWR-1** Columbia River fisheries development program annual report-FY 1980, by **R. Z. Smith and E. Wold**. 1981, 52 p. NTIS Access. No. PB82-127374.
- F/NWR-2** Fish transportation oversight team annual report-FY 1981. Transport operations on the Snake and Columbia Rivers, by **Larry R. Basham, Michael R. Delarm, James B. Athearn, and Stephen W. Pettit**. 1982, 58 p. NTIS Access. No. PB83-114512.
- F/NWR-3** Net economic values for salmon and steelhead from the Columbia River system, by **Philip A. Meyer**. 1982, 29 p. NTIS Access. No. PB83-139485.
- F/NWR-4** Columbia River fisheries development program annual report-FY 1981, by **R. Z. Smith and E. Wold**. 1982, 51 p. NTIS Access. No. PB83-114520.
- F/NWR-5** Fish transportation oversight team annual report-FY 1982, by **Larry R. Basham, Michael R. Delarm, Stephen W. Pettit, James B. Athearn, and 2Lt. John V. Barker**. 1983, 89 p. NTIS Access. No. PB83-172031.
- F/NWR-6** Columbia River fisheries development program annual report-FY 1982, by **R. Z. Smith and E. Wold**. 1983, 46 p. NTIS Access. No. PB84-121045.
- F/NWR-7** Fish transportation oversight team annual report-FY 1983. Transport operations on the Snake and Columbia Rivers, by **Michael R. Delarm, Larry R. Basham, Stephen W. Pettit, James B. Athearn, and Lt. John V. Barker**. 1984, 119 p. NTIS Access. No. PB84-165257.
- F/NWR-8** Making economic information more useful for salmon and steelhead production decisions. A workshop at Seattle, Washington, July 24–26, 1984, by **Anonymous**. 1984, 305 p. NTIS Access No. PB85-155463.
- F/NWR-9** Columbia River fisheries development program annual report-FY 1983, by **Michael R. Delarm and Einar Wold**. 1984, 113 p.
- F/NWR-10** Economic information for habitat management decisions, by **Jack Richards**. In press.
- F/NWR-11** Fish transportation oversight team annual report-FY 1984: Transport operations on the Snake and Columbia Rivers, by **Charles H. Koski, Stephen W. Pettit, James B. Athearn, and Alex L. Heindl**. 1985, 112 p.
- F/NWR-12** Columbia River fisheries development program screening of irrigation diversions, by **Michael R. Delarm and Einar Wold**. 1985, 80 p.
- F/NWR-13** Columbia River fisheries development program annual report, FY 1984, by **Michael R. Delarm and Einar Wold**. 1985, 94 p.
- F/NWR-14** Fish transportation operations FY-84, by **Stephen Pettit and Charles Koski**. 1985.
- F/NWR-15** Foreign and joint venture fishing operations off Washington, Oregon, and California, 1977–1984, by **Katherine King**. 1985, 8 p.

## Southeast Fisheries Center

75 Virginia Beach Dr., Miami, FL 33149

- SEFC-1** Report of the National Marine Fisheries Service Southeast Fisheries Center, Miami Laboratories, fiscal years 1970 and 1971, by **Ann Weeks and Albert C. Jones**. 1972, 21 p.
- SEFC-2** Report of the National Marine Fisheries Service Southeast Fisheries Center, Pascagoula Laboratories, fiscal years 1970 and 1971, by **Edward F. Klima and Richard B. Roe**. 1972, 21 p.
- SEFC-3** Configurations and relative efficiencies of shrimp trawls employed in southeastern United States waters, by **John W. Watson, Jr., Ian K. Workman, Charles W. Taylor, and Anthony F. Serra**. 1984, 12 p.
- SEFC-4** How to prepare fishery management plans, by **T. J. Costello and Lynn M. Pulos**. 1979, 62 p.
- SEFC-5** Survey of the recreational billfish and shark fisheries, May 1, 1977 - April 30, 1978, by **David C. Hamm and Beany M. Slater**. 1979, 190 p.
- SEFC-6** Observations of temperature, current, and wind variations off the central eastern coast of Florida during 1970 and 1971, by **Thomas D. Leming**. 1979, 172 p.
- SEFC-7** Biological data on pelagic fishes sampled from North Carolina charter boat landings, 1978, by **C. S. Manooch, III, and J. L. Ross**. 1979, 48 p.
- SEFC-8** Annotated bibliography and subject indices for western Atlantic snappers (Family Lutjanidae), by **Joseph E. Tashiro**. 1979.
- SEFC-9** Proceedings of the coastal zone color scanner workshop, by **Joan A. Browder and Joseph E. Powers** (editors). 1980, 61 p.
- SEFC-10** Standardized data condensation: A systematic approach to efficient fisheries and environmental information storage and retrieval, by **Larry L. Massey and John E. Hollingsworth**. 1980, 8 p.
- SEFC-11** Chemical and nutritional composition of finfishes, whales, crustaceans, mollusks, and their products, by **Virginia D. Sidwell**. 1980, 432 p.
- SEFC-12** Results of a king mackerel (*Scomberomorus cavalla*) and Atlantic Spanish mackerel (*Scomberomorus maculatus*) migration study, 1975-79, by **Doyle F. Sutherland and William A. Fable, Jr.** 1980, 12 p.
- SEFC-13** Evaluation of a quarterwave stub antenna for Tiros satellite application, by **Lawrence B. Stogner**. 1980, 42 p.
- SEFC-14** A summarization and discussion of age and growth of spot, *Leiostomus xanthurus* Lacepede, sand seatrout, *Cynoscion areharius* Ginsburg, and silver seatrout, *Cynoscion nothus* (Holbrook), based on a literature review, by **Lyman E. Barger and Mark L. Williams**. 1980, 15 p.
- SEFC-15** Comparison of ecological and life history information on gobiid fishes, with emphasis on the southeastern United States, by **George H. Darcy**. 1980, 53 p.
- SEFC-16** A directory of fishery data collection activities conducted by the Statistical Surveys Division in the southeast region of the United States, by **Herbert F. Prytherch**. 1980, 91 p.
- SEFC-17** Everything you always wanted to know about MSY and OY (but were afraid to ask), by **J. R. Zuboy and A. C. Jones**. 1980, 19 p.
- SEFC-18** Consumer risk simulation model users guide, by **Karen Bolton, Stephen Bingham, and Peter Eldridge**. 1980.
- SEFC-19** The Delphi Technique: A potential methodology for evaluating recreational fisheries, by **James R. Zuboy**. 1980, 19 p.
- SEFC-20** Commercial brown, white, and pink shrimp tail size: total size conversions, by **Susan L. Brunenmeister**. 1980, 7 p.
- SEFC-21** Assessment of the Florida stone crab fishery, by **James R. Zuboy and J. Ernest Snell**. 1980, 29 p.
- SEFC-22** An evaluation of marks on hardparts for age determination of Atlantic croaker, spot, sand seatrout, and silver seatrout, by **Lyman E. Barger and Allyn G. Johnson**. 1980, 5 p.
- SEFC-23** Big game fishing in the northern Gulf of Mexico during 1979, by **Paul J. Pristas**. 1980, 6 p.
- SEFC-24** Sea turtle necropsy manual, by **R. E. Wolke and A. George**. 1981, 20 p.
- SEFC-25** Biological/chemical survey of Texoma and Capline Sector salt dome brine disposal sites off Louisiana, 1978-79, Vol. I - Benthos, by **R. H. Parker, A. L. Crowe, and L. S. Bohme**. 1980, 103 p.
- SEFC-26** Biological/chemical survey of Texoma and Capline Sector salt dome brine disposal sites off Louisiana, 1978-79, Vol. II - Zooplankton, by **L. A. Reitsema**. 1980, 133 p.
- SEFC-27** Biological/chemical survey of Texoma and Capline Sector salt dome brine disposal sites off Louisiana, 1978-1979, Vol. III - Bacteria, by **J. R. Schwartz, S. K. Alexander, S. J. Schropp, and V. L. Carpenter**. 1980, 48 p.
- SEFC-28** Biological/chemical survey of Texoma and Capline Sector salt dome brine disposal sites off Louisiana, 1978-1979, Vol. IV - Demersal fin fishes and macro-crustaceans, by **A. M. Landry, Jr. and H. W. Armstrong**. 1980, 180 p.
- SEFC-29** Biological/chemical survey of Texoma and Capline Sector salt dome brine disposal sites off Louisiana, 1978-1979, Vol. V - Sediments, by **K. A. Hausknecht**. 1980, 56 p.
- SEFC-30** Biological/chemical survey of Texoma and Capline Sector salt dome brine disposal sites off Louisiana, 1978-1979, Vol. VI - Hydrocarbons, by **P. D. Boehm and D. L. Fiest**. 1980, 138 p.
- SEFC-31** Biological/chemical survey of Texoma and Capline Sector salt dome brine disposal sites off Louisiana, 1978-1979, Vol. VII - Trace metals, by **J. Tillery**. 1980, 72 p.
- SEFC-32** Biological/chemical survey of Texoma and Capline Sector salt dome brine disposal sites off Louisiana, 1978-1979, Vol. VIII - Inorganic nutrients, by **J. M. Brooks**. 1980, 31 p.
- SEFC-33** Biological/chemical survey of Texoma and Capline Sector salt dome brine disposal sites off Louisiana, 1978-1979, Vol. IX - Shrimp data analysis, by **F. J. Margraf**. 1980, 293 p.
- SEFC-34** Planktonic processes affecting establishment and maintenance of reef fish stocks, by **William J. Richards**. 1980, 13 p.
- SEFC-35** Environmental assessment of Buccaneer gas and oil field in the northwestern Gulf of Mexico 1978-1979. Volume I - Synopsis/data management, by **K. Savastano and H. Holley**. 1980, 72 p.
- SEFC-36** Environmental assessment of Buccaneer gas and oil field in the northwestern Gulf of Mexico 1978-1979. Volume II - Sediments and particulates, by **J. Brooks, E. Estes, and W. Huang**. 1980, 261 p.
- SEFC-37** Environmental assessment of Buccaneer gas and oil field in the northwestern Gulf of Mexico 1978-1979. Volume III - Fishes and macrocrustaceans, by **B. Gallaway and L. Martin**. 1980, 49 p.



- SEFC-38** Environmental assessment of Buccaneer gas and oil field in the northwestern Gulf of Mexico 1978-1979. Volume IV - Bacteria, by **R. Sizemore and K. Olsen**. 1980, 32 p.
- SEFC-39** Environmental assessment of Buccaneer gas and oil field in the northwestern Gulf of Mexico 1978-1979. Volume V - Fouling community, by **R. Howard, G. Boland, B. Gallaway, and G. Dennis**. 1980, 60 p.
- SEFC-40** Environmental assessment of Buccaneer gas and oil field in the northwestern Gulf of Mexico 1978-1979. Volume VI - Currents and hydrography, by **L. J. Danek and M. S. Tomlinson**. 1980, 33 p.
- SEFC-41** Environmental assessment of Buccaneer gas and oil field in the northwestern Gulf of Mexico 1978-1979. Volume VII - Hydrocarbons, by **B. Middleditch and D. West**. 1980, 112 p.
- SEFC-42** Environmental assessment of Buccaneer gas and oil field in the northwestern Gulf of Mexico 1978-1979 Volume VIII - Trace metals, by **J. Tillery**. 1980, 93 p.
- SEFC-43** Environmental assessment of Buccaneer gas and oil field in the northwestern Gulf of Mexico 1978-1979. Volume IX - Fate and effects modeling, by **K. Fucik and I. Show**. 1980, 105 p.
- SEFC-44** Environmental assessment of Buccaneer gas and oil field in the northwestern Gulf of Mexico 1978-1979. Volume X - Hydrodynamic modeling, by **G. Smedes, J. Calman, and J. Beebe**. 1980, 57 p.
- SEFC-45** The occurrence of life stages of some recreational marine fishes in estuaries of the Gulf of Mexico, by **E. L. Nakamura, J. R. Taylor, and I. K. Workman**. 1980, 53 p.
- SEFC-46** Catch composition, seasonality, and distribution of ichthyoplankton from R/V Onslow Bay monthly cruises in Onslow Bay and Newport River Estuary, North Carolina, 1972-74, by **J. Mayo**. 1982, 10 p.
- SEFC-47** Environmental assessment of Buccaneer Gas and Oil Field in the northwestern Gulf of Mexico, 1976-1980. NOAA/NMFS milestone report to EPA. Volume I - Sediments, particulates, volatile hydrocarbons, by **J. Brooks, E. Estes, D. Wiesenburg, C. Schwab, and H. Abdel-Reheim**. 1980, 89 p.
- SEFC-48** Environmental assessment of Buccaneer Gas and Oil Field in the northwestern Gulf of Mexico, 1976-1980. NOAA/NMFS milestone report to EPA. Volume II - Fishes and macrocrustaceans, by **B. Gallaway**. 1980, 82 p.
- SEFC-49** Environmental assessment of Buccaneer Gas and Oil Field in the northwestern Gulf of Mexico, 1976-1980. NOAA/NMFS milestone report to EPA. Volume III - Bacteria, by **R. Sizemore and K. Olsen**. 1980, 21 p.
- SEFC-50** Environmental assessment of Buccaneer Gas and Oil Field in the northwestern Gulf of Mexico, 1976-1980. NOAA/NMFS milestone report to EPA. Volume IV - Currents and hydrography, by **R. Armstrong**. 1980, 31 p.
- SEFC-51** Environmental assessment of Buccaneer Gas and Oil Field in the northwestern Gulf of Mexico, 1976-1980. NOAA/NMFS milestone report to EPA. Volume V - Hydrocarbons, biocides, and sulfur, by **B. Middleditch**. 1980, 70 p.
- SEFC-52** Environmental assessment of Buccaneer Gas and Oil Field in the northwestern Gulf of Mexico, 1976-1980. NOAA/NMFS milestone report to EPA. Volume VI - Trace metals, by **J. Tillery**. 1980, 39 p.
- SEFC-53** A fishery statistics plan for the southeastern United States, by **A. C. Jones, H. E. Gross, K. Newlin, J. R. Zuboy, L. L. Massey, P. Eldridge, and D. Tidwell**. 1980, 89 p.
- SEFC-54** The refrigerated shelflife of Spanish mackerel (*Scomberomorus maculatus*) and king mackerel (*Scomberomorus cavalla*) harvested from the southeastern United States, by **Melvin E. Waters**. 1982, 14 p.
- SEFC-55** Bioprofiles sampling manual for oceanic pelagic fishes, by **Eric D. Prince and Dennis W. Lee**. 1980, 8 p.
- SEFC-56** Temperature associated growth of white shrimp in Louisiana, by **Patricia Phares**. 1980, 16 p.
- SEFC-57** Tail length to tail weight relationships for Louisiana white shrimp in 1977, by **Patricia Phares**. 1980, 10 p.
- SEFC-58** Estimates of natural and fishing mortality for white shrimp in the Gulf of Mexico, by **Patricia Phares**. 1980, 21 p.
- SEFC-59** 1. A balanced marine aquarium. 2. The biology of marine aquarium fishes collected in Monroe County, Florida, by **Barbara J. Palko, Deb Hess, and John Stevely**. 1980, 83 p.
- SEFC-60** A report of data collected and publications resulting from the research cruises of the *Geronimo* and *Undaunted*, by **Joseph Tashiro**. 1980, 166 p.
- SEFC-61** Length-frequency distributions of recreationally caught reef fishes from Panama City, Florida, in 1978 and 1979, by **Carl Saloman and William A. Fable, Jr.** 1981, 22 p.
- SEFC-62** Size and sex ratio of king mackerel, *Scomberomorus cavalla*, in the southeastern United States, by **Lee Trent, Roy O. Williams, Ronald Taylor, Carl H. Saloman, and Charles Manooch, III**. 1981, 59 p.
- SEFC-63** Report of the workshop on the ecological interactions between shrimp and bottomfishes, April 1980, by **Peter F. Sheridan and Sammy M. Ray** (editors). 1981, 132 p.
- SEFC-64** Japanese longline fishing: Comparisons between observer data and Japanese quarterly reports for 1979 in the Atlantic and Gulf of Mexico, by **Perry A. Thompson, Jr.** 1982, 38 p.
- SEFC-65** Shrimp and redfish studies; Bryan Mound brine disposal site off Freeport, Texas, 1979-1981, Vol. I(A) - Shrimping success, (B) Shrimp catch-effort analysis, by **C. E. Comiskey and the Environmental Research and Aquaculture Division, Galveston Laboratory**. 1982, Vol. I(A): 449 p; Vol. I(B): 217 p.
- SEFC-66** Shrimp and redfish studies; Bryan Mound brine disposal site off Freeport, Texas, 1979-1981, Vol. II - Shrimp mark-release investigations, by **M. Johnson**. 1981, 110 p.
- SEFC-67** Shrimp and redfish studies; Bryan Mound brine disposal site off Freeport, Texas, 1979-1981, Vol. III - Shrimp spawning site survey, by **B. Gallaway and L. Reitsema**. 1981, 84 p.
- SEFC-68** Shrimp and redfish studies; Bryan Mound brine disposal site off Freeport, Texas, 1979-1981, Vol. IV - Interview sampling survey of shrimp catch and effort, by **M. F. Johnson**. 1981, 38 p.
- SEFC-69** Shrimp and redfish studies; Bryan Mound brine disposal site off Freeport, Texas, 1979-1981, Vol. V - (A), Brine toxicity bioassays on redfish, by **J. M. Neff, M. P. Coglianese, W. McCulloch, L. A. Reitsema, and S. Anderson**. (B), Brine avoidance/attraction bioassays on redfish, by **D. W. Owens, K. A. Jones, and D. J. Gallaway**. 1982, Vol. V(A): 82 p.; Vol. V(B): 58 p.
- SEFC-70** Shrimp and redfish studies; Bryan Mound brine disposal site off Freeport, Texas, 1979-1981, Vol. VI - Shrimp bioassays, by **N. R. Howe**. 1981, 60 p.
- SEFC-71** Construction, installation, and handling procedure for the National Marine Fisheries Service's sea turtle excluder device, by **Pascagoula Laboratory**. 1981, 14 p.

- SEFC-72** A summary of results of Louisiana white shrimp tagging experiments, 1977, by **K. N. Baxter and S. L. Hollaway**. 1981, 116 p.
- SEFC-73** Mapping of submerged vegetation using remote sensing technology, by **Kenneth J. Savastano, Kenneth H. Faller, Louis W. McFadin, and Hillman Holley**. 1981, 68 p.
- SEFC-74** Application of a computer simulation model to estimate dietary intake of cadmium from seafood by U.S. consumers, by **G. Malcolm Meaburn, Karen B. Bolton, Harry L. Seagran, Thomas Siewicki, Stephen M. Bingham, and Peter J. Eldridge**. 1981, 31 p.
- SEFC-75** Lipid oxidation in blueback herring, *Alosa aestivalis*, during frozen and superchilled ( $-2^{\circ}\text{C}$ ) storage; effect of TBHQ antioxidant, by **Malcolm B. Hale, Jeanne D. Joseph, and Gloria T. Seaborn**. 1981, 17 p.
- SEFC-76** Electrophoretic patterns of proteins in Spanish mackerel (*Scomberomorus maculatus*), by **Allyn G. Johnson**. 1981, 11 p.
- SEFC-77** Big game fishing in the northern Gulf of Mexico during 1980, by **P. J. Pristas**. 1981, 34 p.
- SEFC-78** A summary of results of Louisiana brown shrimp tagging experiments with regard to movement and migration, 1978, by **Stephen L. Hollaway and K. Neal Baxter**. 1981, 123 p.
- SEFC-79** Assessment of the Florida stone crab fishery 1980-81 season, by **James R. Zuboy and J. Ernest Snell**. 1982, 21 p.
- SEFC-80** The biological bases for reef fishery management - Proceedings of a workshop, by **Gene R. Huntsman, William R. Nicholson, and William W. Fox, Jr.** 1982, 216 p.
- SEFC-81** Sea surface area by fishing zones off the coast of north-eastern South America, by **Joseph E. Tashiro**. 1981, 11 p.
- SEFC-82** Guide to sea turtle visceral anatomy, by **William E. Rainey**. 1981, 82 p.
- SEFC-83** Selenium levels in yellowfin tuna (*Thunnus albacares*) and sharks from the Carolinas, by **Sylvia A. Braddon and Charles R. Sumpter**. 1981, 10 p.
- SEFC-84** A report on the economic data bases for the coastal migratory pelagic resource (mackerel) management units, by **John Ward and John Poffenberger**. 1981, 42 p.
- SEFC-85** Oceanic gamefish investigations: 1978, 1979, and 1980, by **Allyn Monty Lopez**. 1981, 23 p.
- SEFC-86** Bureau of Commercial Fisheries economic working papers series annotated bibliography, by **John M. Ward**. 1982, 37 p.
- SEFC-87** The occurrence of *Penaeus* spp. in the stomachs of trawl-caught fishes from the northwestern Gulf of Mexico, 1981, by **Mischelle Creel and Regina Divita**. 1982, 22 p.
- SEFC-88** A report on the available economic data for the invertebrate fisheries (except shrimp), by **John Ward**. 1982, 6 p.
- SEFC-89** A summary of 1979 Louisiana penaeid shrimp tagging experiments, with regard to movement and migration, by **S. L. Hollaway and L. F. Sullivan**. 1982, 104 p.
- SEFC-90** Big game fishing in the northern Gulf of Mexico during 1981, by **Paul J. Pristas**. 1982, 34 p.
- SEFC-91** Surveys of sea turtle populations and habitats in the western Atlantic, by **Archie Carr, Anne Meylan, Jeanne Mortimer, Karen Bjorndal, and Thomas Carr**. 1982, 82 p.
- SEFC-92** Holding southeast groundfish (croaker, spot, and weakfish) in experimental refrigerated and chilled sea water systems, by **Robert C. Ernst, Jr.** 1982, 35 p.
- SEFC-93** Radiologic evaluation of the differential absorption of diatrizoate in marine turtles, by **Garey L. McLellan and Jorge K. Leong**. 1982, 15 p.
- SEFC-94** Seasonal abundance, size distribution and spawning of three shrimps (*Penaeus aztecus*, *P. setiferus* and *P. duorarum*) in the northwestern Gulf of Mexico, 1961-62, by **William C. Renfro and Harold A. Brusher**. 1982, 24 p.
- SEFC-95** Preliminary studies in lipid oxidation, by **Jeanne D. Joseph and Gloria Seaborn**. 1982, 92 p.
- SEFC-96** A graphical atlas of cumulative monthly catches, cumulative monthly ex-vessel value of catches, and average monthly ex-vessel price per pound for brown shrimp from the Texas coast, Mississippi River to Texas, and Pensacola to the Mississippi River, for calendar years 1960 through 1981, by **Charles Wax Caillouet, Jr. and Dennis Brian Koi**. 1982, 79 p.
- SEFC-97** Short-term mortality of tagged shrimp during field tagging experiments, by **Brian Holt**. 1982, 10 p.
- SEFC-98** Interim report of the workshop on the scientific basis for the management of penaeid shrimp, by **B. Rothschild and J. A. Gulland** (conveners). 1982, 66 p.
- SEFC-99** Economic status of the offshore shrimp fishery in the Gulf of Mexico, by **John R. Poffenberger**. 1982, 18 p.
- SEFC-100** A report on the available economic data for the shrimp fisheries in the southeastern United States, by **John R. Poffenberger**. 1982, 19 p.
- SEFC-101** An analysis of fishery economic data relating to commercial mackerel fisheries, by **John R. Poffenberger**. 1982, 35 p.
- SEFC-102** Engineering and economics of RSW and CSW systems for semi-tropical waters, including an annotated bibliography, by **Robert C. Ernst, Jr. and John W. Brown**. 1982, 64 p.
- SEFC-103** Bioprofiles sampling manual for oceanic pelagic fishes, 1982-83, by **Eric D. Prince and Dennis W. Lee**. 1982, 8 p.
- SEFC-104** Three reports concerning the Tortugas sanctuary studies, 1981-1982: Report 1. The Tortugas Sanctuary Study, May 1981-February 1982; Report 2. A preliminary analysis of pink shrimp (*Penaeus duorarum*) size and abundance during the Tortugas shrimp sanctuary study, September 1981-February 1982; Report 3. A synopsis of the Tortugas pink shrimp fishery, 1960-1981, and the impact of the Tortugas sanctuary, by **E. F. Klima, T. Costello, T. W. Roberts, G. A. Matthews, and F. J. Patella**. 1982, 196 p.
- SEFC-105** Identification of suspect sea turtle meat samples and determination of species: A law enforcement problem, by **Sylvia Braddon, Brian B. Caffrey, and Jeffrey R. Pike**. 1982, 12 p.
- SEFC-106** Oceanic gamefish investigations: Statistical results of billfish data, collected 1972-81, by **Allyn Monty Lopez**. 1982, 28 p.
- SEFC-107** Corrected SeaSat - A scatterometer wind data for the Gulf of Mexico region, September 1978, by **John T. Brucks, Thomas D. Leming, Samuel Burkett, Jr., S. Peteherych, P. M. Woiceshyn, and M. G. Wurtele**. 1982, 541 p.
- SEFC-108** Review of the 1982 Texas closure for the shrimp fishery off Texas and Louisiana, by **Edward F. Klima, K. Neal Baxter, Frank J. Patella, and Geoffrey A. Matthews**. 1983, 21 p.
- SEFC-109** Abundance and size distributions of *Penaeus* spp. shrimps in the northern and northwestern Gulf of Mexico during the 1982 closure period, by **Geoffrey A. Matthews**. 1982, 17 p.

- SEFC-110** Impacts of 1981 and 1982 Texas closure on brown shrimp yields, by **Scott Nichols**. 1983, 20 p.
- SEFC-111** Estimated impacts of Texas closure regulation on ex-vessel prices and value, 1981-1982, by **John Poffenberger**. 1982, 34 p.
- SEFC-112** Movement and surfacing behavior patterns of loggerhead sea turtles in and near Canaveral Channel, Florida (September and October 1981), by **Andrew J. Kemmerer, Robert E. Timko, and Samuel B. Burkett**. 1983, 43 p.
- SEFC-113** An annotated list of selected references on age and growth studies of bluefin tuna *Thunnus* spp., by **Dennis W. Lee, Eric D. Prince, and Walter C. Mann**. 1983, 29 p.
- SEFC-114** A survey of brown shrimp resources in the northwestern Gulf of Mexico, by **R. A. Neal, H. Brusher, and L. F. Sullivan**. 1983, 30 p.
- SEFC-115** Reef fish distributions off North Carolina and South Carolina as revealed by headboat catches, by **Patricia Tester, Cynthia Wolfe, Robert Dixon, and Gene R. Huntsman**. 1983, 12 p.
- SEFC-116** Size composition of monthly catches of brown shrimp from the Texas coast, Mississippi River to Texas and Pensacola to the Mississippi River, 1960-81, by **C. W. Caillouet, Jr. and D. Koi**. 1983, 73 p.
- SEFC-117** Synopsis of data on the impact of habitat alteration on sea turtles around the southeastern United States, by **Linda Coston-Clements and Donald E. Hoss**. 1983, 57 p.
- SEFC-118** Shrimp vessel activity relative to the Texas closure, 1981 and 1982, by **Joan Browder**. 1983, 10 p.
- SEFC-119** Selectivity of gill nets on Spanish mackerel, *Scomberomorus maculatus*, king mackerel, *S. cavalla*, and bluefish, *Pomatomus saltatrix*, by **Lee Trent, Carl H. Saloman, and Steven P. Naughton**. 1983, 28 p.
- SEFC-120** Mobility patterns and characteristics of shrimp vessels fishing off Texas, 1981, by **Carolyn M. Fonyo, Joan A. Browder, and Susan L. Brunenmeister**. 1983, 37 p.
- SEFC-121** Shellfish associated gastroenteritis: a case study on the impact of the hard clam associated outbreaks in New York State, May to Sept. 1982, by **John W. Brown and W. Davis Folson**. 1983, 44 p.
- SEFC-122** A descriptive survey of the bottom longline fishery in the Gulf of Mexico, by **Herbert F. Prytherch**. 1983, 33 p.
- SEFC-123** Metabolism of benzo(a)pyrene by fish liver microsomes: Literature review and preliminary studies, by **Gary P. Richards, Daniel Goldmintz, and John A. Wells**. 1983, 18 p.
- SEFC-124** Food and gastrointestinal parasites of dolphin, *Coryphaena hippurus*, collected along the southeastern and gulf coasts of the United States, by **C. S. Manooch, III, D. L. Mason, and R. S. Nelson**. 1983, 36 p.
- SEFC-125** Japanese longline fishing: Comparisons between 1980 observer and Japanese report data and between 1979 and 1980 fishing activity and catch rates for the Atlantic and Gulf of Mexico, by **Gladys B. Reese**. 1983, 82 p.
- SEFC-126** Food of the king mackerel, *Scomberomorus cavalla*, from the southeastern United States, including the Gulf of Mexico, by **C. Saloman and S. Naughton**. 1983, 25 p.
- SEFC-127** Report of the Southeast Fisheries Center stock assessment workshop, by **Joseph E. Powers** (editor). 1983, 229 p.
- SEFC-128** Food of Spanish mackerel, *Scomberomorus maculatus*, from the Gulf of Mexico and the southeastern seaboard of the United States, by **C. Saloman and S. Naughton**. 1983, 22 p.
- SEFC-129** Catch and effort data from a pilot survey of charter-boat captains in the southeastern United States, 1982, by **Mark L. Williams, Harold A. Brusher, and Lee Trent**. 1984, 25 p.
- SEFC-130** Station and catch data, FRS *Oregon II* cruise 85, January 1978 (west Florida shelf), by **George H. Darcy and Elmer J. Gutherz**. 1984, 149 p.
- SEFC-131** Orientation characteristics of immature Kemp's ridley sea turtles, *Lepidochelys kempi*, by **Thane R. Wibbels**. 1984, 67 p.
- SEFC-132** An evaluation of hard parts for age determination of pompano (*Trachinotus carolinus*), ladyfish (*Elops saurus*), crevalle jack (*Caranx hippos*), gulf flounder (*Paralichthys albigutta*), and southern flounder (*Paralichthys lethostigma*), by **Barbara Jayne Palko**. 1984, 11 p.
- SEFC-133** Beach restoration with offshore dredged sand: Effects on nearshore macroinfauna, by **Carl H. Saloman and Steven P. Naughton**. 1984, 20 p.
- SEFC-134** Food of crevalle jack (*Caranx hippos*) from Florida, Louisiana, and Texas, by **Carl H. Saloman and Steven P. Naughton**. 1984, 34 p.
- SEFC-135** Executive summary of the 1983 Texas closure, by **Albert C. Jones and Edward F. Klima**. 1984, 14 p.
- SEFC-136** Review of the 1983 Texas closure for the shrimp fishery off Texas and Louisiana, by **Edward F. Klima, K. Neal Baxter, Frank J. Patella, Geoffrey A. Matthews**. 1984, 28 p.
- SEFC-137** Abundance and associations of epibenthic crustacea in the western Gulf of Mexico, by **R. T. Christian and L. James Lester**. 1984, 17 p.
- SEFC-138** Catches of king mackerel and cero in the Spanish mackerel gill-net fishery, by **William A. Fable, Jr. and Lee Trent**. 1984, 12 p.
- SEFC-139** Catch and effort data from a sample survey of charter-boat captains in the southeastern United States, 1983, by **Mark L. Williams, Harold A. Brusher, Barbara J. Palko, and Lee Trent**. 1984, 170 p.
- SEFC-140** A user's guide to the inshore shrimp and hydrographic data collected by the Texas Parks and Wildlife Department from 1963 through 1980, by **Geoffrey A. Matthews, Dennis B. Koi, and Richard L. Benefield**. 1984, 74 p.
- SEFC-141** Impacts of the combined closures of the Texas territorial sea and FCZ on brown shrimp yields, by **Scott Nichols**. 1984, 7 p.
- SEFC-142** Impacts on the 1982 and 1983 closure of the Texas FCZ and brown shrimp yields, by **Scott Nichols**. 1984, 15 p.
- SEFC-143** Comparative tissue distribution of cadmium in mice dosed with partially purified extracts of oyster, by **Thomas Siewicki, Frances M. Van Dolah, and Jane S. Sydlowski**. 1984, 12 p.
- SEFC-144** SEAMAP 1982 - Ichthyoplankton larval distribution and abundance of Engraulidae, Carangidae, Clupeidae, Lutjanidae, Serranidae Coryphaenidae, Istiophoridae, Xiphiidae and Scombridae in the Gulf of Mexico, by **William J. Richards, Thomas Potthoff, Sharon Kelley, Michael McGowan, Leonard Ejsymont and James Powers**. 1984, 4 p.
- SEFC-145** Growth and movements of captive-reared Kemp's ridley sea turtles, *Lepidochelys kempi*, following their release in the Gulf of Mexico, by **J. P. McVey and T. Wibbels**. 1984, 25 p.
- SEFC-146** Application of a truncated Poisson model to seafood consumption frequencies, by **L. Ng**. 1984, 23 p.

- SEFC-147** Bibliographies of the National Marine Fisheries Service's assessments of impacts of the Buccaneer Gas and Oil field and of brine disposal from salt domes of the strategic petroleum reserve, by **C. W. Caillouet, Jr.** 1984, 35 p.
- SEFC-148** Estimated impacts of Texas Closure regulation on ex-vessel prices and value, 1982 and 1983, by **J. R. Poffenberger.** 1984, 21 p.
- SEFC-149** Relative abundance and size distributions of *Penaeus* shrimps based on samples collected during the 1983 SEAMAP-Texas closure survey in the north and northwestern Gulf of Mexico, by **G. A. Matthews.** 1984, 18 p.
- SEFC-150** Food of bluefish (*Pomatomus saltatrix*) from the U.S. south Atlantic and Gulf of Mexico, by **S. P. Naughton and C. H. Saloman.** 1984, 37 p.
- SEFC-151** Graphics—an anthology of programs, by **L. Ng.** 1984, 125 p.
- SEFC-152** The Kemp's ridley sea turtle head start research project: An annual report for fiscal year 1984, by **C. T. Fontaine and C. W. Caillouet, Jr.** 1985, 13 p.
- SEFC-153** Generalized geographic mapping system for computer graphics, by **D. B. Koi.** 1985, 39 p.
- SEFC-154** Report of the second Southeast Fisheries Center stock assessment workshop, by **J. E. Powers.** 1985.
- SEFC-155** (Not yet published)
- SEFC-156** Review of the 1984 Texas closure for the shrimp fishery off Texas and Louisiana, by **E. F. Klima, K. N. Baxter, and F. J. Patella.** 1985, 33 p.
- SEFC-157** Catch and effort data from a sample survey of charter-boat captains in the southeastern United States, 1984, by **M. L. Williams, H. A. Brusher, B. J. Palko, and L. Trent.** 1985, 120 p.
- SEFC-158** The husbandry of hatchling to yearling Kemp's ridley sea turtles (*Lepidochelys kempi*), by **C. T. Fontaine, et al.** 1985, 34 p.
- SEFC-159** A financial profile of shrimp vessels in the southeastern United States during 1982, by **J. R. Poffenberger.** 1984, 14 p.
- SEFC-160** Food of gag (*Mycteroperca microlepis*) from North Carolina and three areas of Florida, by **S. P. Naughton and C. H. Saloman.** 1985, 36 p.
- SEFC-161** Distribution, seasonal abundance, and ecology of juvenile northern pink shrimp, *Penaeus duorarum*, in the Florida Bay area, by **T. J. Costello, D. M. Allen, and J. H. Hudson.** 1985.
- SEFC-162** A comparison of forage fish communities in relation to habitat parameters in Faka Union Bay, Florida and eight collateral bays during the wet season, by **D. R. Colby, G. W. Thayer, W. F. Hettler, and D. S. Peters.** 1985, 87 p.
- SEFC-163** SEFC oceanic pelagics program 1984, by **A. R. Bertolino, et al.** 1985, 67 p.
- SEFC-164** Patterns and variability in first-year growth and weight of captive-reared Kemp's ridley sea turtle: a graphical analysis, by **C. W. Caillouet, Jr., and D. B. Koi.** 1985, 4 p.
- SEFC-165** Biological implications of the closed corridor option for the Atlantic menhaden fishery, by **D. S. Vaughan.** 1985, 14 p.
- SEFC-166** A selected bibliography on fish oils, by **P. E. Bauersfeld and L. F. Winemiller.** 1985, 59 p.
- SEFC-167** SEAMAP 1983. Ichthyoplankton, by **S. Kelly, T. Potthoff, W. J. Richards, and L. Ejsymont.** 1985.
- SEFC-168** Report of the working group on NEFC/SEFC marine mammal research, by **G. P. Scott** (editor). 1985, 27 p.
- SEFC-169** A survey of potential disease-causing organisms in bait shrimp from west Galveston Bay, Texas, by **C. T. Fontaine.** 1985, 25 p.

#### Southeast Region

9450 Koger Blvd., St. Petersburg, FL 33702

**SER-1** Report of the National Marine Fisheries Service Gulf Coastal Fisheries Center, fiscal years 1970 and 1971, by **Anonymous.** 1972, 26 p.

**SER-2** Report of the National Marine Fisheries Service Biological Laboratory, St. Petersburg Beach, fiscal years 1970 and 1971, by **James E. Sykes.** 1972, 13 p.

**SER-3** Report of the National Marine Fisheries Service Fishery Products Technology Laboratory, Pascagoula, fiscal years 1970 and 1971, by **Travis D. Love, Mary H. Thompson, and Melvin E. Waters.** 1972, 12 p.

#### Southwest Fisheries Center

P.O. Box 271, La Jolla, CA 92038

**SWFC-1** California's northern anchovy fishery: Biological and economic basis for fishery management, by **Daniel D. Huppert, Alec D. MacCall, Gary D. Stauffer, Herbert W. Frey, and Jane A. McMillan.** 1980, 121 p.

**SWFC-2** Estimates of the catch and effort by foreign tuna longliners and baitboats in the Fishery Conservation Zone of the central and western Pacific, 1965-1977, by **Marian Y. Y. Yong and Jerry A. Wetherall.** 1980, 103 p.

**SWFC-3** The mid-net zipper ridge, a possible cause of unobserved porpoise mortality, by **David B. Holts.** 1980, 4 p.

**SWFC-4** Biology and economics of the fishery for jack mackerel in the northeastern Pacific, by **Alec D. MacCall, Herbert W. Frey, Daniel D. Huppert, Eric H. Knaggs, Jane A. McMillan, and Gary D. Stauffer.** 1980, 85 p.

**SWFC-5** Summary report of the billfish stock assessment workshop—Pacific resources, by **Richard S. Shomura** (editor). 1980, 80 p.

**SWFC-6** Results of the chartered cruise of the M/V *Maria C. J.*, September 17 to November 22, 1979, by **James M. Coe and Richard W. Butler.** 1980, 28 p.

**SWFC-7** Synopsis of biological data on the green turtle in the Hawaiian Islands, by **George H. Balazs.** 1980, 102 p.

**SWFC-8** Fishing methods and equipment of the U.S. west coast albacore fleet, by **Ronald C. Dotson.** 1980.

**SWFC-9** An annotated computerized bibliography of the use of karyotypic analysis in the subspecific taxonomy of mammals, by **Gary L. Worthen.** 1981, 154 p.

**SWFC-10** Albacore trolling and longline exploration in eastern North Pacific waters during mid-winter 1981, by **R. Michael Laurs, Ronald J. Lynn, Robert Nishimoto, and Ronald Dotson.** 1981, 40 p.

**SWFC-11** Observations of albacore (*Thunnus alalunga*) fishing off California in relation to sea surface temperature isotherms as measured by an airborne infrared radiometer, by **James L. Squire, Jr.** 1981, 7 p.

- SWFC-12** Stock assessment activities within the National Marine Fisheries Service, by **Anonymous**. 1981, 130 p.
- SWFC-13** Planning double-tagging experiments, by **Jerry A. Wetherall and Marian Y. Y. Yong**. 1981, 11 p.
- SWFC-14** Histological gonad analyses of late summer-early winter collections of bigeye tuna, *Thunnus obesus*, and yellowfin tuna, *Thunnus albacares*, from the Northwest Atlantic and the Gulf of Mexico, by **Stephen R. Goldberg and Hillary Herring-Dyal**. 1981, 1 p.
- SWFC-15** Status reports on world tuna and bullfish stocks, by **Anonymous**. 1981, 300 p.
- SWFC-16** An evaluation of tagging, marking, and tattooing techniques for small delphinids, by **Merrill J. White, Jr., Jacqueline G. Jennings, Walter F. Gandy, and Lanny H. Cornell**. 1981, 142 p.
- SWFC-17** Local stability and maximum net productivity levels for a simple model of porpoise population sizes, by **Tom Polacheck**. 1981, 14 p.
- SWFC-18** Computer program documentation, EDMAP 2, environmental data mapping program, version 2, by **Larry E. Eber**. 1982, 55 p.
- SWFC-19** The relationship between changes in gross reproductive rate and the current rate of increase for some simple age structured models, by **Tom Polacheck**. 1982, 10 p.
- SWFC-20** Testing methods of estimating range and bearing to cetaceans aboard the R/V *D. S. Jordan*, by **Tim D. Smith**. 1982, 30 p.
- SWFC-21** An annotated bibliography of the ecology of co-occurring tunas (*Katsuwonus pelamis*, *Thunnus albacares*) and dolphins (*Stenella attenuata*, *Stenella longirostris*, and *Delphinus delphis*) in the eastern tropical Pacific, by **Sandra D. Hawes**. 1982, 29 p.
- SWFC-22** Structured flotsam as fish aggregating devices, by **Richard S. Shomura and Walter M. Matsumoto**. 1982, 8 p.
- SWFC-23** Abundance estimation of dolphin stocks involved in the eastern tropical Pacific yellowfin tuna fishery determined from aerial and ship surveys to 1979, by **Rennie S. Holt and Joseph E. Powers**. 1982, 104 p.
- SWFC-24** Revised update and retrieval system for the CalCOFI oceanographic data file, by **L. E. Eber and Nancy Wiley**. 1982, 33 p.
- SWFC-25** A preliminary study of dolphin release procedures using model purse seines, by **David B. Holts and James M. Coe**. 1982, 23 p.
- SWFC-26** Possible effects of sampling biases on reproductive rate estimates for porpoise in the eastern tropical Pacific, by **Tom Polacheck**. 1983, 27 p.
- SWFC-27** Report of porpoise experiment testing detection of on-track schools (PET DOTs), March 7 - April 5, 1981, by **Rennie S. Holt**. 1983, 82 p.
- SWFC-28** Two computer programs to project populations with time-varying vital rates, by **Tim Gerrodette, Daniel Goodman, and Jay Barlow**. 1983, 56 p.
- SWFC-29** Report of eastern tropical Pacific research vessel marine mammal survey, May 15-August 3, 1982, by **Rennie S. Holt**. 1983, 159 p.
- SWFC-30** Estimating age of spotted and spinner dolphins (*Stenella attenuata* and *Stenella longirostris*) from teeth, by **Albert C. Myrick, Jr., Aleta A. Hohn, Priscilla A. Sloan, Makota Kimura, and Drew D. Stanley**. 1983, 21 p.
- SWFC-31** Re-estimation of three parameters associated with anchovy egg larval abundance: Temperature dependent incubation time, yolk-sac growth rate and egg and larval retention in mesh nets, by **Nancy C. H. Lo**. 1983, 32 p.
- SWFC-32** NMFS guidelines on economic valuation of marine recreational fishing, by **Daniel D. Huppert**. 1983, 33 p.
- SWFC-33** Summary of environmental and fishing information on Guam and the Northern Mariana Islands: A review of the plankton communities and fishery resources of Guam and the Commonwealth of the Northern Mariana Islands, by **Richard R. N. Uchida**. 1983, 111 p.
- SWFC-34** Some data on dolphin mortalities in the eastern tropical Pacific tuna purse seine fishery prior to 1970, by **Tim D. Smith and Nancy C. H. Lo**. 1983, 30 p.
- SWFC-35** Precision of age determination of northern offshore spotted dolphins, by **Stephen Reilly, Aleta A. Hohn, and Albert C. Myrick, Jr.** 1983, 31 p.
- SWFC-36** Recovery of adult green turtles observed or originally tagged at French Frigate Shoals, northwestern Hawaiian Islands, by **George Balazs**. 1983, 10 p.
- SWFC-37** Report of the workshop on long-range planning for the North Pacific albacore fishery, by **David J. Mackett** (editor). 1983, 53 p.
- SWFC-38** Distribution of four dolphins (*Stenella* spp. and *Delphinus delphis*) in the eastern tropical Pacific, with an annotated catalog of data sources, by **W. F. Perrin, M. D. Scott, G. J. Walker, F. M. Ralston, and D. W. K. Au**. 1983, 65 p.
- SWFC-39** Annotated references to techniques capable of assessing the roles of cephalopods in the eastern tropical Pacific Ocean, with emphasis on pelagic squids, by **John B. Hedgepeth**. 1983, 81 p.
- SWFC-40** Summary of environmental and fishing information on Guam and the Commonwealth of the northern Mariana Islands: Historical background, description of the islands, and review of the climate, oceanography, and submarine topography, by **L. G. Eldredge**. 1983, 50 p.
- SWFC-41** Diving patterns of the Hawaiian monk seal, Lisianski Island, 1982, by **Fredrick V. Schlexer**. 1984, 4 p.
- SWFC-42** The Hawaiian monk seal of Laysan Island: 1982, by **Doris J. Alcorn**. 1984, 27 p.
- SWFC-43** Atlas of airborne sea surface temperature observations in nearshore California waters, 1980-1983. With a note pertaining to El Niño of 1982-83, by **Paul N. Sund**. 1984, 6 p.
- SWFC-44** Potential impact of deep seabed mining on the larvae of tunas and billfishes, by **Walter M. Matsumoto**. 1984, 70 p.
- SWFC-45** Sampling commercial rockfish landings in California, by **A. R. Sen**. 1984, 95 p.
- SWFC-46** Histopathological manual for monitoring health of striped bass in relation to pollutant burdens, by **Jeanette A. Whipple, Marvin Jung, R. Bruce MacFarlane, and Rahel Fischer**. 1984, 81 p.
- SWFC-47** Hawaiian monk seal population research, Lisianski Island, 1982, by **H. Sheridan Stone**. 1984, 33 p.
- SWFC-48** Interpreting spotted dolphin age distributions, by **Jay Barlow and Aleta A. Hohn**. 1984, 22 p. NTIS Access No. PB85-174555/AS.
- SWFC-49** Observations of the Hawaiian monk seal on Laysan Island from 1977 through 1980, by **Brian W. Johnson and Patricia A. Johnson**. 1984, 79 p.

- SWFC-50** Hawaiian monk seal observations on French Frigate Shoals, 1980, by **Patricia A. Johnson and Brian W. Johnson**. 1984, 49 p.
- SWFC-51** Estimating dolphin juvenile survival rates from the proportion of calves nursing, by **Tom Polacheck**. 1984, 14 p. NTIS Access. No. PB85-174563/AS.
- SWFC-52** Operational plan for NMFS Albacore Program, by **Richard H. Parrish, N. Bartoo, P. Donely, S. Herrick, P. Kleiber, R. M. Laurs, R. McInnis, and J. Wetherall**. 1985, 31 p. NTIS Access. No. PB85-217933/AS.
- SWFC-53** Albacore fishing and windspeed, by **Paul N. Sund**. 1985, 11 p.
- SWFC-54** Proceedings of the workshop on the fate and impact of marine debris, 27-29 November 1984, Honolulu, Hawaii, by **Richard S. Shomura and Howard O. Yoshida** (editors). 1985, 580 p.
- SWFC-55** The Hawaiian monk seal and green turtles on Necker Island 1983, by **Robert J. Morrow and Elizabeth K. Buelna**. 1985, 11 p.
- SWFC-56** Proportions of species of dolphins in the eastern tropical Pacific, by **J. Barlow and R. S. Holt**. 1985.
- SWFC-57** A budget simulation model for West Coast albacore troller, by **S. F. Herrick, Jr., and K. L. Carlson**. 1985.

#### Southwest Region

300 S. Ferry St., Terminal Island, CA 90731-7415

- F/SWR-OO1** An assessment of commercial fishing facilities and the potential for commercial fishing industry expansion in Santa Barbara and Ventura County harbors, by **James R. Bybee and John B. Richards**. 1979, 50 p.
- F/SWR-OO2** Survey of new U. S. commercial fishing vessels delivered to the west coast in 1979, by **Wesley Silverthorne, Brian Brown, and John Sheldon**. 1979, 15 p.
- F/SWR-OO3** A survey of Japan's import regulations on fish and shellfish products, by **Sunee C. Sonu**. 1980, 78 p.
- F/SWR-OO4** Economic status of the California groundfish fishery in 1983, by **Charles S. Korson**. 1984, 18 p.
- F/SWR-OO5** Economic status of the California salmon fishery in 1983, by **Charles S. Korson**. 1984, 19 p.
- F/SWR-OO6** Economic status of the California dungeness crab fishery in 1982-1983, by **Charles S. Korson**. 1984, 8 p.
- F/SWR-OO7** Economic status of the California pink shrimp fishery in 1983, by **Charles S. Korson**. 1984, 10 p.
- F/SWR-OO8** Economic status of the California dungeness crab fishery in 1983-1984, by **Charles S. Korson**. 1985, 8 p.
- F/SWR-OO9** Economic status of the California pink shrimp fishery in 1984, by **Charles S. Korson**. 1985, 10 p.
- F/SWR-O10** Economic status of the Washington, Oregon, and California groundfish fishery in 1984, by **Charles S. Korson and Wesley Silverthorne**. 1985, 22 p.
- F/SWR-011** Tuna handling and refrigeration on purse seiners, by **Frank D. Burns**. 1985, 135 p.
- F/SWR-012** Annotated bibliography on impacts of gillnets on non-target species, by **H. Sheridan Stone**. 1985.

## AUTHOR INDEX

---

The series are abbreviated as follows:

C *Circular*  
FB *Fishery Bulletin*  
MFR *Marine Fisheries Review*  
S *Special Scientific Report—Fisheries*  
TM *Technical Memorandum*  
TR *Technical Report*

### A

---

Aasted, Donald C.—see Matsumoto et al.  
Abbas, Leon E.—see Manooch et al.  
Abdel-Reheim, H.—see Brooks et al.  
Abe, Takemitsu—see Kanazawa et al.  
Able, K. W.—see Grimes et al.; Katz et al.; Turner et al.  
Acerra, Robin—see Shaklee et al.  
Ackert, James D.—see Rothschild et al.  
Actor, Ann T.—see Loughlin et al.  
Adams, Gary—see Spotte and Adams  
Adams, Peter B., FB 78:1; MFR 42(3-4):80  
———see Lenarz and Adams  
Agnello, Richard J., MFR 45(7-9):21  
Ahrenholz, Dean W., FB 79:325  
Ainley, David G.—see Allen et al.  
———, Anthony R. DeGange, Linda L. Jones, and Richard J. Beach, FB 79:800  
———, Harriet R. Huber, and Kevin M. Bailey, FB 80:253  
———, Craig S. Strong, Harriet R. Huber, T. James Lewis, and Stephen H. Morrell, FB 78:941  
Akiyama, Toshio—see Murai et al.  
Al-Judaimi, Manal M., A. K. Jafri, and K. A. George, FB 79:211  
Alarcon, Victor Hugo—see Goldberg et al.  
Albers, W. D., and P. J. Anderson, FB 83:601  
Albert, Thomas F., George Migaki, Harold W. Casey, and L. Michael Philo, MFR 42(9-10):92  
Alcorn, Doris J., TM SWFC-42  
Alevizon, William S.—see Colton and Alevizon; see Ebeling et al.  
Alexander, Leigh C.—see Greenstein et al.  
Alexander, S. K.—see Schwartz et al.  
Alheit, Jurgen, TR 36:59-61  
———see Goldberg et al.  
Ali, Mohammed Liaquat—see Ulanowicz et al.  
Alioshkina, L. D., A. V. Gaevskaya, and A. A. Kovaliova, TR 25:29  
Allen, D. M.—see Costello et al.  
Allen, Kevin J.—see Gorga and Allen  
Allen, Larry G., FB 80:769  
———see DeMartini et al.  
———, and Edward E. DeMartini, FB 81:569  
Allen, Sarah G., David G. Ainley, Gary W. Page, and Christine A. Ribic, FB 82:493  
Allsup, M. G.—see Licciardello et al.  
Allsup, Michael G.—see Licciardello et al.  
Almeida, F. P.—see Anderson et al.  
Alton, M. S.—see Livingston and Alton  
Alton, Miles S., TM F/NWC-10  
———see Morris et al.  
Amaral, Elizabeth H., and H. Arnold Carr, MFR 42(7-8):51  
Ambler, Julie W., FB 78:13  
Ames, Jack A.—see Loughlin et al.  
Ampola, Vincent G., MFR 42(7-8):74

Ampola, Vincent G., and Cynthia L. Keller, MFR 47(3):26  
Anderson, E. D., F. E. Lux, and F. P. Almeida, MFR 42(1):12  
Anderson, Emory D., TM F/NEC-29; TR 31:1-14  
———, and Guy D. Marchesseault, TM F/NEC-3  
Anderson, Eric E., MFR 47(2):42; TM F/NWC-90  
Anderson, J. L.—see Colton et al.  
Anderson, Jacquelyn L.—see Colton and Anderson  
Anderson, James Jay, FB 79:315  
Anderson, Lee G.—see Hennemuth et al.  
Anderson, P. J.—see Albers and Anderson  
Anderson, S.—see Neff et al.  
Andrews, Jay D., MFR 42(12):1  
Andryszak, Bryan L., and Robert H. Gore, FB 79:487  
Anger, Klaus, and Ralph R. Dawirs, FB 80:419  
Ankenbrandt, Lisa, FB 83:379  
Antoine, Loic M., Jeremy J. Mendoza, and Patrice M. Cayré, TR 8:91-97  
Antonelis, George A., Jr., Clifford H. Fiscus, and Robert L. DeLong, FB 82:67  
———, Stephen Leatherwood, and Daniel K. Odell, FB 79:562  
Appeldoorn, Richard S., FB 81:75  
Appy, Ralph G.—see MacDonald et al.  
Arai, Shigeru, C 447:3-5  
Armstrong, David A.—see Stevens and Armstrong  
Armstrong, H. W.—see Landry and Armstrong  
Armstrong, R., TM SEFC-50  
Arnold, C. R., TR 10:25-27  
———see Holt et al.  
Arnold, Connie R.—see Holt and Arnold  
Asper, Edward D.—see Odell et al.  
Athearn, James B.—see Basham et al.; Delarm et al.; Koski et al.  
Au, D., and W. Perryman, FB 80:371  
Au, D. W. K.—see Perrin et al.  
Au, David W. K., and Wayne L. Perryman, FB 83:623  
Avdeev, G. V., TR 25:79-82  
Avdeev, V. V., TR 25:89-92

### B

---

Babcock, Malin M.—see Rice et al.  
Babinchak, John A., Daniel Goldmintz, and Gary P. Richards, FB 80:884  
Baglin, Raymond E., Jr., FB 80:121  
———, Mark I. Farber, William H. Lenarz, and John M. Mason, Jr., FB 78:179  
Baglivo, Jenny A.—see Brousseau and Baglivo  
———see Brousseau et al.  
Bailey, Jack E.—see Jaenicke et al.; Rice and Bailey  
———, and William R. Heard, TM ABFL-1  
———, Stanley D. Rice, Jerome J. Pella, and Sidney G. Taylor, FB 78:649  
———, and Sidney G. Taylor, TM ABFL-3  
Bailey, K. M.—see Livingstone and Bailey  
Bailey, Kevin M., FB 80:589  
———see Ainley et al.  
———, and Robert C. Francis, MFR 47(2):8  
Baker, Daniel W., II—see Ronsivalli and Baker  
Bakkala, R.—see Umeda and Bakkala  
———, and L.-L. Low, TM F/NWC-42  
Bakkala, R. G.—see Bohle and Bakkala

- Bakkala, R. G., and L.-L. Low, TM F/NWC-53  
 ———, T. M. Sample, M. S. Bohle, J. A. June, A. M. Shimada, and Y. Umeda, TM F/NWC-30  
 ———, V. G. Wespestad, and L.-L. Low, TM F/NWC-33  
 Bakkala, Richard G.—see Grant et al.; Sample et al.; Smith and Bakkala; Wespestad et al.  
 ———, and Loh-Lee Low, TM F/NWC-83  
 ———, Jimmie J. Traynor, Kazuyuki Teshima, Allen M. Shimada, and Hirotsune Yamaguchi, TM F/NWC-87  
 Balazs, George H., TM SWFC-7; TM SWFC-36  
 ————see Dizon and Balazs  
 Ball, S. J., MFR 43(10):5  
 Balsiger, J. W.—see Ito and Balsiger  
 Balsiger, James W., Daniel H. Ito, Daniel K. Kimura, David A. Somerton, and Joseph M. Terry, TM F/NWC-72  
 Banas, P. T., D. E. Smith, and D. C. Biggs, FB 80:648  
 Barak, J. E.—see Boehm and Barak  
 Barans, C. A.—see Powles and Barans  
 Barans, Charles A.—see Manooch and Barans  
 Bard, F. X.—see Compean-Jimenez and Bard  
 Barger, Lyman E.—see Johnson et al.  
 ———, and Allyn G. Johnson, TM SEFC-22  
 ———, and Mark L. Williams, TM SEFC-14  
 Barker, 2Lt. John V.—see Basham et al.  
 Barker, Lt. John V.—see Delarm et al.  
 Barker, Morris W.—see Mathews and Barker  
 Barker, Seth L., David W. Townsend, and John S. Hacunda, FB 79:198  
 Barlow, J., and R. S. Holt, TM SWFC-56  
 Barlow, Jay, FB 83:657  
 ————see Gerrodette et al.  
 ———, and Aleta A. Hohn, TM SWFC-48  
 Barnes, A.—see Lester et al.  
 Barnett, Arthur M., Andrew E. Jahn, Peter D. Sertic, and William Watson, FB 82:97  
 Barnett, Harold J.—see Conrad et al.; Nelson et al.; Patashnik et al.; Stone et al.  
 ———, Frederick E. Stone, Glenn C. Roberts, Patrick J. Hunter, Richard W. Nelson, and Josephine Kwok, MFR 44(3):7  
 Barss, W. H.—see Boehlert et al.  
 Barss, William H.—see Golden et al.  
 Bartoo, N.—see Parrish et al.  
 Bartoo, Norman W., and Keith R. Parker, FB 81:91; TR 8:25-27  
 Basham, Larry R.—see Delarm et al.; Slatick and Basham  
 ———, Michael R. Delarm, James B. Athearn, and Stephen W. Pettit, TM F/NWR-2  
 ———, ———, Stephen W. Pettit, James B. Athearn, and 2Lt. John V. Barker, TM F/NWR-5  
 Bath, D. W., and J. M. O'Connor, FB 80:599  
 Baucom, Joe—see Odell et al.  
 Bauer, O. N., and Yu. I. Polianski, TR 25:5-6  
 Bauer, R. A.—see Evans et al.  
 Bauersfeld, P. E., and L. F. Winemiller, TM SEFC-166  
 Baxter, K. N.—see Klima et al.  
 ———, and S. L. Hollaway, TM SEFC-72  
 Baxter, K. Neal—see Hollaway and Baxter; Klima et al.  
 Baxter, Kenneth N.—see Klima et al.  
 Beach, Douglas W.—see Higgins et al.  
 Beach, Richard J.—see Ainley et al.  
 Beacham, Terry D., FB 81:303  
 ———, and Paul Starr, FB 80:813  
 Beal, Brian F.—see Peterson et al.  
 Beamish, Richard J.—see McFarlane and Beamish  
 ———, and Gordon A. McFarlane, MFR 47(2):75; TR 8:29-33  
 Beardsley, G. L.—see Palko et al.  
 Beardsley, Grant L., FB 78:805  
 ————see Palko et al.  
 ———, and Ramon J. Conser, FB 79:49  
 Beebe, J.—see Smedes et al.  
 Beezhold, F. Lee—see Stout and Beezhold; Stout et al.  
 Behrens, William J.—see McHugh et al.  
 Benefield, Richard L.—see Matthews et al.  
 Benirschke, K., Mary L. Johnson, and Rolf J. Benirschke, FB 78:507  
 Benirschke, Rolf J.—see Benirschke et al.  
 Bergey, Anne—see Shimek et al.  
 Berkeley, Steven A., and Edward D. Houde, TR 8:137-143  
 Berman, Carl R., Jr.—see Pearce et al.  
 Bermingham, E. L.—see McFarland et al.  
 Berrien, Peter, Wallace Morse, and Michael Pennington, TM F/NEC-30  
 Bertolino, A. R., TM SEFC-163  
 Bibb, Brenda Goldberg, Ronald L. Hersey, and Rocco A. Marcello, Jr., S 775:15-22; S 775:63-64  
 Biggs, D. C.—see Banas et al.  
 Bingham, Stephen M.—see Bolton et al.; Meaburn et al.  
 Bird, Patricia M., FB 79:376  
 Bishop, James M., James G. Gosselink, and James H. Stone, FB 78:741  
 Bjorndal, Karen—see Carr et al.  
 Blackburn, Maurice, and D. L. Serventy, FB 79:85  
 Blahm, Theodore H.—see Durkin et al.  
 Blaxter, J. H. S.—see Colby et al.  
 Blaylock, J. W.—see Pearson et al.  
 Blazer, V. S.—see Wolke et al.  
 Bledsoe, L. J.—see Knechtel and Bledsoe  
 Bledsoe, Lewis J.—see Knechtel and Bledsoe  
 Blomo, Vito, MFR 43(7):20  
 Blott, Alan J., MFR 42(7-8):57  
 Blum, F.—see Low et al.  
 Bockstoce, John, MFR 42(9-10):20  
 ————see Fraker and Bockstoce; Marquette and Bockstoce  
 Boehlert, George W., FB 79:789; FB 83:103; MFR 42(3-4):57  
 ———, W. H. Barss, and P. B. Lamberson, FB 80:881  
 ———, Dena M. Gadomski, and Bruce C. Mundy, FB 83:611  
 ———, and Mary M. Yoklavich, FB 83:475  
 Boehm, P. D., and J. E. Barak, S 751:13-15  
 ———, and D. L. Fiest, TM SEFC-30  
 Boehm, Paul D., and Pam Hirtzer, TM F/NEC-13  
 Bogar, Richard G.—see MacLeod et al.  
 Bohle, M. S.—see Bakkala et al.  
 ———, and R. G. Bakkala, TM F/NWC-55  
 Bohme, L. S.—see Parker et al.  
 Boland, G.—see Howard et al.  
 Bolton, Karen B.—see Meaburn et al.  
 ———, Stephen M. Bingham, and Peter J. Eldridge, TM SEFC-18  
 Bolz, George R.—see Lough et al.  
 ———, and R. Gregory Lough, FB 81:827  
 Bond, Carl E., Ting T. Kan, and Katherine W. Myers, FB 81:165  
 Borden, David V. D.—see Fogarty et al.  
 Borderías, A. J., J. Jiménez-Colmenero, and M. Tejada, MFR 47(4):43  
 Borgatti, Mando—see Lawton et al.  
 Bosworth, Weldon S.—see Grabe et al.



- Botsford, Louis W., Richard D. Methot, Jr., and James E. Wilen, FB 80:791
- Botton, Mark L., and Harold H. Haskin, FB 82:383
- Bowen, R.—see Lake et al.
- Bowering, W. R., FB 81:599
- Bowers, Michael J.—see Eldridge et al.
- Bowman, R. E.—see Durbin et al.
- Bowman, Ray E., FB 79:200; FB 82:21  
 —see Langton and Bowman  
 —, and William L. Michaels, TM F/NEC-28
- Boyd, S. H.—see Wiebe et al.
- Boynton, Walter R.—see Setzler et al.
- Bozeman, Earl L.—see Helfman et al.
- Braddon, Sylvia, Brian B. Caffrey, and Jeffrey R. Pike, TM SEFC-105  
 —, and Charles R. Sumpter, TM SEFC-83
- Brady, Phillips—see Lawton et al.
- Braham, H. W., TM F/NWC-36; TM F/NWC-46
- Braham, Howard W., MFR 46(4):2, 45; TM F/NWC-58  
 —see Dahlheim et al.; Morris et al.; Rice et al.  
 —, John J. Burns, Gennadii A. Fedoseev, and Bruce D. Krogman, TR 12:25-47  
 —, Floyd E. Durham, Gordon H. Jarrell, and Stephen Leatherwood, MFR 42(9-10):70  
 —, Mark A. Fraker, and Bruce D. Krogman, MFR 42(9-10):36  
 —, Bruce D. Krogman, and Geoffrey M. Carroll, S 778  
 —, and Dale W. Rice, MFR 46(4):38
- Branstetter, Steven, and Robert L. Shipp, FB 78:177
- Bray, Richard N., FB 78:829  
 —see Ebeling et al.
- Bray, Teresa—see Dahlheim et al.
- Brege, Dean A., FB 79:567
- Breiwick, J. M.—see Eberhardt and Breiwick
- Breiwick, Jeffrey M.—see Gosho et al.; Mizroch et al.  
 —, Edward D. Mitchell, and Douglas G. Chapman, FB 78:843
- Bretschneider, Dale Emil, and Douglas R. McLain, S 761
- Briggs, Hugh, Ralph Townsend, and James Wilson, MFR 44(1):1
- Brill, Richard W.—see Holland et al.; Shaklee et al.
- Brodersen, Christine C.—see Rice et al.
- Brodeur, Richard D.—see Dickinson et al.; Peterson et al.  
 —, and William G. Percy, FB 82:269
- Bronstein, M. N., R. J. Price, E. M. Strange, E. F. Melvin, C. M. Dewees, and B. B. Wyatt, MFR 47(1):68
- Brooker, James R.—see Martin et al.
- Brooks, E. R.—see Mullin et al.
- Brooks, J., E. Estes, and W. Huang, TM SEFC-36  
 —, —, D. Wiesenburg, C. Schwab, and H. Abdel-Reheim, TM SEFC-47
- Brooks, J. M., TM SEFC-32
- Brothers, E. B.—see McFarland et al.
- Brothers, Edward B., TR 8:35-44  
 —see Helfman et al.  
 —, Eric D. Prince, and Dennis W. Lee, TR 8:49-59
- Brousseau, Diane J., FB 81:733  
 —, and Jenny A. Baglivo, FB 82:537  
 —, —, and George E. Lang, Jr., FB 80:642
- Browder, Joan A., TM SEFC-118  
 —see Fonyo et al.  
 —, J. Connor Davis, and Eulalie Sullivan, MFR 43(8):12  
 —, and Joseph E. Powers, TM SEFC-9
- Brown, Bradford E.—see McBride and Brown
- Brown, Brian—see Silverthorne et al.
- Brown, D. E., R. Paul Singh, and R. J. Coffelt, MFR 43(6):21  
 —, —, R. E. Garrett, and Barbara Katz, MFR 43(10):15
- Brown, Daniel E.—see Singh and Brown
- Brown, Donald W.—see MacLeod et al.
- Brown, John W., MFR 44(5):21  
 —see Ernst and Brown  
 —, and W. Davis Folsom, TM SEFC-121  
 —, John W. Manzi, Harry Q. M. Clawson, and Fred S. Stevens, MFR 45(4-6):10
- Brown, R. S., and N. Caputi, FB 83:567
- Brown, Robin R., and Bruce R. Mate, FB 81:291
- Brown, Thomas—see Hale and Brown
- Brown-Leger, Susan—see Dickinson et al.
- Brownell, Willard N., and John M. Stevely, MFR 43(7):1
- Brucks, John, Thomas D. Leming, Samuel Burkett, Jr., S. Peteherych, P. M. Woiceshyn, and M. G. Wurtele, TM SEFC-107
- Brundage, Harold M., III, and Robert E. Meadows, FB 80:337
- Brunenmeister, Susan L., TM SEFC-20  
 —see Fonyo et al.
- Brusher, H. A.—see Williams et al.
- Brusher, Harold A.—see Fable et al.; Renfroe and Brusher; Williams et al.  
 —, and Barbara J. Palko, MFR 47(3):54  
 —, Mark L. Williams, Lee Trent, and Barbara J. Palko, MFR 46(3):48
- Brusher, H.—see Neal et al.
- Bryan, Patrick G., MFR 42(6):15
- Bryson, John C.—see Rothschild et al.
- Buchanan, Kurt D.—see Durkin et al.
- Buck, John D., FB 82:375
- Buckley, Jack—see Dadswell et al.
- Buckley, James L.—see Collings et al.
- Buckley, Raymond M., MFR 44(6-7):28
- Bucy, Michele—see Mercer and Bucy
- Buelna, Elizabeth K.—see Morrow and Buelna
- Bukhtiyarov, Yuri A.—see Fay et al.  
 —, Kathryn J. Frost, and Lloyd F. Lowry, TR 12:55-59
- Bullard, Fern A., and Jeff Collins, FB 78:465
- Burgess, Lourdes Alvina, FB 80:703
- Burkett, Samuel B.—see Kemmerer et al.
- Burkett, Samuel, Jr.—see Brucks et al.
- Burlin, V. V.—see Potievski et al.
- Burns, Frank D., TM F/SWR-011
- Burns, John J.—see Braham et al.; Lowry and Burns  
 —, Francis H. Fay, and Gennadii A. Fedoseev, TR 12:5-16  
 —, and Vitali N. Gol'tsev, TR 12:17-24
- Burrows, Douglas G.—see MacLeod et al.
- Bush, Louise F., C 440
- Butcher, W., J. Buteau, K. Hassenmüller, G. Perry, and S. Staitieh, TM F/NWC-9
- Buteau, J.—see Butcher et al.
- Butler, Philip A., TR 35
- Butler, Richard W.—see Coe and Butler; Coe et al.
- Butorina, T. E.—see Konovalov and Butorina
- Bybee, James R., and John B. Richards, TM F/SWR-001

## C

- Caffin, John E.—see Irvine et al.  
Caffrey, Brian B.—see Braddon et al.  
Cailliet, Gregor M., Linda K. Martin, James T. Harvey, David Kusher, and Bruce A. Welden, TR 8:179-188  
———, ———, David Kusher, Patricia Wolf, and Bruce A. Welden, TR 8:157-165  
Caillouet, C., Jr., and D. Koi, TM SEFC-116  
Caillouet, C. W., Jr., TM SEFC-147  
———see Fontaine and Caillouet  
———, and D. B. Koi, TM SEFC-164  
Caillouet, Charles W., and Dennis B. Koi, MFR 42(12):18  
———, ———, and William B. Jackson, MFR 42(12):28  
Caillouet, Charles Wax, Jr., and Dennis Brian Koi, TM SEFC-96  
Cairns, Stephen D., C 438  
Callahan, Pamela—see Gunderson et al.  
Callan, John G.—see Mendelsohn and Callan  
———, and John J. Ryan, MFR 42(6):32  
Calman, J.—see Smedes et al.  
Calvin, Natasha I.—see Ellis and Calvin  
Campana, Steven E., FB 82:165  
Campbell, A.—see Jamieson and Campbell  
———, and M. D. Eagles, FB 81:357  
Campbell, Douglas W.—see Miller et al.  
Capps, Oral, Jr., MFR 44(3):1  
Caputi, N.—see Brown and Caputi  
Caracciolo, Janice V., and Frank W. Steimle, Jr., S 766  
Carey, A. G., Jr.—see Hogue and Carey  
Carey, Andrew G., Jr.—see Carney and Carey  
Carey, Francis G., and Bruce H. Robison, FB 79:277  
Carls, Mark G.—see Rice et al.  
Carlson, H. Richard, and Richard R. Straty, MFR 43(7):13  
Carlson, K. L.—see Herrick and Carlson  
Carney, Robert S., and Andrew G. Carey, Jr., FB 78:791  
Carpenter, V. L.—see Schwartz et al.  
Carr, Archie, Anne Meylan, Jeanne Mortimer, Karen Bjorndal, and Thomas Carr, TM SEFC-91  
Carr, H. Arnold—see Amaral and Carr  
Carr, Thomas—see Carr et al.  
Carranza, Francisco—see Stevenson and Carranza  
Carroll, Geoffrey M.—see Braham et al.  
———, and John R. Smithhisler, MFR 42(9-10):80  
Carter, Gary R.—see Hain et al.  
Casey, Harold W.—see Albert et al.  
Casey, John G.—see Pratt and Casey; Pratt et al.  
———, and John J. Hoey, TR 31:15-19  
———, Harold L. Pratt, Jr., and Charles E. Stillwell, TR 8:189-191  
Casey, John J.—see Medved et al.  
Cass, Virginia L., MFR 47(1):36  
———see Perrin et al.  
Casselman, John M., TR 8:1-17  
Castagna, Michael—see Kraeuter and Castagna  
Cayré, Patrice M.—see Antoine et al.  
———, and Taib Diouf, TR 8:105-110  
Celewycz, Adrian G.—see Jaenicke et al.  
Chan, Brian—see Neilson et al.  
Chaney, Ed—see Wahle and Chaney; Wahle et al.  
Chang, Randolph—see Holland et al.  
Chapman, Douglas G.—see Breiwick et al.  
Cheng, Lanna, and Eric Shulenberger, FB 78:579  
Chess, James R.—see Hobson et al.  
Chester, Alexander J., TR 9  
———see Hettler and Chester; Warlen and Chester  
Chittenden, Mark E., Jr.—see DeVries and Chittenden; Geoghegan and Chittenden; Rockett et al.; Shlossman and Chittenden; Standard and Chittenden  
Christensen, Darryl J., and Walter J. Clifford, FB 78:799  
Christian, R. T., and L. James Lester, TM SEFC-137  
Christman, M. C.—see Van Heukelem et al.  
Clarke, Thomas A., FB 78:619; FB 80:287  
———see Williams and Clarke  
Clarke, W. Craig—see Wedemeyer et al.  
Clausen, David M., FB 78:968; FB 81:637  
———, and Jeffrey T. Fujioka, TM F/NWC-76  
Clawson, Harry Q. M.—see Brown et al.  
Clifford, David A.—see Creaser and Clifford; Creaser et al.  
Clifford, Walter J.—see Christensen and Clifford  
Cobb, J. Stanley—see Richards et al.  
Coe, James M.—see Holts and Coe; Jennings et al.  
———, and Richard W. Butler, TM SWFC-6  
———, David B. Holts, and Richard W. Butler, MFR 46(3):18; TR 13  
———, and Warren E. Stuntz, FB 78:535  
Coffelt, R. J.—see Brown et al.  
Coglianese, M. P.—see Neff et al.  
Cohen, Daniel M., MFR 42(1):2  
———see Yabe et al.  
Cohn, Myra S.—see Marshall and Cohn  
Colby, D. R., G. W. Thayer, W. F. Hettler, and D. S. Peters, TM SEFC-162  
Colby, David R., Donald E. Hoss, and J. H. S. Blaxter, FB 80:567  
Coleman, Essie M.—see Dragovich and Coleman  
Colin, Patrick L., FB 80:853  
Collette, Bruce B.—see Cressey et al.  
———, and Joseph L. Russo, FR 82:545  
Collings, W. Stephen, Christine Cooper-Sheehan, Sally C. Hughes, and James L. Buckley, S 775:35-40  
Collins, Jeff—see Bullard and Collins  
Collins, L. Alan, and John H. Finucane, TR 6  
Collins, Robson A.—see Love et al.  
Colton, Douglas E., and William S. Alevizon, FB 81:148  
Colton, J. B., Jr., J. L. Anderson, J. E. O'Reilly, C. A. Evans-Zetlin, and H. G. Marshall, TM F/NEC-38  
Colton, John B., Jr., and Jacquelyn L. Anderson, TM F/NEC-24  
Colvocoresses, J. A., and J. A. Musick, FB 82:295  
Comiskey, C. E., TM SEFC-65  
Compagno, L. J. V.—see Gruber and Compagno  
Compeán-Jimenez, G., and F. X. Bard, TR 8:77-86  
Concannon, Greg—see Ewing et al.  
Condrey, Richard E., FB 82:449  
Conklin, Robert B.—see Pratt et al.  
Connally, David W.—see Schlotterbeck and Connally  
Connors, Thomas J.—see Lane and Connors  
Conover, David O., FB 83:331  
———, and Steven A. Murawski, FB 80:145  
Conrad, Jim W., Harold J. Barnett, Fuad M. Teeny, and Richard W. Nelson, MFR 47(1):73  
Conrad, Jon, Dale Squires, and Jim Kirkley, TM F/NWC-60  
Conser, Ramon J.—see Beardsley and Conser  
Conservation and Utilization Division, Northeast Fisheries Center, TM F/NEC-42  
Consiglieri, Lewis—see Loughlin et al.  
Cook, Steven K., TR 24

Coon, W. P., III—see Wenner et al.  
 Cooper, Richard A.—see Hulbert et al.; Meyer et al.  
 Cooper-Sheehan, Christine—see Collings et al.  
 Cornell, Lanny H.—see Odell et al.; White et al.  
 Corolla, R. T.—see Webb and Corolla  
 Costello, T.—see Klima et al.  
 Costello, T. J., D. M. Allen, and J. H. Hudson, TM SEFC-161  
 ———, and Lynn M. Pulos, TM SEFC-4  
 Coston-Clements, Linda, and Donald E. Hoss, TM SEFC-117  
 Court, William G., MFR 42(7-8):1  
 Cox, J. L.—see Wiebe et al.  
 Coyer, James A., FB 82:55  
 Craddock, James E.—see Robison and Craddock  
 Cramer, J. L., R. M. Nakamura, A. E. Dizon, and W. N. Ikehara,  
 MFR 43(6):12  
 Crapo, C.—see Kolbe et al.  
 Crass, Dennis W., and Robert H. Gray, FB 80:158  
 Creaser, Edwin P., and David A. Clifford, FB 80:735  
 ———, ———, Michael J. Hogan, and David B. Sampson, S 767  
 Creed, Robert P., Jr., FB 83:711  
 Creel, Michelle—see Divita et al.  
 ———, and Regina Divita, TM SEFC-87  
 Cressey, Hillary Boyle—see Cressey and Cressey  
 Cressey, Roger F., Bruce B. Collette, and Joseph L. Russo, FB  
 81:227  
 ———, and Hillary Boyle Cressey, FB 78:715  
 Cross, Jeffrey N., FB 83:195  
 Crow, Michael E.—see Lee et al.  
 Crowe, A. L.—see Parker et al.  
 Crowe, Barbara J., FB 82:427  
 Cabbage, James C.—see Rugh and Cabbage  
 Current, William L.—see Upton et al.

## D

Dadswell, Michael J.—see MacDonald et al.  
 ———, Bruce D. Taubert, Thomas S. Squiers, Donald Marchette,  
 and Jack Buckley, TR 14  
 Dahlheim, Marilyn—see Ljungblad et al.  
 ———, Teresa Bray, and Howard W. Braham, MFR 42(9-10):51  
 Danald, D. A.—see Lightner et al.  
 Danek, L. J., and M. S. Tomlinson, TM SEFC-40  
 Dangel, James R., Paul T. Macy, and Fred C. Withler, TM  
 NWFC-1 Daniels, Robert A., FB 80:575  
 ———, and Peter B. Moyle, FB 81:647  
 Darcy, George H., C 448; C 449; S 748; TM SEFC-15; TR 19;  
 TR 23; TR 26  
 ———, and Elmer J. Guthertz, TM SEFC-130  
 Dark, T. A., M. E. Wilkins, and K. Edwards, TM F/NWC-48  
 Dark, Thomas A.—see Edwards et al.; Nelson and Dark; Weinberg  
 et al.  
 ———, Martin O. Nelson, Jimmie J. Traynor, and Edmund P. Nun-  
 nallee, MFR 42(3-4):17  
 Davis, B. M.—see Wiebe et al.  
 Davis, Gary E., FB 78:979  
 Davis, J. Connor—see Browder et al.  
 Dawirs, Ralph R.—see Anger and Dawirs  
 Dawley, Earl M., Richard D. Ledgerwood, and Alvin Jensen, TM  
 F/NWC-74, TM F/NWC-75  
 Dawson, Chad P., and Bruce T. Wilkins, MFR 42(12):12  
 Dawson, Margaret A., FB 80:389  
 Dean, J. M.—see Radtke and Dean

Dean, John M.—see Wilson and Dean  
 DeBlanc, David—see Timko and DeBlanc  
 DeGange, Anthony R.—see Ainley et al.  
 Delamure, S. L., and A. S. Skriabin, TR 25:129-135  
 Delaney, Glenn—see Fogarty et al.  
 Delarm, Michael R.—see Basham et al.  
 ———, Larry R. Basham, Stephen W. Pettit, James B. Athearn,  
 and Lt. John V. Barker, TM F/NWR-7  
 ———, and Einar Wold, TM F/NWR-9; TM F/NWR-12; TM  
 F/NWR-13  
 DeLong, Robert L.—see Antonelis et al.; Loughlin et al.  
 Delyamure, Semyon L., Mikhail V. Yurakhno, Valentin N. Popov,  
 Larry M. Shults, and Francis H. Fay, TR 12:61-65  
 DeMartini, E. E., and Robert K. Fountain, FB 79:547  
 DeMartini, Edward E.—see Allen and DeMartini; Larson and  
 DeMartini  
 ———, Larry G. Allen, Robert K. Fountain, and Dale Roberts,  
 FB 83:171  
 DeMaster, Douglas P., TR 12:77-80  
 Demory, Robert L.—see Golden et al.  
 Dennis, G.—see Howard et al.  
 Dery, Louise M.—see Smith et al.  
 DeVries, Douglas A., and Mark E. Chittenden, Jr., FB 80:487  
 Dewees, C. M.—see Bronstein et al.  
 Dickhoff, Walton W.—see Folmar et al.  
 ———, Craig Sullivan, and Conrad V. W. Mahnken, TR 27:5-9  
 Dickinson, John J., and Roland L. Wigley, S 746  
 ———, ———, Richard D. Brodeur, and Susan Brown-Leger,  
 S 741  
 Dimock, C. W.—see Lake et al.  
 Diouf, Taib—see Cayre and Diouf  
 Ditton, Robert B., and David K. Loomis, MFR 47(1):43  
 Divita, Regina—see Creel and Divita  
 ———, Michelle Creel, and Peter F. Sheridan, FB 81:396  
 Dixon, Robert—see Tester et al.  
 Dizon, A. E.—see Cramer et al.  
 Dizon, Andrew E.—see Gooding et al.; Kaya et al.; Matsumoto  
 et al.  
 ———, and George H. Balazs, MFR 44(5):13  
 Dodrill, Jon W.—see Gilmore et al.  
 Doggett, Lee F.—see Larsen et al.  
 Donely, P.—see Parrish et al.  
 Dorsey, Eleanor—see Wursig et al.  
 Dotson, Ronald C., TM SWFC-8  
 ————see Laurs et al.  
 Douman, David J., and Andrew Wright, MFR 45(10-12):47  
 Doyle, Willard H.—see Martin et al.  
 Dragovich, Alexander, MFR 43(2):9  
 ———, and Essie M. Coleman, MFR 45(4-6):1  
 Draxler, A. F. J., A. Matte, R. Waldhauer, and J. E. O'Reilly,  
 TR 32  
 Dubina, V. R., TR 25:33-34  
 Dudley, Richard G., and T. Glenn McGahee, FB 81:420  
 Duedall, Iver W.—see Woodhead et al.  
 Duncan, Bruce P.—see Peterson et al.  
 Duncan, Keith L.—see Winkler et al.  
 Duncan, P. B.—see Peterson et al.  
 Dunn, Daniel W.—see Fuss et al.  
 Dunn, Jean R., C 450; FB 81:23  
 ————see Kendall and Dunn; Matarese et al.; Richardson et al.  
 Dupree, Harry K., C 447:23-25  
 Durbin, A. G.—see Durbin et al.

Durbin, Ann G.—see Durbin and Durbin  
 ———, Edward G. Durbin, Peter G. Verity, and Thomas J. Smayda, FB 78:877  
 Durbin, Ann Gail. Edward G. Durbin. Thomas J. Smayda, and Peter G. Verity, FB 81:133  
 Durbin, E. G., A. G. Durbin, R. W. Langton, and R. E. Bowman, FB 81:437  
 Durbin, Edward G.—see Durbin et al.  
 ———, and Ann G. Durbin, FB 79:601; FB 81:177  
 Durham, Floyd E., MFR 42(9-10):74  
 ————see Braham et al.  
 Durkin, Joseph T.—see Emmett and Durkin; McCabe et al.  
 ———, Kurt D. Buchanan, and Theodore H. Blahm, MFR 46(1):22  
 ———, and Carl W. Sims, TM F/NWC-84  
 Duszynski, Donald W.—see Upton et al.  
 Dyer, Debra—see Gorga et al.  
 Dykstra, Jacob J.—see Rothschild et al.

## E

Eagles, M. D.—see Campbell and Eagles  
 Earl, Paul M., MFR 42(1):26  
 Ebel, Wesley, J., FB 78:491  
 Ebeling, Alfred W., Ralph J. Larson, William S. Alevizon, and Richard N. Bray, FB 78:361  
 Eber, L. E., and Nancy Wiley, TM SWFC-24  
 Eber, Larry E., TM SWFC-18  
 Eberhardt, L. L., and J. M. Breiwick, MFR 42(9-10):27  
 Eberwine, James—see Ingham and Eberwine  
 Echeverria, Tina, and William H. Lenarz, FB 82:249  
 Edwards, K.—see Dark et al.  
 Edwards, Kathleen D., Thomas A. Dark, Robert French, Russell Nelson, Jr., and Janet Wall, TM F/NWC-11  
 Egorova, T. P., TR 25:75  
 Eisenberg, Max, Reba Mallman, and Haskell S. Tubiash, MFR 42(2):21  
 Ejsymont, L.—see Kelly et al.; Sherman et al.  
 Ejsymont, Leonard—see Richards et al.  
 Eldredge, L. G., TM SWFC-40  
 Eldridge, Maxwell B., Jeannette A. Whipple, and Michael J. Bowers, FB 80:461  
 Eldridge, P.—see Jones et al.  
 Eldridge, Peter J.—see Bolton et al.; Meaburn et al.  
 Ellertsen, B.—see Tilseth and Ellertsen  
 Elliott, Joel—see Shimek et al.  
 Ellis, Robert J., and Natasha I. Calvin, MFR 43(2):19  
 Emmett, Robert L.—see McCabe et al.  
 ———, and Joseph T. Durkin, MFR 47(3):21  
 Ennis, G. P., FB 79:796; FB 82:242, 244, 529  
 ————see Taylor et al.  
 Epifanio, C. E.—see Van Heukelem et al.  
 Epperly, Sheryan P., and Walter R. Nelson, FB 82:446  
 Ernst, Robert C., Jr., TM SEFC-92  
 ———, and John W. Brown, TM SEFC-102  
 Estes, E.—see Brooks et al.  
 Estes, James A., and Vitali N. Gol'tsev, TR 12:67-76  
 Evans, R. H., D. R. McLain, and R. A. Bauer, MFR 43(6):1  
 Evans, William E.—see Leatherwood et al.  
 Evans-Zetlin, C. A.—see Colton et al.  
 Ewing, R. D., C. E. Hart, C. A. Fustich, and Greg Concannon, FB 82:157

## F

Fable, William A., Jr.—see Johnson et al.; Saloman et al.; Sutherland and Fable  
 ———, Harold A. Brusher, Lee Trent, and Joe Finnegan, Jr., MFR 43(8):21  
 ———, and Lee Trent, TM SEFC-138  
 Faller, Kenneth H.—see Savastano et al.  
 Farber, Mark I.—see Baglin et al.  
 Fariña-Perez, A. C.—see González-Garcés and Fariña-Perez  
 Farr, Winston E.—see Gessel et al.  
 Fay, Francis H.—see Burns et al.; Delyamure et al.  
 ———, Yuri A. Bukhtiyarov, Samuel W. Stoker, and Larry M. Shults, TR 12:81-88  
 ———, and Gennadii A. Fedoseev, TR 12  
 ———, G. Carleton Ray, and Arkadii A. Kibal'chich, TR 12:89-99  
 Fedoseev, Gennadii A., TR 12:49-54  
 ————see Braham et al.; Burns et al.; Fay and Fedoseev  
 Fegley, Stephen R.—see Peterson et al.  
 Feldkamp, Steven D., FB 83:692  
 Feldman, Gene C., and Craig S. Rose, TM F/NWC-13  
 Fell, F. Julian—see Serafy and Fell  
 Ferguson, Scott—see Holland et al.  
 Fernholm, Bo, and Carl L. Hubbs, FB 79:69  
 Ferraro, Steven P., FB 78:455  
 Fey, M.—see Regenstein et al.  
 Fiedler, Paul C., Gary B. Smith, and R. Michael Laurs, MFR 46(3):1  
 Fiest, D. L.—see Boehm and Fiest  
 Finne, Gunnar—see Meinke et al.; Ward et al.  
 Finnegan, Joe, Jr.—see Fable et al.  
 Finucane, John H.—see Collins and Finucane  
 Fischer, Rahel—see Whipple et al.  
 Fiscus, Clifford H., MFR 44(2):1; TM F/NWC-65  
 ————see Antonelis et al.; Kajimura et al.; Scheffer et al.; Stroud et al.  
 ———, and Roger W. Mercer, TM F/NWC-28  
 ———, David J. Rugh, and Thomas R. Loughlin, TM F/NWC-17  
 Flagg, Paul J.—see McHugh et al.  
 Flagg, Thomas J.—see Newcomb and Flagg  
 Flerx, William—see Smith et al.  
 Flescher, Donald D., C 431  
 Flierl, G. R., and J. S. Wroblewski, FB 83:313  
 Flint, R. Warren, and Nancy N. Rabalais, FB 79:737  
 Flores, Efren Ed. C.—see Hernando and Flores  
 Fogarty, Michael J., S 775; S 775:3-8  
 ————see Richards et al.  
 ———, David V. D. Borden, and Howard J. Russell, FB 78:771  
 ———, Glenn Delaney, John W. Gillikin, Jr., John C. Poole, David E. Ralph, Paul G. Scarlett, Ronald W. Smith, and Stuart J. Wilk, TM F/NEC-18  
 ———, Martin A. Hyman, George F. Johnson, and Clement A. Griscom, S 775:23-28  
 ———, and Robert Lawton, S 775:9-14  
 Follette, L. Frank—see Shleser and Follett  
 Folmar, Leroy C., Walton W. Dickhoff, Waldo S. Zaugg, and Conrad V. W. Mahnken, C 447:7-13  
 Folson, W. Davis—see Brown and Folson  
 Fontaine, C. T., TM SEFC-158; TM SEFC-169  
 ———, and C. W. Caillouet, Jr., TM SEFC-152  
 Fonyo, Carolyn M., Joan A. Browder, and Susan L. Brunenmeister, TM SEFC-120

Ford, Robert J., MFR 46(3):44  
 Fountain, Robert K.—see DeMartini and Fountain; DeMartini et al.  
 Fox, Alfred C., TR 27:11-13  
 Fox, William W., Jr.—see Huntsman et al.  
 Fraidenburg, Michael E., MFR 42(3-4):54  
 Fraker, Mark A.—see Braham et al.; Wursig et al.  
 ———, and John R. Bockstoce, MFR 42(9-10):57  
 Francis, Robert C.—see Bailey and Francis  
 ———, and Anne B. Hollowed, MFR 47(2):95  
 Frank, Hilmer A., Mitchel E. Rosenfeld, Derrick H. Yoshinaga, and Wai-Kit Nip, MFR 46(2):40  
 ———, Derrick H. Yoshinaga, and Wai-Kit Nip, MFR 43(10):9  
 ———, ———, and I-Pai Wu, MFR 45(4-6):40  
 Freeman, Mary C., Nate Neally, and Gary D. Grossman, FB 83:645  
 French, Robert R.—see Edwards et al.; Murai et al.; Nelson et al.; Wall et al.  
 ———, Russell Nelson, Jr., and Janet Wall, MFR 43(5):36  
 Frere, Phyllis—see Setzler et al.  
 Frey, Herbert W.—see Huppert et al.; MacCall et al.  
 Friedman, Andrew J.—see Macleod et al.  
 Fritz, Lowell W., and Dexter S. Haven, FB 81:697  
 Frost, Kathryn J.—see Bukhtiyarov et al.  
 ———, and Lloyd F. Lowry, FB 79:187; S 764  
 Fry, Brian, FB 79:337; FB 81:789  
 Fucik, K., and I. Show, TM SEFC-43  
 Fujii, T.—see Percy et al.  
 Fujioka, Jeffrey T.—see Clausen and Fujioka  
 Fukuhara, Osamu, TR 10:3-9  
 ————see Nogami et al.  
 Fulton, Leonard A., and Roger E. Pearson, TM F/NWC-12  
 Fuss, Charles M., Jr., Daniel W. Dunn, and Robert M. Spraitz, MFR 42(11):19  
 Fustish, C. A.—see Ewing et al.  
 Fyfe, David—see Shimek et al.

## G

Gabriel, Wendy L., and William G. Percy, FB 79:749  
 ———, and A. V. Tyler, MFR 42(3-4):83  
 Gadbois, Donald F., and Richard S. Maney, FB 81:389  
 Gadowski, Dena M.—see Boehlert et al.  
 Gaevskaya, A. V.—see Alioshkina et al.; Naidenova et al.  
 ———, A. A. Kovaliova, and G. N. Rodjuk, TR 25:25-28  
 Galaktionov, K. F., TR 25:111  
 Gallaway, B., TM SEFC-48  
 ————see Howard et al.  
 ———, and L. Martin, TM SEFC-37  
 ———, and L. Reitsema, TM SEFC-67  
 Gallaway, D. J.—see Owens et al.  
 Gandy, Walter F.—see Jennings et al.; White et al.  
 Gangmark, Harold A.—see Murai et al.  
 Garrett, R. E.—see Brown et al.  
 Garrick, J. A. F., C 445; TR 34  
 Gaskin, D. E.—see Smith et al.  
 Gaskin, David E.—see Read and Gaskin  
 ———, and Alan P. Watson, FB 83:427  
 Geen, Glen H.—see Neilson and Geen; Neilson et al.  
 Gendron, Irene S., MFR 42(1):50  
 Gentry, Roger L., and John R. Holt, S 758  
 Geoghegan, Paul, and Mark E. Chittenden, Jr., FB 80:523  
 George A.—see Wolke and George  
 George, C. J.—see Wolke et al.  
 George, K. A.—see Al-Judaimi et al.  
 Georgianna, Daniel, and Richard Ibara, MFR 45(1):1  
 Geraci, J. R., and D. J. St. Aubin, MFR 42(11):1  
 Gerrodette, Tim, Daniel Goodman, and Jay Barlow, FB 83:207; TM SWFC-28  
 Gerry, Lawrence R.—see Weinstein et al.  
 Gessel, Michael H., Winston E. Farr, and Clifford W. Long, MFR 47(3):38  
 Gharrett, Jessica A.—see Rice et al.  
 Ghichenok, L. A., TR 25:73  
 Gibbs, B.—see Wespestad et al.  
 Gibson, D. M., FB 80:157  
 Giddings, George G., MFR 42(1):8  
 ————see Otwell and Giddings  
 Gilbert, James R.—see Kraus et al.  
 Gillespie, Samuel M.—see Hixon et al.  
 Gillikin, John W., Jr.—see Fogarty et al.  
 Gilmore, R. Grant, Jon W. Dodrill, and Patricia A. Linley, FB 81:201  
 Giorgi, A. E., TM F/NWC-56  
 Godbout, Robert—see Holt et al.  
 Goebel, Michael E.—see Hobbs and Goebel  
 Goiney, B. J., Jr.—see Livingston and Goiney  
 Goiney, Bernard J., Jr.—see Gunderson et al.; Livingston and Goiney  
 Gol'tsev, Vitali N.—see Burns and Gol'tsev; Estes and Gol'tsev  
 Goldberg, Stephen R., FB 78:977; FB 79:561; FB 80:906  
 ———, Victor Hugo Alarcon, and Jurgen Alheit, FB 82:443  
 ———, and Hillary Herring-Dyal, TM SWFC-14  
 Golden, James T., Robert L. Demory, and William H. Barss, MFR 42(3-4):41  
 Goldmintz, Daniel—see Babinchak et al.; Richards et al.  
 González-Garcés, A., and A. C. Fariña-Perez, TR 8:117-122  
 Goodger, Timothy—see Higgins et al.  
 Gooding, Reginald M., MFR 46(2):18; MFR 47(1):27  
 ———, William H. Neill, and Andrew E. Dizon, FB 79:31  
 Goodman, Daniel—see Gerrodette et al.  
 Gordy, Herbert R.—see Powell and Gordy  
 Gore, Robert H.—see Andryszak and Gore  
 ———, and Liberta E. Scotto, FB 80:501  
 Gores, Kurt X.—see Prentice et al.  
 Gorga, Carmine—see Ronsivalli et al.  
 ———, and Kevin J. Allen, MFR 42(1):44  
 ———, and Louis J. Ronsivalli, MFR 44(2):11  
 ———, Burton L. Tinker, Debra Dyer, and Joseph M. Mendelsohn, MFR 44(11):1  
 Gosho, Merrill E., Dale W. Rice, and Jeffrey M. Breiwick, MFR 46(4):54  
 Gosselink, James G.—see Bishop et al.  
 Gould, Rowan W., C 447:21-22  
 ———, Aldo N. Palmisano, Stanley D. Smith, Conrad V. W. Mahnken, Wally S. Zaugg, and Earl F. Prentice, TR 27:15-19  
 Goulet, J. R.—see Sherman et al.  
 Govoni, John J., FB 81:895  
 Grabe, Stephen A., John W. Shipman, and Weldon S. Bosworth, S 775:53-57  
 Graham, Joseph J.—see Townsend and Graham  
 Grant, John J., Kenneth C. Wilson, Allen M. Grover, and Heidi A. Togstad, MFR 44(6-7):53  
 Grant, W. E., W. L. Griffin, and J. P. Warren, MFR 43(11):1

- Grant, W. Stewart, Richard Bakkala, Fred M. Utter, David J. Teel, and Tokimasa Kobayashi, FB 81:667
- Grant, William E.—see Krauthamer et al.
- Gray, Robert H.—see Crass et al.; Haynes and Gray
- Green, J. R.—see Sherman et al.
- Greenstein, Daniel M., Leigh C. Alexander, and Daryl E. Richter, S 775:59-61
- Griffin, W. L.—see Grant et al.
- Griffin, Wade L.—see Hixon et al.; Krauthamer et al., Tetley and Griffin; Tetley et al.; Warren and Griffin
- Grimes, C. B.—see Katz et al.; Turner et al.
- \_\_\_\_\_, K. W. Able, and S. C. Turner, MFR 42(11):13
- \_\_\_\_\_, S. C. Turner, and K. W. Able, FB 81:663
- Grimes, Churchill B.—see Huntsman et al.; Shepherd and Grimes
- \_\_\_\_\_, and Gene R. Huntsman, FB 78:137
- Griscom, Clement A.—see Fogarty et al.
- Griswold, Carolyn A., S 751
- \_\_\_\_—see Prezioso and Griswold
- \_\_\_\_\_, and Thomas W. McKenney, FB 82:77
- \_\_\_\_\_, and Jerome Prezioso, FB 78:945
- Groess, H. E.—see Jones et al.
- Groninger, Herman S.—see Lee et al.; Patashnik et al.; Prentice et al.
- Grossman, Gary D.—see Freeman et al.
- \_\_\_\_\_, Michael J. Harris, and Joseph E. Hightower, FB 83:443
- Grove, Robert S., MFR 44(6-7):24
- Grover, Allen M.—see Grant et al.
- Grozdilova, T. A.—see Ivanchenko and Grozdilova
- Gruber, S. H., and L. J. V. Compagno, FB 79:617
- Gruber, Samuel H., and Robert G. Stout, TR 8:193-205
- Grussendorf, Mark James, FB 79:383
- Guillemot, Patrick J., Ralph J. Larson, and William H. Lenarz, FB 83:299
- Gulland, J. A.—see Rothschild and Gulland
- Gunderson, Donald R.—see Wishard et al.
- \_\_\_\_\_, Pamela Callahan, and Bernard Goiney, MFR 42(3-4):74
- \_\_\_\_\_, and Terrance M. Sample, MFR 42(3-4):2
- Gutherz, Elmer J.—see Darcy and Gutherz
- Guthrie, James F., and Curtis W. Lewis, MFR 44(1):16
- Guy, Stewart—see Shimek et al.
- H** \_\_\_\_\_
- Haar, Robert T.—see Swartzman and Haar
- Habib, G.—see Lester et al.
- Hacunda, John S., FB 79:775
- \_\_\_\_—see Barker et al.
- Hain, James H. W., Gary R. Carter, Scott D. Kraus, Charles A. Mayo, and Howard E. Winn, FB 80:259
- \_\_\_\_\_, Martin A. M. Hyman, Robert D. Kenney, and Howard E. Winn, MFR 47(1):13
- Hale, Malcolm B., MFR 46(1):19
- \_\_\_\_\_, and Thomas Brown, MFR 45(4-6):45
- \_\_\_\_\_, Jeanne D. Joseph, and Gloria T. Seaborn, TM SEFC-75
- \_\_\_\_\_, and Melvin E. Waters, MFR 43(12):18
- Hamm, David C., and Beany M. Slater, TM SEFC-5
- Hammond, P. S.—see Hohn and Hammond
- Hampton, J.—see Majkowski and Hampton
- Hampton, John—see Majkoski and Hampton
- Hanan, Doyle A., FB 81:107
- Hankin, David G., FB 78:555
- Hanlon, Roger T.—see Hixon et al.
- Hanna, Rifaat G. M., MFR 46(3):71
- Hanna, S. S., TM F/NWC-47
- Hansen, Larry J., William F. Perrin, Anatoli S. Sokolov, and James G. Mead, TR 12:101-104
- Hardy, Ronald W., C 447:15-19
- Hargis, William J., Jr., TR 25; TR 25:1-3; TR 25:101-107
- Harmon, Jerrel R., and Donn L. Park, MFR 42(6):25
- Harris, Larry G.—see Hulbert et al.
- Harris, Michael J.—see Grossman et al.
- Harrison, F. L.—see Rice et al.
- Hart, C. E.—see Ewing et al.
- Harvey, James T.—see Cailliet et al.
- Haskin, Harold H.—see Botton and Haskin
- Hassenmiller, K.—see Butcher et al.
- Hausknecht, K. A., TM SEFC-29
- Haven, Dexter S.—see Fritz and Haven
- Hawes, Sandra D., TM SWFC-21
- Haynes, Elizabeth D., TM OF-5
- Haynes, Evan B., FB 79:177, 421; FB 80:305; FB 82:315, 523; FB 83:253; S 765
- \_\_\_\_\_, and Steve E. Ignell, FB 81:890
- Haynes, James M., and Robert H. Gray, FB 78:185; FB 79:367
- Heard, William R., TR 27:21-28
- \_\_\_\_—see Bailey and Heard
- Hedgepeth, John B., TM SWFC-39
- Hedgepeth, Marion Y., and John W. Jolley, Jr., TR 8:131-135
- Heifetz, J.—see Johnson and Heifetz
- Heindl, Alex L.—see Koski et al.
- Heinle, Donald R.—see Ulanowicz et al.
- Helfman, Gene S., Earl L. Bozeman, and Edward B. Brothers, FB 82:519
- Helvey, Mark, MFR 47(1):18
- Henderson, John R., MFR 46(3):59
- Hendricks, Jerry D.—see Meyers and Hendricks
- Hendrickx, M. E., FB 82:715
- Hendrix, Sharon D.—see Kaya et al.
- Hennemuth, Richard C.—see Rothschild et al.
- \_\_\_\_\_, Brian J. Rothschild, Lee G. Anderson, and William A. Lund, Jr., TM F/NEC-1
- Hernando, Aniceto M., Jr., and Efred Ed. C. Flores, MFR 43(1):13
- Herrick, S.—see Parrish et al.
- Herrick, S. F., Jr., and K. L. Carlson, TM SWFC-57
- Herrick, Samuel F., Jr., MFR 46(1):1
- \_\_\_\_\_, and Steven Koplun, MFR 46(4):65
- Herring-Dyal, Hillary—see Goldberg and Herring-Dyal
- Hersey, Ronald L.—see Bibb et al.
- Hershberger, William K., and Robert N. Iwamoto, TR 27:29-32
- Heslinga, Gerald A., Obichang Orak, and Marcus Ngiramengior, MFR 46(4):73
- Hess, Deb—see Palko et al.
- Hess, Steven C.—see Toll and Hess
- Hettler, W. F.—see Colby et al.
- Hettler, William F., FB 82:85
- \_\_\_\_\_, and Alexander J. Chester, FB 80:761
- Hewitt, Roger P.—see Smith and Hewitt; Smith et al.
- \_\_\_\_\_, FB 83:187; TR 36:51-53; TR 36:95-99
- Higgins, Bruce E., Ruth Rehfus, John B. Pearce, Robert J. Pawlowski, Robert L. Lippson, Timothy Goodger, Susan M. Roe, and Douglas W. Beach, TM F/NEC-37
- High, William L., MFR 42(2):26
- Hightower, Joseph E.—see Grossman et al.
- Hilderbrand, K.—see Kolbe et al.

- Hinde, P.—see Wenner et al.  
Hines, Anson H., and Thomas R. Loughlin, FB 78:159  
\_\_\_\_\_, Kenric E. Osgood, and Joseph J. Miklas, FB 83:467  
Hiroi, Osamu, TR 27:45-53  
Hirschberger, W. A., and G. B. Smith, TM F/NWC-44  
Hirschberger, Wendy A., MFR 42(2):8; TM F/NWC-85; TM F/NWC-94  
\_\_\_\_—see Smith et al.; Walters et al.  
Hirtzer, Pam—see Boehm and Hirtzer  
Hixon, Raymond F., Roger T. Hanlon, Samuel M. Gillespie, and Wade L. Griffin, MFR 42(7 8):44  
Hjort, R. C., and C. B. Schreck, FB 80:105  
Hobart, W., MFR 44(6-7):1  
Hobbs, Larry J.—see Leatherwood et al.  
\_\_\_\_\_, and Michael E. Goebel, TM F/NWC-21  
Hobson, Edmund S., William N. McFarland, and James R. Chess, FB 79:1  
Hodson, Ronald G.—see Weinstein et al.  
Hoening, John M., FB 81:898  
Hocy, John J.—see Casey and Hocy  
Hoff, James G.—see Smith et al.  
Hoffman, E. J., and J. G. Quinn, S 751:8-12  
Hogan, Michael J.—see Creaser et al.  
Hogue, E. W., and A. G. Carey, Jr., FB 80:555  
Hohn, Aleta A.—see Barlow and Hohn; Myrick et al.; Reilly et al.  
\_\_\_\_\_, and P. S. Hammond, FB 83:553  
Holland, Kim, Richard Brill, Scott Ferguson, Randolph Chang, and Reuben Yost, MFR 47(4):26  
Hollaway, S. L.—see Baxter and Hollaway  
\_\_\_\_\_, and L. F. Sullivan, TM SEFC-89  
Hollaway, Stephen L., and K. Neal Baxter, TM SEFC-78  
Holley, H.—see Savastano and Holley  
Holley, Hillman—see Savastano et al.  
Hollingsworth, John E.—see Massey and Hollingsworth  
Hollowed, Anne B.—see Francis and Hollowed  
Holt, Brian, TM SEFC-97  
Holt, Joan, Robert Godbout, and C. R. Arnold, FB 79:569  
Holt, John R.—see Gentry and Holt  
Holt, R. S.—see Barlow and Holt  
Holt, Rennie S., TM SWFC-27; TM SWFC-29  
\_\_\_\_\_, and Joseph E. Powers, TM SWFC-23  
Holt, Scott A., and Connie R. Arnold, FB 80:644  
Holts, Dave, MFR 47(3):48  
Holts, David B., TM SWFC-3  
\_\_\_\_—see Coe et al.  
\_\_\_\_\_, and James M. Coe, TM SWFC-25  
Hooper, R. G.—see Taylor et al.  
Hopson, Debra J.—see Ward et al.  
Horn, Michael H., FB 78:759  
Horton, Howard F.—see Maule and Horton  
Hose, Jo Ellen—see Winkler et al.  
Hoss, D. E., and G. Phonlor, FB 82:513  
Hoss, Donald E.—see Colby et al.; Coston-Clements and Hoss  
Houde, Edward D.—see Berkeley and Houde  
Houle, Clifford R.—see Stout et al.  
Howard, Dorothy W., and Cecelia S. Smith, TM F/NEC-25  
Howard, R., G. Boland, B. Gallaway, and G. Dennis, TM SEFC-39  
Howe, N. R., TM SEFC-70  
Howe, Stavros, and Wayne Leathem, TM F/NEC-32  
Howell, W. Hunting, FB 78:731; FB 81:341  
Huang, W.—see Brooks et al.  
Hubbs, Carl L.—see Fernholm and Hubbs  
Huber, Harriet R.—see Ainley et al.  
Hudgins, Linda L., MFR 42(2):16  
Hudson, J. H.—see Costello et al.  
Hueckel, Gregory J., and R. Lee Stayton, MFR 44(6-7):38  
Hughes, J. B., and A. Crosby Longwell, S 751:21-29  
Hughes, S. E.—see Parks and Hughes; Zenger and Hughes  
Hughes, Sally C.—see Collings et al.  
Hughes, Steven E., MFR 43(1):26  
Hui, Clifford A., FB 83:472  
Hulberg, Larry W.—see Oliver et al.  
Hulbert, Alan W., Kenneth J. Pecci, Jonathan D. Witman, Larry G. Harris, James R. Sears, and Richard A. Cooper, TM F/NEC-14  
Hultin, H. O.—see Regenstein et al.  
Hunte, Wayne—see Oxenford and Hunte  
\_\_\_\_\_, and Robin Mahon, FB 81:654  
Hunter, J. Roe, TR 36:63-65  
\_\_\_\_\_, and Roderick Leong, FB 79:215  
\_\_\_\_\_, Nancy C. H. Lo, and Roderick J. H. Leong, TR 36:67-77  
\_\_\_\_\_, and Beverly J. Macewicz, FB 83:119; TR 36:79-94  
Hunter, John R., and Carol A. Kimbrell, FB 78:89, 811  
\_\_\_\_\_, and Ragan Nicholl, FB 83:235  
Hunter, Patrick J.—see Barnett et al.; Stone et al.  
Huntsman, Gene R.—see Grimes and Huntsman; Tester et al.  
\_\_\_\_\_, Charles S. Manooch III, and Churchill B. Grimes, FB 81:679  
\_\_\_\_\_, William R. Nicholson, and William W. Fox, Jr., TM SEFC-80  
Huppert, D. D., FB 78:267  
Huppert, Daniel D., TM FC-32  
\_\_\_\_—see MacCall et al.  
\_\_\_\_\_, Alec D. MacCall, Gary D. Stauffer, Herbert W. Frey, and Jane A. McMillan, TM SWFC-1  
Hurley, Geoffrey V., MFR 42(7-8):15  
Hurley, Peter C. F.—see Radtke and Hurley  
\_\_\_\_\_, and T. Derrick Iles, TR 8:71-75  
Husby, D. M., and G. R. Seckel, S 742  
Husby, David M.—see Nelson and Husby  
Hyman, Martin A.—see Fogarty et al.; Hain et al.; Kenney et al.
- ## I
- 
- Ibara, Richard—see Georgianna and Ibara  
Ignell, Steve E.—see Haynes et al.  
Ikeda, Ikuo—see Low and Ikeda  
Ikehara, W. N.—see Cramer et al.  
Iles, T. Derrick—see Hurley and Iles  
Ingham, Merton C., TM F/NEC-17  
\_\_\_\_\_, and James Eberwine, TM F/NEC-31  
Ingraham, W. James, Jr.—see Swan and Ingraham  
Irie, Takahiko, TR 27:55-65  
Irvine, A. B., R. S. Wells, and M. D. Scott, FB 80:135  
Irvine, A. Blair, John E. Caffin, and Howard I. Kochman, FB 80:621  
\_\_\_\_\_, Michael D. Scott, Randall S. Wells, and John H. Kaufmann, FB 79:671  
Ito, D. H., and J. W. Balsiger, TM F/NWC-52  
Ito, Daniel H., TM F/NWC-62  
\_\_\_\_—see Balsiger et al.  
Itzkowitz, Norman, and J. R. Schubel, FB 81:913  
Ivanchenko, O. F., and T. A. Grozdilova, TR 25:65  
Iverson, Edwin S.—see Jory and Iverson

Iwamoto, Robert N.—see Hershberger and Iwamoto  
Iwamoto, Tomio—see Yabe et al.

## J

Jackson, William B.—see Caillouet et al.  
Jaenicke, Herbert W., Adrian G. Celewycz, Jack E. Bailey, and Joseph A. Orsi, MFR 46(3):62  
Jafri, A. K.—see Al-Judaimi et al.  
Jahn, Andrew E.—see Barnett et al.  
Jamieson, G. S., and A. Campbell, FB 83:575  
Jarrell, Gordon H.—see Braham et al.  
Jearld, A., Jr.—see Rice et al.; Ropes et al.; Smith et al.  
Jennings, Jacqueline G.—see White et al.  
\_\_\_\_\_, James M. Coe, and Walter F. Gandy, MFR 43(11):16  
Jensen, Alvin—see Dawley et al.  
Jessee, Bill—see MacCall et al.  
Jiménez-Colmenero, J.—see Borderias et al.  
Johansen, P. H.—see Peterson et al.  
Johnson, Allyn G., TM SEFC-76; TR 8:111-115  
\_\_\_\_—see Barger and Johnson  
\_\_\_\_\_, William A. Fable, Jr., Mark L. Williams, and Lyman E. Barger, FB 81:97  
\_\_\_\_\_, and Carl H. Saloman, FB 82:485  
Johnson, Anne C.—see Larsen et al.  
Johnson, Brian W.—see Johnson and Johnson  
\_\_\_\_\_, and Patricia A. Johnson, TM SWFC-49  
Johnson, Emily Z.—see Johnson and Johnson  
Johnson, George F.—see Fogarty et al.  
Johnson, James H., FB 78:549  
\_\_\_\_\_, and Emily Z. Johnson, FB 79:370  
\_\_\_\_\_, and Allen A. Wolman, MFR 46(4):30  
Johnson, James R., and Joseph G. Loesch, FB 81:323  
Johnson, Karen L.—see Lange and Johnson  
Johnson, M., TM SEFC-66  
Johnson, M. F., TM SEFC-68  
Johnson, Mary L.—see Benirschke et al.  
Johnson, Patricia A.—see Johnson and Johnson  
\_\_\_\_\_, and Brian W. Johnson, TM SWFC-50  
Johnson, Phyllis T., FB 83:497  
Johnson, S. W., and J. Heifetz, TM F/NWC-73  
Joll, L. M.—see Morgan et al.  
Jolley, John W., Jr.—see Hedgepeth and Jolley  
Jones, A. C.—see Zuboy et al.  
\_\_\_\_\_, H. E. Groess, K. Newlin, J. R. Zuboy, L. L. Massey, P. Eldridge, and D. Tidwell, TM SEFC-53  
Jones, Albert C.—see Weeks and Jones  
\_\_\_\_\_, and Edward F. Klima, TM SEFC-135  
\_\_\_\_\_, \_\_\_\_\_, and John R. Poffenberger, MFR 44(9-10):1  
\_\_\_\_\_, and James R. Zweifel, MFR 44(9-10):50  
Jones, Cynthia, FB 83:289  
Jones, Douglas S.—see Ropes et al.  
Jones, K. A.—see Owens et al.  
Jones, Linda L.—see Ainley et al.  
Jory, Darryl E., and Edwin S. Iversen, MFR 47(4):1  
Joseph, Jeanne D., MFR 47(3):30  
\_\_\_\_—see Hale et al.  
\_\_\_\_\_, and Gloria Seaborn, TM SEFC-95  
Jossi, Jack W.—see Smith and Jossi  
\_\_\_\_\_, and Robert R. Marak, TM F/NEC-21  
Joyce, Gerald G., John V. Rosapepe, and Junroku Ogasawara, FB 80:401

Juanico, Marcelo, MFR 42(7-8):10  
Judy, Mayo H.—see Lewis and Judy  
\_\_\_\_\_, and Robert M. Lewis, S 774  
June, J. A.—see Bakkala et al.  
June, Jeffrey—see Weststad et al.  
Jung, Marvin—see Whipple et al.

## K

Kabata, Z., and D. J. Whitaker, MFR 47(2):55  
Kajimura, H.—see Lander and Kajimura  
Kajimura, Hiroshi, S 779  
\_\_\_\_—see Stroud et al.  
\_\_\_\_\_, Clifford H. Fiscus, and Richard K. Stroud, TM F/NWC-2  
Kan, Ting T.—see Bond et al.  
Kanazawa, Akio, TR 16:3-7  
\_\_\_\_\_, Shin-ichi Teshima, Mineshi Sakamoto, Hikaru Matsubara, and Takemitsu Abe, TR 16:71-72  
Kane, Joseph, FB 80:631  
Kang, Ingrid—see Myrick et al.  
Kappenman, Russell F., FB 79:95; TM F/NWC-15  
Karinen, John F.—see Rice et al.  
Kato, Mamoru, TR 27:67-73  
Kato, Susumu, and Stephen C. Schroeter, MFR 47(3):1  
Katz, Barbara—see Brown et al.  
Katz, S. J., C. B. Grimes, and K. W. Able, FB 81:41  
Kaufmann, John H.—see Irvine et al.  
Kaya, Calvin M., Andrew E. Dizon, and Sharon D. Hendrix, FB 79:185  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, Thomas K. Kazama, and Martina K. K. Queenth, FB 80:393  
Kaylor, John D.—see Ronsivalli et al.  
\_\_\_\_\_, and Robert J. Learson, S 769  
Kazachenko, V. N., and V. M. Titar, TR 25:85-88  
Kazama, Thomas K.—see Kaya et al.; Matsumoto et al.  
Kelleher, S. D.—see Regenstein et al.  
Keller, Cynthia L.—see Ampola and Keller  
Kelley, Sharon—see Potthoff and Kelley; Richards et al.  
Kelly, George F.—see Lux et al.  
Kelly, S., T. Potthoff, W. J. Richards, and L. Ejsymont, TM SEFC-167  
Kemmerer, Andrew J., Robert E. Timko, and Samuel B. Burkett, TM SEFC-112  
Kendall, Arthur W., Jr.—see Sherman et al.  
\_\_\_\_\_, and Jean R. Dunn, TR 20  
\_\_\_\_\_, and N. A. Naplin, FB 79:705  
\_\_\_\_\_, and Beverly Vinter, TR 2  
Kenney, Elizabeth—see Norton et al.  
Kenney, Robert D.—see Hain et al.  
\_\_\_\_\_, Martin A. M. Hyman, and Howard E. Winn, TM F/NEC-41  
Keser, Milan, Donald F. Landers, Jr., and Jeffrey D. Morris, S 770  
Keyes, Raymond S.—see Le Boeuf et al.; Webb and Keyes  
Khilnani, Arvind, FB 78:973  
Kibal'chich, Arkadii A.—see Fay et al.  
Kimbrell, Carol A.—see Hunter and Kimbrell  
Kimura, Daniel K.—see Balsiger et al.  
Kimura, Makota—see Myrick et al.  
King, Katherine, TM F/NWR-15  
King, Michael G., MFR 43(12):10  
Kirkley, James E.—see Sissenwine and Kirkley  
Kirkley, Jim—see Conrad et al.



- Kito, Hitoshi, 442:7-12  
 Kleiber, P.—see Parrish et al.  
 Kleppel, G. S., and E. Manzanilla, FB 81:154  
 Klima, E. F., K. N. Baxter, and F. J. Patella, TM SEFC-156  
 ———, T. Costello, T. W. Roberts, G. A. Matthews, and F. J. Patella, TM SEFC-104  
 Klima, Edward F.—see Jones and Klima; Jones et al.  
 ———, K. Neal Baxter, Frank J. Patella, and Geoffrey A. Matthews, TM SEFC-108; TM SEFC-136  
 ———, Kenneth N. Baxter, and Frank J. Patella, Jr., MFR 44(9-10):16  
 ———, and Frank J. Patella, MFR 47(4):11  
 ———, and Richard B. Roe, TM SEFC-2  
 Klimley, A. Peter, and Donald R. Nelson, FB 79:356  
 Knaggs, Eric H.—see MacCall et al.  
 Knechtel, C. D., and L. J. Bledsoe, TM F/NWC-50  
 Knechtel, Charles D., and Lewis J. Bledsoe, TM F/NWC-19  
 Knight, Margaret D., FB 78:313  
 ———, and Makoto Omori, FB 80:217  
 Knott, D. M.—see Wenner et al.  
 Kobayashi, Tokimasa—see Grant et al.  
 Kochman, Howard I.—see Irvine et al.  
 Koganezawa, Akimitsu, and Minoru Sasaki, TR 27:75-81  
 Koi, D.—see Caillouet and Koi  
 Koi, D. B., TM SEFC-153  
 ————see Caillouet and Koi  
 Koi, Dennis B.—see Caillouet and Koi; Caillouet et al.; Matthews et al.  
 Koi, Dennis Brian—see Caillouet and Koi  
 Kolbe, E., C. Crapo, and K. Hilderbrand, MFR 47(4):33  
 Kolbe, Edward—see Lee and Kolbe  
 Kolz, A. Lawrence—see Timko and Kolz  
 Konovalov, S. M., and T. E. Butorina, TR 25:35-38  
 Koplín, Steven—see Herrick and Koplín  
 Korn, Sid—see Rice et al.  
 Korotaeva, V. D., TR 25:63-64  
 Korson, Charles S., TM F/SWR-004; TM F/SWR-005; TM F/SWR-006; TM F/SWR-007; TM F/SWR-008; TM F/SWR-009  
 ———, and Wesley Silverthorne, TM F/SWR-010  
 Koski, Charles—see Pettit and Koski  
 Koski, Charles H., Stephen W. Pettit, James B. Athearn, and Alex L. Heindl, TM F/NWR-11  
 Koslow, J. Anthony, FB 79:131  
 Kotchian-Prentiss, N. M.—see McFarland et al.  
 Kouloheras, Elizabeth—see Lawton et al.  
 Koury, Barbara—see Patashnik et al.  
 Kovaliova, A. A.—see Alioshkina et al.; Gaevskaya et al.  
 ———, and S. S. Schulman, TR 25:55-58  
 Kozloff, P., TM F/NWC-37  
 Kozloff, Patrick, TM F/NWC-71; TM F/NWC-78  
 Kraeuter, John N., and Michael Castagna, FB 78:538  
 Krasin, V. K., TR 25:59-60  
 Kraus, Scott D.—see Hain et al.  
 ———, James R. Gilbert, and John H. Prescott, FB 81:910  
 Krauthamer, Judith T., William E. Grant, and Wade L. Griffin, MFR 46(2):53  
 Krieger, Kenneth J., MFR 44(3):18  
 ———, and Bruce L. Wing, TM F/NWC-66  
 Krogman, B. D., and D. J. Rugh, TM F/NWC-45  
 Krogman, Bruce D., MFR 42(9-10):30  
 ————see Braham et al.  
 Krouse, Jay S., S 747  
 Kudo, George—see Nelson et al.; Patashnik et al.  
 Kurata, Hiroshi, Kunihiko Shigueno, and Kenro Yatsuyanagi, TR 16:9-15  
 Kurochkin, Yu. V., TR 25:15-18  
 Kusher, David—see Cailliet et al.  
 Kwok, Josephine—see Barnett et al.  
 Kyle, B.—see Lake et al.
- L** \_\_\_\_\_
- Laevastu, T., TM F/NWC-38  
 ———, and R. J. Marasco, TM F/NWC-41  
 Laevastu, Taivo, and Richard Marasco, TM F/NWC-27  
 Lake, J. L., C. W. Dimock, C. Norwood, R. Bowen, and B. Kyle, S 751:5-8  
 Lamberson, P. B.—see Boehlert et al.  
 Lander, R. H., TM F/NWC-3; TM F/NWC-4  
 ———, and H. Kajimura, TM F/NWC-5  
 Landers, Donald F., Jr.—see Keser et al.  
 Landingham, Joyce H.—see Orsi and Landingham  
 Landry, A. M., Jr., and H. W. Armstrong, TM SEFC-28  
 Lane, J. Perry, and Thomas J. Connors, MFR 46(2):36  
 ———, John J. Ryan, and Robert J. Learson, MFR 46(3):76  
 Lang, George E., Jr.—see Brousseau et al.  
 Lange, A. M. T., and M. P. Sissenwine, MFR 42(7-8):23  
 Lange, Anne M. T., and Karen L. Johnson, S 745  
 ———, and Joan E. Palmer, TM F/NEC-39  
 Langton, R. W.—see Durbin et al.  
 Langton, Richard W., and Ray E. Bowman, FB 80:745; FB 81:15; S 740; S 749  
 Lanier, Tyre C., MFR 46(2):43  
 LaPlace, Joseph A.—see Olsen and LaPlace  
 Laroche, Joanne Lyczkowski, FB 80:827  
 ————see Rosenberg and Laroche  
 ———, and Sally L. Richardson, FB 78:603  
 ———, and Andrew A. Rosenberg, FB 80:93  
 Laroche, Wayne A., FB 78:897  
 ———, and Sally L. Richardson, FB 79:231  
 Larsen, Peter F., Anne C. Johnson, and Lee F. Doggett, TM F/NEC-19  
 Larson, Ralph J.—see Ebeling et al.; Guillemot et al.  
 ———, and Edward E. DeMartini, FB 82:37  
 Lasker, Reuben, TR 36; TR 36:1-3  
 ————see Sherman et al.  
 Laurence, G. C., and R. G. Lough, TM F/NEC-36  
 Laurs, R. M.—see Parrish et al.  
 Laurs, R. Michael—see Fiedler et al.  
 ———, Ronald J. Lynn, Robert Nishimoto, and Ronald Dotson, TM SWFC-10  
 ———, and Jerry A. Weatherall, FB 79:293  
 Lavenberg, Robert J.—see Love et al.  
 Lawton, Robert—see Fogarty and Lawton  
 ———, Elizabeth Kouloheras, Phillips Brady, Wendell Sides, and Mando Borgatti, S 775:47-52  
 Le Boeuf, Burney J., Marianne Riedman, and Raymond S. Keyes, FB 80:891  
 Learson, Robert J.—see Kaylor and Learson; Lane et al.  
 Leathem, Wayne—see Howe and Leathem  
 Leatherwood, Stephen—see Antonelis et al.; Braham et al.; Ljunblad et al.  
 ———, Randall R. Reeves, William F. Perrin, William E. Evans, and Larry Hobbs, C 444

- Lebedev, B. Iv., TR 25:77
- Ledgerwood, Richard D.—see Dawley et al.
- Lee, Dennis W.—see Brothers et al.; Prince and Lee
- , Eric D. Prince, and Michael E. Crow, TR 8:61-69
- , ———, and Walter C. Mann, TM SEFC-113
- Lee, J. S., and Edward Kolbe, MFR 44(3):12
- Lee, Kang-Ho, Herman S. Groninger, and John Spineili, MFR 43(3):14
- Leek, Steve L.—see McCabe et al.
- Leithiser, Ronald—see MacCall et al.
- Lemberg, Norman A.—see Trumble et al.
- Leming, Thomas D., TM SEFC-6
- see Brucks et al.
- Lenarz, William H., MFR 42(3-4):34
- see Baglin et al.; Echeverria and Lenarz; Guillemot et al.
- , and Peter B. Adams, FB 78:659
- Leong, J. K.—see McLellan and Leong
- Lcong, Jorge K.—see McLellan and Leong
- Leong, Roderick J. H.—see Hunter and Leong; Hunter et al.
- Lester, L. James—see Christian and Lester
- Lester, R. J. G., A. Barnes, and G. Habib, FB 83:343
- Lewis, Curtis W.—see Guthrie and Lewis
- Lewis, Robert M.—see Judy and Lewis
- , and Mayo H. Judy, FB 81:405
- , and Charles M. Roithmayr, FB 78:947
- Lewis, T. James—see Ainley et al.
- Libby, David A., FB 79:207; FB 80:902; FB 83:696
- Licciardello, J. J., E. M. Ravesi, and M. G. Allsup, MFR 47(1):78
- Licciardello, Joseph J., MFR 42(1):21; MFR 45(2):1
- see Ravesi et al.
- , Elinor M. Ravesi, and Michael G. Allsup, MFR 42(1):55; MFR 44(8):15
- Lightner, D. V., R. M. Redman, D. A. Danald, R. R. Williams, and L. A. Perez, TR 16:25-33
- Lindall, William N., Jr., and Gordon W. Thayer, MFR 44(12):18
- Linley, Patricia A.—see Gilmore et al.
- Lipson, Robert L.—see Higgins et al.
- Lipton, Douglas W.—see McHugh et al.
- Liscom, Kenneth L., Gerald E. Monan, Lowell C. Steuhrenberg, and Pamela J. Wülder, TM F/NWC-81
- Livingston, P. A., TM F/NWC-43
- , and M. S. Alton, TM F/NWC-32
- , and K. M. Bailey, MFR 47(2):16
- , and B. J. Goiney, Jr., TM F/NWC-54
- Livingston, Patricia A., FB 81:629; MFR 47(1):9
- , and Bernard J. Goiney, Jr., TM F/NWC-63
- Ljungblad, D. K., S. Leatherwood, and M. E. Dahlheim, MFR 42(9-10):86
- Lo, Nancy C. H., FB 83:137; TM SWFC-31; TR 36:43-50
- see Hunter et al.; Smith and Lo
- , Joseph E. Powers, and Bruce E. Wahlen, FB 80:396
- Loesch, Joseph G.—see Johnson and Loesch
- Long, Clifford W.—see Gessel et al.; McCabe et al.
- Long, Douglas, and W. F. Rathjen, MFR 42(7-8):60
- Longwell, A. Crosby—see Hughes and Longwell
- Loomis, David K.—see Ditton and Loomis
- Lopez, Allyn Monty, TM SEFC-85; TM SEFC-106
- Lough, R. G.—see Laurence and Lough
- Lough, R. Gregory—see Bolz and Lough
- , Michael Pennington, George R. Bolz, and Andrew A. Rosenberg, FB 80:187
- Loughlin, Thomas R.—see Fiscus et al.; Hines and Loughlin
- Loughlin, Thomas R., Jack A. Ames, and Judson E. Vandevere, FB 79:347
- , Lewis Consiglieri, Robert L. DeLong, and Ann T. Actor, MFR 45(7-9):44
- Love, Milton S., Gerald E. McGowen, William Westphal, Robert J. Lavenberg, and Linda K. Martin, FB 82:179
- , and Mike Moser, S 777
- , Kimberly Shriner, and Pamela Morris, FB 82:530
- , and William V. Westphal, FB 79:533, 794
- , William Westphal, and Robson A. Collins, FB 83:243
- Love, Travis D., Mary H. Thompson, and Melvin E. Waters, TM SER-3
- Low, Doris—see Todd and Low
- Low, L.-L.—see Bakkala and Low; Bakkala et al.
- Low, Loh-Lee—see Bakkala and Low
- , and Ikuo Ikeda, S 743
- Low, R. A., Jr., and S. B. Mathews, S 753
- , G. F. Ulrich, and F. Blum, MFR 45(4-6):16
- Lowry, Lloyd F.—see Bukhtiyarov et al.; Frost and Lowry; Oliver et al.
- , and John J. Burns, MFR 42(9-10):88
- Lubbers, Lawrence—see Setzler et al.
- Lund, William A., Jr.—see Hennemuth et al.; Walsh and Lund
- Lundstrom, Ronald C.—see Ravesi et al.
- Lunsford, Pamela J.—see Miller et al.
- Lux, F. E.—see Anderson et al.
- , and F. E. Nichy, S 752
- Lux, Fred E., George F. Kelly, and Charles L. Wheeler, S 775:29-33
- Lyadov, V. N., TR 25:41-43
- Lynde, C. M., FB 79:303
- Lynn, Ronald J.—see Laurs et al.

## M

- MacCall, Alec D.—see Huppert et al.
- , Herbert W. Frey, Daniel D. Huppert, Eric H. Knaggs, Jane A. McMillan, and Gary D. Stauffer, TM SWFC-4
- , Keith R. Parker, Ronald Leithiser, and Bill Jessee, FB 81:613
- MacDonald, J. Stevenson, Michael J. Dadswell, Ralph G. Appy, Gary D. Melvin, and David A. Methven, FB 82:121
- Macewicz, Beverly J.—see Hunter and Macewicz
- MacFarlane, R. Bruce—see Whipple et al.
- MacIntosh, Richard A., MFR 42(5):15
- see Somerton and MacIntosh
- MacKay, David B.—see Myrick et al.
- MacKenzie, Clyde L., Jr., MFR 45(3):1
- Mackett, David J., TM SWFC-37
- MacLeod, William D., Jr., Donald W. Brown, Andrew J. Friedman, Douglas G. Burrows, Orlando Maynes, Ronald W. Pearce, Catherine A. Wigren, and Richard G. Bogar, TM F/NWC-92
- , ———, ———, Orlando Maynes, and Ronald W. Pierce, TM F/NWC-64
- Macy, Paul T.—see Dangel et al.
- Macy, William K., III, FB 80:449
- Mahnken, Conrad V. M.—see Prentice et al.; Dickhoff et al.; Folmar et al.; Gould et al.
- Mahon, Robin—see Hunte and Mahon
- Mais, K. F.—see Parrish et al.
- Majkowski, J., and J. Hampton, FB 81:723

Majkowski, Jacek, and John Hampton, TR 8:87-90  
 Majors, Richard L., TM F/NWC-80  
 Malecha, Spencer, TR 16:35-55  
 Mallicoate, D. L.—see Parrish et al.  
 Mallman, Reba—see Eisenberg et al.  
 Maney, Richard S.—see Gadbois and Maney  
 Mann, Roger, FB 80:315  
 Mann, Walter C.—see Lee et al.  
 Manooch, C., III, D. L. Mason, and R. S. Nelson, TM SEFC-124  
 Manooch, C. S., III, and J. L. Ross, TM SEFC-7  
 Manooch, Charles S., III—see Huntsman et al.; Trent et al.  
 ———, Leon E. Abbas, and Jeffrey L. Ross, MFR 43(8):1  
 ———, and Charles A. Barans, FB 80:1  
 Manzanilla, E.—see Kleppel and Manzanilla  
 Manzi, John W.—see Brown et al.  
 Marak, Robert R.—see Jossi and Marak  
 Marasco, R. J.—see Laevastu and Marasco  
 Marasco, Richard—see Laevastu and Marasco  
 Marcello, Rocco A., Jr.—see Bibb et al.  
 Marchesseault, Guy D.—see Anderson and Marchesseault  
 ———, Joseph J. Mueller, and Ivar E. Strand, Jr., TM F/NEC-6  
 ———, Richard P. Ruais, and Der-Hsiung Wang, TM F/NEC-2  
 Marchette, Donald—see Dadswell et al.  
 Margraf, F. J., TM SEFC-33  
 Marliave, Jeffrey B., FB 78:959  
 ————see Matarese and Marliave  
 Marquette, Willman M., and John R. Bockstoe, MFR 42(9-10):5  
 Marshall, H. G.—see Colton et al.  
 Marshall, Harold G., and Myra S. Cohn, TM F/NEC-8; TM  
 F/NEC-9; TM F/NEC-15  
 Marshall, Joseph A.—see Medved and Marshall  
 Martin, David K., and Conrad W. Recksiek, MFR 45(10-12):42  
 Martin, L.—see Gallaway and Martin  
 Martin, Linda K.—see Cailliet et al.; Love et al.  
 Martin, Roy E.—see Meinke et al.  
 ———, Willard H. Doyle, and James R. Brooker, MFR 45(7-9):1  
 Mason, D. L.—see Manooch et al.  
 Mason, John M., Jr.—see Baglin et al.  
 Massey, L. L.—see Jones et al.  
 Massey, Larry L., and John E. Hollingsworth, TM SEFC-10  
 Masuda, K.—see Percy et al.  
 Matarese, Ann C., and Jeffrey B. Marliave, FB 80:345  
 ———, Sally L. Richardson, and Jean R. Dunn, FB 78:923  
 ———, and David L. Stein, FB 78:169  
 ———, and Beverly M. Vinter, FB 83:447  
 Mate, Bruce R.—see Brown and Mate  
 Mathews, S. B.—see Low and Mathews  
 Mathews, Stephen B., and Morris W. Barker, FB 81:916  
 Mathieson, Arthur C., C 442:25-66  
 Matlock, Gary C.—see McEachron and Matlock  
 Matshkevski, V. K., TR 25:109-110  
 Matsubara, Hikaru—see Kanazawa et al.  
 Matsumoto, Walter M., TM SWFC-44  
 ————see Shomura and Matsumoto  
 ———, Thomas K. Kazama, and Donald C. Aasted, MFR 43(9):1  
 ———, Robert A. Skillman, and Andrew E. Dizon, C 451  
 Matsusato, Toshihiko, TR 10:11-16  
 Matte, A.—see Draxler et al.  
 Matthews, G. A., TM SEFC-149  
 ————see Klima et al.  
 Matthews, Geoffrey A., MFR 44(9-10):5; TM SEFC-109  
 ————see Klima et al.  
 Matthews, Geoffrey A., Dennis B. Koi, and Richard L. Benefield,  
 TM SEFC-140  
 Mattheissen, George C., and Michael D. Scherer, S 775:41-46  
 Maule, Alec G., and Howard F. Horton, FB 82:411; FB 83:701  
 Maurer, Don, and Roland L. Wigley, S 783  
 Mayama, Hiroshi, TR 27:83-86  
 Maynes, Orlando—see MacLeod et al.  
 Mayo, Charles A.—see Hain et al.  
 Mayo, J., TM SEFC-46  
 McBride, Margaret M., and Bradford E. Brown, TM F/NEC-5  
 McCabe, George T., Jr., Clifford W. Long, and Steve L. Leek,  
 FB 81:412  
 ———, William D. Muir, Robert L. Emmett, and Joseph T.  
 Durkin, FB 81:815  
 McCleave, James D.—see Power and McCleave  
 McCleod, Guy C.—see Robinson et al.  
 McCulloch, W.—see Neff et al.  
 McEachron, Lawrence W., and Gary C. Matlock, MFR 45(1):11  
 McFadin, Louis W.—see Savastano et al.  
 McFarland, W. N., E. B. Brothers, J. C. Ogden, M. J. Shulman,  
 E. L. Bermingham, and N. M. Kotchian-Prentiss, FB 83:413  
 McFarland, William N.—see Hobson et al.  
 McFarlane, Gordon A.—see Beamish and McFarlane  
 ———, and Richard J. Beamish, MFR 47(2):23  
 McGahee, T. Glenn—see Dudley and McGahee  
 McGowan, Michael—see Richards et al.  
 McGowen, Gerald E.—see Love et al.  
 McGurk, Michael D., FB 82:113  
 McHugh, J. L., FB 79:575  
 ———, Marjorie W. Sumner, Paul J. Flagg, Douglas W. Lipton,  
 and William J. Behrens, S 756  
 McInnis, R.—see Parrish et al.  
 McKay, Philip J.—see Ronsivalli et al.  
 McKenney, Thomas W.—see Griswold and McKenney  
 McLain, D. R.—see Evans et al.  
 McLain, Douglas R.—see Bretschneider and McLain  
 McLellan, G. I., and J. K. Leong, FB 78:965  
 McLellan, Garey L., and Jorge K. Leong, TM SEFC-93  
 McMillan, Jane A.—see Huppert et al.; MacCall et al.  
 McPhail, M. J.—see Walters and McPhail  
 McVey, J. P., and T. Wibbels, TM SEFC-145  
 Meaburn, G. Malcolm, Karen B. Bolton, Harry L. Seagran,  
 Thomas Siewicki, Stephen M. Bingham, and Peter J.  
 Eldridge, TM SEFC-74  
 Mead, James G.—see Hansen et al.; Testaverde and Mead  
 ———, Daniel K. Odell, Randall S. Wells, and Michael D. Scott,  
 FB 78:353  
 Meadows, Robert E.—see Brundage and Meadows  
 Medved, Robert J., and Joseph A. Marshall, FB 79:441  
 ———, Charles E. Stillwell, and John J. Casey, FB 83:395  
 Medway, W., MFR 42(9-10):91  
 Meinke, Wilmon W., Gunnar Finne, Ranzell Nickelson, and Roy  
 Martin, MFR 45(7-9):34  
 Melvin, E. F.—see Bronstein et al.  
 Melvin, Garu D.—see MacDonald et al.  
 Mendelsohn, J. M., and John G. Callan, MFR 42(1):38  
 Mendelsohn, Joseph M.—see Gorga et al.  
 Mendelssohn, Roy, FB 78:35, 887  
 Mendoza, Jeremy J.—see Antoine et al.  
 Menz, Fredric C., and Donald P. Wilton, FB 81:168  
 Mercer, Roger W.—see Fiscus and Mercer  
 ———, and Michele Bucy, MFR 45(7-9):56

- Merriner, John V.—see Ross and Merriner  
 Metcalfe, J. L.—see Peterson et al.  
 Methot, Richard D., Jr., FB 81:741  
 ————see Botsford et al.  
 Methven, David A.—see MacDonald et al.  
 Meyer, Philip A., TM F/NWR-3  
 Meyer, Thomas L., Richard A. Cooper, and Kenneth J. Pecci, MFR 43(9):14  
 Meyers, Theodore R., MFR 46(3):14  
 ————, and Jerry D. Hendricks, MFR 44(12):1  
 Meylan, Anne—see Carr et al.  
 Michaels, William L.—see Bowman and Michaels  
 Michel, Harding B., TR 15  
 Middleditch, B., TM SEFC-51  
 ————, and D. West, TM SEFC-41  
 Migaki, George—see Albert et al.  
 Mighell, James L., MFR 43(2):1  
 Mihursky, Joseph A.—see Setzler et al.  
 Miklas, Joseph J.—see Hines et al.  
 Miller, Bruce S.—see Quinn et al.  
 Miller, Charles B.—see Rothlisberg and Miller  
 Miller, David R., FB 80:650  
 Miller, Don C.—see Pearce et al.  
 Miller, Katie—see Sullivan et al.  
 Miller, Morton M.—see Norton et al.  
 Miller, Robert E., Douglas W. Campbell, and Pamela J. Lunsford, FB 78:196  
 Miller, Robert V., TR 12:1-4  
 Miller, Ruth, and John Spinelli, FB 80:281  
 Millikin, Mark R., FB 80:655  
 ————, and Austin B. Williams, TR 1  
 Milner, George B., David J. Teel, Fred M. Utter, and Gary A. Winans, MFR 47(1):1  
 Minello, Thomas J.—see Zimmerman et al.  
 Mintel, Ralph J., and Gary B. Smith, TM F/NWC-18  
 Mitchell, Edward D.—see Breiwick et al.  
 Mitsuoka, Rae R., Roger E. Pearson, Laura J. Rutledge, and Samuel Waterman, TM F/NWC-34  
 Miyamoto, Garret T.—see Ralston and Miyamoto  
 Mizroch, Sally A.—see Wespestad et al.  
 ————, Dale W. Rice, and Jeffrey M. Breiwick, MFR 46(4):15, 20, 25  
 Modde, Timothy, and Stephen T. Ross, FB 78:911  
 Moffitt, Robert B., FB 81:434  
 ————see Polovina et al.  
 Moles, Adam, S 760  
 Moles, D. Adam—see Rice et al.  
 Monan, Gerald E., TR 27:33-37  
 ————see Liscom et al.  
 Mordvinova, T. N.—see Naidenova and Mordvinova  
 Morgan, G. R., B. F. Phillips, and L. M. Joll, FB 80:475  
 Morgan, Steven G., FB 78:693  
 Morrell, Stephen H.—see Ainley et al.  
 Morris, Byron F., TM F/AKR-2; TM F/AKR-3; TM F/AKR-4  
 ————, Miles S. Alton, and Howard W. Braham, TM F/AKR-5  
 Morris, Jeffrey D.—see Keser et al.  
 Morris, Pamela A., FB 82:199  
 ————see Love et al.  
 Morrow, Robert J., and Elizabeth K. Buelna, TM SWFC-55  
 Morse, M. Patricia—see Robinson et al.  
 Morse, Wallace W., FB 78:103, 190  
 ————see Berrien et al.  
 Mortimer, Jeanne—see Carr et al.  
 Moser, H. Geoffrey, and Elbert H. Ahlstrom, TR 36:37-41  
 Moser, Mike—see Love and Moser  
 ————, Judy A. Sakanari, Carol A. Reilly, and Jeannette Whipple, TR 29  
 Mountford, Nancy K.—see Setzler et al.  
 Moyle, Peter B.—see Daniels and Moyle  
 Mueller, Joseph J.—see Marchesseault et al.  
 Mugiya, Yasuo—see Tanaka et al.  
 Muir, William D.—see McCabe et al.  
 Mullin, M. M., E. R. Brooks, F. M. H. Reid, J. Napp, and E. R. Stewart, FB 83:151  
 Mundy, Bruce C.—see Boehlert et al.  
 Murai, Sueto, Harold A. Gangmark, and Robert R. French, TM F/NWC-14  
 Murai, Takeshi, Toshio Akiyama, and Takeshi Nose, TR 27:87-90  
 Murawski, Steven A.—see Conover and Murawski; Ropes et al.  
 ————, John W. Ropes, and Fredric M. Serchuk, FB 80:21  
 Murphy, Leo C., Jr.—see Rothschild et al.  
 Musick, J. A.—see Colvocoresses and Musick  
 Myers, Katherine W.—see Bond et al.  
 Myrick, Albert C., Jr.—see Reilly et al.  
 ————, Aleta A. Hohn, Priscilla A. Sloan, Makota Kimura, and Drew D. Stanley, TM SWFC-30  
 ————, Edward W. Shallenberger, Ingrid Kang, and David B. MacKay, FB 82:207
- N** \_\_\_\_\_
- Naidenova, N. N., and T. N. Mordvinova, TR 25:123-127  
 ————, C. M. Nigmatullin, and A. V. Gaevskeya, TR 25:113-116  
 Nakamura, E. L., J. R. Taylor, and I. K. Workman, TM SEFC-45  
 Nakamura, R. M.—see Cramer et al.  
 Naplin, N. A.—see Kendall and Naplin  
 Naplin, Nancy Anne—see Richardson et al.  
 Napp, J.—see Mullin et al.  
 Naughton, S.—see Saloman and Naughton  
 Naughton, S. P., and C. H. Saloman, TM SEFC-150; TM SEFC-160  
 Naughton, Steven P.—see Saloman and Naughton; Trent et al.  
 Neal, R. A., H. Brusher, and L. F. Sullivan, TM SEFC-114  
 Neal, Victor T.—see Quinn and Neal  
 Neally, Nate—see Freeman et al.  
 Neff, J. M., M. P. Coglianesi, W. McCulloch, L. A. Reitsema, and S. Anderson, TM SEFC-69  
 Neill, William H.—see Gooding et al.  
 Neilson, John D., and Glen H. Geen, FB 83:91  
 ————, ————, and Brian Chan, FB 83:81  
 Nellis, David W.—see Olsen et al.  
 Nelson, Craig S., and David M. Husby, S 763  
 Nelson, Donald R.—see Klimley and Nelson  
 Nelson, Martin O.—see Dark et al.  
 ————, and Thomas A. Dark, MFR 47(2):82  
 Nelson, R.—see Wespestad et al.  
 Nelson, R. E., Jr., MFR 47(2):39  
 Nelson, R. S.—see Manooch et al.  
 Nelson, Richard W.—see Barnett et al.; Conrad et al.; Stone et al.  
 ————, Harold J. Barnett, and George Kudo, MFR 47(2):60  
 Nelson, Russell, Jr.—see Edwards et al.; French et al.; Wall et al.  
 ————, Robert French, and Janet Wall, MFR 43(5):1  
 Nelson, Walter R.—see Epperly and Nelson  
 Neves, Richard J., FB 79:473

Newcomb, Timothy W., and Thomas J. Flagg, MFR 45(2):8  
 Newlin, K.—see Jones et al.  
 Ng, L., TM SEFC-146; TM SEFC-151  
 Ngiramengior, Marcus—see Heslinga et al.  
 Nicholl, Ragan—see Hunter and Nicholl  
 Nichols, Scott, MFR 44(9-10):31; TM SEFC-110; TM SEFC-141;  
 TM SEFC-142  
 Nicholson, William R.—see Huntsman et al.  
 Nichy, F. E.—see Lux and Nichy  
 Nickelson, Ranzell—see Meinke et al; Ward et al.  
 Nielsen, Daphne—see Squire and Nielsen  
 Niesen, Thomas M.—see Rosenblum and Niesen  
 Niggol, Karl, TM F/NWC-29  
 Nigmatullin, C. M.—see Naidenova et al.  
 Nikolaeva, V. M., TR 25:67-72  
 Nip, Wai-Kit—see Frank et al.  
 Nishimoto, Robert—see Laurs et al.  
 Nishiyama, T.—see Percy et al.  
 Nogami, Kazuhiko, Osamu Fukuhara, and Satoshi Umezawa, TR  
 16:73-81  
 Noma, Toshifumi, TR 16:17-23  
 Northeast Monitoring Program, TM F/NEC-10; TM F/NEC-20  
 Norton, Virgil J., Morton M. Miller, and Elizabeth Kenney, TM  
 F/NEC-40  
 Norwood, C.—see Lake et al.  
 Nose, Takeshi—see Murai et al.  
 Nulk, Vernon E.—see Smolowitz and Nulk  
 Nunnallee, Edmund P.—see Dark et al.  
 Nybakken, James W.—see Oliver et al.

## O

O'Connell, Charles P., FB 78:475  
 \_\_\_\_\_, and Pedro A. Paloma, FB 79:806  
 O'Connor, Edmund F.—see Oliver et al.  
 O'Connor, J. M.—see Bath and O'Connor  
 Odell, Daniel K.—see Antonelis et al.; Mead et al.  
 \_\_\_\_\_, Edward D. Asper, Joe Baucom, and Lanny H. Cornell,  
 FB 78:171  
 Ogasawara, Junroku—see Joyce et al.  
 Ogden, T. C.—see McFarland et al.  
 Ogren, Larry—see Steimle and Ogren  
 Okamoto, Ryo, TR 10:17-20  
 Oliver, John S., Peter N. Slaterry, Edmund F. O'Connor, and Lloyd  
 F. Lowry, FB 81:501  
 \_\_\_\_\_, \_\_\_\_\_, Larry W. Hulberg, and James W. Nybakken, FB  
 78:437  
 \_\_\_\_\_, \_\_\_\_\_, Mark A. Silberstein, and Edmund F. O'Connor,  
 FB 81:513  
 Olla, Bori L.—see Pearson et al.  
 Olsen, David A., and Joseph A. LaPlace, MFR 43(11):11  
 \_\_\_\_\_, David W. Nellis, and Richard S. Wood, MFR 46(1):13  
 Olsen, K.—see Sizemore and Olsen  
 Omori, Makoto—see Knight and Omori  
 O'Neil, Steven P.—see Smith et al.  
 Orak, Obichang—see Heslinga et al.  
 O'Reilly, J. E.—see Colton et al.; Draxler et al.  
 O'Reilly, John E.—see Reid et al.  
 Orsi, Joseph A.—see Jaenicke et al.  
 \_\_\_\_\_, and Joyce H. Landingham, TM F/NWC-86  
 Osgood, Kenric E.—see Hines et al.  
 Otwell, W. Steven, and George G. Giddings, MFR 42(7-8):67

Overholtz, William J., and Albert V. Tyler, FB 83:507  
 Overstreet, Robin M., TR 25:117-122  
 Ow, Mark D.—see Polovina and Ow  
 Owens, D. W., K. A. Jones, and D. J. Gallaway, TM SEFC-69  
 Oxenford, Hazel A., and Wayne Hunte, FB 81:906

## P

Page, Gary W.—see Allen et al.  
 Palko, B. J.—see Williams et al.  
 \_\_\_\_\_, G. L. Beardsley, and W. J. Richards, C 441  
 Palko, Barbara J., TM SEFC-132  
 \_\_\_\_\_—see Brusher and Palko; Brusher et al.; Williams et al.  
 \_\_\_\_\_, Grant L. Beardsley, and William J. Richards, C 443  
 \_\_\_\_\_, Deb Hess, and John Stevely, TM SEFC-59  
 Palmer, Joan E.—see Lange and Palmer  
 Palmisano, Aldo N.—see Gould et al.  
 Paloma, Pedro A.—see O'Connell and Paloma  
 Pardy, Christopher—see Tettey et al.  
 Park, Donn L.—see Harmon and Park  
 Parker, Jeffrey H.—see Woodhead et al.  
 Parker, Keith R., FB 78:541; TR 36:5-6  
 \_\_\_\_\_—see Bartoo and Parker; MacCall et al.  
 Parker, R. H., A. L. Crowe, and L. S. Bohme, TM SEFC-25  
 Parks, N. B., and F. R. Shaw, TM F/NWC-51  
 \_\_\_\_\_, and S. E. Hughes, TM F/NWC-8  
 Parks, Norman B., TM F/NWC-26; TM F/NWC-61  
 Parrish, R. H., D. L. Mallicoate, and K. F. Mais, FB 83:483  
 Parrish, Richard H., N. Bartoo, P. Donely, S. Herrick, P. Kleiber,  
 R. M. Laurs, R. McInnis, and J. Wetherall, TM SWFC-52  
 Parsons, Glenn R., FB 81:61; FB 83:695  
 Pascagoula Laboratory, TM SEFC-71  
 Patashnik, Max, Herman S. Groninger, Harold Barnett, George  
 Kudo, and Barbara Koury, MFR 44(5):1  
 Patella, F. J.—see Klima et al.  
 Patella, Frank J., Jr.—see Klima et al.; Klima and Patella  
 Patten, Benjamin G.—see Tretsven and Patten  
 Pawlowski, Robert J.—see Higgins et al.  
 Payne, P. Michael, and David C. Schneider, FB 82:440  
 Payne, Roger S.—see Wursig et al.  
 Pearce, John B.—see Higgins et al.  
 \_\_\_\_\_, Carl R. Berman, Jr., and Marlene R. Rosen, TM  
 F/NEC-35  
 \_\_\_\_\_, Don C. Miller, and Carl Berman, TM F/NEC-26  
 Pearce, Ronald W.—see MacLeod et al.  
 Percy, W., T. Nishiyama, T. Fujii, and K. Masuda, FB 82:391  
 Percy, William G., FB 78:529  
 \_\_\_\_\_—see Brodeur and Percy; Gabriel and Percy; Peterson  
 et al.  
 Pearson, Roger E.—see Fulton and Pearson; Mitsuoka et al.; Wahle  
 and Pearson; Wahle et al.  
 Pearson, Walter H., Peter C. Sugarman, Dana L. Woodruff, J. W.  
 Blaylock, and Bori L. Olla, FB 78:821  
 \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and Bori L. Olla, FB 79:641  
 Pecci, Kenneth J.—see Hulbert et al.; see Meyer et al.  
 Pederson, Mark, MFR 47(2):35  
 Pella, Jerome J.—see Bailey et al.  
 Pellegrin, Gilmore J., Jr.—see Watts and Pellegrin  
 Pennington, Michael—see Berrien et al.; Lough et al.  
 Perez, L. A.—see Lightner et al.  
 Pérez Farfante, Isabel, FB 83:1  
 Perkins, Herbert C.—see Shumway et al.

- Perrin, W. F., M. D. Scott, G. J. Walker, F. M. Ralston, and D. W. K. Au, TM SWFC-38
- Perrin, William F.—see Hansen et al.; Leatherwood et al.
- , Michael D. Scott, G. Jay Walker, and Virginia L. Cass, TR 28
- Perry, G.—see Butcher et al.
- Perryman, W.—see Au and Perryman
- Perryman, Wayne L.—see Au and Perryman
- Peteherych, S.—see Brucks et al.
- Peters, D. S.—see Colby et al.
- Peterson, C. H., P. B. Duncan, H. C. Summerson, and G. W. Safrit, Jr., FB 81:765
- Peterson, Charles H., P. Bruce Duncan, Henry C. Summerson, and Brian F. Beal, FB 83:671
- , Henry C. Summerson, and Stephen R. Fegley, FB 81:429
- Peterson, R. H., P. H. Johansen, and J. L. Metcalfe, FB 78:147
- Peterson, William T., Richard D. Brodeur, and William G. Percy, FB 80:841
- Pettit, Stephen W.—see Basham et al.; Delarm et al.; Koski et al.
- , and Charles Koski, TM F/NWR-14
- Phares, Patricia, TM SEFC-56; TM SEFC-57; TM SEFC-58
- Philbin, Cavin W., MFR 42(2):30
- Phillips, B. F.—see Morgan et al.
- Philo, L. Michael—see Albert et al.
- Phonlor, G.—see Hoss and Phonlor
- Picquelle, Susan, TR 36:55-57
- —see Stauffer and Picquelle
- , and Gary Stauffer, TR 36:7-15
- Pierce, Fran—see Stevenson and Pierce
- Pierce, Ronald W.—see Macleod et al.
- Pietsch, Theodore W., FB 79:387
- , and Jeffrey A. Seigel, FB 78:379
- , and John P. Van Duzer, FB 78:59
- Pike, Jeffrey R.—see Braddon et al.
- Pitcher, Kenneth W., FB 78:549, 797; FB 79:467
- Poffenberger, J. R., TM SEFC-148; TM SEFC-159
- Poffenberger, John R., MFR 44(9-10):38; TM SEFC-99; TM SEFC-100; TM SEFC-101; TM SEFC-111
- —see Jones et al.; Ward and Poffenberger
- Polacheck, Tom, TM SWFC-17; TM SWFC-19; TM SWFC-26; TM SWFC-51
- Polianski, Yu. I.—see Bauer and Polianski
- Polovina, Jeffrey J.—see Ralston and Polovina
- , Robert B. Moffitt, Stephen Ralston, Paul M. Shiota, and Happy A. Williams, MFR 47(4):19
- , and Mark D. Ow, FB 83:457
- Poole, John C.—see Fogarty et al.
- Popov, Valentin N.—see Delyamure et al.
- Posgay, J. A., MFR 43(4):19
- Potievski, E. G., L. A. Tsareva, and V. V. Burlin, TR 25:99
- Pothoff, T.—see Kelly et al.
- Pothoff, Thomas, FB 78:277
- —see Richards et al.
- , and Sharon Kelley, FB 80:161
- Powell, Allyn B., and Herbert R. Gordy, FB 78:701
- Power, James H., and James D. McCleave, FB 81:483
- Powers, J. E., TM SEFC-154
- Powers, James—see Richards et al.
- Powers, Joseph E., TM SEFC-127; TR 8:19-24
- —see Browder and Powers; Holt and Powers; Lo et al.
- Powers, K. D., TM F/NEC-27
- Powles, H., and C. A. Barans, MFR 42(5):21
- Powles, Howard, FB 78:119
- Pozdnyakov, S. E., TR 25:39
- Pratt, Harold L., Jr.—see Casey et al.
- , and John G. Casey, TR 8:175-177
- , and Robert B. Conklin, FB 80:153
- Pratt, Sheldon D., S 751:16-20
- Prentice, Earl F.—see Gould et al.; Rensel and Prentice
- , Kurt X. Gores, Conrad V. M. Mahnken, and Herman S. Groninger, TM F/NWC-68
- Prescott, John H.—see Kraus et al.
- Prezioso, Jerome—see Griswold and Prezioso
- , and Carolyn A. Griswold, S 751:20-21
- Price, R. J.—see Bronstein et al.
- Prince, Eric D.—see Lee et al.; Brothers et al.
- , and Dennis W. Lee, TM SEFC-55; TM SEFC-103
- , and Lynn M. Pulos, TR 8
- Pristas, P. J., TM SEFC-77
- Pristas, Paul J., TM SEFC-23; TM SEFC-90
- Prytherch, Herbert F., TM SEFC-16; TM SEFC-122
- Puffer, Harold W.—see Winkler et al.
- Pulos, Lynn M.—see Costello and Pulos; Prince and Pulos

## Q

- Queenth, Martina K. K.—see Kaya et al.
- Quinn, J. G.—see Hoffman and Quinn
- Quinn, Thomas P., Bruce S. Miller, and R. Craig Wingert, FB 78:816
- Quinn, William H., and Victor T. Neal, FB 81:363
- Quriolo, Louis E., TM F/AKR-1

## R

- Rabalais, Nancy N.—see Flint and Rabalais
- Radtke, R. L., and J. M. Dean, FB 80:201
- Radtke, Richard L., FB 82:434; TR 8:99-103; TR 8:123-129
- , and J. M. Dean, FB 79:360
- , and Peter C. F. Hurley, TR 8:145-150
- Rainey, William E., TM SEFC-82
- Raju, Solomon N., TR 22
- Ralph, David E.—see Fogarty et al.
- Ralston, F. M.—see Perrin et al.
- Ralston, Stephen—see Polovina et al.
- , and Garret T. Miyamoto, FB 81:523
- , and Jeffrey J. Polovina, FB 80:435
- Ramsdell, Gordon E.—see Slabyj et al.
- Ramsey, Leah—see Shimek et al.
- Randall, John E., FB 78:201
- Rasekh, Jamshyd G., Melvin E. Waters, and V. D. Sidwell, MFR 42(11):26
- Rathjen, W. F.—see Long and Rathjen
- Ravesi, E. M.—see Licciardello et al.
- Ravesi, Elinor M.—see Licciardello et al.
- , Joseph J. Licciardello, Bette E. Tuhkunen, and Ronald C. Lundstrom, MFR 47(1):48
- Ray, G. Carleton—see Fay et al.
- Ray, Sammy M.—see Sheridan and Ray
- Raymore, Paul A., Jr.—see Smith et al.; Walters et al.
- Read, A. J.—see Smith et al.
- Read, Andrew J., and David E. Gaskin, FB 83:543
- Reames, Robert C., and Austin B. Williams, FB 81:885
- Recksiek, Conrad W., MFR 45(10-12):26

- Recksiek, Conrad W.—see Martin and Recksiek
- Redman, R. M.—see Lightner et al.
- Reduker, David W.—see Upton et al.
- Reed, R. K., MFR 42(6):29; MFR 46(1):7
- Reese, Gladys B., TM SEFC-125
- Reeves, Randall R., MFR 42(9-10):65  
 —see Leatherwood et al.
- Regenstein, J. M., H. O. Hultin, M. Fey, and S. D. Kelleher, MFR 42(1):32
- Rehfus, Ruth—see Higgins et al.
- Reid, F. M. H.—see Mullin et al.
- Reid, Robert N., John E. O'Reilly, and Vincent S. Zdanowicz, TM F/NEC-16
- Reilly, Carol A.—see Moser et al.
- Reilly, Stephen B., Aleta A. Hohn, and Albert C. Myrick, Jr., TM SWFC-35  
 —, Dale W. Rice, and Allen A. Wolman, FB 81:267
- Reitsema, L. A., TM SEFC-26  
 —see Gallaway and Reitsema; Neff et al.
- Renaud, Maurice L., TR 21
- Renfroe, William C., and Harold A. Brusher, TM SEFC-94
- Rensel, John E., and Earl F. Prentice, FB 78:781
- Resource Assessment Division, Northeast Fisheries Center, TM F/NEC-12; TM F/NEC22
- Ribic, Christine A.—see Allen et al.
- Rice, D. W., Jr., F. L. Harrison, and A. Jearld, Jr., FB 78:675
- Rice, Dale W.—see Braham and Rice; Gosho et al.; Mizroch et al.; Reilly et al.  
 —, Allen A. Wolman, and Howard W. Braham, MFR 46(4):7
- Rice, Stanley D.—see Bailey et al.  
 —, and Jack E. Bailey, FB 78:641, 809  
 —, D. Adam Moles, John F. Karinen, Sid Korn, Mark G. Carls, Christine C. Brodersen, Jessica A. Gharrett, and Malin M. Babcock, TM F/NWC-67
- Rice, T. R., TM AEFC-1
- Richards, Gary P.—see Babinchak et al.  
 —, Daniel Goldmintz, and John A. Wells, TM SEFC-123
- Richards, Jack, TM F/NWR-10
- Richards, John B.—see Bybee and Richards
- Richards, R. Anne, J. Stanley Cobb, and Michael J. Fogarty, FB 81:51
- Richards, W. J.—see Kelly et al.; Palko et al.
- Richards, William J., S 776; TM SEFC-34  
 —see Palko et al.; Sherman et al.  
 —, Thomas Potthoff, Sharon Kelley, Michael McGowan, Leonard Ejsymont, and James Powers, TM SEFC-144
- Richardson, Sally L., FB 78:855; FB 79:103, 163  
 —see Laroche and Richardson; Laroche et al.; Matarese et al.
- , Jean R. Dunn, and Nancy Anne Naplin, FB 78:401  
 —, and Betsy B. Washington, C 430
- Richardson, W. John—see Wursig et al.
- Richkus, William A.—see Ulanowicz et al.
- Richter, Daryl E.—see Greenstein et al.
- Riedman, Marianne—see Le Boeuf et al.
- Roberts, Dale—see DeMartini et al.
- Roberts, Glenn C.—see Barnett et al.; Stone et al.
- Roberts, T. W.—see Klima et al.
- Robinson, Gary R., FB 80:907
- Robinson, William E., William E. Wehling, M. Patricia Morse, and Guy C. McLeod, FB 79:449
- Robison, Bruce H.—see Carey and Robison  
 —, and James E. Craddock, FB 81:283
- Rockett, Mark D., Gary W. Standard, and Mark E. Chittenden, Jr., FB 82:418
- Rodjuk, G. N., TR 25:31-32  
 —see Gaevskaya et al.
- Roe, Richard B.—see Klima and Roe
- Roe, Susan M.—see Higgins et al.
- Rogers, Donald E.—see Ruggerone and Rogers  
 —, and Ernest O. Salo, TR 27:39-43
- Roithmayr, Charles M.—see Lewis and Roithmayr
- Ronholt, Lael L.—see Wilderbuer et al.  
 —, Franklin R. Shaw, and Thomas K. Wilderbuer, TM F/NWC-23
- Ronsivalli, Louis J., MFR 44(1):8  
 —see Gorga and Ronsivalli  
 —, and Daniel W. Baker II, MFR 43(4):1  
 —, John D. Kaylor, Philip J. McKay, and Carmine Gorga, MFR 43(2):22
- Ropes, John W., MFR 44(8):1; MFR 46(2):27  
 —see Murawski et al.  
 —, Douglas S. Jones, Steven A. Murawski, Fredric M. Serchuk, and Ambrose Jearld, Jr., FB 82:1  
 —, Steven A. Murawski, and Fredric Serchuk, FB 82:253
- Roppel, Alton Y., TR 4
- Rosapepe, John V.—see Joyce et al.
- Rose, Craig S.—see Feldman and Rose
- Rosen, Marlene R.—see Pearce et al.
- Rosenberg, Andrew A., FB 80:245  
 —see Laroche et al.; Lough et al.  
 —, and Joanne Lyczkowski Laroche, FB 80:150
- Rosenblum, Shelly E., and Thomas M. Niesen, FB 83:403
- Rosenfeld, Mitchel E.—see Frank et al.
- Rosenthal, H., MFR 42(5):1
- Ross, J. L.—see Manooch and Ross
- Ross, Jeffrey L.—see Manooch et al.  
 —, and John V. Merriner, FB 81:553
- Ross, Stephen T.—see Modde and Ross
- Ross, Steve W., FB 82:227
- Rothlisberg, Peter C., FB 80:541  
 —, and Charles B. Miller, FB 81:455
- Rothschild, B., and J. A. Gulland, TM SEFC-98
- Rothschild, Brian J.—see Hennemuth et al.  
 —, Richard C. Hennemuth, Jacob J. Dykstra, Leo C. Murphy, Jr., John C. Bryson, and James D. Ackert, TM F/NEC-7
- Roumillat, William A.—see Waltz et al.
- Ruais, Richard P.—see Marchesseault et al.
- Ruggerone, Gregory T., and Donald E. Rogers, FB 82:401
- Rugh, D. J.—see Krogman and Rugh
- Rugh, David J.—see Fiscus et al.  
 —, and James C. Cabbage, MFR 42(9-10):46
- Russell, Howard J.—see Fogarty et al.
- Russo, Joseph L., C 435  
 —see Collette and Russo; Cressey et al.
- Rutledge, Laura J.—see Mitsuoka et al.
- Ryan, John J.—see Callan and Ryan; Lane et al.

## S

- Safrit, G. W., Jr.—see Peterson et al.  
 Saito, Yunosuke, C 442:1-5; C 442:13-17  
 Sakamoto, Mineshi—see Kanazawa et al.  
 Sakanari, Judy A.—see Moser et al.  
 Salo, Ernest O.—see Rogers and Salo  
 Saloman, C., and S. Naughton, TM SEFC-126; TM SEFC-128  
 Saloman, C. H.—see Naughton and Saloman  
 Saloman, Carl H.—see Johnson and Saloman; Trent et al.  
 ———, and William Fable, Jr., TM SEFC-61  
 ———, and Steven P. Naughton, TM SEFC-133; TM SEFC-134  
 Samollow, Paul B.—see Shaklee and Samollow  
 Sample, T. M.—see Bakkala et al.  
 Sample, Terrance M.—see Gunderson and Sample  
 ———, Kiyoshi Wakabayashi, Richard G. Bakkala, and Hirotsune Yamaguchi, TM F/NWC-88  
 ———, and Robert J. Wolotira, Jr., TM F/NWC-89  
 Samples, Karl C., MFR 45(7-9):50  
 Sampson, David B.—see Creaser et al.  
 Sandifer, P. A.—see Wenner et al.  
 Sandifer, Paul A.—see Wenner et al.  
 Sasaki, Minoru—see Koganezawa and Sasaki  
 Sato, Shigekatsu—see Shaw and Sato  
 Saunders, Richard L.—see Wedemeyer et al.  
 Savastano, K., and H. Holley, TM SEFC-35  
 Savastano, Kenneth J., Kenneth H. Faller, Louis W. McFadin, and Hillman Holley, TM SEFC-73  
 Scarlett, Paul G., S 755  
 ————see Fogarty et al.; Smith et al.  
 Scheer, Anthony G.—see Sullivan et al.  
 Scheffer, Victor B., Clifford H. Fiscus, and Ethel I. Todd, S 780  
 Scherer, Michael D.—see Matthiessen and Scherer  
 Schevill, William E.—see Watkins and Schevill  
 Schick, Daniel F.—see Shumway et al.  
 Schlexer, Fredrick V., TM SWFC-41  
 Schlotterbeck, Robert E., and David W. Connally, FB 80:895  
 Schmitt, P. D., FB 82:237  
 Schneider, David C.—see Payne and Schneider  
 Schreck, C. B.—see Hjort et al.  
 Schroeter, Stephen C.—see Kato and Schroeter  
 Schropp, S. J.—see Schwartz et al.  
 Schubel, J. R.—see Itzkowitz and Schubel  
 Schulman, S. S.—see Kovaliova and Schulman  
 Schwab, C.—see Brooks et al.  
 Schwartz, Frank J., S 750; TR 8:167-174  
 Schwartz, J. R., S. K. Alexander, S. J. Schropp, and V. L. Carpenter, TM SEFC-27  
 Scott, G. P., TM SEFC-168  
 Scott, M. D.—see Irvine et al.; Perrin et al.  
 Scott, Michael D.—see Irvine et al.; Mead et al.; Perrin et al.  
 Scotto, Liberta E.—see Gore and Scotto  
 Seaborn, Gloria T.—see Hale et al.; Joseph and Seaborn  
 Seagran, Harry L.—see Meaburn et al.  
 Sears, James R.—see Hulbert et al.  
 Sebenius, James K., MFR 43(10):1  
 Seckel, G. R.—see Husby and Seckel  
 Sedberry, George R., FB 83:461; S 773  
 Seigel, Jeffrey A.—see Pietsch and Seigel  
 Sen, A. R., TM SWFC-45  
 Serafy, D. Keith, and F. Julian Fell, TR 33  
 Serchuk, Fredric M.—see Murawski et al.; Ropes et al.  
 Serra, Anthony F.—see Watson et al.  
 Sertic, Peter D.—see Barnett et al.  
 Serventy, D. L.—see Blackburn and Serventy  
 Setzler, Eileen M., Walter R. Boynton, Kathryn V. Wood, Henry H. Zion, Lawrence Lubbers, Nancy K. Mountford, Phyllis Frere, Luther Tucker, and Joseph A. Mihursky, C 433  
 Shaklee, James B., Richard W. Brill, and Robin Acerra, FB 81:85  
 ———, and Paul B. Samollow, FB 82:693, 703  
 Shallenberger, Edward W.—see Myrick et al.  
 Shane, Susan H., FB 78:593  
 Shang, Yung C., MFR 43(9):23  
 Shaw, F. R.—see Parks and Shaw  
 Shaw, Franklin R., TM F/NWC-69  
 ————see Ronholt et al.  
 Shaw, William N., C 442:19-24; C 447  
 ———, and Shigekatsu Sato, C 447:1  
 Shchepkina, A. M., TR 25:49-51  
 Shealy, M. H., Jr.—see Wenner et al.  
 Shealy, Malcolm H., Jr.—see Wenner et al.  
 Sheehy, Daniel J., MFR 44(6-7):4  
 ———, and Susan F. Vik, MFR 42(7-8):85  
 Sheldon, John—see Silverthorne et al.  
 Shenker, Jonathan M., FB 81:161  
 Shepherd, Gary R., and Churchill B. Grimes, FB 81:803; FB 82:501  
 Sherburne, Stuart W., FB 82:541  
 Sheridan, Peter F.—see Divita et al.  
 ———, and Sammy M. Ray, TM SEFC-63  
 ———, and David L. Trimm, FB 81:643  
 Sherman, K., J. R. Green, J. R. Goulet, and L. Ejsymont, FB 81:855  
 Sherman, Kenneth, Reuben Lasker, William Richards, and Arthur W. Kendall, Jr., MFR 45(10-12):1  
 Shigueno, Kunihiko—see Kurata et al.  
 Shimada, A. M.—see Bakkala et al.  
 Shimada, Allen M.—see Bakkala et al.  
 Shimek, Ronald L., David Fyfe, Leah Ramsey, Anne Bergey, Joel Elliot, and Stewart Guy, FB 82:445  
 Shiota, Paul M.—see Polovina et al.  
 Shipman, John W.—see Grabe et al.  
 Shipp, Robert L.—see Branstetter and Shipp  
 Shirahata, Soichiro, TR 27:91-95  
 Shleser, Robert A., and L. Frank Follett, TR 16:57-60  
 Shlossman, Philip A., and Mark E. Chittenden, Jr., FB 79:649  
 Shomura, Richard S., TM SWFC-5  
 ———, and Walter M. Matsumoto, TM SWFC-22  
 ———, and Howard O. Yoshida, TM SWFC-54  
 Show, I.—see Fucik and Show  
 Shriner, Kimberly—see Love et al.  
 Shulenberg, Eric—see Cheng and Shulenberg  
 Shulman, M. J.—see McFarland et al.  
 Shults, Larry M.—see Delyamure et al.; Fay et al.  
 Shumway, Sandra E., Herbert C. Perkins, Daniel F. Schick, and Alden P. Stickney, TR 30  
 Sibunka, John D., and Myron J. Silverman, TM F/NEC-33  
 Sides, Wendell—see Lawton et al.  
 Sidwell, V. D.—see Rasekh et al.  
 Sidwell, Virginia D., TM SEFC-11  
 Siewicki, Thomas, Frances M. Van Dolah, and Jane S. Sydlowski, TM SEFC-143  
 Siewicki, Thomas—see Meaburn et al.  
 Silberstein, Mark A.—see Oliver et al.



Silverman, Myron J.—see Sibunka and Silverman  
Silverthorne, Wesley—see Korsos and Silverthorne  
\_\_\_\_\_, Brian Brown, and John Sheldon, TM F/SWR-002  
Sims, Carl W.—see Durkin and Sims  
Sindermann, Carl J., C 442; TR 10; TR 16; TR 25:7-13; TR 27  
Singer, Michael M., FB 83:531  
Singh, R. Paul—see Brown et al.  
\_\_\_\_\_, and Daniel E. Brown, MFR 42(7-8):77  
Singleton, Kathleen—see Sullivan et al.  
Sissenwine, M. P.—see Lange and Sissenwine  
Sissenwine, Michael P., and James E. Kirkley, TM F/NEC-4  
Sizemore, R., and K. Olsen, TM SEFC-38; TM SEFC-49  
Skillman, Robert A.—see Matsumoto et al.  
Skinner, Renate H., FB 80:269  
Skriabin, A. S.—see Delamure and Skriabin  
Slabyj, Bohdan M., Gordon E. Ramsdell, and Ruth H. True, MFR 43(6):17  
Slater, Beany M.—see Hamm and Slater  
Slatick, Emil, and Larry R. Basham, MFR 46(3):68; MFR 47(1):83  
Slattery, Peter N.—see Oliver et al.  
Sloan, Priscilla A.—see Myrick et al.  
Smayda, Thomas J.—see Durbin et al.  
Smedes, G., J. Calman, and J. Beebe, TM SEFC-44  
Smith, C. Lavett, TR 8:45-47  
Smith, Cecelia S.—see Howard and Smith  
Smith, D. E.—see Banas et al.  
Smith, Daniel E., and Jack W. Jossi, TR 5  
Smith, G. B.—see Hirschberger and Smith  
Smith, G. J. D., A. J. Read, and D. E. Gaskin, FB 81:660  
Smith, Gary B.—see Fiedler et al.; Mintel and Smith; Walters et al.  
\_\_\_\_\_, and Richard G. Bakkala, S 754  
\_\_\_\_\_, Gary E. Walters, Paul A. Raymore, Jr., and Wendy A. Hirschberger, TM F/NWC-59  
Smith, Paul E., William Flerx, and Roger P. Hewitt, TR 36:27-32  
\_\_\_\_\_, and Roger P. Hewitt, TR 36:17-26  
Smith, R. Z., and E. Wold, TM F/NWR-1; TM F/NWR-4; TM F/NWR-6  
Smith, Robert Z., and Roy J. Wahle, TM F/NWC-6  
Smith, Ronald W.—see Fogarty et al.  
\_\_\_\_\_, Louise M. Dery, Paul G. Scarlett, and Ambrose Jearld, Jr., TM F/NEC-11  
Smith, Stanley D.—see Gould et al.  
Smith, Stephen M., James G. Hoff, Steven P. O'Neil, and Michael P. Weinstein, FB 82:455  
Smith, Tim D., FB 81:1; TM SWFC-20  
\_\_\_\_—see Wahlen and Smith  
\_\_\_\_\_, and Nancy C. H. Lo., TM SWFC-34  
Smithhisler, John R.—see Carroll and Smithhisler  
Smolowitz, Ronald Joel, S 771  
\_\_\_\_\_, and Vernon E. Nulk, MFR 44(4):1  
Smyth, Peter O., FB 78:251  
Snell, J. Ernest—see Zuboy and Snell  
Sokolov, Anatoli S.—see Hansen et al.  
Solonchenko, A. I., TR 25:83-84  
Somerton, David A., FB 79:259  
\_\_\_\_—see Balsiger et al.  
\_\_\_\_\_, and Richard A. MacIntosh, FB 81:621  
Sonu, Sunee C., TM F/SWR-003  
Sparks, Albert K., TR 16:61-67  
Speckhard, Marci W.—see Taylor and Speckhard  
Spinelli, John—see Lee et al.; Miller and Spinelli  
Spotte, Stephen, and Gary Adams, FB 79:182  
Spraitz, Robert M.—see Fuss et al.  
Squiers, Thomas S.—see Dadswell et al.  
Squire, James L., Jr., MFR 45(4-6):27; MFR 45(7-9):63; MFR 47(3):43; S 759; S 762; TM SWFC-11  
\_\_\_\_\_, and Daphne V. Nielsen, S 772  
Squires, Dale—see Conrad et al.  
St. Aubin, D. J.—see Geraci and St. Aubin  
Staitieh, S.—see Butcher et al.  
Standard, Gary W.—see Rockett et al.  
\_\_\_\_\_, and Mark E. Chittenden, Jr., FB 82:337  
Stanley, Drew D.—see Myrick et al.  
Stansby, Maurice E., MFR 46(2):60  
Starr, Paul—see Beacham and Starr  
Stauffer, Gary D., MFR 47(2):2  
\_\_\_\_\_, and Susan Picquelle, TR 36:33-35  
\_\_\_\_—see Huppert et al.; MacCall et al.; Picquelle and Stauffer  
Stayton, R. Lee—see Hueckel and Stayton  
Steimle, Frank W., Jr.—see Caracciolo and Steimle  
\_\_\_\_\_, and Larry Ogren, MFR 44(6-7):49  
Stein, David L.—see Matarese and Stein  
Stein, G. A., TR 25:53-54  
Stehrenberg, Lowell C.—see Liscom et al.  
Stevely, John M.—see Brownell and Stevely; Palko et al.  
Stevens, Bob, TR 10:29-31  
Stevens, Bradley G., and David A. Armstrong, FB 79:349; FB 82:469  
Stevens, Fred S.—see Brown et al.  
Stevenson, David K., and Francisco Carranza, FB 79:689  
\_\_\_\_\_, and Fran Pierce, FB 83:219  
Stewart, E. F.—see Mullin et al.  
Stickney, Alden P.—see Shumway et al.  
Stillwell, Charles E.—see Casey et al.; Medved et al.  
Stogner, Lawrence B., TM SEFC-13  
Stoker, Samuel W.—see Fay et al.  
Stone, Frederick E.—see Barnett et al.  
\_\_\_\_\_, Harold J. Barnett, Patrick J. Hunter, Glenn C. Roberts, and Richard W. Nelson, MFR 43(1):21  
Stone, H. Sheridan, TM F/SWR-012; TM SWFC-47  
Stone, James H.—see Bishop et al.  
Stone, Richard B., MFR 44(6-7):2; TM OF-6  
Stoner, Allan W., FB 78:337; FB 81:837  
Stout, Robert G.—see Gruber and Stout  
Stout, Virginia F., FB 78:51  
\_\_\_\_\_, and F. Lee Beezhold, MFR 43(1):1  
\_\_\_\_\_, Clifford R. Houle, and F. Lee Beezhold, MFR 43(3):1  
Strand, Ivar E., Jr.—see Marcheseault et al.  
Strange, E. M.—see Bronstein et al.  
Straty, Richard R.—see Carlson and Straty  
Strong, Craig S.—see Ainley et al.  
Stroud, Richard K.—see Kajimura et al.  
\_\_\_\_\_, Clifford H. Fiscus, and Hiroshi Kajimura, FB 78:951  
Struhsaker, Paul C.—see Uchiyama and Struhsaker  
Stuntz, Warren E.—see Coe and Stuntz  
Sugarman, Peter C.—see Pearson et al.  
Sulkin, S. D.—see Van Heukelem et al.  
Sullivan, Bolling, Katie Miller, Kathleen Singleton, Anthony G. Scheer, and Austin B. Williams, FB 81:883  
Sullivan, Craig—see Dickhoff et al.  
Sullivan, Eulalie—see Browder et al.  
Sullivan, L. F.—see Hollaway and Sullivan; Neal et al.  
Sullivan, Loretta F., FB 83:677  
Summers, J. Kevin—see Ulanowicz et al.

Summerson, H. C.—see Peterson et al.  
Summerson, Henry C.—see Peterson et al.  
Sumner, Marjorie W.—see McHugh et al.  
Sumpter, Charles R.—see Braddon and Sumpter  
Sund, Paul N., S 744; TM SWFC-43; TM SWFC-53  
Sutherland, Doyle F., and William A. Fable, Jr., TM SEFC-12  
Swan, Nancy Pola, and W. James Ingraham, Jr., TM F/NWC-57  
Swartz, A. N., TM F/NWC-39  
Swartz, A. Nelson—see Tettey et al.  
Swartz, Steven L., FB 79:360  
Swartzman, Gordon L., and Robert T. Haar, FB 81:121  
Sydowski, Jane S.—see Siewicki et al.  
Sykes, James E., TM SER-2

## T

---

Tagami, Darryl T.—see Uchida and Tagami  
Tanaka, Kuniaki, Yasuo Mugiya, and Juro Yamada, FB 79:459  
Taniguchi, Michiko, TR 10:21-24  
Tashiro, Joseph E., TM SEFC-8; TM SEFC-60; TM SEFC-81  
Taubert, Bruce D.—see Dadswell et al.  
Taylor, Charles W.—see Watson et al.  
Taylor, D. M., R. G. Hooper, and G. P. Ennis, FB 83:707  
Taylor, J. R.—see Nakamura et al.  
Taylor, Ronald G.—see Trent et al.  
Taylor, Ronald M., C 446  
Taylor, Sidney G., MFR 47(1):39  
———see Bailey and Taylor; Bailey et al.  
Taylor, Steve L., and Marci W. Speckhard, MFR 45(4-6):35  
Teel, David J.—see Grant et al.; Milner et al.  
Teeny, Fuad M.—see Conrad et al.  
Tejada, M.—see Borderias et al.  
Terry, Joseph M.—see Balsiger et al.  
Teshima, Kazuyuki—see Bakkala et al.  
Teshima, Shin-ichi—see Kanazawa et al.  
Testaverde, Salvatore A., and James G. Mead, FB 78:167  
Tester, Patricia, Cynthia Wolfe, Robert Dixon, and Gene R. Huntsman, TM SEFC-115  
Tettey, Ernest O., and Wade L. Griffin, MFR 46(2):49  
———, Christopher Pardy, Wade Griffin, and A. Nelson Swartz, FB 82:365  
Thayer, G. W.—see Colby et al.  
Thayer, Gordon W.—see Lindall and Thayer  
Theilacker, Gail H., FB 78:685, 789  
Theroux, Roger B., and Roland L. Wigley, S 768  
Thomas, David H., FB 83:682  
Thompson, Mary H.—see Love et al.  
Thompson, Perry A., Jr., TM SEFC-64  
Thorne, Richard E.—see Trumble et al.  
Thorsen, Kenneth—see Wespestad et al.  
Thorson, Lee C., C 437  
Tidwell, D.—see Jones et al.  
Tillery, J., TM SEFC-31; TM SEFC-42  
Tillman, Michael F., MFR 42(9-10):2  
Tilseth, S., and B. Ellertsen, FB 82:141  
Timko, Robert E.—see Kemmerer et al.  
———, and David DeBlanc, MFR 43(3):20  
———, and A. Lawrence Kolz, MFR 44(4):19  
Tinker, Burton L.—see Gorga et al.  
Titar, V. M.—see Kazachenko and Titar  
Tkachuk, L. P., TR 25:45-46  
Todd, Ethel I.—see Scheffer et al.

Todd, Ruth, and Doris Low, C 439  
Togstad, Heidi A.—see Grant et al.  
Toll, Ronald B., and Steven C. Hess, FB 79:765  
Tomlinson, M. S.—see Danek and Tomlinson  
Townsend, David W.—see Barker et al.  
———, and Joseph J. Graham, FB 79:123  
Townsend, Ralph—see Briggs et al.  
Trautman, Milton B., TM ABFL-2  
Traynor, Jimmie J.—see Bakkala et al.; Dark et al.  
Trent, Lee—see Brusher et al.; Fable and Trent; Fable et al.; Williams et al.  
———, Carl H. Saloman, and Steven P. Naughton, TM SEFC-119  
———, Roy O. Williams, Ronald G. Taylor, Carl H. Saloman, and Charles S. Manooch III, FB 81:709; TM SEFC-52  
Tretsven, Wayne I., and Benjamin G. Patten, MFR 43(4):16  
Trimm, David L.—see Sheridan and Trimm  
True, Ruth H.—see Slabyj et al.  
Trumble, Robert J., Richard E. Thorne, and Norman A. Lemberg, FB 80:381  
Tsareva, L. A.—see Potievski et al.  
Tubiash, Haskell S.—see Eisenberg et al.  
Tucker, John W., Jr., FB 80:35  
Tucker, Luther—see Setzler et al.  
Tuhkunen, Bette E.—see Ravesi et al.  
Turner, Jefferson T., TR 7  
Turner, S. C.—see Grimes et al.  
———, C. B. Grimes, and K. W. Able, FB 81:751  
Tyler, A. V.—see Gabriel and Tyler  
Tyler, Albert V.—see Overholtz and Tyler  
Tyler, James C., C 434

## U

---

Uchida, Richard N., C 436; TM SWFC-33  
———, and Darryl T. Tagami, MFR 46(2):1  
Uchiyama, James H., and Paul Struhsaker, FB 79:151  
Ueda, Kazuo, TR 27:97-102  
Uki, Nagahisa, TR 16:83-88  
Ulanowicz, Robert E., Mohammed Liaquat Ali, Alice Vivian, Donald R. Heinle, William A. Richkus, and J. Kevin Summers, FB 80:611  
Ulrich, G. F.—see Low et al.  
Umeda, Y.—see Bakkala et al.  
———, and R. Bakkala, TM F/NWC-49  
Urmezawa, Satoshi—see Nogami et al.  
Upton, Steve J., David W. Reduker, William L. Current, and Donald W. Duszynski, TR 11  
Uspenskaya, A. V., TR 25:61-62  
Utter, Fred M.—see Grant et al.; Milner et al.; Wishard et al.

## V

---

Vandevere, Judson E.—see Loughlin et al.  
Van Dolah, Frances M.—see Siewicki et al.  
Van Dolah, R. F.—see Wenner et al.  
Van Duzer, John P.—see Pietsch and Van Duzer  
Van Heukelem, W., M. C. Christman, C. E. Epifanio, and S. D. Sulkin, FB 81:903  
Vaughan, D. S., TM SEFC-165  
Venrick, E. L., FB 81:375  
Verity, Peter G.—see Durbin et al.  
Vik, Susan R.—see Sheehy and Vik

Vinogradov, M. E., TM F/NEC-34  
Vinter, Beverly M.—see Kendall and Vinter; Matarese and Vinter  
Vivian, Alice—see Ulanowicz et al.  
Vreeland, Robert R., and Roy J. Wahle, FB 81:143

## W

Wada, Koji, TR 16:89-92  
Wahle, Roy J.—see Smith and Wahle; Vreeland and Wahle  
\_\_\_\_\_, and Ed Chaney, FB 79:507  
\_\_\_\_\_, \_\_\_\_\_, and Roger E. Pearson, MFR 43(12):1  
\_\_\_\_\_, and Roger E. Pearson, MFR 46(3):34  
\_\_\_\_\_, and Waldo S. Zaugg, MFR 44(11):11  
Wahlen, Bruce E.—see Lo et al.  
\_\_\_\_\_, and Tim D. Smith, FB 83:521  
Wakabayashi, Kiyoshi—see Sample et al.; Wilderbuier et al.; Yabe et al.  
Waldhauer, R.—see Draxler et al.  
Walker, G. J.—see Perrin et al.  
Wall, Janet—see Edwards et al.; French et al.; Nelson et al.  
\_\_\_\_\_, Robert French, and Russell Nelson, Jr., MFR 43(5):20  
Walsh, William A., and William A. Lund, Jr., FB 81:781  
Walters, G. E., TM F/NWC-40  
\_\_\_\_\_, and M. J. McPhail, TM F/NWC-35  
Walters, Gary E.—see Smith et al.  
\_\_\_\_\_, Gary B. Smith, Paul A. Raymore, Jr., and Wendy Hirschberger, TM F/NWC-77  
Walton, James M., MFR 44(6-7):45  
Waltz, C. Wayne, William A. Roumillat, and Charles A. Wenner, FB 80:863  
Wang, Der-Hsiung—see Marchesseault et al.  
Wankowski, J. W. J., FB 79:517  
Ward, Donn R., Ranzell Nickelson II, Gunnar Finne, and Debra J. Hopson, MFR 45(7-9):38  
Ward, John M., TM SEFC-86; TM SEFC-88  
\_\_\_\_\_, and John R. Poffenberger, MFR 44(9-10):55; TM SEFC-84  
Warlen, Stanley M., and Alexander J. Chester, FB 83:587  
Warren, J. P.—see Grant et al.  
Warren, John P., and Wade L. Griffin, MFR 42(2):1  
Washington, Betsy B.—see Richardson and Washington  
Wass, Richard C., S 781  
Waterman, Samuel—see Mitsuoka et al.  
Waters, Melvin E., MFR 44(11):14; MFR 45(7-9):27; TM SEFC-54  
\_\_\_\_\_,—see Hale and Waters; Love et al.; Rasekh et al.  
Watkins, William A., and William E. Schevill, FB 80:875  
Watson, Alan P.—see Gaskin and Watson  
Watson, John W., Jr., Ian K. Workman, Charles W. Taylor, and Anthony F. Serra, TR 3; TM SEFC-3  
Watson, William, FB 80:403; FB 81:847  
\_\_\_\_\_,—see Barnett et al.  
Watts, Noel H., and Gilmore J. Pellegrin, Jr., MFR 44(9-10):44  
Weatherall, Jerry A.—see Laurs and Weatherall  
Webb, P. W., FB 79:271, 727  
\_\_\_\_\_, and R. T. Corolla, FB 79:143  
\_\_\_\_\_, and Raymond S. Keyes, FB 80:803  
Weddig, Lee J., MFR 42(1):1  
Wedemeyer, Gary A., Richard A. Saunders, and W. Craig Clarke, MFR 42(6):1  
Weeks, Ann, and Albert C. Jones, TM SEFC-1  
Wehling, William E.—see Robinson et al.  
Weihs, Daniel, FB 78:109; FB 79:171

Weinberg, Kenneth L., Mark E. Wilkins, and Thomas A. Dark, TM F/NWC-70  
Weinstein, Michael P.—see Smith et al.  
\_\_\_\_\_, Sidney L. Weiss, Ronald G. Hodson, and Lawrence R. Gerry, FB 78:419  
Weis, Judith Shulman—see Weis and Weis  
Weis, Peddrick, and Judith Shulman Weis, FB 78:163  
Weiss, Sidney L.—see Weinstein et al.  
Welden, Bruce A.—see Cailliet et al.  
Wells, John A.—see Richards et al.  
Wells, R. S.—see Irvine et al.  
Wells, Randall S.—see Irvine et al.; Mead et al.  
Wenner, Charles A., FB 81:537  
\_\_\_\_\_,—see Waltz et al.  
Wenner, E. L., W. P. Coon III, M. H. Shealy, Jr., and P. A. Sandifer, S 782  
\_\_\_\_\_, P. Hinde, D. M. Knott, and R. F. Van Dolah, TR 18  
Wenner, Elizabeth Lewis, Malcolm H. Shealy, Jr., and Paul A. Sandifer, S 757  
Wertheimer, Alex C., and James R. Winton, TM F/NWC-22  
Wespestad, V. G.—see Bakkala et al.  
Wespestad, Vidar G., TM F/NWC-24  
\_\_\_\_\_, Richard Bakkala, and Jeffrey June, TM F/NWC-25  
\_\_\_\_\_, R. Nelson, and B. Gibbs, TM F/NWC-31  
\_\_\_\_\_, Kenneth Thorsen, and Sally A. Mizroch, FB 81:415  
West, Charles W., MFR 47(2):47; TM F/NWC-16  
West, D.—see Middleditch and West  
Westphal, William V.—see Love and Westphal; Love et al.  
Wetherall, J.—see Parrish et al.  
Wetherall, Jerry A., FB 80:687  
\_\_\_\_\_,—see Yong and Wetherall  
\_\_\_\_\_, and Marian Y. Y. Yong, TM SWFC-13  
Wheeler, Charles L.—see Lux et al.  
Whipple, Jeannette A.—see Eldridge et al.; Moser et al.  
\_\_\_\_\_, Marvin Jung, R. Bruce MacFarlane, and Rahel Fischer, TM SWFC-46  
Whitaker, D. J.—see Kabata and Whitaker  
Whitaker, Donald R., MFR 42(1):4; MFR 47(1):100  
Whitaker, J. David, MFR 42(7-8):39  
White, Merrill J., Jr., Jacqueline G. Jennings, Walter F. Gandy, and Lanny H. Cornell, TM SWFC-16  
Whitledge, Terry E., FB 80:327  
Whoriskey, F. G., Jr., FB 81:426  
Wibbels, T.—see McVey and Wibbels  
Wibbels, Thane R., TM SEFC-131  
Wiebe, P. H., S. H. Boyd, B. M. Davis, and J. L. Cox, FB 80:75  
Wiesenburg, D.—see Brooks et al.  
Wigley, Roland L.—see Dickinson and Wigley; Dickinson et al.; Maurer and Wigley; Theroux and Wigley  
Wigren, Catherine A.—see MacLeod et al.  
Wilder, Pamela J.—see Liscom et al.  
Wilderbuier, Thomas K.—see Ronholt et al.  
\_\_\_\_\_, Kiyoshi Wakabayashi, Lael L. Ronholt, and Hirotsune Yamaguchi, TM F/NWC-93  
Wilens, James E.—see Botsford et al.  
Wiley, Nancy—see Eber and Wiley  
Wilhelm, Kurt A., MFR 44(2):17  
Wilk, Stuart J.—see Fogarty et al.  
Wilkins, Bruce T.—see Dawson and Wilkins  
Wilkins, M. E.—see Dark et al.  
Wilkins, Mark E., MFR 42(3-4):48  
\_\_\_\_\_,—see Weinberg et al.

Williams, Austin B., FB 81:863  
 —see Millikin and Williams; Reames and Williams; Sullivan et al.  
 —, and David McN. Williams, FB 79:192  
 Williams, David McN.—see Williams and Williams  
 Williams, Happy A.—see Polovina et al.  
 Williams, Mark L.—see Barger and Williams; Brusher et al.; Johnson et al.  
 —, H. Brusher, and Lee Trent, TM SEFC-129  
 —, Harold A. Brusher, Barbara J. Palko, and Lee Trent, TM SEFC-139; TM SEFC-157  
 Williams, R. R.—see Lightner et al.  
 Williams, Roy O.—see Trent et al.  
 Williams, Vern R., and Thomas A. Clarke, FB 81:587  
 Wilson, Charles A., and John M. Dean, TR 8:151-156  
 Wilson, James—see Briggs et al.  
 Wilson, Kenneth C.—see Grant et al.  
 Wilton, Donald P.—see Menz and Wilton  
 Winans, Gary A.—see Milner et al.  
 Winemiller, L. F.—see Bauersfeld and Winemiller  
 Wing, Bruce L., TM F/NWC-91  
 —see Krieger and Wing  
 Wingert, R. Craig—see Quinn et al.  
 Winkler, Delaine L., Keith L. Duncan, Jo Ellen Hose, and Harold W. Puffer, FB 81:473  
 Winn, Howard E.—see Hain et al.; Kenney et al.  
 Winton, James R.—see Wertheimer and Winton  
 Wishard, Lisa N., Fred M. Utter, and Donald R. Gunderson, MFR 42(3-4):64  
 Withler, Fred C.—see Dangel et al.  
 Witman, Jonathan D.—see Hulbert et al.  
 Witzell, W. N., MFR 46(3):56; TR 31:21-22  
 Woiceshyn, P. M.—see Brucks et al.  
 Wold, E.—see Smith and Wold  
 Wold, Einar—see Delarm and Wold  
 Wolf, Patricia—see Cailliet et al.  
 Wolfe, Cynthia—see Tester et al.  
 Wolff, Gary A., FB 80:357; TR 17  
 Wolke, R. E., and A. George, TM SEFC-24  
 —, C. J. George, and V. S. Blazer, TR 25:93-97  
 Wolman, A. A.—see Johnson and Wolman; Rice et al.  
 Wolman, Allen A.—see Reilly et al.  
 Wolotira, Robert J., Jr., TM F/NWC-79  
 —see Sample and Wolotira  
 Wood, Kathryn V.—see Setzler et al.  
 Wood, Richard S.—see Olsen et al.  
 Woodhead, Peter M. J., Jeffrey H. Parker, and Iver W. Duedall, MFR 44(6-7):16  
 Woodruff, Dana L.—see Pearson et al.  
 Workman, I. K.—see Nakamura et al.  
 Workman, Ian K.—see Watson et al.  
 Worthen, Gary L., TM SWFC-9  
 Wright, Andrew—see Doulman and Wright  
 Wright, W. Redwood, TM F/NEC-23  
 Wroblewski, J. S.—see Flierl and Wroblewski  
 Wu, I-Pai—see Frank et al.  
 Würsig, Bernd, Eleanor M. Dorsey, Mark A. Fraker, Roger S. Payne, and W. John Richardson, FB 83:357  
 Wurtele, M. G.—see Brucks et al.  
 Wyatt, B. B.—see Bronstein et al.

## Y

Yabe, Mamoru, Daniel M. Cohen, Kiyoshi Wakabayashi, and Tomio Iwamoto, FB 79:353  
 Yamada, Juro—see Tanaka et al.  
 Yamaguchi, Hirotsune—see Bakkala et al.; Sample et al.; Wilder-buer et al.  
 Yatsuyanagi, Kenro—see Kurata et al.  
 Yoklavich, Mary M.—see Boehlert and Yoklavich  
 Yong, Marian Y. Y.—see Wetherall and Yong  
 —, and Jerry A. Wetherall, TM SWFC-2  
 Yoshida, Howard O., C 432  
 —see Shomura and Yoshida  
 Yoshinaga, Derrick H.—see Frank et al.  
 Yost, Reuben—see Holland et al.  
 Yurakhno, Mikhail V.—see Delyamure et al.

## Z

Zamora, Gilbert, Jr.—see Zimmerman et al.  
 Zaugg, Waldo S.—see Folmar et al.; Wahle and Zaugg  
 Zaugg, Wally S.—see Gould et al.  
 Zdanowicz, Vincent S.—see Reid et al.  
 Zenger, H., and S. E. Hughes, TM F/NWC-7  
 Zenger, Harold H., Jr., TM F/NWC-20; TM F/NWC-82  
 Zhukov, E. V., TR 25:47-48  
 Zimmerman, Roger J., Thomas J. Minello, and Gilbert Zamora, Jr., FB 82:325  
 Zion, Henry H.—see Setzler et al.  
 Zubchenko, A. V., TR 25:19-23  
 Zuboy, J. R.—see Jones et al.  
 —, and A. C. Jones, TM SEFC-17  
 Zuboy, James R., TM SEFC-19  
 —, and J. Ernest Snell, TM SEFC-21; TM SEFC-79  
 Zweifel, James R.—see Jones and Zweifel

## SUBJECT INDEX

---

### A

- Abalone culture in Japan, TR 16
- Abraliopsis affinis*
  - identification and estimation of size from beaks, TR 17
- Abraliopsis felis*
  - identification and estimation of size from beaks, TR 17
- Absorption
  - radiologic evaluation
    - diatrizoate in marine turtles, TM SEFC-93
- Acanthophora*
  - as substrate for *Gambierdiscus toxicus*, MFR 46(1):16
- Acanthopagrus schlegelii*—see Porgy
- Acanthuridae
  - proximate chemical composition, MFR 46(3):71
- Acanthurus lineatus*—see Surgeonfish, blueline
- Achromobacter*
  - in freshly caught marine fish, MFR 45(4-6):35
- Acipenser brevirostrum*—see Sturgeon, shortnose
- Acipenser oxyrinchus*—see Sturgeon, Atlantic
- Acipenser transmontanus*—see Sturgeon, white
- Aerobic plate count (APC)
  - cooking processes, blue crab, MFR 45(7-9):39
- Africa, northwestern
  - cephalopod fishery management model, MFR 43(11):1
  - upwelling ecosystem
    - regeneration of nitrogen by nekton, FB 80:327
- Age composition
  - anchovy, northern, FB 83:483
- Age determination
  - alewife, FB 83:696
  - billfishes, sharks, tunas, TR 8
  - dolphins, northern offshore spotted, TM SWFC-35
  - dolphins, spinner
    - from teeth, TM SWFC-30
  - dolphins, spotted
    - from teeth, TM SWFC-30
  - evaluating hard parts
    - croaker, Atlantic, TM SEFC-22
    - flounder, gulf, TM SEFC-132
    - flounder, southern, TM SEFC-132
    - jack, crevalle, TM SEFC-132
    - ladyfish, TM SEFC-132
    - pompano, TM SEFC-132
    - seatrout, sand, TM SEFC-22
    - seatrout, silver, TM SEFC-22
    - spot, TM SEFC-22
  - fishes, FB 83:103
  - multiple regression models, FB 83:103
  - sailfish
    - morphological features of otoliths, FB 79:360
    - scale and otolith methods, FB 83:696
- Age discussion
  - seatrout, sand, TM SEFC-14
  - seatrout, silver, TM SEFC-14
  - spot, TM SEFC-14
- Age distribution
  - dolphins, spotted
    - interpretations of, TM SWFC-48
- Age studies
  - tuna, bluefin
    - annotated list of references, TM SEFC-113
- Age-frequency estimation
  - bias resolution, FB 81:93
  - biases, FB 81:92
  - bonito, Pacific, FB 81:91
  - clam, hard, FB 81:772
  - cod, Atlantic, FB 81:304
  - commercial fisheries, FB 81:723
  - croaker, Atlantic, FB 81:405
  - halibut, Greenland, FB 81:599
  - herring, gold spot, FB 81:593
  - mackerel, king, FB 81:99
  - mortality rates, FB 81:898
  - nonsalmonids, FB 81:817
  - salmonids, FB 81:817
  - shrimp, pink, FB 81:456
  - snapper, Hawaiian, FB 81:531
  - spot, FB 81:405
  - tuna, southern bluefin, FB 81:726
  - von Bertalanffy growth equation, FB 81:92
- Age-size estimation
  - anchovy, northern, FB 81:743
  - clam, hard, FB 81:697
  - cod, Atlantic, FB 81:304
  - crab, blue king, FB 81:621
  - crab, deep-sea red, FB 81:903
  - crab, Dungeness, FB 82:471
  - crab, rock, FB 81:357
  - croaker, FB 81:793
  - croaker, white, FB 82:183
  - dolphin, Hawaiian spinner, FB 82:207
  - drum, banded, FB 82:233, 353, 355
  - eel, American, FB 82:519
  - halibut, Greenland, FB 81:599
  - herring, Pacific, FB 82:115
  - kingfish, southern, FB 82:427
  - lobster, American, FB 82:244
  - mackerel, king, FB 81:709
  - menhaden, Atlantic, FB 81:133
  - midshipman, plainfin, FB 82:165
  - nonsalmonids, FB 81:817
  - quahog, ocean, FB 82:1, 254
  - ribbonfish, FB 81:161
  - rockfish, FB 82:249
  - salmon, chinook, FB 82:158
  - salmonids, FB 81:817
  - shrimp, FB 81:792
  - shrimp, freshwater, FB 81:656
  - shrimp, mantis, FB 82:420
  - snapper, Hawaiian, FB 81:531
  - splittail, FB 81:649
  - spot, FB 81:792
  - tetracycline use, FB 82:237
  - tilefish, FB 81:756
  - triggerfish, gray, FB 82:488
  - weakfish, FB 81:803

- Agonidae  
 ichthyoplankton off Kodiak Island, Alaska, TR 20
- Airborne Fish Monitoring Program  
 California, southern and central  
 abundance of pelagic resources, 1963-78, S 762
- Alabama  
 ice plant survey, 1980-81, MFR 44(9-10):55
- Alaska  
 groundfish species  
 spawning, 1975-81, TM F/NWC-44  
 kelp  
 rope culture, MFR 43(2):19  
 oil effects research  
 fish, TM F/NWC-67  
 invertebrates, TM F/NWC-67  
 perch, Pacific Ocean  
 biological and economic assessment, TM F/NWC-72  
 salmon  
 fry production in gravel hatchery, TM ABFL-3  
 improved incubator, TM ABFL-1  
 presmolt identification, TM ABFL-2  
 shellfish fishery  
 economic impacts, TM F/NWC-9  
 Alaska, Little Togiak River fishery, FB 82:402  
 Alaska, lower Cook Inlet  
 crab, snow  
 description of stage II zoeae from plankton, FB 79:177  
 Alaska, northern  
 gadids, marine  
 trophic importance of, and their body-otolith size relationships,  
 FB 79:187  
 Alaska, southeastern  
 beach seine samples, nearshore waters  
 numbers, maturity stages, and species of fish caught, TM  
 F/NWC-86  
 cod, Pacific  
 summer food, FB 78:968  
 rockfish, Pacific  
 habitat and nursery grounds in rocky coastal areas, MFR  
 43(7):13  
 sablefish  
 abundance and size composition, 1978-80, TM F/NWC-7  
 abundance and size composition, 1978-81, TM F/NWC-20  
 fish trap performance, TM F/NWC-76  
 scarred Pacific salmon at freshwater recovery sites, MFR 47(1):  
 39  
 Alaska, western  
 cod, saffron  
 resource assessment and potential, TM F/NWC-79  
 groundfish  
 economic feasibility of domestic harvest, FB 79:303  
 Alaska Troll Logbook Program  
 salmon  
 stomach contents, 1977-84, TM F/NWC-91
- Albacore  
 budget simulation model for west coast troller, TM SWFC-  
 57  
 California  
 sea-surface temperature effects on sport fishing, S 759  
 commercial passenger fishing vessel industry, MFR 47(3):48  
 eastern North Pacific  
 longline and trolling exploration, 1981, TM SWFC-10
- Albacore (continued)  
 fishing off California  
 relationship to sea surface temperature isotherms, TM SWFC-11  
 growth rates of North Pacific based on tag returns  
 covariance analysis, FB 79:297  
 data screening, FB 79:294  
 extended model, FB 79:299  
 grouping of data, FB 79:295  
 growth models, FB 79:295  
 parameter estimation, FB 79:296  
 recovery procedures, FB 79:294  
 standard model, FB 79:297  
 tagging procedures, FB 79:293  
 NMFS Albacore Program  
 operational plan, TM SWFC-52  
 optimum sea surface catch temperature, MFR 45(4-6):31  
 transpacific migrations, MFR 46(3):8  
 U.S. tuna trade summary, 1982, MFR 46(1):1  
 U.S. tuna trade summary, 1983, MFR 46(4):65  
 used in determining squid jigging locations, MFR 45(7-9):57
- Albacore fleet  
 U.S. west coast  
 equipment and fishing methods, TM SWFC-8
- Albula vulpes*—see Bonefish
- Aleutian Islands  
 fishery resources  
 groundfish, 1980, TM F/NWC-23  
 groundfish, 1982, TM F/NWC-42  
 groundfish, 1983, TM F/NWC-53  
 groundfish, 1984, TM F/NWC-83  
 groundfish trawl survey  
 U.S.-Japan, 1980, TM F/NWC-93  
 marine mammal resources  
 northern sea lion census and notes on other marine mammals,  
 1979, TM F/NWC-17  
 sampling by U.S. observers on foreign fishing vessels, 1977-78,  
 MFR 43(5):1  
 seabird resources, TM F/NWC-17
- Alewife  
 anadromous  
 sex ratio differences between top and bottom of fishway at  
 Damariscotta Lake, Maine, FB 79:207  
 decrease in length at predominant ages during spawning migra-  
 tion, FB 80:902  
 offshore distribution along the Atlantic coast  
 commercial catches, FB 79:481  
 depth distribution, FB 79:482  
 seasonal distribution, FB 79:476
- Alfonsin  
 distribution, MFR 46(2):15  
 fisheries, MFR 46(2):15  
 life history, MFR 46(2):15
- Alopias superciliosus*—see Thresher, bigeye  
*Alosa aestivalis*—see Herring, blueback  
*Alosa pseudoharengus*—see Alewife; Alewife, anadromous  
*Alosa sapidissima*—see Shad, American
- Amberjack  
 charterboat fishery harvest, Alabama, MFR 45(1):15  
 seamount fishery research, central North Pacific, MFR 46(2):11
- American Fisheries Promotion Act of 1980  
 U.S. fishery resources, management and conservation, MFR  
 45(7-9):21

- Ammodytes* spp.—see Sand lance
- Ammodytidae  
 ichthyoplankton off Kodiak Island, Alaska, TR 20
- Ampelisca agassizi*—see Amphipods, benthic
- Amphipoda  
 life history, distribution, and abundance in the New York Bight, S 766
- Amphipoda, Grammaridean  
 Georges Bank  
 distribution, S 746  
 Middle Atlantic Bight region  
 distribution, S 741  
 species accounts, S 741
- Amphipods, FB 82:55  
 benthic, parasites of, FB 83:497
- Amphiprion percula*  
 responses of northern anchovy to predation by, FB 79:727
- Analysis, graphical  
 Kemp's ridley sea turtle, captive-reared  
 patterns and variability in first-year growth and weight. TM SEFC-164
- Anarrhichthys ocellatus*—see Eel, wolf
- Anatomy, visceral  
 sea turtle, TM SEFC-82
- Anchoa mitchelli*—see Anchovy, bay
- Anchovy  
 baitfish use, Papua New Guinea's tuna fishery, MFR 45(10-12):50  
 bay  
 marsh habitat, FB 82:457  
 Hawaiian, or nehu, FB 81:587  
 larval abundance  
 egg and larval retention in mesh nets, TM SWFC-31  
 temperature dependent incubation time, TM SWFC-31  
 yolk-sac growth rate, TM SWFC-31  
 northern Pacific  
 recruitment studies, MFR 45(10-12):4, 11
- Anchovy, black sea  
 influence of helminths on tissue lipids, TR 25
- Anchovy, northern, FB 82:68, 113  
 age determination, FB 81:743  
 associated with juvenile subyearling chinook salmon, FB 81:815  
 burst swimming performance of larvae, FB 79:143  
 California, southern and central  
 resource abundance as measured by Airborne Monitoring Program, 1963-78. S 762  
 changes in body measurements of larvae due to handling and preservation  
 eye diameter, FB 78:690  
 laboratory shrinkage, FB 78:687  
 live body parts, FB 78:686  
 net-treatment shrinkage, FB 78:688  
 preservation shrinkage (after net treatment), FB 78:690  
 direct method for estimating spawning biomass, FB 78:541  
 effects of copper on early life history stages, FB 78:675  
 egg cannibalism, FB 78:811  
 egg production and mortality rate, FB 83:137  
 egg production method for biomass assessment, TR 36  
 environmental conditions, FB 81:748  
 feeding selectivity of schools in Southern California Bight  
 comparison of feeding selectivity between cruises, FB 79:138
- Anchovy, northern (continued)  
 feeding selectivity (continued)  
 comparison with other studies, FB 79:140  
 evaluation of field method, FB 79:139  
 school characteristics, FB 79:133  
 school feeding, FB 79:134  
 fish population dynamics, FB 81:741  
 fishery management  
 biological and economic basis, TM SWFC-1  
 growth and age composition, FB 83:483  
 juvenile samples, FB 81:742, 746  
 larvae, emaciated and robust  
 histochemical indications of liver glycogen in samples, FB 79:806  
 larvae, percentage of starving in southern California Bight  
 classification of larvae, FB 78:481  
 digestive tract, FB 78:479  
 geographical distribution, FB 78:481  
 other organs, FB 78:481  
 plankton volume, FB 78:486  
 standard length, FB 78:481  
 surface temperature, FB 78:485  
 trunk musculature, FB 78:476  
 larval abundance, FB 81:41, 744, 747  
 otolith preparation, FB 81:743  
 rates of ovarian atresia, FB 83:119  
 reproduction off Oregon and Washington  
 fecundity, FB 78:611  
 gonadal condition, FB 78:606  
 length and age at sexual maturity, FB 78:606  
 ovarian maturation, FB 78:607  
 seasonal distribution, FB 78:615  
 sex ratio, FB 78:607  
 spawning frequency, FB 78:612  
 respiration and depth control as possible reasons for swimming of larvae, FB 78:109  
 responses to predation by *Amphiprion percula*, FB 79:727  
 schooling behavior, FB 83:235  
 size, birth-date, FB 81:744, 747  
 spawning biomass and early life history off Oregon and Washington  
 comparison of northern and central subpopulations, FB 78:871  
 egg and larvae census estimates, FB 78:858, 867  
 field procedures, FB 78:857  
 hydrography and plankton volume, FB 78:862  
 laboratory procedures, FB 78:858  
 larval transport and juvenile nurseries, FB 78:873  
 relationship with Columbia River plume, FB 78:872  
 spawning biomass estimates, FB 78:859, 868  
 subpopulation, northern, FB 78:856  
 yield estimates, FB 78:862, 870  
 spawning energetics of female  
 annual fat cycle and spawning, FB 79:223  
 energy budget for female growth and reproduction, FB 79:224  
 energy cost of spawning, FB 79:221  
 spawning frequency and rate of egg maturation, FB 79:218  
 vertical stratification off southern California, FB 80:895
- Anemone, bay  
 as oyster seed bed predators, northeastern U.S., MFR 45(3):5

- Anglerfish**  
osteology and relationships of genus *Tetrabrachium*  
comparative osteology of antennarioid families, FB 79:397  
osteology, FB 79:390  
phylogenetic relationships, FB 79:412  
systematics, FB 79:388
- Anglerfish, ceratioid**  
Philippine Archipelago  
Caulophrynidae, FB 78:380  
Caulophrynidae genera and species key, FB 78:380  
Centrophrynidae, FB 78:395  
Ceratiidae, FB 78:395  
Ceratiidae genera and species key, FB 78:395  
Ceratioidei family key, FB 78:379  
Diceratiidae, FB 78:381  
Diceratiidae genera and species key, FB 78:381  
Gigantactinidae, FB 78:396  
Himantolophidae, FB 78:381  
Linophrynidae, FB 78:396  
Linophrynidae genera and species key, FB 78:396  
Melanocetidae, FB 78:381  
*Melanocetus* species key, FB 78:381  
*Oneirodes* species key, FB 78:382  
Oneirodidae, FB 78:382  
Oneirodidae genera key, FB 78:382  
Thaumatichthyidae, FB 78:395
- systematics and distribution  
distribution, FB 78:83  
evolutionary relationships, FB 78:84  
genus *Melanocetus*, FB 78:70  
key to species based on females, FB 78:70  
*Melanocetus eustalus* n. sp., FB 78:79  
*Melanocetus johnsoni*, FB 78:71  
*Melanocetus murrayi*, FB 78:78  
*Melanocetus niger*, FB 78:78  
*Melanocetus polyactis*, FB 78:77  
*Melanocetus* species, FB 78:83  
osteology of females, FB 78:61  
type genus *Melanocetus*, FB 78:67
- Anguilla anguilla*—see Eel, Atlantic  
*Anguilla rostrata*—see Eel, American
- Animals, aquatic**  
tissue lesions  
induced by controlled exposure to environmental contaminants,  
chemotherapeutic agents, and potential carcinogens,  
MFR 44(12):1
- Anisakis* sp. (nematodes)  
larval infection in striped bass, TR 29
- Annelida**  
life history, distribution, and abundance in New York Bight, S 766
- Anoplopoma fimbria*—see Sablefish
- Anoplopomatidae**  
ichthyoplankton off Alaska, TR 20
- Antarctic**  
krill, review, S 769  
parasitic fauna, TR 25
- Antarctic Peninsula**  
feeding ecology of some fishes, FB 80:575
- Antenna**  
quarterwave stub  
evaluation for Tiros satellite application, TM SEFC-13
- Anthias bicolor*—see Dogfish, horny
- Anthozoa**  
life history, distribution, and abundance in New York Bight,  
S 766
- Antioxidant**  
effect of TBHQ, on lipid oxidation, blueback herring, TM  
SEFC-75
- AOAC multiresidue procedure for pesticides**, FB 81:391
- Aprionodon**  
additions to revision of shark genus *Carcharhinus*, TR 34
- Aquaculture**  
bass, striped  
artificial propagation, TR 10  
environmental stress and disease relationships, TR 27  
finfish culture, proceedings, TR 10  
freshwater  
catfish, C 447  
development and smoltification in coho salmon from Colum-  
bia River, C 447  
finfish culture in Japan, C 447  
salmonid enhancement, C 447  
genetic selection and breeding in salmonid culture, TR 27  
Japan  
brown algae, C 442  
phytoplankton, C 442  
porphyra, C 442  
marine  
fish diseases in Far East, TR 25  
molluscan mariculture in the greater Caribbean MFR 47(4):1  
soybean meal in trout and salmon diets, C 447  
United States  
phytoplankton, C 442  
seaweed, C 442
- Aquarium, marine**  
balancing, how to, TM SEFC-59  
biology of fishes collected in Monroe County, Florida, TM  
SEFC-59
- Aquatic species**  
comparison of rearing costs and returns of selected herbivores,  
omnivores, and carnivores, MFR 43(9):23
- Arabian Gulf**  
fishes, food  
proximate composition and nutritive value, FB 79:211
- Aracanidae**—see Plectognath fishes
- Archaeogastropods**  
*Trochus incrassatus*, MFR 46(4):79  
*Trochus maculatus*, MFR 46(4):79  
*Trochus pyramis*, MFR 46(4):78  
*Turbo argyrostoma*, MFR 46(4):79
- Archiannelida**  
life history, distribution, and abundance in New York Bight, S 766
- Arctic**  
identification guide for whales, dolphins, porpoises, C 444
- Arctica islandica*—see Quahog, ocean
- Arctocephalus gazella*—see Seal, Antarctic fur
- Arctocephalus pusillus*—see Seal, Cape fur
- Argonata* sp.  
association between, and aggregate salps, FB 80:648
- Armorhead, pelagic**  
distribution, MFR 46(2):13  
feeding behavior, MFR 46(2):13  
fisheries, MFR 46(2):14  
life history, MFR 46(2):13



- Armorhead, pelagic (continued)  
 migration, MFR 46(2):13  
 morphological differences, MFR 46(2):14  
 population, MFR 46(2):13
- Aroclor—see Finfish
- Arthropoda  
 life history, distribution, and abundance in New York Bight, S 766
- Artificial propagation  
 salmon, coho, mid-Columbia River system, MFR 46(3):34
- Ascelichthys rhodorus*—see Sculpin, rosylip
- Ascomycetes—see Lichens
- Asterias forbesi*—see Starfish
- Astropectinidae—see Starfish
- Atherinops affinis*—see Topsmelt
- Atlantic and Gulf of Mexico coasts  
 crab, blue  
 biological data, TR 1
- Atlantic Bight  
*Callinectes* larvae, 1975-77, FB 78:251  
 diel-depth distribution of summer ichthyoplankton, FB 79:705  
 flounder, summer  
 stock discrimination workshop proceedings, TM F/NEC-18  
 mackerel, Atlantic  
 spawning and fecundity, FB 78:103  
 ocean quahog growth, FB 80:21  
 porgy, whitebone  
 biology, FB 80:863  
 tilefish  
 preliminary analysis of fishery, MFR 42(11):13
- Atlantic Bight, Middle  
 grammaridean amphipods  
 distribution, C 442  
 species, C 442  
 outer continental shelf  
 food habits and trophic relationships of fishes, S 773
- Atlantic Bight, South  
 invertebrate communities, TR 18
- Atlantic City, New Jersey  
 nearshore coastal upwelling, TM F/NEC-31
- Atlantic coast  
 alewife  
 offshore distribution, FB 79:473  
 herring, blueback  
 offshore distribution, FB 79:473  
 shrimp landings  
 relationship between annual ex-vessel value and size composition, MFR 42(12):18  
 trends in annual ex-vessel value and size composition, MFR 42(12):18
- Atlantic coast, U.S.  
 menhaden, Atlantic  
 eggs and larvae, S 774
- Atlantic Estuarine Fisheries Center  
 reports  
 fiscal years 1970 and 1971, TM AEFC-1
- Atlantic Ocean  
 Japanese longline fishing  
 fishing activity and catch rates, 1979 and 1980, TM SEFC-125  
 observer data versus quarterly data reports, 1979, TM SEFC-64  
 observer data versus quarterly data reports, 1980, TM SEFC-125
- Atlantic Ocean (continued)  
 survey  
 organic pollutants in finfish, TM F/NEC-13  
 tuna, bluefin  
 shedding rates of plastic and metal dart tags, FB 78:179
- Atlantic Ocean, eastern  
 sailfish  
 size and possible origin, FB 78:805
- Atlantic Ocean, middle  
 fisheries management  
 economic and biological data, TM F/NEC-5  
 groundfish, FB 82:295  
 mackerel, Atlantic  
 1978 spring recreational catch, FB 78:799
- Atlantic Ocean, North  
 Turbellaria  
 Asceola and Nemertodermatida, C 440
- Atlantic Ocean, northwest  
 food habits of pleuronectiforms, S 749
- Atlantic Ocean, northwestern  
 biological considerations relevant to management of squid, MFR 42(7-8):23
- fish  
 food of seventeen species, TM F/NEC-28  
 organochlorine residues, FB 78:51  
 food of 10 species of juvenile groundfish, FB 79:200  
 tuna, bigeye  
 gonad analyses, late summer-early winter collections, TM SWFC-14  
 tuna, yellowfin  
 gonad analyses, late summer-early winter collections, TM SWFC-14
- zooplankton  
 effect of season and location on relationship between displacement volume and dry weight, FB 80:631
- Atlantic Ocean, South  
 bight habitat, FB 81:537  
 biological data on the spottail pinfish, TR 19
- Atlantic Ocean, South U.S.  
 bluefish  
 food preferences, TM SEFC-150
- Atlantic Ocean, western  
 conch: *Strombus* spp.  
 annotated bibliography, S 748  
 crab, xanthid  
*Micropanope sculptipes*, complete larval development in laboratory, FB 79:487  
 grunts: *Haemulon aurolineatum* and *Haemulon plumieri*  
 biological data, C 448  
 surveys of sea turtle habitats and populations, TM SEFC-91  
 tuna, bluefin  
 reproductive biology, FB 80:121
- Atlantic Ocean, western central  
 fish larvae, S 776  
 fishes taken in longlining, C 435
- Atlantic Ocean, western North  
 billfishes  
 analysis of catch and effort data from U.S. recreational fishery, 1971-78, FB 79:49  
 dolphin, Atlantic whitesided  
 southern distribution, FB 78:167

Atlantic Ocean, western North (continued)

hagfishes

description of two new species, FB 79:69

whale, humpback

feeding behavior, FB 80:259

Atlantic United States Fishery Conservation Zone

incidental capture of sharks, TR 31

Atlas

average monthly ex-vessel price per pound, 1960-81, TM SEFC-96

brown shrimp cumulative monthly catches, 1960-81, TM SEFC-96

cumulative ex-vessel value catches, 1960-81, TM SEFC-96

eastern Bering Sea

demersal fish community structure, 1971-77, TM F/NWC-40

demersal fish community structure, 1978-81, TM F/NWC-35

invertebrate community structure, 1971-77, TM F/NWC-40

invertebrate community structure, 1978-81, TM F/NWC-35

MARMAP

continental shelf survey, east coast, 1977-83, TM F/NEC-33

sea surface temperatures

California, 1980-83, TM SWFC-43

El Nino, 1982-83, TM SWFC-43

Atmosphere-ocean

California current region

heat exchange components, S 763

*Atractoscion nobilis*—see Seabass, white

Auke Creek, Alaska

salmon

fry production in gravel hatchery, TM ABFL-3

Australia

Gulf of Carpentaria

effect of vertical migration on dispersal of penaeid shrimp

larvae, FB 80:541

lobster, rock

stock and recruitment relationships, FB 80:475

tuna, skipjack

distribution and life history, FB 79:85

*Auxis rochei*—see Mackerel, bullet; Tuna, bullet

*Auxis thazard*—see Tuna, frigate

**B**

*Bacillus*

in freshly caught marine fish, MFR 45(4-6):35

Backdown

reducing porpoise mortality in tuna purse seining, TR 13

Bacteria

*Achromobacter*, FB 82:377

*Bacillus*, FB 82:377

Buccaneer gas and oil field

environmental assessment, TM SEFC-38

milestone report to Environmental Protection Agency (EPA), TM SEFC-49

*Corynebacterium*, FB 82:377

*Cytophaga*, FB 82:377

*Flavobacterium*, FB 82:377

histamine producing, MFR 45(4-6):35

Louisiana salt dome brine disposal sites, 1978-79

biochemical survey, TM SEFC-27

*Micrococcus*, FB 82:377

*Moraxella*, FB 82:377

Bacteria (continued)

*Pseudomonas*, FB 82:377

*Vibrio*, FB 82:377

Bacterial spoilage

isolated from frozen tuna, MFR 45(4-6):35

Bacteriology, elasmobranch fish

analysis, FB 82:376

occurrence - muscle, FB 82:379

occurrence - teeth, FB 82:378

Baffin Bank, FB 81:600

*Bairdiella chrysoura*—see Perch, silver

Baitboats

foreign tuna catch and effort

central and western Pacific, 1965-77, TM SWFC-2

Baitfish

anchovy in New Guinea's tuna fishery, MFR 45(10-12):50

Baja California

whale, gray, FB 81:513, 519

*Balaena glacialis*—see Whale, right

*Balaena mysticetus*—see Whale, bowhead

*Balaenoptera borealis*—see Whale, sei

*Balaenoptera musculus*—see Whale, blue

*Balaenoptera physalus*—see Whale, fin

*Balanus eburneus*—see Barnacle

*Balistes capriscus*—see Triggerfish, gray

*Balistes polylepis*—see Triggerfish, finescale

Balistidae—see also Leatherjackets

proximate chemical composition, MFR 46(3):71

Barnacle

as oyster spat fouling organisms, MFR 45(3):5

Barracuda

guide to fishes taken in longlining, C 435

Barracuda, Pacific

California, southern and central, S 762

resource abundance, 1963-78, S 762

temperature effects on sport fishing, S 759

warm water period observations, California, MFR 45(4-6):27

Barter Island, Alaska

whale, bowhead

foods utilized, autumn 1979, MFR 42(9-10):88

Bass, kelp, FB 82:37

Bass, striped

bioenergetics and growth of embryos and larvae

energy inputs, FB 80:462, 463, 467

energy outputs, FB 80:463, 464, 470

utilization efficiency, FB 80:467

biological data

aquaculture, TR 10

commercial harvest, C 442

culture of, C 442

distribution, C 442

ecology, C 442

life history, C 442

morphology, C 442

population, C 442

recreational harvest, C 442

culture in the U.S., TR 10

effects of long-term mercury exposure on hematology, FB 80:389

gear, FB 81:421, 423

movements, FB 81:421

- Bass, striped (continued)  
 nematode and prevalence, TR 29  
 nomenclature differences, MFR 45(7-9):1  
 pollutant burdens  
 histopathological manual for monitoring health, TM SWFC-46  
 pollution impacts on early life history stages, MFR 45(10-12):12  
 recruitment studies, MFR 45(10-12):4  
 Savannah River, Georgia, FB 81:420
- Bathylagus typhlops*  
 chaetognatha  
 classification, TR 15  
 key to species, TR 15
- Bathylagidae  
 ichthyoplankton off Alaska, TR 20
- Bathylagus stibius*—see Smoothtongue, California
- Bathymasteridae  
 ichthyoplankton off Alaska, TR 20
- Bathymetric data  
 temperature conditions in the Cold Pool, 1977-81, TR 24
- Bay of Fundy, fish diversity, FB 82:121
- Beach restoration  
 effects on nearshore macroinfauna, TM SEFC-133
- Beach seines  
 Alaska, southeast  
 nearshore fishery sampling, 1981 and 1982, TM F/NWC-86  
 Columbia River, Washington  
 juvenile salmon catch data, 1977-83, TM F/NWC-74  
 juvenile salmon, marked fish recoveries, 1977-83, TM F/NWC-75
- Bear, polar  
 satellite monitoring of winter ice cover, MFR 46(3):7
- Beaufort Sea  
 bowhead whale  
 historical shore-based catch, MFR 42(9-10):5  
 migration, distribution, and abundance, S 778  
 summer distribution, MFR 42(9-10):57  
 white whale  
 migration, distribution, and abundance, S 778
- Beaufort Sea, western  
 fishes and invertebrates trawled, S 764
- Behavioral studies  
 anchovy, northern, FB 83:235  
 dolphins, FB 83:187  
 fish entrapment at cooling water intake structures, MFR 47(1):18  
 salmonids at dams, MFR 47(3):38  
 walrus, Pacific, TR 12  
 whales, bowhead, FB 83:357
- Belonidae, FB 81:260
- Beloniformes fishes  
 monogenean fauna of, TR 25
- Benthic macrofauna  
 contaminated sediments  
 Long Island Sound and New York Bight, TM F/NEC-16  
 salt dome brine disposal sites, Louisiana, 1978-79 biochemical survey, TM SEFC-25  
 secondary production  
 coastal Delaware and Delaware Bay, TM F/NEC-32
- Benzo(a)pyrene (BaP)  
 carcinogenic, FB 81:473, 476, 479  
 concentration, FB 81:473, 478  
 in sand, FB 81:476, 478  
 in sea water, FB 81:473, 476
- Benzo(a)pyrene (BaP) (continued)  
 in sediments, FB 81:478  
 metabolism by fish liver microsomes  
 literature review and preliminary studies, TM SEFC-123  
 mutagenic, FB 81:473  
 solubilizing or dispersing agent, FB 81:476  
 toxic, FB 81:473, 478
- Bering Sea  
 abundance  
 distribution of groundfish catches, 1977-80, TM F/NWC-31  
 Pacific cod, 1982, TM F/NWC-25  
 Pacific cod, projected, 1982-86, TM F/NWC-25  
 Pacific herring, 1959-81, TM F/NWC-24  
 assessments  
 living marine resources, TM F/AKR-2  
 pollock abundance, S 743  
 atlas  
 demersal fish, 1971-77, TM F/NWC-40  
 demersal fish, 1978-81, TM F/NWC-35  
 invertebrate resources, 1971-77, TM F/NWC-40  
 invertebrate resources, 1978-81, TM F/NWC-35  
 data on fish species for ecosystem simulation I, TM F/NWC-29  
 fecal material, FB 81:515, 520  
 invertebrates, benthic, FB 81:515, 519  
 invertebrates, infaunal, FB 81:517  
 large bivalves, FB 81:517, 520  
 marine mammal predation on squids, MFR 44(2):1  
 new fishes, FB 79:353  
 numerical simulation model  
 temperature fluctuation effects on fish distributions, TM F/NWC-57  
*Psychrolutes phrictus*, additional records, FB 78:169  
 resource use conflicts  
 commercial fisheries and petroleum development, TM F/AKR-2  
 harvest  
 groundfish, 1964-80, TM F/NWC-14  
 herring, 1964-80, TM F/NWC-14  
 shrimp, 1964-80, TM F/NWC-14  
 sampling by U.S. observers on foreign fishing vessels, 1977-78, MFR 43(5):1  
 snail resource and its fishery, MFR 42(5):15  
 survey  
 bottom trawl, 1983, TM F/NWC-94  
 bottom trawl, groundfish, 1978, TM F/NWC-55  
 bottom trawl, joint U.S.-Japan, 1981, TM F/NWC-88  
 demersal species trawl, 1979, TM F/NWC-30  
 demersal species trawl, 1980, TM F/NWC-49  
 groundfish, 1982, TM F/NWC-42  
 groundfish, 1983, TM F/NWC-53  
 groundfish, 1984, TM F/NWC-83  
 groundfish, joint U.S.-Japan, 1982, TM F/NWC-87  
 trawl, joint U.S.-U.S.S.R., 1983, TM F/NWC-85  
 walleye pollock  
 workshop, 1984, TM F/NWC-62  
 walrus, FB 81:501  
 whale, bowhead  
 estimated initial population size of stock, FB 78:843  
 historical shore-based catch, MFR 42(9-10):5  
 vessel surveys, June-July 1978, MFR 42(9-10):51  
 whale, gray, FB 81:513  
 whale migrations, S 778

- Bering Sea, eastern  
demersal fish resource, S 754
- Bibliographies**  
Bureau of Commercial Fisheries, economic working papers series, TM SEFC-86  
clam, hard, S 756  
ecology of co-occurring tunas and dolphins in the eastern tropical Pacific, TM SWFC-21  
economics and uncertainty, TM F/NWC-47  
fish oils, TM SEFC-166  
food  
habits, North Pacific fishes, TM F/NWC-54  
rations, TM F/NWC-63  
gill net impacts  
non-target species, TM F/SWR-012  
interspecific hybridization  
salmonids, TM NWFC-1  
NMFS impact assessments  
Buccaneer gas and oil fields, TM SEFC-147  
brine disposal from salt domes, TM SEFC-147  
karyotypic analysis  
subspecific taxonomy of mammals, TM SWFC-9  
RSW and CSW systems for semi-tropical waters  
engineering and economics, TM SEFC-102  
snappers, western Atlantic, TM SEFC-8
- Bigeye, red**  
seamount fishery research, central North Pacific, MFR 46(2):10
- Bikini, Marshall Islands**  
ciguatera survey, FB 78:201
- Billfish**  
age determination, TR 8  
charterboat fishery landings, Florida Gulf coast and Keys, MFR 45(1):16  
guide to fishes taken in long lining, C 435  
larvae  
effects of deep seabed mining, TM SWFC-44  
recreational fishery survey, 1977-78, TM SEFC-5  
statistical results of collected data, 1972-81, TM SEFC-106  
status reports on world stocks, TM SWFC-15  
stock assessment  
summary report of Pacific resources, TM SWFC-5  
U.S. recreational fishery, 1971-78  
catch model, FB 79:59  
data acquisition, FB 79:52  
fishing techniques, FB 79:50  
longline fishery, FB 79:50  
marlin, blue, FB 79:60, 64  
marlin, white, FB 79:60, 64  
methodology, FB 79:53  
sailfish, FB 79:61, 65  
sampling coverage, FB 79:53  
sampling problems, FB 79:52  
sampling program, FB 79:51
- Biocides**  
Buccaneer gas and oil field environmental assessment  
milestone report to Environmental Protection Agency (EPA),  
TM SEFC-51
- Biological assessments, Alaska**  
perch, Pacific ocean, TM F/NWC-72
- Biological implications**  
closed corridor option  
Atlantic menhaden fishery, TM SEFC-165
- Biological Investigations of Marine Antarctic Systems and Stocks (BIOMASS)**  
management implications, Large Marine Ecosystems (LME),  
MFR 45(10-12):23
- Biological studies—see also Reproductive biology**  
mackerel, Spanish, FB 82:545
- Biomass**  
assessment of anchovy populations, TR 36  
calculation, FB 82:446  
fish, kelp forest, FB 82:44  
fish growth rate and mortality, TM F/NWC-58  
macrophyte, FB 81:838  
model investigations, dynamic effects of fishing, TM F/NWC-41  
zooplankton, FB 81:855
- Bioprofiles**  
oceanic pelagic fishes  
sampling manual, TM SEFC-103, SEFC-55
- Biscayne Bay, Florida**  
interrelation of water quality, gill parasites, and gill pathology  
of some fishes, FB 80:269
- Bivalves**  
ageing, MFR 46(2):27  
collection of east coast mollusks, S 768  
deep-burrowing infaunal  
flushing-coring device for collecting in intertidal sand, FB 79:383  
gross and histological techniques, TM F/NEC-25  
life history, distribution, and abundance in New York Bight, S 766  
*Macoma* spp., FB 81:504  
*Mya truncata*, FB 81:504  
*Serripes groenlandicus*, FB 81:504
- Black Sands mining trawl survey 1981-82, MFR 47(3):23**
- Blacksmith**  
abundance, FB 82:199, 201  
diel migration, FB 82:202  
distribution patterns, FB 78:837  
feeding habits, FB 82:200  
foraging at reef, FB 78:838  
foraging experiments, FB 78:831, 835  
physical measurements, FB 78:832  
plankton sampling, FB 78:831  
prey, FB 82:201  
response to thermal effluents, FB 82:201  
study site, FB 78:830  
surveys, FB 78:830  
zooplankton distribution patterns, FB 78:839
- Block Island Sound**  
barge *Ocean 250* gasoline spill, S 751
- Bloodworms**  
Maine coast  
*Glycera dibranchiata* commercial sampling program, S 767
- Bluefish**  
distribution of larvae, MFR 45(10-12):19  
food preferences  
gill net selectivity, TM SEFC-119  
landings, North Carolina charterboat fishery, MFR 45(1):16
- Bluegill**  
mortality from 13p2 virus, MFR 46(3):15
- Bocaccio, FB 82:70**  
bottom trawl survey  
off Washington-California, 1980, TM F/NWC-48  
maturation and fecundity, MFR 42(3-4):74

- Bocaccio (continued)**  
 seasonal changes in fat and gonad volume, FB 83:299  
 size, age composition, and growth, MFR 42(3-4):48
- Bolinas Lagoon, California, FB 82:493**
- Bonefish**  
 Bahamian waters, FB 81:148  
 movement patterns, FB 81:148  
 ultrasonic equipment, FB 81:148
- Bongo plankton nets, FB 81:405**
- Bonito, Atlantic**  
 landings, Florida charterboat fishery, MFR 45(1):16
- Bonito, Pacific**  
 California, southern and central  
 sea-surface temperature effects on sport fishing, S 759  
 optimum sea surface catch temperatures, MFR 45(4-6):  
 31  
 von Bertalanffy growth equation, FB 81:93
- Bonitos**  
 bionomics and life history, C 442  
 exploration, C 442  
 identification, C 442  
 population, C 442  
 protection and management, C 442
- Bonnethead**  
 swimming kinematics, FB:803
- Bothriocephalus scorpii***  
 larval stages of, TR 25
- Bottomfish—see also Groundfish**  
 ecological interactions between shrimp, TM SEFC-63  
 resources Gulf of Alaska, TM F/NWC-10
- Botulism**  
*Clostridium botulinum* outbreaks, MFR 45(2):1  
*Clostridium botulinum* type E  
 D values, MFR 45(2):5, 6  
 distribution in nature, MFR 45(2):1, 2  
 in fish-related botulism, MFR 45(2):1  
 phantom TDT curves, MFR 45(2):5  
 quantitative incidence, MFR 45(2):2  
 survivor curves, MFR 45(2):4  
 z value, MFR 45(2):4, 5  
*Clostridium perfringens*  
 in decomposed skipjack tuna, MFR 45(4-6):40  
 isolated from frozen tuna, MFR 45(4-6):35  
*Clostridium sporogenes*  
 commercial canning heat process standards, MFR 45(2):3
- Box-Jenkins models**  
 forecasting fishery dynamics, FB 78:887
- Boxfish, spiny**  
 warm water period observations, California, MFR 45(4-6)  
 27
- Boxfishes**  
 osteology, phylogeny, and higher classification of fishes of order  
 Plectognathi (Tetraodontiformes), C 434
- Brevoortia gunteri*—see Menhaden, finescale**
- Brevoortia patronis*—see Menhaden, gulf**
- Brevoortia smithi*—see Menhaden, yellowfin**
- Brevoortia* spp.—see Menhaden**
- Brevoortia tyrannus*—see Menhaden, Atlantic**
- British Columbia**  
 salmon, chum  
 population biology, Fraser River, FB:813
- Brosme brosme*—see Cusk**
- Bryan Mound, brine disposal site, 1979-81**  
 redfish studies  
 brine avoidance/attraction bioassays, TM SEFC-69  
 brine toxicity bioassays, TM SEFC-69  
 shrimp studies  
 bioassays, TM SEFC-70  
 catch effort analysis, TM SEFC-65  
 interview sampling survey of catch effort, TM SEFC-68  
 mark-release investigations, TM SEFC-66  
 shrimping success, TM SEFC-65  
 spawning site survey, TM SEFC-67
- Bryozoa**  
 as oyster spat fouling organisms, MFR 45(3):5
- Buccaneer gas and oil fields**  
 environmental assessments, 1976-80  
 reports to Environmental Protection Agency (EPA), TM  
 SEFC-47 - 52  
 environmental assessments, 1978-79, TM SEFC-35 - 44  
 impact assessments  
 bibliographies, TM SEFC-147
- Bulk biomass model**  
 fish food habits data base, MFR 47(1):9
- Bull rake—see Clam rake**
- Bullhead**  
 helminths on tissue lipids, TR 25  
 pelagic resources, 1963-78, S 762
- Butterfish**  
 Pacific  
 seasonal spawning cycle, FB 78:977  
 seamount fishery research, central North Pacific, MFR 46(2):11
- C**
- Cadmium**  
 dietary intake from seafood  
 using a computer simulation model, TM SEFC-74  
 tissue distribution  
 in mice dosed with partially purified extracts of oyster, TM  
 SEFC-143
- Calamus leucosteus*—see Porgy, whitebone**
- Calamus*—see Fish, reef**
- Calappa* spp.—see Crab, box**
- CalCOFI—see also Large Marine Ecosystems (LME)**  
 oceanographic data file, TM SWFC-24
- California**  
 albacore fishing  
 relationship to sea surface temperature isotherms, TM  
 SWFC-11  
 bottom trawl survey  
 bocaccio, 1980, TM F/NWC-48  
 canary rockfish, 1980, TM F/NWC-48  
 chilipepper, 1980, TM F/NWC-48  
 yellowtail rockfish, 1980, TM F/NWC-48  
 Dungeness crab resources  
 economic status, 1982-83, TM F/SWR-006  
 economic status, 1983-84, TM F/SWR-008  
 food of Pacific white-sided dolphin, Dall's porpoise, and northern  
 fur seal, off, FB 78:951  
 foreign fisheries, off, 1977-78, MFR 43(5):36  
 foreign fishing operations, TM F/NWR-15  
 groundfish  
 economic status, 1983, TM F/SWR-004

- California (continued)
- groundfish (continued)
    - economic status, 1984, TM F/SWR-010
  - joint fishing operations, TM F/NWR-15
  - nearshore sea surface temperatures
    - 1980-83, TM SWFC-43
    - El Nino, 1982-83, TM SWFC-43
  - northern anchovy fishery management
    - biological and economic basis, TM SWFC-1
  - pink shrimp resources
    - economic status, 1983, TM F/SWR-007
    - economic status, 1984, TM F/SWR-009
  - rockfish
    - distribution and abundance, 1977, MFR 42(3-4):2
  - rockfish, shortbelly, MFR 42(3-4):34
  - rockfish, yellowtail
    - length and age composition, 1977, MFR 42(3-4):54
  - sablefish
    - abundance and size composition, 1980-81, TM F/NWC-26
    - abundance and size composition, 1980-82, TM F/NWC-51
    - tagging studies, 1979-83, TM F/NWC-69
  - salmon
    - economic status, 1983, TM F/SWR-005
  - sampling commercial landings
    - rockfish, 1984, TM SWFC-45
  - sea otters
    - annual reproduction, dependency period, and apparent gestation period, FB 79:347
  - whiting, Pacific
    - foreign fleet catches, 1977-80, TM F/NWC-11
    - foreign fleet trawl positions, 1977-80, TM F/NWC-11
  - California, central
    - rockfish, olive
      - growth, reproduction, and food habits, FB 79:533
    - sea lion, California
      - population fluctuations and Pacific whiting fishery, FB 80:253
  - California, southern
    - croaker, white
      - development of eggs and larvae off coast, FB 80:403
    - fishes
      - crepuscular and nocturnal activities, FB 79:1
    - Newport Bay
      - seasonal abundance, composition, and productivity of littoral fish assemblage, FB 80:769
    - reefs, artificial
      - resource management option for siting coastal power stations, MFR 44(6-7):24
    - salmon, coho
      - phenotypic differences among hatchery and wild stocks, FB 80:105
    - shark, white
      - predation on pinnipeds in coastal waters, FB 80:891
    - vertical stratification of nearshore larval fishes
      - anchovy, northern, FB 80:895
      - croaker, white, FB 80:895
      - queenfish, FB 80:895
  - California Bight, southern
    - anchovy, northern
      - feeding selectivity of schools, FB 79:131
      - percentage of starving larvae, FB 78:475
  - California Channel Islands
    - seal, northern elephant
      - population growth and censuses, 1958-78, FB 79:562
  - California Cooperative Oceanic Fish Investigation (CalCOFI), FB 82:97
  - California Department of Fish and Game
    - crab, Dungeness, nursery studies, MFR 47(3):21
  - California fishery, FB 82:37, 196, 530
  - rockfish, FB 82:249
  - California sea lions—see Sea lions, California
  - California-British Columbia
    - whiting, Pacific
      - distribution, abundance, and biological characteristics, July-September 1977, MFR 42(3-4):17
  - Caligus* parasites, FB 81:246
  - Callinectes*
    - larvae in Middle Atlantic Bight, 1975-77
      - cooccurring decapods, FB 78:259
      - distribution, FB 78:255
      - identification, FB 78:254
  - Callinectes bocourti*—see Crab, tropical swimming
  - Callinectes sapidus* Rathburn—see Crab, blue
  - Callorhinus ursinus*—see Seal, northern fur
  - Canada
    - MARMAP survey, 1977-83, TM F/NEC-33
    - northern fur seal eastern Pacific pelagic data and collection procedures, TM F/NWC-4
    - salmon, anadromous
      - releases from rearing facilities, 1960-76, TM F/NWC-6
    - trout, anadromous
      - releases from rearing facilities, 1960-76, TM F/NWC-6
  - Canadian fishery, FB 82:121
  - Canadian Formula
    - ice requirements for chilled seawater systems, MFR 47(4):33
  - Canaveral Channel, Florida
    - loggerhead sea turtle
      - movement and behavior patterns, TM SEFC-112
  - Cancer borealis*—see Crab, Jonah
  - Cancer irroratus*—see Crab, rock
  - Cancer magister*—see Crab, Dungeness
  - Canned foods, commercial
    - botulism protection, MFR 45(2):2
    - process time determination, MFR 45(2):4
    - thermal death time (TDT) curve, MFR 45(2):2
  - Cape Fear River, North Carolina
    - fishes, postlarval in tidal estuary, FB 78:419
  - Cape Hatteras, North Carolina
    - croaker, Atlantic
      - maturity, spawning, and fecundity, north of, FB 78:190
    - MARMAP survey, 1977-83, TM F/NEC-33
  - Cape Lisburne, Alaska
    - migration of bowhead whales, MFR 42(9-10):46
  - Cape Sable, Nova Scotia
    - MARMAP survey, 1977-83, F/NEC-33
  - Capitellida
    - life history, distribution, and abundance in New York Bight, S 766
  - Capline Sector
    - Louisiana salt dome brine biochemical surveys, 1978-79, TM SEFC-25 to SEFC-33
  - Caprodon schlegelii*—see Grouper

- Capsalid fauna  
parasitology and pathology of marine organisms of the world ocean, TR 25
- Carangidae  
ichthyoplankton larval distribution and abundance  
Gulf of Mexico, 1982, TM SEFC-144  
seamount fishery research, central North Pacific, MFR 46(2):11
- Caranx caballus*—see Jack, green  
*Caranx hippos*—see Jack, crevalle  
*Caranx ignobilis*—see Ulua, white
- Carcharhinidae—see Sharks
- Carcharhinus*  
revision of genus, TR 34
- Carcharhinus falciformis*—see Shark, silky, TR 31  
*Carcharhinus hemiodon*—see also Sharks  
biological data, TR 34  
*Carcharhinus isodon*—see Shark, finetooth; see also Sharks  
*Carcharhinus leidon*—see Sharks  
*Carcharhinus leucas*—see Shark, bull  
*Carcharhinus longimanus*—see Shark, ocean whitetip, TR 31  
*Carcharhinus macrotis*—see also Sharks  
biological data, TR 34  
*Carcharhinus melanopterus*—see Shark, Pacific blacktip  
*Carcharhinus milberti*—see Shark, sandbar  
*Carcharhinus obscurus*—see Shark, dusky  
*Carcharhinus plumbeus*—see Shark, sandbar  
*Carcharhinus signatus*—see also Sharks  
biological data, TR 34  
*Carcharhinus* spp.—see Sharks  
*Carcharodon carcharias*—see Shark, white  
*Caretta caretta*—see Turtle, loggerhead
- Caribbean Sea  
chaetognatha, TR 15  
classification, TR 15  
fishes taken in longlining, C 435  
fish larvae, S 776  
key to species, TR 15  
molluscan mariculture, MFR 47(4):1
- Caroline Islands, Western  
Helen Reef, Palau  
tridacnid clam stocks, MFR 42(2):8
- Casco Bay, Maine  
environmental benchmark studies, TM F/NEC-19
- Catch and effort data  
analysis  
Pacific herring, 1959-81, TM F/NWC-24  
charterboat fishery  
southeastern U.S., 1982, TM SEFC-129  
southeastern U.S., 1983, TM SEFC-139  
southeastern U.S., 1984, TM SEFC-157  
FRS *Oregon* II cruise 85  
west Florida shelf, 1978, TM SEFC-130  
historical  
Georges Bank, 1904-1982, TM F/NWC-24
- Catch estimation—see also Tagging  
bass fishery, FB 81:168  
commercial fisheries, FB 81:723  
crab, blue king, FB 81:621  
fish, demersal, FB 81:537  
fish, reef, FB 81:679  
fishery management, FB 81:723
- Catch estimation (continued)  
Japanese longline  
comparison of 1979 and 1980 for Atlantic and Gulf of Mexico, TM SEFC-125  
mackerel, king, FB 81:711  
quahog, ocean, FB 82:269  
salmon, coho, FB 81:412  
shrimp, deepwater pandalid, FB 81:434  
shrimp, freshwater, FB 81:658  
splittail, FB 81:650  
trawl positions  
California, Oregon, and Washington, 1977-80, TM F/NWC-11  
tuna baitboats  
central and western Pacific, 1965-77, TM SWFC-2  
tuna, bluefin, FB 81:107  
tuna longliners  
central and western Pacific, 1965-77, TM SWFC-2  
tuna, southern bluefin, FB 81:726  
whiting, Pacific  
California, Oregon, and Washington, 1977-80, TM F/NWC-11
- Catfish  
United States  
aquaculture, C 447
- Catshark  
life history notes, FB 83:695
- Caulolatilus microps*—see Tilefish, blueline
- Census  
sea lions, northern  
central Aleutian Islands, 1979, TM F/NWC-17  
whales, bowhead  
instructions and techniques, TM F/NWC-45
- Centropristis*—see Fish, reef
- Cephalopod fishery  
management model for northwest Africa  
conceptual model, MFR 43(11):2  
evaluation of alternative management policies, MFR 43(11):6  
model validation, MFR 43(11):5  
robustness of model predictions, MFR 43(11):7  
sensitivity analysis, MFR 43(11):6  
simulation model, MFR 43(11):2 statistical comparisons of alternative management policies, MFR 43(11):8
- Cephalopods  
catalog of specimens at the National Marine Mammal Laboratory, TM F/NWC-65  
identification, TR 17  
Pacific, eastern tropical  
beak key with relationships between beak dimensions and size, FB 80:357  
techniques for assessing roles, TM SWFC-39
- Cero  
biology, FB 82:659  
catches in Spanish mackerel gill net fishery, TM SEFC-138  
species type, FB 82:657
- Cetaceans  
food requirements in northeast U.S., MFR 47(1):15  
role in ecosystem, MFR 47(1):13  
status of endangered species, MFR 46(4):2  
stock size and energy requirements, northeastern U.S., TM F/NEC-41  
tagging techniques for small cetaceans  
freeze brands, FB 80:137, 140  
natural marks, FB 80:139, 140

- Cetaceans (continued)  
 tagging techniques (continued)  
 radio tags, FB 80:136, 139  
 Roto tags, FB 80:140  
 spaghetti tags, FB 80:139, 140  
 visual tags, FB 80:136, 140  
 test methods  
 estimating range and bearing, TM SWFC-20
- Chaetognatha  
 Caribbean Sea  
 classification, TR 15  
 key to species, TR 15
- Char, Arctic  
 feeding on salmon smolts, FB 82:401  
 predator-prey interaction, FB 82:401
- Charleston Harbor  
 South Carolina  
 seasonal distribution and abundance of fishes and decapod crustaceans, S 782
- Charterboat fishery, Texas  
 catch rates, Texas bays, MFR 45(1):16  
 fish landing surveys, Texas and Gulf of Mexico, MFR 45(1):13  
 landings since 1975, MFR 45(1):11  
 species harvested, MFR 45(1):15
- Charterboat industry  
 boats, Texas  
 classification, MFR 45(1):12  
 harvest calculations, MFR 45(1):13  
 headboat surveys, MFR 45(1):12  
 management strategy, MFR 45(1):14  
 party boat surveys, MFR 45(1):12  
 recreational fish catch, 1979, MFR 45(1):13  
 business turnover, Texas, 1975-80, MFR 47(1):43  
 catch and effort from southeastern U.S. waters  
 biological information, MFR 47(3):54  
 charterboat characteristics, MFR 47(3):54  
 geographical and seasonal availability, MFR 47(3):54  
 species catch data, MFR 47(3):54  
 trolling, MFR 47(3):54  
 catch and effort survey  
 southeastern U.S., 1982, TM SEFC-129  
 southeastern U.S., 1983, TM SEFC-139  
 southeastern U.S., 1984, TM SEFC-157  
 catch records  
 catch and effort data, MFR 46(3):48  
 catch per boat hour (CBH), MFR 46(3):53  
 effort distribution, MFR 46(3):52  
 fishing method, MFR 46(3):49  
 fishing zones, definition, MFR 46(3):48  
 species caught, MFR 46(3):50  
 landings, North Carolina  
 biological data on pelagic fish samples, TM SEFC-7  
 Texas, MFR 45(1):11
- Cheilotrema saturnum*—see Croaker, black
- Chelonia mydas*—see Turtle, green; Turtle, green sea
- Chemical composition  
 crustaceans, TM SEFC-11  
 finfish, FB 81:389, TM SEFC-11  
 menhaden, Atlantic, FB 81:139, 181  
 mollusks, TM SEFC-11  
 sole, yellowfin, FB 81:669  
 whales, TM SEFC-11
- Chesapeake Bay  
 fishery, FB 82:455  
 polychlorinated biphenyls  
 fish, in, MFR 42(2):21  
 shellfish, in, MFR 42(2):21
- Squilla empusa*  
 larval ecology, FB 78:693
- Chilean subtropical rainfall  
 long-term, FB 81:369
- Chilipepper  
 trawl survey  
 off Washington-California, 1980, TM F/NWC-48  
 maturation and fecundity, MFR 42(3-4):74  
 fat and gonad volume, FB 83:299  
 age composition and growth, MFR 42(3-4):48
- Chilled seawater (CSW) systems  
 engineering and economics for semi-tropical waters, TM SEFC-102  
 ice requirements for preservation, MFR 47(4):33
- Chincoteague Bay, Virginia  
 shark, sandbar  
 feeding behavior and biology, FB 79:441
- Chionoectes bairdi*—see Crab, snow
- Chionoectes opilio*—see Crab, snow
- Chromis punctipinnis*—see Blacksmith
- Chthamalus fragilis*—see Barnacle
- Chukchi Sea, Alaska  
 assessments  
 living marine resources, TM F/AKR-3  
 bowhead and white whale migration, distribution, and abundance, S 778  
 whale, bowhead  
 historical shore-based catch, MFR 42(9-10):5  
 vessel surveys, June-July 1978, MFR 42(9-10):51
- Chukchi Sea, northeastern  
 demersal fishes and invertebrates trawled, S 764
- Chum salmon virus (CSV)  
 accumulation in mollusk tissues, MFR 46(3):15
- Ciguatera  
 fish poisoning, eastern Caribbean  
 fish involved, MFR 46(1):16  
 frequency/incidence, MFR 46(1):13  
 hazardous (high risk) species, MFR 46(1):17  
 toxic areas, MFR 46(1):15  
 survey at Enewetak and Bikini, Marshall Islands
- Acanthuridae, FB 78:240  
 Balistidae, FB 78:243  
 Carcharhinidae, FB 78:206  
 Crangidae, FB 78:233  
 Dasyatidae, FB 78:211  
 Holocentridae, FB 78:213  
 Kyphosidae, FB 78:232  
 Labridae, FB 78:237  
 Lethrinidae, FB 78:228  
 Lutjanidae, FB 78:223  
 Mugilidae, FB 78:215  
 Muraenidae, FB 78:212  
 Orectolobidae, FB 78:205  
 Scaridae, FB 78:238  
 Scombridae, FB 78:235  
 Serranidae, FB 78:216  
 Sphyrnidae, FB 78:214



- Cirolana borealis*  
 occurrence in shark hearts, Atlantic coastal waters of Florida  
 histopathology of shark heart, FB 79:379  
 isopods in shark samples, FB 79:379  
 sampling, FB 79:378  
 shark pathology, FB 79:379  
 water parameters, FB 79:378
- Cirratulida  
 life history, distribution, and abundance in New York Bight Apex,  
 S 766
- Citharichthys arctifrons*—see Flounder, gulfstream
- Citharichthys cornutus*  
 larval development and occurrence  
 cephalic spination, FB 80:47  
 characters, distinguishing, FB 80:39  
 counts, FB 80:37  
 developmental terminology, FB 80:37  
 fin and axial skeleton formation, FB 80:44  
 identification, FB 80:38, 39  
 morphometrics, FB 80:37, 41  
 occurrence, FB 80:47  
 pigmentation, FB 80:40  
 specimens, FB 80:36  
 teeth, FB 80:47  
 transformation, FB 80:47
- Citharichthys gymnorhinus*  
 larval development and occurrence  
 cephalic spination, FB 80:56  
 characters, distinguishing, FB 80:51  
 counts, FB 80:37  
 developmental terminology, FB 80:37  
 fin and axial skeleton formation, FB 80:54  
 identification, FB 80:38, 51  
 morphometrics, FB 80:37, 54  
 occurrence, FB 80:56  
 pigmentation, FB 80:51  
 specimens, FB 80:36  
 teeth, FB 80:56  
 transformation, FB 80:56
- Citharichthys spilopterus*  
 larval development and occurrence  
 cephalic spination, FB 80:62  
 characters, distinguishing, FB 80:57  
 counts, FB 80:37  
 developmental terminology, FB 80:37  
 fin and axial skeleton formation, FB 80:61  
 identification, FB 80:38, 57  
 morphometrics, FB 80:37, 59  
 occurrence, FB 80:62  
 pigmentation, FB 80:57  
 specimens, FB 80:36  
 teeth, FB 80:62  
 transformation, FB 80:62
- Citharichthys stigmaeus*—see Sanddab, speckled
- Citharichthys xanthostigma*—see Sanddab, longfin
- Citrobacter freundii*  
 isolated from tuna gills, MFR 45(4-6):37
- Clam  
 growth rates, FB 82:537
- Clam, Atlantic surf  
 fishery, 1965-74  
 areas fished, MFR 44(8):6
- Clam, Atlantic surf (continued)  
 fishery, 1965-74 (continued)  
 fleet operations, MFR 44(8):7  
 interview records, MFR 44(8):6  
 Long Island, MFR 44(8):8  
 New England region, MFR 44(8):11  
 New Jersey, MFR 44(8):9  
 Ocean City, Maryland, MFR 44(8):9  
 ports, number of vessels, and landings, MFR 44(8):4  
 resource and fishery, MFR 44(8):2  
 vessels and gear, MFR 44(8):3  
 Virginia, MFR 44(8):10  
 worldwide and United States, MFR 44(8):11
- Clam, hard  
 acetate peels, FB 81:698, 699, 701, 706  
 aging marks, MFR 46(2):33  
 aging methodology, FB 81:766  
 annotated bibliography, S 756  
 annual shell increments, FB 81:699, 700  
 Chesapeake Bay, FB 81:697  
 dark bands, FB 81:699, 706  
 depuration of human polio virus, MFR 46(3):15  
 effects of large predators on field culture, FB 78:538  
 field population, FB 81:768, 774, 776  
 gastroenteritis outbreak  
 New York, May-September, 1982, TM SEFC-121  
 growth band deposition, FB 83:671  
 growth rates, FB 81:706  
 light bands, FB 81:699, 706  
 mariculture, South Carolina  
 direct production costs, MFR 45(4-6):12  
 nursery capacity, MFR 45(4-6):15  
 operational lessons, MFR 45(4-6):14  
 raceway type, MFR 45(4-6):14  
 seed clams, MFR 45(4-6):10  
 microgrowth increment, FB 81:701  
 rakes, FB 81:429  
 shell microstructure, FB 81:699  
 southeastern United States, FB 81:765
- Clam, rake, FB 81:429
- Clam, soft-shell  
 environmental parameters, FB 81:79  
 Gallucci and Quinn parameter, FB 81:75, 78  
 growth rate, FB 81:75, 78  
 Maryland to Nova Scotia, FB 81:75  
 spawning cycle in San Francisco Bay, FB 83:403
- Clam, surf, FB 82:387  
 annual microstructure deposits and use in ocean quahog ageing,  
 MFR 46(2):27
- Clam, tridacnid  
 stocks on Helen Reef, Palau, Western Caroline Islands  
 natural history, MFR 42(2):9  
 survey methods, MFR 42(2):12
- Clam dredge, hydraulic  
 performance and environmental effects  
 clam behavior, MFR 43(9):20  
 clam mortality, MFR 43(9):19  
 clam predators, MFR 43(9):21  
 dredge efficiency, MFR 43(9):18  
 dredge performance, MFR 43(9):17  
 dredge track, adjacent areas, and wind rows, MFR 43(9):15  
 performance and efficiency, MFR 43(9):14

- Clam dredge, hydraulic (continued)
  - performance and environmental effects (continued)
    - sample treatment, MFR 43(9):16
    - track configuration and breakdown, MFR 43(9):19
- Clam surveys
  - design of electrohydraulic dredge, MFR 44(4):1
- Clam-kicking fishery
  - North Carolina
    - anchor method, MFR 44(1):16
    - bedstead method, MFR 44(1):17
    - clam trawl, MFR 44(1):19
    - oyster drag method, MFR 44(1):18
- Climatology
  - bass, striped, FB 81:420
  - California Current Region
    - atmosphere-ocean surface heat fluxes, S 763
- Closed corridor
  - biological implications
    - Atlantic menhaden fishery, SEFC-165
- Clostridium botulinum*—see Botulism
- Clostridium perfringens*—see Botulism
- Clostridium sporogenes*—see Botulism
- Clupea harengus harengus*—see Herring, Atlantic; see Herring
- Clupea harengus pallasi*—see Herring, Pacific
- Clupea sprattus*—see Sprat
- Clupeid fishes
  - Pacific, Indo-West
    - bomolochid copepods parasitic on eyes, FB 78:715
- Clupeidae
  - ichthyoplankton larval distribution and abundance
    - Gulf of Mexico, 1982, TM SEFC-144
- Coastal zone
  - color scanner workshop proceedings, TM SEFC-9
- Cobble-bottom habitats, FB 82:37
- Cobia
  - landings, Texas charterboat fishery, MFR 45(1):11
- Cochito
  - food habits, S 740
- Cod
  - Georges Bank
    - larvae fish growth and survival in relation to trophodynamics, TM F/NEC-36
- Cod, Arcto-Norwegian
  - distribution, FB 82:143, 148
  - feeding area, FB 82:141, 143, 149, 152
  - larvae, FB 82:141
- Cod, Atlantic
  - asteriscus, FB 81:830
  - Cape Hatteras to western Nova Scotia, FB 81:438
  - catch, FB 81:304, 305, 309, 315
  - daily food consumption, FB 81:437
  - diet overlap between, and other northwest Atlantic finfish
    - butterfish, FB 80:749
    - flounder, fourspot, FB 80:751
    - flounder, witch, FB 80:751
    - flounder, yellowtail, FB 80:751
    - haddock, FB 80:751
    - hake, red, FB 80:749
    - hake, spotted, FB 80:749
    - hake, silver, FB 80:754
    - hake, white, FB 80:749
    - plaice, American, FB 80:751
- Cod, Atlantic (continued)
  - diet overlap (continued)
    - pollock, FB 80:749
    - pout, ocean, FB 80:751
    - redfish, FB 80:747
    - sculpin, longhorn, FB 80:747
    - scup, FB 80:749
    - skate, little, FB 80:746
  - domestic utilization, MFR 45(7-9):21
  - food of juveniles, FB 79:202
  - Georges Bank, FB 81:827
  - groundfish processing in Massachusetts, 1970s, MFR 45(1):1
  - growth increments, FB 81:829
  - Gulf of Maine
    - trophic relationships, FB 79:775
  - landings, MFR 45(1):5
  - lapillus, FB 81:830
  - larval growth, FB 81:830
  - mean size and age, FB 81:316
  - medium length and age at maturity, FB 81:317
  - minced fish flesh
    - nutritive value, MFR 45(7-9):34
    - percent composition, MFR 45(7-9):34
    - sensory attributes, MFR 45(7-9):34
  - otoliths, FB 81:828
  - recovery trends, MFR 45(10-12):18
  - recruitment studies, MFR 45(10-12):4
  - Scotian Shelf, FB 81:303
  - shelf life extension using potassium sorbate, MFR 47(3):26
  - used in mixed mince-fillet fish blocks, MFR 46(3):76
  - viscosity as quality control for frozen fish, MFR 47(3):52
- Cod, Pacific
  - Alaska, southeastern
    - summer food, FB 78:968
  - diet and predation in Pavlof Bay, Alaska, FB 83:601
  - early life history studies, MFR 45(10-12):12
  - east Bering Sea
    - abundance of, 1982, TM F/NWC-25
    - projected abundance, 1982-86, TM F/NWC-25
  - Japanese fishery, Gulf of Alaska
    - longline catches, 1978-83, TM F/NWC-82
  - larval development in northeast Pacific Ocean
    - compared with Pacific tomcod, FB 78:923
- Cod, saffron
  - Alaska, western
    - resource assessment and potential, TM F/NWC-79
- Cod, scrod—see Cod, Atlantic
- Coded wire tags (CWT)
  - internal magnetic, MFR 46(3):68
- Coelenterata
  - life history, distribution, and abundance in New York Bight Apex, S 766
- Coelorhynchus carminatus*—see Grenadier, longnose
- Cohort analysis
  - herring, Pacific, 1959-81, TM F/NWC-24
- Cold Pool
  - temperature conditions, 1977-81, TR 24
- Collagen
  - content in tuna, MFR 46(2):40
- Columbia River
  - fishery, FB 82:411

- Columbia River (continued)
- fisheries development program
    - annual report, 1980, TM F/NWR-1
    - annual report, 1981, TM F/NWR-4
    - annual report, 1982, TM F/NWR-6
    - annual report, 1983, TM F/NWR-9
    - annual report, 1984, TM F/NWR-13
  - Hanford, Washington
    - snout dimorphism in white sturgeon, FB 80:158
  - irrigation
    - screening diversions, F/NWR-12
  - John Day Reservoir
    - walleye, growth characteristics of young-of-the-year, 1979, FB 79:567
  - salmon
    - economic values, TM F/NWR-3
    - homing experiments, broods from 1939-44, TM F/NWC-12
    - radio tracking studies at hydroelectric dams, 1971-77, TM F/NWC-81
    - tracking studies at hydroelectric dams, TM F/NWC-81
    - transplantation experiments, broods from 1939-44, TM F/NWC-12
  - salmon, juvenile
    - coho migrations, 1966-71, TM F/NWC-84
    - marked fish recoveries from the estuary and ocean plume, 1977-83, TM F/NWC-75
    - migrations, TM F/NWC-56
    - sampling and catch data, 1977-83, TM F/NWC-74
  - salmon migration, FB 82:157
  - salmonid fishery
    - stock identification methods for fishery management, MFR 47(1):85
  - transport operations
    - annual report, 1981, TM F/NWR-2
    - annual report, 1982, TM F/NWR-5
    - annual report, 1983, TM F/NWR-7
    - annual report, 1984, TM F/NWR-11
    - fiscal year 1984, TM F/NWR-14
  - transportation of smolts
    - salmon, chinook, FB 78:491
    - steelhead, FB 78:491
  - trout, steelhead
    - economic values, TM F/NWR-3
    - radio tracking studies at hydroelectric dams, 1971-77, TM F/NWC-81
  - Wind River drainage
    - salmon, chinook, establishment of nonindigenous runs, 1955-63, FB 79:507
  - Columbia River, mid-sturgeon, white
    - diel and seasonal movements, FB 79:367
  - Columbia River Basin
    - salmon, spring chinook
      - areal distribution of marked, recovered in fisheries and at parent hatcheries, MFR 43(12):1
  - Columbia River estuary
    - crab, Dungeness, nursery habitat studies, MFR 47(3):21
  - Columbia River Estuary Data Development Program, MFR 47(3):21
  - Combfish
    - Pacific Ocean, northeastern
      - development, TR 2
  - Commercial passenger fishing vessel industry
    - recreational albacore fishery, MFR 47(3):48
  - Commission for the Conservation of Antarctic Marine Living Resources
    - ecosystem management applications, MFR 45(10-12):23
  - Community, fouling
    - Buccaneer gas and oil field
      - environmental assessment, TM SEFC-39
  - Community structure
    - fisheries
      - demersal fish, eastern Bering Sea, 1978-81, TM F/NWC-35
      - demersal fish, eastern Bering Sea, 1971-77, TM F/NWC-40
    - invertebrates
      - eastern Bering Sea, 1978-81, TM F/NWC-35
      - eastern Bering Sea, 1971-77, TM F/NWC-40
    - macrobenthos
      - Gulf of Maine, TM F/NEC-14
    - phytoplankton
      - east coast, TM F/NEC-8, TM F/NEC-9
  - Computer
    - simulation model
      - estimate of dietary intake of cadmium from seafood, TM SEFC-74
  - Computer
    - graphics anthology of programs, TM SEFC-151
    - geographic mapping systems for computer programs, TM SEFC-153
  - Computer program documentation
    - EDMAP 2
      - environmental data mapping, SWFC-18
  - Computer programs
    - population projections
      - using time varying vital rates, TM SWFC-28
  - Computer programs, net tapering—see Trawl-net section taper
  - Conch
    - Atlantic Bight, middle
      - food habits and trophic relationships of fishes, S 773
  - Conch, queen
    - biology, fisheries, and management
      - Antigua, MFR 43(7):7
      - Bahamas, MFR 43(7):7
      - Barbados, MFR 43(7):7
      - Barbuda, MFR 43(7):7
      - Belize, MFR 43(7):8
      - Caicos, MFR 43(7):9
      - Cuba, MFR 43(7):8
      - Dominica, MFR 43(7):8
      - Dominican Republic, MFR 43(7):8
      - fishing methods, MFR 43(7):5
      - Florida, MFR 43(7):9
      - food, MFR 43(7):2
      - growth, MFR 43(7):3
      - habitat, MFR 43(7):2
      - Haiti, MFR 43(7):8
      - mariculture, MFR 43(7):10
      - movements and migrations, MFR 43(7):4
      - Panama, MFR 43(7):8
      - predation, MFR 43(7):5
      - processing and marketing, MFR 43(7):6
      - reproduction, MFR 43(7):2
      - research, current and proposed, MFR 43(7):10
      - resource status, MFR 43(7):6

- Conch, queen (continued)  
 biology, fisheries, and management (continued)  
 St. Lucia, MFR 43(7):8  
 St. Vincent, MFR 43(7):9  
 Tobago, MFR 43(7):9  
 Trinidad, MFR 43(7):9  
 Turks, MFR 43(7):9  
 Venezuela, MFR 43(7):9
- Conservation technology  
 economic analysis  
 fishing industry energy use, TM F/NWC-39
- Consumer expenditure patterns  
 fish, MFR 44(3):1  
 shellfish, MFR 44(3):1
- Consumption by guano  
 birds, FB 81:369
- Contaminants  
 effects on benthos  
 Long Island Sound and New York Bight, TM F/NEC-16  
 in demersal species  
 Long Island Sound and New York Bight, TM F/NEC-16  
 in finfish, FB 81:389  
 in grunion, California, FB 81:473  
 in sediments  
 Long Island Sound and New York Bight, TM F/NEC-16
- Continental shelf  
 demersal fishes  
 bottom trawl surveys, FB 82:295  
 faunal affinities, FB 82:297  
 species associations, FB 82:304  
 east coast  
 cetacean stock size estimates, TM F/NEC-41  
 Georges Bank, TM F/NEC-38  
 MARMAP survey, 1977-83, TM F/NEC-33  
 Nantucket Shoals, TM F/NEC-38  
 eastern Bering Sea  
 bottom trawl survey, 1983, TM F/NWC-94  
 U.S.-Japan bottom trawl survey, 1981, TM F/NWC-88  
 west coast  
 demersal trawl survey, eastern Bering Sea, 1979, TM F/NWC-30  
 demersal trawl survey, eastern Bering Sea, 1980, TM F/NWC-49
- Conversions  
 tail size  
 shrimp, brown, TM SEFC-20  
 shrimp, pink, TM SEFC-20  
 shrimp, white, TM SEFC-20
- Cook Inlet, Alaska  
 assessments  
 living marine resources, TM F/AKR-5
- Cookeolus boops*—see Bigeye, red
- Cooper River, S.C.  
 distribution and abundance of fishes and crustaceans, S 782
- Copepod parasites, FB 81:260
- Copepods, FB 81:227; FB 82:55
- Copepods, bomolochid  
 parasitic on eyes of Indo-West Pacific clupeid fishes  
*Pseudorbitacolax fimbriatus*, FB 78:716  
*Pseudorbitacolax nudus*, FB 78:724  
*Pseudorbitacolax* Pillai 1971, FB 78:715  
*Pseudorbitacolax varunae* (Bennet 1966), FB 78:720
- Copepods, bomolochid (continued)  
 parasitic on eyes (continued)  
*Pumiliopes jonesi* (Bennet 1967), FB 78:729  
*Pumiliopes opisthopteri* Shen 1957, FB 78:729  
*Pumiliopes* Shen 1957, FB 78:729  
*Pumiliopes squamosus* Cressey and Boyle 1973, FB 78:730  
*Pumiliopsis* Pillai 1967, FB 78:724  
*Pumiliopsis plautus* Cressey and Boyle 1973, FB 78:726  
*Pumiliopsis sardinellae* (Bennet 1964), FB 78:726
- Copepods, marine  
*Acartia tonsa*, FB 81:155  
*Calanus pacificus*, FB 81:155  
 diatom, FB 81:156  
 dinoflagellates, FB 81:156  
 food selection, FB 81:154  
 Santa Monica Bay, California, FB 81:154
- Copper  
 effects of on early life history stages of northern anchovy, FB 78:675
- Corals, stoney  
 Scleractinia coral of the U.S., N.E., C 438  
 annotated systematic list, C 442  
 bathymetric range, C 442  
 dichotomous key, C 442  
 general biology, C 442  
 geographic range, C 442  
 morphology, C 442  
 tabular key, C 442
- Corps of Engineers, U.S. Army  
 transportation of migrating salmon and steelhead trout, Columbia and Snake Rivers, MFR 45(2):9
- Corral system  
 examining pelagic dolphin schools, MFR 43(11):16
- Coryneforms  
 in freshly caught marine fish, MFR 45(4-6):35
- Coryphaena equiselis* Linnaeus—see also Dolphin-fishes  
 development and structure of fins and fin supports, FB 78:277
- Coryphaena hippurus* Linnaeus—see also Dolphin-fishes  
 development and structure of fins and fin supports, FB 78:277
- Coryphaenidae  
 ichthyoplankton larval distribution and abundance  
 Gulf of Mexico, 1982, TM SEFC-144
- Coryphaenoides rupestris* Gunner—see Grenadier, rock
- Costa Rica  
 Pacific thread herring fishery  
 maximum yield estimates, FB 79:689
- Cottidae—see also Sculpin  
 ichthyoplankton off Alaska, TR 20
- Cottids  
 Bering Sea  
 fish resources, S 754  
*Cottus asper*—see Sculpin, prickly  
 CPUE, FB 81:52
- Crab—see also *Cyclograpsus integer*
- Crab, blue  
 biological data, TR 20  
 biomes and life history, TR 20  
 comparative study of autochthonous bacterial flora on gills and environment, FB 80:884  
 distribution, TR 20  
 exploration, TR 20  
 handling, MFR 45(7-9):38

- Crab, blue (continued)  
 identification, TR 20  
 marsh habitat, FB 82:455  
 meat yield, MFR 45(7-9):42  
 microbiological properties, MFR 45(7-9):38  
 population, TR 20  
 predators on oyster spat and small seed, MFR 45(3):15  
 processing technologies  
   bacteriological profiles, MFR 45(7-9):40  
   debacked, eviscerated, boiled, MFR 45(7-9):39  
   energy savings, MFR 45(7-9):43  
   heat penetration, MFR 45(7-9):39  
   moisture content, MFR 45(7-9):42  
   whole-boiled, MFR 45(7-9):39  
   whole-boiled, debacked, washed, MFR 45(7-9):39  
 production, MFR 45(7-9):38  
 sampling devices for juvenile, comparison, FB 78:196  
 shell shedding operations, TR 20
- Crab, blue king  
 Alaska, FB 81:621  
 female size, FB 81:621  
 male size, FB 81:622  
 materials and methods of collection, FB 81:621
- Crab, box  
 seamount fishery research, central North Pacific, MFR 46(2):  
 13
- Crab, deep-sea king  
 life history, in Gulf of Alaska  
   adaptations for life on the upper slope, FB 79:265  
   depth distribution, FB 79:261  
   egg size, FB 79:265  
   fecundity, FB 79:263  
   female reproductive condition, FB 79:262  
   parasites, FB 79:265  
   sex ratio, FB 79:261  
   size distribution, FB 79:261  
   size of maturity, FB 79:263
- Crab, deep-sea red  
 growth, FB 81:903  
 juveniles, FB 81:903  
 laboratory-reared, FB 81:903  
 western Atlantic Ocean, FB 81:903
- Crab, Dungeness  
 California  
   economic status, 1982-83, TM F/SWR-006  
   economic status, 1983-84, TM F/SWR-008  
 Columbia River estuary  
   causes of injury, MFR 46(1):24  
   composition by sex, MFR 46(1):22  
   leg loss, MFR 46(1):22  
   regeneration, MFR 46(1):22  
 cyclic covariation in California fisheries  
   California, central, total catch, FB 80:795  
   California, northern  
     catch by salmon species, FB 80:794  
     total catch, FB 80:793  
     switching effort between species, FB 80:796
- Grays Harbor  
 abundance, FB 82:471, 479  
 age, FB 82:474  
 distribution, FB 82:473, 478  
 growth, FB 82:477, 481
- Crab, Dungeness (continued)  
 impairment of chemosensory antennular flicking response by  
   petroleum hydrocarbons  
     animal collection and maintenance, FB 79:641  
     apparatus, experimental, FB 79:642  
     hydrocarbon concentrations, FB 79:643  
     impairment and recovery of chemosensory detection, FB 79:643  
     procedures, FB 79:642  
     solutions, experimental, FB 79:642  
     statistical analysis, FB 79:643  
 mass mortality of female on southern Washington coast, FB  
 79:349  
 North America, west coast  
   correlation between annual catches and mean annual sunspot  
   number, FB 79:794  
 nursery habitat in Columbia River estuary, MFR 47(3):21  
 petroleum hydrocarbon detection by  
   chemosensory threshold determination, FB 78:822  
   composition of water soluble fraction, FB 78:823  
   detection thresholds, FB 78:823  
   experimental solutions, FB 78:822  
   salmonid predation, FB 83:683
- Crab, Florida stone  
 assessment of fishery, TM SEFC-21  
 assessment of fishery, 1980-81, TM SEFC-79
- Crab, golden king  
 larval description  
   comparison of larval stages with descriptions by other authors,  
   FB 80:312  
   stage I zoea, FB 80:305  
   stage II zoea, FB 80:308  
   stage III zoea, FB 80:309  
   stage IV zoea, FB 80:309  
   stage V (glaucothoe), FB 80:310
- Crab, hermit  
 found in coral reef snail shells (*Trochus* spp.), MFR 46(4):76  
 seamount fishery research, central North Pacific, MFR 46(2):12
- Crab, horseshoe  
 feeding, FB 82:383, 387  
 mortality, FB 82:388  
 population, FB 82:383  
 prey, FB 82:387
- Crab, Jonah  
 lobster trap, FB 81:51
- Crab, king  
 larvae  
   distribution and abundance in Kachemak Bay, S 765  
   satellite monitoring of ice cover affecting winter fisheries, MFR  
   46(3):7
- Crab, lithodid  
 collection methods, FB 82:315  
 larvae, morphology  
   *Cryptolithodes typicus*, FB 82:323  
   *Hapalogaster grebnitzkii*, *Dermaturus mandtii*, and *P. beivipes*,  
   FB 82:323  
   *Hapalogaster mertensii*, FB 82:323  
   *Lithodes aequispina*, FB 82:323  
   *Paralithodes brevipes*, FB 82:322  
   *Paralithodes brevipes*, *P. camtschatica*, and *P. platypus*, FB  
   82:323  
   *Placetrion wosnessenskii* and *Rhinolithodes wosnessenskii*, FB  
   82:324

- Crab, lithodid (continued)  
 zoeae, descriptions  
   Lithodes vs. Pagerinae, FB 82:321  
   *Placetron wosnessenskii*, FB 82:317  
   *Rhinolithodes wosnessenskii*, FB 82:318, 320
- Crab, mud  
 Alabama, FB 81:885  
 American oyster, *Crassostrea virginica*, FB 81:863  
 characteristics, FB 81:877  
 coloration, FB 81:884, 888, 889  
 differences from other *Panopeus* species, FB 81:877  
 ecology, FB 81:887  
 electrophoresis of hemocyanins, FB 81:883  
 genetic variability, FB 81:884  
 habitat, FB 81:884, 885  
 morphological characters, FB 81:886  
 North Carolina, FB 81:883  
*Panopeus austrobesus* new species, FB 81:865  
*Panopeus herbstii* H. Milne Edwards, s.s., FB 81:866  
*Panopeus lacustris* Desbonne, FB 81:868  
*Panopeus meridionalis* new species, FB 81:872  
*Panopeus obesus* Smith, new rank, FB 81:873  
*Panopeus simpsoni* Rathbun, new rank, FB 81:875  
 physical and biological factors, FB 81:886  
 predators, FB 81:863  
 prey, FB 81:884  
 species accounts, FB 81:865  
 statistical analyses, FB 81:886
- Crab, Pacific king  
 life history studies, MFR 45(10-12):14  
 recruitment studies, MFR 45(10-12):4
- Crab, rock, FB 82:387  
 as oyster spat predators, MFR 45(3):5  
 Bay of Fundy, FB 81:357  
 divers, FB 81:357  
 fecundity, FB 81:361  
 gonads, FB 81:358  
 lobster trap, FB 81:51, 357  
 maturity, FB 81:359  
 nonovigerous females and males, FB 81:357  
 ovigerous females, FB 81:358  
 southwestern Nova Scotia, FB 81:357  
 trawls, FB 81:357
- Crab, snow  
 description of stage II zoeae from plankton of lower Cook Inlet, Alaska  
   comparison of North Pacific zoeae of the subfamily Oregoniinae, FB 79:180  
   key for distinguishing stage II zoeae, FB 79:181  
   satellite monitoring of ice cover affecting winter fisheries, MFR 46(3):7  
 spring breeding migration, FB 83:707
- Crab, spider  
 elemental composition and energy in growing and starving larvae  
   biomass loss during starvation, FB 80:427  
   growth, FB 80:420
- Crab, tropical swimming  
 Carolinian records for, postulated means of dispersal, FB 79:192
- Crangonidae—see Shrimp
- Crassostrea angulata*—see Oyster, Portuguese  
*Crassostrea gigas*—see Oyster, Pacific  
*Crassostrea virginica*—see Oyster, American; Oyster, eastern
- Crenomytilus graynus*—see Mussel, Far East  
*Crepidula fornicata*—see Shells, slipper  
*Crepidula plana*—see Shells, slipper
- Croaker  
 effect of washing on quality characteristics, held in frozen storage  
   chemical analysis, MFR 42(11):27  
   functionality analysis, MFR 42(11):28  
   functionality measurement, MFR 42(11):27  
   loss of total solids, MFR 42(11):27  
   microbiological evaluation, MFR 42(11):29  
   microbiological examination, MFR 42(11):27  
   organoleptic analysis, MFR 42(11):29  
   sample preparation, MFR 42(11):26  
   sensory evaluation, MFR 42(11):27  
   washing, MFR 42(11):26  
 incidental harvest in South Atlantic shrimp fishery, MFR 45(7-9):27  
 in experimental seawater systems  
   chilled and refrigerated, TM SEFC-92
- Croaker, Atlantic  
 analysis of migration patterns using isotope ratios, FB 81:789  
 Cape Fear River, North Carolina  
   maturity, spawning, and fecundity north of Cape Hatteras, North Carolina, FB 78:190  
   retention of postlarval in tidal estuary, FB 78:419  
 evaluation of marks on hard parts to determine age, TM SEFC-22  
 infections, FB 81:895  
 landings, Louisiana charterboat fishery, MFR 45(1):15  
 larvae, FB 81:895  
 larvae distribution patterns, MFR 45(10-12):19  
 larval abundance, FB 81:407  
 marsh habitat, FB 82:457  
 mean standard length, FB 81:407, 411  
 1972-73 season, FB 81:408  
 1973-74 season, FB 81:409  
 occurrence of, FB 81:405  
 recruitment studies, MFR 45(10-12):4  
 used in surimi production, MFR 46(2):45
- Croaker, black  
 seasonal spawning cycle, FB 79:561
- Croaker, white  
 age determination, FB 82:180, 185  
 eggs and larvae off southern California coast  
   comparison with similar species, FB 80:413  
   distribution, FB 80:415  
   embryonic development, FB 80:404  
   fin development, FB 80:410  
   head spination, FB 80:411  
   ossification, FB 80:411  
   pigmentation, FB 80:407  
   proportions, FB 80:413  
   yolk-sac larvae morphology, FB 80:407  
   yolk-sac larvae pigmentation, FB 80:405  
 fishery, FB 82:182, 192, 196  
 ichthyoplankton, FB 82:181, 188  
 larvae, FB 82:188, 195  
 life history, FB 82:179  
 seasonal differences, FB 82:184  
 vertical stratification off southern California, FB 80:895
- Crustacea  
 life history, distribution, and abundance in New York Bight, S 766

- Crustacea, epibenthic  
abundance and associations  
western Gulf of Mexico, TM SEFC-137
- Crustaceans  
chemical composition, TM SEFC-11  
nutritional composition, TM SEFC-11
- Crustaceans, Black Sea  
helminths, TR 25
- Crustaceans, decapod  
Cooper River  
abundance and distribution, S 782  
South Carolina estuarine system, S 757
- Crustaceans, isopod  
distribution, TR 25
- Cryptocanthodidae  
ichthyoplankton off Alaska, TR 20
- Culture studies  
abalone, TR 16  
blood ark shells, TR 16  
oyster, TR 16  
pecten, TR 16  
prawn, freshwater, TR 16  
salmon, chum, TR 27  
salmon, TR 27  
shellfish, TR 16  
shrimp, Kuruma, TR 16  
shrimp, penaeid, TR 16
- Cunner  
foraging behavior, FB 81:426  
intertidal feeding, FB 81:426  
Scituate, Mass, FB 81:426
- Current variations  
observed off Florida central eastern coast, TM SEFC-6
- Currents  
Buccaneer gas and oil field  
environmental assessment, TM SEFC-40  
milestone report to the Environmental Protection Agency, TM SEFC-50
- Cusk  
Atlantic Ocean, N.W.  
food habits, S 740
- Cusk-eel, fawn  
Atlantic Ocean, N.W.  
food habits, S 740
- Cyclograpsus integer*  
larval development in laboratory  
fifth zoea (penultimate), FB 80:511  
fifth zoea (ultimate), FB 80:511  
first zoea, FB 80:504  
fourth zoea, FB 80:508  
megalopa, FB 80:513  
rearing experiment results, FB 80:502  
second zoea, FB 80:505  
sixth zoea, FB 80:513  
third zoea, FB 80:508
- Cyclopteridae  
ichthyoplankton off Alaska, TR 20
- Cymatogaster aggregata*—see Perch, shiner
- Cynoscion arenarius*—see Seatrout, sand
- Cynoscion nebulosus*—see Seatrout, spotted
- Cynoscion nothus*—see Seatrout, silver
- Cynoscion regalis*—see Weakfish
- D**
- Damariscotta Lake, Maine  
alewife, anadromous  
difference in sex ratios between the top and bottom of a fishway, FB 79:207
- Dams  
underwater separation methods for juvenile salmonids, MFR 47(3):38
- Dams, hydroelectric  
tracking studies  
salmonids in lower Columbia River, TM F/NWC-81
- Dardanus* spp.—see Crab, hermit
- Data management  
Buccaneer gas and oil field  
environmental assessment, TM SEFC-35
- Database systems  
resource survey  
Northwest Alaska Fisheries Center, 1981, TM F/NWC-18
- Dauphin Island, Alabama  
shark, finetooth  
occurrence off, FB 78:177
- Debris  
workshop proceedings on fate and impact in marine environment, November, 1984, TM SWFC-54
- Decapoda  
life history, distribution, and abundance in New York Bight, S 766
- Decapods  
Cooper River, S.C.  
seasonal abundance and distribution, S 782  
South Carolina estuarine system, S 757
- Decapterus punctatus*—see Scad, round
- Decapterus tabl*—see Mackerel, scad
- Delaware  
coastal  
secondary production of benthic macrofauna, TM F/NEC-32
- marine fisheries  
alewives, FB 79:585  
bass, striped, FB 79:588  
clam, hard, FB 79:587  
clam, surf, FB 79:583  
crab, blue, FB 79:583  
croaker, FB 79:587  
dredges, clam, FB 79:596  
dredges, crab, FB 79:596  
dredges, oyster, FB 79:595  
eel, American, FB 79:589  
food finfishes, FB 79:579  
food shellfishes, FB 79:580  
industrial, FB 79:579  
lines, FB 79:593  
menhaden, FB 79:581  
mullet, FB 79:588  
nets, fyke, FB 79:597  
nets, gill, FB 79:590  
nets, pound, FB 79:595  
oceanographic regime, FB 79:581  
oyster, American, FB 79:584  
perch, white, FB 79:589  
pots, FB 79:592  
rakes, FB 79:597  
recreational, FB 79:580

- Delaware (continued)
- marine fisheries (continued)
    - seines, haul, FB 79:592
    - seines, purse, FB 79:590
    - shad, FB 79:586
    - spot, FB 79:587
    - sturgeon, FB 79:586
    - trawl, otter, FB 79:593
    - weakfish, FB 79:585
  - Delaware Bay
    - secondary production of benthic macrofauna, TM F/NEC-32
  - Delaware River
    - Atlantic sturgeon in estuary, FB 80:337
  - Delphi technique
    - potential method for evaluating recreational fisheries, TM SEFC-19
  - Delphinapterus leucas*—see Whale, beluga; see Whales, white
  - Delphinids
    - evaluation of
      - marking, tagging, and tattooing techniques, TM SWFC-16
  - Delphinus delphis*—see Dolphin, common
  - Demersal species
    - contaminants in
      - Long Island Sound, TM F/NEC-16
      - New York Bight, TM F/NEC-16
  - Denil fishway
    - passage of nonsalmonid fishes, MFR 47(1):83
  - Dermochelys coriacea*—see Turtle, leatherback
  - Deschutes River, Oregon, salmon migration, FB 82:157
  - Diadumene leucolena*—see Anemone, bay
  - Diatrizoate
    - absorption in marine turtles, TM SEFC-93
  - Dichelopandalus leptocerus*—see Shrimp
  - Dicryota*
    - as substrate for *Gambierdiscus toxicus*, MFR 46(1):16
  - Diet—see also Food habits
    - effects on spot prawn laboratory culture, TM F/NWC-68
  - Diet intake
    - computer simulation model
      - estimate of cadmium from seafood, TM SEFC-74
  - Dinoflagellate
    - Gymnodinium splendens* in California Current, MFR 45(10-12):11
  - Diontidae—see Porcupine fishes
  - Diplectrum formosum*—see Perch, sand
  - Diplodus holbrooki*—see Pinfish, spottail
  - Disease
    - caused by organisms in bait shrimp
      - West Galveston Bay, SEFC-169
    - environment, stress and disease in aquaculture, TR 27
    - pathology and parasitology of marine fish of world ocean, TR 25
    - Penaeid shrimp cultured in Mexico, TR 16
  - Disease, infectious
    - hematopoietic necrosis virus
      - salmon, chinook, TM F/NWC-22
  - Dogfish
    - horny
      - seamount fishery research, central North Pacific, MFR 46(2):11
    - spiny
      - Bay of Fundy-Gulf of Maine, FB 82:131
      - effects of processing on storage, MFR 47(1):48
  - Dolly varden
    - estuarine migrations of juveniles, MFR 46(3):64
  - Dolphin
    - Atlantic Ocean
      - guide to fishes caught in longlining operations, C 435
    - Barbados, FB 81:906
    - co-occurring with tunas
      - annotated bibliography of their ecology, eastern tropical Pacific, TM SWFC-21
    - distribution
      - eastern tropical Pacific, TM SWFC-38
    - food and gastrointestinal parasites of
      - in the southeastern and gulf coasts of the U.S., TM SEFC-124
    - eastern tropical Pacific, FB 81:1
    - growth, FB 81:908
    - habitats in the eastern tropical Pacific, FB 83:623
    - incidental mortality, FB 83:521
    - incidental mortality reduction
      - behavior patterns, MFR 46(3):20
      - management recommendations, MFR 46(3):32
      - mortality, MFR 46(3):20
      - net configuration, MFR 46(3):21
      - regulations, MFR 46(3):18, 23
      - research, behavioral, MFR 46(3):29
      - research, mechanical
        - handling methods/gear, MFR 46(3):25
        - net design/improvements, MFR 46(3):25
        - net/vessel handling, MFR 46(3):23
    - juvenile survival rate
      - from the proportion of nursing calves, TM SWFC-51
    - kill rates, FB 81:5
    - Pacific Ocean
      - identification guide, C 444
    - population, FB 81:1
    - proportions of species
      - eastern tropical Pacific, TM SWFC-56
    - purse seine fishery, FB 81:1
    - reactions to population survey vessels, FB 83:187
    - recruitment rates, FB 81:8
    - release procedure
      - using model purse seines, TM SWFC-25
    - sagittal otoliths, FB 81:906, 907
    - stock abundance
      - involved in the eastern tropical Pacific yellowfin tuna fishery, TM SWFC-23
    - tuna purse seine fishery mortality
      - eastern tropical Pacific, prior to 1970, TM SWFC-34
  - Dolphin, Atlantic bottlenose
    - movements and activities near Sarasota, Florida
      - data collection and analysis, FB 79:672
      - food resources and feeding behavior, FB 79:684
      - home range, FB 79:675
      - reproduction and growth, FB 79:685
      - social interactions, FB 79:681
      - social structure, FB 79:679
      - study area, FB 79:672
  - Dolphin, Atlantic whitesided
    - Atlantic Ocean, western North
      - southern distribution, FB 78:167
  - Dolphin, bottlenose
    - Florida, western peninsular
      - aerial surveys, FB 80:621



- Dolphin, bottlenose (continued)  
 occurrence, movements, and distribution in southern Texas, FB 78:593  
 Pacific Ocean  
 identification guide, C 444
- Dolphin, commom  
 Pacific Ocean  
 identification, C 444  
 undersea topography and distribution, FB 83:472  
 variation and distribution, TR 28
- Dolphin, eastern spinner  
 marine resource management under uncertainty, MFR 43(10):1
- Dolphin, Fraser's  
 eastern tropical Pacific, FB 81:283  
 mesopelagic fishes, FB 81:283, 284  
 otoliths, FB 81:284, 286  
 Pacific Ocean  
 identification guide, C 444  
 purse seine, FB 81:283  
 shrimp, FB 81:284, 287  
 squid, FB 81:284, 287  
 stomach contents, FB 81:283
- Dolphin, Hawaiian spinner  
 age through teeth, FB 82:207  
 birth season, FB 82:221, 224  
 dental layers, FB 82:207  
 lunar monthly cycles, FB 82:223  
 sexual maturity, FB 82:224
- Dolphin, northern right whale  
 Pacific Ocean  
 identification guide, C 444
- Dolphin, Pacific white-sided  
 food of, off California and Washington, TM F/NWC-2  
 prey distribution, FB 78:955  
 prey size, FB 78:957  
 prey species, FB 78:955  
 stomach capacity of predators, FB 78:955  
 Pacific Ocean  
 identification guide, C 444
- Dolphin, Risso's  
 Pacific Ocean  
 identification guide, C 444
- Dolphin, rough-toothed  
 Pacific Ocean  
 identification guide, C 444
- Dolphin, spinner  
 eastern, FB 81:3  
 eastern tropical Pacific, FB 81:1  
 estimating age from teeth, TM SWFC-30  
 is ovulation always copulation-induced?  
 early pregnancy, FB 78:512  
 immature females, FB 78:508  
 lactating females, FB 78:518  
 late pregnancy, FB 78:515  
 mature females, FB 78:509  
 nonpregant animals with corpus luteum, FB 78:518  
 observations on mass stranding, west coast of Florida  
 circumstances, FB 78:353  
 morphology, external, FB 78:358  
 necropsy, FB 78:355  
 physical maturity, FB 78:358  
 productive seasonality, FB 78:357
- Dolphin, spinner (continued)  
 observations on mass stranding (continued)  
 reproductive data, FB 78:355  
 weights, FB 78:360  
 Pacific Ocean  
 identification guide, C 444  
 variation and distribution, eastern tropical Pacific, TR 28  
 whitebelly, FB 81:3
- Dolphin, spotted  
 age distributions  
 interpretations, TM SWFC-48  
 coastal, FB 81:2  
 eastern tropical Pacific, FB 81:1  
 estimating age from teeth, TM SWFC-30  
 growth rates, FB 83:553  
 is ovulation always copulation-induced?  
 early pregnancy, FB 78:512  
 immature females, FB 78:508  
 lactating females, FB 78:518  
 late pregnancy, FB 78:515  
 mature females, FB 78:509  
 nonpregant animals with corpus luteum, FB 78:518  
 northern offshore  
 age determination, TM SWFC-35  
 offshore, FB 81:2  
 Pacific Ocean  
 identification guide, C 444  
 passive behavior in tuna purse seing nets, FB 78:535  
 reproductive rates, FB 83:657  
 variation and distribution, TR 28
- Dolphin, striped  
 Pacific Ocean  
 identification guide, C 444  
 variation and distribution, TR 28
- Dolphin fish (or mahi-mahi)  
 histamine formation in fresh fish, MFR 45(4-6):43  
 landings in Florida Gulf coast and Keys charterboat fishery, MFR 45(1):16  
 observations, warm water periods, California, MFR 45(4-6):27
- Dolphin fishes  
 development and structure of fins and fin supports  
 anal fin, FB 78:290  
 anal fin pterygiophores, FB 78:291  
 caudal fin, FB 78:295  
 caudal fin supports, FB 78:296  
 dorsal fin, FB 78:278  
 dorsal fin pterygiophores, FB 78:281  
 pectoral fin and supports, FB 78:300  
 pelvic fin and supports, FB 78:304  
 vertebral column, FB 78:278  
 synopsis of biological data on *Coryphaena hippurus* Linnaeus and  
*Coryphaena equiselis* Linnaeus  
 bionomics and life history, C 443  
 culture, C 443  
 distribution, C 443  
 exploitation, C 443  
 identification, C 443  
 population, C 443  
 protection and management, C 443
- Dolphin mortality  
 estimating, FB 81:1

- Dolphin mortality (continued)  
 estimating and monitoring incidental in eastern tropical Pacific  
 combined kill-per-day and kill-per-ton method, FB 80:398  
 estimation procedures, FB 80:397  
 kill-per-day method, FB 80:397  
 kill-per-set method, FB 80:399
- Dolphin schools  
 corral system for examining pelagic, MFR 43(11):16  
 movement and speed, responding to an approaching ship  
 school speed, FB 80:376  
 swimming behavior and school structure, FB 80:377  
 vessel avoidance, FB 80:373
- Dosidicus gigas*  
 identification, TR 17
- Dredge, clam—see Clam dredge
- Dredge, electrohydraulic  
 design of, for clam surveys  
 basic concept development, MFR 44(4):1  
 blade design, MFR 44(4):4  
 cage design, MFR 44(4):5  
 diver observations, MFR 44(4):7  
 dredge hydraulics, MFR 44(4):11  
 main winch tension test, MFR 44(4):8  
 manifold assembly, MFR 44(4):5  
 operating parameters, MFR 44(4):8  
 operation, MFR 44(4):5  
 path surveys, MFR 44(4):9  
 submersible pump mount, MFR 44(4):5  
 submersible supply loss calculations, MFR 44(4):13  
 substrate testing, MFR 44(4):8  
 surface supply loss calculations, MFR 44(4):13  
 testing, MFR 44(4):6  
 video taping, MFR 44(4):8
- Dredged sand  
 effects on nearshore macroinfauna, TM SEFC-133
- Drill, oyster  
 abundance on oyster seed beds, northeastern U.S., MFR 45(3):5  
 biological data, TR 35
- Drum, banded  
 age determination, FB 82:353  
 age-growth relationship, FB 82:233  
 comparison with earlier descriptions, FB 78:133  
 comparison with other larval Sciaenidae, FB 78:134  
 description, FB 78:125  
 growth, FB 82:355  
 life history, FB 82:337  
 maturity, FB 82:229, 233  
 reproduction, FB 82:227  
 sex ratio, FB 82:232  
 spawning, FB 82:228, 233  
 spawning periodicity, FB 82:339, 344, 350, 357  
 spawning seasons and areas, FB 78:133
- Drum, black, FB 82:378
- Drum, red  
 effects of temperature and salinity on egg hatching and larval survival, FB 79:569  
 Texas charterboat fishery harvest, MFR 45(1):11
- Drum, star  
 comparison with earlier descriptions, FB 78:133  
 comparison with other larval Sciaenidae, FB 78:134  
 description, FB 78:129  
 spawning seasons and areas, FB 78:134
- Dudong, FB 81:501
- Duncan's test, FB 81:272
- E**
- E. drummondhayi*—see Fish, reef
- Eastern Pacific Ocean Tuna Fishing Agreement, MFR 46(4):72
- Echinodermata: Echinoidea  
 distribution, TR 33  
 external morphology, TR 33  
 index, TR 33  
 key to species, TR 33  
 life history, distribution, and abundance in New York Bight, S 766  
 natural history, TR 33  
 systematic list, TR 33
- Echinometridae—see Sea urchin
- Ecology  
 annotated bibliography of co-occurring tunas and dolphins  
 eastern tropical Pacific, TM SWFC-21  
 interactions between shrimp and bottomfishes, TM SEFC-63  
 salmon in early marine life, TR 27
- Ecology, fish  
 parasites as indicators, TR 25
- Economic studies  
 analysis of commercial mackerel fishery, TM SEFC-101  
 available for invertebrate fisheries (except shrimp), TM SEFC-88  
 bass fishery, FB 81:168  
 Bureau of Commercial Fishery, working paper series, TM SEFC-86  
 business turnover in Texas charterboat industry 1975-80, MFR 47(1):43
- Dungeness crab resources  
 California, 1982-83, TM F/SWR-006  
 California, 1983-84, TM F/SWR-008  
 fisheries literature survey, TM F/NWC-47  
 fishery production, TM F/NWC-60  
 fishing industry energy conservation technology, TM F/NWC-39  
 groundfish  
 California, 1983, TM F/SWR-004  
 California, 1984, TM F/SWR-010  
 Oregon, 1984, TM F/SWR-010  
 Washington, 1984, TM F/SWR-010  
 habitat management decisions, TM F/NWR-10  
 impact on Alaskan shellfish fishery, TM F/NWC-9  
 implications  
 loss of INPFC for Japanese North Pacific salmon fishery, TM F/AKR-1  
 increasing usefulness of  
 for salmon and steelhead production decisions, TM F/NWR-8  
 jack mackerel fishery  
 northeastern Pacific, TM SWFC-4  
 marine recreational fishing  
 NMFS guidelines, TM SWFC-32  
 net values  
 salmon, Columbia River, TM F/NWR-3  
 steelhead, Columbia River, TM F/NWR-3  
 offshore shrimp fishery  
 Gulf of Mexico, TM SEFC-99  
 Perch, Pacific Ocean, TM F/NWC-72  
 pink shrimp resources  
 California, 1983, TM F/SWR-007  
 California, 1984, TM F/SWR-009

- Economic studies (continued)
- report on mackerel management units, TM SEFC-84
  - RSW and CSW systems for semi-tropical waters, TM SEFC-102
  - salmon resources
    - California, 1983, TM F/SWR-005
  - shrimp, rock, FB 83:1
  - shrimp fisheries report
    - southeastern U.S., TM SEFC-100
  - shrimp fishery, FB 82:365
  - shrimp vessels, Gulf of Mexico, FB 82:365
  - U.S. fishing industry's harvest sector, TM F/NEC-40
- Ecosystem—see Large Marine Ecosystem (LME)
- Ecosystems
- crab, mud, FB 81:885
  - ECOPATH model, FB 83:457
  - estimating a box model, FB 83:457
  - kelp, cobble bottom, California, FB 82:37
  - kelp forests, California, FB 82:55
  - macrobenthos
    - Pigeon Hill, Gulf of Maine, F/NEC-14
  - northeastern outer continental shelf
    - role of marine mammals, MFR 47(1):13
  - simulation I
    - fish species data for, TM F/NWC-29
  - zooplankton, FB 81:857
- EDMAP 2
- computer program documentation, TM SWFC-18
- Eel, American—see also Eel, Atlantic
- growth rates, FB 82:519
- Eel, Atlantic
- distribution of leptocephali, FB 81:490
  - drift migration, FB 81:483
  - drift simulation, FB 81:483, 496, 498
  - leptocephali (larvae), FB 81:483
  - north Atlantic Ocean, FB 81:483, 485
- Eel, conger
- Ariosoma bowersi*, MFR 46(2):12
  - Conger wilksoni*, MFR 46(2):12
  - Congerellus aequoreus*, MFR 46(2):12
- Eel, European—see Eel, Atlantic
- Eel, moray
- Gymnothorax berndti*, MFR 46(2):12
  - Gymnothorax steindachneri*, MFR 46(2):12
  - Gymnothorax undulatus*, MFR 46(2):12
- Eel, wolf
- migration from Port Hardy, British Columbia, to Willapa Bay, Washington, FB 80:650
- Eels, congrid
- key to leptocephali of the eastern Pacific, TR 22
- Eel culture
- method of culture, TR 10
- Egg production method
- anchovy, northern, TR 36
- Eggs—see also Embryos
- Eicosapentaenoic acid
- in fish oil, MFR 46(2):60
- Eimeria angiullae*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria aurati*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria brevoortiana*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria catostomi*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria duszynskii*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria etheostomae*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria fernandoae*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria freemani*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria funduli*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria gasterostei*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria glenorensis*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria haneki*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria hoffmani*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria hybognathi*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria ictaluri*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria iroquoina*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria laureleus*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria micropteri*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria moronei*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria myoxocephali*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria ojobwana*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria osmeri*
- key to species, TR 11
  - taxonomy, TR 11
- Eimeria pungitii*
- key to species, TR 11

- Eimeria pungitii* (continued)  
taxonomy, TR 11
- Eimeria salvelini*  
key to species, TR 11  
taxonomy, TR 11
- Eimeria squali*  
key to species, TR 11  
taxonomy, TR 11
- Eimeria tedlai*  
key to species, TR 11  
taxonomy, TR 11
- Eimeria truttae*  
key to species, TR 11  
taxonomy, TR 11
- Eimeriidae  
key to species, TR 11  
taxonomy, TR 11
- El Niño, FB 81:363  
California review, 1982-83, TM SWFC-43  
effects on sea urchins, MFR 47(3):4, 5  
effects on tuna resources, MFR 46(4):65  
fish movements, MFR 45(4-6):27  
Pacific Northwest  
Kelvin waves, MFR 46(1):7  
oceanographic observations, MFR 46(1):7  
sea surface temperature anomalies, MFR 46(1):7  
sigma-*t* density, MFR 46(1):9  
subsurface conditions, MFR 46(1):8  
sea surface temperatures, MFR 45(4-6):27-30  
Southern California, fish catch recreational  
harvest effects, 1983-84, MFR 45(4-6):34  
species, MFR 45(4-6):32-33
- Electron microscope, scanning (SEM)  
etching, FB 82:435  
increment counts, FB 82:435, 437  
otoliths, FB 82:434
- Electrophoresis  
crab, mud, FB 81:883  
marlin, Pacific blue, FB 81:86  
sole, yellowfin, FB 81:667  
protein patterns in Spanish mackerel, TM SEFC-76  
tilefish, FB 81:42, 43
- Elirginus gracilis*—see Cod, saffron
- Elliott and Persson model, FB 81:437
- Elops saurus*—see Ladyfish
- Embassichthys bathybius*—see Sole, deepsea
- Embryos  
grunion, California, FB 81:475  
menhaden, gulf, FB 82:87  
pollock, walleye, FB 81:890  
salmonid, FB 83:81  
sculpin, longhorn, FB 81:782  
scup, FB 82:78  
shark, sandtiger, FB 81:210
- Enchelyopus cimbrius*—see Rockling, fourbeard
- Endangered Species Act (ESA), MFR 46(4):2
- Endangered whales  
Endangered Species Act (ESA)  
listed whales' status, MFR 46(4):2  
listing factors, MFR 46(4):2  
populations, MFR 46(4):5, 6  
status review, MFR 46(4):2, 4, 5
- Energy budgets—see Fish bioenergetics
- Energy conservation  
fishing industry technology, TM F/NWC-39
- Energy requirements  
cetacean stocks  
northeastern U.S., TM F/NEC-41
- Enewetak, Marshall Islands  
ciguatera survey, FB 78:201
- Enforcement Management Information System (EMIS)  
marine mammal catch data, MFR 45(7-9):48
- Engraulidae  
ichthyoplankton larval distribution and abundance  
Gulf of Mexico, 1982, TM SEFC-144
- Engraulis encrasicolus*—see Anchovy, Black Sea
- Engraulis mordax*—see Anchovy, northern; Anchovy, northern Pacific
- Enhydra lutris*—see Otter, sea
- Enoplateuthis* spp.—see Squid
- Enterobacter aerogenes*  
isolated from tuna, MFR 45(4-6):35-37,40
- Enterobacteriaceae*  
in freshly caught marine fish, MFR 45(4-6):35,38
- Environment  
New York Bight  
plankton net sampling, TR 5  
marine conditions  
U.S. coasts, 1978-79, TM OF-5  
Martha's Vineyard, U.S.  
macrobenthic invertebrates, S 783  
macrophage accumulations and fish health, TR 25
- Environmental Protection Agency (EPA)  
report on environmental assessments of Buccaneer gas and oil fields, TM SEFC-47-SEFC-52
- Environmental studies  
assessments, Buccaneer gas and oil field, 1976-80  
bacteria, TM SEFC-49  
currents, TM SEFC-50  
fishes, TM SEFC-48  
hydrography, TM SEFC-50  
macrocrustaceans, TM SEFC-48  
particulates, TM SEFC-47  
sediments, TM SEFC-47  
volatile hydrocarbons, TM SEFC-47  
assessments, Buccaneer gas and oil field, 1978-79  
bacteria, TM SEFC-38  
currents, TM SEFC-40  
fate and effects modeling, TM SEFC-43  
fishes, TM SEFC-37  
fouling community, TM SEFC-39  
hydrocarbons, TM SEFC-41  
hydrodynamic modeling, TM SEFC-44  
hydrography, TM SEFC-40  
macrocrustaceans, TM SEFC-37  
particulates, TM SEFC-36  
sediments, TM SEFC-36  
synopsis/data management, TM SEFC-35  
trace metals, TM SEFC-42  
availability of albacore, MFR 47(3):48  
benchmark studies  
Casco Bay, Maine, TM F/NEC-19  
Portland Harbor, Maine, TM F/NEC-19

- Environmental studies (continued)  
 conditions—see also Habitat effects  
 U.S. coasts, 1978-79, TM OF-5  
 effects  
 anchovy, northern, FB 83:483  
 dolphin habitats, FB 83:623  
 food web, FB 83:151  
 grunts, French, FB 83:413  
 larval fish, FB 83:313  
 mummichog, FB 83:467  
 porpoise, harbor, FB 83:427  
 tilefish, FB 83:443  
 efficient storage and retrieval  
 standardized data condensation, TM SEFC-10  
 Guam and northern Mariana Islands, TM SWFC-40  
 marlin, striped  
 sea surface temperature relationship to catch, MFR 47(3):43  
 temperature conditions in the Cold Pool, TR 24  
 whiting, Pacific, MFR 47(2):10
- Epibenthic crustacea  
 abundance and associations  
 western Gulf of Mexico, TM SEFC-137
- Epinephelus niveatus*—see Fish, reef  
*Epinephelus quernus*—see Grouper  
*Erignathus barbatus*—see Seal, bearded  
*Escherichia coli*  
 histamine production from tuna, MFR 45(4-6):35  
*Eschrichtius robustus*—see Whale, gray
- Estuarine and inshore waters  
 Florida Everglades  
 abundance and distribution, TR 6  
 ichthyoplankton sampling, TR 6  
 South Carolina  
 fish and decapod crustacean community, S 757
- Estuary  
 crab, Dungeness, nursery habitat in Columbia River, MFR 47(3):21
- Etropus crossotus*  
 larval development and occurrence  
 cephalic spination, FB 80:67  
 characters, distinguishing, FB 80:63  
 counts, FB 80:37  
 developmental terminology, FB 80:37  
 fin and axial skeleton formation, FB 80:67  
 identification, FB 80:38, 62  
 morphometrics, FB 80:37, 64  
 occurrence, FB 80:67  
 pigmentation, FB 80:63  
 specimens, FB 80:36  
 teeth, FB 80:67  
 transformation, FB 80:67
- Eualus fabricii*  
 description  
 stage I and II zoeae, FB 79:430
- Eualus suckleyi*  
 description  
 stage I zoeae, FB 79:426  
 stage II zoeae, FB 79:429
- Eubalaena glacialis*—see Whale, right
- Eukrohnia bathyantartica*  
 chaetognatha of the Caribbean Sea  
 classification, TR 15
- Eukrohnia bathyantartica* (continued)  
 chaetognatha of the Caribbean Sea (continued)  
 key to species, TR 15
- Eukrohnia bathypelagica*  
 chaetognatha of the Caribbean Sea  
 classification, TR 15  
 key to species, TR 15
- Eukrohnia fowleri*  
 chaetognatha of the Caribbean Sea  
 classification, TR 15  
 key to species, TR 15
- Eukrohnia hamata*  
 chaetognatha of the Caribbean Sea  
 classification, TR 15  
 key to species, TR 15
- Eukrohnia proboscidea*  
 chaetognatha of the Caribbean Sea  
 classification, TR 15  
 key to species, TR 15
- Eumetopias jubatus*—see Sea lion, northern; Sea lion, Steller
- Eunicida  
 life history, distribution, and abundance in New York Bight, S 766
- Euphausia eximia*  
 larval development  
 distribution, vertical, FB 78:331  
 larval stages described, FB 78:315  
 observations of reared animals, FB 78:315  
 population, South Pacific, FB 78:328
- Euphausiids—see Krill
- Eupleura caudata*—see Drill, oyster  
*Euthynnus affinis*—see Tuna  
*Euthynnus alletteratus*—see Tunny, little  
*Euthynnus pelamis*—see Tuna, skipjack
- Everglades, Florida  
 ichthyoplankton sampling, TR 6
- Ex-vessel  
 impacts on prices and values  
 from Texas closure regulation, 1981-82, TM SEFC-111  
 from Texas closure regulation, 1982 and 1983, TM SEFC-148
- Experiments  
 Nantucket Shoals  
 flux experiments, TM F/NEC-23  
 porpoises  
 PET DOTS (porpoise experiment testing detection of on-track schools), TM SWFC-27  
 refrigerated and chilled seawater systems for groundfish species, TM SEFC-92  
 salmon, Columbia River  
 homing and transplantation, TM F/NWC-12  
 steelhead trout, Columbia River  
 homing and transplantation, TM F/NWC-12  
 tagging  
 Louisiana brown shrimp, movement and migration, 1978, TM SEFC-78  
 Louisiana penaeid shrimp, 1979, TM SEFC-89  
 Louisiana white shrimp, TM SEFC-72  
 tagging-double  
 planning, TM SWFC-13  
 with an 83/112 eastern trawl, TM F/NWC-16

**F**

- Faka Union Bay, Florida
  - fish forage communities in relation to habitat parameters, TM SEFC-162
- Falkland-Patagonia Region
  - parasites of fishes, TR 25
- FAO
  - Norway Regional Acoustic Centre, FB 81:363
- Farallon Islands
  - pinnipeds
    - predation by sharks, FB 78:941
- Fatty acids—see also Saturated fatty acids
  - in coastal herring, MFR 45(4-6):45-48
- Feeding—see Food habits
- Financial profile
  - shrimp vessels
    - southeast U.S., TM SEFC-159
- Finfish
  - Atlantic demersal finfish management plan, TM F/NEC-2
    - comparison of shrimp and, catch rates and ratios for Texas and Louisiana
      - catch rates and ratios, MFR 44(9-10):45
      - contemporary data, MFR 44(9-10):44
      - data analysis, MFR 44(9-10):45
      - historical data, MFR 44(9-10):45
      - species composition, MFR 44(9-10):48
  - composition
    - chemical and nutritional, TM SEFC-11
  - survey
    - selected organic pollutants, TM F/NEC-13
  - U.S. coastal waters, FB 81:391
- Finfish, demersal
  - Atlantic fishery management plan
    - history and status, TM F/NEC-2
  - Louisiana salt dome brine disposal sites, 1978-79
    - biochemical survey, TM SEFC-28
- Finfish, marine
  - maturation and spawning, TR 10
  - propagation and culture techniques
    - bass, striped, TR 10
    - parrotfish, TR 10
    - porgy, TR 10
    - sea bream, TR 10
    - yellowtail, TR 10
- Finfish, northwest Atlantic
  - diet overlap between
    - Atlantic cod, FB 80:745
    - silver hake, FB 80:745
- Finfish pathogens, MFR 46(3):14
- Finfish resources
  - Gulf of Mexico, MFR 46(1):19
- Fish
  - Alaskan, parasite-host records, S 760
  - Antarctic parasitic fauna, TR 25
  - aquarium
    - balanced marine aquarium, TM SEFC-59
    - biology of species collected in Monroe County, Florida, TM SEFC-59
  - associated with Gulf of Alaska seamounts, MFR 43(1):26
  - Atlantic Ocean, northwest, and Gulf of Mexico
    - organochlorine residues, FB 78:51

## Fish (continued)

- Atlantic menhaden
  - egg and larvae distribution, S 774
- behavioral factors affecting entrapment at offshore cooling-water intake structures in southern California, MFR 47(1):18
- Beloniformes
  - monogenean fauna, TR 25
- Biscayne Bay, Florida
  - interrelation of water quality, gill parasites, and gill pathology, FB 80:269
- Buccaneer gas and oil field
  - environmental assessment, TM SEFC-37
  - milestone report to the Environmental Protection Agency (EPA), TM SEFC-48
- California, southern and central
  - pelagic resource abundance, 1963-78, S 762
- Californian nearshore, crepuscular and nocturnal activities
  - activity patterns, FB 79:19
  - day and night feeders, FB 79:18
  - day feeders, FB 79:8
  - determining activity patterns in fishes, FB 79:3
  - determining spectral composition of submarine sunlight, FB 79:2
  - determining spectral photosensitivity of fishes, FB 79:3
  - night feeders, FB 79:15
  - scotopic spectral sensitivity and ambient light, FB 79:23
  - scotopic spectral sensitivity and bioluminescence, FB 79:24
  - submarine daylight, FB 79:3
  - submarine nightlight, FB 79:5
- commercial
  - trematodes, TR 25
- consumer expenditure patterns, MFR 44(3):1
- Cooper River, S.C.
  - seasonal abundance and distribution, S 782
- daily time of spawning in the Peconic Bays, New York, FB 78:455
- deepwater tagging, FB 81:663
- demersal
  - Chukchi Sea and Beaufort Sea trawl-caught, S 764
  - Middle Atlantic Bight, food habits and trophic relationships, S 773
  - trophic relationships in Gulf of Maine:
    - benthos analysis, FB 79:783
    - dietary overlap, FB 79:781
    - fish abundance, FB 79:777
    - foods, FB 79:777
    - prey size and predator mouth morphology, FB 79:782
- distributional patterns in the Channel Islands, FB 83:243
- ecosystem model evaluation, MFR 47(1):9
- Falkland-Patagonian Region
  - parasitic fauna, TR 25
- feeding ecology along Antarctic Peninsula
  - dietary similarity, FB 80:583
  - diets, FB 80:579
  - feeding behaviors, FB 80:578
  - study area, FB 80:575
- Florida Everglades
  - abundance and distribution of larvae, eggs, and juveniles, TR 6
  - ichthyoplankton sampling, TR 6
- food
  - Arabian Gulf, proximate composition and nutritive value, FB 79:211

## Fish (continued)

- food habits
  - north Pacific species, TM F/NWR-54
  - northwest Atlantic species, TM F/NEC-28
- food habits data base, MFR 47(1):9
- frozen
  - instrument for determining depth of dehydration, MFR 42(6):32
- gadiform
  - food habits, Atlantic Ocean, northwest, S 740
- gobiid
  - comparison of ecological and life information, TM SEFC-15
- Gulf of Mexico
  - flatworm fauna, TR 25
- kelp forest
  - abundance, FB 82:44
  - vertical distribution, FB 82:47
- liver microsomes
  - metabolism of benzo(a)pyrene, literature review and preliminary studies, TM SEFC-123
- marine
  - life history patterns and consequences for fisheries management  $r$  and  $K$  selection, FB 78:2
  - response of  $r$  and  $K$  selected species to harvesting, FB 78:4
  - theory of  $r$  and  $K$  selection, FB 78:1
- marine and estuarine
  - parasites of in California, Oregon, and Washington, S 777
- Maryland commercial landings
  - identifying climatic factors influencing, FB 80:611
- mesopelagic
  - diets of vertically migrating in Hawaiian waters
    - Benthoosema suborbitale*, FB 78:630
    - Bolinichthys longipes*, FB 78:629
    - Bregmaceros japonicus*, FB 78:632
    - Ceratoscopelus warmingi*, FB 78:628
    - Diaphus fragilis*, FB 78:632
    - Diaphys perspicillatus*, FB 78:631
    - Diaphys schmidti*, FB 78:630
    - Diaphys trachops*, FB 78:632
    - Diogenichthys atlanticus*, FB 78:630
  - field collections, FB 78:619
  - laboratory procedures, FB 78:620
  - Lampanyctus nobilis*, FB 78:623
  - Lampanyctus steinbecki*, FB 78:623
  - Melamphaes danae*, FB 78:632
  - Notolychnus valdiviae*, FB 78:628
  - Triphoturus nigrescens*, FB 78:625
- minced
  - in cooked sausages, MFR 45(7-9):21, 26
  - production costs, MFR 45(7-9):22
  - per capita annual utilization and consumption, MFR 42(2):16
- new to eastern Bering Sea
  - Kali indica*, FB 79:353
  - Laemonema longipes*, FB 79:354
  - Macropinna microstoma*, FB 79:354
  - Percis japonicus*, FB 79:353
- nonsalmonid
  - passage through Denil fishway lengths, MFR 47(1):83
- North Pacific
  - myxosporidia, TR 25
- nutrient requirements, qualitative and quantitative
  - amino acid availability, FB 80:659

## Fish (continued)

- nutrient requirements (continued)
  - ascorbic acid, FB 80:669
  - biotin, FB 80:672
  - calcium, FB 80:676
  - calcium-to-phosphorus ratios, FB 80:676
  - carbohydrates, FB 80:665
  - choline, FB 80:671
  - copper, FB 80:677
  - cyanocobalamin, FB 80:671
  - fatty acids, essential, FB 80:663
  - folic acid, FB 80:671
  - inositol, FB 80:672
  - iodine, FB 80:678
  - iron, FB 80:677
  - lysine, FB 80:660
  - magnesium, FB 80:676
  - manganese, FB 80:677
  - methionine, FB 80:660
  - niacin, FB 80:668
  - optimal dietary lipid concentrations and protein-to-energy ratios, FB 80:661
  - pantothenic acid, FB 80:668
  - phosphorus, FB 80:676
  - protein, FB 80:656
  - pyridoxine, FB 80:667
  - riboflavin, FB 80:667
  - selenium, FB 80:678
  - thiamine, FB 80:666
  - tryptophan, FB 80:661
  - vitamin A, FB 80:673
  - vitamin D, FB 80:673
  - vitamin E, FB 80:674
  - vitamin K, FB 80:675
  - zinc, FB 80:677
- oceanic pelagic
  - bioprofiles sampling manual, TM SEFC-55
  - bioprofiles sampling manual, 1982-83, TM SEFC-103
- Pacific
  - parasitic copepods, TR 25
- Pacific Ocean, northeastern
  - chlorinated hydrocarbon levels, MFR 43(1):1
- pelagic
  - Bay of Fundy-Gulf of Maine, FB 82:131
  - biological data, North Carolina charterboat landings, 1978, TM SEFC-7
  - data analysis, FB 81:570
  - feeding behavior, FB 81:585
  - foregut content, FB 81:572, 584
  - lampara net, FB 81:570
  - location comparison, FB 81:572
  - net-hauls, FB 81:570
  - patterns, FB 81:573
  - San Onofre-Oceanside, California, FB 81:570
  - small vessel tracking technique, MFR 47(4):35
  - species composition, FB 81:572, 576
- pen-reared salmon in San Francisco Bay, MFR 47(4):26
- pleuronectiform food habits, Atlantic Ocean, S 749
- polychlorinated biphenyls, Chesapeake Bay
  - effects on humans, MFR 42(2):22
  - PCB control, MFR 42(2):22

Fish (continued)

postlarval

- retention of three taxa in tidal estuary, Cape Fear River, North Carolina
- behavior, diel, FB 78:423
- length-frequency distributions, FB 78:429
- tide response, FB 78:426

products

- import regulations, Japan, TM F/SWR-003

recreational

- occurrence of life stages in estuaries, Gulf of Mexico, TM SEFC-45

recruitment studies, large marine ecosystems, MFR 45(10-12):1

Red Sea

- proximate chemical composition, MFR 46(3):71
- seasonal variations, MFR 46(3):74

reef

- black sea bass, FB 81:681
- distributions off North and South Carolina, by headboat catches, TM SEFC-115
- groupers, FB 81:679
- growth parameters, FB 81:681
- grunt, FB 81:681
- management problems, potential, FB 81:680
- mortality parameters, FB 81:681, 683, 689, 694
- planktonic processes affecting establishment, TM SEFC-34
- planktonic processes affecting maintenance, TM SEFC-34
- planktonic processes affecting stocks, TM SEFC-34
- porgies, FB 81:679
- recreationally caught, Panama City, Florida, 1978-79, TM SEFC-61
- snappers, FB 81:679
- South Atlantic Bight, FB 81:679
- workshop on biological basis for management, TM SEFC-80
- yield per recruit, FB 81:680, 681, 683, 689

Samoan

- annotated checklist, S 781

scombrid, FB 81:227

seagrass

- distribution, FB 81:837
- macrophyte biomass, FB 81:837
- manatee grass, *Syringodium filiforme*, FB 81:837
- pinfish, FB 81:838
- seagrass meadows, FB 81:837
- shoal grass, *Halodule wrightii*, FB 81:838
- species composition, FB 81:837
- turtle grass, *Thalassia testudinum*, FB 81:837

seasonality of, occupying surf zone habitat in Gulf of Mexico

- annual and seasonal occurrence, FB 78:913
- daily activity patterns, FB 78:916
- factors affecting occurrence, FB 78:920
- seasonal and annual variations, FB 78:918
- species composition, FB 78:918

South Carolina

- estuarine, S 757

species

- data for ecosystem simulation I, TM F/NWC-29

stock fluctuations

- consequences, TM F/NWC-27
- management, TM F/NWC-27

stomatoid, feeding habits in Hawaiian waters

- Astronesthidae, FB 80:294

Fish (continued)

stomatoid, feeding habits (continued)

- Chauliodontidae, FB 80:294
- Gonostomatidae, FB 80:292
- Idiacanthidae, FB 80:296
- Malacosteidae, FB 80:298
- Melanostomiidae, FB 80:296
- Photichthyidae, FB 80:291
- Sternoptychidae, FB 80:292

Texas coastal

- croaker, FB 81:643
- cutlassfish, FB 81:643
- food habits, FB 81:643
- porgy, FB 81:643
- seatrout, FB 81:643
- stomach contents, FB 81:643

trawl caught

- biomass, FB 81:540
- day-night trawl tows, FB 81:538
- occurrence of *Penaeus* spp. in stomachs, northwestern Gulf of Mexico, TM SEFC-87
- relative abundance, FB 81:541
- South Atlantic Bight, FB 81:537
- species composition, FB 81:541
- sponge-coral habitat, FB 81:537, 543

trimethylamine

- improved method to analyze, and interference of ammonia and dimethylamine, FB 78:465

U.S.S.R.

- parasite studies, TR 25

Whale Ridge

- parasitic fauna, TR 25

Fish, demersal—see also Groundfish

Bering Sea

- Pleuronectid, gadid, cottid resources, S 754
- community structure
- eastern Bering Sea, 1978-81, TM F/NWC-35
- eastern Bering Sea, 1971-77, TM F/NWC-40

Pacific coast assemblages

- preliminary analysis, MFR 42(3-4):83

resources

- Norton Sound, 1979, TM F/NWC-89

Fish, larval

- croaker, Atlantic, FB 81:896
- distribution and abundance in the northeastern U.S., FB 83:313
- Georges Bank
- distribution, survival, and transport, TM F/NEC-24
- growth in relation to trophodynamics of cod and haddock, TM F/NEC-36

menhaden, gulf, FB 81:895

Fish aggregating devices (FAD)

- anchored in Hawaiian waters
- anchor and mooring method, MFR 43(9):2
- buoy benefits, MFR 43(9):13
- buoy construction, MFR 43(9):1
- buoy design, MFR 43(9):11
- buoy location, MFR 43(9):3
- buoy performance, MFR 43(9):4
- influence on fishing routine, MFR 43(9):12
- monitoring buoys and catches, MFR 43(9):3
- monitoring trips, MFR 43(9):5
- multiple schools at buoys, MFR 43(9):11



- Fish aggregating devices (FAD) (continued)
  - anchored in Hawaiian waters (continued)
    - pole-and-line fishing, MFR 43(9):6
    - troll fishing, MFR 43(9):8
    - tuna aggregations around buoys, MFR 43(9):11
    - underwater observation, MFR 43(9):10
  - Papua New Guinea, MFR 45(10-12):50
  - structured flotsam, TM SWFC-22
- Fish assemblage
  - Bay of Fundy-Gulf of Maine, FB 82:121
  - Middle Atlantic Bight, FB 82:295
  - San Onofre, Calif., FB 82:37
  - York River marshes, FB 82:458
- Fish assemblage, demersal
  - estimates of marine populations, FB 83:508
  - temporal and spatial patterns, FB 83:507
- Fish assemblage, littoral
  - seasonal abundance, composition, and productivity in upper
    - Newport Bay, California
  - abiotic factors, influence, FB 80:786
  - catch, total, FB 80:774
  - cluster analysis and canonical correlation, FB 80:773
  - composition, diversity, and seasonal dynamics, FB 80:784
  - cumulative species curve, FB 80:773, 774
  - diversity, FB 80:773
  - production estimation, FB 80:771
  - productivity, FB 80:779
  - relationship of abiotic factors to fish abundance and distribution, FB 80:783
  - sampling procedures, FB 80:771
  - seasonal abundance and diversity, FB 80:777
  - species associations, FB 80:777, 785
  - species densities and productivity, FB 80:785
  - study area, FB 80:770
  - temperature and salinity patterns, FB 80:773
- Fish assemblage, reef
  - annual variability in kelp forest off Santa Barbara, California
    - cinetransects, FB 78:363
    - sampling, FB 78:372
    - spatial differences, FB 78:365
    - statistical analyses, FB 78:364
    - study sites, FB 78:362
    - yearly differences, FB 78:369, 373
- Fish bioenergetics
  - menhaden, Atlantic, FB 81:177
- Fish Block Technical Working Group
  - standards for minced fish in mixed fish blocks, MFR 46(2):38
- Fish blocks
  - composition, MFR 46(2):36, MFR 46(3):76
  - determination, MFR 46(2):36, MFR 46(3):77
  - minced fish, amount, MFR 46(3):76
  - recommendations, MFR 46(2):39, MFR 46(3):77
- Fish cleaning machine
  - evaluation of a prototype
    - cleaning efficiency, MFR 42(1):40
    - operation under commercial conditions, MFR 42(1):39
    - problems encountered, MFR 42(1):40
    - processing in commercial plant, MFR 42(1):38
    - products, MFR 42(1):41
    - yield recovery, MFR 42(1):40
- Fish disease, PEN, FB 82:542
- Fish ecology
  - parasitic indicators, TR 25
- Fish farming, Norwegian
  - salmon, MFR 46(3):44
  - trout, MFR 46(3):44
- Fish fillets
  - recommended procedure for assuring quality at point of consumption
    - consumer, MFR 44(1):14
    - monitoring need, MFR 44(1):14
    - processor, MFR 44(1):12
    - rationale, MFR 44(1):9
    - retail outlet, MFR 44(1):12
    - vessel, MFR 44(1):10
    - warehouse, MFR 44(1):12
- Fish forage communities
  - habitat parameters in Faka Union Bay, Florida, TM SEFC-162
- Fish hybrids
  - literature citations 1971-80, S 750
- Fish interaction
  - Bay of Fundy/Passamaquoddy Bay, FB 82:121
  - bird predators, FB 81:427
  - char, Arctic, FB 82:401
  - Continental shelf, FB 82:295
  - copepods, FB 81:227
  - dolphin, Fraser's, FB 81:283
  - fish, pelagic, FB 81:576
  - fish, seagrass, FB 81:837
  - groundfish, FB 82:296
  - kelp, FB 82:50
  - mackerel, Spanish, FB 82:620
  - Middle Atlantic Bight, FB 82:295
  - open shelf, FB 81:541
  - pollock, walleye, FB 81:639
  - reef, FB 81:541
  - salmon, sockeye, FB 82:401
  - salmonids and nonsalmonids, FB 81:815
  - sea lion predators, FB 82:67
  - seals, FB 81:121
  - shrimp, brown, FB 81:396
  - South Atlantic Bight, FB 81:537
  - species estimates, FB 81:375
  - splittail, FB 81:647
  - sponge-coral habitat, FB 81:541
  - walleye, FB 82:411
  - whiting, Pacific, FB 81:632
- Fish larvae—see Larvae
- Fish meal
  - demand model for United States
    - functional form, FB 78:270
    - lagged response mechanisms, FB 78:271
    - simultaneity bias, FB 78:270
    - specification, FB 78:268
    - statistical procedures, FB 78:272
- Fish motion
  - effects of swimming path curvature on energetics, FB 79:171
- Fish muscle
  - trimethylamine estimation, FB 80:157
- Fish oil
  - dietary
    - consumption, MFR 46(2):62
    - docosahexaenoic acid (DHA), MFR 46(2):61

- Fish oil (continued)
  - dietary (continued)
    - icosapentaenoic acid (EPA), MFR 46(2):61
    - heart attack risk, effects on, MFR 46(2):62
    - high-, low-oil fishes, MFR 46(2):62
    - Omega-3 long-chain fatty acid, MFR 46(2):62
    - selected bibliography. TM SEFC-166
  - Fish oil concentrates. MFR 46(2):61
  - Fish poisoning—see Ciguatera fish poisoning
  - Fish poisoning, bacterial
    - scombroid and non-scombroid fishes, MFR 45(4-6):35
  - Fish populations
    - biomass assessments. TR 36
    - diel and seasonal variation in abundance and diversity of shallow-water, in Morrow Bay, California, FB 78:759
    - estimating spawning frequency, TR 36
    - multistage recruitment process for laboratory
      - data collection, FB 78:558
      - experimental design, FB 78:559
      - experimental environments, FB 78:557
      - feeding, FB 78:558
      - marking, FB 78:558
      - mathematical model, development, FB 78:569
      - phase I, FB 78:561
      - phase II, FB 78:566
    - sampling requirements for survey, TR 36
  - Fish protein
    - acylation: effect of reaction conditions on products
      - acylation extent, MFR 43(3):15
      - acylhydroxamates, MFR 43(3):15
      - amino group acetylation, MFR 43(3):16
      - fish protein acylation, MFR 43(3):14
      - hydroxyl group acetylation, MFR 43(3):17
      - inhibitory effect of sodium sulfite, MFR 43(3):17
      - myofibrillar protein preparation, MFR 43(3):14
      - O-acyl tyrosine analysis, MFR 43(3):15
      - protein content, MFR 43(3):15
      - S-acyl cysteine analysis, MFR 43(3):15
      - secondary groups acetylation, MFR 43(3):16
      - sulphydryl group acetylation, MFR 43(3):17
      - tyrosyl group acetylation, MFR 43(3):17
  - Fish recruitment studies—see Large Marine Ecosystems
  - Fish sampling
    - U.S. observers on foreign fishing vessels, 1977-78
      - Aleutian Island region, MFR 43(5):1
      - Bering Sea, eastern, MFR 43(5):1
      - crab, king, MFR 43(5):13
      - crab, snow, MFR 43(5):12
      - estimates of foreign groundfish catches, MFR 43(5):7
      - fishery under FCMA, MFR 43(5):2
      - flatfish catch, MFR 43(5):17
      - halibut, Pacific, MFR 43(5):9
      - historical groundfish catches, MFR 43(5):4
      - history, MFR 43(5):2, 5
      - observer coverage, MFR 43(5):6
      - regulation, MFR 43(5):4
      - rockfish catch, MFR 43(5):17
      - salmon, Pacific, MFR 43(5):15
      - sampling procedures, MFR 43(5):5
  - Fish schools
    - stochastic model for size of
      - fitting model to data, FB 79:318
- Fish schools (continued)
  - stochastic model for size of (continued)
    - observations, FB 79:316
    - sensitivity analysis, FB 79:319
  - Fish spoilage
    - honeycombing and collagen breakdown, skipjack tuna, MFR 46(2):40
  - Fish sticks, with textured soy products (TSP)
    - amino acid composition, MFR 45(7-9):35, 36
    - flesh-TSP ratio, MFR 45(7-9):37
    - nutritive value, MFR 45(7-9):35
    - preparation, MFR 45(7-9):34, 35
    - protein efficiency ratios (PER), MFR 45(7-9):35
    - proximate composition, MFR 45(7-9):35, 36
    - sensory evaluations, MFR 45(7-9):36
  - Fisheries, commercial
    - Bering Sea, central
      - Navarin Basin, TM F/AKR-2
    - Bering Sea, eastern
      - potential for yellowfin sole fishery, TM F/NWC-33
    - harvest sector
      - economic health, TM F/NEC-40
    - mackerel
      - fishery economic data analysis, TM SEFC-101
  - Fisheries, eastern Caribbean
    - effects of ciguatera fish poisoning, MFR 46(1):13
  - Fisheries, foreign
    - and joint venture
      - off California, Oregon, and Washington, TM F/NWR-15
    - Gulf of Alaska, 1977-78
      - crab, king, MFR 43(5):31
      - crab, snow, MFR 43(5):31
      - flatfish catches, MFR 43(5):33
      - foreign fisheries observer program, MFR 43(5):24
      - groundfish, MFR 43(5):20
      - groundfish catch estimates, MFR 43(5):25
      - halibut, Pacific, MFR 43(5):27
      - historical groundfish catches, MFR 43(5):23
      - regulation, MFR 43(5):23
      - rockfish catches, MFR 43(5):32
      - salmon, Pacific, MFR 43(5):29
    - off Washington, Oregon, and California, 1977-78
      - halibut, Pacific, MFR 43(5):42
      - observer sampling results, MFR 43(5):39
      - regulations, MFR 43(5):37
      - salmon, MFR 43(5):39
      - species composition and estimated catch of rockfish and flatfish, MFR 43(5):42
      - trawl fishery, MFR 43(5):36
      - U.S. observer program, MFR 43(5):38
  - Fisheries, invertebrate
    - report on available economic data (except shrimp), TM SEFC-88
  - Fisheries, mackerel
    - economic data analysis, TM SEFC-101
  - Fisheries, management
    - maximum sustained yield, TM SEFC-17
    - optimum yield, TM SEFC-17
  - Fisheries, marine—see Delaware
  - Fisheries, recreational
    - evaluation using the Delphi Technique. TM SEFC-19
    - length-frequency distributions
    - reef fishes. Panama City, Florida, 1978-79, TM SEFC-61

- Fisheries, recreational (continued)
- paying-passenger of Florida gulf coast and keys
    - activity centers, MFR 43(8):13
    - boat distribution, MFR 43(8):13
    - charter- and head-boat problems, MFR 43(8):17
    - guide boat problems, MFR 43(8):18
    - guide boats, MFR 43(8):16
    - inshore-offshore charters, MFR 43(8):16
    - list compilation, MFR 43(8):12
    - offshore charter, MFR 43(8):15
    - offshore head boats, MFR 43(8):17
    - operator types, MFR 43(8):13
    - percent returns and estimates of total activity, MFR 43(8):14
    - questionnaire distribution, MFR 43(8):13
    - species dependence and percent fishing effort, MFR 43(8):14
  - surveys, 1977-78
    - billfish and shark, TM SEFC-5
- Fisheries Conservation and Management Act
- fishing, marine recreational
    - social considerations, MFR 42(12):12
- Fisheries enforcement, marine
- preliminary method for estimating requirements
    - area enforcement estimates, MFR 42(11):25
    - at-sea enforcement, MFR 42(11):20
    - investigations, MFR 42(11):22
    - multiple fishery estimates, MFR 42(11):23
    - regulatory mechanism, MFR 42(11):19
    - regulatory modes, MFR 42(11):19
    - shore-side enforcement, MFR 42(11):22
    - single fishery estimates, MFR 42(11):23
    - support, MFR 42(11):23
- Fisheries information
- efficient storage and retrieval
    - standardized data condensation, TM SEFC-10
- Fisheries production
- economics of, TM F/NWC-60
- Fishery
- albacore, North Pacific
    - long range planning workshop, 1983, TM SWFC-37
  - Atlantic menhaden
    - closed corridor option, biological implications, TM SEFC-165
  - bass
    - economic evaluation, FB 81:168, 170, 171
    - St. Lawrence River-eastern Lake Ontario, FB 81:168
  - Bering Sea
    - procedure for assessing pollock abundance, S 743
  - bottom, longline descriptive survey
    - Gulf of Mexico, TM SEFC-122
  - business turnover in Texas charterboat industry 1975-80, MFR 47(1):43
  - charter boat, N.C. biological and economic analysis
    - bottom fishing for reef fishes, MFR 43(8):6
    - charter boat activities, MFR 43(8):3
    - estuary fishing, MFR 43(8):6
    - fleet profitability, MFR 43(8):6
    - landings, MFR 43(8):3
    - trolling inshore, MFR 43(8):3
    - trolling offshore, MFR 43(8):3
  - Chinook salmon
    - enhancement in Alaska, TR 27
- Fishery (continued)
- commercial
    - contribution of pen-reared salmon in San Francisco Bay, MFR 47(4):26
    - sharks, pelagic, commercial catch, TR 31
    - whiting, Pacific, in Canadian zone, MFR 47(2):80
  - deep-sea handline
    - multispecies analysis of commercial, in Hawaii
      - aggregation effects, FB 80:444
      - clustering, FB 80:439
      - data sources and fishery description, FB 80:436
      - fishing effort, FB 80:438, 440, 443
      - stock production analyses, FB 80:441
  - dogfish, spiny
    - processing and handling, MFR 47(1):48
  - eastern Pacific shrimp, FB 83:1
  - finfish culture in Kochi prefecture, Japan, TR 10
  - gill net
    - impacts on non-target species, TM F/SWR-012
    - selectivity on Spanish mackerel, king mackerel, and bluefish, TM SEFC-119
    - Spanish mackerel and catches of king mackerel and cero, TM SEFC-138
    - squid taken in surface gill nets, North Pacific, TM F/NWC-28
  - Grays Harbor, FB 82:469
  - Gulf of Mexico
    - juvenile brown shrimp as abundance predictors, FB 83:677
  - lobster, spiny
    - predation of released trapped lobsters, MFR 47(1):27
  - longline
    - descriptive bottom survey, Gulf of Mexico, TM SEFC-122
    - distribution of groundfish catches, eastern Bering Sea, 1977-80, TM F/NWC-31
    - Japanese, 1979 and 1980 catch rates, Atlantic and Gulf of Mexico, TM SEFC-125
    - Japanese, 1980 observer data and Japanese report data, TM SEFC-125
    - Japanese, Pacific cod and sablefish catches, Gulf of Alaska, 1978-83, TM F/NWC-82
  - Menhaden
    - closed corridor option, biological implications, TM SEFC-165
  - Menhaden, Atlantic
    - sampling statistics, TR 9
  - New England groundfishery
    - otter trawl size, S 771
  - ocean troll
    - genetic stock identification methods, MFR 47(1):1
  - Puget Sound commercial fishery for Pacific whiting, MFR 47(2):33
  - purse seine
    - estimates of catch, Atlantic Menhaden, TR 31
  - recreational
    - bass fishery, FB 81:168
    - commercial passenger fishing industry for albacore, MFR 47(3):48
    - contribution of pen-reared salmon in San Francisco Bay, MFR 47(4):26
    - croaker, white, FB 82:196
    - pelagic sharks, estimates of catch, TR 31
  - reef management
    - biological basis for, TM SEFC-80
    - workshop proceedings, TM SEFC-80

- Fishery (continued)
- regulatory
    - instrument constraints, TM F/NWC-90
  - sand lance
    - keeping quality of fresh and frozen *Ammodytes* sp., MFR 47(1):78
  - sea urchin, red
    - harvesting, MFR 47(3):9
    - marketing methods, MFR 47(3):17
    - processing, MFR 47(3):12
  - scarred fish and high seas fisheries, MFR 47(1):39
  - shrimp, pink, in Tortugas Sanctuary off south Florida, MFR 47(4):11
  - tuna
    - parasite use for stock management, FB 83:343
    - reducing porpoise mortality, TR 13
  - Walleye pollock
    - procedure for assessing abundance, S 743
  - western Australian
    - lobster, western rock, FB 83:567
  - whiting, Pacific
    - condition, MFR 47(2):95
    - historical review of the fishery, MFR 47(2):39
    - history, MFR 47(2):95
    - management, MFR 47(2):95
  - worm
    - bloodworms and sandworms of Maine
      - distribution, S 767
      - habitat, S 767
      - history of fishery, S 767
- Fishery closures
- Texas
    - impacts on brown shrimp yields, TM SEFC-141
    - impacts on brown shrimp yields, 1982 and 1983, TM SEFC-142
- Fishery Conservation Zone (FCZ)
- fisheries management and charterboat industry, MFR 46(3):48
  - foreign baitboats
    - catch and effort estimates, 1965-77, TM SWFC-2
  - foreign tuna longliners
    - catch and effort estimates, TM SWFC-2
  - impact of closure
    - on brown shrimp yields, TM SEFC-141
    - on brown shrimp yields, 1982 and 1983, TM SEFC-142
- Fishery data
- directory of collection activities
    - southeast U.S., TM SEFC-16
- Fishery development
- Columbia River
    - annual report, 1980, TM F/NWR-1
    - annual report, 1981, TM F/NWR-4
    - annual report, 1982, TM F/NWR-6
    - annual report, 1983, TM F/NWR-9
    - annual report, 1984, TM F/NWR-13
    - screening of irrigation diversions, TM F/NWR-12
- Fishery economic data
- commercial mackerel fisheries analysis, TM SEFC-101
- Fishery management
- analysis, TM F/NEC-7
  - anchovy, California northern
    - biological basis, TM SWFC-1
    - economic basis, TM SWFC-1
- Fishery management (continued)
- biological
    - Mid-Atlantic, TM F/NEC-6
    - New England, TM F/NEC-6
  - Columbia River salmonid fishery, MFR 47(1):5
  - definitions
    - management units, TM F/NEC-3
  - economics
    - and uncertainty, TM F/NWC-47
    - Mid-Atlantic, TM F/NEC-6
    - New England, TM F/NEC-6
  - fish stock fluctuations
    - consequences, TM F/NWC-27
    - management, TM F/NWC-27
  - genetic stock identification, MFR 47(1):1
  - how to prepare plans, TM SEFC-4
  - lobster industry, MFR 47(1):27
  - methodologies, TM F/NEC-7
  - oceanic salmonid fishery, MFR 47(1):5
  - overview
    - Northeast Fishery Management team, TM F/NEC-1
  - plans
    - Atlantic demersal finfish, TM F/NEC-2
    - Northeast Region Action Plan, 1985, TM F/NEC-37
    - preparation, TM SEFC-4
  - regulatory instruments
    - adjusted constraints, TM F/NWC-90
  - seawater acclimation of Chinook salmon smolts, TR 27
  - techniques, TM F/NEC-4
  - workshop on scientific basis for management in penaeid shrimp, TM SEFC-98
- Fishery Management Councils
- management, large marine ecosystems, MFR 45(10-12):2
  - New England fishery, MFR 45(1):2
- Fishery Management Zone (FMZ), U.S.
- establishment of, MFR 45(7-9):21
  - MARMAP program, MFR 45(10-12):1
- Fishery plan
- statistics
    - southeast U.S., TM SEFC-53
- Fishery production
- lectures on the economics, TM F/NWC-60
- Fishery products
- “Comparative Edibility Factors”, MFR 45(7-9):6
  - edibility characteristics, MFR 45(7-9):12
  - edibility profiles, MFR 45(7-9):15
  - extended fresh storage with modified atmosphere
    - CO<sub>2</sub>-enriched, MFR 44(2):19
    - hyperbaric storage, MFR 44(2):19
    - hypobaric storage, MFR 44(2):18
    - vacuum packaging, MFR 44(2):17
  - grading program, MFR 45(7-9):6
  - identification system, MFR 45(7-9):6
  - nomenclature, system for changing, MFR 45(7-9):9
    - base terms, MFR 45(7-9):11
    - factor list, MFR 45(7-9):10
    - future developments, MFR 45(7-9):19
    - identification plan, prototype, MFR 45(7-9):12
    - standardized definition list, MFR 45(7-9):11
  - nomenclature scheme, MFR 45(7-9):19
  - potential expansion area, MFR 45(7-9):1
  - versatility, MFR 45(7-9):2

- Fishery research
  - remote sensing data and management applications, MFR 46(3):1
- Fishery resources
  - Guam
    - resource review, TM SWFC-33
  - Mariana Archipelago, MFR 47(4):19
  - Mariana Islands, northern
    - resource review, TM SWFC-33
  - northeastern coastal waters
    - Atlantic demersal finfish, TM F/NEC-2
    - status report, 1980, TM F/NEC-5
    - status report, 1981, TM F/NEC-12
    - status report, 1982, TM F/NEC-22
    - status report, 1983, TM F/NEC-29
    - status report, 1985, TM F/NEC-42
- Fishery statistics
  - shrimp, pink, in Tortugas sanctuary off south Florida
    - catch and effort, MFR 47(4):12
    - fishing effort, MFR 47(4):14
    - landing, MFR 47(4):12, 13
    - relative abundance, MFR 47(4):14, 15
    - size, MFR 47(4):16
  - yield estimates from Mariana Archipelago, MFR 47(4):20
- Fishery status, conditional
  - solution to overcapitalization
    - capacity, MFR 43(7):22
    - conditional fishery, MFR 43(7):20
    - effect of conditional fishery declaration, MFR 43(7):23
    - financial conditions, MFR 43(7):23
    - policy implications, MFR 43(7):23
    - vessels and effort, MFR 43(7):21
- Fishery transportation
  - Columbia River
    - fiscal year 1984, TM F/NWR-14
    - transport operations, annual report 1981, TM F/NWR-2
    - transport operations, annual report 1982, TM F/NWR-5
    - transport operations, annual report 1983, TM F/NWR-7
    - transport operations, annual report 1984, TM F/NWR-11
  - Snake River
    - transport operations, annual report 1981, TM F/NWR-2
    - transport operations, annual report 1982, TM F/NWR-5
    - transport operations, annual report 1983, TM F/NWR-7
    - transport operations, annual report 1984, TM F/NWR-11
- Fishery-dynamics
  - using Box-Jenkins models to forecast
    - data and underlying model, FB 78:888
    - estimation and checking, FB 78:891
    - forecasts, FB 78:893
    - model identification, FB 78:890
    - transfer function models, FB 78:892
- Fishing
  - big game
    - northern Gulf of Mexico, 1979, TM SEFC-23
    - northern Gulf of Mexico, 1980, TM SEFC-77
    - northern Gulf of Mexico, 1981, TM SEFC-90
  - commercial facilities, potential for industry expansion
    - Santa Barbara County, California, TM F/SWR-001
    - Ventura County, California, F/SWR-001
  - commercial vessels
    - survey of new west coast deliveries, TM F/SWR-002
  - foreign
    - off California, Oregon, and Washington, TM F/NWR-15
- Fishing (continued)
  - Japanese longline
    - comparing observer data and Japanese quarterly reports, 1979 Atlantic Ocean and Gulf of Mexico, TM SEFC-64
  - joint venture
    - California, Oregon, and Washington, 1977-84, TM F/NWR-15
  - longline
    - incidental capture of sharks, TR 31
  - marine recreational
    - social considerations under Fisheries Conservation and Management Act, MFR 42(12):12
  - recreational
    - charterboat catch and effort from southeastern U.S. waters, MFR 47(3):54
    - economic valuations, National Marine Fisheries Service guidelines, TM SWFC-32
    - estimated catches of large sharks, TR 31
  - sport
    - temperature effects on sport species in California, S 759
  - Fishing activity
    - Japanese longline
      - comparison between 1979 and 1980 for the Atlantic and Gulf of Mexico, TM SEFC-125
  - Fishing equipment
    - albacore fleet
      - U.S. west coast, TM SWFC-8
  - Fishing harvest
    - economic health index for industry's harvest sector, TM F/NEC-40
    - model
      - effects on fish biomass, TM F/NWC-41
  - Fishing industry
    - economic health
      - harvest sector, TM F/NEC-40
    - energy conservation technology
      - economic analysis, TM F/NWC-39
    - expansion
      - Santa Barbara County, California, TM F/SWR-001
      - Ventura County, California, TM F/SWR-001
  - Fishing information
    - Guam and northern Mariana Islands, TM SWFC-40
  - Fishing methods
    - albacore fleet
      - U.S. west coast, TM SWFC-8
  - Fishing techniques, small boat
    - Virgin Islands
      - demonstration of advances, MFR 43(11):11
  - Fishing vessels, commercial
    - diesel-powered, Hawaii, MFR 45(7-9):53, 55
    - sail assisted, Hawaii
      - cost effectiveness, MFR 45(7-9):50
      - investment analyses, MFR 45(7-9):52
      - new construction, MFR 45(7-9):51
    - sailing, MFR 45(7-9):51
  - Fishing vessels, foreign
    - eastern Bering Sea and Aleutian Island region, 1977-78
      - sampling by U.S. observers aboard, MFR 43(5):1
  - Fishing zones
    - used to calculate sea surface areas
      - coast of northeastern South America, TM SEFC-81
  - Fishmeal industry, FB 81:367, 369

- FISHMO  
numerical model computations  
fishing mortality, spawning, stress mortality, and biomass growth rate, TM F/NWC-38
- Fishways  
effect of Denil fishway length on passage of nonsalmonid fishes, MFR 47(1):83
- Fjord habitat, FB 82:144
- Flabelligerida  
life history, distribution, and abundance in the New York Bight, S 766
- Flatfish  
Bay of Fundy-Gulf of Maine, FB 82:126  
Oregon coast  
feeding ecology of 0-age at nursery ground, FB 80:555  
reef, artificial  
effects on resident populations, MFR 44(6-7):45
- Flavobacterium*  
in freshly caught marine fish, MFR 45(4-6):35
- Florida  
Atlantic coastal waters  
occurrence of *Cirolana borealis* in shark hearts, FB 79:376  
central eastern coast  
observed variation of current, temperature, and wind, TM SEFC-6  
crevalle jack food preferences, TM SEFC-134  
gag food preferences, TM SEFC-160  
Gulf coast and Keys  
paying-passenger recreational fisheries, MFR 43(8):12  
northwest  
possible temperature effects on charter boat catches of king mackerel and other coastal pelagic species, MFR 43(8):21  
south  
pink shrimp fishery in Tortugas Sanctuary, MFR 47(4):11  
stone crab fishery assessment, 1980-81 season, TM SEFC-79
- Straits  
swordfish, cephalopods in the diet, FB 79:765
- west coast  
spinner dolphin, observations of mass stranding, FB 78:353
- west shelf  
cruise 85, FRS *Oregon II*, January 1978, station and catch data, TM SEFC-130
- whale, false killer  
recurrent mass stranding, FB 78:171
- Florida Bay  
shrimp, juvenile northern pink  
distribution, ecology, and seasonal abundance, TM SEFC-161  
turtles, marine  
radio tracking juvenile, MFR 43(3):20
- Flotsam  
as structured fish aggregating device, TM SWFC-22
- Flounder  
exploited stocks, northeast coast, MFR 45(10-12):18  
New England groundfish fishery, MFR 45(1):5  
stock recovery trends, MFR 45(10-12):18  
U.S. fresh fish industry, MFR 45(1):1
- Flounder, fourspot  
Atlantic Ocean, N.W.  
food habits, S 749  
Middle Atlantic Bight  
food habits and trophic relationship, S 773
- Flounder, gulf  
evaluating hard parts for age determination, TM SEFC-132
- Flounder, gulfstream  
Atlantic Ocean  
food habits, S 749  
Middle Atlantic Bight  
food habits and trophic relationships, S 773
- Flounder, smooth  
development of larval with redescription of development of winter flounder  
distinguishing features, FB 78:900  
fin development, FB 78:902  
general development, FB 78:900  
identification, FB 78:898  
laboratory observations, FB 78:899  
morphology, FB 78:901  
pigmentation, FB 78:903  
terminology, FB 78:898  
mortalities of larvae exposed to acute thermal shock, FB 79:198
- Flounder, southern  
evaluating hard parts for age determination, TM SEFC-132  
spawning experiments, TR 10
- Flounder, starry, FB 81:815
- Flounder, summer  
age and growth workshop proceedings, 1980, TM F/NEC-11  
annotated bibliography, S 752  
Atlantic Ocean, N.W.  
food habits, S 749  
behavior, S 755  
distribution, S 755  
ecology, S 755  
exploitation, S 755  
identity, S 755  
life history, S 755
- New England  
tagging movements, S 752  
population dynamics, S 755  
stock discrimination workshop proceedings, 1983, TM F/NEC-18
- Flounder, winter  
Atlantic Ocean, N.W.  
food habits, S 749  
eggs, FB 81:914  
Gulf of Maine  
trophic relationships, FB 79:775  
larvae, FB 81:914  
Narragansett Bay, FB 81:914  
nuclear generator effects, FB 81:915  
redescription of development, FB 78:897
- Flounder, witch  
Atlantic Ocean, N.W.  
food habits, S 749
- Flounder, yellowtail  
Atlantic Ocean, N.W.  
food habits, S 749  
development, FB 81:344, 351, 353  
feeding patterns, FB 81:16, 18, 20  
food of juvenile, FB 79:205  
gonosomatic index, FB 81:343  
Gulf of Maine  
trophic relationships, FB 79:775  
Gulf of St. Lawrence to the Chesapeake Bay, FB 81:341  
Harris' hematoxylin, FB 81:342

## Flounder, yellowtail (continued)

- macroscopic structure, FB 81:343
  - maturity stages, FB 81:343
  - microscopic appearance, FB 81:347
  - northeastern United States, FB 81:15
  - oocytes, FB 81:342
  - oogenesis, FB 81:344
  - oogonia, FB 81:351
  - ovaries, FB 81:344
  - spawning stock estimates, MFR 45(10-12):21
  - stock recovery trends, northeastern U.S., MFR 45(10-12):18
  - stomach contents, FB 81:16
  - Student-Newman-Keuls, FB 81:342
  - student's *t*-test, FB 81:343
  - temperature effects on growth and yolk utilization in yolk-sac larvae, FB 78:731
  - types I and II of regressing oocytes, FB 81:352
- Fluctuations, fish stock
- consequences and management, TM F/NWC-27
- Flux experiments
- Nantucket Shoals, TM F/NEC-23
- Follicle histology, FB 82:443
- Food and Agriculture Organization (FAO), U.N.
- response to NMFS seafood nomenclature system, MFR 45(7-9):17
- Food and Drug Administration (FDA), U.S.
- hazard levels for histamine in tuna, MFR 45(4-6):42
  - response to NMFS seafood nomenclature system, MFR 45(7-9):17
  - seafood identification labeling regulations, MFR 45(7-9):1, 4
- Food Drug and Cosmetic Act
- food labeling provisions, MFR 45(7-9):1, 4
  - interpretations of the Act, MFR 45(7-9):6
- Food habits
- Bering Sea
    - feeding of northern fur seal, S 779
  - bibliography
    - food rations, TM F/NWC-63
  - blacksmith, FB 82:199, 200
  - char, Arctic, FB 82:401
  - coastal fishes, FB 81:396
  - cod, Arcto-Norwegian, FB 82:152
  - cod, Arcto-Norwegian, larvae, FB 82:141
  - cod, Atlantic, FB 81:440
  - copepods, marine, FB 81:154
  - crab, horseshoe, FB 82:383, 387
  - croaker, FB 81:795
  - cunner, FB 81:426
  - diet effects on laboratory culture of *P. dulus platyceros*, TM F/NWC-68
  - dolphin, Fraser's, FB 81:283
  - fish
    - North Pacific species, TM F/NWC-54
    - northwest Atlantic species, TM F/NWC-28
  - fish, pelagic, FB 81:581
  - fish, Texas coastal, FB 81:643
  - flounder, yellowtail, FB 81:15
  - food requirements of shelf edge cetaceans in the northeastern U.S., MFR 47(1):15
  - forage sites of humpback whales, TM F/NWC-66
  - hake, silver, FB 81:440, FB 82:21
  - herring, gold spot, FB 81:590

## Food habits (continued)

- importance of fish food habits data, MFR 47(1):9
  - lamprey, river, FB 81:165
  - marsh habitat, FB 82:455
  - Middle Atlantic Bight
    - resident and seasonal fishes, S 773
  - nekton, FB 82:455, 460
  - nonsalmonids, FB 81:815
  - Pacific Ocean
    - feeding of northern fur seal, S 779
  - pollock, walleye, FB 81:637
  - quahog, ocean, FB 82:272
  - queenfish, FB 83:171
  - ribbonfish, FB 81:161
  - rockfish, FB 82:269, FB 83:531
  - salmon, Pacific, FB 82:391
  - sea lions, FB 82:67
  - seal, harbor, FB 81:291
  - seal, spotted, TR 12
  - sharks, sandbar, FB 83:395
  - shrimp, FB 81:795
  - shrimp, brown, FB 82:325
  - shrimp, penaeid, FB 82:717
  - shrimp, rock, FB 82:716
  - splittail, FB 81:651
  - spot, FB 81:795
  - tomtate, FB 83:461
  - tuna, skipjack, FB 83:379
  - walleye, FB 82:411
  - walrus, FB 81:501
  - walrus, Pacific, TR 12
  - whale, gray, FB 81:513
  - whiting, Pacific, FB 81:629, MFR 47(2):13, 14, 16, 32
- Food preferences
- bluefish
    - U.S. south Atlantic and Gulf of Mexico, TM SEFC-150
  - gag
    - North Carolina and three areas of Florida, TM SEFC-160
- Food rations
- for fish
    - bibliography, TM F/NWC-63
- Forage communities, fish
- habitat parameters in Faka Union Bay, Florida, TM SEFC-162
- Forage sites
- identification of humpback whales, Alaska, TM F/NWC-66
- Foraminifera, benthic—see also Protozoa
- key to species, U.S., N.E., C 439
  - marine flora and fauna of the NE U.S., C 439
- Foreign fishing vessels, N.E. Pacific
- gear used, MFR 45(7-9):48
  - marine mammals caught, 1978-81, MFR 45(7-9):45
- Frederick Sound, Alaska
- humpback whale studies
    - forage site identification and hydroacoustic surveys, TM F/NWC-66
- Freeport, Texas
- Bryan Mound, brine disposal site
    - shrimp and redfish studies, 1979-81, TM SEFC-65 to SEFC-70
- French Frigate Shoals, Hawaii
- Hawaiian monk seal observations, 1980, TM SWFC-50
  - sea turtles, green
    - recovery efforts, TM SWFC-36

- French Guiana  
offshore shrimp fishery harvest, U.S., 1978-79, MFR  
45(4-6):1
- Fundulus heteroclitus*—see Mummichog
- FV Typhoon, FB 81:434
- G**
- Gadidae  
ichthyoplankton off Alaska, TR 20
- Gadids  
Bering Sea, demersal fish resources, S 754
- Gadids, marine  
Alaska, northern  
trophic importance of, and their body-otolith size relationships,  
FB 79:187
- Gadoids  
Bay of Fundy-Gulf of Maine, FB 82:129
- Gadus macrocephalus*—see Cod, Pacific
- Gadus morhua*—see Cod, Arcto-Norwegian; Cod, Atlantic
- Gag  
food of in North Carolina and three areas of Florida, TM  
SEFC-160
- Gallucci and Quinn parameter, FB 81:75, 78
- Galveston Bay, west Texas  
shrimp, bait  
potential disease-causing organisms, TM SEFC-169
- Galveston Island, Texas, FB 82:326
- Gambierdiscus toxicus*—see Ciguatera fish poisoning
- Gamefish, oceanic  
investigations, 1978-80, TM SEFC-85  
statistical results of collected billfish data, 1972-81, TM  
SEFC-106
- Gammaridean amphipods  
*Ampelisca eschrichti*, MFR 46(4):9  
*Ampelisca macrocephala*, MFR 46(4):9  
*Ampelisca nugax*, MFR 46(4):9  
*Nototropis brueggeri*, MFR 46(4):9  
*Nototropis ekmani*, MFR 46(4):9  
*Pontoporeia affinis*, MFR 46(4):9  
*Pontoporeia femorata*, MFR 46(4):9
- Gasoline  
Block Island Sound  
spill from the barge *Ocean 250*, S 751
- Gasterosteus aculeatus*—see Stickleback, threespine
- Gastric evacuation rate  
estimation method, FB 81:451
- Gastroenteritis  
hard clam associated outbreaks  
New York, May-September, 1982, TM SEFC-121
- Gastropoda  
life history, distribution, and abundance in New York Bight, S 766
- Gear  
cod end liners, FB 81:550  
high-rise roller trawl nets, FB 81:550  
hook end line, FB 81:547  
otter trawl, FB 81:543, 550  
trawl, FB 81:550  
Yankee otter trawl net, FB 81:538, 547, 550
- Genetic studies  
lobster, spiny, FB 82:693  
marlin, Pacific blue, FB 81:85
- Genetic studies (continued)  
salmon, Pacific, MFR 47(1):1  
salmonids, TR 27  
snapper, deepwater, FB 82:703  
sole, yellowfin, FB 81:667
- Genyonemus lineatus*—see Croaker, white
- Georges Bank  
Grammaridean Amphipoda  
distribution, S 746  
historical catch data, 1904-1982, TM F/NEC-39  
hydrographic observations, TM F/NEC-38  
larval fish  
distribution, survival, and transport, TM F/NEC-24  
growth and survival in relation to trophodynamics of cod and  
haddock, TM F/NEC-36  
nutrient environment in 1979, TR 32  
plankton observations, TM F/NEC-38  
satellite infrared imagery, TM F/NEC-38  
sea scallop, Atlantic  
movement of tagged, MFR 43(4):19  
surface waters  
residence time and residual drift, TM F/NEC-24
- Georgia, Strait of  
herring fishery  
case history of timely management aided by hydroacoustic  
surveys, FB 80:381
- Geronimo* research cruise  
data and publications, TM SEFC-60
- Geryon quinquedens*—see Crab, deep-sea red
- Gill nets  
salmon  
mortality of seabirds in high-seas, FB 79:800
- Ginglymostoma cirratum*—see Shark, nurse
- Glacier Bay, Alaska  
humpback whale studies  
forage site identification and hydroacoustic surveys, TM  
F/NWC-66
- Globicephala macrorhynchus*—see Whales, Pacific pilot
- Glycera dibranchiata*—see Bloodworms
- Glyptocephalus cynoglossus*—see Flounder, witch
- Gobiid fishes  
ecological comparison and life history, TM SEFC-15
- Gonad histological analyses  
tuna, bigeye  
northwest Atlantic and Gulf of Mexico, late summer-early  
winter collections, TM SWFC-14  
tuna, yellowfin  
northwest Atlantic and Gulf of Mexico, late summer-early  
winter collections, TM SWFC-14
- Gonatus onyx*  
identification, TR 17
- Gonyaulax polyedra*  
correlated with anchovy productivity, MFR 45(10-12):11
- Goosefish  
Middle Atlantic Bight Outer Continental Shelf  
food habits and trophic relationships, S 773
- Goussia caseosa*  
key to species, TR 11  
taxonomy, TR 11
- Goussia degiustii*  
key to species, TR 11  
taxonomy, TR 11



- Goussia gadi*  
 key to species, TR 11  
 taxonomy, TR 11
- Grammaridean—see Amphipoda
- Graphics  
 anthology of computer programs, TM SEFC-151  
 geographic mapping systems for computer graphics, TM SEFC-153
- Great Barrier Reef  
 black marlin  
 migration, S 772
- Great whales  
 Special Section, MFR 46(4):1
- Greenling, kelp  
 Pacific Ocean, N.E.  
 development, TR 2
- Greenling, masked  
 Pacific Ocean, N.E.  
 development, TR 2
- Greenling, painted  
 Pacific Ocean, N.E.  
 development, TR 2
- Greenling, rock  
 Pacific Ocean, N.E.  
 development, TR 2
- Greenling, white spotted  
 Pacific Ocean, N.E.  
 development, TR 2
- Greenlings  
 Pacific Ocean, N.E.  
 development, TR 2
- Grenadier, longnose  
 Atlantic Ocean, N.W.  
 food habits, S 740
- Grenadier, rock  
 parasite studies, TR 25
- Groundfish  
 Atlantic continental shelf, FB 82:295  
 Bering Sea, eastern  
 cooperative U.S.-Japan investigation, June-November, 1982, TM F/NWC-87  
 foreign trawl and longline fisheries distribution of catches, 1977-80, TM F/NWC-31  
 bottom trawl survey  
 eastern Bering Sea, 1978, TM F/NWC-55  
 Pacific west coast, 1983, TM F/NWC-70  
 California  
 economic status, 1983, TM F/SWR-004  
 economic feasibility of domestic harvest from western Alaska waters  
 comparison of fishing strategies, FB 79:309  
 comparison of vessel types, FB 79:308  
 cost derivations and sources of estimates, FB 79:313  
 delivering at sea versus delivering to port, FB 79:307  
 economic model, FB 79:304  
 fishing strategy, FB 79:307  
 fuel price, FB 79:307  
 processor location and mode of operation, FB 79:306  
 sensitivity to changes in fuel price, FB 79:309  
 vessel types, FB 79:306  
 economic status  
 California, Oregon, and Washington, TM F/SWR-010
- Groundfish (continued)  
 fishery harvest  
 east Bering Sea, 1964-80, TM F/NWC-14  
 fishery resources  
 Aleutian Islands, 1982, TM F/NWC-42  
 eastern Bering Sea, 1982, TM F/NWC-42  
 eastern Bering Sea, 1984, TM F/NWC-83  
 Gulf of Alaska, 1984, TM F/NWC-80  
 joint U.S.-Japan investigations, east Bering Sea, TM F/NWC-87  
 food of juvenile, FB 79:200  
 held in experimental refrigerated and chilled seawater systems, TM SEFC-92  
 juveniles  
 distribution and abundance Gulf of Alaska, 1980-82, TM F/NWC-59, F/NWC-77  
 monitoring in sponge-coral areas off southeastern United States  
 habitat observations and description, MFR 42(5):23  
 oceanographic observations, MFR 42(5):22  
 television transect studies, MFR 42(5):26  
 trap catch comparisons, MFR 42(5):30  
 trawl catch comparisons, MFR 42(5):27  
 seamount fishery research, central North Pacific, MFR 46(2):11  
 spawning  
 Alaskan species and Pacific Coast species, 1975-81, TM F/NWC-44  
 trawl survey  
 Aleutian Islands, 1980, TM F/NWC-23  
 Aleutian Islands, 1980, cooperative U.S.-Japan resource survey, TM F/NWC-93  
 east Bering Sea and Aleutian Islands, TM F/NWC-53  
 eastern Bering Sea, 1978, TM F/NWC-55  
 Gulf of Alaska, 1978, TM F/NWC-13  
 Gulf of Alaska, 1982, TM F/NWC-52
- Groundfish fisheries, Hawaiian Archipelago  
 commercial exploitation, MFR 46(2):2  
 preliminary management plan, MFR 46(2):1  
 species biology  
 alfonsin, MFR 46(2):15  
 armorhead, pelagic, MFR 46(2):13
- Groundfish industry, Massachusetts  
 export products, MFR 45(1):6, 9  
 import products, MFR 45(1):4, 6, 9  
 landings, 1964-79, MFR 45(1):3, 8  
 processing  
 fishery management data, MFR 45(1):1  
 plants, MFR 45(1):6  
 sales, MFR 45(1):1  
 statistical description, MFR 45(1):2  
 total employment, MFR 45(1):6, 7, 9  
 value, MFR 45(1):1  
 products, MFR 45(1):1  
 revitalization, MFR 45(1):7
- Groundfishery  
 New England  
 otter trawl size, S 771
- Grouper  
 landings, Florida Gulf coast and Keys charterboat fishery, MFR 45(1):16  
 resource assessment at the Mariana Archipelago, MFR 47(4):19  
 seamount fishery research, central North Pacific  
*Caprodon schlegelii*, MFR 46(2):11

- Grouper (continued)  
 seamount fishery research (continued)  
*Epinephelus quernus*, MFR 46(2):11  
*Plectranthias kelloggi*, MFR 46(2):11
- Growth  
 Kemp's ridley sea turtle  
 released into Gulf of Mexico, TM SEFC-145  
 larval fish  
 related to trophodynamics of Georges Bank cod and haddock,  
 TM F/NEC-36  
 patterns in variability of captive-reared, TM SEFC-164  
 rates  
 effect of fishing and spawning stress mortality, TM F/NWC-38  
 seatrout, sand, TM SEFC-14  
 seatrout, silver, TM SEFC-14  
 spot, TM SEFC-14  
 studies  
 annotated list of references of the bluefin tuna, TM SEFC-113  
 summer flounder workshop proceedings, 1980, TM F/NEC-11  
 white shrimp, temperature effects on, TM SEFC-56
- Growth curves  
 method for comparisons, FB 79:95
- Growth lines  
 bivalve mollusks, MFR 46(2):27
- Growth rates  
 arithmetic/exponential calculation, FB 82:446  
 clam, soft-shell, FB 81:75  
 clam transplanting, FB 82:540  
 cod, Atlantic, FB 81:833  
 crab, deep-sea red, FB 81:903  
 crab, Dungeness, FB 82:417  
 croaker, white, FB 82:183  
 dolphin, FB 81:906  
 dolphin, spotted, FB 83:553  
 drum, banded, FB 82:353  
 eel, American, FB 82:520  
 growth increment marking, tetracycline, FB 82:208, 237  
 haddock, FB 81:833  
 herring, Atlantic, FB 83:289  
 herring, gold spot, FB 81:593  
 herring, Pacific, FB 82:117  
 Leslie model, FB 82:537  
 lobster, American, FB 82:242, 243  
 lobster, rock, FB 83:567  
 menhaden, Atlantic, FB 81:139, 193  
 midshipman, plainfin, FB 82:165  
 population growth rate, FB 82:537, 540  
 quahog, ocean, FB 82:1, 251  
 salmon, chinook, FB 82:158, 160  
 sculpin, longhorn, FB 81:781  
 sensitivity formulae, FB 82:538  
 tilefish, FB 81:760  
 triggerfish, gray, FB 82:488  
 tuna, bluefin, FB 82:434  
 weakfish, FB 81:803
- Grunion, California  
 hatching, FB 81:473, 475, 478
- Grunts  
 Atlantic Ocean  
 biological data, C 448
- Grunts, French  
 recruitment patterns in Tague Bay, Virgin Islands, FB 83:413
- Guam  
 environmental and fishing information summary  
 climate, TM SWFC-40  
 historical background, TM SWFC-40  
 oceanography, TM SWFC-40  
 submarine topography, TM SWFC-40  
 resource review  
 plankton communities and fisheries, TM SWFC-33
- Guianas-Brazil  
 shrimp fishery and related U.S. research, MFR 43(2):9
- Guianas-Brazil shrimping grounds  
 U.S. trawler participation in offshore fisheries, 1978-79, MFR  
 45(4-6):1
- Guides  
 to collection and identification of presmolt Pacific salmon in  
 Alaska, TM ABFS-2  
 to consumer risk simulation model, TM SEFC-18  
 to inshore shrimp data by Texas Parks and Wildlife Department,  
 TM SEFC-140  
 to sea turtle visceral anatomy, TM SEFC-82
- Gulf coast  
 shrimp landings  
 relationship between ex-vessel value and size composition of  
 annual, MFR 42(12):28  
 trends in ex-vessel value and size composition of annual, MFR  
 42(12):18
- Gulf of Alaska  
 bottomfish resources, TM F/NWC-10  
 crab, deep-sea king  
 life history, FB 79:259  
 fish species data for ecosystem simulation I, TM F/NWC-29  
 fishery, FB 82:396  
 foreign fisheries, 1977-78, MFR 43(5):20  
 groundfish resources  
 assessment, 1982, TM F/NWC-52  
 assessment, 1984, TM F/NWC-80  
 foreign trawl and longline fisheries, 1977-80, TM F/NWC-31  
 juvenile distribution and abundance, 1980-82, TM F/NWC-59,  
 F/NWC-77  
 trawl survey, 1978, TM F/NWC-13
- Japanese longline catches  
 Pacific cod and sablefish, 1978-83, TM F/NWC-82
- living marine resources assessment, TM F/AKR-5
- recent observations of a large eddy  
 distributions and circulation, MFR 42(6):29  
 formation, MFR 42(6):30  
 implications, MFR 42(6):30  
 surface features, MFR 42(6):30
- sea lion, Steller  
 prey of, FB 79:467
- seal, harbor  
 food of, FB 78:549  
 stomach contents and feces as indicators of foods, FB 78:797
- shellfish resources, TM F/NWC-10
- Gulf of California  
 fishery, FB 82:715  
 schooling of scalloped hammerhead shark, FB 79:356
- Gulf of Carpentaria, Australia  
 shrimp larvae, penaeid  
 effect of vertical migration on dispersal, FB 80:541
- Gulf of Maine  
 fish diversity, FB 82:121

- Gulf of Maine (continued)  
 trophic relationships among demersal fishes, FB 79:775
- Gulf of Mexico  
 abundance of  
 Carangidae, TM SEFC-144  
 Clupeidae, TM SEFC-144  
 Engraulidae, TM SEFC-144  
 Istiophoridae, TM SEFC-144  
 Lutjanidae, TM SEFC-144  
 Scombridae, TM SEFC-144  
 Serranidae Coryphaenidae, TM SEFC-144  
 Xiphiidae, TM SEFC-144  
 bibliography on hypoxia and its effects, TR 21  
 billfishes  
 analysis of catch and effort data from U.S. recreational fishery, 1971-78, FB 79:49  
 biological data on the spottail pinfish, TR 19  
 bluefish  
 food preferences, TM SEFC-150  
 bottom longline fishery  
 descriptive survey, TM SEFC-122  
 fishery, FB 82:365, 375, 419  
 fishes  
 organochlorine residues, FB 78:51  
 food of the king mackerel, TM SEFC-126  
 food of the Spanish mackerel, TM SEFC-128  
 guide to fishes taken in longlining, C 43  
 ichthyoplankton larval distribution, TM SEFC-144  
 Japanese longline fishing  
 comparing observer and quarterly reports, 1979, TM SEFC-64  
 comparing observer and quarterly reports, 1980, TM SEFC-125  
 fishing activity and catch rates, 1979 and 1980, TM SEFC-125  
 Kemp's ridley sea turtle  
 growth and movement after release, TM SEFC-145  
 northern  
 big game fishing, 1979, TM SEFC-23  
 big game fishing, 1980, TM SEFC-77  
 big game fishing, 1981, TM SEFC-90  
 seasonality of fishes occupying surf zone habitat, FB 78:911  
*Penaeus* shrimp abundance and size distributions using samples, 1983 SEAMAP-Texas closure survey, TM SEFC-149  
 northwestern.  
 Buccaneer gas and oil field environmental assessments, 1976-80  
 bacteria, TM SEFC-49  
 biocides, TM SEFC-51  
 currents, TM SEFC-50  
 fishes, TM SEFC-48  
 hydrocarbons, TM SEFC-47, SEFC-51  
 macrocrustaceans, TM SEFC-48  
 particulates, TM SEFC-47  
 sediments, TM SEFC-47  
 sulfur, TM SEFC-51  
 trace metals, TM SEFC-51  
 volatile hydrocarbons, TM SEFC-47  
 Buccaneer gas and oil field environmental assessments, 1978-79  
 bacteria, TM SEFC-38  
 currents, TM SEFC-40  
 fate and effects of modeling, TM SEFC-43  
 fishes, TM SEFC-37  
 fouling community, TM SEFC-39  
 hydrocarbons, TM SEFC-41  
 hydrodynamic modeling, TM SEFC-44
- Gulf of Mexico (continued)  
 northwestern (continued)  
 Buccaneer gas and oil field, 1976-80 (continued)  
 hydrography, TM SEFC-40  
 macrocrustaceans, TM SEFC-37  
 particulates, TM SEFC-36  
 sediments, TM SEFC-36  
 synopsis/data management, TM SEFC-35  
 trace metals, TM SEFC-42  
*Penaeus* shrimp abundance and size distributions using samples, 1983 SEAMAP-Texas closure survey, TM SEFC-149  
*Penaeus* spp. occurrence in stomachs of trawl-caught fishes, TM SEFC-87  
 shrimp, brown, seasonal abundance, size distribution, and spawning, TM SEFC-94  
 survey of resources, TM SEFC-114  
 shrimp, pink, seasonal abundance, size distribution, and spawning, TM SEFC-94  
 shrimp, white, seasonal abundance, size distribution, and spawning, TM SEFC-94  
 northern and northwestern *Penaeus* spp. shrimps  
 abundance and size distributions, 1982 closure, TM SEFC-109  
 offshore shrimp fishery  
 economic status, TM SEFC-99  
 pollution  
 survey for organics, TM F/NEC-13  
 recreational marine fishes  
 life stages occurring in estuaries, TM SEFC-45  
 seatrout, silver  
 spawning, age determination, longevity, and mortality, FB 80:487  
 shrimp, white  
 natural and fishing mortality, SEFC-58  
 shrimp fishery  
 conditional fishery status as a solution to overcapitalization, MFR 43(7):20  
 use of Griffin's yield model, FB 78:973  
 shrimp industry  
 costs and returns trends, 1971-78, MFR 42(2):1  
 shrimp production  
 food web hypothesis, FB 79:737  
 snapper, red  
 growth of juvenile, FB 80:644  
 tuna, bigeye  
 gonad analyses, late summer-early winter collections, TM SWFC-14  
 tuna, yellowfin  
 gonad analyses, late summer-early winter collections, TM SWFC-14  
 western  
 epibenthic crustacea abundance and associations, TM SEFC-137  
 wind data using a scatterometer, September 1978, TM SEFC-107  
 Guyana  
 offshore shrimp fishery harvest, U.S., 1978-79, MFR 45(4-6):1  
*Gymnodinium splendens*—see Dinoflagellate
- H** \_\_\_\_\_
- Habitat alteration  
 impact of on sea turtles  
 southeastern U.S., TM SEFC-117

- Habitat conservation**  
 quantification of NMFS efforts in southeast United States  
 dredging, MFR 44(12):20  
 filling, MFR 44(12):21  
 impact of NMFS recommendations, MFR 44(12):21  
 impounding, MFR 44(12):21  
 mitigation, MFR 44(12):21  
 totals, cumulative, MFR 44(12):21
- Habitat effects**  
 diel light and temperature, FB 82:168  
 kingfish, southern, FB 82:430  
 marshes, FB 82:455  
 power plant effluents, FB 82:199  
 seal, harbor, FB 82:495  
 shrimp, brown, FB 82:325
- Habitat enhancement, marine**  
 urban recreational fishing in Washington  
 design, colonization, and ecosystem development, MFR 44(6-7):33  
 fish community structure, longterm, MFR 44(6-7):36  
 program design and methodology, MFR 44(6-7):29  
 site selection, facility design, and fishery management, MFR 44(6-7):31
- Habitat management**  
 economics  
 decision making, TM F/NWR-10
- Habitat parameters**  
 forage fish communities  
 Faka Union Bay, Florida, TM SEFC-162
- Habitats**  
 invertebrates of South Atlantic Bight, TR 18
- Haddock**  
 asteriscus, FB 81:830  
 Atlantic Ocean, N.W.  
 food habits, S 740  
 food of juvenile, FB 79:203  
 Georges Bank, FB 81:827  
 in relation to larval fish growth and survival, TM F/NEC-36  
 growth increments, FB 81:829  
 lapillus, FB 81:830  
 larval growth, FB 81:830  
 Massachusetts  
 groundfish industry, MFR 45(1):1  
 landings and production, MFR 45(1):5, 7  
 otoliths, FB 81:828  
 recruitment studies, MFR 45(10-12):4
- Haemulon aurolineatum***—see Grunts; see Tomato
- Haemulon flavolineatum***—see Grunts, French
- Haemulon plumieri***—see Fish, reef; see Grunts
- Hafnia alvei***  
 isolated from scombroid fish poisoning incidents, MFR 45(4-6):35, 38
- Hagfishes**  
 Atlantic, western  
*Eptatretus minor*, FB 79:78  
*Eptatretus multidentis*, FB 79:80  
*Eptatretus* species A and B, FB 79:76  
*Eptatretus* species C, FB 79:77  
*Eptatretus springeri*, FB 79:74  
 generic allocation, FB 79:72  
 species key, FB 79:73
- Hake**—see also Whiting, Pacific  
 markets  
 cured, MFR 42(1):52  
 export, MFR 42(1):52  
 fillets and fillet blocks, MFR 42(1):51  
 headed and gutted, MFR 42(1):51  
 impediments to development, MFR 42(1):53  
 industrial, MFR 42(1):52  
 new product development, MFR 42(1):53  
 red hake, MFR 42(1):52  
 silver hake, MFR 42(1):50  
 white hake, MFR 42(1):53  
 whiting, fresh, MFR 42(1):51  
 whiting, Pacific, MFR 42(1):53  
 names, MFR 42(1):2  
 South American resource and utilization  
 Argentina, MFR 42(1):9  
 Chile, MFR 42(1):9  
 Peru, MFR 42(1):8  
 Uruguay, MFR 42(1):10  
 world utilization  
 Australia, MFR 42(1):7  
 Brazil, MFR 42(1):7  
 foreign trade, MFR 42(1):6  
 France, MFR 42(1):6  
 Italy, MFR 42(1):7  
 Portugal, MFR 42(1):7  
 potential catches, MFR 42(1):5  
 products, MFR 42(1):5  
 Spain, MFR 42(1):6  
 United States, MFR 42(1):7  
 West Germany, MFR 42(1):6  
 world catch, MFR 42(1):4  
 Zaire, MFR 42(1):7
- Hake, longfin**  
 Atlantic Ocean, N.W.  
 food habits, S 740
- Hake, Pacific**—see also Whiting, Pacific  
 early life history  
 development and growth, FB 80:589  
 development times, FB 80:591  
 growth rates, FB 80:591  
 metabolic rates, FB 80:590, 593  
 vertical distribution, FB 80:590, 593
- Hake products**  
 industry outlook for greater utilization  
 fillets, MFR 42(1):1  
 fish sticks and portions, MFR 42(1):1  
 other forms, MFR 42(1):1
- Hake, red**  
 Atlantic Ocean, N.W.  
 food habits, S 740  
 domestic utilization, MFR 45(7-9):21  
 food of juvenile, FB 79:204  
 Gulf of Maine  
 trophic relationships, FB 79:775  
 larvae distribution patterns, MFR 45(10-12):20  
 Middle Atlantic Bight  
 food habits and trophic relationships, S 773  
 suitability for surimi, MFR 46(2):43  
 surimi production, MFR 46(2):44  
 utilization, MFR 42(1):32

- Hake, silver, FB 81:437  
 Atlantic Ocean  
 food habits, S 740  
 composition of diet, FB 82:24  
 diet overlap, between other northwest Atlantic finfish  
 butterfish, FB 80:754  
 cod, Atlantic, FB 80:754  
 flounder, fourspot, FB 80:757  
 flounder, witch, FB 80:756  
 flounder, yellowtail, FB 80:757  
 haddock, FB 80:754  
 hake, red, FB 80:754  
 hake, spotted, FB 80:754  
 hake, white, FB 80:754  
 plaice, American, FB 80:756  
 pollock, FB 80:754  
 pout, ocean, FB 80:756  
 redfish, FB 80:752  
 sculpin, longhorn, FB 80:752  
 scup, FB 80:754  
 skate, little, FB 80:751  
 domestic utilization, MFR 45(7-9):21  
 fish blocks  
 economic feasibility of processing into, MFR 42(1):26  
 food of juvenile, FB 79:203  
 geographic feeding distribution, FB 82:24  
 Middle Atlantic Bight  
 food habits and trophic relationships, S 773  
 migration patterns, MFR 45(10-12):20  
 recruitment studies, MFR 45(10-12):4  
 stocks and fishery off northeastern United States  
 current trends by state, MFR 42(1):14  
 current trends by stock, MFR 42(1):15  
 historical development, MFR 42(1):13  
 implications of expanded U.S. fishery, MFR 42(1):19  
 stock definition, MFR 42(1):12  
 stock status, MFR 42(1):18  
 stomach contents, FB 82:23  
 suitability for surimi, MFR 46(2):43  
 surimi production, MFR 46(2):44  
 Hake, spotted  
 food of juvenile, FB 79:204  
 Middle Atlantic Bight  
 food habits and trophic relationships, S 773  
 Hake, white  
 Atlantic Ocean, N.W.  
 food habits, S 740  
 food of juvenile, FB 79:204  
 Halibut, Greenland  
 age and growth, FB 81:600  
 Canadian northwest Atlantic, FB 81:600  
 sexual maturity, FB 81:601, 605, 609  
*Halobates* species  
 distribution and abundance in eastern tropical Pacific  
 cooccurrence, FB 78:589  
 temperature effects, FB 78:589  
 Hanford, Washington  
 Columbia River  
 snout dimorphism in white sturgeon, FB 80:158
- Harbors  
 commercial fishing facilities  
 Santa Barbara County, California, TM F/SWR-001  
 commercial fishing facility (continued)  
 Ventura County, California, TM F/SWR-001  
 fishing industry expansion  
 Santa Barbara County, California, TM F/SWR-001  
 Ventura County, California, TM F/SWR-001  
 Harvesting technology  
 whiting, Pacific, MFR 47(2):47  
 Hatchery release, salmon, FB 82:157  
 Hatchery studies  
 chinook salmon fishery in Alaska, TR 27  
 salmon, chinook, TR 27  
 salmon, chum, TR 27  
 salmonid tagging and tracking, TR 27  
 Hawaii  
 fish  
 per capita annual utilization and consumption, 1970-77, MFR 42(2):16  
 fish aggregating devices, anchored, MFR 43(9):1  
 fishery, deep-sea handline  
 multispecies analysis, commercial, FB 80:435  
 fishes, mesopelagic  
 diets of vertically migrating, FB 78:619  
 fishes, stomiatoid  
 feeding habits, FB 80:287  
 shellfish  
 per capita annual utilization and consumption, 1970-77, MFR 42(2):16  
 turtles, green  
 radio telemetry at breeding colony, MFR 44(5):13  
 recovery efforts, TM SWFC-36  
 synopsis of biological data, TM SWFC-7  
 Hawaiian Archipelago, seamount survey  
 bottom topography, MFR 46(2):7  
 sampling gear, MFR 46(2):8  
 seamounts, MFR 46(2):1  
 Hawaiian fishery  
 snapper, pink, FB 82:703  
 Hawaiian Islands  
 fishes and shellfishes  
 chlorinated hydrocarbon levels, MFR 43(1):1  
 Hawaiian Islands, northwestern  
 predation on released spiny lobsters, MFR 47(1):27  
 Headboat catches  
 to determine reef fish distributions in North and South Carolina, TM SEFC-115  
 Headstart Project  
 Kemp's ridley sea turtles  
 annual report, 1984, TM SEFC-152  
 Helen Reef  
 Palau, Western Caroline Islands  
 tridacnid clam stocks, MFR 42(2):8  
*Helicolenus maculatus*  
 helminth fauna of, TR 25  
 Helminth fauna  
 seal, spotted  
 subpopulations in Bering Sea, TR 12  
 Helminth infections  
 cestode, *Scolex pleuronectis*, FB 81:895  
 trematode, *Aphanurus* sp., FB 81:895

## Helminths

- parasitology and pathology of marine organisms of the world ocean, TR 25
- taxonomic composition and origin of in the world ocean, TR 25
- Hematopoietic necrosis virus
  - salmon, chinook
  - susceptibility differences among, TM F/NWC-22
- Hemilepidotus zapus*—see Lord, longfin Irish
- Hemirhamphidae
  - proximate chemical composition, MFR 46(3):71
- Hemitripteris americanus*
  - trophic patterns among larvae in estuary, FB 80:827
- Heptacarpus camtschaticus*
  - description
    - stage I zoeae, FB 79:434
- Herklotsichthys quadrimaculatus*—see Herring, gold spot
- Herring, FB 81:124
  - tagging with coded-wire microtags
    - equipment and methods, MFR 44(3):18
    - field tagging study, MFR 44(3):20
    - tag recovery, MFR 44(3):20
    - tag retention, MFR 44(3):19
- Herring, Atlantic, FB 82:113
  - age and growth of larval based on otolith growth increments
    - growth curve compared with other field studies, FB 80:196
    - laboratory-reared larvae, FB 80:191
    - larval growth, FB 80:194
    - otolith growth, FB 80:192
  - growth comparison studies, FB 83:289
  - mortalities of larvae exposed to acute thermal shock, FB 79:198
  - pressure sensitivity, FB 80:567
  - Sheepscot River estuary, Maine
    - growth and age structure of larval, as determined by daily growth increments in otoliths, FB 79:123
  - stock recovery trends, MFR 45(10-12):18
- Herring, Atlantic thread
  - proximate chemical composition, MFR 46(1):19
- Herring, Atlantic and Gulf coastal
  - proximate chemical composition, MFR 46(1):19
  - proximate composition analyses
    - fatty acids, MFR 46(1):20
    - oil, MFR 46(1):19
    - protein, MFR 46(1):20
- Herring, blueback
  - diet and spawning in the Chowan River, North Carolina, FB 83:711
  - effect of TBHQ antioxidant, TM SEFC-75
  - lipid oxidation during frozen and superchilled storage, TM SEFC-75
  - offshore distribution along the Atlantic coast
    - commercial catches, FB 79:481
    - depth distribution, FB 79:482
    - seasonal distribution, FB 79:476
- Herring, coastal
  - fatty acids
    - canning medium, effect of, MFR 45(4-6):47
    - eicosapentaenoic acid, MFR 45(4-6):45
    - highly unsaturated (HUFA), MFR 45(4-6):45
    - polyunsaturated (PUFA), MFR 45(4-6):45
  - marketability, MFR 45(4-6):45
  - potential, MFR 45(4-6):45
  - proximate composition, MFR 45(4-6):45

- Herring, coastal (continued)
  - utilization, MFR 45(4-6):45
  - yield, Gulf of Mexico, MFR 45(4-6):45
- Herring, gold spot
  - age and growth, FB 81:593, 595
  - biology, FB 81:590
  - food habits, FB 81:590
  - Hawaii, FB 81:587
  - history, FB 81:589
  - otoliths, FB 81:588, 593
  - reproduction, FB 81:591, 595
  - sagittae, FB 81:588
- Herring, middling thread
  - observations. warm water periods, California, MFR 45(4-6):27
- Herring, Pacific, FB 81:815
  - applications of satellite data for fisheries management, MFR 46(3):5
  - fishery harvest
    - cohort analysis of catch data, 1959-81. TM F/NWC-24
    - east Bering Sea, 1964-80. TM F/NWC-14
  - growth rate, FB 82:115
  - larvae, FB 82:113
  - otoliths, FB 82:113
  - ring deposition, FB 82:115
- Herring, thread
  - maximum yield estimates for Costa Rica fishery
    - catch and effort statistics estimation, FB 79:692
    - management implications, FB 79:701
    - model evaluation, FB 79:699
    - unit stock definition, FB 79:691
    - yield analyses, FB 79:694
  - proximate chemical composition, MFR 45(4-6):45
- Herring, White Sea
  - trematode infestation, TR 25
- Herring fishery
  - Strait of Georgia, timely management
    - acoustic survey equipment and methods, FB 80:382
    - catch records, FB 80:384 1976-79
    - surveys, FB 80:384-386
    - spawning ground surveys, FB 80:384
    - trawling procedures, midwater, FB 80:383
- Herring weir entrapment, FB 81:660
- Heterocarpus ensifer*, FB 81:435
- Heterocarpus laevigatus*, FB 81:435
- Heterocarpus longirostris*—see Shrimp, deepwater pandalid
- Heterocarpus* spp.—see Shrimp
- Hexagrammidae
  - ichthyoplankton off Alaska, TR 20
- Hexagrammids—see Greenlings
- Hexagrammos decagrammus*—see Greenling, kelp
- Hexagrammos lagocephalus*—see Greenling, rock
- Hexagrammos octogrammus*—see Greenling, masked
- Hexagrammos stelleri*—see Greenling, whitespotted
- Hippoglossoides platessoides*—see Plaice, American
- Hippoglossoides* sp.—see Flounder
- Hippolytidae—see also Shrimp
  - early zoeal stages
    - characterization of zoeae of *Spirontocaris* s.s. and related genera, FB 79:438
    - comparison of zoeal stages with descriptions by other authors, FB 79:435
    - description, FB 79:422

- Histamine**  
 defect levels in tuna, MFR 45(4-6):42  
 distribution in decomposed fish, MFR 45(4-6):43  
 formation, MFR 45(4-6):40  
   equation describing, MFR 45(4-6):41, 42  
   incubation time-temperature, MFR 45(4-6):41  
   microbial decarboxylation of free histidine, MFR 45(4-6):40  
 hazard levels in tuna, MFR 45(4-6):42  
 identification of isolates using API 20E *Enterobacteriaceae* system, MFR 45(4-6):36, 37  
 index of microbial decomposition in tuna, MFR 45(4-6):40  
 nomograph to determine, MFR 45(4-6):40  
 organisms responsible, MFR 45(4-6):40  
 production, MFR 45(4-6):37  
 tuna, skipjack  
   formation during decomposition at elevated temperatures, MFR 43(10):9
- Histidine, free**  
 histamine production, MFR 45(4-6):40  
 scombroid fish levels, MFR 45(4-6):35
- Histioteuthis dofleini***  
 identification, TR 17
- Histioteuthis heteropsis***  
 identification, TR 17
- Histology**  
 analysis  
   gonads of bigeye tuna and yellowfin tuna from northwest Atlantic and Gulf of Mexico, late summer-early winter collections, TM SWFC-14  
 techniques  
   marine bivalve mollusks, TM F/NEC-25
- Histopathology**  
 manual for use in relation to pollutant burdens in striped bass, TM SWFC-46
- Historical catch data**  
 Georges Bank, 1904-1982, TM F/NEC-39
- Historical trends**  
 dolphin, FB 81:617  
 El Niño, FB 81:363  
 herring, gold spot, FB 81:589  
 subtropical rainfall, FB 81:363  
 weakfish growth, FB 81:809
- Hogchoaker**  
 marsh habitat, FB 82:457
- Hogfish**  
 courtship and spawning observations, FB 80:853  
 egg and larval development, FB 80:858  
 egg collection and rearing, FB 80:854  
 spawning behavior, FB 80:855  
 spawning groups of *L. maximus*, FB 80:855  
 study site, FB 80:854  
 time and conditions of spawning, FB 80:855
- Homarus americanus***—see Lobster, American
- Homing experiments**  
 Columbia River  
   broods of salmon and steelhead trout, 1939-44, TM F/NWC-11
- Homing habits**—see Migration
- Homing studies**  
 salmon, chum, TR 27
- Homosassa, Florida**  
 turtles, marine  
   radio tracking juvenile, MFR 43(3):20
- Honeycombing**  
 tuna, skipjack  
   analysis, MFR 46(2):41  
   definition, MFR 46(2):40  
   during decomposition at elevated temperatures, MFR 43(10):9  
   evaluation, MFR 46(2):40
- Hope Basin, Alaska**  
 assessment of living marine resources, TM F/AKR-3
- Host-parasite relationship**  
 host size, scombrids, FB 81:227
- Hotelling's T2-test**, FB 82:101
- Hudson River estuary**  
 perch, white  
   biology, FB 80:599
- Human effects**—see Habitat effects
- Husbandry**  
 Kemp's ridley sea turtles  
   hatchling to yearling, TM SEFC-158
- Hyaloteuthis pelagica***  
 identification, TR 17
- Hyas araneus***—see Crab, spider
- Hybridization**  
 of salmonids  
   annotated bibliography, TM NWFC-1
- Hybrids, fish**  
 literature 1971-80, S 750
- Hydrocarbon levels, chlorinated**  
 Pacific Ocean, northeastern  
 fishes, MFR 43(1):4  
 Hawaii, MFR 43(1):10  
 plankton, MFR 43(1):3  
 sea cucumbers, MFR 43(1):3  
 shellfishes, MFR 43(1):3
- Hydrocarbon residues, chlorinated**  
 survey in menhaden fishery products, MFR 43(3):1
- Hydrocarbons**  
 Buccaneer gas and oil field  
   environmental assessment, TM SEFC-41  
   milestone report to the Environmental Protection Agency (EPA), TM SEFC-47, TM SEFC-51  
 Louisiana salt dome brine disposal sites  
   biochemical survey, 1978-79, TM SEFC-30  
   petroleum effects of marine organisms, TM F/NWC-67
- Hydroelectric dams**  
 tracking studies, lower Columbia River  
   salmonids and steelhead trout, 1971-77, TM F/NWC-81
- Hydrographic information**  
 user's guide to inshore shrimp data collected by Texas Parks and Wildlife Department, 1963-80, TM SEFC-140
- Hydrography**  
 Buccaneer gas and oil field  
   environmental assessment, TM SEFC-40  
   milestone report to Environmental Protection Agency, TM SEFC-50  
 Georges Bank, TM F/NEC-38  
 humpback whale survey, TM F/NWC-66  
 Nantucket Shoals  
   flux experimental data, TM F/NEC-23  
   shipboard observations, TM F/NEC-38
- Hydrolagus colliei***—see Ratfish
- Hyperoglyphe japonica***—see Butterfish
- Hypomesus pretiosus***—see Smelt, surf

- Hypomesus transpacificus*—see Splittail
- Hypoprion  
revision of shark genus *Carcharhinus*, TR 34
- Hypoxia  
bibliography, TR 21
- I**
- Ichthyoplankton  
distribution and abundance off Alaska, TR 20  
Florida Everglades  
sampling, TR 6  
larvae distribution and abundance, Gulf of Mexico  
Carangidae, TM SEFC-144  
Clupeidae, TM SEFC-144  
Coryphaenidae, TM SEFC-144  
Engraulidae, TM SEFC-144  
Istiophonidae, TM SEFC-144  
Lutjanidae, TM SEFC-144  
Serranidae, TM SEFC-144  
Xiphiidae, TM SEFC-144  
off San Onofre, California  
abundance, FB 82:103, 108  
cross-shelf patterns, FB 82:102  
ontogenic pattern changes, FB 82:105, 108  
sampling, shallow waters, FB 82:99  
vertical migration, FB 82:103, 107  
Onslow Bay  
Newport River estuary, North Carolina catch composition,  
distribution, and seasonality, TM SEFC-46  
SEAMAP, 1983, TM SEFC-167  
summer  
diel-depth distribution in Middle Atlantic Bight  
*Auxis* sp., FB 79:723  
*Citharichthys arctifrons*, FB 79:717  
*Etropus microstomus*, FB 79:723  
*Hippoglossina oblonga*, FB 79:720  
*Merluccius bilinearis*, FB 79:712  
*Peprilus triacanthus*, FB 79:720  
*Pisodonophis cruentifer*, FB 79:721  
*Pomatomus saltatrix*, FB 79:709  
*Urophycis* spp., FB 79:720  
survey estimates  
northeastern U.S., TM F/NEC-30  
vertical distribution off the Oregon coast, FB 83:611  
Ichthyoplankton studies—see also Large Marine Ecosystems  
*Icichthys lockingtoni*—see Medusafish  
*Illex illecebrosus*—see also Squid, short-finned  
quality of mantles canned in oil, MFR 43(6):17  
Incubation  
anchovies, egg larvae  
temperature dependent time parameters, TM SWFC-31  
Incubators  
for salmonids, TM ABFL-1  
gravel hatchery, TM ABFL-3  
Incubators, gravel  
effects of seeding density of pink salmon eggs on water chemistry  
and fry characteristics and survival, FB 78:649  
Indexes  
U.S. fishing industry  
economic health of harvest sector, F/NEC-40  
snappers, western Atlantic, TM SEFC-8  
Indian Ocean  
parasitofauna of sailfish, TR 25  
Infection, PEN, FB 82:542  
Infectious hematopoietic necrosis virus (IHNV), MFR 46(3):14  
Infrared imagery  
continental shelf  
Georges Bank, TM F/NEC-38  
Nantucket Shoals, TM F/NEC-38  
INPFC  
Japanese high sea salmon fishery, TM F/AKR-1  
Instrumentation  
particle counter, FB 82:142, 144  
International Commission for North Atlantic Fisheries (ICNAF)  
finfish biomass quotas, northwest Atlantic, MFR 45(10-12):23  
International Whaling Commission (IWC), MFR 46(4):21, 26, 35,  
39, 47, 59  
Interspecific hybridization  
salmonidae  
annotated bibliography, TM NWFC-1  
Invertebrate  
benthic, FB 81:515, 519  
benthic community structure  
relationships between wave disturbance and zonation in Monterey  
Bay, California  
canyon ridge transect, FB 78:448  
crustacean zone, FB 78:443  
environmental setting, FB 78:439  
polychaete zone, FB 78:446  
sandflat, northern, FB 78:447  
seasonal patterns, FB 78:449  
benthic marine equilibrium settlement rates, FB 80:642  
Chukchi Sea and Bering Sea  
trawl-caught, S 764  
community structure  
eastern Bering Sea, 1971-77, TM F/NWC-40  
eastern Bering Sea, 1978-81, TM F/NWC-35  
kelp forest, FB 82:57  
Invertebrate communities  
Atlantic Bight, South  
benthic invertebrates, TR 18  
biomass density, TR 18  
habitat diversity, TR 18  
species composition, TR 18  
Invertebrates, macrobenthic  
Martha's Vineyard, Mass.  
biomass, S 783  
density, S 783  
environmental factors, S 783  
Investment—see Economic studies  
Irrigation  
Columbia River  
screening of irrigation diversions, TM F/NWR-12  
Isopoda  
life history, distribution, and abundance in New York Bight, S 766  
*Isopsetta isolepis*—see Sole, butter  
Isotherms, sea surface  
observations of albacore fishing off California, TM  
SWFC-11  
Istiophoridae  
ichthyoplankton larval distribution and abundance  
Gulf of Mexico, 1982, TM SEFC-144  
*Istiophorus platypterus*—see Sailfish



## J

---

- Jack, crevalle  
evaluating hard parts for age determination, TM SEFC-132  
food preferences  
from Florida, Louisiana, and Texas, TM SEFC-134
- Jack, green  
observations, warm water periods, California, MFR 45(4-6):27
- Jacks  
Atlantic Ocean, Gulf of Mexico, and Caribbean Sea  
guide to fishes taken in longlining, C 435
- Jamaica freshwater shrimp, FB 81:654
- Japan  
aquaculture status report  
phytoplankton, C 442  
fur seals, northern  
pelagic data and collection procedures, 1958-78, TM F/NWC-4  
import regulations  
fish and shellfish products, TM F/SWR-003  
investigations  
joint U.S. bottom trawl survey, eastern Bering Sea, 1981, TM F/NWC-88  
joint U.S. groundfish study, eastern Bering Sea, 1982, TM F/NWC-87  
joint U.S. groundfish trawl survey, Aleutian Islands, 1980, F/NWC-93  
longline fishing, Atlantic and Gulf of Mexico  
fishing activity and catch rates, 1979 and 1980, TM SEFC-125  
observer data versus Japanese quarterly reports, 1979, TM SEFC-64  
observer data versus Japanese quarterly reports, 1980, TM SEFC-125  
porphyra  
brown algae, C 442  
squid fishing industry, MFR 42(7-8):1
- Japanese fishery  
longline catches  
Pacific cod and sablefish, Gulf of Alaska, 1978-83, TM F/NWC-82  
salmon  
INPFC, loss of constraints, and economic implications, TM F/AKR-1
- Jellyfish  
squid jigging experiments, MFR 45(7-9):57
- Jersey rake—see Clam rake
- Juveniles  
menhaden, gulf, FB 82:93

## K

---

- Kachemak Bay  
larvae, king crab and pandalid shrimp  
distribution and abundance, S 765
- Karyotypic analysis  
subspecific taxonomy of mammals  
annotated bibliography, TM SWFC-9
- Katsuwonus pelamis*, FB 81:435—see also Tuna; Tuna skipjack
- Kelp  
giant, FB 82:37, 55  
rocky reef, FB 82:37

- Kelp (continued)  
rope culture in Alaska  
appearance, growth, and size of young-of-the-year and yearling plants, MFR 43(2):19  
methods, MFR 43(2):19  
study area, MFR 43(2):19
- Kelp forests  
off San Onofre, California  
characteristics, FB 82:37  
cinetransect calibration, FB 82:43  
sampling methods, FB 82:38  
transects, FB 82:40  
vertical stratification, FB 82:44  
off Santa Catalina Island, California  
algal community, FB 82:55  
biomass, FB 82:56  
composition, FB 82:55  
habitat reef, FB 82:55  
invertebrate assemblages, FB 82:55  
seasonal dynamics, FB 82:58, 60, 64  
vertical stratification, FB 82:56, 58, 64
- Kelpfish, giant, FB 82:37
- Kelpfish, halfmoon, FB 82:37
- King-of-the-salmon—see Ribbonfish
- Kingfish, Kanadi—see Mackerel, Queensland school
- Kingfish, southern  
distribution, FB 82:427, 429  
length-frequency, FB 82:430  
length-weight, FB 82:432
- Klebsiella pneumoniae*  
isolated from scombroid fish poisoning incidents, MFR 45(4-6):35, 38  
isolated from skipjack tuna, MFR 45(4-6):40
- Kochi prefecture, Japan  
finfish culture, TR 10
- Kodiak Island, Alaska  
ichthyoplankton off the Continental Shelf, TR 20
- Krill  
Antarctic  
review of utilization research, S 769
- Krohnitta pacifica*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Krohnitta subtilis*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Kudoa quadratum*  
ultrastructure and cytochemistry, TR 25
- Kudoa* spp.—see parasites, Myxosporean

## L

---

- Laboratory culture  
diet effects on spot prawn larvae, TM F/NWC-68
- Labridae  
proximate chemical composition, MFR 46(3):71  
seamount fishery research, central North Pacific, MFR 46(2):11
- Lachnolaimus maximus*—see Hogfish
- Lacistorhynchus tenuis* (metacestode)  
infection in striped bass, TR 29

- Lactation  
juvenile dolphin survival rate, TM SWFC-51
- Ladyfish  
evaluating hard parts for age determination, TM SEFC-132
- Lagenodelphis hosei*—see Dolphin, Fraser's
- Lagenorhynchus acutus*—see Dolphin, Atlantic whitesided
- Lagenorhynchus obliquidens*—see Dolphin, Pacific white-sided
- Lagodon rhomboides*—see Fish, seagrass; Pinfish
- Laguna San Ignacio  
Baja California Sur, Mexico  
cleaning symbiosis between topsmelt and gray whale, FB 79:360
- Laminaria groenlandica*—see Kelp
- Lampetra ayresi*—see Lamprey, river
- Lampfish, northern, FB 82:68
- Lamprey, river  
Columbia River estuary, FB 81:165  
growth and upstream migration, FB 81:166  
marine life, FB 81:165  
Yaquina Bay, Oregon, FB 81:165
- Lamprey, sea  
viral eurythrocytic necrosis (VEN), FB 82:543
- Lancetfishes  
Atlantic Ocean, northwestern, the Gulf of Mexico and the Caribbean Sea  
guide to fishes taken in longlining, C 435
- Large Marine Ecosystems (LME)  
CalCOFI studies, MFR 45(10-12):4, 7  
California current, MFR 45(10-12):3  
Eastern Bering Sea, MFR 45(10-12):3  
fisheries studies, MFR 45(10-12):3  
ichthyoplankton surveys, MFR 45(10-12):3  
Gulf of Alaska, MFR 45(10-12):3  
Gulf of Mexico, MFR 45(10-12):3  
management  
environmental studies, MFR 45(10-12):23  
population surveys, MFR 45(10-12):23  
resource assessment, MFR 45(10-12):23
- Northeast Continental Shelf LME, MFR 45(10-12):3
- Northeast Fisheries Center, NMFS  
density-dependent recruitment studies, MFR 45(10-12):22  
ecosystem linkages, MFR 45(10-12):19  
larval production, MFR 45(10-12):21  
Narragansett Laboratory, MFR 45(10-12):22
- Northwest and Alaska Fisheries Center, NMFS  
areas of interest, MFR 45(10-12):12  
Eastern Bering Sea, MFR 45(10-12):12, 13  
egg-larvae guide, MFR 45(10-12):12  
Gulf of Alaska, MFR 45(10-12):12, 15  
ichthyoplankton survey locations, MFR 45(10-12):17  
Pacific salmon studies, MFR 45(10-12):16  
pollution stress, MFR 45(10-12):17  
Washington-Oregon coast, MFR 45(10-12):12, 15
- pollution studies, MFR 45(10-12):22
- primary production studies, MFR 45(10-12):20
- sampling strategy, MFR 45(10-12):19
- Southeast Fisheries Center, NMFS  
bluefin tuna assessments, MFR 45(10-12):6  
Gulf of Mexico, MFR 45(10-12):3  
ichthyoplankton identification, MFR 45(10-12):5  
ichthyoplankton surveys, Gulf, MFR 45(10-12):4  
pollution stress, MFR 45(10-12):7
- Large Marine Ecosystems (LME) (continued)  
Southeast Fisheries Center, NMFS (continued)  
Southeast Area Monitoring Assessment and Prediction (SEAMAP), MFR 45(10-12):6
- Southwest Fisheries Center, NMFS  
CalCOFI population assessments, MFR 45(10-12):11  
CalCOFI studies, MFR 45(10-12):7  
California Current, MFR 45(10-12):7  
Honolulu Laboratory studies, MFR 45(10-12):12  
larval fish identification, MFR 45(10-12):7  
physiological ecology studies, MFR 45(10-12):7  
pioneering studies, MFR 45(10-12):7  
pollution stress, MFR 45(10-12):12  
sardine, anchovy abundance, MFR 45(10-12):9  
Tiburon Laboratory studies, MFR 45(10-12):12  
Washington-Oregon coast, MFR 45(10-12):3  
stressed northeast shelf ecosystems, MFR 45(10-12):18  
target species recruitment studies, MFR 45(10-12):3  
trawl surveys, MFR 45(10-12):4
- Larimus fasciatus*—see Drum, banded
- Larvae  
anchovy  
three parameters associated with abundance, TM SWFC-31  
anchovy, northern, FB 81:741  
anchovy, northern  
percentage of starving in southern California Bight, FB 78:475  
cod, Arcto-Norwegian, FB 82:141, 148  
cod, Atlantic, FB 81:834  
crab, FB 82:315  
crabs, lithodid, FB 82:321  
croaker, FB 81:895  
croaker, Atlantic, FB 81:405  
croaker, white, FB 82:188, 195  
eel, Atlantic, FB 81:483  
effects of deep seabed mining on tuna and billfishes, TM SWFC-44  
fish, Caribbean, S 776  
fish census method, TR 36  
fish, environmental effects, FB 83:313
- Florida Everglades  
ichthyoplankton sampling, TR 6
- flounder, winter, FB 81:913
- food web off southern California coast, FB 83:151
- haddock, FB 81:834
- herring, Atlantic, growth studies, FB 83:289
- Hexagrammid development, TR 2
- herring, Pacific, FB 82:113
- ichthyoplankton, FB 82:97  
distribution and abundance, Gulf of Mexico, TM SEFC-144
- Kachemak Bay  
king crab and pandalid shrimp, S 765
- lobster, American, S 775
- lobster, spiny, FB 82:694
- lord, longfin Irish, development in Bering Sea, FB 83:447
- menhaden, FB 81:895
- menhaden, Atlantic, S 774
- menhaden, gulf, FB 82:88, 513
- pigfish, FB 81:847
- pollock, walleye, FB 81:890
- sable fish growth, FB 83:475
- sculpin, C 430
- sculpin, longhorn, FB 81:785

- Larvae (continued)  
 scup, FB 82:77  
 shad, American, FB 81:324  
 shrimp, FB 82:523, FB 83:253  
 shrimp, pink, FB 81:455  
 spot, FB 81:405, 895, FB 83:587  
 teleost taxonomy, C 450
- Laysan Island  
 Hawaiian monk seal, 1982, TM SWFC-42  
 Hawaiian monk seal observations, 1977-80, TM SWFC-49
- Leachia danae*  
 identification, TR 17
- Leatherjackets  
 osteology, phylogeny, and higher classification, C 434
- Leavenworth National Fish Hatchery  
 effects of volcanic ash on juvenile salmon smolts, MFR 45(2):9
- Lebbeus polaris*  
 description  
 stage I zoeae, FB 79:422  
 stage II zoeae, FB 79:425
- Leiostomus xanthurus*—see Spot
- Length-frequency distributions  
 reef fishes, Panama City, Florida, 1978-79, TM SEFC-61
- Lepidochelys kempi*—see Sea turtles, Kemp's ridley; Turtle, Atlantic  
 ridley; Turtle, Kemp's ridley
- Lepomis macrochirus*—see Bluegill
- Lepophidium cervinum*—see Cusk-Eel, fawn
- Leptocephali, congrid eel  
 key to genera, TR 22
- Leptocephali—see Eel, Atlantic
- Leptocottus armatus*—see Sculpin, Pacific staghorn
- Lethrinidae  
 proximate chemical composition, MFR 46(3):71
- Leuresthes tenuis*—see Grunion, California
- Leuroglossus* Gilbert, FB 81:24, 36
- Leuroglossus schmidti*—see Smoothtongue, northern
- Lichens  
 U.S., NE  
 collection methods, C 446  
 ecology, C 446  
 key to species, C 446
- Life history  
 crab, Dungeness, MFR 47(3):21  
 gobiid fishes  
 compared to ecological information, TM SEFC-15  
 whiting, Pacific, MFR 47(2):1
- Life stages  
 occurrence in some recreational marine fishes  
 in Gulf of Mexico estuaries, TM SEFC-45
- Limanda aspera*—see Sole, yellowfin
- Limanda ferruginea*—see Flounder, yellowtail
- Limulus polyphemus*—see Crab, horseshoe
- Ling cod  
 Pacific Ocean  
 development, TR 2
- Liocranchia reinhardtii*  
 identification, TR 17
- Liopsetta putnami*—see Flounder, smooth
- Lipids  
 classes in coastal herring, MFR 45(4-6):45
- Lironeca vulgaris*  
 otter trawl sampling bias of, from sanddab host, FB 80:907
- Lisianski Islands  
 Hawaiian monk seal  
 diving patterns, 1982, TM SWFC-41  
 population research, 1982, TM SWFC-47
- Literature review  
 exploitation of California sea lion, MFR 47(1):36
- Lithodes aequispina*—see Crab, golden king
- Lithodes couesi*—see Crab, deep-sea king
- Little Goose Dam  
 salmonids, juvenile  
 evaluation of a bypass system, MFR 42(6):25
- Little White Salmon National Fish Hatchery  
 effects of volcanic ash on juvenile salmon smolts, MFR 45(2):9
- Lobster  
 molting, FB 82:529  
 spawning, FB 82:529
- Lobster, American  
 Carolinian records for, postulated means of dispersal, FB 79:192  
 CPUE, FB 81:52  
 damage from scallop drags, FB 83:575  
 distribution and abundance of larvae, S 775  
 egg extrusion, prediction, FB 82:243  
 fecundity in Newfoundland waters, FB 79:796  
 lobster traps, FB 81:52, 56
- Long Island Sound  
 population characteristics, S 770
- Maine coast  
 movements, growth, and mortality from taggings, S 747  
 molt prediction, FB 82:243  
 movements of tagged off Rhode Island, FB 78:771  
 resorption, FB 82:248  
 size-maturity, FB 82:244
- Lobster, rock  
 factors affecting growth, FB 83:567  
 stock and recruitment relationships in Western Australia  
 breeding stock, FB 80:478  
 breeding stock abundance, FB 80:476  
 index of abundance of spawning stock, FB 80:478  
 juvenile abundance, FB 80:477, 480  
 juvenile densities and recruitment to the fishery, FB 80:482  
 puerulus and juvenile densities, FB 80:481  
 puerulus settlement and subsequent spawning stock, FB 80:482  
 puerulus stage abundance, FB 80:477, 480  
 recruits to fishery abundance, FB 80:477, 480  
 spawning stock and puerulus settlement, FB 80:480  
 stock definition, FB 80:477
- Lobster, slipper  
 seamount fishery research, central North Pacific, MFR  
 46(2):13
- Lobster, spiny  
 allele examination, FB 82:695  
 effects of injuries and implications for fishery management, FB  
 78:979  
 electrophoresis, FB 82:695  
 enzyme variation, FB 82:695  
 genetic variation, FB 82:693  
 predation during testing in northwestern Hawaiian Islands, MFR  
 47(1):27
- Lobster traps  
 crab, Jonah, FB 81:52  
 crab, rock, FB 81:52  
 lobster, American, FB 81:52

- Logging  
 effects on small streams, TM F/NWC-73
- Loligo opalescens*—see also Squid, market; Squid, Pacific market  
 identification, TR 17
- Loligo pealei*—see Squid, long-finned
- Long Island Sound, New York  
 contaminants  
 effects on benthos, TM F/NEC-16  
 in demersal species and sediments, TM F/NEC-16  
 population characteristics of the American lobster, S 770  
 shark, white, observations off, FB 80:153
- Longline—see Fishery
- Longline exploration  
 for albacore in eastern North Pacific, 1981, TM SWFC-10
- Longline gear, halibut  
 bait loss observed from a submersible, MFR 42(2):26
- Longline operations  
 Atlantic Ocean, the Gulf of Mexico and the Caribbean Sea  
 guide to fishes, C 435
- Longliners  
 foreign tuna catch and effort  
 central and western Pacific, 1965-77, TM SWFC-2
- Lophius americanus*—see Goosefish
- Lord, longfin Irish  
 development of larvae, FB 83:447
- Louisiana  
 ice plant survey, 1980-81, MFR 44(9-10):55  
 jack, crevalle  
 food preferences, TM SEFC-134  
 1981 closure  
 comparison of shrimp and finfish catch rates and ratios, MFR 44(9-10):44  
 salt dome brine disposal sites  
 biochemical survey, 1978-79, TM SEFC-25 to SEFC-33  
 shrimp, brown  
 movement and migration tagging experiment, 1978, TM SEFC-78  
 shrimp, white  
 effects of temperature on growth, TM SEFC-56  
 summary results of tagging experiments, 1977, TM SEFC-72  
 tail length/weight relationship, 1977, TM SEFC-57  
 shrimp closures  
 review, 1982, TM SEFC-108  
 review, 1983, TM SEFC-136  
 review, 1984, TM SEFC-156  
 summary of penaeid shrimp tagging experiments, 1979  
 movement and migration, TM SEFC-89
- Lutjanidae—see also snappers, western Atlantic  
 ichthyoplankton larval distribution and abundance  
 Gulf of Mexico, 1982, TM SEFC-144  
 proximate chemical composition, MFR 46(3):71  
 seamount fishery research, central North Pacific, MFR 46(2):11
- Lutjanus campechanus*—see Fish, reef; Snapper, red
- Lyopsetta exilis*—see Ichthyoplankton
- M**
- Mackerel, atka  
 preservation and processing study, MFR 47(1):73
- Mackerel, Atka Hokke  
 Pacific Ocean, N.E.  
 development, TR 2
- Mackerel, Atlantic  
 harvest estimate, Texas charterboat fishery, MFR 45(1):11  
 Middle Atlantic region, 1978 spring recreational catch  
 catch rate estimation, FB 78:801  
 fishing effort estimation, FB 78:800  
 lengths, weights, and age composition, FB 78:802  
 sampling, FB 78:799  
 recruitment studies, MFR 45(10-12):4  
 spawning and fecundity in Middle Atlantic Bight, FB 78:103  
 stock recovery trends, MFR 45(10-12):18  
 voluntary swimming speeds and respiration rates  
 experimental procedure, FB 78:878  
 feeding measurements, FB 78:882  
 initial and final measurements, FB 78:881  
 postfeeding measurements, FB 78:882
- Mackerel, Australian spotted  
 biology, FB 82:649  
 fisheries, FB 82:649  
 species type, FB 82:647
- Mackerel, broad-barré Spanish  
 biology, FB 82:661  
 fisheries, FB 82:661  
 geographic variation, FB 82:662  
 species type, FB 82:659
- Mackerel, bullet  
 observations, warm water periods, California, MFR 45(4-6):27
- Mackerel, chub, FB 82:68  
 fatty acid and lipid composition, MFR 45(4-6):45  
 seamount fishery research, central North Pacific, MFR 46(2):11
- Mackerel, Indo-Pacific king  
 biology, FB 82:634  
 fisheries, FB 82:635  
 geographic variation, FB 82:635  
 species type, FB 82:630
- Mackerel, jack  
 applications of satellite data for fisheries management, MFR 46(3):5  
 California  
 resource abundance, 1963-78, S 762  
 rearing container size affects morphology and nutritional condition of larval, FB 78:789
- Mackerel, Japanese Spanish  
 biology, FB 82:651  
 fisheries, FB 82:652  
 geographic variation, FB 82:652  
 species type, FB 82:649
- Mackerel, king  
 biology, FB 82:619  
 fisheries, FB 82:620  
 gear types, FB 81:713  
 immature group, FB 81:719  
 landings, Alabama charterboat fishery, MFR 45(1):15  
 Louisiana group, FB 81:720  
 otoliths, FB 81:99, 103, 104  
 possible temperature effects on charter boat catches in northwest Florida  
 catch seasonality, MFR 43(8):23  
 fish sizes, MFR 43(8):24  
 source and treatment of data, MFR 43(8):21  
 species composition and catch per hour, MFR 43(8):22  
 temperature, MFR 43(8):25  
 seasonal difference in size, FB 81:712

- Mackerel, king (continued)**  
 sex ratio, FB 81:712, 721  
 size at recruitment, FB 81:718  
 size comparison, FB 81:716  
 size limits, FB 81:718  
 southeastern United States, FB 81:97, 709  
 spawning group, FB 81:720  
 species type, FB 82:616
- Mackerel, Monterey Spanish**  
 biology, FB 82:629  
 fisheries, FB 82:629  
 species type, FB 82:628
- Mackerel, narrow-barred king**  
 biology, FB 82:626  
 fisheries, FB 82:626  
 geographic variation, FB 82:627  
 species type, FB 82:622
- Mackerel, Pacific**  
 applications of satellite data for fisheries management, MFR 46(3):5
- California**  
 resource abundance, 1963-78, S 762
- life history, early**  
 feeding behavior, FB 78:94  
 growth, FB 78:93  
 hatching, onset of feeding, and starvation, FB 78:91  
 laboratory experiments and sea samples, FB 78:89  
 larvae culture, FB 78:91  
 ration, growth efficiency, and metabolism, FB 78:97  
 swimming behavior, FB 78:94
- Mackerel, queen**  
 biology, FB 82:654  
 fisheries, FB 82:654  
 species type, FB 82:652
- Mackerel, Queensland school**  
 biology, FB 82:656  
 fisheries, FB 82:656  
 geographic variation, FB 82:656  
 species type, FB 82:654
- Mackerel, scad**  
 seamount fishery research, central North Pacific, MFR 46(2):11
- Mackerel, serra Spanish**  
 biology, FB 82:614  
 fisheries, FB 82:615  
 species type, FB 82:613
- Mackerel, snake**  
 Atlantic Ocean, the Gulf of Mexico and the Caribbean Sea  
 guide to fishes taken in longlining, C 435  
 seamount fishery research, central North Pacific, MFR 46(2):9
- Mackerel, Spanish**  
 biology, FB 82:643  
 characters for analysis, FB 82:690  
 fisheries, FB 82:645  
 geographic variation, FB 82:646  
*Grammatorcynus*, *Acanthocybin*, and *Scomberomorus*, FB 82:547  
 landings, Texas charterboat fishery, MFR 45(1):15  
 morphology, FB 82:549  
 relationships of species, FB 82:670  
*Scomberomorus brasiliensis*, FB 82:613  
*S. cavalla*, FB 82:616  
*S. commerson*, FB 82:622
- Mackerel, Spanish (continued)**  
*S. concolor*, FB 82:628  
*S. guttatus*, FB 82:630  
*S. koreanus*, FB 82:636  
*S. lacepede*, FB 82:611  
*S. lineolatus*, FB 82:638  
*S. maculatus*, FB 82:641  
*S. miphonius*, FB 82:649  
*S. multiradiatus*, FB 82:646  
*S. munroi*, FB 82:647  
*S. plurineatus*, FB 82:652  
*S. queenslandicus*, FB 82:654  
*S. regalis*, FB 82:657  
*S. semifasciatus*, FB 82:659  
*S. sierra*, FB 82:662  
*S. sinensis*, FB 82:665  
*S. tritor*, FB 82:668  
 species biology, FB 82:611  
 species type, FB 82:641
- Mackerel, West African Spanish**  
 biology, FB 82:670  
 fisheries, FB 82:670  
 species type, FB 82:668
- Mackerel-like fishes**  
 guide to fishes taken in longlining, C 435
- Macrobenthic, invertebrates—see Invertebrates, macrobenthic**
- Macrobrachium faustinum*—see Shrimp, freshwater**
- Macrobrachium rosenbergii*—see Prawn, freshwater**
- Macrocytis pyrifera*—see Kelp, giant**
- Macrouridae**  
 ichthyoplankton off Alaska, TR 20
- Macrozoarces americanus*—see Pout, ocean**
- Magelonida**  
 life history, distribution, and abundance in New York Bight, S 766
- Magnuson Fishery Conservation and Management Act of 1976 (MCFCMA)**  
 conservation and management of fishery resources, MFR 45(7-9):21  
 fisheries management and charterboat industry, MFR 46(3):48  
 total ecosystem management, MFR 45(10-12):23
- Mahi-mahi—see Dolphin fish**
- Maine**  
 fishery, FB 82:121  
 guide to trawl-caught fishes, C 431  
 input-output analysis of fisheries data, MFR 44(1):3  
 model construction, MFR 44(1):6  
 regional approach, MFR 44(1):2
- sculpins**  
 trophic patterns among larvae of five species in an estuary, FB 80:827
- Sheepscot Estuary**  
 sandworm, life history studies, FB 80:735
- Maine coast**  
 lobster movement, growth, mortality, S 747  
 worm fishery, S 767
- Makaira indica*—see Marlin, black**
- Mammals, marine**  
 harbor seals/disturbance, FB 82:493  
 harvest moratorium, NE North Pacific  
 incidental foreign catch, MFR 45(7-9):44  
 catch location, MFR 45(7-9):46  
 catch reporting, MFR 45(7-9):44

- Mammals, marine (continued)
- Harvest moratorium, NE North Pacific (continued)
    - estimating annual take, MFR 45(7-9):49
    - future monitoring, MFR 45(7-9):49
    - General Permit system, MFR 45(7-9):44
    - mortalities, MFR 45(7-9):45
    - observer data, 1978-81, MFR 45(7-9):45
  - interaction, FB 81:510
  - petroleum resource development, offshore
    - background, MFR 42(11):5
    - behavioral effects of oil, MFR 42(11):6
    - behavioral/psychological effects of noise, MFR 42(11):4
    - boat collision, MFR 42(11):5
    - indirect effects, MFR 42(11):10
    - ingestion and accumulation of oil, MFR 42(11):7
    - inhalation of oil, MFR 42(11):9
    - monitoring program, MFR 42(11):10
    - noxious effects of oil, MFR 42(11):7
    - oil countermeasures, MFR 42(11):9
    - oil detection and avoidance, MFR 42(11):5
    - physiological effects of noise, MFR 42(11):3
    - shock wave effects, MFR 42(11):1
    - thermal effects of oil, MFR 42(11):6
  - sea lions, California, FB 82:67
  - seals, harbor, FB 82:493
  - Soviet-American Research, TR 12
  - Soviet investigations of helminth fauna, TR 25
- Management
- Alaskan fur seal, S 780
  - northern fur seals on Pribilof Islands, Alaska, 1786-1981, TR 4
- Manatee, FB 81:501
- Manatee, West Indian
- Florida, western peninsular
    - aerial surveys, FB 80:621
- Margaritana margaritana*—see Mussel, freshwater
- Mariana Archipelago
- fishery resource assessment, MFR 47(4):19
- Mariculture
- mollusks in greater Caribbean, MFR 47(4):1
    - extensive culture, MFR 47(4):5
    - pilot project and research, MFR 47(4):6
    - semi-intensive culture, MFR 47(4):2
- Marine fish farms, Norwegian
- salmon, Atlantic, MFR 46(3):44
  - trout, rainbow, MFR 46(3):46
- Marine fisheries—see Delaware
- Marine flora and fauna
- Echinodermata: Echinoida
    - annotated systematics list, TR 33
    - distribution, TR 33
    - external morphology, TR 33
    - index, TR 33
    - key to species, TR 33
    - natural history, TR 33
  - United States
    - Ascomycetes, C 446
    - Protozoa: Sarcodina: Foraminifera, C 439
    - Scleractinian coral, C 438
    - Turbellaria: Acoela and Nemertodermatida, C 440
- Marine Mammal Protection Act (MMPA) of 1972
- harvest moratorium on marine mammals, MFR 45(7-9):44
  - NMFS responsibilities, MFR 46(3):18
- Marine Mammal Protection Act (MMPA) of 1972 (continued)
- protection of endangered whales, MFR 46(4):2
- Marine mammals—see Mammals, marine
- Marine Resources Monitoring Assessment and Prediction (MARMAP)
- ichthyoplankton and fish recruitment studies, MFR 45(10-12):1
  - survey cruises, FB 82:21
- Marine worm fishery—see Fishery, worm
- Market news
- future, MFR 47(2):104
  - goals, MFR 47(2):101, 103
  - history, MFR 47(2):102
  - purpose, MFR 47(2):100
- Marking technique
- salmon, chum, TR 27
- Markov decision models
- using, and related techniques for purposes other than simple optimization
    - defining the model on a discrete grid, FB 78:37
    - model, FB 78:36
    - policy analysis, FB 78:39
- Marlin, black
- Pacific Ocean, southwest
    - migration rates and patterns, S 772
- Marlin, Pacific blue
- electrophoresis, FB 81:86
  - Hawaiian waters, FB 81:85
- Marlin, striped
- Baja California
    - catch, MFR 45(7-9):63
    - weight, MFR 45(7-9):63
  - optimum catch temperatures, MFR 45(4-6):31
  - relationship of sea surface temperatures to catch off southern California, MFR 47(3):43
  - Southern California
    - harvest, MFR 45(7-9):63
    - sex ratios, MFR 45(7-9):64
    - weight data, MFR 45(7-9):63, 67
- Marlin, white
- landings, North Carolina charterboat fishery, MFR 45(1):16
- Marlin-spike
- Atlantic Ocean, N.E.
    - food habits, S 740
- Marshes, FB 82:455
- Martha's Vineyard, Mass.
- macrobenthic invertebrates, S 783
- Maryland
- fish and shellfish commercial landings
    - climatic factors, FB 80:611
- Massachusetts
- whales, right
    - Cape Cod waters, FB 80:875
- Mathematical techniques—see also Simulation
- age-growth estimation, FB 81:805
  - A. posteriori t*-tests, FB 82:101
  - Analysis of Variance (ANOVA), FB 82:101
  - biomass calculation, FB 82:446
  - clam growth rates, FB 82:537
  - mortality rates, FB 81:898
  - otolith growth, FB 81:529
  - percent similarity index, FB 81:375
  - power plant impact assessment, FB 81:615

- Mathematical techniques (continued)  
 regression analysis, FB 81:530  
 searching fisheries, FB 82:449
- Medusafish, FB 82:68
- Megaptera novaeangliae*—see Whale, humpback
- Melanogrammus aeglefinus*—see Haddock; see Hake, longfin
- Menhaden  
 chlorinated hydrocarbon residues in fishery products  
 DDT and its metabolites, MFR 43(3):4  
 dieldrin, MFR 43(3):8  
 endrin, MFR 43(3):8  
 PCB, MFR 43(3):5  
 results interpretation, MFR 43(3):11  
 statistical evaluations, MFR 43(3):9  
 fatty acid composition of, MFR 47(3):30  
 finescale, FB 82:85  
 yellowfin, FB 82:85
- Menhaden, Atlantic, FB 82:85  
 age, FB 81:134, 135  
 application of models to the field, FB 81:197  
 assimilation efficiency and nitrogen excretion, FB 79:601  
 chemical composition, FB 81:139  
 distribution of eggs and larvae, S 774  
*Ditylum*, FB 81:183, 186, 192  
*Ditylum brightwelli*, FB 81:179, 181, 196  
 energy budget, FB 81:177, 179, 184, 191  
 extension of model to particles of different size, FB 81:196  
 fishery sampling statistics, TR 9  
 Florida to Maine, FB 81:177  
 growth rate, FB 81:135  
*Holocanthus*, FB 81:193  
 ichthyoplankton and pollution stress studies, MFR 45(10-12):7  
 larvae distribution patterns, MFR 45(10-12):19  
 Narragansett Bay, Rhode Island, FB 81:133  
 nitrogen budget, FB 81:177, 183, 187  
 optimal foraging by planktivores, FB 81:195  
 recruitment studies, MFR 45(10-12):4  
 sampling statistics in fishery, TR 9  
 size, FB 81:134, 135
- Menhaden, gulf  
 comparison to other *Brevoortia* sp., FB 82:93  
 distribution, FB 82:85  
 diurnal vertical migration, FB 82:517  
 embryos, FB 82:87  
 infections, FB 81:895  
 larvae, FB 81:895, FB 82:88, 513  
 myomeres, FB 82:89  
 recruitment and exploitation  
 area-specific and age-specific exploitation rates, FB 79:333  
 mortality rate estimation from adult tag recoveries, FB 79:329  
 movement and recruitment of juvenile tagged fish, FB 79:326  
 tagging methodology, FB 79:325  
 spawning and sexual maturity  
 age and size of first spawning, FB 78:948  
 ova spawned, number, FB 78:950  
 stages of sexual maturity, FB 78:948  
 time and frequency of spawning, FB 78:949  
 swim bladder, FB 82:513
- Menidia menidia*—see Silverside, Atlantic
- Menticirrhus americanus*—see Kingfish, southern
- Mercenaria mercenaria*—see Clam, hard
- Mercury exposure  
 bass, striped  
 effects of long-term on hematology, FB 80:389
- Merluccius albidus*—see Hake, silver
- Merluccius bilinearis*—see Hake, silver; Whiting, Atlantic
- Merluccius productus*—see Hake, Pacific; Whiting, Pacific
- Mesh size  
 trawl, otter, S 771
- Micrococcus*  
 in freshly caught marine fish, MFR 45(4-6):35
- Microgadus proximus*—see Tomcod, Pacific
- Microgadus tomcod*—see Tomcod, Atlantic
- Micropanope sculptipes*  
 complete larval development in laboratory  
 comparative morphology with other xanthid larvae, FB 79:499  
 first zoea, FB 79:490  
 fourth zoea, FB 79:494  
 megalopa, FB 79:497  
 plesiomorphy and larval development, FB 79:503  
 second zoea, FB 79:492  
 status of *Micropanope* in Family Xanthidae, FB 79:505  
 third zoea, FB 79:494
- Micropogon undulatus*—see Croaker
- Micropogonias undulatus*—see Croaker, Atlantic
- Microstomus pacificus*—see Sole, Dover
- Midshipman, plainfin  
 environmental variables, FB 82:165  
 increment formation, FB 82:165  
 microstructure examination, FB 82:165  
 rearing, FB 82:165
- Migration—see also Movement patterns  
 albacore, MFR 47(3):48  
 bowhead and white whale, S 778  
 crab, horseshoe, FB 82:383  
 crab, snow, FB 83:707  
 diel, blacksmith, FB 82:202  
 diurnal/vertical, gulf menhaden, FB 82:517  
 fish, FB 81:789  
 flounder, summer, S 752  
 ichthyoplankton, FB 83:611  
 lamprey, river, FB 81:165  
 lobster, American, FB 83:575  
 marlin, black  
 tagging program, S 772  
 northern Gulf of Mexico, FB 81:789  
 porpoise, harbor, FB 83:543  
 queenfish, FB 83:171  
 rockfish, FB 81:920, 921  
 sablefish, FB 81:415  
 salmon, chinook, FB 82:157  
 salmon, coho, FB 81:143, 412, FB 83:682  
 salmon, sockeye, FB 82:405  
 salmonids, FB 81:815  
 sea urchin, MFR 47(3):4, 5  
 shrimp, FB 81:789  
 shrimp, brown, FB 81:396  
 tracking techniques for pelagic fish, MFR 47(4):35  
 vertical, ichthyoplankton, FB 82:103  
 whiting, Pacific, MFR 47(2):2, 3, 75, 76
- Mikaira nigricans*—see Marlin, Pacific blue
- Millstone Point, Connecticut  
 population characteristics of American lobster, S 770

- Minced fish  
 amount in fish blocks, MFR 46(3):76  
 in cooked sausage products, MFR 45(7-9):21  
 washed, unwashed, MFR 45(7-9):28  
 with texturized soy protein (TSP)  
 composition, MFR 45(7-9):34  
 nutritive values, MFR 45(7-9):34
- Minchinia chitonis*  
 spore structure, MFR 43(10):5
- Mirounga angustirostris*—see Seal, northern elephant
- Mississippi  
 fishery, FB 82:427  
 ice plant survey, 1980-81, MFR 44(9-10):55
- Molas  
 osteology, phylogeny, and higher classification, C 434
- Molidae—see Molas
- Mollie  
 efficiency as live bait for pole-and-line skipjack fishing  
 fishing results, general, MFR 42(6):18  
 mollies as baitfish, MFR 42(6):17  
 Samoa, American, MFR 42(6):19  
 survival, MFR 42(6):18  
 Tuvalu and the Gilbert Islands, MFR 42(6):20
- Mollusca  
 life history, distribution, and abundance in New York Bight, S 766
- Mollusks  
 bivalve, ageing, MFR 46(2):27  
 mariculture in Caribbean MFR 47(4):1
- Mollusks, bivalves  
 Woods Hole  
 East Coast Specimen collection, S 768
- Mollusks, littoral  
 trematode infection, TR 25
- Monachus schauinslandi*—see Seal, Hawaiian monk
- Monodon monoceros*—see Narwhal
- Monogenean fauna  
 parasitology and pathology of marine organisms of the world  
 ocean, TR 25
- Monterey, California  
 sea level variation, S 761
- Monterey Bay, California  
 invertebrate community, benthic  
 relationships between wave disturbance and zonation along a  
 subtidal high-energy beach, FB 78:437
- Monterey Harbor, California  
 otter, sea  
 observations on digging for clams, FB 78:159
- Morone americana*—see Perch, white
- Morone saxatilis* (Walbaum)—see Bass, striped
- Morphology  
 crab, mud, FB 81:865, 883, 885  
 crabs, lithodid, larvae, FB 82:321  
 croaker, white, FB 82:179  
 eel, American, FB 82:519  
 lord, longfin Irish, larvae, FB 83:447  
 mackerel, Spanish, FB 82:545  
 pigfish larvae, FB 81:852  
 shad, American, FB 81:323  
 shrimp, larvae, FB 83:253  
 shrimp, mantis, FB 82:424  
 shrimp, rock, FB 83:1  
 walleye, FB 82:412
- Morro Bay, California  
 fish populations, shallow-water  
 diel and seasonal variation in abundance and diversity, FB  
 78:759
- Mortality rates  
 anchovy, northern, FB 81:741, FB 82:71  
 calculation, FB 82:449  
 clam, FB 82:541  
 crab, horseshoe, FB 82:388  
 croaker, FB 81:895  
 density-dependent searching time, FB 82:449  
 dolphin, FB 81:1  
 drum, banded, FB 82:342  
 fish, seagrass, FB 81:837  
 flounder, winter, FB 81:914  
 grunion, California, FB 81:476  
 linear regression, FB 81:899, 901  
 longevity data, FB 81:898  
 mackerel, king, FB 81:104  
 menhaden, FB 81:895  
 porpoise, harbor, FB 81:661  
 power plant impact, FB 81:613  
 rockfish, FB 82:71  
 salmon, FB 82:412, 413  
 salmon, sockeye, FB 82:404  
 salmonids, FB 81:820  
 shrimp, freshwater, FB 81:656  
 shrimp, pink, FB 81:465  
 spot, FB 81:895  
 squid, FB 82:71  
 tilefish, FB 81:760  
 triggerfish, gray, FB 82:486  
 whiting, Pacific, FB 82:71
- Movement patterns  
 analyses and production, FB 82:450  
 bass, striped, FB 81:420  
 bonefish, FB 81:148  
 char, Arctic, FB 82:405  
 drum, banded, FB 82:351, 352  
 eel, Atlantic, FB 81:487  
 fish, pelagic, FB 81:569  
 rockfish, FB 81:916  
 seal, harbor, FB 81:291
- Mullidae  
 proximate chemical composition, MFR 46(3):71
- Mummichog  
 fin regeneration  
 effect of zinc on and its interaction with methyl-mercury, FB  
 78:163  
 otolith increment formation  
 age estimation of wild fish, FB 80:210, 213  
 effect of temperature and body growth on otolith formation,  
 FB 80:210, 213  
 embryological formation, FB 80:204, 206, 211  
 light effect on increment formation, FB 80:206, 212  
 removal, preparation, and inspection, FB 80:204  
 semilunar reproductive cycles, FB 83:467
- Munidopsis*  
 species occurring off Oregon and adjacent waters  
 characters of taxonomic importance, FB 78:16  
 key to species, FB 78:16  
*Munidopsis aries*, FB 78:17



## *Munidopsis* (continued)

species occurring off Oregon (continued)

*Munidopsis bairdii*, FB 78:18

*Munidopsis beringana*, FB 78:24

*Munidopsis cascadia* n. sp., FB 78:21

*Munidopsis cthata*, FB 78:19

*Munidopsis latirostris*, FB 78:28

*Munidopsis quadrata*, FB 78:17

*Munidopsis* sp., FB 78:18

*Munidopsis subsquamosa*, FB 78:26

*Munidopsis tufsi* n. sp., FB 78:24

*Munidopsis verrucosus*, FB 78:27

*Munidopsis yaquinensis* n. sp., FB 78:20

vertical and geographic distribution, FB 78:29

## Mussel

blue, FB 82:387

gonad color, FB 81:738

Long Island Sound, FB 81:733

reproductive cycle, FB 81:735

sex ratios, FB 81:738

## Far East

ageing experiments, MFR 46(2):33

## freshwater

ageing experiments, MFR 46(2):33

trematode infection, TR 25

*Mya arenaria*—see also Clam; Clam, soft-shell

equilibrium settlement rate estimation, FB 80:642

*Mycteroperca microlepis*—see Fish, reef

*Mycteroperca phenax*—see Fish, reef

## Myctophidae

ichthyoplankton off Alaska, TR 20

*Mylocheilus caurinus*—see Peamouth

*Myoxocephalus aeneus*

trophic patterns among larvae in an estuary, FB 80:827

*Myoxocephalus octodecemspinus*—see also Sculpin, longhorn

trophic patterns among larvae in an estuary, FB 80:827

*Myoxocephalus scorpius*

trophic patterns among larvae in an estuary, FB 80:827

## Mysidacea

life history, distribution and abundance in the New York Bight, S 766

Mysids, FB 82:55

*Mytilus edulis*—see Mussel, blue

*Mytilus galla provincialis*—see Mussels

## Myxosporidian fauna

parasitology and pathology of marine organisms of the world ocean, TR 25

## N

Names of fishes, MFR 45(7-9):1

Nantucket Sound, Massachusetts

experimental squid fishing with lights, MFR 42(7-8):51

## Narwhal

Pacific Ocean and Arctic waters

identification guide, C 444

satellite monitoring of winter ice cover, MFR 46(3):7

National Aeronautics and Space Administration (NASA)

satellites and fisheries management applications, MFR 46(3):1

*Naucrates ductor*—see Pilotfish

*Negaprion brevirostris*—see Shark, lemon

## Nekton

collection, FB 82:456

community composition, FB 82:459

marsh habitats, FB 82:455

oceanic

opening-closing midwater trawl vs. Isaacs-Kidd midwater trawl, FB 78:529

regeneration of nitrogen in northwest Africa upwelling system

excretion measurements, FB 80:329

nekton biomass, FB 80:331

regeneration rates, FB 80:332

seasonality, FB 82:458

tidal creeks, FB 82:456

## *Nematoscelis megalops*

avoidance of towed nets, FB 80:75

*Neogobius melanostomus*—see Bullhead

*Nereis virens*—see Sandworm

## Nets

tuna purse seine

passive behavior of spotted dolphins, FB 78:535

## New England

groundfishery

mesh size: applications and implications, S 771

squid

experimental pair trawling, MFR 42(7-8):57

## New England, southern

movements of summer flounder, S 752

## New England Fishery Management Council

fishery quotas, MFR 45(1):2

## New Jersey

fishery, FB 82:384

lichens of the intertidal region, C 446

New Port River estuary, North Carolina, FB 81:405

## New York Bight

fishery, FB 82:502

life history, distribution, and abundance of dominant benthic invertebrates, S 766

plankton sampling, TR 5

reef, artificial

food of fish collected on, MFR 44(6-7):49

## Newfoundland, Canada

fecundity of American lobster in waters, FB 79:796

lichens of the intertidal region, C 446

squid, short-finned

recent developments in fishery, MFR 42(7-8):15

*Nezumia bairdi*—see Marlin-spike

## Nomenclature system

seafood, MFR 45(7-9):1, 6

## North America, west

crab, Dungeness

correlation between annual catches and mean annual sunspot number, FB 79:794

## North Carolina, FB 81:429

clam-kicking industry, MFR 44(1):16

shrimp, pink

relationship of winter temperature and spring landings, FB 80:761

snapper, vermilion

reproductive biology, FB 78:137

## Northern Mariana Islands

bait, skipjack tuna, FB 81:434

Norwegian fishery, FB 82:144

*Nototodarus hawaiiensis*  
identification, TR 17  
Nursery habitats  
crab, Dungeness, in Columbia River estuary, MFR 47(3):21  
pink shrimp fishery in Tortugas Sanctuary off south Florida, MFR 47(4):11  
Nutrient environment  
Georges Bank and adjacent waters, TR 32  
Nutritional studies  
fatty acid composition of commercial menhaden, MFR 47(3):30  
salmon, fry, TR 27

## O

Observer program  
"tuna-porpoise problem"  
mandatory, 1976-82, MFR 46(3):20  
voluntary, 1971-75, MFR 46(3):20  
*Ocean 250* Barge  
gasoline spill in Block Island Sound, S 751  
Ocean condition research  
remote sensing data, MFR 46(3):1  
Ocean habitat, FB 82:149  
Ocean pout—see Pout, ocean  
Ocean Weather Station V  
Pacific Ocean  
water structure studies, 1966-71, S 742  
Ocean-atmosphere  
California Current Region  
heat exchange components, S 763  
Oceanic salmonid fishery  
genetic stock identification methods for use in fishery management, MFR 47(1):1  
Oceanographic station data  
Ocean Weather Station V  
analysis, S 742  
depth, S 742  
harmonic analysis, S 742  
heat budget estimates, S 742  
salinity, S 742  
temperature, S 742  
water structure studies, S 742  
Octopus, two-spotted, FB 82:68  
*Octopus bimaculatus*—see Octopus, two-spotted  
*Octopus* sp.  
seamount fishery research, central North Pacific, MFR 46(2):13  
*Odobenus rosmarus divergens*—see Walrus, Pacific  
*Odontaspis taurus*—see Shark, sand tiger  
Offshore hard-bottom habitats, TR 18  
*Okthopristis chrysoptera*—see Pigfish  
*Oligocottus snyderi*—see Sculpin, fluffy  
Omega-3 long chain fatty acid  
fish oil concentrates, MFR 46(2):61  
serum cholesterol effects, MFR 46(2):61  
*Ommastrephes bartramii*  
identification, TR 17  
*Ommastrephes bartramii*—see Squid, flying  
*Oncorhynchus nerka*—see Salmon, sockeye  
*Oncorhynchus gorbuscha*—see Salmon, pink  
*Oncorhynchus keta*—see Salmon, chum  
*Oncorhynchus kisutch*—see Salmon, coho; Salmon, silver  
*Oncorhynchus nerka*—see Salmon, sockeye  
*Oncorhynchus tshawytscha*—see Salmon, chinook; Salmon, king  
Onslow Bay, North Carolina, FB 81:405  
*Onychoteuthis banksii*  
identification, TR 17  
*Onychoteuthis borealijaponicus*—see Squid, nail  
Opah  
guide to fishes taken in longlining, C 435  
Opakaka—see Snapper, pink  
Opakapaka—see Snapper, Hawaiian  
*Ophiodon elongatus*—see Lingcod  
*Opisthonema mediastre*—see Herring, middling thread  
*Opisthonema oglinum*—see Herring, thread  
*Oplegnathus fasciatus*—see Parrotfish  
*Orcinus orca*—see Whale, killer  
Oregon  
anchovy, northern  
reproduction off, FB 78:603  
spawning biomass and early life in northern subpopulation, FB 78:855  
fishery, FB 82:270  
flatfishes  
feeding ecology of 0-age at nursery ground, FB 80:555  
foreign fisheries off, 1977-78, MFR 43(5):36  
Pacific Ocean, N.E.  
sculpin larvae, C 430  
*Psychrolutes phrictus*  
additional records, FB 78:169  
rockfish  
development of larvae and juveniles off, FB 79:231  
distribution and abundance, 1977, MFR 42(3-4):2  
rockfish, widow  
fecundity off coast, FB 80:881  
rockfish, yellowtail  
length and age composition, 1977, MFR 42(3-4):54  
salmon, coho  
phenotypic differences among hatchery and wild stocks, FB 80:105  
salmon, juvenile  
food habits in coastal zone, June 1979, FB 80:841  
sole, butter  
eggs and larvae off, FB 78:401  
sole, Dover  
feeding selectivity, FB 79:749  
sole, English  
growth during metamorphosis, FB 80:150  
Oregon coast  
weather, FB 81:456  
*Oregon II*, FB 81:396  
Organochlorine residues  
fishes, northwest Atlantic Ocean and Gulf of Mexico, FB 78:51  
*Ornithoteuthis volatilis*  
identification and estimation of size from beaks, TR 17  
*Orthopristis chrysoptera*—see Pigfish  
Orwell Brook, New York  
production and growth of subyearling  
salmon, chinook, FB 78:549  
salmon, coho, FB 78:549  
steelhead, FB 78:549  
Osmeridae  
ichthyoplankton off Alaska, TR 20  
*Osmerus mordax*—see Smelt, rainbow

- Osteological specimens  
 pinnipeds, TR 12  
 sea otters, TR 12
- Osteology  
 osteology, phylogeny, and higher classification, C 434
- Ostraciidae—see Boxfishes
- Ostracion diaphanum*—see Boxfish, spiny
- Ostrea edulis*—see Oyster, European flat
- Otoliths  
 alewives, FB 83:696  
 anchovy, northern, FB 81:743  
 cod, Atlantic, FB 81:833  
 daily growth increments, FB 82:165  
 dolphin, FB 81:906  
 dolphin, Fraser's, FB 81:284, 286  
 growth increments, FB 82:237  
 haddock, FB 81:883  
 halibut, Greenland, FB 81:600  
 herring, Atlantic, FB 83:289  
 herring, gold spot, FB 81:588  
 herring, Pacific, FB 82:113  
 increment counting, scanning electron microscope, FB 82:434  
 increment formation rate, FB 82:237, 240  
 juvenile fish, FB 82:240  
 larvae, FB 82:240  
 midshipman, plainfin, FB 82:164, 165  
 multiple regression models, FB 83:103  
 rockfish, FB 83:103  
 sablefish, FB 83:475  
 morphological features useful in age determination, FB 79:360  
 salmon, chinook, FB 83:81, 91  
 seal, harbor, FB 81:293, 298  
 snapper, Hawaiian, FB 81:523  
 tetracycline marking, FB 82:208, 237  
 tilefish, FB 81:752  
 trout, rainbow, FB 83:81  
 tuna, bluefin, FB 82:434
- Otter, sea, FB 81:501, 510  
 annual reproduction, dependency period, and apparent gestation period in two Californian, FB 79:347  
 Monterey Harbor, California  
 observations on digging for clams, FB 78:159  
 osteological specimens, TR 12
- Otter trawl  
 catches, FB 81:543  
 species, FB 81:548
- Outer Continental Shelf Environmental Assessment Program (OCSEAP)  
 king crab recruitment studies, MFR 45(10-12):15
- Oxygen, dissolved  
 annotated bibliography on hypoxia, TR 21
- Oxylebius pictus*—see Greenling, painted
- Oyster, American—see also Crab, mud  
 as reservoirs of viral finfish pathogens, MFR 46(3):15  
 parasites and pathogens, TR 25
- Oyster, eastern  
 introduction to Pacific coast of North America, MFR 42(12):3
- Oyster, European flat  
 as reservoirs of viral finfish pathogens, MFR 46(3):15
- Oyster, Pacific  
 increasing seed abundance, MFR 45(3):15
- Oyster, Pacific (continued)  
 introduced from Japan to  
 Australasia, MFR 42(12):3  
 France, MFR 42(12):3  
 Pacific coast of North America, MFR 42(12):3
- Oyster, Portuguese  
 introduced from Portugal and Spain to France, MFR 42(12):2
- Oyster drill—see Drill, oyster
- Oyster shucking  
 economic analysis of "steam shock" and "pasteurization" processes  
 assumptions and benefits analysis, MFR 44(5):21  
 cost estimation, MFR 44(5):22  
 pasteurized product, MFR 44(5):24  
 sensitivity analysis, MFR 44(5):23
- Oysters, exotic  
 review of introductions  
 adaptations of marine organisms to oceanic and continental climates, MFR 42(12):2  
 attitudes and rationales for new introductions, MFR 42(12):7  
 biological planning for new importations, MFR 42(12):6  
 competition with native species, MFR 42(12):7  
 history of major introductions, MFR 42(12):2  
 importance of races, MFR 42(12):8  
 importation categories, MFR 42(12):2  
 invertebrate species associated with western European waters, MFR 42(12):4  
 mollusks associated with, Pacific coast of North America, MFR 42(12):4  
 preimportation studies needed and controls required, MFR 42(12):9  
 role in spreading diseases and parasites, MFR 42(12):5  
 role of hatcheries, MFR 42(12):8
- 
- P**
- Pacific, eastern tropical  
 boundaries for  
 fishery, purse seine, TR 28  
 stock assessment, TR 28  
 geographical variation, TR 28
- Pacific Ocean  
 climatic changes, FB 81:363  
 tunas  
 distribution, 1950-78, S 744
- Pacific Ocean, central  
 squid  
 four new species, FB 80:703
- Pacific Ocean, eastern North  
 anglerfishes, ceratioid  
 description of new species, FB 78:59  
 marine mammal predation on squids, MFR 44(2):1
- Pacific Ocean, eastern tropical  
 cephalopods  
 beak key with relationships between beak dimensions and size, FB 80:357  
 dolphin mortality  
 estimating and monitoring incidental in tuna purse seine fishery, FB 80:396
- Halobates* species  
 distribution and abundance, FB 78:579

- Pacific Ocean, Indo-West  
 clupeid fishes  
 bomolochid copepods parasitic on eyes of, FB 78:716
- Pacific Ocean, North  
 white Dall's porpoise sighted, FB 80:401
- Pacific Ocean, northeast  
 hexagrammid development, TR 2  
 identification guide to whales, dolphins and porpoises,  
 C 444  
 sculpin larvae from marine and brackish waters, C 430  
 water structure at Ocean Weather Station V, 1966-71,  
 C 742
- Pacific Ocean, northeastern  
 fishes and shellfishes  
 chlorinated hydrocarbon levels, MFR 43(1):1  
 sculpin larvae  
 current knowledge with notes on intergeneric relationships, FB  
 79:103  
 tomcod, Pacific  
 larval development, FB 78:923
- Pacific Ocean, southwest  
 marlin, black  
 migration, S 772
- Pagrus major*—see Sea bream, red  
*Pagrus pagrus*—see Fish, reef
- Palau  
 Helen Reef, Western Caroline Islands  
 tridacnid clam stocks, MFR 42(2):8
- Pandalidae—see Shrimp  
*Pandalus borealis*—see Shrimp, northern pink; see also shrimp, pink  
*Pandalus jordani*—see Shrimp, pink; Shrimp, Pacific  
*Pandalus montagui*—see Shrimp  
*Pandalus platyceros*—see Prawn, spot  
*Pandalus* spp.—see Shrimp, pandalid  
*Panopeus herbstii*—see Crab, mud  
*Panopeus obesus*—see Crab, mud  
*Panulirus argus*—see Lobster, spiny  
*Panulirus cygnus*—see Lobster, rock  
*Panulirus marginatus*—see Lobster, spiny
- Papua New Guinea  
 tuna fishery developments, MFR 45(10-12):47  
 tuna, skipjack  
 estimated growth of surface-schooling, FB 79:517  
 tuna, yellowfin  
 estimated growth of surface-schooling, FB 79:517
- Paralichthys dentatus*—see Flounder, summer  
*Paralichthys lethostigma*—see Flounder, southern  
*Paralichthys oblongus*—see Flounder, fourspot  
*Paralichthys* sp.—see Flounder  
*Paralithodes camtschatica*—see Crab, king  
*Paralithodes platypus*—see Crab, blue king  
*Paralithodes* spp.—see Crab, king; Crab, Pacific king
- Parasite studies  
 amphipods, FB 83:497  
 copepods, FB 81:227  
 fish, marine, TR 25  
 fishes of Whale Ridge, TR 25  
 Grenadier, rock, TR 25  
 indicators of fish ecology, TR 25  
 rockfish, olive, FB 82:530  
 sailfish in the Indian Ocean, TR 25  
 tuna, skipjack, FB 83:343
- Parasites  
 Alaskan fish hosts  
 published records, S 760  
 marine and estuarine fishes of California, Oregon, and  
 Washington  
 summary of published records, S 777  
 myxosporean  
 effects of exploitation on Pacific whiting, MFR 47(2):56, 57  
 rockfish, FB 82:530
- Parental biomass  
 age composition, FB 81:723, 725, 726  
 catch weight, FB 81:724  
 management implications, FB 81:726  
 sensitivity analysis, FB 81:727  
 tuna, northern bluefin, FB 81:726
- Parophrys vetulus*—see Sole, English
- Parrotfish  
 propagation in aquaculture, TR 10
- Particle counter, zooplankton, FB 82:142
- Passamaquoddy Bay—see Gulf of Maine
- Pathogens, finfish  
 bioaccumulation, MFR 46(3):14  
 depuration, MFR 46(3):14  
 epizootics, MFR 46(3):14  
 infectious hematopoietic necrosis, MFR 46(3):14  
 IPN molluscibirnaviruses, MFR 46(3):15  
 JOV-1, MFR 46(3):15  
 management implications, MFR 46(3):16  
 potential infections, bivalves, MFR 46(3):15  
 chum salmon virus (CSV), MFR 46(3):15  
 infectious hematopoietic necrosis virus (IHNV), MFR 46(3):16  
 salmonid IPN piscibirnaviruses, MFR 46(3):16  
 13p2 reovirus, MFR 46(3):15
- Pathology—see Disease
- PCB's—see Contamination
- Pea digger—see Clam rake
- Peamouth, FB 81:815
- Peconic Bays, New York  
 fish spawning, daily time of, FB 78:455
- Pen-rearing  
 salmon, Pacific, in San Francisco Bay, MFR 47(4):26
- Penaeus aztecus*—see Shrimp, brown  
*Penaeus brasiliensis*—see Shrimp, pink-spotted  
*Penaeus duorarum*—see Shrimp, pink  
*Penaeus japonicus*—see Shrimp, Kuruma  
*Penaeus marginatus*—see Shrimp, aloha  
*Penaeus notialis*—see Shrimp, pink  
*Penaeus schmitti*—see Shrimp, white  
*Penaeus setiferus*—see Shrimp, white  
*Penaeus subtilis*—see Shrimp, brown
- Pendleton Artificial Reef—see Reefs, artificial
- Pentaceros richardsoni*—see Armorhead, pelagic
- Peprius similimus*—see Butterfish, Pacific
- Perch, kelp, FB 82:37
- Perch, ocean  
 groundfish processing, Massachusetts, MFR 45(1):1
- Perch, Pacific ocean, FB 82:270  
 abundance, size and age composition, and growth  
 age and size composition, MFR 42(3-4):41, 43  
 biomass, MFR 42(3-4):41, 42  
 catch composition, MFR 42(3-4):41, 42  
 growth, MFR 42(3-4):42, 44

- Perch, pile  
Puget Sound, Washington  
foraging on an artificial reef, MFR 44(6-7):40
- Perch, sand  
biological data, TR 26  
fishery, TR 26
- Perch, shiner, FB 81:815
- Perch, silver  
comparison with earlier descriptions, FB 78:132  
comparison with other larval Sciaenidae, FB 78:134  
description, FB 78:122  
spawning seasons and areas, FB 78:133
- Perch, white  
biology in Hudson River estuary  
growth, FB 80:602  
length conversions, FB 80:602  
length-frequency and age distribution, FB 80:602  
length-weight relationship, FB 80:604  
marsh habitat, FB 82:457  
reproduction, FB 80:604  
sex ratio, FB 80:606  
time of annulus formation, FB 80:601
- Peruvian anchoveta fishery, FB 81:363, 365
- Petromyzon marinus*—see Lamprey, sea
- Philippine Archipelago  
anglerfishes, ceratioid  
descriptions of five new species, FB 78:379
- Philippine Islands  
squid fishery, MFR 43(1):13
- Phoca fasciata*—see Seal, ribbon
- Phoca hispida*—see Seal, ringed
- Phoca largha*—see Seal, spotted
- Phoca vitulina richardsi*—see Seal, harbor
- Phocoena phocoena*—see Porpoise, harbor
- Phocoenoides dalli*—see Porpoise, Dall's
- Phoronida  
life history, distribution and abundance in the New York Bight, S 766
- Phyllococida  
life history, distribution and abundance in the New York Bight, S 766
- Phylogeny  
osteology, phylogeny, and higher classification, C 434
- Physeter macrocephalus*—see Whale, sperm
- Phytoplankton  
New York Bight  
sampling, TR 5  
nutrient environment in Georges Bank and adjacent waters in 1979, TR 32  
vertical structure off southern California, FB 83:151
- Pigfish  
biological data, C 449  
Cape Fear River Estuary, N.C., FB 81:847  
haemulids, FB 81:853  
larvae, FB 81:847, 853  
morphology, FB 81:852  
northern Gulf of Mexico, FB 81:847
- Pilotfish  
observations, warm water periods, California, MFR 45(4-6):27
- Pinfish, FB 82:378; see also Fish, seagrass  
biological data, TR 23
- Pinfish (continued)  
feeding ecology  
variation and functional responses, FB 78:337
- Pinfish, spottail  
biological data, TR 19
- Pinnipeds  
California coastal waters  
predation by white shark, FB 80:891  
distribution and density over Bering Sea pack ice, TR 12  
osteological specimens, TR 12  
predation by sharks at Farallon Islands, FB 78:941
- Pinnipeds, sea lions, California—see Sea lions, California
- Pisces: Sparidae—see Pinfish
- Placopecten magellanicus*—see Scallop, deep-sea; Sea scallop, Atlantic
- Plaice, American  
Atlantic Ocean, N.W.  
food habits, S 749  
food of juvenile, FB 79:204
- Plankton  
ichthyoplankton off the Oregon coast, FB 83:611  
New York Bight, sampling, TR 5  
vertical structure off southern California, FB 83:151
- Platichthys stellatus*—see Flounder, starry
- Plectognath fishes  
osteology, phylogeny, and higher classification, C 434
- Plectranthias kelloggi*—see Grouper
- Pleurogrammus monoptyerygius*—see Mackerel, Atka Hokke
- Pleuronectidae  
Bering Sea, Eastern  
demersal fish resources, S 754  
ichthyoplankton off Alaska, TR 20
- Podonema longipes*  
indicators of population structure, TR 25
- Poecilia mexicana*—see Mollie
- Pogonias cromis*—see Drum, black
- Pogonichthys macrolepidotus*—see Splittail
- Poisons—see Ciguatera fish poisoning
- Pollachius virens*—see Pollock
- Pollock, FB 81:124, 125, 131  
Atlantic Ocean, N.W.  
food habits, S 740  
compared with hake for surimi processing, MFR 46(2):45  
food of juvenile, FB 79:203  
groundfish landings and processing, Massachusetts, MFR 45(1):1, 5, 8  
stock recovery trends, MFR 45(10-12):18
- Pollock, walleye  
Alaskan waters, FB 81:890  
Bering Sea  
density index procedure for assessing abundance, S 743  
crustaceans, major food, FB 81:639  
domestic fish utilization, MFR 45(7-9):21  
diets, FB 81:637  
embryos, FB 81:891  
fish as food, FB 81:639  
incubators, FB 81:891  
larval development in northeast Pacific Ocean  
compared with Pacific tomcod, FB 78:923  
minced fish flesh  
nutritive value, MFR 45(7-9):34  
percent composition, MFR 45(7-9):34

- Pollock, walleye (continued)  
 minced fish flesh (continued)  
 sensory attributes, MFR 45(7-9):34  
 recruitment studies, MFR 45(10-12):4  
 southeastern Alaska, FB 81:637  
 viable eggs only, FB 81:891
- Pollution studies  
 macrophage accumulations and fish health, TR 25
- Polychaeta  
 life history, distribution and abundance in the New York Bight, S 766
- Polychlorinated biphenyls  
 concentration, FB 81:392  
 confirmation, FB 81:392  
 contamination, FB 81:389, 395  
 embryo toxicity, FB 81:389  
 in fatty tissues of aquatic and land animals, FB 81:389
- Polyunsaturates  
 in fish and fish oil, MFR 46(2):60
- Pomatomus saltatrix*—see Bluefish
- Pomfrets  
 guide to fishes taken in longlining, C 435
- Population dynamics  
 Long Island Sound, eastern  
 characteristics of American lobster population, S 770
- Population studies—see also Catch estimation  
 Bay of Fundy-Gulf of Maine, FB 82:121  
 clam, FB 82:537  
 confidence limits for projections, FB 83:207  
 crab, Dungeness, FB 82:469, 471  
 crab, horseshoe, FB 82:383  
 dolphin reactions to survey vessels, FB 83:187  
 drum, banded, FB 82:353, 359  
 estimates using juvenile shrimp, FB 83:677  
 fish, kelp forest, FB 82:37  
 fish, seagrass, FB 81:837  
 growth rate sensitivities, FB 82:537  
 kingfish, southern, FB 82:430  
 lobster, spiny, FB 82:693, 694  
 mathematical techniques, FB 82:449  
 porpoise, harbor, FB 81:910  
 seal, harbor, FB 81:291, FB 82:440  
 shrimp, mantis, FB 82:420  
 shrimp, rock, FB 82:715  
 snapper, deepwater, FB 82:703  
 snapper, pink, FB 82:703  
 sole, yellowfin, FB 81:671  
 whale, gray, FB 81:267
- Porcupine fishes  
 osteology, phylogeny, and higher classification, C 434
- Porgy  
 propagation in aquaculture, TR 10
- Porgy, longspine  
 reproduction, movements, and population dynamics  
 age determination and growth using length-frequency analysis, FB 80:534  
 age determination using scales, FB 80:534  
 maturation and spawning seasonality, FB 80:525  
 mortality and postspawning survival, FB 80:536  
 movements, spawning areas, and diel variation in catch, FB 80:531  
 size, maximum, and lifespan, FB 80:536
- Porgy, longspine (continued)  
 reproduction, movements, etc. (continued)  
 total weight-total length, girth-total length, and length-length relationships, FB 80:537
- Porgy, whitebone  
 biology in South Atlantic Bight  
 age and growth, FB 80:866  
 distribution and abundance, FB 80:864  
 reproduction, FB 80:868  
 South Carolina commercial landings, FB 80:871
- Porichthys notatus*—see Midshipman, plainfin
- Porpoise  
 reducing mortality in tuna purse seining, TR 13
- Porpoise, Dall's  
 off California and Washington  
 prey distribution, FB 78:955  
 prey size, FB 78:957  
 prey species, FB 78:955  
 stomach capacity of predators, FB 78:955
- Pacific Ocean, N.E. and Arctic waters  
 guide to identification, C 444  
 white, sighted in North Pacific, FB 80:401
- Porpoise, harbor  
 abundance, estimate, FB 81:910, 913  
 Campollo Island, FB 81:910  
 Charlotte County, New Brunswick, Canada, FB 81:660  
 distribution and movements in Fish Harbour, FB 83:427  
 herring weirs, FB 81:660  
 movements and activities, FB 83:543  
 Pacific Ocean, N.E. and Arctic waters  
 guide to identification, C 444  
 population, FB 81:661  
 survey methods, FB 81:910  
 weir entrapment questionnaire, FB 81:661  
 western North Atlantic, FB 81:910
- Porpoises  
 Pacific Ocean, N.E. and Arctic waters  
 guide to identification, C 444
- Port Hardy, British Columbia  
 eel, wolf  
 migration of juvenile from, to Willapa Bay, Washington, FB 80:650
- Port Vila, Vanuatu  
 deepwater shrimp resources, MFR 43(12):10
- Potassium sorbate  
 cod, Atlantic, preservation studies, MFR 47(3):26
- Potato rake—see Clam rake
- Pout, ocean  
 Bay of Fundy-Gulf of Maine, FB 82:132  
 Gulf of Maine  
 trophic relationships, FB 79:775
- Pout, ocean  
 Atlantic Ocean, N.W.  
 food habits, S 740
- Power plant impact assessment  
 adult loss, FB 81:613  
 application, example, FB 81:617  
 criteria, FB 81:617  
 fishery management, FB 81:615, 618  
 larval growth, FB 81:614  
 long-term impact, FB 81:614  
 natural mortality, FB 81:614

- Power plant impact assessment (continued)  
 short-term impact, FB 81:614  
 spawned eggs, FB 81:614
- Prawn, freshwater  
 breeding and domestication, TR 16  
 frozen storage stability of whole and headless  
 acceptability, MFR 43(12):20  
 chemical analyses, MFR 43(12):19  
 flavor and appearance, MFR 43(12):19  
 microbial analyses, MFR 43(12):19  
 physical analyses, MFR 43(12):19  
 sensory evaluation, MFR 43(12):18  
 statistical analysis, MFR 43(12):20  
 texture, MFR 43(12):19
- Prawn, larval  
 diet effects on laboratory culture, TM F/NWC-68
- Prawn, spot  
 factors controlling growth and survival of cultured in Puget  
 Sound, Washington  
 environmental data, FB 78:783  
 juveniles, FB 78:783  
 molting, FB 78:787  
 yearlings, FB 78:785
- Predation—see Mortality rates
- Preservation  
 salmon  
 use of high concentration of CO<sub>2</sub> in modified atmosphere,  
 MFR 44(3):7
- Preservation studies  
 anchovy, northern, TR 36  
 cod, Atlantic, shelf life extension, MFR 47(3):26  
 dogfish, spiny, MFR 47(1):48  
 ice requirements for chilled sea water systems, MFR 47(4):42  
 mackerel, atka, MFR 47(1):73  
 viscosity as quality control for fish, MFR 47(3):52
- Pribilof Islands  
 management of northern fur seals, 1786-1981, TR 4
- Prionace glauca*—see Shark, blue
- Prionotus* spp.—see Seabrobin
- Pristipomoides filamentosus*—see Snapper, Hawaiian; see Snapper,  
 pink
- Pristipomoides sieboldii*—see Snapper, pink
- Pristipomoides zonatus*—see Snapper, Brigham's
- Processes and Resources of the Bering Sea (PROBES)  
 walleye pollock life history studies, MFR 45(10-12):13
- Processing studies  
 sand lance, MFR 47(1):78
- Promethichthyys promethus*—see Mackerel, snake
- Proteus mirabilis*  
 isolated from skipjack tuna, MFR 45(4-6):40
- Proteus morgani*  
 histamine production in tuna, MFR 45(4-6):35
- Protozoa  
 parasites and pathology of marine fish, TR 25
- Protozoa: Sarcodina  
 benthic foraminifera of the nearshore and shelf  
 distribution, C 439  
 ecology, C 439  
 key to species, C 439
- Proximate chemical composition  
 coastal (southeast U.S.) herrings, MFR 46(2):20  
 fish sticks, MFR 45(7-9):34
- Proximate chemical composition (continued)  
 herring, thread, MFR 45(4-6):46  
 mackerel, chub, MFR 45(4-6):46  
 Red Sea fishes, MFR 46(3):71  
 sardine, Spanish, MFR 45(4-6):46  
 weakfish, MFR 45(7-9):28
- Psettichthys melanostictus*—see Ichthyoplankton
- Pseudaxine mexicana*  
 taxonomic position, TR 25
- Pseudomonas*  
 in freshly caught marine fish, MFR 45(4-6):35
- Pseudopleuronectes americanus*—see Flounder, winter
- Pseudopleuronectes* sp.—see Flounder
- Pseudorca crassidens*—see Whale, false killer
- Psychrolutes phrictus*  
 additional records from eastern Bering Sea and off Oregon, FB  
 78:169
- Pterosagitta draco*  
 chaetognatha of the Caribbean Sea  
 classification, TR 15  
 key to species, TR 15
- Pterygioteuthis giardi*  
 identification, TR 17
- Puffers  
 osteology, phylogeny, and higher classification, C 434
- Puget Sound  
 prawn, spot  
 factors controlling growth and survival of cultured, FB 78:781  
 ratfish  
 depth distribution and seasonal diel movements, FB 78:816  
 salmon, Atlantic, culture of, MFR 43(2):1
- Purse seine fishery  
 dolphin-yellowtail tuna, FB 81:1  
 Menhaden, Atlantic  
 sampling statistics, TR 9
- Purse-seining, tuna  
 dolphin mortality reduction research, MFR 46(3):18  
 reducing porpoise mortality, TR 13

## Q

- Quahog, ocean  
 acetate peel images, FB 82:1  
 age, FB 82:2, 18  
 age and growth studies, MFR 46(2):28  
 age-size, FB 82:254  
 gonad condition, FB 82:259  
 growth, FB 82:2, 3, 16  
 growth in Middle Atlantic Bight  
 field studies, FB 80:23  
 length-weight studies, FB 80:28  
 mark-recapture studies, FB 80:24  
 shell banding studies, FB 80:26  
 growth increments, FB 82:251  
 sex determination, MFR 46(2):32  
 sexual maturation, FB 82:262  
 shell microstructure, FB 82:1, 13, 16  
 southern New England shelf  
 seasonal cycle of gonadal development, FB 80:315  
 validation of annual periodicity, MFR 46(2):29
- Queenfish  
 food habits, migration, and abundance, FB 83:171

## Queenfish (continued)

- ovarian cycling frequency and batch fecundity
  - analysis of fish and ovaries, FB 79:548
  - annual egg production, FB 79:554
  - batch fecundity, FB 79:551
  - body size and time of spawning, FB 79:549
  - egg production and fish body size, FB 79:556
  - egg size, FB 79:555
  - field sampling, FB 79:547
  - ovarian cycling, FB 79:550
  - production cycles, timing of reproduction, and egg size, FB 79:557
  - relative fecundity, FB 79:554
  - residual ova, FB 79:554
  - sex ratio, FB 79:551
  - size at sexual maturity, FB 79:555
  - spawning frequency and annual fecundity, FB 79:557
  - spawning season and gonad maturation, FB 79:549
  - temporal patterns of spawning, FB 79:556
- vertical stratification off southern California, FB 80:895

## R

*Rachycentron canadum*—see Cobia

*Raja erinacea*—see Skate, little

### Ratfish

- Puget Sound, Washington
  - depth distribution and seasonal diel movements, FB 78:816

Ray, cownose, FB 82:378

### Recruitment

- crab, Dungeness, FB 82:478
- drum, banded, FB 82:229, 344, 351
- fish, reef, FB 81:680
- lobster, American, FB 82:244
- mackerel, king, FB 81:718

Recruitment studies—see Large Marine Ecosystem

### Red drum

- spawning experiments, TR 10

### Redfish

- larvae distribution patterns, MFR 45(10-12):19

Reef fisheries—see Fish, reef

### Reefs, artificial

- coal-waste artificial reef program
  - area description, MFR 44(6-7):17
  - blocks and reef building, MFR 44(6-7):17
  - epifaunal colonization, MFR 44(6-7):19
  - habitation by fish, MFR 44(6-7):20
  - physical and chemical results, MFR 44(6-7):17
  - studies, early, MFR 44(6-7):16
  - toxic potentials, MFR 44(6-7):20
- early development of Pendleton Artificial Reef
  - biological observations, MFR 44(6-7):54
  - biomanipulations and management, MFR 44(6-7):56
  - design and construction, MFR 44(6-7):53
  - establishment of ecological studies, MFR 44(6-7):54
  - site selection, MFR 44(6-7):53
- effects on resident flatfish populations, MFR 44(6-7):45
- foraging on in Puget Sound, Washington
  - feeding observations, MFR 44(6-7):40,41
  - field and laboratory, MFR 44(6-7):38
  - perch, pile, MFR 44(6-7):40
  - rockfish, quillback, MFR 44(6-7):41

### Reefs, artificial (continued)

- foraging on in Puget Sound, Washington (continued)
  - seaperch, striped, MFR 44(6-7):40
  - study area, MFR 44(6-7):38
- New York Bight and Charleston, South Carolina
  - food of fish collected on, MFR 44(6-7):49
- Pendleton Artificial Reef planning, MFR 44(6-7):25
- Pendleton Artificial Reef preconstruction activities. MFR 44(6-7):25
- resource management option for siting coastal power stations in southern California
  - construction, MFR 44(6-7):26
  - management, MFR 44(6-7):26
- toward a new era in fisheries enhancement, MFR 44(6-7):2
- use of designed and prefabricated in United States
  - Japanese fiberglass reinforced plastic, MFR 44(6-7):9
  - Japanese-style concrete, MFR 44(6-7):5
  - lobster, MFR 44(6-7):7
  - uses, potential, MFR 44(6-7):13

*Reinhardtius hippoglossoides*—see Halibut, Greenland

### Remote sensing

- applications of satellite data for fisheries management, MFR 46(3):1

### Reproduction

- anchovy, northern, TR 36
- prawn, freshwater, TR 16

### Reproductive biology

- bass, striped
  - artificial propagation, TR 10
- clam, soft-shell, FB 83:403
- cod, Arcto-Norwegian, FB 82:141
- crab, rock, FB 81:357
- croaker, white, FB 82:180
- dolphin, spinner, FB 82:224
- dolphins, spotted, FB 83:657
- drum, banded, FB 82:227, 337
- flounder, yellowtail, FB 81:341
- grunts, French, FB 83:413
- halibut, Greenland, FB 81:601
- herring, gold spot, FB 81:591
- lobster, FB 82:529
- lobster, American, FB 82:242, 244
- mummichog, FB 83:467
- mussel, blue, FB 81:733
- propagation in aquaculture, TR 10
- quahog, ocean, FB 82:253, 259
- sardine, Pacific, FB 85:443
- sea urchin, red, MFR 47(3):5, 6
- shark, Atlantic sharpnose, FB 81:61
- shark, sand tiger, FB 81:204
- shrimp, mantis, FB 82:418, 421
- silverside, Atlantic, FB 83:331
- spawning and maturation of marine finfish, TR 10
- splittail, FB 81:650
- squid, Pacific market, FB 82:445
- tilefish, blue, FB 81:553
- weakfish, FB 82:501
- whiting, Pacific, MFR 47(2):3, 4, 12, 31, 35, 76

### Reproductive studies

- drill, oyster, TR 35
- flounder, southern, TR 10
- perch, sand, TR 26



- Reproductive studies (continued)  
 pinfish, spottail, TR 19  
 shrimp, pink, TR 30  
 sturgeon, shortnose, TR 14  
 urchin, heart, TR 33  
 urchin, sea, TR 33  
 walrus, Pacific, TR 12
- Resource Assessment Investigation of the Mariana Archipelago, MFR 47(4):19
- Resources, pelagic  
 California, 1963-78, S 762
- Rhinoptera bonasus*—see Ray, cownose
- Rhizoprionodon terraenovae*—see Shark, Atlantic sharpnose
- Rhode Island  
 lobster, American  
 movements of tagged off, FB 78:771
- Rhomboplites aurorubens*—see Fish, reef; Snapper, vermilion
- Ribbonfish  
 king-of-the-salmon, juvenile, FB 81:161
- Rockfish  
 age determination, FB 83:103  
 black rockfish, *Sebastes melanops*, FB 81:916  
 capture, FB 81:918  
 copper rockfish, *Sebastes caurinus*, FB 81:916  
 diet variations, FB 82:273  
 distribution and abundance, 1977  
 California, MFR 42(3-4):2  
 Oregon, MFR 42(3-4):2  
 Washington, MFR 42(3-4):2  
 distribution of prey, FB 82:288  
 food habits, FB 82:272, 275, FB 83:531  
 fork length/total length, FB 82:251  
 found as prey species in sea lion scats, FB 82:68  
 larvae identification, MFR 45(10-12):13  
 maturation and fecundity of four species, MFR 42(3-4):74  
 measurement, FB 82:249  
 morphology and distribution patterns of several species, MFR 42(3-4):80  
 northern Puget Sound, Washington, FB 81:916  
 quillback rockfish, *Sebastes maliger*, FB 81:916  
 seamount fishery research, central North Pacific, MFR 46(2):4  
 standard length/fork length, FB 82:250  
 stock separation of five species using naturally occurring biochemical genetic markers  
 electrophoresis applicability to marine fisheries, MFR 42(3-4):72  
 genetic data, MFR 42(3-4):67  
 species relationships, MFR 42(3-4):70  
 trawl surveys, statistical considerations of design  
 comparisons of random, stratified random, and systematic sampling, FB 78:660  
 examination of trade offs between tow length and number of tows, FB 78:667  
 yellowtail rockfish, *Sebastes flavidus*, FB 81:916
- Rockfish, calico  
 fin erosion, FB 83:195
- Rockfish, canary, FB 82:270  
 maturation and fecundity, MFR 42(3-4):74  
 seasonal changes in fat and gonad volume, FB 83:299  
 size and age composition and growth, MFR 42(3-4):57
- Rockfish, darkblotched, FB 82:270
- Rockfish, olive  
 growth, reproduction, and food habits, off central California  
 age and growth, FB 79:535  
 age determination, FB 79:534  
 food habits, FB 79:535, 542  
 juveniles, FB 79:541  
 length-weight relationships, FB 79:537  
 maturation and reproduction, FB 79:534, 537  
 parasites, FB 82:531  
 seasonal patterns of infection, FB 82:534  
 size, FB 82:530
- Rockfish, Pacific  
 habitat and nursery grounds in southeastern Alaska, MFR 43(7):13
- Rockfish, quillback  
 Puget Sound, Washington  
 foraging on an artificial reef, MFR 44(6-7):41
- Rockfish, sharpchin  
 development of larvae and juveniles off Oregon  
 distinguishing features, FB 79:247  
 fin development, FB 79:249  
 general development, FB 79:248  
 identification, FB 79:244  
 literature, FB 79:243  
 morphology, FB 79:249  
 occurrence, FB 79:253  
 pigmentation, FB 79:251  
 scale formation, FB 79:251  
 spination, FB 79:249
- Rockfish, shortbelly  
 resource off California  
 development potential of fishery, MFR 42(3-4):39  
 growth, MFR 42(3-4):34  
 larval and juvenile stages, MFR 42(3-4):34  
 length-weight, MFR 42(3-4):35  
 management options for fishery development, MFR 42(3-4):39  
 maturation, fecundity, and sex composition, MFR 42(3-4):35  
 movements, MFR 42(3-4):35  
 reaction to fishing, MFR 42(3-4):37  
 relationships with other species, MFR 42(3-4):36  
 survey results with regard to fishing, MFR 42(3-4):38
- Rockfish, splitnose, FB 82:270  
 effects of photoperiod and temperature on laboratory growth of juvenile, FB 79:789  
 size and age composition and growth, MFR 42(3-4):57
- Rockfish, widow  
 development of larvae and juveniles off Oregon  
 distinguishing features, FB 79:235  
 fin development, FB 79:238  
 general development, FB 79:235  
 identification, FB 79:233  
 literature, FB 79:233  
 morphology, FB 79:236  
 occurrence, FB 79:242  
 pigmentation, FB 79:240  
 scale formation, FB 79:239  
 spination, FB 79:239  
 fecundity off Oregon coast, FB 80:881  
 seasonal changes in fat and gonad volume, FB 83:299
- Rockfish, yellowtail, FB 82:270  
 length and age composition, 1977  
 California, MFR 42(3-4):54

- Rockfish, yellowtail (continued)  
length and age composition (continued)  
Oregon, MFR 42(3-4):54  
Washington, MFR 42(3-4):54  
maturation and fecundity, MFR 42(3-4):74  
seasonal changes in fat and gonad volume, FB  
83:299
- Rockling, fourbeard  
Atlantic Ocean, northwest  
food habits, S 740  
food of juvenile, FB 79:204
- Roe  
red sea urchin fishery, MFR 47(3):1
- RV *Cayuse*, FB 81:456  
RV *Dolphin*, FB 81:538  
RV *Onslow Bay*, FB 81:554
- S** \_\_\_\_\_
- Sablefish, FB 82:68  
gear, FB 81:416  
growth, FB 83:475  
migration, FB 81:415, 417  
northeastern Pacific Ocean, FB 81:415  
recruitment studies, MFR 45(10-12):16  
tagging, FB 81:415, 416
- Sagitta bipunctata*  
chaetognatha of the Caribbean Sea and adjacent areas  
classification, TR 15  
key to species, TR 15
- Sagitta decipiens*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Sagitta enflata*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Sagitta friderici*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Sagitta helenae*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Sagitta hexaptera*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Sagitta hispida*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Sagitta lyra*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Sagitta macrocephala*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Sagitta megalophihelma*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Sagitta minima*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Sagitta planctonis*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Sagitta serratodentata*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Sagitta tenuis*  
chaetognatha of the Caribbean Sea  
classification, TR 15  
key to species, TR 15
- Sagittae  
daily growth increments indicate age and growth  
tuna, skipjack, FB 79:151  
tuna, yellowfin, FB 79:151
- Sail-assisted fishing vessels  
economic appraisal of, MFR 45(7-9):50  
—see also Fishing vessels, commercial
- Sailfish  
morphological features of otoliths useful in age determination,  
FB 79:360  
parasitofauna in the northwest Indian Ocean, TR 25  
size and possible origin from eastern Atlantic ocean, FB 78:805
- Salmo gairdneri*—see Steelhead; Trout, rainbow
- Salmo salar*—see Salmon, Atlantic
- Salmon  
farming in Japan, TR 27  
freshwater enhancement, C 447  
migration and ecology in early marine life, TR 27  
recruitment studies, MFR 45(10-12):4  
soybean meal in diet, C 447  
underwater separation methods for juvenile salmonids at  
hydroelectric dams, MFR 47(3):38  
volcanic ash effects on juvenile smolts, MFR 45(2):9
- Salmon, Atlantic  
culture in Puget Sound  
disease and treatment, MFR 43(2):7  
freshwater growth and survival, MFR 43(2):4  
freshwater rearing, MFR 43(2):2  
incubation, MFR 43(2):2  
saltwater growth and survival, MFR 43(2):6  
saltwater rearing, MFR 43(2):3  
seawater adaptation, MFR 43(2):5  
sexual maturation, MFR 43(2):8  
Norwegian production and farming efforts, MFR 46(3):44
- Salmon, chinook  
areal distribution of marked Columbia River Basin  
factors that limit data use, MFR 43(12):5  
marine distribution north and south of Columbia River, MFR  
43(12):8  
marine, river, and hatchery recoveries, MFR 43(12):9  
marking (1971-73), MFR 43(12):2  
recovery (1972-77), MFR 43(12):4

Salmon, chinook (continued)

California, southern and central coast  
sea-surface temperature effects on sports fishing, S 759  
compared with coho salmon abundance, Columbia River, MFR 46(3):36  
establishment of nonindigenous runs in Wind River drainage of Columbia River, 1955-63  
adult trapping and hauling, FB 79:510  
catch contribution, FB 79:513  
hatchery operations, FB 79:511  
hatchery returns-juvenile releases, FB 79:512  
Shipperd Falls counts, FB 79:512  
Shipperd Falls fishway, FB 79:509  
spawning ground surveys, FB 79:513  
Wind River spring chinook salmon transfers, FB 79:514  
food habits of juvenile in Oregon coastal zone, June 1979  
diet overlap, FB 80:847  
occurrence and abundance of prey taxa, FB 80:846  
fisheries and enhancement in Alaska, TR 27  
genetic stock identification methods, MFR 47(1):4, 5  
influence of Little Goose Dam on upstream movements of adult, FB 78:185  
juveniles, FB 81:815  
lunar phase, FB 82:161  
migration, FB 82:157  
otoliths, FB 83:81, 91  
pen-rearing in San Francisco Bay, MFR 47(4):26  
production and growth of subyearling in Orwell Brook, New York, FB 78:549  
recruitment studies, MFR 45(10-12):16  
release time, FB 82:159, 160  
satellite data applied to fisheries management, MFR 46(3):5  
seawater acclimation of smolts, TR 27  
size and growth, FB 82:160  
smolts, transportation in Columbia River and effects on adult returns  
collection and marketing of fish and fish hauling procedures, FB 78:493  
comparison of results with other studies, FB 78:502  
effect of transportation on homing, FB 78:503  
evaluation of returning adults, FB 78:494  
experimental design, FB 78:493  
factors influencing assessment of data, FB 78:494  
percentage adult returns of transported releases, FB 78:498  
recovery of marked in commercial and sport fisheries, FB 78:500  
returns of adult experimental fish to hatcheries and spawning grounds, FB 78:501  
returns of adult experimental fish to Little Goose Dam, FB 78:496  
size and years-in-ocean of adult experimental fish, FB 78:500  
straying of experimental groups, FB 78:502  
timing of adult returns, FB 78:49  
storage in water systems  
bacteriological measurements, MFR 47(1):69  
NaCl analysis, MFR 47(1):69  
sensory analysis, MFR 47(1):69  
statistical analysis, MFR 47(1):69  
trends in natural and hatchery production, TR 27  
volcanic ash effects on juvenile smolts, MFR 45(2):9

Salmon, chum, FB 82:395

culture and release, TR 27

Salmon, chum (continued)

food habits of juvenile in Oregon coastal zone, June 1979  
diet overlap, FB 80:847  
occurrence and abundance of prey taxa, FB 80:843  
hatchery approaches, TR 27  
marking technique, TR 27  
olfactory recognition of homestream waters, TR 27  
population biology from Fraser River, British Columbia  
age composition and sex ratios of returning adults, FB 80:815  
age of return, FB 80:819  
fecundity, FB 80:816  
fry migrations and survival, FB 80:816  
marine growth, FB 80:815  
return to escapement, FB 80:820  
satellite data applied to fisheries management, MFR 46(3):5  
spawning, Kamchatka Peninsula, U.S.S.R., MFR 46(3):35  
technical innovations, TR 27

Salmon, coho, FB 82:395  
adult recoveries and NA + -K + ATPase activity at release, MFR 44(11):11  
artificial propagation in mid-Columbia River system, MFR 46(3):34  
Columbia River, FB 81:143, 412  
development and smoltification in the Columbia River, C 447  
egg production, MFR 46(3):37  
estuarine migrations of juveniles, MFR 46(3):64  
feeding periodicity and diel variation in diet composition in small stream during summer, FB 79:370  
fisheries, MFR 46(3):36  
fishery contribution, FB 81:145  
food habits of juvenile in Oregon coastal zone, June 1979  
diet overlap, FB 80:847  
occurrence and abundance of prey taxa, FB 80:843  
homing, FB 81:144, 413, 414  
juveniles, FB 81:815  
life history, MFR 46(3):35  
pen-rearing in San Francisco Bay, MFR 47(4):26  
phenotypic differences among hatchery and wild stocks, U.S. Pacific coast  
characters, morphological, FB 80:107,108  
electrophoresis, FB 80:107  
environmental data, FB 80:107  
isozyme gene frequencies, FB 80:110  
life history, FB 80:107, 110  
sampling, FB 80:106  
statistics, FB 80:108  
stock similarity, FB 80:113  
streams systems and wild stocks similarity, FB 80:117  
predation on Dungeness crab, FB 83:682  
production and growth of subyearling in Orwell Brook, New York, FB 78:549  
recruitment studies, MFR 45(10-12):17  
return rate, MFR 46(3):40  
satellite data applied to fisheries management, MFR 46(3):5  
seasonal runs, MFR 46(3):37  
spawning, MFR 46(3):35  
survival rates, FB 81:414, MFR 46(3):40  
tags, FB 81:412  
transport, FB 81:412  
Washington and Vancouver Island  
factors influencing ocean catches, S 753  
Willard Hatchery, FB 81:412

- Salmon, fresh  
 using high concentration of CO<sub>2</sub> in modified atmosphere to preserve  
 analytic methods, MFR 44(3):9  
 atmosphere (modified) system, MFR 44(3):8  
 bacteriological measurements, MFR 44(3):9  
 chemical measurements, MFR 44(3):9  
 refrigerated shelf-life test, MFR 44(3):11  
 sample preparation and procedures, MFR 44(3):8  
 sensory evaluation, MFR 44(3):10  
 sensory tests, MFR 44(3):9
- Salmon, fry  
 nutritional studies, TR 27
- Salmon, juvenile  
 methods of measuring smoltification, TR 27
- Salmon, king  
 cyclic covariation in California fisheries  
 California, central, total catch, FB 80:795  
 California, northern  
 catch by salmon species, FB 80:794  
 total catch, FB 80:793  
 switching effort between species, FB 80:796
- Salmon, Pacific  
 diet change, diel, FB 82:396  
 estuarine migrations of juveniles, MFR 46(3):62  
 feeding habits, FB 82:393  
 genetic stock identification methods, MFR 47(1):8  
 prey composition, FB 82:392  
 scarred salmon at freshwater recovery sites in southeastern Alaska, MFR 47(1):39  
 vertical distribution, FB 82:392
- Salmon, pink  
 applications of satellite data for fisheries management, MFR 46(3):5  
 effects of seeding density of eggs on water chemistry and fry characteristics and survival in gravel incubators  
 dissolved oxygen, FB 78:652  
 quantity and quality of fry produced, FB 78:653  
 temperature, pH, and total ammonia in effluent, FB 78:650  
 water quality and fry production, FB 78:655  
 estuarine migration studies, MFR 46(3):62, 64  
 Sashin Creek, southeastern Alaska  
 ammonia concentrations in redds, FB 78:809  
 spawning grounds, Kamchatka Peninsula, U.S.S.R., MFR 46(3):35  
 survival, size, and emergence of alevins after exposure to ammonia  
 early emergence, FB 78:644  
 effect of long-term exposures on fry size at emergence, FB 78:644  
 sensitivity of different life stages, FB 78:643  
 Washington and Vancouver Island  
 factors influencing ocean catches, S 753
- Salmon, silver—see also Salmon, coho  
 California, southern and central coast  
 temperature effects on sport fishing, S 759  
 cyclic covariation in California fisheries  
 California, central, total catch, FB 80:795  
 California, northern  
 catch by salmon species, FB 80:794  
 total catch, FB 80:793  
 switching effort between species, FB 80:796
- Salmon, sockeye  
 applications of satellite data for stock recruitment predictions, MFR 46(3):5  
 migration, FB 82:401, 403  
 occurrence of IHNV with bivalve mollusks, MFR 46(3):14  
 smolts, FB 82:401  
 spawning on Kamchatka Peninsula, U.S.S.R., MFR 46(3):35  
 volcanic ash effects on juvenile smolts, MFR 45(2):9
- Salmon canneries  
 wastewater processing from two mechanized, MFR 43(1):21
- Salmon smolts  
 volcanic ash effects, MFR 45(2):9
- Salmonids  
 genetic selection and breeding in culture and enhancement, TR 27  
 tagging and tracking hatchery salmonids, TR 27
- Salmonids, anadromous  
 environmental factors affecting smoltification and early marine survival  
 activation of latent infections, MFR 42(6):10  
 ATPase test, MFR 42(6):8  
 body composition, lipid-moisture dynamics, carbohydrate metabolism, MFR 42(6):3  
 body silvering, fin darkening, MFR 42(6):2  
 buoyancy adjustment, MFR 42(6):4  
 contaminant exposure, MFR 42(6):5  
 endocrine control, MFR 42(6):3  
 environmental stress and scale loss, MFR 42(6):10  
 gill parasite infestations and seawater tolerance, MFR 42(6):11  
 growth rate, condition factor, MFR 42(6):3  
 hatchery practices, fish disease treatments, MFR 42(6):7  
 hypoosmotic regulatory capability, salinity tolerance and preference, MFR 42(6):2  
 methods for optimizing time, age, and size at release, MFR 42(6):8  
 migratory activity, MFR 42(6):4  
 Na<sup>+</sup>, K<sup>+</sup>-ATPase activity, MFR 42(6):4  
 physiological problems during release and emigration, MFR 42(6):10  
 photoperiod, MFR 42(6):7  
 seawater challenge tests, MFR 42(6):9  
 size threshold, MFR 42(6):5  
 thyroxine monitoring, MFR 42(6):10  
 water temperature, MFR 42(6):6
- Salmonids, juvenile  
 evaluation of a bypass system at Little Goose Dam  
 directional currents in bulkhead slot, MFR 42(6):28  
 fish passage through orifices placed in bulkhead slot, MFR 42(6):27  
 fish passage through orifices placed in operating gate slot, MFR 42(6):28
- Salt marsh habitat  
 shrimp, brown, FB 82:325  
*Salvelinus alpinus*—see Char, Arctic  
*Salvelinus fontinalis*—see Trout, brook  
*Salvelinus malma*—see Dolly varden
- Samoa  
 fishes, annotated checklist, S 781
- Sampler, flushing-coring  
 collect deep-burrowing infaunal bivalves in intertidal sand, FB 79:383
- Sampling, commercial  
 Maine coast worm fishery, S 767

- Sampling, probability theory  
   Menhaden, Atlantic  
     length, weight, age statistics, TR 9
- Sampling methods  
   ichthyoplankton, FB 82:98  
   kelp forest, FB 82:38
- Sampling statistics  
   Atlantic menhaden fishery, TR 9
- San Francisco Bay  
   pen-rearing salmon, MFR 47(4):26
- Sand dollars, TR 33
- Sand flat, FB 81:429
- Sand lance  
   American  
     as prey of red and silver hake, MFR 46(2):44  
     keeping quality of fresh and frozen *Ammodytes* sp.  
       chemical composition, MFR 47(1):78  
       fresh study, MFR 47(1):79  
       frozen study, MFR 47(1):80  
     population growth observations, MFR 45(10-12):19
- Sanddab  
   otter trawl sampling bias of *Lironeca vulgaris*, FB 80:907
- Sanddab, longfin  
   seasonal spawning cycle, FB 80:906
- Sanddab, speckled  
   effect of bottom on fast start  
     fast-start performance, FB 79:273  
     kinematics, FB 79:272
- Sandfish, Pacific  
   spawn and larvae  
     larval development, FB 78:961  
     life history notes, FB 78:959
- Sandworm  
   life history study in Sheepsfoot Estuary, Maine  
     eggs, numbers laid, FB 80:738, 741  
     environmental conditions during spawning, FB 80:738, 741  
     length frequency, FB 80:737, 740  
     oocyte development, FB 80:738, 741  
     predation, FB 80:740  
     salinity and temperature of study area, FB 80:737, 740  
     spawning characteristics, FB 80:739, 742
- Maine coast  
     sampling program, S 767
- Santa Barbara, California  
   fish assemblages, reef  
     annual variability in kelp forests off, FB 78:361
- Sarasota, Florida  
   dolphin, Atlantic bottlenose, movements, and activities, FB 79:671
- Sarda chiliensis*—see Bonito, Pacific
- Sarda sarda*—see Bonito, Atlantic
- Sarda* spp.—see Bonitos
- Sardine  
   Marquesan, FB 81:587, 595  
   Pacific  
     follicle condition, FB 82:443  
     recruitment studies, MFR 45(10-12):4  
     spawning, FB 82:443  
   Spanish  
     proximate chemical composition, MFR 45(4-6):45, MFR 46(1):19
- Sardine, Pacific  
   California, southern and central  
     abundance, 1963-78, S 762
- Sardinella aurita*—see Sardine, Spanish
- Sardinella marquesensis*—see Sardine, Marquesan
- Sardini  
   *Allothunnus* Serventy, FB 81:243  
   *Cybiosarda* Whitley, FB 81:240  
   *Gymnosarda* Gill, FB 81:243  
   *Orcynopsis* Gill, FB 81:240  
   *Sarda* Cuvier, FB 81:241
- Sardinops sagax*—see Sardine, Pacific
- Sashin Creek, southeastern Alaska  
   salmon, pink  
     ammonia concentrations in redds, FB 78:809
- Satellite  
   remote sensing  
     applications, MFR 46(3):3  
     charts, MFR 46(3):7  
     coastal zone monitoring, MFR 46(3):6  
     fisheries management applications, MFR 46(3):1  
     ocean/surface conditions, MFR 46(3):3  
     prediction, stock recruitment, MFR 46(3):5  
     sea-ice monitoring, MFR 46(3):7  
     tracking sea turtles, MFR 44(4):19
- Saturated fatty acids  
   in fish and fish oil, MFR 46(2):60
- Sausage products with fish  
   costs, MFR 45(7-9):21  
   economic impacts, MFR 45(7-9):21, 26  
   market, MFR 45(7-9):22  
   nutritional attributes, MFR 45(7-9):23  
   potential, MFR 45(7-9):21
- Scad  
   bigeye  
     resource assessment at Mariana Archipelago, MFR 47(4):19  
   round  
     proximate chemical composition, MFR 46(1):19
- Scallop, deep-sea  
   seasonal changes in soft-body component indices and energy reserves  
     biochemical analysis of tissues, FB 79:451  
     body component indices, FB 79:450, 452  
     dry weight and biochemical analyses, FB 79:453  
     gametogenic cycle, FB 79:451  
     histochemical localization of energy reserves, FB 79:453  
     histological and histochemical monitoring, FB 79:450  
     standard scallop, FB 79:451
- Scallops, sea  
   abundance, FB 83:580  
   fishery damage to American lobsters, FB 83:575
- Scheffe's test, FB 81:272, 275
- Schizoporella unicornis*—see Bryozoa
- Sciaenops ocellata*—see Drum, red
- Scleractinia—see Coral
- Scomber japonicus*—see Mackerel, chub; Mackerel, Pacific
- Scomber scombrus*—see Mackerel, Atlantic
- Scomberomorini*, FB 81:233
- Scomberomorus brasiliensis*—see Mackerel, serra Spanish
- Scomberomorus cavalla*—see Mackerel, king
- Scomberomorus commerson*—see Mackerel, narrow-barred king
- Scomberomorus concolor*—see Mackerel, Monterey Spanish

- Scomberomorus guttatus*—see Mackerel, Indo-Pacific king
- Scomberomorus koreanus*—see Seerfish, Korean
- Scomberomorus lacepede*, FB 81:233, 236, 238
- Scomberomorus lineolatus*—see Seerfish, streaked
- Scomberomorus maculatus*—see Mackerel, Spanish
- Scomberomorus multiradiatus*—see Seerfish, Papuan
- Scomberomorus munroi*—see Mackerel, Australian spotted
- Scomberomorus nipponius*—see Mackerel, Japanese Spanish
- Scomberomorus plurineatus*—see Mackerel, queen
- Scomberomorus queenslandicus*—see Mackerel, Queensland school
- Scomberomorus regalis*—see Cero
- Scomberomorus semifasciatus*—see Mackerel, broad-barred Spanish
- Scomberomorus sierra*—see Sierra
- Scomberomorus sinensis*—see Seerfish, Chinese
- Scomberomorus tritor*—see Mackerel, West African Spanish
- Scombrid phylogeny
- historic, FB 81:252
  - parasite base, FB 81:252
- Scombridae, FB 81:260
- seamount fishery research, central North Pacific, MFR 46(2):11
- Scombrids, FB 81:246
- Scombrinae, FB 81:232
- Scombrini
- Rostrelliger* Jordon and Stark, FB 81:232
  - Scomber* Linnaeus, FB 81:232
- Scopthalmus aquosus*—see Windowpane
- Scorpaenidae
- ichthyoplankton off Alaska, TR 20
  - seamount fishery research, central North Pacific, MFR 46(2):11
- Scuba gear
- used in oyster surveys, MFR 45(3):1
- Sculpin
- Bay of Fundy-Gulf of Maine, FB 82:132
  - current knowledge of larvae in northeast Pacific
    - larval characters, FB 79:105
    - larval groups, FB 79:106
    - ungrouped genera, FB 79:113
  - Pacific Ocean, N.E.
    - larvae from marine and brackish waters, C 430
  - trophic patterns among larvae in a Maine estuary
    - diet comparisons, FB 80:830
    - diet composition, FB 80:829
    - diet overlap, FB 80:831
    - feeding incidence, FB 80:829
    - mouth size, larval, and prey width, FB 80:836
- Sculpin, fluffy
- life history aspects, FB 83:645
- Sculpin, longhorn
- adult pigment, FB 81:787
  - benthic behavior, FB 81:788
  - early development, FB 81:781
  - eggs, FB 81:782
  - Gulf of Maine
    - trophic relationships, FB 79:775
  - juvenile, FB 81:787
  - larvae, FB 81:785
  - metamorphosis, FB 81:786
  - northwest Atlantic, FB 81:781
- Sculpin, Pacific staghorn, FB 81:815
- Sculpin, prickly
- prey of walleye, FB 82:412
- Sculpin, rosytip
- larval development
    - axial skeleton, FB 80:350
    - egg collection and laboratory rearing, FB 80:345
    - fin development, FB 80:350
    - identification, FB 80:346
    - measurements, FB 80:346
    - morphology, FB 80:349
    - oral region, FB 80:350
    - pigment patterns, FB 80:347
    - reproductive behavior and larval rearing, FB 80:353
    - spination, FB 80:353
- Scup
- distribution, FB 82:83
  - eggs, FB 82:78
  - fin development, FB 82:80
  - larvae, FB 82:79
  - Middle Atlantic Bight
    - food habits and trophic relationships, S 773
  - ossification, FB 82:82
  - pigment, FB 82:81
  - preopercular spines, FB 82:83
- Scyliorhinus meadi*—see Catshark
- Scyllarides squamosus*—see Lobster, spiny
- Scyphomedusidae
- as prey of leatherback sea turtles, MFR 46(3):57
- Sea bass, white
- observations, warm water periods, California, MFR 45(4-6):27
- Sea bottom, features
- furrows, FB 81:504
  - pits, FB 81:504, 516, 519
- Sea bream, red
- artificial propagation and culture techniques, TR 10
- Sea level
- Monterey, California
    - variation and causes, S 761
- Sea lion, California
- exploitation prior to 1972, MFR 47(1):36
  - feeding habits, FB 82:74
  - population fluctuations and Pacific whiting fishery, FB 80:253
  - prey, FB 82:67
  - rookeries, FB 82:67
  - seasonal distribution, FB 82:67
  - species occurrence, FB 82:69
- Sea lion, northern
- incidental catch, foreign fishing vessels, 1978-81, MFR 45(7-9):45
- Sea lion, Steller
- prey of, in the Gulf of Alaska, FB 79:467
- Sea scallop, Atlantic
- movement of tagged on Georges Bank, MFR 43(4):19
- Sea trout, spotted
- spawning experiments, TR 10
- Sea turtles—see Turtles, sea
- Sea urchin, TR 33
- Sea urchin (Echinometridae)
- seamount fishery research, central North Pacific, MFR 46(2):13
- Sea urchin, red
- biology
    - abundance, MFR 47(3):2
    - development, MFR 47(3):6, 7
    - distribution, MFR 47(3):2

- Sea urchin, red (continued)  
 biology (continued)  
 ecology, MFR 47(3):7, 8  
 food habits, MFR 47(3):7  
 growth, MFR 47(3):6, 7  
 life history, MFR 47(3):2  
 management, MFR 47(3):7, 8  
 reproduction, MFR 47(3):5, 6  
 fishery  
 harvesting, MFR 47(3):91  
 history, MFR 47(3):8, 9  
 processing, FR 47(3):12  
 shipping, MFR 47(3):17, 18
- Sea-ice  
 remote sensing monitoring, MFR 46(3):7
- Sea-lion, California  
 entanglement studies, FB 83:692
- Sea-surface temperature—see Temperature, sea-surface
- Seabass, white  
 California, southern and central  
 abundance, 1963-1978, S 762  
 temperature effects on sport fishing, S 759
- Seabirds  
 mortality in high-seas salmon gill nets  
 entanglement rates, FB 79:804  
 overall mortality, FB 79:804  
 species observed, FB 79:802
- Seafood  
 botulism and heat-processing, MFR 45(2):1  
 impact of assurance of high quality at point of sale  
 Australian industry effort, MFR 43(2):23  
 discussion and recommendations, MFR 43(2):23  
 NMFS-industry effort, MFR 43(2):22  
 U.S. industry effort, MFR 43(2):23  
 international awareness for quality  
 countries recognizing need to improve quality, MFR 44(2):12  
 countries with reputation for high quality, MFR 44(2):11  
 low temperature preservation  
 chilled seawater, MFR 43(4):3  
 chilling, MFR 43(4):2  
 freezing, MFR 43(4):5  
 ice, MFR 43(4):2  
 liquid refrigerants, MFR 43(4):7  
 mechanical systems using liquid refrigerants, MFR 43(4):10  
 refrigerated air, MFR 43(4):11  
 refrigerated seawater, MFR 43(4):4  
 superchilling, MFR 43(4):4  
 nomenclature system, MFR 45(7-9):1
- Seafood, frozen  
 economic feasibility of quality assurance to the customer  
 data collection, MFR 44(11):3  
 hypothesis verification and basis for further experiments, MFR 44(11):12  
 normalcy of trends, MFR 44(11):8  
 processor markups, MFR 44(11):5  
 processor profit margin, MFR 44(11):5  
 production costs, MFR 44(11):4  
 production volume, MFR 44(11):4  
 quality assurance of fresh fish fillets, MFR 44(11):1  
 rationale for quality assurance of frozen fish fillets, MFR 44(11):3  
 retail markup, MFR 44(11):8
- Seafood, frozen (continued)  
 economic feasibility etc. (continued)  
 retail sales, MFR 44(11):5  
 retail sales trend, MFR 44(11):6  
 retailer profit margin, MFR 44(11):19  
 sample design, MFR 44(11):3  
 store location, MFR 44(11):3
- Seagrass, FB 82:455  
 abundance of fishes, FB 81:838  
 beds, FB 81:841  
 biomass, FB 81:429, 838  
 fish inhabiting, FB 82:37  
 habitat utilization by nekton, FB 82:455  
 kelp forests, California, FB 82:37
- Seagrass bed  
 habitat, FB 81:431  
*Halodule wrightii*, FB 81:430  
*Zostera marina*, FB 81:430
- Seal, Alaskan fur  
 history of study and management, S 780
- Seal, Antarctic fur  
 marine debris entanglements, MFR 46(3):59
- Seal, bearded, FB 81:501, 509  
 satellite monitoring of winter ice cover, MFR 46(3):7  
 Soviet-American Cooperative Research, TR 12
- Seal, Cape fur  
 marine debris entanglement, MFR 46(3):59
- Seal, fur  
 Bering Sea, FB 81:121  
 food consumption, FB 81:129  
 fur seal rookeries, FB 81:123  
 future data collection, FB 81:131  
 population indices, FB 81:126, 130  
 population trend, FB 81:125  
 pup deaths on the rookery, FB 81:127  
 suggested analyses, FB 81:131
- Seal, harbor  
 abundance in Massachusetts, FB 82:440  
 chum salmon, FB 81:292, 296  
 comparative biology, TR 12  
 craniological analysis, TR 12  
 disturbances, FB 82:495  
 food of, in Gulf of Alaska, FB 78:549  
 Gulf of Alaska  
 stomach contents and feces as indicators of foods, FB 78:797  
 haul-out, FB 81:293, 298  
 incidental catch, foreign fishing vessels, 1978-81, MFR 45(7-9):45  
 Netarts Bay, Oregon, FB 81:291  
 otoliths, FB 81:293, 298  
 population, FB 82:440, 498  
 preys of, FB 81:295  
 pups, FB 81:293  
 rate of increase, FB 82:441  
 satellite monitoring of winter ice cover, MFR 46(3):7  
 seasonal disturbances, FB 82:495, 498  
 tags, FB 81:292, 296  
 teeth, FB 81:298  
 Tillamook Bay, Oregon, FB 81:291  
 Whiskey Creek, Oregon, FB 81:292
- Seal, Hawaiian monk  
 fishing gear encounters, Lisianski Island, 1982, MFR 46(3):59

- Seal, monk  
 entanglement with fishing gear  
 incidence, MFR 46(3):60  
 reponses, MFR 46(3):60
- Seal, northern elephant  
 incidental catch, foreign fishing vessels, 1978-81, MFR 45(7-9):45  
 population growth and censuses, on the California Channel Islands, 1958-78, FB 79:562
- Seal, northern fur  
 equipment and techniques for handling, S 758  
 feeding rate of captive adult female, FB 79:182  
 food of, off California and Washington  
 prey distribution, FB 78:955  
 prey size, FB 78:957  
 prey species, FB 78:955  
 stomach capacity of predators, FB 78:955  
 incidental catch, foreign fishing vessels, 1978-81, MFR 45(7-9):45  
 marine debris entanglement, MFR 46(3):59  
 Pacific Ocean and Bering Sea  
 opportunistic feeding, S 779  
 Pribilof Islands, Alaska  
 management, 1786-1981, TR 4  
 satellite monitoring of migration patterns, MFR 46(3):9
- Seal, ribbon  
 incidental catch, foreign fishing vessels, 1978-81, MFR 45(7-9):45  
 phenotypic structure of populations, TR 12  
 satellite monitoring of winter ice cover, MFR 46(3):7
- Seal, ringed  
 satellite monitoring of winter ice cover, MFR 46(3):7  
 Soviet-American Cooperative Research, TR 12
- Seal, spotted  
 craniological studies, TR 12  
 food habits, TR 12  
 phenotypic structure of populations, TR 12  
 subpopulations in Bering Sea, TR 12
- Seamounts  
 initial U.S. exploration of Gulf of Alaska  
 Applequist, MFR 43(1):28  
 Dickens, MFR 43(1):28  
 Durgin, MFR 43(1):28  
 fish and shellfish resources, MFR 43(1):29  
 Giacomini, MFR 43(1):29  
 Patton, MFR 43(1):29  
 Pratt, MFR 43(1):28  
 Quinn, MFR 43(1):28  
 Surveyor, MFR 43(1):28  
 Welker, MFR 43(1):28
- Seaperch, striped  
 Puget Sound, Washington  
 foraging on an artificial reef, MFR 44(6-7):40
- Seaperch, white, FB 82:37
- Searobin  
 larvae distribution patterns, MFR 45(10-12):19
- SEASAT satellite  
 fisheries data applications, MFR 46(3):6
- Seasonal effects  
 anchovy, northern, FB 81:741  
 Bay of Fundy-Gulf of Maine, FB 82:124, 136  
 clam, hard, FB 81:765
- Seasonal effects (continued)  
 drum, banded, FB 82:339  
 flounder, winter, FB 81:913  
 flounder, yellowtail, FB 81:341  
 groundfish, FB 82:298  
 kingfish, southern, FB 82:429  
 mussel, blue, FB 81:734  
 pollock, walleye, FB 81:890  
 rockfish, FB 82:280  
 rockfish, olive, FB 82:534  
 salmon, chinook, FB 82:157  
 seal, harbor, FB 82:495  
 shrimp, pink, FB 81:455  
 walleye, FB 82:413  
 weakfish, FB 82:503
- Seatrout, sand  
 charterboat fishery harvest, southeastern U.S., MFR 45(1):15  
 reproduction, movements, and population dynamics  
 age determination using scales, FB 79:660  
 growth and age determination by length frequency, FB 79:658  
 maturation and spawning periodicity, FB 79:650  
 maximum size, lifespan, and mortality, FB 79:662  
 nurseries and later movements, FB 79:657  
 spawning areas, early nurseries, and movements, FB 79:655  
 total weight-, girth-, and standard length-total length relations, FB 79:664
- Seatrout, silver  
 charterboat fishery harvest, southeastern U.S., MFR 45(1):15  
 spawning, age determination, longevity, and mortality in Gulf of Mexico  
 age determination using scales, FB 80:494  
 distribution and availability, FB 80:495, 498  
 growth and age determination, FB 80:496  
 growth and age determination by length frequency, FB 80:493  
 maximum size, life span, and mortality, FB 80:495, 498  
 spawning, FB 80:489, 496  
 total weight- and girth-standard length and standard length-total length relationships, FB 80:495
- Seatrout, spotted  
 Texas charterboat fishery harvest, MFR 45(1):11
- Seawater challenge  
 measuring smoltification in juvenile salmon, TR 17
- Seaweed  
 aquaculture  
 brown algae, C 442  
 phytoplankton, C 442  
 porphyra (nori), C 442
- Sebastes alutus*—see Perch, Pacific ocean  
*Sebastes crameri*—see Rockfish, darkblotched  
*Sebastes diploproa*—see Rockfish, splitnose  
*Sebastes entomelas*—see Rockfish, widow  
*Sebastes flavidus*—see also Rockfish, yellowtail  
 head spine notes, off Oregon, FB 79:254  
*Sebastes goodei*—see Chilipepper  
*Sebastes jordani*—see Rockfish, shortbelly  
*Sebastes matsubari*—see Rockfish  
*Sebastes melanops*  
 head spine notes, off Oregon, FB 79:254  
*Sebastes mystinus*  
 head spine notes, off Oregon, FB 79:254  
*Sebastes paucispinis*—see Bocaccio



- Sebastes pinniger*—see Rockfish, canary  
*Sebastes serranoides*—see Rockfish, olive  
*Sebastes* spp.—see Redfish; see Rockfish  
*Sebastes zacentrus*—see Rockfish, sharpchin
- Seerfish, Chinese  
 biology, FB 82:667  
 fisheries, FB 82:667  
 geographic variation, FB 82:668  
 species type, FB 82:665
- Seerfish, Korean  
 biology, FB 82:637  
 fisheries, FB 82:638  
 geographic variation, FB 82:638  
 species type, FB 82:636
- Seerfish, Papuan  
 biology, FB 82:647  
 fisheries, FB 82:647  
 species type, FB 82:646
- Seerfish, streaked  
 fisheries, FB 82:640  
 geographic variation, FB 82:641  
 species type, FB 82:638
- Senorita, FB 82:37
- Sergestes similis*  
 larval development  
 nauplius I, FB 80:218  
 nauplius II, FB 80:218  
 nauplius III, FB 80:218  
 nauplius IV, FB 80:223  
 postlarva I, FB 80:238  
 postlarva II, FB 80:238  
 protozoa I, FB 80:223  
 protozoa II, FB 80:223  
 protozoa III, FB 80:225  
 zoea I, FB 80:231  
 zoea II, FB 80:234
- Seriola dorsalis*—see Yellowtail  
*Seriola dumerili*—see Amberjack  
*Seriola lelandei*—see Yellowtail  
*Seriphus politus*—see Queenfish  
 Serranidae—see also Perch, sand  
 proximate chemical composition, MFR 46(3):71
- Sexual maturity—see Reproductive biology
- Shad, American, FB 81:815  
 eggs, FB 81:323  
 fin development, FB 81:330, 337  
 interaction with walleye, FB 82:411  
 larvae, FB 81:323  
 larval *Alosa sapidissima*, FB 81:324  
 morphology, FB 81:323, 336  
 myomers, FB 81:328, 336  
 Newfoundland, Canada to St. John's River, Florida, FB 81:323  
 pigmentation, FB 81:333, 337
- Shark, Atlantic sharpnose, FB 81:61  
 Gulf of Mexico, FB 81:61  
 reproductive biology, FB 81:63, 68
- Shark, basking  
 California, southern and central  
 abundance, 1963-78, S 762
- Shark, bigeye thresher—see Sharks  
 Shark, blacktip  
 incidental capture, TR 31
- Shark, blue, FB 81:61, 69  
 incidental capture, TR 31  
 physical properties useful in designing a skinning machine  
 adhesive work, MFR 43(10):20  
 apparatus and measurements, MFR 43(10):17  
 design parameters, MFR 43(10):15  
 sample collection and preparation, MFR 43(10):16  
 shear strength and shear work, MFR 43(10):19  
 skinning machine design, MFR 43(10):20  
 tensile strength and breaking elongation, MFR 43(10):18
- Shark, bull  
 incidental capture, TR 31  
 swimming kinematics, FB 80:803
- Shark, dusky  
 incidental capture, TR 31
- Shark, finetooth  
 occurrence off Dauphin Island, Alabama, FB 78:177
- Shark, Galapagos  
 predation on released spiny lobsters in the northwestern Hawaiian  
 Islands, MFR 47(1):33
- Shark, hammerhead  
 incidental capture, TR 31
- Shark, lemon  
 incidental capture, TR 31  
 swimming kinematics, FB 80:803
- Shark, leopard  
 swimming kinematics, FB 80:804
- Shark, nurse, FB 82:376  
 incidental capture, TR 31  
 swimming kinematics, FB 80:803
- Shark, oceanic whitetip  
 incidental capture, TR 31
- Shark, Pacific blacktop  
 swimming kinematics, FB 80:803
- Shark, porbeagle  
 incidental capture, TR 31
- Shark, sand tiger, FB 82:375  
 cannibalistic period, FB 81:213, 216  
 early development, FB 81:204, 206, 222  
 east-central coast of Florida, FB 81:202  
 late gestation period, FB 81:217  
 mating activity, FB 81:204  
 oophagous stage, FB 81:218  
 postcannibalistic period, FB 81:217  
 preparturition period, FB 81:218  
 reproduction, FB 81:222
- Shark, sandbar, FB 81:61, 72  
 Chincoteague Bay, Virginia  
 feeding behavior and biology of, in, FB 79:441  
 food habits in, FB 83:395
- Shark, sandbar (brown)  
 incidental capture, TR 31
- Shark, scalloped hammerhead  
 schooling in Gulf of California, FB 79:356
- Shark, shortfin mako  
 incidental capture, TR 31
- Shark, shovelhead, FB 82:378
- Shark, silky  
 incidental capture, TR 31
- Shark, thresher—see Thresher, bigeye  
 Shark, tiger  
 incidental capture, TR 31

- Shark, white  
 incidental capture, TR 31  
 observations off Long Island, New York, FB 80:153  
 predation on pinnipeds in California coastal waters, FB 80:891
- Sharks  
 age determination  
 proceedings, TR 8  
 Atlantic coastal waters of Florida  
 occurrence of *Cirolana borealis* in hearts, FB 79:376  
 Atlantic Ocean, western north, the Gulf of Mexico and the Caribbean Sea  
 guide to fishes taken in longlining, C 435  
 Farallon Islands  
 predation on pinnipeds, FB 78:941  
 incidental capture of sharks, TR 31  
 revision of genus *Carcharhinus*, TR 34  
 species accounts, TR 34  
 swimming kinematics, FB 80:803
- Sharks (large)  
 estimated catches by recreational fishermen in the Atlantic and Gulf of Mexico, TR 31
- Sharks, *Carcharhinus* spp.  
 identification features, C 445  
 key to species, C 445  
 species account, C 445  
 zoogeography, C 445
- Sharks, pelagic  
 reported commercial catches in the northwest and western central Atlantic Ocean and Gulf of Mexico, TR 31  
 estimates of recreational catch and other fishery bycatch, TR 31
- Sheephead, California, FB 82:37
- Sheepscot River estuary, Maine  
 herring, Atlantic  
 growth and age structure of larval, as determined by daily growth increments in otoliths, FB 79:123
- Shell growth  
 clam, hard, FB 81:697, 765  
 quahog, ocean, FB 82:13
- Shellfish  
 associated with Gulf of Alaska seamounts, MFR 43(1):26  
 consumer expenditure patterns, MFR 44(3):1  
 Hawaii, 1970-77  
 per capita annual utilization and consumption, MFR 42(2):16  
 Maryland commercial landings  
 identifying climatic factors influencing, FB 80:611  
 polychlorinated biphenyls, Chesapeake Bay  
 effects on humans, MFR 42(2):22  
 PCB control, MFR 42(2):22
- Shellfish culture  
 recent developments in Japan, TR 16
- Shellfishes  
 Pacific Ocean, northeastern  
 chlorinated hydrocarbon levels, MFR 43(1):1
- Shells, slipper  
 oyster spat fouling organisms, northeastern U.S., MFR 45(3):5
- Shrimp  
 abundance, FB 83:223  
 associated with giant kelp, FB 82:55  
 comparison of finfish and, in Texas and Louisiana  
 catch rates and ratios, MFR 44(9-10):45  
 contemporary data, MFR 44(9-10):44  
 data analysis, MFR 44(9-10):45
- Shrimp (continued)  
 Comparison of finfish and, (continued)  
 historical data, MFR 44(9-10):45  
 species composition, MFR 44(9-10):48  
 effects of 1981 Texas fishery closure  
 abundance, MFR 44(9-10):1  
 catch magnitude, MFR 44(9-10):2  
 fishing patterns, MFR 44(9-10):3  
 incidental catch and discards, MFR 44(9-10):4  
 estimated impacts on ex-vessel prices and value as a result of Texas closure regulation, MFR 44(9-10):38  
 Gulf and South Atlantic coasts  
 relationship between ex-vessel value and size composition of annual landings, MFR 42(12):28  
*Heterocarpus* spp., MFR 47(3):19  
 identification and development, FB 83:253  
 length-frequency data, FB 83:222  
 life history aspects, FB 83:219  
 Pandalidae, Hippolytidae, Crangonidae larvae, FB 83:253  
 relative abundance and size distribution of commercially important during 1981 Texas closure  
 genus *Penaeus*, MFR 44(9-10):8  
 historical collections, MFR 44(9-10):7  
 length frequency distributions of brown, MFR 44(9-10):10  
 length frequency distributions of other Panaeid species, MFR 44(9-10):12  
 sampling procedures, MFR 44(9-10):6  
 resource assessment at Mariana Archipelago, MFR 47(4):19  
 review of offshore fishery and 1981 Texas closure  
 biological background, MFR 44(9-10):17  
 fishery background, MFR 44(9-10):17  
 Louisiana fishery, MFR 44(9-10):19,21  
 production and regulations, MFR 44(9-10):18  
 recruitment, MFR 44(9-10):27  
 relative abundance, MFR 44(9-10):23  
 size composition 1972, 1977-80, MFR 44(9-10):19  
 size composition 1981, MFR 44(9-10):26  
 Texas fishery, MFR 44(9-10):19,22  
 sex transition, FB 83:225  
 yield impacts of 1981 Fishery Conservation Zone closure off Texas  
 sensitivity considerations, MFR 44(9-10):37  
 size structure in FCZ, MFR 44(9-10):31  
 virtual population analysis of offshore brown shrimp stock, MFR 44(9-10):33  
 yield-per recruit analysis, MFR 44(9-10):32  
 yields, had the FCZ been open, MFR 44(9-10):34  
 zoea, FB 82:523
- Shrimp, aloha  
 trawling surveys, Hawaii, MFR 46(2):19
- Shrimp, brown  
 abiotic relationships, FB 82:331  
 analysis of migration patterns using isotope ratios, FB 81:789  
 density-habitat, FB 82:332  
 density-temperature, FB 82:332  
 foods of coastal fishes, FB 81:396  
 Gulf and South Atlantic coasts  
 relationship between ex-vessel value and size composition of annual landings, MFR 42(12):28  
 habitat selection, FB 82:325  
 natural stable carbon isotope tag traces Texas migrations  
 bay migrations, FB 79:344

- Shrimp, brown (continued)  
 natural stable carbon isotope tag etc. (continued)  
 bay shrimp, FB 79:339  
 offshore migrations, FB 79:343  
 offshore samples, FB 79:341  
 seasonality, FB 79:341, 342  
 size and bay brown shrimp (XXX)C, FB 79:339  
 night trawl survey, FB 81:396  
 offshore fisheries, French Guiana, Surinam, and Guyana,  
 1978-1979, MFR 45(4-6):1  
 oxygen consumption and hemolymph osmolality  
 crowding effects, FB 78:743, 745  
 disturbance effects, FB 78:743, 745  
 diurnal effects, FB 78:743, 744  
 energy considerations, FB 78:752  
 reduced-light effects, FB 78:743, 745  
 salinity effects, FB 78:744, 745, 749  
 size effects, FB 78:744, 746, 750  
 temperature effects, FB 78:744, 745, 751  
 variability sources, FB 78:746  
 population estimates using juveniles, FB 83:677  
 predation, FB 82:331  
 stomach contents, FB 81:397  
 Texas estuaries to offshore waters, FB 81:396  
 Texas shrimp fleet characteristics, 1979-82, MFR 46(2):53  
 trends in ex-vessel value and size composition of annual landings  
 annual average ex-vessel value by size category, MFR  
 42(12):19  
 annual cumulative ex-vessel value of landings by size category,  
 MFR 42(12):22  
 data description, MFR 42(12):18  
 landings, MFR 42(12):19
- Shrimp, caridean  
 Northwestern Hawaiian Islands  
 catch rate, MFR 46(2):20  
 distribution, MFR 46(2):20  
*Heterocarpus ensifer*, trapping survey, MFR 46(2):18  
*Heterocarpus laevigatus*, trapping survey, MFR 46(2):18  
 peak abundance, MFR 46(2):25  
 seasonal abundance, MFR 46(2):23  
 size/depth, MFR 46(2):23
- Shrimp, deepwater  
 Vanuatu  
 bait, MFR 43(12):12  
 catch analyses, MFR 43(12):14  
 catch by depth, MFR 43(12):15  
 depth distribution, MFR 43(12):14  
 fishing operation, MFR 43(12):12  
 fishing rig, MFR 43(12):12  
 fishing vessel and equipment, MFR 43(12):12  
 offshore bathymetry, MFR 43(12):13  
 sexuality, MFR 43(12):16  
 size by depth, MFR 43(12):15  
 species caught, MFR 43(12):14  
 survey area and method, MFR 43(12):13  
 temperature, MFR 43(12):13  
 traps, MFR 43(12):11
- Shrimp, deepwater pandalid  
 stock, FB 81:434
- Shrimp, freshwater  
 Cane River, Jamaica, FB 81:654, 658  
 catch, FB 81:655, 658
- Shrimp, freshwater (continued)  
 eggs, FB 81:656  
 growth, FB 81:656, 658  
 maturity, FB 81:655  
 mortality, FB 81:655
- Shrimp, gulf  
 recruitment studies, MFR 45(10-12):4
- Shrimp, Kuruma  
 nutritional requirements and artificial diets, TR 16  
 structure of culture pond, TR 16
- Shrimp, mantis  
 distribution, FB 82:418, 420, 424  
 life history, FB 82:418  
 sex ratio, FB 82:420, 422  
 size composition, FB 82:420, 422
- Shrimp, northern pink  
 Pacific cod diet in Pavlof Bay, Alaska, FB 83:601
- Shrimp, Pacific  
 microbiological profile, stowed under refrigerated seawater  
 spray  
 microbial count, MFR 44(3):15  
 microbial identification, MFR 44(3):15  
 NaCl, MFR 44(3):15  
 pH, MFR 44(3):15  
 sampling, MFR 44(3):12  
 sea trial of model RSWS unit, MFR 44(3):14  
 shore trial of model RSW system, MFR 44(3):15  
 temperature, MFR 44(3):15
- Shrimp, pandalid  
 Kachemak Bay area  
 larvae distribution and abundance, S 765
- Shrimp, penaeid  
 disease in controlled culture, TR 16  
 research and development in maturation and production, TR 16
- Shrimp, *Penaeus* spp.  
 gulf shrimp recruitment studies, MFR 45(10-12):4
- Shrimp, pink  
 analysis of migration patterns using isotope ratios, FB 81:789  
 biological data, TR 30  
 distribution and abundance, FB 81:457  
 fishery in Tortugas Sanctuary off south Florida, MFR 47(4):11  
 growth rates, FB 81:464  
 Gulf and South Atlantic coasts  
 relationship between ex-vessel value and size composition of  
 annual landings, MFR 42(12):28  
 larvae, FB 81:455  
 offshore fisheries, French Guiana, Surinam, and Guyana,  
 1978-79, MFR 45(4-6):1  
 relationship of winter temperature and spring landings in North  
 Carolina  
 air-water temperature relation, FB 80:765  
 annual temperature cycle in Newport River Estuary, FB 80:764  
 relationship between temperature, rainfall, and landings, FB  
 80:765  
 survival, FB 81:465, 467, 469  
 Texas shrimp fleet characteristics, 1979-82, MFR 46(2):53  
 trends in ex-vessel value and size composition of annual landings  
 annual average ex-vessel value by size category, MFR  
 42(12):19  
 annual cumulative ex-vessel value of landings by size category,  
 MFR 42(12):22  
 annual cumulative landings by size category, MFR 42(12):21

- Shrimp, pink (continued)
- Landings (continued)
    - data description, MFR 42(12):18
    - landings, MFR 42(12):19
- Shrimp, pink-spotted
- offshore fisheries, French Guiana, Surinam, and Guyana, 1978-79, MFR 45(4-6):1
- Shrimp, rock
- abundance, FB 82:717
  - biometric relationships, FB 82:718
  - description and taxonomy in the eastern Pacific, FB 83:1
  - diet, FB 82:717
  - distribution, FB 82:716
- Shrimp, white, FB 81:789
- Gulf and South Atlantic coasts
    - relationship between ex-vessel value and size composition of annual landings, MFR 42(12):28
  - offshore fisheries, French Guiana, Surinam, and Guyana, 1978-79, MFR 45(4-6):1
  - Texas shrimp fleet characteristics, 1979-82, MFR 46(2):53
  - trends in ex-vessel value and size composition of annual landings
    - annual average ex-vessel value by size category, MFR 42(12):19
    - annual cumulative ex-vessel value of landings by size category, MFR 42(12):22
    - annual cumulative landings by size category, MFR 42(12):21
    - data description, MFR 42(12):18
    - landings, MFR 42(12):19
- Shrimp culture
- parasitological aspects, TR 25
- Shrimp fisheries
- Guianas-Brazil area, 1978-79
    - catch, MFR 45(4-6):7
    - CPUE, MFR 45(4-6):3
    - fishing effort, MFR 45(4-6):4
    - regulations, MFR 45(4-6):2
    - trends, MFR 45(4-6):9
    - U.S. vessel landings, MFR 45(4-6):3
  - Guianas-Brazil and related U.S. research
    - annual and monthly landings, MFR 43(2):11
    - catch per unit of effort, MFR 43(2):12
    - distribution of catch and effort in relation to day and night fishing, MFR 43(2):13
    - species composition and geographical distribution, MFR 43(2):11
    - stock evaluation, MFR 43(2):14
  - Texas
    - commercial, MFR 46(2):53
    - costs, MFR 46(2):53
    - economic impacts, MFR 46(2):53
    - fishing areas, MFR 46(2):53
    - fleet, MFR 46(2):54
    - legislation, MFR 46(2):58
    - licensing, MFR 46(2):53
    - management, MFR 46(2):53
    - recreational, MFR 46(2):53
    - total landings/value, MFR 46(2):53
    - vessels, MFR 46(2):53
  - use of Griffin's yield model for Gulf of Mexico
    - expected value of yield, FB 78:974
    - parameter sensitivity test, FB 78:975
- Shrimp fleet
- Guianas-Brazil area, MFR 45(4-6):2
  - U.S. South Atlantic, MFR 45(7-9):27
- Shrimp industry
- costs and returns trends in Gulf of Mexico
    - annual cash flows, MFR 42(2):5
    - annual costs and returns, MFR 42(2):4
    - cash flow budgeting, MFR 42(2):3
    - catch, seasonal variations, MFR 42(2):2
    - costs and returns budgeting, MFR 42(2):3
    - data analysis, MFR 42(2):3
    - data description, MFR 42(2):2
    - investment analysis, MFR 42(2):3
    - monthly cash flows, MFR 42(2):5
- Shrimp landings
- Gulf of Mexico, MFR 46(2):51
- Shrimp larvae, penaeid
- effect of vertical migration on dispersal in Gulf of Carpentaria, Australia
    - consequences of vertical migration, FB 80:545
    - ontogeny of vertical migration, FB 80:543
    - pattern variations of vertical distribution, FB 80:544
- Shrimp production
- Gulf of Mexico
    - food web hypothesis, FB 79:737
- Shrimp vessels
- Gulf of Mexico, MFR 46(2):49
    - costs, FB 82:365
    - revenue, FB 82:366, 369
  - Sicyonia pencillata*—see Shrimp, rock
- Sierra
- biology, FB 82:665
  - fisheries, FB 82:665
  - geographic variation, FB 82:665
  - species type, FB 82:662
- Signidae
- proximate chemical composition, MFR 46(3):71
- Silverside, Atlantic
- migration, offshore winter, FB 80:145
  - patterns in fecundity, FB 83:331
- Simulation
- eel, Atlantic, movement patterns, FB 81:484
  - yield per recruit model, FB 81:681
- Size-composition
- queenfish, FB 83:172
- Skate, little
- Gulf of Maine
    - trophic relationships, FB 79:775
  - Mid Atlantic Bight
    - food habits and trophic relationships, S 773
- Skipjack Tuna Assessment Program
- Papua New Guinea's tuna fishery, MFR 45(10-12):47
- Smelt
- longfin, FB 81:815
  - rainbow
    - mortalities of larvae exposed to acute thermal shock, FB 79:198
  - surf, FB 81:815
- Smoltification
- methods of measure, TR 27
- Smoothtongue
- California, FB 82:68

- Smoothtongue (continued)
- northern
    - eggs and larvae, FB 81:37
    - identification, FB 81:25, 36
    - morphology, FB 81:27
    - northeast Pacific, FB 81:23
    - osteology, FB 81:25, 30
    - pigmentation, FB 81:26
  - Snail
    - coral reef
      - abundance, MFR 46(4):75
      - conservation efforts, MFR 46(4):73
      - demand, MFR 46(4):73
      - depletion, MFR 46(4):74
      - distribution, MFR 46(4):76
      - fisheries, MFR 46(4):73
      - habitat, MFR 46(4):76
      - harvest, MFR 46(4):73
      - products, MFR 46(4):73
      - resource management, MFR 46(4):74
      - sanctuary program, MFR 46(4):74
    - resource and fishery of eastern Bering Sea
      - composition, MFR 42(5):15
      - Japanese fishery, MFR 42(5):17
      - life history, MFR 42(5):16
      - prospects for U.S. fishery, MFR 42(5):19
  - Snapper
    - resource assessment at Mariana Archipelago, MFR 47(4):19
  - Snapper, Brigham's
    - seamount fishery research, central North Pacific, MFR 46(2):11
  - Snapper, Hawaiian
    - gonads, FB 81:526
    - growth of whole fish, FB 81:527, 532
    - otolith growth increments, FB 81:524
    - sagittae, FB 81:526
    - size-frequency distribution, FB 81:531
  - Snapper, pink
    - allele examination, FB 82:707
    - electrophoresis, FB 82:704
    - enzyme variation, FB 82:704
    - genetic differentiation, FB 82:710
    - seamount fishery research, central North Pacific, MFR 46(2):11
  - Snapper, red
    - growth of juvenile, Gulf of Mexico, FB 80:644
    - seamount fishery research, central North Pacific, MFR 46(2):11
    - spawning experiments, TR 10
    - Texas charterboat fishery harvest, MFR 45(1):11
  - Snapper, vermilion
    - reproductive biology, North and South Carolina
      - fecundity, FB 78:142
      - maturity, FB 78:140, 144
      - seasonality, frequency, and duration of spawning, FB 78:139
      - sex ratio, FB 78:141, 144
  - Sole, butter
    - eggs and larvae off Oregon and Washington
      - features, distinguishing, FB 78:403
      - identification verification, FB 78:403
      - morphology, FB 78:405, 408
      - occurrence, FB 78:412
      - ossification of meristic structures, FB 78:409
      - pigmentation, FB 78:404, 405
  - Sole, deepsea
    - pelagic eggs and larvae
      - comparison, FB 79:166
      - description, FB 79:164
      - identification, FB 79:164
      - occurrence, FB 79:166
  - Sole, Dover
    - feeding selectivity off Oregon
      - diet changes with predator length, FB 79:753
      - feeding habits, FB 79:752
      - prey abundance patterns, FB 79:759
    - fin erosion, FB 83:195
  - Sole, English, FB 82:113
    - age and growth in Oregon coastal waters
      - field and laboratory procedures, FB 80:94
      - increment formation, FB 80:95
      - spawning and rearing procedures, FB 80:94
      - statistical procedures, FB 80:95
    - growth during metamorphosis, FB 80:150
    - growth in estuarine and open coastal nursery grounds, FB 80:245
  - Sole, rex
    - fin erosion, FB 83:195
  - Sole, yellowfin
    - Bering Sea, FB 81:667
    - genetic population structure, FB 81:668, 670
    - Hokkaido, Japan, FB 81:668
    - north Pacific Ocean, FB 81:667
  - SOOP (ships of opportunity)
    - ocean monitoring program, TR 24
  - South America
    - hake
      - resource and utilization, MFR 42(1):8
      - squid fisheries developments, MFR 42(7-8):10
  - South Carolina
    - estuarine system, S 757
    - snapper, vermilion
      - reproductive biology, FB 78:137
  - South Carolina, Charleston
    - reef, artificial
      - food of fish collected on, MFR 44(6-7):49
  - Southern oscillation
    - indices, FB 81:363, 365
    - long-term variations, FB 81:367
  - Soviet-American Cooperative Research
    - marine mammals, TR 12
  - Spadella cephaloptera*
    - chaetognatha of the Caribbean Sea
      - classification, TR 15
      - key to species, TR 15
  - Spadella nana*
    - chaetognatha of the Caribbean Sea
      - classification, TR 15
      - key to species, TR 15
  - Spadella pulchella*
    - chaetognatha of the Caribbean Sea
      - classification, TR 15
      - key to species, TR 15
  - Spadella schizoptera*
    - chaetognatha of the Caribbean Sea
      - classification, TR 15
      - key to species, TR 15

- Sparidae  
 proximate chemical composition, MFR 46(3):71
- Spawning—see also Reproductive biology  
 daily time of in the Peconic Bays, New York, FB 78:455
- Spearfish, shortbill  
 observations, warm water periods, California, MFR 45(4-6):27
- Sphyaena argentea*—see Barracuda, Pacific
- Sphyrna lewini*—see Shark, scalloped hammerhead
- Sphyrna* spp.—see Scalloped hammerhead, TR 31  
 —see Great hammerhead, TR 31  
 —see Bonnethead, TR 31  
 —see Smooth hammerhead, TR 31
- Sphyrna tiburo*—see Bonnethead; Shark, shovelhead
- Spikefishes  
 osteology, phylogeny, and higher classification, C 434
- Spionida  
 life history, distribution, and abundance in the New York Bight, S 766
- Spirinchus thaleichthys*—see Smelt, longfin
- Spirontocaris arcuata*  
 description  
 stage I zoeae, FB 79:431
- Spirontocaris murdochi*—see Shrimp
- Spirontocaris ochotensis*  
 description  
 stage I zoea, FB 79:433
- Spisula solidissima*—see Clam, Atlantic surf; Clam, surf
- Splittail  
 condition, FB 81:650  
 feeding, FB 81:651, 653  
 growth, FB 81:649, 653  
 life history, FB 81:649  
 reproductive biology, FB 81:650  
 Sacramento-San Joaquin estuary, FB 81:647, 653
- Sport fishing—see Recreational fishing; Fishing, sport
- Spot  
 age, growth and distribution of larvae in North Carolina coastal waters, FB 83:587  
 Cape Fear River, North Carolina  
 retention of postlarval in tidal estuary, FB 78:419  
 chemical composition and frozen storage stability  
 chemical analyses, MFR 44(11):15  
 physical measurements, MFR 44(11):15  
 product evaluation, MFR 44(11):15  
 sample preparation, MFR 44(11):15  
 sensory evaluation, MFR 44(11):15
- egg and larval development  
 body proportions, FB 78:704  
 distinguishing from other sciaenids, FB 78:712  
 embryonic development, FB 78:702  
 fins, FB 78:705  
 pigmentation, FB 78:710  
 pterygiophore development and arrangements, FB 78:709
- fatty acid profile, MFR 45(7-9):31
- incidental harvest, South Atlantic shrimp fleet, MFR 45(7-9):27
- infections, FB 81:895
- larvae, FB 81:407, 895
- mean standard length, FB 81:407, 411
- 1972-73 season, FB 81:407
- 1973-74 season, FB 81:408
- recruitment studies, MFR 45(10-12):4
- Sprat  
 abundance, MFR 45(10-12):19  
 baitfish use, Papua New Guinea's tuna fishery, MFR 45(10-12):50
- Spratelloides gracilis*—see Sprat
- Spyridia*  
 as substrate for *Gambierdiscus toxicus*, MFR 46(1):16
- Squalus acanthias*—see Dogfish, spiny
- Squid, FB 81:124, 129  
 Atlantic coast, U.S.  
 length-weight relationship, S 745  
 California, southern and central  
 abundance, 1963-78, S 762  
 catches  
 resulting from trawl surveys off southeastern United States, MFR 42(7-8):39
- dried  
 processing equipment and markets, MFR 42(7-8):85
- Enoploteuthis reticulata*  
 adult description, FB 80:723  
 experimental fishing with lights in Nantucket Sound  
 vessel, rigging, and operation, MFR 42(7-8):52  
 vessel trials, MFR 42(7-8):53  
 experimental jigging off northeast United States  
 biological data, MFR 42(7-8):65  
 catch and effort, MFR 42(7-8):64  
 environmental factors, MFR 42(7-8):65  
 fishing areas, MFR 42(7-8):63  
 fishing operations, MFR 42(7-8):60  
 processing operations, MFR 42(7-8):63  
 vessel lighting, MFR 42(7-8):66
- flying  
 potential squid jigging fishery, Washington coast, MFR 45(7-9):56
- four new species from the central Pacific  
 bathymetric distribution, FB 80:728  
*Enoploteuthis higginsi*, FB 80:718  
*Enoploteuthis jonesi*, FB 80:713  
*Enoploteuthis obliqua*, FB 80:704  
*Enoploteuthis octolineata*, FB 80:708  
 geographic distribution, FB 80:728  
 key to species of *Enoploteuthis*, FB 80:731  
 relationships, FB 80:729
- helminth fauna and host parasite relations, TR 25
- market, FB 82:68
- nail  
 potential squid jigging fishery, Washington coast, MFR 45(7-9):56
- New England  
 experimental pair trawling, MFR 42(7-8):57
- off Washington  
 biological data, MFR 45(7-9):59, 60, 61  
 harvesting, MFR 45(7-9):60  
 jigging experiments, MFR 45(7-9):57-59  
 sexual maturity, MFR 45(7-9):61  
 squid, nail, MFR 45(7-9):56  
 squid, flying, MFR 45(7-9):56
- Pacific market  
 embryological stage, FB 82:445  
 spawning, FB 82:445
- predation by marine mammals in eastern North Pacific Ocean  
 and Bering Sea  
 Gonatidae, MFR 44(2):5  
 Loliginidae, MFR 44(2):3

- Squid (continued)
- Bering Sea (continued)
    - Ommastrephidae, MFR 44(2):4
    - Onychoteuthidae, MFR 44(2):4
    - specimen collection, MFR 44(2):2
  - quality of, held in chilled seawater vs. conventional shipboard handling
    - boxed, MFR 42(7-8):74
    - frozen at sea, MFR 42(7-8):74
    - organoleptic results, MFR 42(7-8):75
    - penned, MFR 42(7-8):74
    - procedure ashore, MFR 42(7-8):75
    - procedure at sea, MFR 42(7-8):74
    - quality determination, MFR 42(7-8):75
  - quality of mantles canned in oil
    - effect of preprocess frozen storage, MFR 43(6):20
    - shelf life, MFR 43(6):19
    - shrinkage during thermal processing, MFR 43(6):18
    - system to singulate and align for packaging and processing, MFR 43(6):21
  - skinning and eviscerating system, development
    - design considerations, MFR 42(7-8):77
    - ducting, MFR 42(7-8):79
    - evisceration and pen removal, MFR 42(7-8):79
    - industrial scale-up, MFR 42(7-8):84
    - orientation and alignment, MFR 42(7-8):77
    - performance trials, MFR 42(7-8):81
    - removal from machine, MFR 42(7-8):80
    - skinning process, MFR 42(7-8):79
- Squid, long-finned
- biological considerations relevant to management in northwest Atlantic
    - biology, MFR 42(7-8):23
    - commercial fishery, MFR 42(7-8):29
    - length frequency samples, MFR 42(7-8):31
    - research cruise abundance, MFR 42(7-8):32
    - simulation model of population, MFR 42(7-8):36
  - objective method for classifying into sexual maturity stages
    - application, FB 80:453
    - biological relevance and accuracy, FB 80:456
    - classification process, FB 80:452
    - comparisons with other classification methods, FB 80:457
    - discriminant functions development, FB 80:451
    - maturity stages, four, FB 80:453
    - multivariate approach, objectivity and utility, FB 80:456
  - reproductive behavior, in situ observations, FB 78:947
  - scanning electron microscopy
    - cooked, MFR 42(7-8):73
    - frozen, MFR 42(7-8):69
    - muscle fibers, MFR 42(7-8):69
    - procedure, MFR 42(7-8):67
    - raw squid, MFR 42(7-8):68
- Squid, short-finned
- biological considerations relevant to management in northwest Atlantic
    - biology, MFR 42(7-8):23
    - commercial fishery, MFR 42(7-8):29
    - length frequency samples, MFR 42(7-8):31
    - research cruise abundance, MFR 42(7-8):32
    - simulation model of population, MFR 42(7-8):36
  - recent developments in Newfoundland fishery
    - catch rates, factors influencing inshore, MFR 42(7-8):18
- Squid, short-finned (continued)
- recent developments etc. (continued)
    - dried, MFR 42(7-8):20
    - fishing strategy developments, MFR 42(7-8):17
    - frozen, MFR 42(7-8):20
    - landings, distribution, and economic value, MFR 42(7-8):15
    - life history, MFR 42(7-8):15
    - management initiatives, MFR 42(7-8):16
    - offshore fishery, MFR 42(7-8):19
    - processing and marketing developments, MFR 42(7-8):19
    - prospects, MFR 42(7-8):21
  - Squid fishery
    - Japan's industry
      - consumption, MFR 42(7-8):6
      - fishery, MFR 42(7-8):1
      - import quota system, MFR 42(7-8):8
      - regulation, MFR 42(7-8):4
    - Newfoundland, Canada
      - recent developments in short-finned, MFR 42(7-8):15
    - Philippine fishery
      - developments, MFR 43(1):19
      - fishing methods, MFR 43(1):15
      - production, MFR 43(1):13
      - research, MFR 43(1):17
  - shark bycatch, TR 31
  - South America, developments
    - Atlantic coast, MFR 42(7-8):11
    - consumer market, MFR 42(7-8):12
    - Pacific coast, MFR 42(7-8):10
    - situation, general, MFR 42(7-8):10
    - squid resources, MFR 42(7-8):12
  - Texas
    - biological, economic, and market considerations, MFR 42(7-8):44
- Squilla empusa*—see also Shrimp, mantis
- larval ecology in Chesapeake Bay
    - Cape Henry survey, FB 78:694
    - research applied to national needs (RANN) survey, FB 78:694
    - seasonal occurrence, FB 78:695
    - temperature and salinity tolerance, FB 78:697
- St. Lawrence, Gulf of, FB 81:600
- Staphylococcus aureus*
- microbiological analysis, blue crab samples, MFR 45(7-9):39
- Starfish (Astropectinidae)
- oyster spat predators, northeastern U.S., MFR 45(3):5
  - seamount fishery research, central North Pacific, MFR 46(2):12
- Steelhead—see also Trout, rainbow
- feeding periodicity and diel variation in diet composition in small stream during summer, FB 79:370
  - juveniles, FB 81:815
  - production and growth of subyearling in Orwell Brook, New York, FB 78:549
  - smolts, transportation in Columbia River and effects on adult returns
    - collection and marketing of fish and fish hauling procedures, FB 78:493
    - comparison of results with other studies, FB 78:502
    - effect of transportation on homing, FB 78:503
    - evaluation of returning adults, FB 78:494
    - experimental design, FB 78:493
    - factors influencing assessment of data, FB 78:494
    - percentage adult returns of transported releases, FB 78:498

- Steelhead (continued)  
 returns (continued)  
 recovery of marked in the Indian and sport fisheries,  
 FB 78:501  
 returns of adult experimental fish to hatcheries and spawning  
 grounds, FB 78:501  
 returns of adult experimental fish to Little Goose Dam, FB  
 78:496  
 size and years-in-ocean of adult experimental fish, FB 78:500  
 straying of experimental groups, FB 78:502  
*Stellifer lanceolatus*—see Drum, star  
*Stenella attenuata*—see Dolphin, spotted  
*Stenella coeruleoalba*—see Dolphin, striped  
*Stenella longirostris*—see Dolphin, eastern spinner; Dolphin,  
 Hawaiian spinner; Dolphin, spinner  
*Stenella oualaniensis*—see Squid  
*Stenella* spp.—see Dolphins  
*Stenobranchius leucopsarus*—see Lampfish, northern  
*Stenotomus caprinus*—see Porgy, longspine  
*Stenotomus chrysops*—see Scup  
 Stichaeidae  
 ichthyoplankton off Alaska, TR 20  
 Stickleback, threespine, FB 81:815  
*Stizostedion vitreum vitreum*—see Walleye  
 Stock assessment—see Population studies  
 Stock identification  
 salmonid, FB 83:81  
 Stock recruitment  
 using remote sensing predictions, MFR 46(3):5  
*Stolephorus devisi*—See Anchovy  
*Stolephorus heterolobus*—see Anchovy  
*Stolephorus purpureus*—see Anchovy, Hawaiian  
 Stomach contents  
 change in food habits, FB 81:441  
 change, increasing fish length, FB 81:440  
*Striata*—see Fish, reef  
*Strombus gigas*—see Conch, queen  
*Strombus* spp.—see Conch  
*Strongylocentrotus franciscanus*—see Sea urchin, red  
 Student-Newman-Kuel's test, FB 81:272  
 Sturgeon, Atlantic  
 Delaware River estuary, FB 80:337  
 Sturgeon, shortnose  
 biological data, TR 14  
 Sturgeon, white  
 Columbia River at Hanford, Washington  
 snout dimorphism, FB 80:158  
 diel and seasonal movements in mid-Columbia River, FB 79:367  
 Submersible  
 bait loss from halibut longline gear, observing, MFR 42(2):26  
 Surgeonfish, blueline  
*Trochus* habitat indicator species, MFR 46(4):78  
 Surimi  
 processing using red and silver hake, MFR 46(2):43  
 Surinam  
 offshore shrimp fishery harvest, U.S., 1978-79, MFR 45(4-6):1  
 Survey  
 fishery experiments, MFR 47(4):20  
 methods  
 porpoise, harbor, FB 81:910  
 resource assessments at Mariana Archipelago, MFR 47(4):19  
 Swim bladder, menhaden, FB 82:513
- Swordfish  
 biology, C 441  
 daily patterns in activities, observed by acoustic telemetry  
 buoyancy, FB 79:290  
 horizontal movements, FB 79:284  
 navigation, FB 79:279  
 oxygen, FB 79:289  
 receiving, FB 79:279  
 temperature, FB 79:279, 290  
 transmitters, FB 79:278  
 vertical movements and light, FB 79:287  
 development  
 anal fin, FB 80:169  
 anal fin pterygiophores, FB 80:171  
 branchiostegal rays, FB 80:179  
 caudal fin, FB 80:172  
 caudal fin supports, FB 80:172  
 dorsal fin, FB 80:165  
 dorsal fin pterygiophores, FB 80:166  
 pectoral fin, FB 80:162  
 pectoral fin supports, FB 80:163  
 squamation, FB 80:181  
 vertebral column, FB 80:175  
 exploitation, C 441  
 Florida Straits  
 cephalopods in the diet, FB 79:765  
 incidental catch, TR 31  
 pond fish culture, C 441  
 protection and management, C 441  
 shark bycatch fishery, TR 31  
*Symplectoteuthis luminosa*  
 identification, TR 17  
*Symplectoteuthis oualaniensis*  
 identification, TR 17  
 Systematics studies  
 mackerel, Spanish, FB 82:545
- T** \_\_\_\_\_
- Tagging  
 deepwater fish, FB 81:663  
 detachable tags, FB 81:664  
 eel, American, FB 82:519  
 herring  
 coded-wire microtags, MFR 44(3):18  
 lobster, American, FB 82:242  
 rockfish, FB 81:918  
 sablefish, FB 81:415  
 tetracycline, FB 82:208, 237  
 tilefish, FB 81:663  
 Tagging experiments  
 analysis of double-tagging  
 adjustment factor estimation for single-tag recoveries, FB  
 80:692  
 models, FB 80:689  
 mortality rate, FB 80:699  
 parameter estimation of specific models, FB 80:693  
 shedding rate and parameter estimation, FB 80:691  
 tag loss in single-tagging experiments, FB 80:687  
 Tagging programs  
 black marlin in the southwest Pacific  
 migration, S 772



- Tagging programs (continued)  
 black marlin in the southeast Pacific (continued)  
 procedure, S 772  
 results, S 772
- Tagging studies  
 salmonids, TR 27
- Tagging techniques  
 cetaceans, small odontocete, FB 80:135
- Tautoglabrus adspersus*—see Cunner
- Taxonomy  
 mackerel, Spanish, FB 82:545  
 scombrids, FB 81:246  
 shrimp, FB 82:523  
 shrimp, rock, FB 83:1
- Teleost larvae—see also Larvae, teleost  
 taxonomic studies, C 450
- Temperature, sea-surface  
 California, southern and central coast  
 effects on sport species, S 759  
 relationship to striped marlin catch off southern California, MFR 47(3):43
- Terebellida  
 life history, distribution, and abundance in the New York Bight, S 766
- Tetrabrachium*—see Anglerfish
- Tetraodontidae—see Puffers  
 seamount fishery research, central North Pacific, MFR 46(2):11
- Tetraodontiform fishes—see Plectognath fishes
- Tetrapturus albidus*—see Marlin, white
- Tetrapturus angustirostris*—see Spearfish, shortbill
- Tetrapturus audax*—see Marlin, striped
- Texas  
 charter boat fishery  
 harvest estimates, MFR 45(1):11  
 1981 closure  
 comparison of shrimp and finfish catch rates and ratios, MFR 44(9-10):44  
 effects on shrimp fishery, MFR 44(9-10):1  
 estimated impacts on ex-vessel brown shrimp prices and value, MFR 44(9-10):38  
 impacts on shrimp yields, MFR 44(9-10):31  
 relative abundance and size distribution of commercially important, MFR 44(9-10):5  
 review of offshore shrimp fishery, MFR 44(9-10):16  
 shrimp fleet mobility, MFR 44(9-10):50  
 squid fishery  
 biological, economic, and market considerations, MFR 42(7-8):44  
 turnover in charterboat industry 1975-80, MFR 47(1):43
- Texas, southern  
 dolphin, bottlenose  
 occurrence, movements, and distribution, FB 78:593
- Thais haemastoma floridana*—see Drill, oyster
- Theragra chalcogramma*—see Pollock, walleye
- Thermal effluent effects, FB 82:199
- Thresher, bigeye  
 taxonomic status and biology  
 abundance, distribution, and habitat, FB 79:632  
 age and growth, FB 79:630  
 characters, distinctive, FB 79:619  
 color, FB 79:624  
 commercial importance, FB 79:636
- Thresher, bigeye (continued)  
 taxonomic status and biology (continued)  
 denticles, FB 79:627  
 dentition, FB 79:625  
 food, FB 79:635  
 notes, descriptive, FB 79:623  
 parasitology, FB 79:636  
 prey catching, FB 79:635  
 reproduction, FB 79:633  
 size, FB 79:628  
 status of *Alopias profundus*, FB 79:621  
 studies, experimental, FB 79:635  
 vertebrae, FB 79:524
- Thunnini  
*Auxis Cuvier*, FB 81:243  
*Euthynnus* Lutken in Jordon and Gilbert, FB 81:244  
*Katsuwonus* Kishinouye, FB 81:244  
 Subgenus *Neothunnus* Kishinouye, FB 81:245  
 Subgenus *Thunnus* South, FB 81:245  
*Thunnus* South, FB 81:244  
*Thunnus alalunga*—see Albacore  
*Thunnus albacares*—see Tuna, yellowfin  
*Thunnus atlanticus*—see Tuna, blackfin  
*Thunnus obesus*—see Tuna, bigeye  
*Thunnus thynnus orientalis*—see Tuna, bluefin
- Thyroxine  
 smoltification in juvenile salmon, TR 27
- Tilapia nilotica*  
 otoliths, effects of photoperiod and feeding on daily growth patterns of juvenile  
 correlation between number of otolith rings and age in days after hatching, FB 79:462  
 experiments under 24-h photoperiod, FB 79:460  
 feeding experiments, FB 79:460  
 feeding time and formation of otolith rings, FB 79:463  
 formation of otolith rings under 12L-12D photoperiod, FB 79:462  
 formation of otolith rings under 18L-6D and 6L-18D photoperiods, FB 79:463  
 measurement of daily growth rhythm, FB 79:460  
 otolith preparation for scanning electron microscopy, FB 79:460
- Tilefish  
 abundance and sediment composition off Georgia, FB 83:443  
 age, FB 81:756, 760  
 electrophoresis, FB 81:42, 43  
 fishery in Mid-Atlantic Bight  
 catch, MFR 42(11):15  
 catch rates, MFR 42(11):15  
 effort, MFR 42(11):15  
 gear and operations, MFR 42(11):15  
 history, MFR 42(11):14  
 size of fish, MFR 42(11):15  
 growth models, FB 81:757, 760  
 Gulf of Mexico, FB 81:41  
 historical data, MFR 45(4-6):16  
 length and weight relationship, FB 81:758  
 Middle Atlantic Bight, FB 81:41, 751  
 morphology, FB 81:42, 44, 47  
 off South Carolina, Georgia  
 average size, MFR 45(4-6):23  
 bottom temperatures, MFR 45(4-6):24  
 CPUE, MFR 45(4-6):17, 18

- Tilefish (continued)
- off South Carolina, Georgia (continued)
    - fishery, MFR 45(4-6):25
    - habitat, MFR 45(4-6):22
    - relative abundance, MFR 45(4-6):20
    - seasonal production, MFR 45(4-6):22
    - test fishing, MFR 45(4-6):17
  - otoliths, FB 81:752, 755
  - size structure, FB 81:759
  - South Atlantic Bight, FB 81:41
  - southern New England, FB 81:751
  - tagging, FB 81:663
  - U.S. east coast, FB 81:41
- Tilefish, blueline
- fecundity, FB 81:555, 557
  - gonad, FB 81:554
  - gonostomatic indices, FB 81:554
  - juveniles, FB 81:556
  - ovaries, FB 81:555, 566
  - sex ratio, FB 81:562, 566
  - sex transition., FB 81:563, 566
  - sexual maturity, FB 81:562
  - spawning, FB 81:557, 566
- Todarodes pacificus*
- identification and estimation of size from beaks, TR 17
- Tomcod, Atlantic
- observations on early life stages
    - developmental stages, FB 78:150
    - dry weight, FB 78:153
    - egg collection, FB 78:148
    - egg diameter, FB 78:153
    - field observations, FB 78:150
    - field studies, FB 78:147
    - laboratory studies, FB 78:148
    - specific gravity, FB 78:152
    - specific gravity of egg solids, FB 78:154
    - statistical procedures, FB 78:149
    - survival to hatch and length at hatching, FB 78:152
    - water content, FB 78:152
- Tomcod, Pacific
- early life history studies, MFR 45(10-12):12
  - larval development in northeast Pacific Ocean
    - comparative notes on *Theragra chalcogramma* and *Gadus macrocephalus*, FB 78:935
  - fins, FB 78:931
  - head and axial skeleton, FB 78:929
  - identification, FB 78:925
  - measurements, FB 78:924
  - morphology, FB 78:929
  - occurrence, FB 78:935
  - pigment patterns, FB 78:925
  - scales, FB 78:935
  - specimens, FB 78:924
- Tomtate
- distribution, abundance, and age and growth along southeastern U.S. coast
    - age and growth, FB 80:3, 10, 15
    - distribution and relative abundance, FB 80:1, 4, 14
    - length-weight and fork length-total relationships, FB 80:4, 13
    - management, FB 80:16
    - mortality estimates, FB 80:4, 13,
    - spawning, FB 80:4, 13, 16
- Tomtate (continued)
- feeding habits in the South Atlantic Bight, FB 83:461
- Topsmelt
- Laguna San Ignacio, Baja California Sur, Mexico
    - cleaning symbiosis between, and gray whale, FB 79:360
- Total Allowable Level of Foreign Fishing (TALFF)
- definition framework, MFR 45(7-9):21
  - landings, 1981, MFR 45(7-9):22
- Toxins—see Ciguatera fish poisoning
- Trachipterus altivelis*—see Ribbonfish
- Trachurus symmetricus*—see Mackerel, jack
- Tracking
- small vessel techniques for pelagic fish, MFR 47(4):35
- Transplantations
- implications to aquaculture and ecosystems
    - accidental transplantations, MFR 42(5):6
    - carp, common, MFR 42(5):3
    - carp, grass, MFR 42(5):4
    - crayfish, MFR 42(5):6
    - diseases, MFR 42(5):7
    - fish disease control problems, MFR 42(5):11
    - fish parasites, MFR 42(5):8
    - fishes, other, MFR 42(5):4
    - live transport and storage, MFR 42(5):9
    - ornamental fish trade, MFR 42(5):10
    - oysters, MFR 42(5):6
    - purposeful transplantations, MFR 42(5):2
    - salmonids, MFR 42(5):4
    - tilapia*, MFR 42(5):2
    - transfer by sea traffic, MFR 42(5):1
- Trawl, beam
- wheels, metering
    - effectiveness for measurement of area sampled, FB 78:791
- Trawl, midwater nekton
- compared with Isaacs-Kidd midwater trawl
    - effective cross-sectional area of the pelagic trawl, FB 78:533
    - flushing of the pelagic trawl, FB 78:531
    - length-frequency comparisons, FB 78:532
    - midwater trawl description and operation, FB 78:529
    - pelagic trawl-IKMT comparisons, FB 78:532
- Trawl, otter
- Chukchi Sea and Beaufort Sea
    - fishes and invertebrates, S 764
  - mesh size and the New England groundfishery
    - applications and implications, S 771
- Trawlers, U.S. shrimp
- offshore fisheries, French Guiana, Surinam, and Guyana, 1978-79, MFR 45(4-6):1
- Trawling
- guide to marine fishes, C 431
- Trawling, pair
- experimental for squid in New England, MFR 42(7-8):57
- Trawl-net—see Webbing
- Trawl-net section taper
- BASIC language code, MFR 45(10-12):43
  - computer program, MFR 45(10-12):42, 44
  - hanging ratio calculations, MFR 45(10-12):46
  - program logic flowchart, MFR 45(10-12):44
  - subroutines, MFR 45(10-12):45, 46
  - symmetry test, MFR 45(10-12):43
  - twine weight parameters, MFR 45(10-12):46
  - webbing piece dimensions, MFR 45(10-12):42

- Trawl net section taper (continued)  
wing, MFR 45(10-12):42
- Trawls, shrimp  
United States, southeastern  
comparative description, TR 3  
configuration, TR 3  
efficiency, TR 3  
flat trawl, balloon, semiballoon, jib, super X-3, otter, cobra,  
and mongoose configurations, TR 3
- Trematodes  
distribution and biology, TR 25  
fish, commercial, TR 25  
herring, White Sea, TR 25
- Triacanthodidae—see Spikefishes
- Triakis semifasciata*—see Shark, leopard
- Trichechus manatus*—see Manatee, West Indian
- Trichodon trichodon*—see Sandfish, Pacific
- Trichodinidae  
parasitology and pathology of marine organisms of the world  
ocean, TR 25
- Triggerfish  
finescale  
observations, warm water periods, California, MFR 45(4-6):27
- gray  
age estimation, FB 82:488  
annual mortality, FB 82:486  
growth, FB 82:488
- Triglops murrayi*  
trophic patterns among larvae in an estuary, FB 80:827
- Trimethylamine  
estimation in fish muscle, FB 80:157  
improved method to analyze in fish  
cold method of analysis for TMA, FB 78:472  
comparative analyses using fish flesh, FB 78:470  
extraction of fish flesh with added TMA and DMA, FB 78:471  
extraction of TMA, FB 78:470  
extraction procedure for fish flesh, FB 78:466  
purification procedures, FB 78:466  
reaction of ammonia, FB 78:467  
reaction of DMA, FB 78:468  
TMA, methods of analyses, FB 78:466
- Trinectes maculatus*—see Hogchoaker
- Trochus niloticus*—see Snail, coral reef
- Trochus pyramis*  
predation and competition with coral reef snails, MFR 46(4):76
- Trolling  
charterboat industry, MFR 47(3):57, 58  
ocean, MFR 47(1):1
- Trout  
aquaculture  
soybean meal in diet, C 447
- Trout, brook  
first isolation of infectious pancreatic necrosis virus (IPNV), MFR  
46(3):15
- Trout, rainbow  
effect of arterial incisions on amount of bleeding and flesh quality,  
MFR 43(4):16  
mortality from finfish pathogens, MFR 46(3):15  
Norwegian fish farms, MFR 46(3):44  
otoliths, FB 83:81  
volcanic ash effects on juvenile smolts, MFR 45(2):9
- Trunkfish—see Boxfish, spiny
- Tuna  
age determination, proceedings, TR 8  
Atlantic Ocean, Gulf of Mexico and the Caribbean Sea  
guide to fishes taken in longlining, C 435  
burnt  
conditions leading to rapid deterioration in quality of raw, MFR  
43(6):12  
induced spawning, FB 79:185  
Pacific Ocean  
bibliography, 1950-78, S 744  
distribution, S 744  
resource assessment, Mariana Archipelago, MFR 47(4):19  
southern bluefin  
catch level, FB 81:726  
U.S. tuna trade summary, 1982, MFR 46(1):1  
U.S. tuna trade summary, 1983, MFR 46(4):65
- Tuna, albacore  
California  
abundance, 1963-78, S 762
- Tuna, bigeye  
Papua New Guinea's longline fishery, MFR 45(10-12):55  
U.S. tuna trade summary, 1982, MFR 46(1):1  
U.S. tuna trade summary, 1983, MFR 46(4):65
- Tuna, blackfin  
U.S. tuna trade summary, 1983, MFR 46(4):65
- Tuna, bluefin  
analyses, FB 81:107, 113, 115  
California, 1963-78, S 762  
catch, FB 81:107  
distributions using remote sensing techniques, MFR  
46(3):5  
eastern North Pacific, FB 81:107  
growth, FB 82:434  
observations, warm water periods, California, MFR  
45(4-6):27  
otoliths, FB 82:434, 435  
recruitment studies, MFR 45(10-12):4  
reproductive biology of western Atlantic  
egg diameter heterogeneity, FB 80:126  
fecundity estimates, FB 80:131  
gonosomatic index, FB 80:123  
morphology, gross, FB 80:123  
ova size, FB 80:123  
ovary histology, FB 80:126  
sex composition, FB 80:123
- Tuna, bullet  
biological data, C 436
- Tuna, Japanese longline  
estimates of pelagic shark bycatch, TR 31
- Tuna, purse seine fishery  
guidelines for reducing porpoise mortality, TR 13
- Tuna, skipjack  
age and growth as indicated by daily growth increments of  
sagittae, FB 79:151  
biological data, C 451  
distribution and life history in Australian waters  
food, FB 79:92  
length, FB 79:89  
seasonal distribution, FB 79:88  
sexual condition, FB 79:91  
spatial distribution, FB 79:86  
weight, FB 79:89

## Tuna, skipjack (continued)

- estimated growth of surface-schooling, from the Papua New Guinea region
  - estimated length-at-age, FB 79:526
  - recruitment and exploited size range, FB 79:521
  - stock movements, FB 79:525
- food habits in the southwestern Atlantic, FB 83:379
- histamine formation and honeycombing during decomposition at elevated temperatures
  - antibiotics, MFR 43(10):11
  - effect of antibiotics, MFR 43(10):12
  - histamine content, MFR 43(10):11
  - histamine formation, MFR 43(10):11
  - honeycombing, MFR 43(10):10, 12
  - incubation, MFR 43(10):10
  - microbiological examination, MFR 43(10):11
  - precooking, MFR 43(10):10
- histamine formation at elevated temperatures, MFR 45(4-6):40
- histamine producing bacteria, MFR 45(4-6):37
- honeycombing and collagen breakdown, MFR 46(2):40
- influences of mean environmental conditions on vulnerability to fishing gear
  - data processing and analysis, MFR 43(6):3
  - forage, MFR 43(6):2
  - oxygen, dissolved, MFR 43(6):2
  - research, future, MFR 43(6):10
  - salinity, MFR 43(6):2
  - temperature, MFR 43(6):2
  - weather, MFR 43(6):3
- landings, 1980-81, MFR 45(10-12):47
- mollies
  - efficiency as live bait for pole-and-line fishing, MFR 42(6):15
- observations, warm water periods, California, MFR 45(4-6):27
- Papua New Guinea DFZ, in, MFR 45(10-12):47
- parasite use and fishery implications, FB 83:343
- rapid and spontaneous maturation, ovulation, and spawning of ova by newly captured, FB 80:393
- respiration rates and low-oxygen tolerance limits
  - activity-related metabolism, FB 79:41
  - angular acceleration and excess body temperature, FB 79:45
  - interrelation of metabolic rate, swimming speed, and body weight, FB 79:43
  - low-oxygen resistance, FB 79:45
  - low-oxygen tolerance, FB 79:36, 39
  - oxygen consumption, FB 79:35, 38
  - oxygen uptake experiments, FB 79:32, 37
  - source and preexperimental treatment of fish, FB 79:32
  - “standard” metabolism, FB 79:41
  - terminology relevant to tuna metabolism, FB 79:40
- sustainable yield, MFR 45(10-12):47
- U.S. tuna trade summary, 1982, MFR 46(1):1
- U.S. tuna trade summary, 1983, MFR 46(4):65

## Tuna, yellowfin, TR 28

- age and growth as indicated by daily growth increments of sagittae, FB 79:151
- dolphin mortality reduction research, MFR 46(3):18
- estimated growth of surface-schooling, from the Papua New Guinea region
  - estimated length-at-age, FB 79:526
  - recruitment and exploited size range, FB 79:521
  - stock movements, FB 79:525

## Tuna, yellowfin (continued)

- landings, Texas charterboat fishery, MFR 45(1):16
  - longline fishery, Papua New Guinea, MFR 45(10-12):55
  - observations, warm water periods, California, MFR 45(4-6):27
  - related to dolphin habitats in the Pacific, FB 83:623
  - U.S. tuna trade summary, 1982, MFR 46(1):1
- ## Tuna fishery
- incidental dolphin mortality, FB 83:521
  - Papua New Guinea
    - catch, MFR 45(10-12):49, 54
    - CPUE, MFR 45(10-12):49
    - distant-water fishery, MFR 45(10-12):52, 54
    - domestic fishery, MFR 45(10-12):47
    - economic considerations, MFR 45(10-12):50, 51
    - exports, MFR 45(10-12):41
    - FAD's, MFR 45(10-12):50
    - future, MFR 45(10-12):58
    - management, MFR 45(10-12):57
    - resources, MFR 45(10-12):47
- ## Tuna trade, U.S.
- albacore production, white meat tuna, MFR 46(4):66
  - Atlantic catch, MFR 46(1):3
  - canned tuna imports, MFR 46(4):65, 70
  - canned white meat tuna, MFR 46(4):67
  - cannery receipts, MFR 46(1):1
  - domestic production, MFR 46(4):65
  - fleet characteristics, MFR 46(4):65
  - foreign processors, MFR 46(4):65
  - markets, MFR 46(4):71
  - Pacific catch, MFR 46(1):2
  - production, MFR 46(1):4
  - resource limitations, MFR 46(4):71
  - retail sales, MFR 46(4):71
  - tropical light meat tuna processing, MFR 46(4):68
  - U.S. consumption of canned tuna, MFR 46(4):71
- ## Tunny, little
- landings, Texas charterboat fishery, MFR 45(1):15
- ## Turbellaria: Acoela and Nemertodermatida
- United States, N.E.
    - biology, C 440
    - collecting methods, C 440
    - diagnostic characteristics, C 440
    - distribution, C 440
    - habitat, C 440
    - key to genera and species, C 440
- ## Turbinaria
- as substrate for *Gambierdiscus toxicus*, MFR 46(1):16
- ## *Tursiops truncatus*—see Dolphin, Atlantic bottlenose; Dolphin, bottlenose
- ## Turtle
- Atlantic ridley
    - radiologic method for examination of gastrointestinal tract, FB 78:965
  - incidental capture, Japanese tuna longline fleet, 1978-81
    - green sea, MFR 46(3):57
    - Kemp's ridley, MFR 46(3):57
    - leatherback, MFR 46(3):57
    - loggerhead, MFR 46(3):57
  - loggerhead
    - radiologic method for examination of gastrointestinal tract, FB 78:965

**Turtle, green**  
 biological data  
   Hawaiian Islands, TM SWFC-7  
 radio telemetry of Hawaiian at breeding colony  
   habitat utilized, MFR 44(5):19  
   past telemetry work within breeding colonies, MFR 44(5):15  
   receivers, MFR 44(5):16  
   residence times, MFR 44(5):17  
   site, MFR 44(5):14  
   transmitters and deployment on turtle, MFR 44(5):15  
   turtles, MFR 44(5):14  
 recovery efforts  
   northwestern Hawaiian Islands, TM SWFC-36

**Turtle, sea**  
 incidental tuna-trawl catch  
   Atlantic longline fishery, in, MFR 46(3):57  
   catch, MFR 46(3):56  
   catch permits, MFR 46(3):49  
   distribution, MFR 46(3):57  
 satellite tracking  
   background, MFR 44(4):19  
   captive behavioral studies, MFR 44(4):20  
   equipment, MFR 44(4):19  
   preliminary technical considerations, MFR 44(4):20  
   tracking, MFR 44(4):22  
   transmitter construction details, MFR 44(4):21  
   transmitter functional tests, MFR 44(4):21  
   transmitter structural tests, MFR 44(4):20  
   turtle release, MFR 44(4):22

**Turtles, marine**  
 radio tracking juvenile  
   aircraft navigation, MFR 43(3):23  
   antenna system, MFR 43(3):22  
   Florida Bay experiment, MFR 43(3):23  
   Homosassa, Florida, experiment, MFR 43(3):23  
   receivers, MFR 43(3):22  
   system description, MFR 43(3):20  
   transmitter, MFR 43(3):21

## U

---

**Ultrasonic telemetry techniques**, MFR 47(4):35

**Ulua**  
 predation on released spiny lobsters in Hawaiian Islands, MFR 47(1):28

**United States**  
 aquaculture  
   phytoplankton, C 442  
   seaweed, C 442  
 fish meal demand analysis, FB 78:267  
 reefs, artificial  
   use of designed and prefabricated, MFR 44(6-7):4

**United States, northeast**  
 experimental squid jigging off, MFR 42(7-8):60  
 hake, silver  
   stocks and fishery, MFR 42(1):12  
 lichens of the intertidal region from New Jersey to Newfoundland, C 446

**United States, southeast**  
 configurations of shrimp trawls, TR 3  
 groundfish monitoring and sponge-coral areas, MFR 42(5):21

**United States, southeast (continued)**  
 National Marine Fisheries Service  
   quantification of habitat conservation efforts, MFR 44(12):18  
   squid catches resulting from trawl surveys off, MFR 42(7-8):39  
 United States Department of Commerce  
   Voluntary Fishery Product Inspection Program, MFR 46(3):76  
 United States fisheries  
   regulatory guidelines, MFR 46(3):49  
 United States Grade Standards  
   fishery products, MFR 46(3):76  
   grades of frozen fish blocks, MFR 46(2):38, MFR 46(3):76  
 Urchins, heart  
   biological data, TR 33  
   key to species, TR 33  
   systematic list, TR 33  
*Urophycis chuss*—see Hake, red  
*Urophycis regia*—see Hake, spotted; Haddock  
*Urophycis tenuis*—see Hake, white  
*Urosalpinx cinerea*—see Drill, oyster  
*Ursus maritimus*—see Bear, polar

## V

---

*Valella valella*—see Jellyfish

**Vancouver Island**  
 salmon, *Oncorhynchus* spp.  
   factors influencing ocean catches, S 753

**Vegetation**—see Habitat effects

**Vessel costs**, FB 82:365

**Vibrio**  
 in freshly caught marine fish, MFR 45(4-6):35  
*Vibrio alginolyticus*  
 in skipjack tuna, MFR 45(4-6):40  
*Vibrio cholerae*  
 microbiological analysis, blue crab samples, MFR 45(7-9):39, 42

**Virgin Islands**  
 fishing techniques  
   demonstration of advances in small boat, MFR 43(11):11

**Virus**  
 pathology and parasitology of marine fish, TR 25

**Volcanic ash**  
 effect on salmon smolts, MFR 45(2):8  
 hazard concentration levels, MFR 45(2):11  
 hazard to juvenile salmon, MFR 45(2):10-12  
 particulate size, MFR 45(2):9

**Von Bertalanffy growth equation**  
 age-frequency estimation, FB 81:92  
 bonito, Pacific, FB 81:93  
 clam, soft-shell, FB 81:75, 78  
 mackerel, king, FB 81:104  
 otolith growth, FB 81:530

## W

---

**Wagner Tree**, FB 81:253, 259

**Walleye**—see also Pollock  
 diel periodicity, FB 82:414  
 feeding ecology, FB 82:411  
 growth and fecundity in the Columbia River, FB 83:701  
 prey, FB 82:413, 415  
 young-of-the-year growth characteristics in John Day Reservoir on the Columbia River, 1979, FB 79:567

- Walrus  
 Bering Sea, FB 81:502  
 benthic feeding record, FB 81:503  
 effect on benthic communities, FB 81:507  
 effects on bottom distribution, FB 81:510  
 feeding behavior, FB 81:509  
 furrow, FB 81:503, 510  
 incidental catch, foreign fishing vessels, MFR 45(7-9):45  
 interaction among marine mammals, FB 81:510  
 pit, FB 81:503, 509  
 satellite monitoring of winter ice cover, MFR 46(3):7  
 shells, FB 81:504,510  
 tusks, FB 81 81:510
- Walrus, Pacific  
 abundance and distribution, TR 12  
 food habits in the Bering Sea, TR 12
- Washington  
 anchovy, northern  
 reproduction off, FB 78:603  
 spawning biomass and early life in northern subpopulation, FB 78:855  
 food of Pacific white-sided dolphin, Dall's porpoise, and northern fur seal off, FB 78:951  
 foreign fisheries off, 1977-78, MFR 43(5):36  
 marine habitat enhancement and urban recreational fishing, MFR 44(6-7):28
- Puget Sound  
 fish foraging on an artificial reef, MFR 44(6-7):38
- rockfish  
 distribution and abundance, 1977, MFR 42(3-4):2
- rockfish, yellowtail  
 length and age composition, 1977, MFR 42(3-4):54
- salmon, coho  
 phenotypic differences among hatchery and wild stocks, FB 80:105
- sole, butter  
 eggs and larvae off, FB 78:401
- southern coast  
 mass mortality of female Dungeness crab, FB 79:349
- Wastewater  
 processing, from two mechanized salmon canneries  
 analytical results, MFR 43(1):22  
 analytical techniques, MFR 43(1):22  
 cannery description, MFR 43(1):21  
 sampling techniques, MFR 43(1):21  
 waste discharged for each unit of production, MFR 43(1):23  
 water used for each unit of production, MFR 43(1):22
- Water currents  
 influence of on daily foraging movements of blacksmith, FB 78:829
- Water structure  
 Pacific Ocean, N.W.  
 studies from Ocean Weather Station V, 1966-71, S 742
- Waterways experiment station, 1974-76, MFR 47(3):21, 23
- Weakfish  
 age determination, FB 81:805  
 annulus measurement, FB 81:805  
 chemical composition, MFR 45(7-9):27  
 frozen storage stability, MFR 45(7-9):27  
 growth in weight, FB 81:807  
 history, FB 82:500  
 length at age, FB 81:805
- Weakfish (continued)  
 marsh habitat, FB 82:457  
 Middle Atlantic Bight, FB 81:803  
 minced food products, use in, MFR 45(7-9):28  
 processing yields, MFR 45(7-9):29  
 product evaluation, MFR 45(7-9):28  
 recreational catch, MFR 45(7-9):27  
 reproduction, FB 82:501, 502, 510  
 sensory evaluation, MFR 45(7-9):28, 30
- Webbing  
 bellies, MFR 45(10-12):33  
 body cuts, MFR 45(10-12):26, 28  
 computer calculation, MFR 45(10-12):26, 42  
 cutting square mesh sections, MFR 45(10-12):41  
 cutting trawlnet sections, MFR 45(10-12):32  
 double tapers, MFR 45(10-12):36  
 extensions, MFR 45(10-12):33  
 jib cuts, MFR 45(10-12):26, 28, 30  
 shaping and assembling, MFR 45(10-12):26  
 tapering, MFR 45(10-12):26  
 trapezoidal net sections, MFR 45(10-12):35  
 trawl wings, MFR 45(10-12):34  
 wing assembly, MFR 45(10-12):38
- Whale, beluga  
 satellite monitoring of ice cover, MFR 46(3):7
- Whale, blue  
 distribution, MFR 46(4):16  
 exploitation, MFR 46(4):18  
 management, MFR 46(4):18  
 migration, MFR 46(4):15  
 mortality, natural, MFR 46(4):18  
 overview status report, MFR 46(4):2  
 Pacific Ocean and Arctic waters  
 identification, C 444  
 reproduction, MFR 46(4):17, 18  
 stocks, MFR 46(4):16, 17
- Whale, bottlenose  
 Pacific Ocean and Arctic waters  
 identification, C 444
- Whale, bowhead  
 Arctic population, western  
 minimal historical size, MFR 42(9-10):27  
 behavior in the Beaufort Sea, FB 83:357  
 Bering and Chukchi Seas  
 vessel surveys, June-July 1978, MFR 42(9-10):51  
 Bering, Chukchi, and Beaufort Seas  
 abundance, S 778  
 distribution, S 778  
 migration, S 778  
 distribution, MFR 46(4):45  
 estimated initial population size of Bering Sea stock  
 aspects of fishery, FB 78:852  
 catch history, FB 78:845  
 data limitations, FB 78:850  
 estimates of current stock size, FB 78:845  
 estimates of initial stock size, FB 78:845  
 lag time, FB 78:847  
 model development, FB 78:847  
 model limitations, FB 78:851  
 natural mortality, FB 78:847  
 net recruitment rate, FB 78:847  
 recovery times, FB 78:850

## Whale, bowhead (continued)

- estimated initial population size of Bering Sea stock (continued)
  - risk analysis, FB 78:848
  - vital parameters, FB 78:850
- exploitation, MFR 46(4):49
- fetuses and calves
  - morphology, external, MFR 42(9-10):74
- foods utilized near Barter Island, Alaska, autumn 1979, MFR 42(9-10):88
- historical shore-based catch in Bering, Chukchi, and Beaufort Seas
  - aboriginal phase, MFR 42(9-10):9, 10
  - Canada, MFR 42(9-10):16
  - commercial phase, MFR 42(9-10):9, 13
  - data recording, MFR 42(9-10):9
  - data sources, MFR 42(9-10):9
  - evolution, MFR 42(9-10):9
  - subsistence phase, MFR 42(9-10):9, 14
  - U.S.S.R., MFR 42(9-10):14
- ingutuk: a morphological variant
  - genetic-biochemical analysis, MFR 42(9-10):72
  - geographic isolation, MFR 42(9-10):71
  - morphological features, MFR 42(9-10):71
  - proportion observed, MFR 42(9-10):71
  - sex and size-class variation, MFR 42(9-10):71
- taxonomic considerations and Eskimo nomenclature, MFR 42(9-10):70
- injury, healed penetrating, MFR 42(9-10):92
- management, MFR 46(4):51
- migration, MFR 46(4):45, 47
- migration past Cape Lisburne, Alaska
  - behavior, MFR 42(9-10):50
  - census, MFR 42(9-10):47
  - direction headed, MFR 42(9-10):49
  - distance offshore, MFR 42(9-10):49
  - dive times, MFR 42(9-10):50
  - surface times, MFR 42(9-10):51
  - timing of migration, MFR 42(9-10):49
  - travel rate, MFR 42(9-10):48
  - visual cues, MFR 42(9-10):50
- mortality, natural, MFR 46(4):49
- observations of spring migration
  - dive profiles, MFR 42(9-10):81
  - “exuberant” behavior, MFR 42(9-10):83
  - feeding behavior, MFR 42(9-10):84
  - group size, MFR 42(9-10):81
  - maneuvering in ice, MFR 42(9-10):82
  - rate and direction, MFR 42(9-10):81
  - reaction to human disturbance, MFR 42(9-10):83
  - resting, MFR 42(9-10):83
  - size class distribution, MFR 42(9-10):81
- overview status report, MFR 46(4):2
- Pacific Ocean and Arctic waters
  - identification guide, C 444
- pelagic whaling industry: 1848-1915
  - preliminary estimate of reduction of western Arctic population, MFR 42(9-10):20
- population, MFR 46(4):51
- reproduction, MFR 46(4):49
- review of Spitsbergen stock
  - aboriginal exploitation, MFR 42(9-10):65
  - commercial exploitation, whale distribution, and stock identity, MFR 42(9-10):65

## Whale, bowhead (continued)

- review of Spitsbergen stock (continued)
    - historical status, MFR 42(9-10):67
    - present status, MFR 42(9-10):69
    - reasons for decline and failure to recover, MFR 42(9-10):68
  - sampling strategy for enumerating western Arctic population
    - aerial survey, MFR 42(9-10):31
    - computer modeling to improve accuracy and precision, MFR 42(9-10):34
    - ice and land camps, MFR 42(9-10):31
    - measurement of accuracy and precision for missed data, MFR 42(9-10):35
    - relative abundance, MFR 42(9-10):34
    - study area, MFR 42(9-10):30
    - total abundance, MFR 42(9-10):31
  - satellite monitoring of ice cover, MFR 46(3):7
  - scientific perspective of program
    - data lack stimulates U.S. research, MFR 42(9-10):3
    - harvest monitoring results, MFR 42(9-10):3
    - legal background, MFR 42(9-10):4
    - life history and stock identity, MFR 42(9-10):2
    - population estimates, MFR 42(9-10):4
    - utilization history, MFR 42(9-10):2
  - some observations on urine, MFR 42(9-10):91
  - sounds recorded in presence of adult and calf, MFR 42(9-10):86
  - spring migration of western Arctic population
    - data sources, MFR 42(9-10):37
    - effect of ice cover on migration, MFR 42(9-10):44
    - migration routes and timing, MFR 42(9-10):37
    - study area and ice conditions, MFR 42(9-10):37
  - stocks, MFR 46(4):47
  - summer distribution in eastern Beaufort Sea
    - recent observations, MFR 42(9-10):59, 60
    - whaling ship observations, MFR 42(9-10):57, 59
- ## Whale, Bryd's
- Pacific Ocean and Arctic waters
    - a guide to identification, C 444
- ## Whale, dwarf sperm
- Pacific Ocean and Arctic waters
    - a guide to identification, C 444
- ## Whale, false killer
- Pacific Ocean and Arctic waters
    - a guide to identification, C 444
  - recurrent mass stranding in Florida
    - behavior in captivity, FB 78:174
    - hematology, FB 78:174
    - relationships among strandings, FB 78:175
    - sequence of events, FB 78:171
- ## Whale, fin
- distribution, MFR 46(4):20
  - exploitation, MFR 46(4):22
  - feeding, MFR 46(4):22
  - management, MFR 46(4):24
  - migration, MFR 46(4):20
  - overview status report, MFR 46(4):2
  - Pacific Ocean and Arctic waters
    - a guide to identification, C 444
  - population, MFR 46(4):23
  - reproduction, MFR 46(4):22
  - stocks, MFR 46(4):21
- ## Whale, gray
- analysis methods, FB 81:270, 272, 277

- Whale, gray (continued)**  
 calving lagoon, FB 81:513, 517  
 distribution, MFR 46(4):7  
 exploitation, MFR 46(4):10  
 feeding, MFR 46(4):9  
 feeding behavior, FB 81:514, 520  
 identification, MFR 46(4):7  
 infaunal prey, FB 81:517  
 Laguna San Ignacio, Baja California Sur, Mexico  
   cleaning symbiosis between, and topsmelt, FB 79:360  
 management, MFR 46(4):7  
 migration, FB 81:267, MFR 46(4):8  
 migratory timing, FB 81:274  
 natural mortality, MFR 46(4):10  
 overview status report, MFR 46(4):2  
 Pacific Ocean and Arctic waters  
   a guide to identification, C 444  
 population assessment, FB 81:267  
 reproduction, MFR 46(4):10  
 satellite data applied to management, MFR 46(3):9  
 stocks, MFR 46(4):7  
 visibility, FB 81:275
- Whale, humpback**  
 applications of satellite data for migration patterns, MFR 46(3):9  
 distribution, MFR 46(4):31  
 exploitation, MFR 46(4):35  
 feeding, MFR 46(4):33  
 feeding behavior in western North Atlantic  
   behavioral strategies, FB 80:265  
   bubbling behaviors, FB 80:261,  
   circular swimming/thrashing, FB 80:260  
   inside loop behavior, FB 80:261  
   lunge feeding, FB 80:260  
   prey species, FB 80:266  
 habitat protection, MFR 46(4):36  
 identification, MFR 46(4):36  
 management, MFR 46(4):35  
 migration, MFR 46(4):31, MFR 46(3):9  
 mortality, MFR 46(4):34  
 overview status report, MFR 46(4):2  
 Pacific Ocean and Arctic waters  
   identification, C 444  
 population, MFR 46(4):35  
 recruitment, MFR 46(4):34  
 reproduction, MFR 46(4):34  
 stocks, MFR 46(4):31
- Whale, killer**  
 as predators on humpback whale calves, MFR 46(4):34  
 interactions with North Pacific longline fishery, MFR 45(7-9):48  
 Pacific Ocean and Arctic waters  
   identification, C 444
- Whale, melon-headed**  
 Pacific Ocean and Arctic waters  
   identification, C 444
- Whale, Pygmy killer**  
 Pacific Ocean and Arctic waters  
   identification, C 444
- Whale, pygmy sperm**  
 Pacific Ocean and Arctic waters  
   identification, C 444
- Whale, right**  
 distribution, MFR 46(4):38
- Whale, right (continued)**  
 exploitation, MFR 46(4):42  
 feeding, MFR 46(4):41  
 identification, MFR 46(4):38  
 management, MFR 46(4):43  
 migration, MFR 46(4):38  
 mortality, MFR 46(4):42  
 observations in Cape Cod waters, FB 80:875  
 overview status report, MFR 46(4):2  
 Pacific Ocean and Arctic waters  
   identification, C 444  
   population, MFR 46(4):43  
   reproduction, MFR 46(4):41  
   stocks, MFR 46(4):39
- Whale, sei**  
 distribution, MFR 46(4):25  
 exploitation, MFR 46(4):27  
 feeding, MFR 46(4):27  
 identification, MFR 46(4):25  
 management, MFR 46(4):28  
 migration, MFR 46(4):25  
 mortality, MFR 46(4):27  
 overview status report, MFR 46(4):2  
 Pacific Ocean and Arctic waters  
   identification, C 444  
   population, MFR 46(4):28  
   reproduction, MFR 46(4):27  
   stocks, MFR 46(4):27
- Whale, short-finned pilot**  
 Pacific Ocean and Arctic waters  
   identification, C 444
- Whale, sperm**  
 distribution, MFR 46(4):54  
 exploitation, MFR 46(4):60  
 feeding, MFR 46(4):59  
 identification, MFR 46(4):54  
 management, MFR 46(4):63  
 overview status report, MFR 46(4):2  
 Pacific Ocean and Arctic waters  
   identification, C444  
 population, MFR 46(4):60  
 reproduction, MFR 46(4):60  
 stocks, MFR 46(4):59, 62
- Whale, white**  
 Bering, Chukchi, and Beaufort Seas  
   abundance, S 778  
   distribution, S 778  
   migration, S 778  
 Pacific Ocean and Arctic waters  
   a guide to identification, C 444
- Whale Ridge**  
 parasitofauna of fishes, TR 25
- Whales**  
 Pacific Ocean and Arctic waters  
   identification, C 444
- Whales, beaked**  
 Pacific Ocean and Arctic waters  
   Baird's, C 444  
   Blainville's, C 444  
   Cuvier's, C 444  
   Ginkgo-toothed, C 444  
   Hector's, C 444



- Whales, beaked (continued)**  
 Pacific Ocean and Arctic waters (continued)  
 Hubb's, C 444  
 identification guide, C 444
- Whales, dolphins, and porpoises**  
 Pacific Ocean and Arctic waters  
 identification, C 444  
 Japanese and Russian names, C 444  
 strandings, C 444  
 tagging procedures, C 444
- Whales, Minke**  
 Pacific Ocean and Arctic waters  
 identification, C 444
- Whales, Pacific pilot**  
 undersea topography and distribution, FB 83:472
- Whaling industry, pelagic**  
 bowhead  
 preliminary estimate of reduction of western Arctic population, 1848-1915, MFR 42(9-10):20
- Wheels, metering**  
 effectiveness for measurement of area sampled by beam trawls  
 consistency with other estimates of distance, FB 78:794  
 count consistency, FB 78:793  
 wheel counts versus catch data, FB 78:794
- Whiting**  
 blocks  
 frozen storage characteristics, MFR 42(1):55  
 fillet block survey, MFR 42(1):44  
 handling aboard fishing vessels  
 bleeding, MFR 42(1):21  
 chilling, MFR 42(1):22  
 effect of rigor mortis, MFR 42(1):22  
 gutting, MFR 42(1):21  
 temperature, MFR 42(1):22  
 washing, MFR 42(1):21
- Whiting, Atlantic**  
 effect of various antioxidants on flavor stabilization of frozen minced  
 methods, MFR 44(8):17  
 peroxide value, MFR 44(8):17  
 sensory evaluation, MFR 44(8):17  
 statistical analysis, MFR 44(8):18  
 TBA number, MFR 44(8):17
- Whiting, Pacific, FB 82:68**  
 abnormal muscle texture caused by myxosporidian-induced proteolysis  
 chemical determinations, MFR 44(5):2  
 fish samples, MFR 44(5):2  
 heat inactivation of enzyme, MFR 44(5):4  
 microscopy, MFR 44(5):2  
 myxosporidia, morphology and structure, MFR 44(5):7  
 parasite appearance, macroscopic and microscopic, MFR 44(5):5  
 parasitization severity and incidence, MFR 44(5):2,3  
 parasitization severity related to abnormal texture, MFR 44(5):5  
 parasitized condition involves enzyme-induced proteolysis, MFR 44(5):3  
 relation of parasitization to flesh pH, MFR 44(5):4  
 relation of parasitization to level of flesh protein, MFR 44(5):4  
 texture development, mechanism of abnormal, MFR 44(5):10  
 texture evaluation, MFR 44(5):2  
 texture evaluation of frozen fillet block portions, MFR 44(5):11
- Whiting, Pacific (continued)**  
 abnormal muscle texture etc. (continued)  
 texture evaluation of live, frozen in dry ice, MFR 44(5):10  
 texture of commercial fillets, effect of refrigerated storage, MFR 44(5):11
- abundance**  
 biomass estimates, MFR 47(2):83, 84, 87, 88, 90, 93, 94  
 Canadian zone, MFR 47(2):80  
 ocean environment, MFR 47(2):8  
 Pacific coastal stock, MFR 47(2):6, 7  
 Puget Sound, MFR 47(2):37  
 Strait of Georgia, MFR 47(2):28, 32  
 trawl surveys, MFR 47(2):83, 88, 89  
 applications of satellite data for fisheries management, MFR 46(3):5
- biology and life history**  
 Canadian zone, MFR 47(2):75  
 Pacific coastal stock, MFR 47(2):2  
 Puget Sound, MFR 47(2):35-38  
 Strait of Georgia, MFR 47(2):23
- biomass estimates**  
 —see Whiting, Pacific, abundance
- Canadian zone**  
 age composition of strong year class, MFR 47(2):78, 79  
 biology and fishery of offshore stocks, MFR 47(2):75  
 commercial fishery, MFR 47(2):80  
 migration, MFR 47(2):75, 76  
 size and sex composition, MFR 47(2):76  
 stock abundance and management, MFR 47(2):80
- daily ration, FB 81:635**
- diel feeding pattern, FB 81:634**
- distribution, abundance, and biological characteristics, MFR 42(3-4):21**  
 age composition, MFR 42(3-4):26  
 bottom trawl survey, MFR 42(3-4):18  
 hydroacoustic-midwater trawl survey, MFR 42(3-4):18  
 length composition, MFR 42(3-4):28  
 Pacific coastal stock, MFR 47(2):2, 3  
 Puget Sound, MFR 47(2):35  
 sample density, MFR 42(3-4):21  
 Strait of Georgia, MFR 47(2):24, 25  
 trawl surveys, MFR 47(2):83, 88, 89
- economic studies**  
 marketing, MFR 47(2):42, 33, 72, 73  
 product quality, MFR 47(2):42
- feeding habits, MFR 47(2):13, 14, 16**  
 Strait of Georgia, MFR 47(2):32
- fishery**  
 biomass estimates, MFR 47(2):83, 97  
 Canadian zone, MFR 47(2):80  
 condition, MFR 47(2):95  
 economics, MFR 47(2):42  
 environmental factors, MFR 47(2):10  
 foreign, MFR 47(2):42, 40, 41, 49, 50  
 harvesting technologies, MFR 47(2):47  
 history, MFR 47(2):39, 95  
 joint venture, MFR 47(2):40, 41, 42, 49, 50  
 management, MFR 47(2):33, 37, 38, 95  
 markets, MFR 47(2):42, 33, 72, 73  
 processing, MFR 47(2):42, 33, 69  
 product quality, MFR 47(2):42  
 Puget Sound population, MFR 47(2):35

- Whiting, Pacific (continued)
- fishery (continued)
    - shore-based, MFR 47(2):39
    - Strait of Georgia, MFR 47(2):23
    - U.S. domestic, MFR 47(2):39
  - fishery off central California
    - population fluctuations of California sea lions and, FB 80:253
  - food, FB 81:630
  - growth
    - Canadian zone, MFR 47(2):76
    - ocean environment, MFR 47(2):13
    - Pacific coastal stock, MFR 47(2):4
    - Strait of Georgia, MFR 47(2):28
  - harvesting technologies
    - foreign fishing fleets, MFR 47(2):49, 50
    - gear types, MFR 47(2):47
    - joint venture, MFR 47(2):49, 50
  - larvae distribution patterns, MFR 45(10-12):16
  - management
    - see Whiting, Pacific, fishery
  - markets
    - see Whiting, Pacific, economics
  - migration
    - Canadian zone, MFR 47(2):75, 76
    - Pacific coastal stock, MFR 47(2):2, 3
  - mortality
    - Pacific coastal stock, MFR 47(2):4,5
    - Strait of Georgia, MFR 47(2):33
  - ocean environment and recruitment
    - environmental factors, MFR 47(2):10
    - growth, MFR 47(2):13
    - population fluctuation, MFR 47(2):8
    - predation, MFR 47(2):13, 14
    - spawning, MFR 47(2):12
  - Pacific Coastal stock
    - abundance, MFR 47(2):6, 7
    - biology and life history, MFR 47(2):2
    - distribution, MFR 47(2):2, 3
    - growth, MFR 47(2):4
    - migration, MFR 47(2):2, 3
    - mortality, MFR 47(2):4, 5
    - reproduction, MFR 47(2):3, 4
  - parasites
    - effect of infestation, MFR 47(2):56, 57
    - Myxosporean, Kudoa* spp., MFR 47(2):55
    - prevalence and intensity of infection, MFR 47(2):58
  - population estimates
    - see Whiting, Pacific, abundance
  - preservation and processing
    - chemical composition, MFR 47(2):60
    - markets, MFR 47(2):72, 73
    - parasites, MFR 47(2):56, 57, 60, 73
    - processing, MFR 47(2):42, 69
    - production, MFR 47(2):71
    - product quality, MFR 47(2):42
    - protein content, MFR 47(2):60
    - sensory properties, MFR 47(2):62
    - Strait of Georgia, MFR 47(2):33
  - predation
    - see Whiting, Pacific, feeding habits
  - predator-prey size relationships, FB 81:632
- Whiting, Pacific (continued)
- protease inhibitors on proteolysis in parasitized muscle
    - blended fish, FB 80:282, 283
    - diabasic phosphate peroxides, FB 80:284
    - effect of inhibition on texture, FB 80:282, 285
    - enzyme inhibitors, FB 80:282
    - fillet treatment, FB 80:286
    - frozen storage effect, FB 80:285
    - ground fish, FB 80:282, 283
    - hydrogen peroxide, FB 80:284
    - oxidative effect on amino acids, FB 80:282, 285
    - potassium bromate, FB 80:284
    - preparation of ground fish blocks for storage, FB 80:282
    - test for presence of peroxides or bromates, FB 80:283
  - Puget Sound population
    - distribution, MFR 47(2):35
    - fishery, MFR 47(2):36
    - management, MFR 47(2):37, 38
    - population estimates, MFR 47(2):37
    - spawning, MFR 47(2):35
  - recruitment studies, MFR 45(10-12):4
  - reproductive biology
    - Canadian zone, MFR 47(2):76
    - ocean environment, MFR 47(2):12
    - Pacific coastal stock, MFR 47(2):3, 4
    - Puget Sound population, MFR 47(2):35
    - Strait of Georgia, MFR 47(2):31
  - Strait of Georgia
    - abundance, MFR 47(2):28, 32
    - aging, MFR 47(2):23, 26, 27
    - biology, MFR 47(2):23
    - distribution, MFR 47(2):24, 25
    - feeding habits, MFR 47(2):32
    - fishery, MFR 47(2):23
    - growth, MFR 47(2):28
    - management, MFR 47(2):33
    - markets, MFR 47(2):33
    - mortality, MFR 47(2):33
    - population, MFR 47(2):28
    - processing, MFR 47(2):33
    - reproductive biology, MFR 47(2):31
  - three different delivery modes for fresh-caught
    - annual catch rate, MFR 42(2):34
    - business and indebtedness, MFR 42(2):36
    - contingency, MFR 42(2):35
    - crew, MFR 42(2):32
    - daily catch rate, MFR 42(2):33
    - delivery modes, MFR 42(2):31, 32
    - depreciation, MFR 42(2):36
    - ex-vessel price, MFR 42(2):34
    - fuel, MFR 42(2):34
    - gear maintenance, MFR 42(2):36
    - gross profit, MFR 42(2):35
    - gross stock, MFR 42(2):34
    - gross vessel share, MFR 42(2):36
    - hull insurance, MFR 42(2):36
    - ice, MFR 42(2):35
    - income taxes, MFR 42(2):36
    - lubrication, MFR 42(2):35
    - operating schedules, MFR 42(2):32
    - Oregon State landing tax, MFR 42(2):35
    - protection and indemnity, MFR 42(2):36

Whiting, Pacific (continued)  
three different delivery modes for fresh-caught (continued)  
provisions, MFR 42(2):35  
vessel characteristics, MFR 42(2):31  
trawling surveys  
biomass estimates, MFR 47(2):83, 94  
bottom trawling surveys, MFR 47(2):82, 83  
midwater trawl surveys, MFR 47(2):83, 87, 88  
trophic role, MFR 47(2):16  
west coast of North America, FB 81:629  
Willapa Bay, Washington  
eel, wolf  
migration of juvenile from Port Hardy, British Columbia, to,  
FB 80:650  
Windowpane  
Atlantic Ocean  
food habits, S 749  
Gulf of Maine  
trophic relationships, FB 79:775  
Woods Hole  
east coast bivalves, S 768  
mollusk specimen collections, S 768

## XY

---

Xanthids  
as oyster spat predators, northeastern U.S., MFR 45(3):5  
*Xiphias gladius* Linnaeus—see Swordfish  
Yellowtail  
California, southern and central  
abundance, 1963-78, S 762  
temperature effects on sport fishing, S 759  
culture in Japan, TR 10  
effects of sea surface temperature changes, MFR 45(4-6):31

## Z

---

*Zalophus californianus*—see Sea lion, California  
*Zaniolepis*—see Combfish  
Zoeae—see Larvae  
Zoogeography  
helminth characteristics of the world ocean, TR 25  
Zooplankton  
abundance, FB 81:857  
Atlantic, northwest  
effect of season and location on relationship between displacement volume and dry weight, FB 80:631  
coherence in dominance, FB 81:856  
coherent patterns of biomass, FB 81:855  
effluent effects, FB 82:204  
influence of density on daily foraging movements of blacksmith,  
FB 78:829  
kelp forest, FB 82:55  
measurement, FB 81:857  
mesoscale changes, FB 81:855  
New York Bight  
effects of environment on, TR 5  
net sampling, TR 5  
northwest Atlantic, FB 81:855  
observation, FB 81:857  
sampling studies, FB 81:381  
shallow coastal water, FB 82:97, 188  
species shifts in dominance, FB 81:857  
vertical structure off southern California, FB 83:151

