U.S. COMMISSION ON
OCEAN POLICY

APPENDIX 1

TESTIMONY BEFORE THE U.S. COMMISSION ON OCEAN POLICY: SYNTHESIS INDEXED BY POLICY TOPIC

GOVERNORS' DRAFT
MARCH 2004

PREFACE

This appendix organizes highlights of presentations made to the U.S. Commission on Ocean Policy through November 2002. The presentations included in this synthesis were made by invited panelists or offered through public comment. The highlights are organized by the following topical headings, which correspond to the headings included in the Commission's document, Toward a National Ocean Policy: Ocean Policy Topics and Related Issues. Published in July 2002, the Issues Document, is available on the Ocean Commission website, www.oceancommission.gov.

- Living Marine Resources
- Pollution/Water Quality
- Governance
- Coastal Zone Management
- Nonliving Marine Resources
- Research, Exploration, and Monitoring
- Education
- Technology and Marine Operations
- Investment and Federal Government Organization

The highlights include issues raised by each presenter, as well as recommendations offered by the presenters for the Commission's consideration.

ACKNOWLEDGEMENTS

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Topic: Investment and Federal Government Organization

TOPIC: *LIVING MARINE RESOURCES*

KEY ISSUE: *Aquaculture*

ISSUES RAISED

- Hawaii has been moving forward with sustainable use of its ocean space for aquaculture; issued first commercial lease in State waters for open ocean project. (Colom-Agaran)
- Company concept is to apply modern aquaculture and bioprocess techniques, together with knowledge of life cycles of marine invertebrates and marine algae, to high-yield culture for eventual extraction of bioactive chemical constituents. Almost insurmountable hurdles of local, state, federal permitting and obtaining seed funding. (Mendola)
- Pollution, particularly waste, from aquaculture a problem. (Ford)
- Aquaculture enhancement and "fish for food" have difficulties with acceptance; local communities, environmental organizations, etc. (Gutting)
- Aquaculture causes variety of problems: habitat loss, degraded water quality, movement of alien species and diseases. (Safina)
- NOAA, USDA, EPA, USFWS, USDA have roles, sometimes contradictory, confusing and counterproductive.
- Disappointed with NMFS SE hot-cold efforts; encouraged by NOAA OAR FY01 national competition for innovative research: multi-investigator, multi-disciplinary, multi-institutional, multi-state. (Haddad)
- If aquaculture ceased using fish meal in feeds tomorrow, there would be no impact on landings of fish to make fish meal because other agriculture production sectors would buy it all. (Haddad)
- Permit Requirements:
  1) There was no consistency in support for the growth of this new industry;
  2) Those interested in an aquaculture venture had to fight through a maze of permit requirements. (Chew)
- Mistakes Made: In establishing early aquaculture operations there were major losses of investments; the lending institutions shied away from making such loans for many years. (Chew)
- The public-at-large should be better educated about the importance of aquaculture worldwide and its impact on the U.S. economy. (Chew)
- Regulations on effluents from aquaculture facilities are critical issues. (Chew)
- Competition for space in marine and freshwater habitats creates conflict between aquaculture and shoreline property owners, traditional fishermen, and aquatic farmers. (Chew)
- Those in the scientific field should recognize that aquaculture is a tool for replenishing depleted wild stocks of fish. (Chew)
- Aquaculture can produce more food per unit area at a lower environmental cost than nearly any other form of food production. (Chew)
- The NMFS is good for marine fish culture, and for enhancement, but they have not been effective when it comes to aquaculture. (Chew)
- It is difficult to give the approximate level of research funding that is expended in other countries, but other country governments subsidize aquaculture. There are competitive grants and small business opportunities. (Chew)

- The development of aquaculture in the U.S. is in the national interest and requires a national policy. Development of marine aquaculture requires the integration of aquaculture into an overall coastal and ocean policy that respects the rights of states and local communities. [discussion provided] (Daniels)
- As with all human activities, aquaculture has social, economic, political and environmental impacts. These impacts should be considered within the context of other activities and cooperation is needed at national, regional, and international levels among sociopolitical and academic institutions and the fisheries and aquaculture sectors. [discussion provided] (Daniels)
- Aquaculture needs to be integrated into an overall national policy on coastal zone management and the oceans. [discussion provided] (Daniels)
- Marine aquaculture faces many challenges and obstacles as a relatively new industry. Many of these require special attention from Federal agencies and through additional funding. [discussion provided] (Daniels)
- The development and sustainability of marine aquaculture requires a sound scientific foundation, human resource capacity building, and open communication both at a National and international level. [discussion provided] (Daniels)
- When answering whether the U.S. should work to develop partnerships with foreign countries for our aquaculture production, we should decide if we, as a nation, want to delegate responsibility of our food production to someone else. We should seriously consider the strong likelihood that they do not have the inspection system set up to verify the quality and safety of the food. (Daniels)
- Land grant institutions have worked on agriculture activities for a very long time. Aquaculture is relatively new. And, while aquaculture has been appearing more and more in the RFPs for funding agencies, competition exists between agriculture projects under the USDA funding. It is the same with the Sea Grant funding. Aquaculture receives a very small piece of the pie. (Daniels)
- Aquaculture is the fastest growing sector of U.S. agriculture. There is an increasing demand for consistent, high-quality wholesome products. Additional aquaculture demand is created because many wild stocks have been diminished by over fishing or environmental changes. The challenge for aquaculture is to continue to deliver high quality product while maintaining profitability and environmental compatibility. (Rheault)
- While U.S. aquaculture continues to grow, it is also challenged by ever increasing competition for resources, a burgeoning population, continued urbanization, competition from foreign products not subject to U.S. regulations, and a wealth of misinformation. (Rheault)
- The commercial aquaculture industry is concerned about the importation of exotic pathogens into the U.S. Another concern is that commercially reared aquatic animals can be subject to significant predation by a variety of animals including birds, seals crabs, flatworms and starfish [discussion provided]. (Rheault)
- Each aquaculture industry sector has unique production requirements, challenges and potential to impact the environment. Each aquaculture operation must be evaluated within a site-specific and watershed specific framework. Regulatory and voluntary efforts must be optimized to achieve cost-effective solutions. The NAA believes that if environmentally sound watershed management programs are to be developed, accurate information must be used. (Rheault)
- Piscivorous birds can cause significant predation on farm raised fish and shellfish. Considerable need exists to develop improved bird management techniques. (Rheault)
- There are two important issues: one is research and the second is regulatory. The difficulty with aquaculture is that we are farmers, not fishermen. Minimize size makes no sense for farmers. (Rheault)

- We have a Sea Grant college program that has been very supportive of aquaculture and is an important player in the viability of the aquaculture industry. This is an example where academia is being used to help an industry. Sea Grant projects also work on developing offshore technologies on the east and gulf coasts. (Rheault)
- The introduction of various penned and bioengineered fish represents a severe threat to the sports fishers and native tribes of our country. (Affleck-Asch)
- The United States is falling further and further behind the rest of the world in its development of a competitive aquaculture industry. At the same time most of our commercial capture fisheries have diminished in both productivity and value. (Bright)
- In an environmental-affects point of view, the raising of fish in net pens is significantly less harmful to the environment. (Bright)
- A specific issue of aquaculture has not been adequately addressed, and that is genetically engineered fish. There are 35 species of genetically altered fish being developed. Sixty engineered fish would wipe out a population of sixty thousand naturally occurring fish. They say they will be sterile. The native population would be wiped out. The sterile fish would deplete the resources and the wild male salmon would try to mate with the sterile female salmon, thereby repressing reproduction. (Ramirez)
- Important facts:
  1) Aquaculture is the business of growing food in water; in order to grow a lot of it there is a need for a lot of water. This resource should be used more fully to supply our future seafood needs.
  2) The U.S. presently imports over $10 billion of seafood per year, much of it produced by aquaculture. This should not be the case.
  3) Some forms of aquaculture, notably salmon farming, have inspired vigorous opposition and claims of lack of sustainability. What critics fail to understand is that marine aquaculture today is a "work in progress." If it is allowed to progress it can supply our seafood needs indefinitely.
  4) Today, almost every maritime nation on earth has an active marine aquaculture program. The concept is embraced by the European Union and countries such as Australia, Chile and Norway. By comparison, the U.S. lags well behind. (Forster)
- The primary reason the U.S. lags behind is due to lack of perceived need compounded by a cumbersome permitting system that discourages investment. (Forster)
- There are serious social, public health and environmental consequences attached to raising salmon and other finfish in open net-cage feedlots. (Lansing)
- The presence of net cage salmon facilities in the U.S. and worldwide has profound negative effects on wild populations of salmon. The main problems have been well documented: spread of disease, spread of parasites, escapee competition for resources, and interbreeding with wild population. (Lansing)
- The introduction of genetically modified organisms (GMO) into the ocean ecosystem creates a serious risk of ecological disaster including a whole range of risks that are well outside our experience to adequately assess. (Spain)
- The only government agency currently charged with regulating transgenetic fish is the FDA. There is not the scientific expertise to be viewing the environmental implications caused by these fish. The food safety agency is not an environmental agency. (Ramirez)
- Escaped farmed salmon are breeding in rivers. These fish are non-native Atlantics and have no place in our waters. There are horrendous disease problems, which the floating feed lots, pose to indigenous species. We are also concerned about the massive sewage, antibiotics, and pesticides that are released through the operation of these farms. (Knutson)

- Domestic aquaculture is failing. The salmon farms are asking for more money for development and research of species for farming cod and halibut. But, the same cycle will take place in that the fleets will be beached because they cannot afford to fish due to the low price. There will be a low price because of the worldwide glut on those species. (Foss)
- If money is continually poured into failing open water near-shore aquaculture, we're never going to be able to support as many families as we could support by restoring and preserving the wild capture fishery of the current wild populations. (Foss)
- Aquaculture is the only available means to significantly supplement fisheries catches at a time when world population and affluence are increasing. (Goldburg)
- Aquaculture effluent: Under the Clean Water Act, the EPA must develop industry-by-industry "effluent guidelines". EPA has never developed effluent guidelines for aquaculture. It is critical that these guidelines address the range of potential environmental impacts from aquaculture discharges by encompassing biological pollutants as well as the nutrients and other chemical pollutants more traditionally considered by EPA. (Goldburg)
- Offshore aquaculture: The ACOE has taken the lead in regulating offshore facilities, issuing permits under the Rivers and Harbors Act of 1899 and the Outer Continental Shelf Lands Act. The ACOE does not, however, have a clear legal mandate under either of these statutes to protect the environment and lacks expertise to weigh the full ecological impacts of offshore aquaculture facilities. (Goldburg)
- Transgenic fish: The FDA has decided to regulate transgenic fish and other animals as animal drugs. However, while FDA is the appropriate agency to regulate the safety of these fish as food, it lacks an environmental mandate and expertise necessary to protect against the potential ecological effects of transgenic fish. Under drug law FDA must keep all information about a pending drug application confidential and thus the public cannot generally participate by providing comments in FDA decision-making about transgenic fish. (Goldburg)
- Aquaculture research—reducing aquaculture's dependence on wild fisheries: With the exception of salmon farming, U.S. aquaculture is dominated by small and mid-sized companies with a limited capacity to support research and development activities. Targeted research could help to reduce a number of aquaculture's environmental impacts. (Goldburg)
- Governance structure for aquaculture in the U.S. is quite complicated because activities within states or state waters, and most of the aquaculture is in the U.S. freshwater, is heavily affected by state law. And the states vary enormously in their requirements and sometimes communities can vary enormously in their governance of aquaculture. Aquaculture is not over regulated at the Federal level. Aquaculture is often an afterthought. (Goldburg)
- It is pretty much inevitable that aquaculture is going to grow. Certainly it has been growing. Hunting for animals as food has, for the most part, disappeared but fishing is not going to disappear, if for no other reason than fish have a much higher intrinsic rate of reproduction than land mammals. It's important to think of the future in terms of fishing and aquaculture, not one or the other. (Goldburg)
- Hatchery salmon from Japan, Russia, and Alaska are depleting the carrying capacity of the sea. They are larger than wild stock and are better able to compete for food. (Quyana)
- Farmed salmon is the most important issue. Farmed salmon is a multifaceted threat to Alaskans and all coastal people. Many people provide the science on this issue. The issues involved in farmed salmon are from the consumer end who eats the fish, the waste that's created by these ocean pens, and the feces that destroy the ocean floor. (Ulery)

PRESENTER RECOMMENDATIONS

1) Designate lead agency for open water aquaculture and enact legislation granting authority for aquaculture leases in EEZ (Univ. of Delaware);
2) Establish large-scale, national research and development effort to close the life cycles and develop mass culture techniques for important marine species;
3) Initiate national mapping of state and federal ocean waters for potential sites; possibly include pre-permitting designated sites, zoning of sites and/or establishment of public/private mariculture parks;
4) Establish large-scale ocean engineering research and development program for next generation technologies (ocean cages). (Colom-Agaran)

- Urge new national program in marine biotechnology "Ocean Technology Partnerships" to foster innovation and seed investment in new marine biotechnologies:
  1) Administered by DOC/NOAA;
  2) Consortium between small businesses, university and/or National government laboratory group;
  3) 4-phase program of research, development and commercialization. (Mendola)
- Aquaculture should not be "fostered" by subsidies and discouraged in open water. Natural habitats that support wild marine fisheries should not be destroyed for aquaculture: force compliance with US Sustainable Fisheries Act. (Safina)
- NMFS needs to improve communication within agency and between science directors and stakeholders.
- Initiate a national policy and initiative on aquaculture: include clear position of federal government, direct agencies on addressing environmental issues in application of aquaculture, and set general guidelines for implementing aquaculture. (Haddad)
- Aquaculture industry for sustainability with technology-forcing regulations, standards, and incentives. (Hopkins)
- Must begin to look at alternative sources of food from the sea; most promising alternative is aquaculture/mariculture. (Monroe, D)
- Consider recommendations of greater funding for research and development not only of more diverse national aquaculture industry but in developing foreign aquaculture ventures to assist emerging nations alleviate hunger and poverty. (Monroe, D)
- How to "harmonize" aquaculture policy with specific suggestions for elements of a national aquaculture policy:
  1) Mechanism to harmonize is the Joint Subcommittee on Aquaculture (JSA) with Department of Agriculture as the lead agency;
  2) Departments of Agriculture and Commerce need to expand and coordinate their investments in aquaculture research and technology and link to industry outreach education;
  3) Imperative that federal government recognizes potential for aquaculture development in individual states beyond regional approach developed with National Aquaculture Plan in 1980. Should allow more say by states. (Haddad)
- Halt abusive operations on fish farms. [discussion provided] (Hayes)
- Continue to make sure that planning for aquaculture ventures are carefully organized with better understanding of markets and management needs. (Chew)
- Provide unbiased and factual information about aquaculture to the public-at-large. Aquaculture should not be viewed as a competitor with capture fisheries for consumer dollars. The two should be viewed as necessary tools for supplying aquatic protein to our increasing human population. (Chew)

- The Environmental Code of Practices should be developed and added to the EMS, and include input from all regulatory agencies, including environmental and tribal groups. This should similarly be done in other marine aquaculture industries. (Chew)
- Government should be more proactive in partitioning the resources and defining a place for aquaculture. (Chew)
- Given proper research and R & D funding, and a policy to support enhancement activities, aquaculture can help to restore the numerous species of fish and shellfish. [discussion provided] (Chew)
- Efforts should be made to bring together all Federal, State, county and local governments in different strategic regions. A process is needed to look at environmental short term and long-term impacts. (Chew)
- Government Support: Legislation should continue to support the aquaculture industry from all regions of the U.S. (Chew)
- Continue to develop planning and legislation that recognizes the importance of aquaculture. Should provide an overall plan for mapping, management, development and conservation within the U.S. EEZ. (Daniels)
- Integration of aquaculture into coastal management can contribute to improvements in selection, protection and allocation of sites and other resources for existing and future aquaculture development. Suggest a framework of Integrated Coastal Management (ICM). (Daniels)
- To ensure that aquaculture is economically and environmentally sustainable under a variety of conditions and diversity of species grown, research is vitally important. (Daniels)
- Any ocean policy should enhance global and regional cooperation and advocacy on fisheries, aquaculture, and environmental issues through better use of existing networks among professional organizations. (Daniels)
- NAA recommends:
  1) The U.S. Fish and Wildlife Service manage migratory bird numbers on basis of wild food supply.
  2) The USDA Wildlife Services program should be encouraged to actively develop additional control measures.
  3) Cumbersome regulatory processes that impede bird control efforts should be removed.
  4) Depredation permits should be readily available on a timely basis and should be administered equally by all USFWS regions. (Rheault)
- Just as humans have impacted every facet of our environment, we have to become managers for every part of our environment. That is why we need to manage the bird populations that feed off the fish. In Rhode Island, the cormorant populations have increased something like twelve fold in the last twenty years and they are eating 20 percent of the flounder population every year. We need to think about how to protect our aquaculture industry, as well as our wild fish populations, in a responsible fashion. (Rheault)
- The NAA would like to see the Hazard Analysis Critical Control Point (HACCP) standards being applied internationally to improve competition in the global marketplace. (Rheault)
- As a member of the National Aquaculture Association, we support USDA as the lead agency to lead marine aquaculture. The USDA has supported the NAA extensively with research and as an advocate in the marine area. However, taking off my NAA hat, my work with a specific project has made me reach a different conclusion that the lead agency should be a new office in NOAA, Office of Offshore Aquaculture. (Rheault)
- Keep the advocacy role in one agency, USDA, and put the regulatory role in the marine environment under NOAA. (Rheault)
- Need three changes:

1) It is time to shift our view from hunter/gatherers to being marine culturists, as we have done with all of our terrestrial food sources. In order to achieve this goal, we need to increase the incentives for businesses to pursue these kinds of developments.
2) Marine aquaculture has to be fostered in much the same way as we fostered the growth of terrestrial agricultural in order for it to gain a foothold and then expand.
3) Aquatic farming is relatively young, but has seen, and will continue to see, further advances in technology that will increase its efficiency, and reduce its impact on the environment. The only way the industry will continue to discover new and improved ways of farming fish is if it is allowed to develop and then drive research and production into even newer and improved technologies. (Bright)

- The shellfish industry urges the Commission to support environmentally sustainable marine aquaculture development by forming a separate marine aquaculture advisory committee to advise NMFS. (Downey)
- More of our resources should be put into the research and development needed to achieve the 5-fold increase. The U.S. lags embarrassingly far behind other nations in support of aquaculture development, which helps to explain the huge trade deficit we are currently facing. (Downey)
- Regulations must prohibit the use of genetically engineered fish in marine net facilities. (Ramirez)
- The most important things that the Commission could do to help marine aquaculture in the U.S. would be to recognize its importance for the security of our future seafood supply and to recommend a simplified permitting system. (Forster)
- Marine aquaculture is a legitimate and necessary use of our ocean waters. Please say so in your recommendations to the President and to Congress. (Forster)
- Stop Federal grants and subsidies to the industry, including support provided by the National Marine Fishery Service and the U.S. Department of Agriculture. (Lansing)
- Stop expansion of the industry on current sites and do not allow permitting of new sites. (Lansing)
- Mandate plain labeling of salmon and salmon products to consumers, describing origin and use of additives such as colorants, antibiotics, and pesticides. (Lansing)
- Mandate country of origin labeling on imported salmon and salmon products. (Lansing)
- Restrict imports of feedlot-raised salmon to the greatest extent possible under our trade and environmental agreement obligations. (Lansing)
- Although certain forms of aquaculture have promise, we need to proceed with caution, not recklessly, in developing that industry so that it does not jeopardize our wild fisheries. We would recommend that all aquaculture operations be closed systems that physically cannot release fish into the marine environment. (Spain)
- Farm salmon must not have access to marine waters. (Ayers)
- Other agencies should be directly involved in the process, not only the FDA. The NMFS, the DOI or USDA should be involved. (Ramirez)
- We recommend, as we have done repeatedly, that net pen aquaculture be removed from public, coastal waters. The farms are directly subsidized by the destruction of wild ecosystems upon which we depend. (Knutson)
- EPA should develop effluent guidelines for aquaculture. (Goldburg)
- Through a combination of regulatory and legislative changes, offshore aquaculture facilities should be required to receive both discharge permits from the EPA and an approval from the NMFS based on a standard of “no significant adverse effect on marine resources.” (Goldburg)

- Congress should amend Federal law so that the approval of transgenic fish for commercial sale requires evidence of ecological as well as food safety, and the approval process is open to public participation. (Goldburg)
- Appropriations to NOAA and other Federal agencies for aquaculture research should target key environmental goals: to reduce aquaculture's dependence on fisheries inputs by reducing the fishmeal and the fish oil content of feed and by emphasizing the farming of fish that feed at low trophic levels. (Goldburg)
- It is important to balance the concept of the environment and the commercial when thinking of investing as a venture capitalist in a small aquaculture farm that happens to do shellfish, which are interestingly natural filters in the ocean. (McGowan)
- Recommend increased support for mariculture, particularly in the development of technologies that can augment traditional practices of fisheries harvesting. (Estabrook)
- To protect the wild salmon stocks and keep our communities economically viable and off welfare, hatcheries that release salmon into the Bering Sea should be shut down. (Quyana)
- Aquaculture needs help to do the right thing; science needs additional funding; and, we need to improve the ability to educate and make citizens aware of these issues. (Panetta)
- There is need for a major push in the area of aquaculture and mariculture so that ocean fisheries can be farmed much like we farm grains and livestock on land. (White)
- Aquaculture—three recommendations presented. (Eichenberg)

TOPIC: *LIVING MARINE RESOURCES*

KEY ISSUE: *Wild Resources*

ISSUES RAISED

- Get serious about saving wild marine fauna. [discussion provided] (Hayes)
- Protecting endangered wild salmon: The escape of Atlantic salmon from Maine salmon farms has been identified by NMFS and the USFWS as one of the major impediments to restoration of wild Atlantic salmon. (Goldburg)
- Oceans cannot produce sufficient protein to feed projected population in 50 years. (Wiseman)
- Salmon are not native to Lakes and therefore hard to say if their introduction has benefit. (Hartwig)

PRESENTER RECOMMENDATIONS

- Any public policy issue should be such that it holds as a higher value native fish (those that are "wild" or not genetically enhanced) over those that are kept in commercial pens. (Affleck-Asch)
- NMFS and USFWS have proposed a number of reasonable measures to minimize the impact of salmon farms on endangered wild salmon and Federal officials should support these decisions and activities. (Goldburg)

TOPIC: *LIVING MARINE RESOURCES*

KEY ISSUE: *Biodiversity*

ISSUES RAISED

- Protecting and restoring biological diversity has become the driving force in conservation worldwide but biodiversity is conspicuously absent from 1996 version of Magnuson-Stevens Act. (Norse)
- We need to protect more areas of the ocean to ensure the survival of all marine species. (Rothrock)
- Biodiversity, protected areas, and tourism—Loss of marine species diversity and abundance degrades both marine ecosystems and the industries that depend on them. (Hamilton)
- Biodiversity is impossible to legislate. In simple terms, biodiversity is the variety of native organisms that exist in a specific area at any given time; a single frame from a never-ending motion picture. (Radonski)

PRESENTER RECOMMENDATIONS

- Biodiversity recommendations: Congress should enact legislation mandating and appropriating funds to support the development of a network of fully-protected marine areas; the Commission should: 1) recommend to NOAA that they actively pursue designating a portion of the Stellwagen Bank National Marine Sanctuary as a fully protected area; and 2) should charge each agency with marine resource management authority. (Shelley)
- Would like to see more discussion on other areas of living marine resources, particularly marine wildlife—that was not discussed at all today; also coral reefs; national marine sanctuaries. (Weissman)

TOPIC: *LIVING MARINE RESOURCES*

KEY ISSUE: *Status of Managed Species*

ISSUES RAISED

- Coral reefs subject to degradation from far away. Large areas in Caribbean and Pacific have shifted from coral-dominated to macroalgal-dominated communities, often from overfishing and removal of herbivorous fish. (Birkeland)
- Three important points:
  1) Sea turtles are ancient and valuable participants in the global marine ecosystem;
  2) Sea turtles are members of the "global commons," and must be managed as such; and,
  3) By neglecting point 2, we will not only fail to restore sea turtle populations, but the consequences will be severe and enduring for domestic industry and policy. (Eckert)
- Legal status and biology of sea turtles provided. (Eckert)
- Sea turtles are a shared international resource. [detailed discussion provided] Example: declining nesting turtles in Mexico traced to increased use of large-mesh gillnets by Chile and Peru. (Eckert)
- Protecting sea turtles requires a multilateral approach:
  1) Federal mandate [detailed discussion provided]
  2) Why unilateral action can fail. [detailed discussion provided]
  3) Why multilateral mechanisms are urgently required. [detailed discussion provided] (Eckert)
- Facing a world where fishing capacity of fleets has outpaced reproductive capacity of fish stocks.

  Current Situation:

  1) Many of world's primary fishery resources are under stress [statistics provided].
  2) Causes: improved fishing technology, government subsidies increased fishing capacity, degradation of habitats, "flags of convenience," gear types.

  International Law Framework:

  1) 1982 LOS Convention [description provided];
  2) Other Instruments: [extensive list provided].

  Trends and Prospects:

  1) Recognized need for greater conservation ethic in regulating ocean fisheries;
  2) Creating new management regimes to oversee important international fisheries (tuna fisheries in Central/Western Pacific);
  3) Some of new tools for enforcing fishing rules are showing promise. Better coordination, monitoring, control and surveillance, etc;
  4) International community has begun to think "outside the box;" using "port state controls" deters illegal harvests; new restrictions on the importation of fishery products harvested in violation of rules, etc.;

  APEC has growing track record of accomplishments. (West, MB)
- Concerned about fate of monk seal by reopening lobster fishery in NWHI or failing to assess and control cumulative effects of research and other activities that increase human visitation to NWHI. (Raney)
- Coral reefs are important to people of the entire world. The many problems with coral reefs are symptoms of two larger issues: overpopulation and a consumer driven economy. (Grigg)
- Socio-historic profile and economic overview of wetfish industry. (Amoroso)

- America's fisheries are in crisis. [facts are provided] (Norse)
- Discussion regarding harvest rates and stocks is provided. (Hogarth)
- Fish are important. [detail list of fishery facts provided] (Simpson)
- Striped bass landings exceeded 12 million pounds in early 1970s, crashed to 3 million pounds per year by early 1980s from overharvesting and degradation of marine environment. Passage of 1984 Atlantic Striped Bass Conservation Act and populations rebounded; by 1996 highest landings levels since 1975. (Nussman)
- Fisheries: 56 varieties are extinct or overfished. (Hollings)
- West coast fisheries and seafood industry:
  1) Dungeness crab, Pacific groundfish, and pink shrimp fisheries need to be discussed together; most boats fish 2 or all 3.
  2) If you take away any one of these fisheries, there are significant number of boats and plants that may not survive.
  3) Groundfish is glue that holds west coast fisheries together. (Moore)
- Many once-great fish stocks are now gone and once-productive shoreline nurseries are destroyed. Whole food webs are loaded with deadly toxins. (Garrett)
- There are only 78 killer whales left in the Puget Sound ecosystem. The three factors which contribute to the decline are the presence of toxins in our waters such as PCBs, the decrease in available pres, and the increase in the number of whale watching boats. Of these factors, the first two are issues that need to be addressed over the long term. Whale watching is something that can be addressed now. (Himes)
- Fisheries management has in all to many instances failed to prevent overfishing, failed to protect the marine biological resources, and failed to provide a stable fishing economy for our future. In addition, there has been devastating loss of habitat and the various environmental threats that are depleting our living marine resources and pushing the Northwest region's primary fishing resource, Pacific salmon, ever closer to the brink of extinction. (Spain)
- The once legendary Pacific salmon and steelhead runs have been destroyed by the destruction of inland and estuarine salmon spawning and rearing habitat by the extensive damming of rivers and the almost complete diversion of major river systems. The only exception to this tragic story of declines and eventual ESA listings is the fall Chinook salmon run currently inhabiting the Hanford Reach, a 70-mile stretch of river that is the only part of the Columbia River that is undammed and still running wild. (Spain)
- Destructive fishing practices: Coral and sponge are the oldest living animals that we know of today. They are a primary animal that provides habitat for other species and in fact are being destroyed by the tons every year. (Ayers)
- Over the long term, near shore, ocean, and estuary fish habitat loss is probably the greatest threat to marine fishery productivity. (Spain)
- Fisheries management will be moot if habitat loss and destruction destroys the productivity of living marine resources. Already today, habitat destruction all along the coast lines, particularly wet lands loss and estuary degradation cost our industry some 27 billion dollars, at least 450 thousand family wage jobs every year. That is a net productive drain on the economy that is reversible. An investment in the protection of those habitats is essentially an investment in the future of our economy. (Spain)
- It is widely known that New England groundfish stocks were declining precipitously prior to 1994. Today NMFS assessments of those same stocks show biomass levels for 12 groundfish stocks, collectively, have more than doubled since then. (Hill)

- Our oceans are in a crisis and no case better illustrates this crisis than the northern right whale. The whale has supposedly had Federal protection for 30 years. And until this spring, nothing had been done but research. This is for a population of 300 whales! If the northern right whale is an example of how our endangered marine species are being treated, then the entire protection infrastructure should be seriously reconsidered. There is hope that this crisis is coming to the attention of the powers that be and that in this conference earnest talk has begun about the ocean's survival. (Armonson)
- Twenty years ago the Steller Sea lion population in western Alaska started declining so the panic button was pushed. The Council under pressure from NMFS closed all commercial fisheries within ten miles of the great rookery on Borgoslof Island. The sea lion in that area continued their decline so it was closed twenty miles off shore. Last year the survey showed a continued decline in sea lion but to everyone's amazement there were ten thousand fur seal on the island. Was it a shortage of fish? Most likely not. (Tillion)
- The pollock biomass is the greatest story in that the Pollock are harvested in such a way that increases their volume every decade. That can be done responsibly in every other area if it is based on sound science and upon good management judgment. (Stevens)
- In New England you've heard about the disagreement over the need for hard caps. Here, when you hit the TAC, fishing stops for the year. In Russia, their scientists believe that the annual harvest could be twice as high as it is. They believe that you can fish Pollock at an exploitation rate around 30% or more and we've been fishing an exploitation rate of the mature fish around 15%. Theirs has been in decline using the higher exploitation rate and ours has been at a steady state. (McCabe)
- All the baby salmon live within four feet of the bank—millions of them. We used to walk along the bank and as a result we destroyed the bank and knocked down the brush, like they still do in the south 48. We've learned you can't do that. We've restored the habitat back to where the fish have a place to live and be protected. The same thing that we did in the Kenai by learning and correcting what we've done is taking place in the ocean. (Penney)
- The commercial fishing industry is the largest private employment sector in Alaska with an ex-vessel value of over $1 billion and an average wholesale value of more than $2.5 billion dollars in 2001. Alaska fisheries harvest would rank 12th in the world if Alaska were an independent country. (Stinson)
- Of the 63 species of groundfish managed under Federal Fisheries Management Plans (FMPs) in Alaska, none are listed as over fished and none of their population are threatened (NMFS 1999). Only three species of crab have been listed as overfished. Our state managed salmon stocks are regarded as the most viable and healthy natural populations in the world. (Stinson)
- The Bering Sea crab fisheries are working through a stock rebuilding and rationalization process. [discussion provided] (Winther)
- We do not have final results for the reasons for the serious decline of the steller sea lions. One of the early theories was that there is a lack of food perhaps due to the way the fisheries were configured in the 1970s, 1980s, and the early 1090s, which may have contributed to the decline. Most of the research that has been conducted on conditions of animals in the last year or two has not discovered any evidence that there are nutritional problems. Then we looked at predation problems and it's potentially wider than killer whales, There's been a large increase in large shark populations in the Gulf of Alaska, Bering Sea and so we're looking at that too, but the answers are not quite there yet. (Balsiger)
- For BSFA members, it is imperative to understand what factors are contributing to the unexplained drop in western Alaskan chum salmon populations in recent years. (Gillis)

- The notion that killer whales are responsible for the decline of almost every marine mammal in Alaskan waters is not true. We are just beginning research in the Aleutian Islands to determine how many killer whales there are, and what percentage are marine mammal eaters. (Sterne)
- There has been a noted decline in the number of seals in the Hubbard Glacier area where the cruise ships frequent. A recent study showed undisputed evidence that the decline of the seal population there is of 32 percent to 48 percent since 1992. Since there is no hunting in Glacier Bay national monument, the decline cannot be attributed to hunting. There is a decline in Yakutat as well. (Sensmeier)
- The biggest concern is that the cruise ships come at May 14th or 15th, precisely the time that the harbor seal gives birth and nurse their young on the ice pans that break off of the Hubbard Glacier. The tribal government passed an ordinance two years ago setting a demarcation line that they wished the cruise ships to respect. They refused to heed the demarcation line. As a result there's been a market decline in the number of seals in that area. (Sensmeier)
- Fisheries: The estimate is that 25 to 30 percent of all commercial fisheries are being impacted right now in some way by either overfishing or destruction of those fisheries. Bycatch, as you know, is a huge problem. (Panetta)

PRESENTER RECOMMENDATIONS

- Prohibit expenditures, potentially in the hundreds of thousands of dollars, for any efforts to re-open the lobster fishery in the NWHI, and require expenditures needed to fully support the efforts of the Monk Seal Recovery Team and NMFS management programs intended to assist the recovery of the endangered seal. Reopening the lobster fishery is prohibited under the NWHI Executive Order would further reduce prey for the endangered seal at a time when juveniles are suffering from insufficient prey, and would represent a major subsidization of this fishery. (Raney)
- Drastic measures must be taken immediately in order to secure the survival of the few killer whales we have left. Need new whale watching guidelines. (Himes)
- We need to make sure we are really using biology and not having other agendas, such as possibly making the Aleutian Islands a park, making our decisions. (Tillion)
- We should resist the temptation to look for single factor explanations for this, or any other problem, in the ocean. [Further description provided.] (Sterne)
- Give priority attention to the issue of aquatic nuisance species. I believe this is the most serious problem facing the Great Lakes today. We need an analysis of where our shortcomings are and how we as a nation can solve this problem. (Vonnahme)

TOPIC: *LIVING MARINE RESOURCES*

KEY ISSUE: *Requirements of Unmanaged Resources*

ISSUES RAISED

- Need to limit introduction and control spread of invasive species. (Colom-Agaran) (Lane) (Hopkins)
- EFH is part of whole process and it needs holistic approach. (Shipman)
- Mobile Bay now produces very few oysters for numerous reasons: downstream movement of fecal coliform; oxygen depletion; lack of sedimentation; dredging of Intercoastal Waterway; deepening/widening of ship channel; dams, etc.
- Louisiana still productive with large estuaries. Big problem facing oyster farming industry is coastal erosion and saltwater intrusion.
- Major freshwater diversion projects planned that could affect oyster industry.
- Texas has primary problem of too much saltwater; salinities high and oyster drill and dermo disease invade; red tide and ballast water also problems. (Nelson)
- Nonindigenous species issue before IMO now; concern from technical point that current procedures place stress on ship during ballast transfer; IMO Marine Environmental Protection Committee considering it; Coast Guard lead agency to IMO. (Wade)
- Concerned about wetlands loss, and contamination. Think about economic issues related to wetland loss and contaminated waters. (Coman)
- Need marine habitat and species protection for resources known to be sensitive or in decline; i.e., coral reefs, seagrasses, wetlands, estuaries. (Bodman)
- Millions of acres of wetlands have been lost throughout the Gulf of Mexico region. "Compensatory" mitigation, in theory, offsets damages that occur through development activities. Two studies by NAS and GAO found compensatory mitigation falling far short of meeting goal of no net loss. NAS report found:
  1) Goal of no net loss of wetlands is not being met for wetland functions by the mitigation program, despite progress made in last 20 years;
  2) A watershed approach would improve permit decision making;
  3) Performance expectations in Section 404 permits have often been unclear, and compliance has often not been assured or attained.
- Concerned about Corps guidance in response to reports. (Goldberg)
- GAO report found: compensatory mitigation was not effective at mitigating adverse impacts to wetlands. Corps does not properly track mitigation taking place under in-lieu-fee arrangements.
- Invasive Species:
  1) Unclear roles of federal agencies in states cause confusion [ANSTF/Sea Grant example];
  2) National Management Plan does not recognize that scope, diversity and intensity of problem varies state to state;
  3) Ballast water and sediment becoming more important to coastal states; plants, animals, pathogenic bacteria and toxic dinoflagellates. (Haddad)
- Can't separate EFH from fisheries management. (Hogarth)
- Habitat is essential to fishery management and managers need some say in what's going on with EFH. (Mahood)
- Habitat is the key: should be highest priority as it affects fisheries resources. (Simpson)

- Habitat destruction caused by harmful fishing gear further exacerbates fishery and ocean declines. (Dobrzynski)
- Protect habitat from trawlers; less life wasted in terms of bycatch. (Damme)
- Invasive species: open ocean ballast water exchange difficult; need on-shore treatment. Consistency in regulation between ports would provide certainty for shipping companies. (Shultz)
- Shellfish cannot be grown in water that does not meet extremely stringent water quality standards. There is a very real, very tangible relationship between the health of our marine environment and the health of our business. And so we straddle the line between environmentalist and business interest every day. (Downey)
- Populations along the shorelines have increased exponentially and we have lost shellfish growing areas to non-point pollution, from failing septic systems, increased impervious surfaces and road runoff, and agricultural wastes. (Downey)
- As shellfish farmers depend on water quality and they are physically there working in the environment every day—they have become the first line of defense for coastal water quality. (Downey)
- Current methods of monitoring, controlling and preventing marine invasive species, are not sufficient. (Hamilton)
- The fishing industry is a wetlands dependent industry. Wetlands protection should not be seen as a cost so much as it is an investment in the future of national commercial and recreational fishing industry that provides $152 billion each year to the nation's economy and 1.5 million family wage jobs nationwide. (Spain)
- Given the potential for economic harm posed by marine invasive species, the current method of monitoring and controlling invasive organisms is lacking. (Hamilton)
- A great interest is the effects of aquatic nuisance species and regulatory regimes that control that. Regarding the ballast water issue, at what point do these regulations become submarginal and not beneficial? (Brautigan)
- Numerous Federal agencies have ecological restoration programs and numerous states have restoration priorities. Regional ecological restoration priorities of Federal interest are seldom defined. (Koning)
- The infrastructure that exists is the Aquatic Nuisance Species Task Force, which was established by Congress under the Aquatic Species Nuisance, Prevention and Control Act. Many Federal agencies here are members of that task force. If you identify them early enough and you take concerted action, you can stop or hinder the problem. But right now, we're still looking for appropriate tools to deal with the issue. The current strategy is preventing the organisms from getting into the U.S., then keeping them under semblance of control and the final thing is to try to have eradication techniques to eliminate the population. So far we've been not very successful in all three. [discussion provided] (Geiger)
- San Francisco Bay probably has, as you correctly pointed out, more non-native species than native species. And, the importance of San Francisco as a port of entry is extremely critical. The verdict is still out in terms of the ultimate effect on management of native fish and wildlife species, but from the broader perspective, restoration of fisheries populations has been successful. (Geiger)
- A strategic plan or action plan has not been developed to put more resources into the emerging issues of fish and wildlife health and diseases. Discussions have been initiated with the USGS and with some of our NMFS colleagues. Much more is needed. (Geiger)
- In 1997, CLF identified habitat protection as the missing link in the ecosystem safety net needed to insure the long-term sustainability and diversity of the Gulf of Maine and New England waters. (Shelley)

- Key impacts in the Gulf of Maine: Incidental bycatch in commercial fisheries; collisions with commercial and recreational vessels; competition with commercial fisheries for common food resources; increased noise in the oceans; uses of sound by the U.S. Navy; coastal pollutants; ecotourism and directed interactions; killing of nuisance animals[discussion provided] (Young)
- The U.S. must address the threat posed by aquatic nuisance species. The introduction of aquatic nuisance species into new waterway environments via vessel ballast water discharges has been identified as one of the four greatest threats to the world's oceans and the coastal waters they touch. (Fredricks)
- Shipping moves over 80% of the world's commodities via a world fleet of more than 45,000 vessels and, in so doing, transfers approximately 10 to 12 billion tons of ballast water across the globe each year. Ballast water is essential to the safe and efficient operation of modern shipping, providing balance and stability to un-laden ships. However, it also poses a serious ecological, economic and health threat. (Fredricks)
- It is estimated that at any one time, from 3000 to over 4500 different marine species are being carried in ships' ballast water around the world. This includes bacteria and other microbes, small invertebrates and the eggs, cysts and larvae of various species. The problem is compounded by the fact that, virtually all, marine species have life cycles that include a planktonic stage or stages. As a result, whole ecosystems are being changed. In the U.S., the European Zebra Mussel Dreissena polymorpha has infested over 40% of internal waterways and may have required over US$5 billion in expenditure on control measures since 1989. (Fredricks)
- The most important thing that the North Pacific Council does is we actually do account for bycatch. We pay attention to it and we make sure that it's kept within levels that are scientifically sound and we know what it is. That does not happen in the rest of the country. (Leitzell)
- The habitat issues are very closely intertwined with the biology and there is a role for both NMFS and the Council in dealing with them. And NMFS should have continuity in their funding—for their five-year plan at least—much as in the Department of Defense. (Leitzell)
- It is an interesting dynamic that has occurred in the bycatch context. Because not one more fish is alive today than—in a yearly basis than was alive before the 1996 amendments under this new system. So, we cannot say that bycatch reduction in the North Pacific has helped. (Leitzell)
- One-quarter of the global catch in 1994 – more than 27 million metric tons of fish – is thrown overboard each year dead or dying as unwanted bycatch. Fisheries with gear having the greatest impacts on endangered wildlife include shrimp trawl, pelagic longline, and gillnet fisheries. (Ayers)
- It is often assumed that Alaska's fisheries are fully developed. This is not true. The Alaska Fisheries Development Foundation (AFDF) recently made a list of over forty species that have harvest potential, but that are currently not harvested. AFDF is currently working to develop three of these stocks. (Jones)
- Prevention and control of invasive species continues to be a high priority of the Service. Invaders that became established have been implicated in causing population declines and habitat degradation. Up to 46 percent of the plants and animals Federally listed as Endangered have been negatively affected by invasive species. One of the most severe threats currently facing the Great Lakes is the invasion by injurious and nuisance species. (Hartwig)
- Habitat destruction is one of the most serious causes of extinction and population declines of aquatic species. Barriers impede and redirect river flows, which also prevents fish from accessing important habitat needed to spawn, survive through the early critical months of life, feed, avoid predators, grow, and mature. (Hartwig)
- Urban habitat allows large cross sections of society to see the value of fish and wildlife that otherwise might not get to interact with other residents of our biosphere. This can then translate into support for habitat legislation and funding initiatives. (Davis)

- It's not enough to protect the habitat that's left. If nature is our life support system, our growing population needs more habitat. Cities may offer some of the best remaining chances to bring habitat back. (Davis)
- The Lake Michigan Federation is launching an Urban Aquatic Habitat Initiative to restore coastal habitat following a basic three-step process: 1) developing biodiversity and habitat recovery goals, 2) implementing those goals on a site-specific basis, and 3) working collaboratively with volunteers and other stakeholders from plan development to actual restoration work. (Davis)
- Some of our greatest coastal resource challenges stem from the modification of habitat and hydrological regimes. (Wayland)
- Invasive species is defined in Executive Order 13112 that established the Council as an alien (or nonnative) species whose introduction does or is likely to cause economic, or environmental harm or harm to human health. EO 13112 directs the Council develop a comprehensive management plan to deal with invasive species. The Oceans Act also calls for enhancement of marine-related commerce; similar to the invasive species EO 13112 and management plan which call for steps to protect the economy from the impacts of invasive species. (Williams)
- There is a critical need to focus on prevention of both accidentally and intentionally introduced invasive species. Most aquatic invasive species are introduced accidentally through variety of means called pathways. The ballast water of ships is considered the most significant pathway resulting in the introduction of the zebra mussel, Asian clam and many other species. (Williams)
- Although ballast water has received the most attention for obvious reasons, it is critical to look at other pathways including ship biofouling, accidental releases from aquaculture, release of live bait, seafood, and aquatic pets, and recreation – among others. (Williams)
- In many cases we do not know enough to effectively deal with invasive species issues and their impacts our coastal and marine ecosystems. (Williams)
- Biological invasions are one of the greatest drivers of ocean and coastal change in the U.S. in 2002. Invasions threaten life (through disease transport) and property, severely impact coastal stewardship of fishery and other resources, and impact marine-related commerce and transportation. (Carlton)
- Invasions may be seen, in part, as the "thread that binds" the other major causes (habitat alteration, chemical pollution and eutrophication, fisheries impacts, and global climate change) of manmade hazards and alterations to the marine environment. (Carlton)
- Vectors for the accidental introduction of exotic species today include shipping (ballast water and ballast sediments and external (hull) and internal (seachest) fouling), the movement of drilling platforms, the aquaculture (mariculture), live seafood, and aquarium industries, and the live bait industry. (Carlton)
- Lake Carriers' Association focus has always been on preventing additional introductions of non-indigenous species. In 1996, we teamed with the Northeast-Midwest Institute to invent systems that could be installed on ocean-going vessels to treat ballast water. There was no technology in existence to treat ballast water, not even that much research to draw on. (Harkins)
- From the mechanical performance of filters and hydrocyclone, it is clearly evident that filters show good results, but that the hydrocyclone is the wrong approach for reducing particulate and biota in ballast water. (Harkins)
- Successful treatment of ballast water is only one part of the solution for the Great Lakes. Another problem we must solve is that many ships enter the Great Lakes with no ballast onboard – NOBOB is the term we use. However, even though the ballast tanks are considered empty, there is always some residual ballast water and sediment in those tanks, and they are sufficient to sustain resting cysts. (Harkins)
- The invasive species problem is one of the most important issues we face. (Reutter)

- Invasive species are frequently transported by human activities such as the dumping of ballast water from transoceanic ships, transporting species via recreational boats, and emptying unwanted bait. (Reutter)
- Implementation of the National Invasive Species Act falls far short of national needs to effectively protect the region's coastal resources from expensive and environmentally damaging invasions by invasive species, e.g. invasive species are still appearing in the Great Lakes at the rate of about one per year. (Reutter)
- Current and accurate information is needed in each of these areas for every invasive species; biology and life history, effects on ecosystems, socio-economic analysis (costs and benefits), control and mitigation, preventing new introductions, and reducing the spread. (Reutter)
- The Lake Erie experience and effects on the ecosystem are explained. (Reutter)
- Controlling invasive species is a critical example, and one for which the federal government's leadership and cooperation is essential. Non-native nuisance species can permanently and tragically alter the ecosystem, with devastating effects on commerce and recreation, and on the regional economy. (Jimenez)
- Restoration and protection plan for Great Lakes will cost about $3-4 billion. (Vonnahme)
- Only between $1 and $2 million a year for over a decade has been available for the entire national invasive species effort—that is spread too thin. (Carlton)
- Invasive species risk assessment modeling is progressing but is challenged by the unknown and vectors carrying many species at the same time. There is a good deal of discussion about how to weight or rank vectors, but it is very difficult. Many of the vectors are going to require different kinds of attacks on them to manage them properly. Some will be easier than others to regulate and manage. (Carlton)
- Human mediated dispersal is compared to natural dispersal as the first point to consider in determining invasive or native species. (Carlton)
- A nationally coordinated educational effort about invasive species within the National Aquarium Councils would be most welcome in terms of having something with a uniform approach. (Carlton)
- I use two generations of existence to consider a species native. (Reutter)
- Preserving currently healthy habitat now must be a starting point for any conservation restoration effort because annual loss of coastal and estuarine habitat far outstrips the rate at which degraded habitat can be restored. (Wolf-Armstrong)
- Marine recreational fisheries management is discussed. (Loftus)
- Discussion of background and current issues for invasive species. (Rufe)
- Findings, goals and objectives for coastal and marine restoration and conservation. (CSO)

PRESENTER RECOMMENDATIONS

- Institutionalize current recommended activities relating to ballast water and hull fouling from National Aquatic Nuisance Task Force. (Colom-Agaran)
- Look at how Peconic Bay model for spawn settling out from sanctuary might apply to Mobile/Bon Secour Bays. Might answer questions whether protected areas could have dual purpose. (Nelson)
- Degradation of habitat:
  1) Greater coordination among agencies;
  2) Create ocean resources inventory and determine carrying capacity for each resource and site;
  3) Expand day-use mooring system statewide and limit number of ocean tourism businesses allowed to operate in a given area at given time. (Coon)

- Invasive Species:
  1) Coordinate more than 20 federal agencies dealing with nonindigenous species; eliminate redundancy in federal agency initiatives (e.g., ISC and ANSTF both request state management plans);
  2) USFWS should continue looking at listing species under Lacey Act instead of new legislation;
  3) Support ISC intent to validate effectiveness of control methods through coordinated research;
  4) Encourage developing research at state and federal level with states and other stakeholders as full partners;
  5) Implement enforceable national requirements for ships entering US ports; form state/federal task forces to coordinate prevention message, respond to immediate threats, enforcement, etc. (Haddad)
- Recommend that Congress provide funds necessary to obtain information on gear impacts and manage oceans in sustainable way. (Dobrzynski) (Danson)
- Develop a national fresh water inflow policy: main goal ensuring an ample supply of freshwater inflow, applied at appropriate times, to maintain appropriate salinity regimes and concentrations of nutrients and sediments to sustain function and productivity of estuaries. (Simpson)
- Need legislation setting new habitat recovery goals, esp. restrict bottom dragging. (Safina)
- Council (or state) does not have staff to adequately implement EFH. (Morris)
- Invasive Species:
  1) Commission should recommend to Congress that regional approaches to invasive species response be allowed. [details provided]
  2) Coast Guard should provide sufficient resources to work with states. The Federal government should provide specific focus in discussions with other nations to develop international plans for the control of invasive non-native species. [details provided] (Shultz)
- It is not functional to have all the water from the 200-mile line as our definition of our essential fish habitat. Clearer definitions are needed. (Brown)
- The polluter should pay – the entire marine transportation industry should be engaged and made at least partially responsible for costs associated with ANS reduction measures. (Hamilton)
- A compulsory ballast management program needs to be implemented on a national level. Improvements to existing and new vessels entering the maritime transportation industry need to be made. More efficient ships capable of operating with less ballast water and doing so safely in the open ocean would reduce the risk. (Hamilton)
- We need to look at a national regime. (Brautigan)
- Provide a metric to quantify goals and accomplishments of ecological restoration for resources of national interest (e.g., wetlands, anadromous fisheries migratory corridors, submerged aquatic vegetation, etc.) that is shared and coordinated across all Federal programs. (Koning)
- Higher-level technology needs to be employed to assure shipboard safety, to reduce sediment loading in ballast water, and to provide for a higher level of effectiveness in the mitigation of biological invasions. (Fredricks)
- Congress and the Administration should provide the U.S. Coast Guard with the mandate and support that it will need to address and deal with the threat of aquatic nuisance species. More specifically, the time frame proposed by the Coast Guard for the implementation of mandatory ballast water management must be accelerated; the summer of 2004 is too late. (Fredricks)
- Look for innovative ways to address marine invasive species, including a Federal role in ballast water management. (Buchsbaum)

- Alaska must find ways to protect the habitats on which production of living marine resources depend. (Penney)
- Establish a national policy that requires a government-approved bycatch monitoring and minimization plan as a prerequisite to fishing. (Ayers)
- Establish a national goal for these plans to reduce bycatch to levels approaching zero. (Ayers)
- Require annual reports regarding progress in the reduction of bycatch. (Ayers)
- Require action to curtail fishing when bycatch limits are violated. (Ayers)
- The Essential Fish Habitat provisions of the Magnuson-Stevens Act are important provisions. (Gillis)
- Inspections of large ships coming into the lakes and enforcement must be enhanced and funded. I urge you also on a federal level to consider policies to prevent the introduction of invasive species through the ballast water of ships entering US ports, particularly fresh water ports such as the Great Lakes. (Jimenez)
- Aquatic Nuisance Species
  1) A mandatory ballast water management program for all ships entering U.S. ports and the Great Lakes, so that risk of species invasion via ballast water is greatly reduced;
  2) Prevention of introduction of aquatic invasive species into the U.S. via other pathways;
  3) A strengthened program for early detection and monitoring for aquatic nuisance species;
  4) Enhanced ability to rapidly respond to invading species by eradicating them before they become well established in the U.S.;
  5) Either equipping the Chicago Canal electrical barrier with a backup generator or connecting the barrier to a second power grid, which would virtually eliminate the possibility of the barrier becoming inoperable because of power loss; and
  6) Convening an International Panel of Experts to recommend the best approach to preventing the exchange of exotic organisms between the Great Lakes and Mississippi River basins, and make recommendations to Congress and the President on how to proceed. (Hartwig)
- Coastal Habitat and Fish Passage:
  1) Increased protection of ecologically important areas, such as wetlands and riparian zones in the Great Lakes basin, from urban development, logging, mining, agriculture, and other uses that degrade habitat for fish and wildlife;
  2) Increasing the rate of wetland restoration in the Great Lakes and elsewhere; and
  3) Either eliminating, where possible, barriers to passage of fish and other aquatic organisms, or modifying barriers to allow passage of those organisms to their habitats. (Hartwig)
- Bring fish and wildlife habitat back to our cities. (Davis)
- Great Lakes fishery management rests on three pillars:
  1) The sub-national governments (states, the province of Ontario, and the two U.S. intertribal agencies), operating through their own agencies and collectively through A Joint Strategic Plan for Management of Great Lakes Fisheries;
  2) The U.S.-Canadian Great Lakes Fishery Commission, operating under a binational treaty; and
  3) The federal governments, operating through various federal laws and initiatives. (Gaden)
- Both the invasive species EO and the Council's Plan emphasize the important role of education and outreach is critical not only to inform the public and key stakeholders about the problem of invasive species, but what steps people can take to reduce the likelihood they will accidentally introduce or transfer an invasive species to region or ecosystem. (Williams)
- Problems associated with the lack of critical biological and technical information, as well as need for better data on the environmental and economic impacts of invasive species points to the need to enhance and strengthen our invasive species research and information sharing capacities. Targeted and coordinated research is critical to enhance economic analysis of the impacts of invasive species and improve the ability to predict which species will become invasive. (Williams)

- There are superb possibilities for the engagement of the private sector for innovative approaches, superb possibilities for enhancing close cooperation among and between government agencies and departments (both Federal and state) to generate coherent, cost-effective, efficient, and consistent regulations and management, and, importantly, superb possibilities for the United States to take a global leadership role in marine bioinvasion policy and management. (Carlton)
- We strongly encourage the U.S. Coast Guard to issue some Interim Standards that shipowners can try to meet. Also, we strongly encourage the U.S. Coast Guard to allow experimental testing to be done when a shipowner wants to try some technology or technique, providing "good science" is being followed. The U.S. Coast Guard must not make the rigors of the testing and evaluation so difficult that it makes installation and performance testing an economic hardship and burden for the shipowner. (Harkins)
- The only realistic goal is to prevent future introductions into the Great Lakes. To achieve that goal, systems must be designed that can be installed on vessels trading from the oceans. (Harkins)
- Support and strengthen the National Invasive Species Act. (Reutter)
- Coordination of research efforts is very much lacking in ballast water research arena. (Harkins)
- Quantitative information about baseline habitat conditions should be developed and assembled in order to assist planning and funding efforts. (Wolf-Armstrong)
- In order to restore the necessary amount of coastal and estuarine habitats, we must foster a new mindset and policy regime that envisions projects on much larger size and time scales. (Wolf-Armstrong)
- Coordinate restoration policies and efforts more effectively. A central body should exist on the federal level to synchronize efforts and to minimize duplicative initiatives within the agencies. One template for such a body currently exists in the form of the Estuary Habitat Restoration Council. (Wolf-Armstrong)
- Encourage multi-sector partnerships. (Wolf-Armstrong)
- Make coastal habitat restoration a financial priority. (Wolf-Armstrong)
- Develop a restoration and stewardship ethic. (Wolf-Armstrong)
- Incorporate habitat restoration as a guiding principle and priority in decision making. (Wolf-Armstrong)
- Make the permitting process more conducive to habitat restoration. (Wolf-Armstrong)
- Recognize recreational fishing community significant role in coastal communities social and economic well-being. (Loftus)
- Preserve Existing Habitat now and into the future. (Wolf-Armstrong)
- Determine existing coastal habitat conditions nationwide. (Wolf-Armstrong)
- Increase size and time scales for restoration projects. (Wolf-Armstrong)
- Coordinate restoration policies and efforts more effectively. (Wolf-Armstrong)
- Encourage multi-sector partnerships. (Wolf-Armstrong)
- Specific recommendations are presented. (Rufe)

TOPIC: *LIVING MARINE RESOURCES*

KEY ISSUE: *Sufficiency of Science and Information*

ISSUES RAISED

- Only data for seabird/longline interactions is from U.S. fleet; approaching 40% observer coverage. (Webster)
- Providing data provides foundation for an international management plan and international fleet cannot be depended on to gather this information. (Webster)
- Concern is lack of resources to adequately conduct applied research and scientific investigation:
  1) MSY for squid is undetermined, proxy based on unproven egg escapement model proposed;
  2) Full extent of sardine resources along west coast is not known; comprehensive biomass survey is essential;
  3) Present harvest guidelines for sardines subtracts Mexican biomass but doesn't account for Canadian component; Tri-state Sardine Forum welcome initiative that should be elevated to US State Dept. level. (Amoroso)
- One of biggest impediments to good fishery management has been lack of good data. (Parravano)
- Crux of the issue is education both for fishermen and consumers. Both need to keep up with changing conditions. (Ford)
- We hear a lot about good science but what we need is good data. Fishermen keep good data but won't provide it; don't trust one another or regulators. (Halmay)
- NOAA supports quality research: monitoring, assessments, strategic research; but under-funded [detailed discussion provided]. (Hogarth)
- Science voids in fishery management and where "best available science" is not sufficient [discussion provided]. (Mahood)
- Response to questions is a detailed description of SC monitoring programs that monitor ecosystems so they know what to measure in order to determine what regulations are needed. Programs described are in the following categories:
  1) Fishery Monitoring;
  2) Environmental Health Monitoring;
  3) Aquaculture and Fish Stock Replenishment. (Sedberry)
- Key to making decisions that result in successful management is having good management information:
  1) Collection of fishery dependent and fishery independent information on each stock;
  2) Having analytical capability to assess the condition of each stock.

  Shrimp is only Gulf fishery with good long-term data, other aggregated into species groups. (Swingle)
- NMFS has never had stock assessment personnel or capability level consistent with needs of Councils. (Swingle)
- Another of major data deficiencies is lack of social and economic data on fisheries and especially on communities. (Swingle)
- Very profound competition in scientific community for "best" science; many different approaches; maybe a commission like the Marine Mammal Commission or peer reviews could help. (Gutting)

- NMFS authoritative source of information on status of fish stocks for U.S., FAO for global; some trends of reversing overfishing. (Gutting)
- Scientists have identified fishing as primary cause of ecosystem change over time. (Rufe)
- Lack of information detailing status of resources and nature and extent of human impacts on the marine environment. (Dobrzynski)
- Good science and data are lacking. (Morris)
- Currently lack the science that is demanded. (Brown)
- While accurate, precise and complete scientific information will not of itself guarantee successful fishery management, it is an essential ingredient and is recognized as such in our national fisheries law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976 as amended (MSFCMA). (Fox)
- Improving data gathering capability requires some or all of the following elements:
  1) Consistent outreach to industry and other interested constituents;
  2) Careful development of valid technical and scientific protocols; and
  3) The testing and refinement of these lessons in well-designed pilot studies. (Fox)
- Scientific information for fishery management should possess the four "r's" as penned by Dr. Michael Sissenwine: relevant, right, respected and responsive. (Fox)
- For the independent peer review system NOAA created a Center for Independent Experts. The University of Miami was established as a pilot project. They set up the mechanisms and found the individuals that were willing to serve in that role. The idea was to create a pool that will be supported by the public to provide independent review. (Fox)
- NOAA has done some studies on how to make a coherent national system that is not piecemeal. It should deal with data collections, economics, social analysis, and biological analyses. We have a major requirement study for fishing information system that was requested by Congress. We produced an acquisition plan, a stock assessment improvement plan, and requirement plans that deal with science on a regional and a national basis. The research process is not a top down process and the planning process is not a top down approach. It's really more of a bottom up and collegial approach. (Fox)
- NOAA has a plan on recruitment that was developed by NMFS. There are certain types of expertise that are almost unique to NMFS. It is really difficult for faculty members whose expertise is in fishery management, fishery science, and stock assessments to get funding from sources other than agencies that do that job. The NFS does not fund those types of research. There are a lot of economists but we have half a dozen available national scholarships and the Sea Grant program specifically for that. Last year we did not get one applicant. It is a very, very serious problem. (Fox)
- Congress requires us to produce a strategic plan for research on a biennial basis, as well as other reports to Congress. We make a very strong effort to try to develop our budget around those documents. We all know that it is amazing what comes out on the budget from what you submitted in the beginning—there are so many layers. Congress earmarks funds for research as well as for data collection, and they are very different. A large share of those earmarks go to institutions other than the Federal government. We work with those institutions but the government looses the ability to say these are the questions that need to be focused on. (Fox)
- Research in U.S. fisheries management is dominantly an applied problem directed to producing better outcomes from our fisheries management. (Hilborn)
- Within the U.S. the dominant funding source for fisheries management research is NMFS through Congress, with States making important contributions. There is little real planning involved in data collection programs, but rather the politics of the moment. (Hilborn)

- The funding situation in the U.S. is similar to other countries, but differs radically from many of the more progressive countries where fishery managers and industry representatives determine research expenditures on a fishery-by-fishery basis, and most of the costs are recovered from the commercial industry. (Hilborn)
- In the U.S. NMFS and the States do almost all science. There is a growing trend towards cooperative industry/government data collection programs and for a few fisheries consultants working for the industry to participate in the stock assessment process. (Hilborn)
- It is clearly a social choice to determine who is allowed to fish and allocating the catch amount for users. There is a lot of science to determine which aspects of the system work and which do not. (Hilborn)
- The five to ten percent estimate given for budget recovery for research and management of fisheries, is a rough estimate of how much of the landed value goes into the expenses for research, management, enforcement within Australia and New Zealand that is recovered on a fishery-by-fishery basis. We should move in this direction—we must have profitable fisheries in order to do that. (Hilborn)
- In the 25 years since the Fishery Conservation and Management Act was first implemented, little systematic attention has been paid to economics in fishery management. (Hanna)
- Scientific feedback and mutual respect is needed. The design of research to address fishery management issues does not normally invoke the participation of harvesters; harvesters will believe that fisheries management can work if they understand and believe in the science upon which it is based. This means they must be involved in the design and conduct of investigations and experiments, not just in the review of the results. (Leaman)
- The ecosystem approach that many of us have alluded to is critically important. As part of our biodiversity initiative, a biomap of MA was created. Far too often management has been conducted species by species, animal, insect and plant life by animal, insect and plant life. Instead, focus should be on the intact habitat in which they exist. A GIS database was developed that not only identified core habitat areas, but also supported and created a mechanism by which that habitat area could be explored by developing supporting natural landscapes. It is critical to have information and maps from 3 miles out to 200 miles out so long-range protection can be made about those areas. (Durand)
- The scientific challenges faced in supporting the management of living marine resources, in New England and elsewhere in the U.S., are to provide answers to questions of applied ecology and social science. Specifically, the challenges are:
  1) The determination of resource abundance and productivity.
  2) The relation of that productivity to rates and methods of exploitation.
  3) The evaluation of management options and distribution of benefits, consistent with sustainable utilization.
  4) The interrelationships between biological resources and variation in the physical environment. (Murawski)
- The fishermen themselves are actually pushing to be looked at as scientists. There is not really a need for incentives. They know they are the ones out there. Fishermen are now realizing that serious management decisions are being made partially on the basis of what goes into their logbooks. (Murawski)
- Related to the coordination of science with management objectives, the problem is not that the research is not practical, it is that the research is actually too practical. It's always when the policy makers and the decision makers are closely aligned that it turns into short-term research. (Murawski)
- The Council also has been on the cutting edge of seeking new and better avenues to integrate management information needs with research efforts and to foster the participation of fishermen in collaborative fisheries science. (Hill)

- The Northeast Fisheries Science Center is an extremely well respected institution that produces high quality information that has stood the test of peer review time and again. However, the Center does not have adequate funding to meet the existing mandates of the Sustainable Fisheries Act. (Hill)
- Conservation engineering is going on all the time and bottom-trawling impacts and gear impacts is a subject matter that is being addressed, but it is not addressed in a comprehensive enough manner. (Hill)
- The City of Gloucester constantly needs more and better access to up-to-date scientific information and analysis—not only to participate meaningfully and constructively in the national debate about national resources, but also to help make the best decisions affecting resources in Gloucester. (Bell)
- The overall setting of harvest rates and harvest quotas at the Council level is very much driven by the science involved. There are planned teams that have a scientific and statistical committee and they have scientists from multiple disciplines, multiple agencies. They bring a variety of perspectives to the science debate and it's a very open scientific process. (Benton)
- The local observer program was one of the first of its kind. It is a central part of the management regime in the offshore fisheries and without those observers, the fisheries could not be well managed. It is funded by industry, through contractors that are approved by NMFS. They give the basic data that is used to open and close fisheries and to ensure that catch limits and bycatch limits are being followed. (Benton)
- The scientific community advises the Alaska Council process and it identifies research priorities, which sometimes get funded and sometimes do not get funded. They are often focused on a short-term research question. The North Pacific Research Board, however, is engaged in the long-term research plan looking 20 years out. (Benton)
- The absence of information is a reason to be cautions. While each species taken as bycatch performs some ecological function, we have little if any understanding about them. According to NMFS, scientists do not know the marine habitat requirements for any of our managed fish species. NMFS scientists also acknowledge that the status of 86% of the fish species in the North Pacific is unknown. (Childers)
- Management by litigation does not encourage credible science. The level of science required for ESA is not consistent with traditional academic research which encourages transparency and peer review. (Stinson)
- Nearly doubling of the current science budgets is the order of scale in which we need to think. And, that is not the scale for one or two years, but we have an ongoing need for this. (Balsiger)
- The North Pacific Research Board is unique. We have an endowed fund that can generate from year to year a level of funding that we can use for research. As long as that fund is protected and it's available, we can support long-term programs, particularly monitoring programs. There are common types of research issues to all regions. The various regions should be communicating and learning from each other and building on each other. That would bring additional credibility to the science. Any improvement in the information and the science that is supporting your management decisions as vetted through an SSC would improve the credibility of the process. (Pautzke)
- When the Council examines its stock assessments, which they do every fall, it has information that comes before it at its December meeting when they're setting their actual harvest levels for the next year. And, consequently, they have this annual process where they are becoming more and more aware of the impacts of the fisheries and on other components of the ecosystem. (Pautzke)

PRESENTER RECOMMENDATIONS

- Greater emphasis and additional funding needs to be applied to collection of management information, including continuation of cooperative programs with states (SEAMAP, RecFIN, ComFIN, MARFIN). Greater emphasis on collection of information should be by observers: New England a good example. (Swingle)
- Evaluate science funding needs for current mandates and ecosystem approach. (Hogarth)
- Important to involve fishermen in development of monitoring plans or they won't buy into it: create partnerships with them for sampling, etc. (Sedberry)
- Maintain monitoring and enforcement as high priority: onboard observers, vessel monitoring systems, and accurate data reporting. (Nash)
- Implement Coordinated Data Collection and Management System for Fisheries:
  1) State/federal systems such as FIN and SEAMAP coordinate collection and management activities and provide data for all parties;
  2) Today's management regimes require data which are statistically sound, long-term in scope, timely, and comprehensive;
  3) Cooperative partnerships between state and federal agencies most appropriate mechanism. (Simpson)
- If starting fisheries over: Get labs focused on management information; improve economist support; more money for assessments and plans. (Swingle)
- Socio-economic effects of fishery regulations need to be better understood and assistance provided to affected fishermen and communities during transition period. (Cooksey)
- Comprehensive ocean observing system needed to further science-based decisions; biological and socio-economic information. (Hogarth)
- Undertake a concerted effort to improve basic fish population information so that we make smarter fishery management decisions. (Danson)
- Need to understand connection between estuaries and fisheries stocks and habitat and forage stock to overall health of Gulf fisheries. (Davis)
- Must not overlook microbiological issues that affect seafood we eat, including:
  1) Health of fishery;
  2) Susceptibility of culture system to disease;
  3) Misuse of antibiotics in aquaculture;
  4) Seafood used in bioterrorism;
  5) Nonindigenous species issues related to fish and microorganisms;
  6) Concerns about environmental contamination. (Grimes)
- Advocate that NMFS require observers or their collection systems to yield statistically valid information to document total mortality including non-target mortality and compliance with existing regulations. (Dobrzynski)
- Develop national, coordinated research program for living marine resources:
  1) Enhance basic scientific understanding of how marine ecosystems function and how fishing activities interact with them;
  2) Integrate biological studies with studies that seek to understand physical environment;
  3) Adapt technological tools for remote sensing of the ocean environment; shallow water habitat mapping and improving stock assessments. (Rassam)
- Direct NMFS to use and extrapolate existing information where appropriate to fulfill Agency's conservation requirements. (Dobrzynski)

- NSF and NOAA, or new Department of Oceans, should initiate and maintain funding program in marine conservation biology. Program would establish eight academic "Centers of Excellence" in research and training at universities or marine labs throughout coastal areas of U.S. states and territories, and extramural graduate fellowship program for students at other colleges and universities. NSF should make special efforts to increase participation in research and training by minorities who are significantly under represented in marine science at present [reasons why this would make a difference, and who should do it, are provided]. (Norse)
- Recommend to Congress that as they consider the reauthorization of the M-S Act, that a system be put in place to provide for research and monitoring that will inform management decisions that will lead to a long-term sustainable fishery. (Shultz)
- More resources are needed to research particular stocks when we think it is needed. (Smitch)
- Increase funding and staffing to collect, maintain, and analyze fishery-dependent and fishery-independent data. (Brown)
- The way to open up academia is for academic institutions to offer appointments to those in state and Federal labs who advise and support students, for affiliate faculty positions. It is recognition of their academic quality and makes them colleagues. There is another way, also, and that is to have part of their job as Federal employees to teach courses. That model does not exist in NOAA. (Nowell)
- Improve stock assessments—gain significant precision and accuracy through research on improved methodology and the full introduction of acoustical technology and additional major gains will come from long-term, at least interdecadal, forecasting. (Fox)
- Invest in technology—data that is collected by hand off logbooks can be done simply and cheaply by electronic technology such as satellite technology and sensors aboard fishing vessels. (Fox)
- Must do more funding of university programs. There are too few students being trained in the fields of science that are nearly unique to the mission of NOAA Fisheries, stock assessment and fishery economic assessment. (Fox)
- The scientific committee, which is a part of the fishery council system, should be given a greater role in describing the constraints within which the fishery management program should be developed and should not be overridden by the council for policies and short term economics without some consideration. This is from a conservation standpoint and from the human dynamics, the effect on human dynamics, standpoint. A statutory fix is required in order to make that aspect work. (Fox)
- Increase investment in social science—provide a better understanding of the economic and social effects of fishery management and the dynamics behind overcapacity, laying out potential mechanisms for resolving it along with the fiscal and social costs and benefits in doing so. (Fox)
- Let local fishery managers, scientists, industry and councils make the decisions about what research programs to conduct. (Hilborn)
- We need to promote long-term economic productivity to achieve sustainable fisheries. It is time for a public investment in fisheries to achieve long-term economic profitability. (Hanna)
- We need full funding of a comprehensive or coherent data direction system developed within NMFS for systematic nationwide ongoing data collection. (Hanna)
- In order to improve the process of generating scientific advice, the Commission should endorse a more inclusive and comprehensive process for the planning and conduct of scientific investigations by Federal agencies. (Leaman)

- The Commission should also endorse governance structures, such as dedicated access privileges, that provide the incentives for individual stakeholders to participate in such research. (Leaman)
- Need better baseline data and more effective monitoring of fishing to more accurately assess and manage species. (Hamilton)
- Create comprehensive fishery monitoring programs that will improve both the quality and the timeliness of data for fisheries stock assessments and management decisions. [Further description provided.] (Richert)
- There needs to be more emphasis on the study of life in the oceans at the level of species and this is the goal of the Census of Marine Life (CoML) and the Ocean Biogeographic Information System, a component of CoML. (Grassle)
- In order to enhance the science capabilities in support of living marine resources management, the U.S. should:
  1) Consider that every fisherman is a scientist—information provided by fishermen currently provides one of the critical foundations of stock assessment for fishes, invertebrates, and protected species.
  2) Sharpen our tools. Three classes of new tools that have been developed and are beginning to be put into use are: 1) fish tagging with new "smart" or data storage tags which include a small power source and microchips with built-in clocks and sensors; 2) new technologies like multibeam sonar and techniques for ground-truthing of imagery, pioneered by the USGS and other institutions; 3) tracking systems are now used in the northeast to manage days at sea quotas for some fisheries.
  3) Manage ahead of the crest. Resources cannot continue to be managed just "behind the crest" of resource decline, followed by increasing regulation. If this continues then management and the science supporting it will remain contentious and inefficient.
  4) Maintain the vigor of science. Invention is the agent of progress and change. (Murawski)
- Continue strategic investments in technologies, institutional interrelationships, and people can improve the precision, relevance, and timeliness of science in support of living marine resource management. (Murawski)
- A major theme for NOAA might be conservation engineering work. (Hill)
- Augment funding to improve the timeliness of the data collection process. This may require putting more scientific equipment on boats, and it may require increasing the number of human observers charged with compiling real-time data. (Berkowitz)
- More funding is needed for more research on essential fish habitat. The relationship between habitat and fisheries is a good way to start working towards the ecosystem management approach. It is important to understand those habitat relationships. (Buchsbaum)
- The nation should have observer-monitoring programs in place around the country. (Benton)
- In the Alaska Council arena the analysis is there. When the scientists come up with their numbers all the justification analysis is there. If there is going to be deviation from it that there has to be a record and the record has to be credible. It has to be transparent and based on facts. (Benton)
- The Regional Fisheries Management Council is the most successful Federal state management process yet created. But, the Councils cannot be successful unless their decisions are based on sound science. (Stevens)
- Scientists should study interaction predation has upon our system, other than from mankind. (Stevens)
- Alaska must address critical needs for long-term biological and physical data on ocean and coastal habitats. (Penney)

- The Federal government needs to provide basic observations on ocean conditions to the managers of living marine resources who also serve millions. [discussion provided] (Penney)
- There is a strong need for additional research that is directly applicable to present management concerns: the U.S. does not appear to be the world's leader in applied fisheries research. (Winther)
- Provide for more flexibility for input and innovation by members of the public: one database of information that is sometimes discounted and disregarded by NMFS is the fishermen themselves. (Winther)
- Multiple year research and funding is needed. Most of the projects we are working on, all 175 of them, are multiple year projects—three years to ten years for some of them. (Balsiger)
- We must leave a legacy of better science and understanding to enable successful stewardship. (Pautzke)
- Have research boards divided up regionally, in the way that the NMFS is divided throughout the country. That would work with the local constituents and the local scientists to develop long-term research programs. (Pautzke)
- Comprehensive marine research is needed. (Pautzke)
- Propose that an adaptation of the FDA's double blind study practices and requirements be adopted for ongoing and proposed marine resource uses. (Lakosh)
- Recommend outreach programs to help the constituencies understand and accept how data is collected and applied. (Radonski)
- Another area that lacks outreach and constituent understanding is in the data collection efforts for recreational fisheries. (Radonski)

TOPIC: *LIVING MARINE RESOURCES*

KEY ISSUE: *Types of Management Structures and Tools*

ISSUES RAISED

- Many local, village, or traditional management systems are successful because they manage for the future. Marine reserves are alternative to traditional management. (Birkeland)
- Precautionary Principle should be followed for some coral reef resources. (Birkeland)
- Current U.S. policy is heavily weighted toward extraction of ocean resources under the DOC and mandate of M-S Act to seek out and harvest fish, broadly defined, wherever found. Need to balance this policy with the stewardship responsibilities for those resources and the ecosystems impacted directly or indirectly by extractive uses. (Raney)
- Northern Hawaiian Islands and Pacific Remote Islands and Atolls are marine equivalent of wilderness areas and deserve special protection; as national policy survival of endangered monk seal, sea turtles, sea birds of these areas should take precedent over extractive activities; precautionary approach must be taken. (Raney)
- Coral Reef Task Force has developed a National Action Plan to conserve coral reefs. (Schwartz)
- Living marine resource conservation policy: Living marine resources are a public trust resource; harvesting is a privilege not a right. (Paul)
- Saltwater aquarium and live fish trade damaging. (Paul)
- Major issue of concern to CA fisherman is continued access to Coastal Pelagic Species (CPS); number of regulatory processes and initiatives presently underway that may adversely affect access.
- Squid FMP being developed by CA Fish and Game with limited entry, "replenishment zones," trip limits/caps; process needs industry advice and stakeholder participation.
- Harvest guidelines for sardine and mackerel being developed with archaic models that no longer reflect dynamics of fisheries. (Amoroso)
- New policies are needed to address the respective roles of sanctuaries and councils and how they relate to each other. (Bunn)
- In CA, the mandate for marine resources management has been broadened to include an ecosystem approach, with an emphasis on sustainable fisheries, resources and habitat, and a de-emphasis on maximum sustainable yield for fisheries. Council's mandate should move in this direction. (Bunn)
- Major problems with current fisheries management:
  1) Excessive fishing capacity, fostered by perverse economic incentives;
  2) Lack of sufficient scientific understanding of fish populations and ecosystems;
  3) Inadequate attention to maintaining healthy ecosystems that sustain fisheries;
  4) Failure to provide a stable regulatory environment;
  5) Lack of adequate measures to deal with and reduce scientific uncertainty. (Fujita)
- If we change incentives to reduce bycatch we also need to change government assurances that stocks will rebuild. (Parravano)
- We lack ability to adapt the harvest capacity of our fleet with what is there; adjust the capacity with the size of the fish stocks. (Parravano)
- M-S Act seems to work well in Alaska because the fishing industry and the communities are part of the process. (Parravano)

- Commission needs at least one good viable person who knows the industry. (Felando)
- Thoughts about how we get fish: we know certain methods of commercial fishing are detrimental to the habitats; getting rid of trawl gear, imposing reserves, would help. (Ford)
- Concerned so much foreign fish, particularly farmed fish, coming into our markets; how can U.S. boats or families compete. (Ford)
- Focus has been on "direct take" and "incidental take" of marine mammals but now there is new awareness of other types of impacts. (Jasny)
- Concerned recreational anglers not recognized on any panel. Important to realize recreational anglers are ones least likely to cause problems. [discussion provided] Please provide adequate representation. (Raftican)
- Key issue facing marine fisheries management- utilization of coastal resources expanding at unbelievable rate [stats provided]. (Dodds)
- Fisheries management system is layered; international and regional. Simple works best for fishery management. CCA has simple principle: Fisheries management is most effective if it is done at the lowest possible level of government. (Dodds)
- NOAA fisheries efforts to address challenges:
  1) Regulatory streamlining to reduce unnecessary layers of review;
  2) Trying to integrate current statutes;
  3) Improving state/federal management interactions;
  4) Expanding cooperative research with fishermen, particularly gear development. (Hogarth)
- Heinz Center, with NMFS, is organizing Dialogue on Marine Fisheries to continue stakeholder involvement in considering policy options. (Katsouros)
- Two major problems need to be corrected in south Atlantic to effectively manage marine fishery resources:
  1) Lack of adequate stock assessment, especially snapper grouper complex; efforts are underway to provide better data (e.g., ACCSP; SAW);
  2) M-S Act slow and cumbersome; regulatory process is bogged down [detailed discussion is provided] (Mahood)
- Congress picked good delineations when set up regional councils because they reflect different thinking around country. (Mahood)
- Description of SCDNR Involvement with Fishermen in Management: SAFMC; MAFAC. (Sedberry)
- Neither states nor feds have the resources to manage all the fish we want to. (Shipman)
- In some regions fishery management, M-S Act, works better than others; depends on complexity of the fishery; interaction with advisory panel. (Shipman)
- Charleston Bump good example of state providing valuable information to federal fisheries managers. (Stallworth)
- Previous panel comments did not broach the dissatisfaction of marine recreational anglers with current infrastructure. Panels lumping recreational fishing and leisure tourism. Recreation a problem because infrastructure and policy needs of recreational anglers not defined. (Radonski)
- Believe fish stocks will remain healthy for future generations if managers carefully implement IFQs without privatizing the public resource. (Nash)
- Concerned about privatization of fisheries, in particular fishing cooperatives and potential implementation of IFQ program. Both management techniques fail to fairly compensate American people for use of their resource; put additional burdens on taxpayers; and do not protect independent fishermen [discussion provided]. (Heasley)

- Three areas need and deserve the highest priority in Commissions policy formulation:
  1) Coral reefs [discussion of coral degradation provided];
  2) Marine Protected Areas: quality, not size, matters [more discussion of MPA's is provided];
  3) Marine Mammals-Consolidate and strengthen measures to protect marine mammals. (Dunstan)
- GRN priority living marine resource issues:
  1) Sea Turtles: many human activities threaten Gulf sea turtles, e.g., commercial fishing, coastal development, pollution. [discussion provided];
  2) Marine Mammals: many human activities have adverse impacts, e.g., coastal development (marine dumping and dredging), offshore oil and gas, vessel traffic, military activities. Most impact analysis and mitigation activities tailored to dolphins. Threats to whale species are not addressed. Lack sufficient information that these activities do not have a significant adverse impact on whales, particularly use of sonar.
  3) Fisheries: 72% of species under management in Gulf are overfished; 36 species at risk of extinction are in Gulf. Causes numerous and interrelated: serial overfishing leads to crisis management, lack of information. Sustainable fisheries management requires ecosystem management; need reform of fishery management council system [discussions provided].
  4) Dead Zone: Nutrient pollution and its threat to the Gulf's marine resources: 90% of nitrogen load causing Dead Zone is from nonpoint runoff and over half is from upper Midwest. (Sartou)
- Interrelationships:
  1) Marine fish especially interrelated with environment and man's influence;
  2) USCOP must provide recommendations on future, large-scale policies for all our nation's oceans. (Simpson)
- Passage of M-S Act greatly expanded role of federal government in fisheries management. Has it worked? Depends on definition of worked. Has affected marine fisheries management positively; "worked" is another matter:
  1) System is expensive and not very responsive;
  2) Council system have fostered broader thinking and provided guidelines for rational management with several successes, but fisherman and processors pay heavy price for Gulf-wide standards on many fish;
  3) Reduction of foreign fishing off our coasts has been successful;
  4) Habitat loss efforts have resulted in very limited real change;
  5) Successful in engaging general public in management process by selection of individuals to serve on Councils;
  6) Whole system is data driven without initiative to improve and establish systems and mechanisms for future management needs. (Simpson)
- Returning primary role of fisheries management to states could technically and ideally be done but mechanically is doubtful; costs would be lower and more responsive in a time sense. States in a region would need to agree upon overriding standards or means by which regional fisheries will be managed. (Simpson)
- U.S. could be world leader in sustainable fisheries and marine eco-technologies if there existed a regulatory framework to redeploy retired oil and gas platforms into sustainable fishery platforms. Platforms are "essential fish habitat." (Kolian)
- Currently approximately 4000 platforms deployed in northern Gulf; region does not possess hard-substratum in shallow water; platforms provide this. Many marine organisms settle on platforms including Caribbean sponges, gorgonian coral, and demersal fish. Also being colonized by Caribbean coral. (Sammarco)
- Governors support National Academy of Sciences report on ITQs (avoid one-size-fits-all). (Cooksey)

- Five-year review of Sustainable Fisheries Act, "Caught in the Act," highlights:
  1) Overfishing is allowed to continue;
  2) Inadequate overfishing definitions in many fisheries;
  3) Rebuilding plans take too long;
  4) Nearly all councils have failed to develop required bycatch reporting systems;
  5) Most councils identified EFH in appropriately precautionary manner; several councils designated Habitat Areas of Particular Concern;
  6) NMFS response to inadequate assessments of fishing on EFH inconsistent. (Crockett)
- U.S. policy has had profound impact on fisheries issues:
  1) 200 mile legislation and "Fish and Chips" policy;
  2) Fishing cooperatives;
  3) Aquaculture. (Gutting)
- Key issues of concern:
  1) Fishery process overwhelmed by litigation; breakdown in management and delivery of science;
  2) How to provide jobs and economic opportunities for coastal communities depending on ocean resources;
  3) How to unlock tremendous potential in aquaculture;
  4) How to incorporate environmental concerns and enhancement opportunities into fisheries management. (Gutting)
- Among highest priorities: end overfishing and rebuild overfished stocks. (Hopkins)
- Questions whether NMFS mission and institutional structure align with sustainable fisheries and ecosystem protection. (Hopkins)
- Councils often settle for lowest common denominator for consensus. (Hopkins)
- Congressional moratorium and concerns leading to it are greatest obstacles for establishing new Individual Fishing Quota systems.
- Fisheries of concern and how local community is affected. Current fishery policy result of slow and awkward transition from promotion to regulation. (Farr)
- NMFS now one of most regulatory agencies in US government; driven by crisis; council-based management needs to work better. Appropriators in Congress lack confidence in NMFS; reluctant to give big increases; authorizing committees won't give new authority. Management programs have suffered. Capacity reduction; cooperative research; MPAs ecosystem-based management, etc. (Farr)
- Fishing has two goals: develop fishing and maximize yield over long term by limiting catch to sustainable levels. Fishing has three main problems: overfishing, unintended catch, and habitat degradation. Inherent flaw: conflict between trying to increase number of fish caught, and need to limit fishing and rebuild populations. (Safina)
- Fisheries provide a net benefit only when well managed and not depleted. (Safina)
- Free access to the seas is no longer an option. (Monroe, D)
- Believe in ITQ system of management but community-based, not tied to traditional fishing capacity. (Monroe, D)
- The general perception of fishery councils on overfishing and policy recommendations to verify and manage the present situation:
  1) Deals with definitions in Sustainable Fisheries Act; they are sound and will move toward maximum sustainable harvests. Revised Sea Grant publication "Understanding Fisheries Management" incorporating biomass-based overfishing measures would be useful;
  2) Biomass portions of definitions don't work well in data poor species; improved guidance from NMFS needed on acceptable range of proxies. (Morris)

- Establishing a council like MMC for fisheries would not help with marine fisheries issues. It would be duplicative of existing activities. Having a 10-year review panel like the Ocean Commission would be more helpful. (Morris)
- Single most critical deficiency in marine mammal conservation today involves lack of proactive, forward-looking approach to conservation and management of resources. (Reynolds)
- Global issues: Several factors affect marine mammals globally (e.g., noise and chemical pollution, fishing, oil and gas development and other development activities, and global climate change). (Reynolds)
- Issues of importance to marine mammal conservation in southeastern U.S.:
  1) Best publicized issues in SE involve manatees and North Atlantic Right Whales;
  2) Bottlenose dolphins stocks poorly defined;
  3) Noise related death (sonar) of beaked whales occurred recently; noise and chemical pollution are extremely critical in parts of S.E. (Reynolds)
- MMPA does not function as true ecosystem management model. (Reynolds)
- [Discussion of potential biological removals provided] (Reynolds)
- Fish are regulated as commodities; they are wild animals. (Flemming)
- Stock Enhancement:
  1) Important questions remain unanswered about consequences of ecological and genetic interactions between hatchery and wild stocks;
  2) Stock enhancement can do more harm than good [four reasons provided]. (Haddad)
- State-Federal Fisheries Management: 1993 Atlantic Coastal Fisheries Cooperative Management Act considered a success. (Haddad)
- Implementation of the MMPA and ESA: These two acts and their resultant implementation have had a deleterious effect on ability of states to conduct scientific studies needed to actually affect recovery of species: cumbersome permitting process. (Haddad)
- Changes:
  1) Consider NSF program on Long-term Ecological Research or Land-Margin Ecosystem Research models;
  2) Seek specific input on what fisheries and ecosystems should look like during public hearing process, then consolidate and incorporate into final report;
  3) All stock assessments (federal, state, private, academic) should be considered and evaluated objectively if received in time for peer review;
  4) Vision for America's fisheries [Six elements provided];
  5) NMFS needs clear authority to modify Council's action or act when they don't;
  6) Fishing mortality rate of 75% of the level associated with MSY is an appropriate management target. (Rassam)
- Put the myth to rest that says bycatch only occurs in a couple of different fisheries. It is a fact that recreational fishermen in rivers and oceans have bycatch. Everyone does. So the real question is about volume and how can it be reduced. (Moore)
- The premise of the Estuary Restoration Act is to provide some funding, not 100%, to these partnerships. There needs to be funding. Portions of the Act involve some serious money because it involves research; you have to know what you are doing. (Fletcher)
- Concerned with the future of the NMFS and the Council structure. Problems vary between Councils. [discussion provided]. (Alverson)
- Councils should have full range of tools available to manage the fisheries under their jurisdiction; rescind laws limiting use of limited entry. (Alverson)

- Goals and principles of managing ecosystems should be clearly stated and locked into legislative language and should not be vague or generic in character. [discussion provided]. (Alverson)
- My suggestion of the appeal process is political. We all know that the political process depends on the types and nature of support that comes from the public sector. The regime has shifted and the environmental community and the public are much stronger now in terms of their public influence. The current Secretary of Commerce is more in the conservative regime because that is where the public support is. The public wants to remedy what is going on in the oceans. (Alverson)
- There have been ecosystem management group seminars all over the country and nobody is looking at managing the ecosystem. They are using ecosystem principles to manage human activity. (Alverson)
- Improvements in technology can make significant advancements in bycatch reduction. We also need to improve our documentation process. (Alverson)
- Comments on behalf of the Pacific Fishery Management Council: strongly disagree with recent efforts to change the role of regional councils. [detailed discussion is provided] (Brown)
- The Pacific council and fishermen in the commercial fishing fleet are working on how to avoid large amounts of bycatch. (Brown)
- Six years ago The Nature Conservancy (TNC) took a look at the status of our conservation efforts across the U.S. and we saw they were extremely piece- meal and haphazard. We engaged in a process of eco-regional planning. Two thirds of the planning for the terrestrial U.S. is finished. The focus is on identifying conservation targets. The ecosystems and the species direct the available information, of which we need as much as possible to set conservation goals for how much needs to be protected and develop a straw man set of priority sites. (Beck)
- Always take a look at what the targets are—are they kelp, sea grass, or rockfish. Then think about what the principle stresses affecting the targets—poor water quality, reduced water clarity, loss of habitat from coastal development or shoreline modification, or over fishing. Then tailor the strategies—marine protected areas or conservation strategies. (Beck)
- To work with the private sector you have to find similar interests in seeing coastal ecosystems and species in their natural state in one way or another. This is good for business and good for conservation groups. (Beck)
- TNC has a partnership program both on coral reef and whale conservation where we have been trying to identify private partners for both. It's been tougher on the marine side than on the terrestrial side. Perhaps it is the absence of marketability. There are fewer companies, less public awareness. The public perception seems to stop at the water surface. (Beck)
- The major problem in U.S. fisheries management is that we generally think that regulating catch levels IS fisheries management. Fisheries management also involves determining who is allowed to fish, and allocating the catch among users. (Hilborn)
- All parties involved in fisheries management, including commercial fishermen and conservation oriented NGOs, want the same thing—sustained marine ecosystems. (Hilborn)
- One of the mistakes we have made is that it doesn't have to be all or none. You could retain forty percent of the quota in public ownership on an annual basis. You could grant part of that to the processors, fifty percent to the harvesters, and retain forty percent to the public. It doesn't have to be all or none. (Hilborn)
- Investment in property rights will provide economic security and predictability to fishery participants. (Hanna)

- One problem with having a moratorium in place is that once you have let the fishery become very economically depressed, you remove so much of the wealth potential from the potential investors in buying each other out, that you have stretched the limit of fishery to jump right into an individual fishing quota program. (Hanna)
- In fishers, they have become stabilized and have become more of a business planning climate, where you have assurances that your share, not quota, for a certain year translates into a certain amount of fish, you can do some reasonable business planning. You can make good market contracts and you can deliver fish on a schedule that makes economic sense. You don't have to fish when you are putting your life in danger. (Hanna)
- Currently, NMFS has about a 26 to 1 ratio people working on the biological side of fisheries versus the social science/business side of fisheries. The proportion you need depends on how you choose to manage. NMFS has a large majority of biologists because that is how the Federal system has developed. (Hanna)
- There are at lest two major ways in which science must interface with policy in fisheries management:
  1) Policy development—science must provide the basic understanding of stock behavior, as well as the predictive tools and framework necessary for the development of harvest policies.
  2) Policy implementation—science must be capable of describing the present and future status of resources with precision sufficient for effective implementation and evaluation of harvest policy. (Leaman)
- A basic democratic tenet is that effective government rests on the consent of the governed. Fisheries management, in the context that it is governance, has generally not expended sufficient effort at gaining this consent. (Leaman)
- We have begun to re-define the oceans from vessel highways, industrial sites and free-for-all fishing holes to vital natural systems that must be protected and nurtured, but there is a long way to go. (Garrett)
- Salmon are by their nature highly migratory and thus are a multinational resource. True fisheries management should be about managing fish through their entire life cycle, not just managing fishermen and fish harvests at sea in a near-total vacuum. (Spain)
- Abusive Transfer Pricing (ATP) is used to falsify the wholesale export prices and this in turn is used to ratchet down grounds prices paid to U.S. fleets: to destroy small businesses and our fishing communities. Abusive Transfer Pricing is predicted to be the largest global finance and tax topic in this Century. The U.S. has lost billions each year. [discussion provided] (Taufen)
- One of the fundamental problems with the placement of NOAA and marine fisheries in the Department of Commerce is they are overwhelmed by the industrial model, a viewpoint that perpetuates throughout the system. (Spain)
- The discussion about privatizing American's fisheries disturbed me. For me, that is not an issue at all because American's fisheries are not available to be privatized. They are a resource of the American people, and they will remain that way. (Heasly)
- One of the detrimental effects of creating a quota system is that once it is created, especially if it is created in a way that it looks like a property right, it is gone. (Heasly)
- The lack of fisherman representation in these hearings is causing a skewed presentation on ITQ. (Heasly)
- The salmon issues have prevailed in Washington. We see that very often the same regulatory regimes that affect the coastal areas have deep effects on upland owners in Washington. (Brautigan)

- The Sustainable Fisheries and the Small Families Fishery Association bought directly from small family producers and pays a bit higher prices for their hard work and their well cared for fish. These fishermen have sustained sales growth every month since they opened. This is by selling fish that are harvested, and selling no other species. (Foss)
- There is growing recognition that a new era of fisheries management is urgently needed that is based on the management of entire ecosystems. (Richert)
- Ecosystem management—the first tenet of addressing ecosystems is doing good quality, single-species management across the board. For example, there is the whole issue of bycatches. Bycatch is where the target species for one fishery has a bycatch for the target species for another. That's where an ecosystem umbrella plan could work to look at the compromises that you would need to manage in a whole system. (Murawski)
- The same confidentiality issues that arise in terms of fishermen-derived information come into play when speaking about the sharing of Federally funded data. Various issues have been explored when working on the spatial scale and specific catches, so an individual's hot fishing hole is not instantly available to everybody. (Murawski)
- Lacking is an overall strategic plan that cuts across the different missions of all of the Federal, state, and local partners and in which fishery habitat restoration priorities would be consistent with and supportive of regional ocean planning priorities. (Kurkul)
- Council management actions have accounted for significant reductions in fishing effort since the mid 90's through limits on the numbers of days available to fish, the use of closed areas, trip limits and gear restrictions. (Hill)
- Trawl vessels in our region use the largest mesh in the world to reduce catches of juvenile fish. (Hill)
- An eight-inch twine top requirement, implemented several years ago on all scallop dredges, has reduced the bycatch of groundfish during scallop fishing. (Hill)
- There are inherent value judgments, which is why it is important to emphasize the quality and caliber of council people that are making those judgments. Non-scientists on the councils may not be qualified to make value judgments on the science. They are working with a lot of technical information and it is difficult to find people who assess policy and science, both. (Hill)
- Some people believe a number should be chosen and people should live by it—that it's a physical responsibility to a population of fish, if fish are our primary responsibility. There are a number of people who believe that our decisions should be modified based on impacts to communities and on practicality. (Hill)
- There are people who would have a problem with paying a fee to fish. The government would need to front the money because it is a large sum but then the industry would pay it back over, say 2- to 50 years at low interest rates. As it currently exists, the industry cannot pay up front. (Goethel)
- No one is asking to end all regulations. But, when existing regulations are working and the stocks are rebounding, why not stay the course for a while? What is the point of imposing even more severe regulations in an attempt to reach what may prove to be unattainable targets a few years earlier? This year, fishermen in the Northeast are faced with the toughest reduction in fishing efforts in two decades. These unnecessary reductions will devastate inshore fishing fleets and local fishing communities. [discussion provided] Telling fishermen that they must rebuild stocks to reach harvest levels above historic sustainable maximums is sheer folly. It pulls the road to recovery right out from under the industry, which has endured many restrictions and closures to get there. (Sanfilippo)

- The people of the Aleutian Islands only have the sea. They understand the need for conservation but have trouble understanding why they must conform to a "Walt Disney" view of their world. (Tillion)
- Legislating morals is only a little easier than legislating intelligence. A law cannot be written that says they will come up with the right answer. It would be difficult to have public records to justify why all decisions are made, and hold the science committee accountable. (Tillion)
- Alaska has many closed areas—some are larger than Indiana, larger than Maine. This was not done because environmental interests came and forced it. They were closed long before that. (Benton)
- One of the perverse results of the litigation gridlock is that the good work on bycatch reduction, habitat protection, and other kinds of actions that the Sustainable Fisheries Act requires has been stopped due to limited staff and other resources. (Benton)
- One of the most controversial issues lately has been the crab rationalization that has quota shares that go to processors and harvesters, to ensure that deliveries go back to communities that historically participated and also recognized and gave a stake in the fishery to skippers and crew. The most controversial is the role of processors. [discussion provided] (Benton)
- The Alaska state Constitution mandates sustainable fisheries management insuring the resource will be there for future generations. (Stevens)
- Creating a new way of doing business, with Congressional involvement, is possible. The key to the Magnuson Act was regional participation. That was a new way of business at the time. There is now hands-on-management on a regional basis. (Stevens)
- The current Community Development Quota (CDQ) program is a successful program. The Coastal Villages Region Fund (CVRF) has been able to participate in the program with its current goals, rules, and regulations, and has enjoyed many successes. CVRF administers the Community Development Plan (CDP) for 20 of the 65 communities currently participating in the CDQ program. These communities are in Alaska along the coast of the Bering Sea. The CVRF Board of Directors is made up of one fisherman from each of these 20 communities. These men and women provide stewardship for the Company, and guide management to make investment decisions that incorporate their core values and beliefs. [discussion provided] (Crow)
- The people of Coastal Villages are participating in the Alaska Pollock fishery because it is very healthy today, and conservatively managed for tomorrow. This is just one example of how people in the coastal communities, in general, and the CDQ program specifically can enhance the process of continuing to protect our marine environment. The CDQ program has also proved to be a catalyst for increased cooperation and partnership between government agencies and local communities. (Crow)
- At-Sea-Processors Association (APA) employs more than 2,000 people, 19 vessels and harvests around 40% of Bering Sea pollock, the nation's largest fishery. Its main products are Pollock filets, surimi roe, and fish meal. They sell filets to the domestic and European markets and surimi roe and meal to the Asian markets. With help from the CDQ program, five of the six CFQ groups representing 23,000 Alaskans now own more than 25% of the fleet and they expect that they'll own a majority of the fleet within five years. The Pollock fishery has been like a long-term savings bond. (McCabe)
- With the help of the APA 10 cooperatives have now been formed by virtually the entire fleet in the Bering Sea Pollock fishery. To most participants and observers of the fishery, the cooperatives have been the biggest fishery management improvement since the extension of U.S. jurisdiction in 1976. They are successful because:
  1) A cooperative vessel operator has the ability to stop fishing when weather conditions make fishing too dangerous with the knowledge that the other parties to the contract will not catch the portion that's reserved under the contract for his or her vessel. This has been

one of the most significant improvements in the Bering Sea where even fishing in good weather is more dangerous than most other occupations.
2) We've formed a binding contract among all 10 of the Pollock cooperatives through which we agreed to work together to avoid salmon bycatch. During 2001 alone, this program is estimated to have led to the avoidance of more than 20,000 salmon, perhaps a third of the fleet's incidental salmon harvest.
3) There has been an increasing yield seen from each pound of Pollock harvested.
4) Monitoring enforcement has also improved under the AFA and Pollock fishing cooperatives. (McCabe)

- There is tremendous transparency in this system. There is a powerful incentive to fish cleanly because the public is going to know. We have an incentive program where the top three skippers in our fleet receive a cash award for being the cleanest. (McCabe)
- Prior to 1998, the story of our successful management had been marred by bitter battles over access to the catch levels set by the Council. Those battles were resolved after almost a decade of fighting by Congress in 1998 through the American Fisheries Act (AFA). [discussion provided] (McCabe)
- Our experience with what we call quota based management where the vessel heads out at the beginning of the year and knows how much fish it can catch has been extraordinary. We were a lot less affected by this recent Steller sea lion restriction because we had the luxury of a longer season and the ability to be more flexible in how we caught the fish. [discussion provided] (McCabe)
- The enactment of the Magnuson-Stevens Act: The issues of jurisdiction over ocean resources, including fisheries, in the area beyond the traditional three-mile territorial sea were new and the U.N. negotiations were far from completion in the mid-1970s. NOAA and the NMFS were given the regulatory authority to implement the fisheries management system in spite of a lack of experienced people in the Federal government. [discussion provided] (Leitzell)
- The Council system is here to stay and should remain in place. But the balance between NMFS and the Councils needs to be adjusted to restore a more healthy give-and-take in fishery management and conservation decisions. (Leitzell)
- Comments provided on the North Pacific fisheries management program, and the monitoring and catch accounting in the North Pacific. [discussion provided] (Leitzell)
- The Magnuson-Stevens Act fishery management system is not broken, but its implementation is flawed, at least in some parts of the country. Over the last two decades, the Councils have gradually obtained increasing decision-making power in practice. Recently, several national environmental organizations have taken an increasing interest in fishery management decisions and have sued NMFS over Council decisions. The mushrooming of litigation to over 100 lawsuits nationwide has put immense pressure on the NMFS-Council partnership, leading to almost complete collapse of that partnership in some regions. At the same time, the North Pacific Fishery Management Council and the NMFS Alaska Region have worked well together, demonstrating that the two-headed partnership can work. The North Pacific Council is a model of effective, transparent government. (Leitzell)
- Over the 25 years that we have dealt with Federal public partnerships, we've gotten to a point where we do need to give some more authority back to the Federal side of it, to NMFS. The councils have not been run over by the Federal government—the councils are strong and politically supported. (Leitzell)
- The Council learned a lot by going through the Steller sea lion process and the interactions between NMFS and the council improved. There was a transparent process and there was a committee established that worked. Even in the sea lion case once we got the interaction of the Endangered Species Act and the Magnuson-Stevens Act figured out at the council level, the process became better. (Leitzell)

- Separating the scientific decisions from the allocation decisions would be wise. (Leitzell)
- One example of what has been done at the Council level is with the pollock and cod—now they are required to all be retained. Whatever fishery they are caught in, you cannot discard them. We are looking at extending that kind of program to other species. We've banned bottom trawling in the Bering Sea so that the Pollock fishery is a very clean fishery—very, very low amounts of bycatch. (Leitzell)
- The problem with exceeding biological recommendations for ABC is that it changes the future. It's not that it's going to put that stock of fish in an endangered status, but it's going to change the future. Councils have to have the ability to make a decision that in a specific time frame a different rational, a different objective is paramount, that the ABC is not always sacred. (Leitzell)
- A general observation has been made: when NMFS or the councils suspect they will not like the answer to a particular question they go to great lengths to ensure the question does not get asked. This dynamic is particularly apparent in the discussions concerning the lack of standardized bycatch reporting methodology in New England and the North Pacific, and in the systemic failure of NMFS to comply with the environmental review provisions of the National Environmental Policy Act. (Van Tuyn)
- NMFS often does not provide an explicit justification for its decisions, thus providing little transparency to its decision-making, frustrating the public and precluding meaningful debate. (Van Tuyn)
- NMFS often ignores the express will of Congress, and will unilaterally modify its legal duties to give itself greater discretion. This discretion leaves NMFS vulnerable to undue political influence from commercial interests. (Van Tuyn)
- NMFS has little political strength to accomplish its mission—it suffers from an inferiority complex created by its basement-level placement within a non-germane Federal agency. (Van Tuyn)
- Time and again, NMFS and the Councils have revealed themselves to be incapable of implementing basic conservation-oriented actions when the best available information mandates such an approach. (Van Tuyn)
- Many of us have learned that you cannot separate allocation from conservation. And the best example for that is perhaps a total allowable catch that is below the allowable biological catch but is allocated to a bottom drawl fishery. This has cascading impacts through its habitat and increased bycatch. (Van Tuyn)
- The management council process is being hamstrung by NEPA and ESA related lawsuits. [discussion provided] (Winther)
- The longline fleet has successfully worked through a number of issues at the North Pacific Fisheries Management Council (NPFMC) resulting in rationalized and sustainable fisheries. The longline fleet has taken the initiative to reduce bycatch: the longline fleet has consistently shown its willingness to take the initiative to resolve difficult issues in a practical and effective manner. [discussion provided] (Winther)
- Appropriate use of ecosystem management and the precautionary approach: these terms have their place in fisheries management. However, these are also very broad terms without a clear working definition. (Winther)
- Co-management started in Alaska in 1977 when NOAA signed a co-management agreement with the Alaska Eskimo Whaling Commission (AEWC). The 1970 Endangered Species Act had classified the bowhead whale as endangered with as few as 700 animals. The classification meant the subsistence harvest had to be regulated. The whaling captains, who formed the AEWC claimed that there were more than 10 times that number. They stated that most of the whales, which were only being counted in open leads, were being missed and were passing under the ice. The agreement between the AEWC and NOAA has been a tremendous success because:
  1) The whaling captains were willing to share their knowledge

2) NOAA was willing to consider this traditional knowledge
3) The whaling captains were willing to accept quotas and had the resolve to strictly enforce these quotas on themselves
4) NOAA was willing to allow AEWC to participate and manage the subsistence harvest. (Johnson)

- In 1994 the Alaska Nanuuq Commission formed to participate in the negotiation of a polar bear treaty between the U.S. and Russia. There are now Alaska Native Marine Mammal Commissions for most species of marine mammals that are used for subsistence. [discussion provided]. The U.S. & Russia polar bear treaty was at the very highest level of the two governments. The Department of State and the U.S. Fish and Wildlife were involved on the Alaska side and the foreign ministry and the Administrator of Natural Resources on the Russian side. [discussion provided] (Johnson)
- Co-management has proven to be very beneficial, not only for the species, but also to the management agencies. [discussion provided] (Johnson)
- The problems with putting whales and seals at the NMFS, and walruses and polar bears at Fish and Wildlife is that in the NMFS is such a small user group. They are often responding to crisis situations like the whales on the east coast, for example. They don't have the time to really get involved in co-management because of their continuous crises mode. If they were unified, they should go in U.S. Fish and Wildlife because they have been more responsive. But, maybe we need to leave some of the species with the NMFS, like whales or others, and transfer those species that are involved in subsistence in Alaska to U.S. Fish and Wildlife. (Johnson)
- The Marine Conservation Alliance (MCA) is a new organization, established by fishing associations, communities, DCQ groups, harvesters, processors, and support sector businesses, to promote the sustainable use of North Pacific marine resources by present and future generations, based on sound science, prudent management, and a transparent, open public process. (Clarke)
- There were some 140 lawsuits against the NMFS Alaska Region regarding the Steller sea lions, so we've learned that it does not work not to follow the law. (Balsiger)
- We have learned that public opinion was that the Council and NMFS process was opaque and difficult for the public to follow. That was true but the process has been improved and no longer opaque. (Balsiger)
- We are making some human resource changes to respond to NEPA. It is the hope that we will evolve towards the right compliment of NEPA qualified people. Each of the regions has hired a NEPA coordinator. We have a national NEPA coordinator and in the Alaska region we have started the process to hire what we're calling a NEPA analytic team that will have a leader and some biologists, economists, and technical writers. [discussion provided] (Balsiger)
- In the process of developing the environmental impact statement the Council has put together a fairly large committee including environmentalists, industry people, and agency people contributing to try to identify the types of habitat that are affected by the different fisheries that we have, along with the impacts of those fisheries on the different habitats, and looking at what are called the habitat areas of particular concern. [discussion provided] (Balsiger)
- Responsible stewardship continues for Alaska fisheries. Components of our continuing resource stewardship are:
  1) Good science and frequent stock assessments.
  2) Firm catch limits.
  3) Conservative management.
  4) Monitoring and enforcement.
  5) Capacity restrictions and community protection.
  6) Mitigation of fisheries impacts on other elements of ecosystem. (Pautzke)

- The Council is moving towards an ecosystem-based management program for the last five or six years, from a focus on the individual species that they manage. Now they are looking at the broader community of species that are out there, particularly the ones that are very visible to everybody like the seabirds, the marine mammals, etc. Our Council is probably one of the first to incorporate a chapter in our SAFE document, which is a Stock Assessment and Fishery Evaluation document, which is required of all Councils. [discussion provided]. (Pautzke)
- There is a NEPA process the Council undertakes that is a complete analysis within the terms of NEPA and then they do a large ground fish environmental impact statement, which is an assessment to look at all of the dynamics of the ecosystem under various alternatives they could use for future management. Whether we try and wrap NEPA and ESA and all these other acts together, all those requirements into one, maybe under the umbrella Magnuson-Stevens Fisheries Act or whatever, we still need that information there to make a decision in a structured format. (Pautzke)
- It is not just trawls that affect coral. You also have long-liners out there, crab pots, anything that comes crashing down. It takes a lot of ship time and a lot of money and research to map out coral areas. There is a lot to consider when thinking of closing down areas to protect corals. Remember the Council already closed down areas to protect sea lions, to protect crab, and so as you start to pinch in on one particular area you send the fleet into another area and pretty soon you have cordoned off major areas in fisheries and concentrated that fleet into other areas to get their quotas. And then you can have extreme impacts on those areas where they are all concentrating. There needs to be protection but there needs to be balance too. (Pautzke)
- We are a long way from ecosystem management. But we've got to invest and understand an ecosystem if we're going to use technology that we now have that's more sophisticated that we had 30 years ago. We ought to know what the technology is going to do and what the impact of it will be for researching the ecosystem. (Ayers)
- NEPA is a tool. It's when we decide that we're going to use it as a weapon that we get into this power struggle and there are two places then that we can go. We either can go to the court or we can go to the Congress. Because the Steller sea lion case is about ecosystem management, it is forcing people to have the conversation. But right now we don't have the confidence as citizens that we have the research money to carry out the job and the way the U.S. is structured, the only way we can have the conversation is if there is a problem and it's triggered by either ESA or NEPA. NEPA may or may not need to change, but that's not the real problem. The real problem is that we must shift the paradigm. We must invest so that we have the research to provide the information in order to make good decisions. (Ayers)
- There are many safety, conservation, economic, and social goals to be accomplished by rationalizing the crab fisheries of the Bering Sea. But care must be taken to ensure the program is fair and balanced, considering the needs of each sector of the industry. (Garner)
- Any system of allocation of quota or shares to harvesters has implications for the investors in the fishery, including the processing sector. (Garner)
- When the North Pacific Fishery Management Council considers converting the fishery in the Bering Sea to a 'individual fishing quota' managed fishery, the fishing season will become elongated and slower paced, allowing safety and conservation issues to be squarely addressed. (Garner)
- At the same time, however, harvesting capacity developed by vessel owners and processing capacity created by processors, will become surplus. These will have several implications that must be dealt with, including 'stranded capital' and transfer of revenues to other sectors that successfully bid on the now surplus capacity. (Garner)
- This is the first attempt (by any Council) to undertake a comprehensive rationalization plan; one that includes captains and crew, vessel owners, processing plan owners, and community interests. (Garner)

- The Bering Sea Fishermen's Association (BSFA) was established by fishermen from over 30 villages in western Alaska wanting to become more involved in the development of new fisheries and to help local fishermen gain full economic value from local commercial fisheries. The BSFA is directed by a 13-member board and has been involved in a variety of ventures to promote conservation and development of western Alaska fisheries. [Further description provided.] (Gillis)
- The Alaska Fisheries Development Foundation (AFDF) is a private, nonprofit organization chartered to assist the goals of the Magnuson-Stevens Act through working to fully develop the economic potential of sustainable Alaska fisheries. (Jones)
- The Marine Mammal Protection Act Reauthorizing Committee of the Indigenous Peoples Council for Marine Mammals (IPCoMM), recently proposed amendments to the Marine Mammal Protection Act that outline management before depletion, shared enforcement, and local co-management plans with Alaskan Native hunters and their tribes. (Riedel)
- IPCoMM, the primary stakeholders and users of Alaskan marine resources, are conducting research and sound science upon which to base management decisions. We are most proud of the Youth Area Watch Project, which combines the traditional knowledge of hunters with the scientific protocols that are being taught to students. (Riedel)
- Claims are made that Alaska's fishing industry is the best-managed fishery in the world. This is not true. (Quyana)
- The new North Pacific Fishery Management Council approved a rights-based quota system that will slow the fishery, improve human safety, reduce handling mortality of undersize and female crabs, and help rebuild weak and depressed crab stocks. [Further description provided.]
- In 1998, the American Fisheries Act established an alternative Individual Fishing Quota (IFQ) for the one-million ton Pollock fishery off Alaska. The Act established a closed-class of processors and, for the onshore sector, allows IFQs for fishermen who are in a cooperative with a single processor. [Further description provided.] Fishermen joined with processors to seek legislation to remove the 2004 "sunset clause" to make the Act permanent. In 2000, Congress extended the IFQ moratorium. The Alaska Crab Coalition has since worked with affected groups for an alternative management system. [Further description provided.] (Thompson)
- Most fisheries are unique and require unique management and allocation solutions. (Thompson)
- Disagrees with Senator Stevens that the policies have been fully implemented or have been successful in maintaining sustained yield. The Exxon Valdez oil spill and a record of crashing shellfish stocks and Anadromous fish species is clear evidence that these principles have not been properly implemented in Alaska and have not been the practice or effect throughout U.S. waters and certainly not international waters. (Lakosh)
- Keystone species must be protected and the Endangered Species Act must be applied. To a lesser extent, those species that are not keystone to sustaining of ecosystems may be degraded, but there must be a balance between sustained yield for use and sustained yield over time for sustenance of the ecosystem. There should be a balance between use—the right to use and ability to sustain. (Lakosh)
- There are three important words that have come out during these testimonies…stewardship, governance, and information research or data gathering. (Paine)
- There is a proposal to look at the effects on the Aleutian Islands of a fishery that is out there. That is the right place to do it. It should be done at a regional level; is should not be done at some Washington D.C. office with people who don't understand what really goes on at the fishery community level. This is an example that the Council process is working. (Paine)

- The Alaska Native Harbor Seal Commission has co-management agreement with NMFS and is responsible for mandating and protecting the things that are within the purview of those Federal agencies. (Sensmeier)
- The Alaska Coastal Communities Coalition has recently submitted a Saltonstall-Kennedy grant application for a project called Alaska Coastal Communities Observer system or ACOS. The basic premise of this project is to create a corollary database to existing statistical models that incorporate the incredible knowledge and observational ability that our communities have. There may be a pilot project within the Gulf of Alaska that can ultimately be applied around the nation. This system will create much better awareness on both sides, better dialogue, and immense educational opportunity for everyone, including regulators, teachers, scientists, students, fisherman, and the general public. (Vick)
- There is great concern about the increase in the cruise ship traffic to the Hubbard glacier in the Yakutat area. The National Park Service recently introduced legislations to limit that number to 107 because of the effect on marine mammals. (Sensmeier)
- The North Pacific Anadromous Fish Commission is an entity that was created to enforce the terms of the treaty that bans high seas driftnet fishing for salmon and to coordinate international research on Anadromous fish among the four member nations. The Commission is an example of one model of international cooperation. No one state, no one nation can really do the kind of research that is necessary to better understand our oceans. [discussion provided] Two years ago the Commission devised joint international research on the high seas where the four member nations' scientists would work together to better understand what has happened to the salmon in the North Pacific, and, more precisely, in the Bering Sea. That became known as BASIS, the Bering Aleutian Salmon International Survey. BASIS will provide critical information about what happens to salmon in the open ocean. This was not a mandate, but was something that nations voluntarily have agreed to do. It provides an effective mechanism for over a five-year period of time jointly conducting not only sampling, but also fundamental research upon which additional research among the nations can be based. (Ulmer)
- There exists no binding, centralized authority to compel cooperative fishery management on the Great Lakes. (Gaden)
- Together, the bi-national, national, and sub-national management agencies approach the Great Lakes from the same general perspective and with the same goals in mind. (Gaden)
- Many issues remain unresolved and new issues continually emerge. To assist fishery and environmental agencies in dealing with these problems, agencies, through the Joint Strategic Plan, have identified broad procedures that foster cooperation; consensus, accountability, information sharing, and ecosystem management. The Joint Strategic Plan is designed to be a bottom-up process, where management decisions are driven by science generated by field researchers. (Gaden)
- Discussion of background and current issues for: marine mammals; whaling; sea turtles; overfishing; ecosystem alteration; habitat impacts, and bycatch. (Rufe)
- Findings, goals and objectives for fisheries management and community impacts. (CSO)

PRESENTER RECOMMENDATIONS

- M-S Act needs to be retired; Need a new national Living Marine Resources Conservation and Management Act. (Paul)
- Consider ways to facilitate transfer of fishery management authority to give some species back to states to manage:
  1) Current process requires amending Pacific FMC Management Plan; can take a year or longer;

2) States better able to manage resources in timely manner and with better access to management process;
3) Develop streamlined process for transfer of authority for those species state is prepared to manage, e.g., CA nearshore groundfish. (Bunn)

- Authorize use of Individual Transferable Quotas (ITQs) and Individual Fishing Quotas (IFQs) for Council use as a management tool:
  1) Groundfish Strategic Plan: capacity reduction of 50%; ITQ first choice for implementing reduction.
  2) ITQs stop "race for the fish";
  3) Need standards to ensure quotas not consolidated. (Bunn)
- Need funding for management, enforcement and research; have a fee on all seafood sold in U.S. (Parravano)
- Key elements to any solution:
  1) Develop a comprehensive, integrated system to monitor key elements of ecosystem health; NOPP's Integrated Ocean Observing System good start;
  2) Develop new regulatory structures and enforcement mechanisms to reduce pervasive impacts on marine mammals; ones focused on habitat protection and on specific impacts rather than individual species;
  3) Develop a national policy to protect and restore marine ecosystems; historically efforts to protect living marine resources in oceans have not focused on sustaining the systems of which they are a part; fisheries management must move away from single species; non-consumptive uses of the ocean must be recognized, development of MPAs encouraged, coordinated national policy for protection and restoration of ocean ecosystems established. (Jasny)
- Fisheries management should be aimed at specific problems and have clear conservation objectives. (Dodds)
- Where Commission can help:
  1) Federal and state mandates do not work in unison, nor as ecosystem approach;
  2) Decision making authorities should be examined; councils and relationship with NOAA examined concerning the separation of allocation issues from conservation goals. (Hogarth)
- States and feds should decide together who manages what. (Shipman)
- Coral Reefs: 10 recommendations are provided.
- MPA's: 10 recommendations are provided.
- Marine Mammals: 10 recommendations are provided. (Dunstan)
- Sea turtles:
  1) Develop multi-agency ecosystem approach to turtle conservation w/focus on comprehensive conservation program to address all threats to endangered and threatened turtles. Include proactive strategies for preserving important habitats (refuges) and addressing open water threats, including threats posed by fishing, oil and gas development, shipping, etc.
  2) Revisit present policy under Flood Insurance Program that fosters unwise coastal development by removing market forces from development decisions and drives much of current coastal habitat destruction in Gulf states.
- Marine Mammals: Call for comprehensive multi-agency research program by NMFS to determine impacts of shipping, pollution, and oil and gas activities on marine mammals, particularly whales, and methods for minimizing those impacts.
- Fisheries: Ten recommendations provided. (Sartou)
- Foster new and improved relationships with state partners:
  1) It should no longer be us (state) versus them (federal). Must work cooperatively;

2) Cooperative agreements detail who, what, when, where, and how;
3) Joint enforcement agreements between NOAA enforcement and Gulf states provide bi-partisan cooperative enforcement, maximize effectiveness of law enforcement, and enable inter-jurisdictional fisheries enforcement. Funding agreements provide additional benefit to nation by increased presence of officers who are federally commissioned to patrol. (Simpson)

- Commission should review laws to promote effective redeployment of oil rigs into eco-rigs. (Kolian)
- M-S Act and federal legislation regulating decommissioning of platforms should be reviewed in concert and brought into alignment in order to enhance protection of coral communities developing in Gulf. [list of potential related functions of post-production platforms provided] (Sammarco)
- Eliminate loopholes and strengthen M-S Act:
  1) Prohibit overfishing of all stocks, and include a margin of safety to compensate for scientific uncertainties;
  2) Make it high priority to avoid bycatch and require managers to further reduce this practice annually;
  3) Keep bottom trawling, dredging, and other damaging fishing practices from destroying sensitive seafloor habitats;
  4) Stop managing ocean wildlife as a series of unconnected parts and consider needs of ocean ecosystems. (Crockett)
- Review M-S Act and SFA implementation by NMFS. Redesign fisheries management (policies for cooperatives and community-based management systems). (Hopkins)
- Have delegated too much responsibility for setting limits, should be done scientifically, with FMC's. (Hopkins)
- Replace moratorium with national guidelines for IFQs. There are more than 60 IFQs in over 15 countries. (Hopkins)
- Process of developing marine mammal management solutions is hindered by lack of data; basic rules. (Reynolds)
- Stock Enhancement:
  1) Commit federal resources to research needed to resolve critical uncertainties about stocking effect and potential as fishery-management tool;
  2) Conduct enhancement programs using responsible approach such as outlined in American Fisheries Society Symposium 15 publication [10 step process provided]. (Haddad)
- Federal fisheries managers need to recognize and nurture buy-in and partnerships with coastal states in all phases associated with Sustainable Fisheries Act, including policy development, regulatory implementation, and enforcement. (Haddad)
- Right Whale Protection: Continue to support Southeastern Implementation Team and recognize it as model for other natural resource management issues. (Haddad)
- Promotion and marketing of the environmentally sustainable seafood products; supports adoption of gear changes. (Colom-Agaran)
- Pacific Seafood Research and Education Center will help bridge gap between seafood users, producers, and scientists. (Colom-Agaran)
- Improved coordination needed between:
  1) NMFS and WPRFMC, and FWS where there are overlaps in jurisdiction over marine portions of national wildlife refuges in NWHI and PRIA's;
  2) NMFS/WPRFMC and NWHI Coral Reef Ecosystem Reserve under NOAA-NOS (Raney)

- Promote the successful implementation of the NWHI Coral Reef Ecosystem Reserve by supporting the NWHI Executive Order, implementation of rules and regulations for the Reserve, revision of the Reserve Operations Plan to better incorporate the comments of the Reserve/Sanctuary Council, and pursuit of a NWHI Sanctuary that would complement and supplement the Reserve. A NWHI National Marine Sanctuary should include state waters. (Raney)
- Implement reforms of fishery management councils to broaden the range of stakeholder interests represented, including those representing the interests of the general public. (Raney)
- The U.S. must continue to work to maintain the moratorium on exploitation of whales and to expand the sanctuaries within which exploitation of whales will remain forbidden. [discussion provided] (Van Dyke)
- Improve and enforce basic fishery management laws so that we protect essential fish habitats, eliminate overfishing and stop wasteful bycatch. (Danson)
- Prohibit importation and processing of shark fins in U.S.
- Aquaculture native species only; help curb alien species proliferation.
- Make the Northwestern Hawaiian Islands a World Heritage Site.
- All national wildlife refuges in Pacific need consistent 12 mile seaward boundary to provide adequate foraging area for nesting seabirds.
- Migratory Bird Treaty Act: Need to extend DOI jurisdiction to entire U.S. EEZ. (Paul)
- Amend the M-S Act to focus on bringing fishing capacity into balance with the productivity of target populations and ecosystems in flexible ways that respond to natural variation and create incentives for conservation and stewardship. Lift ban on IFQs. (Fujita)
- Embed fisheries management within a department and agency with a mandate that reflects the understanding that natural ecosystems and biodiversity must be maintained in order to sustain fisheries. (Fujita)
- Congress should provide substantially increased funding for NMFS to develop and fully implement short, medium, and long term components of ecosystem management systems, including research. (Norse)
- Enact new legislation, the Marine Fisheries Commission Act (MFCA), to establish and fund a federal fisheries management commission to provide independent oversight of the fishery management councils. (Norse)
- Amend M-S Act:
  1) Enact Fisheries Recovery Act, HR 2570;
  2) Enact Ocean Habitat Protection Act, HR 4003;
  3) Insert language into M-S Act to give strong, clear, unambiguous biodiversity conservation mandate, put resource (not use) first;
  4) Change structure and composition of the regional fishery councils and staff [changes provided] so fishermen, processors, and others have major role in determining their advice on allocation of the allowable catch but none on determining allowable catch levels;
  5) Add language that states clearly to NMFS that councils are advisory bodies and NMFS must exercise ultimate regulatory authority;
  6) Add provision to establish strong and clear performance guidelines for councils. (Norse)
- Suggest oversight body for fishery management council process and restructuring councils so that allocation is separated from the determination of allowable catch. (Norse).
- Strengthen scientific basis of fisheries management and credibility of fishery science among stakeholders; improve stock assessments; enhance social science research; improve and expand data collection programs; re-examine research priorities; improve communication of scientific information to stakeholders. (Katsouros)

- Amendments to M-S Act are required [list of recommended changes provided]. (Mahood)
- Improve fishery management: NMFS needs authority to supercede councils when ineffective or potentially harmful decisions made; provide NMFS with clear mandate how to resolve conflicts. (Reinert)
- Develop a vision and common objectives for fisheries, and a plan for managing living marine resources to achieve those objectives: Involve educated public; make management decisions adaptive; monitor management results; provide incentives for conservation and efficient use of resources; integrate system of data collection, decision making, enforcement and monitoring. (Reinert)
- To extent possible fisheries management should be carried out through more expedient processes of states. (Ross)
- More could be done to improve states understanding of goals of ESA and to elevate states' role. (Ross)
- Use IFQs only in conjunction with other management tools and not as whole toolbox. A successful IFQ program will incorporate terms accommodating the specific fishery's criteria with mandatory national standards regarding quota allocation auctions, transferability restrictions (limits), and sunset provisions (expiration every 2-5 years) [discussion of each provided]. (Nash)
- Overfishing recovery plans should be in context of ecosystem plan so all interactions can be seen. (Sartou)
- IFQ's are a tool that can be used with certain constraints (but concerned about misuse by greedy people and privatizes public resource). (Sartou)
- Elevate living marine resources' status in international issues. (Simpson)
- Consider consolidation of all fisheries agencies in the federal government under a single agency: works for states. (Simpson)
- Gulf Council and council chairs suggest rescinding prohibition on use of ITQs so can be used as management tool. Allow each council to decide to implement ITQ program. Eliminate windfall profit for persons who first sell ITQ shares by adding language to allow federal government to collect windfall. Ocean Commission should support ITQ programs if they want to remove cost of buy-back programs from public sector and to reduce over capacity and excess effort of domestic fleets, and transfer that cost to industries affected. (Swingle)
- Amend M-S Act in three ways:
  1) Strengthen stewardship incentive- allow civil action;
  2) Help IFQ programs achieve their objectives-remove 3 percent cap;
  3) Ensure IFQ programs are achieving objectives; regularly review and evaluate benefits and costs. (Emerson)
- Develop vision and common objectives for fisheries, and a plan for managing living marine resources to achieve those objectives:
  1) Engage public in forthright discussion of what we want fisheries and ecosystems to look like;
  2) Goals of M-S ACT, MMPA, ESA sometimes contradictory and conflicting [examples provided]. (Rassam)
- Stop viewing fish as commodity; fish are wild animals and fishery management must be wildlife management. (Safina)
- Change mandate and composition of FMCs: limits and how many of what size fish caught should be determined by scientists and wildlife managers; must be required, in practice, to rebuild fish and avoid overfishing, with attention getting fines if not. Re-orient fishery management from extraction to rebuilding and stewardship. (Safina)

- Must manage fisheries to protect and rebuild overfished populations. Avoid politically expedient solutions like ocean wilderness proposals that severely restrict/eliminate public access to national resources. (Nussman)
- Remove subsides that encourage overfishing and distort market economies. (Safina)
- Whenever possible, fish farms should be located indoors. (Safina)
- Management must also serve demand side: consumers should know where their seafood came from; label seafood indicating how and where it was caught or raised. (Safina)
- Agency should develop a gear certification system. (Dobrzynski)
- FMP for spiny lobster is good model of cooperation, contains "Protocol and Procedure for an Enhanced Cooperative Management System." (Morris)
- Review Florida's new Fish and Wildlife Conservation Commission structure for restructuring federal fisheries management. (Morris)
- New England's cooperative research plans involving fishermen should be encouraged by Congressional funding. (Morris)
- Add ITQ's as management tool in Gulf of Mexico. Allow each Council to determine whether ITQ's would be a useful tool for their fisheries. (Morris)
- The process should be changed so Council's decision regarding status and conservation goals of the stock is taken first, management measures taken second. (Morris)
- Separate funds for monitoring, strategic research and assessments enough to reduce emphasizing one over the other.
- Reduce harvesting capacity and apply precautionary approach to address overfishing and declining fisheries.
- Create new Department of the Oceans with sub-agencies that would comprehensively address all human interactions with marine resources.
- Most important management change for marine mammals: adopt ecosystem management that explicitly considers foraging needs of marine mammals and other predators.
- Fisheries and Marine Habitat: Need sustainable fisheries management. (Shultz)
- Enact Fisheries Recovery Act, HR 2570. (Hayes)
- Enact the Ocean Habitat Protection Act, HR 4003. [discussion provided] (Hayes)
- Stop "clear cutting" the ocean floor. [discussion provided] (Hayes)
- Give managers the tools they need to keep functional: repeal ITQ moratorium and allow fisheries managers to consider use of this tool. [discussion of ITQs is provided] (Moore)
- Keep regional fishery management council system intact. [discussion provided] (Moore)
- The Estuary Restoration Act should be funded. (Fletcher)
- Believes there is a solution to the problems independent of a major reorganization of the agency. Increase the responsibility of the Scientific and Statistical Committees (SSC) by:
  1) SSC should be responsible for formulating the ABCs for all species under their management or proposed management
  2) SSCs should always be in attendance at Council meetings when TACs and ABCs are under discussion.
  3) Upward adjustments of the SSC established ABCs should be allowed only after a Council petitioned the Secretary of Commerce for an adjustment and subsequent authorization.
  4) SSC membership should constitute a reasonable balance between state, academic and Federal government scientists.

5) Power of the Secretary of Commerce to turn down petitions for increased harvest or a faulty management plan should be given a booster shot. (Alverson)

- The statistical committee should become stronger on major issues such as catches having been exceeded. The science is there but politics, not just in the Councils but also in the higher levels, overrode some of the decisions. The Council structure could remain basically as it is but the authority to establish the ABCs should be vested in the scientific group which is largely made up of state, Federal, and academic scientists, as well as some NGOs. If they exceed the proposed biological limits, they should go through an appeal process allowing them to go to the Secretary of Commerce, who will hopefully remain fairly strict. (Alverson)
- There should be holistic management that takes into account the consequences of our activities, not just on the target species. Must be clear whether effort is to preserve something at the species level, the genetic level, or population level, and each Council needs to know the rules. Should not make up their own rules. (Alverson)
- NMFS is engaged in two main approaches designed to meet the technical and policy challenges associated with salmon recovery planning: 1) establishing multi-stakeholder Technical Recovery Teams, and 2) participating in regional policy forums designed to foster participation from diverse interests in developing recovery plans. [descriptions and examples of both approaches are provided]. (Ruckelshaus)
- Retain current regional council role in terms of science and management decision making. (Brown)
- Support the use of ITQs as a management tool available to the regional councils. (Brown)
- When managing the numbers do not go to extremes. One number could close down every fishery and another number would not affect any of them. Important to remember we are working with people. Although the talk is in terms of fish management it is really about people management. Yet, information on how this is going to affect people is absent. Biological, economic and social information is needed. (Brown)
- Concerted efforts should be undertaken to be proactive in species conservation. (Ehrmann)
- Regional planning is needed to identify priorities for where we spend our limited time, money, and effort. Using TNC's regional plan model to identify areas that represent this nation's marine biodiversity is one model and mechanism. (Beck)
- The Commission recognize that fisheries management is much more than setting catch levels; provide for a method other than councils to make allocation decisions and find a way to break the "race for fish". (Hilborn)
- The Commission should recognize that if the U.S. fisheries are profitable, then the fishing industry could pay for research and management costs. (Hilborn)
- We must build long-term economic productivity of fisheries by introducing property rights, appropriately fund economics data and analysis, and improve the cost-effectiveness of management. [discussion provided]. (Hanna)
- The fishery management councils, and the scientific committee(SCC), need to have more direct control. The process is flawed and needs to be addressed. (Leaman)
- Must make fishery management a shared endeavor that respects the contributions and commitments of stakeholders to the process. (Leaman)
- Have important positive initiatives to help Federal agencies avoid the present litigious alternatives to addressing resource management. (Leaman)
- Let us encourage our children and crew to continue their educations and upgrade their fishing skills to become the thinkers and leaders of our fishing industry of the twenty-first century, the brains that will help us adapt to a constantly changing world. Make it a professional industry. (Spain)

- The Commission should, like the United Nations and Organization for Economic Cooperation and Development, take Transfer Pricing abuses and issues into full consideration. Similarly, it should establish an Ad Hoc Committee on Transfer Pricing in order to gather the information and gain the insights needed to properly deal with these accounting behavioral problems. (Taufen)
- Solicit testimony and evidence from the Internal Revenue Service, Seattle International Division, Large and Medium-sized Business Group experts, and the public and academia, about Abusive Transfer Pricing. (Taufen)
- Issue a report to the U.S. Senate on findings of the Ad Hoc Committee, to such ATP experts as Senator Byron Dorgan. (Taufen)
- Consider additional efforts by the GAO regarding the economic structure of the U.S. North Pacific seafood industry, and its ATP practices. (Taufen)
- The Fish Management Councils should act more in an advisory role. The idea should be that the secretary has the power to modify and amend fishery management plans, not simply reject or adopt them. (Wing)
- User fees should be increased. (Wing)
- Investigate a default fisheries management plan (FMP). Encourage looking into a baseline management plan that could be implemented in the case of emerging fisheries that gives a management framework to move along with until a more detailed FMP could be put into place. (Wing)
- Encourage the Commission to take action as soon as you can and not necessarily wait for the final report to make recommendations on ITQs. If you wait for the final report, the debate may be over. (Heasly)
- The idea that fishermen pay for all the science and the research that goes into maintaining the fishery, is a good one. One of the ways they can do that, especially in a quota system, is that they are given a guarantee of a specific amount of fish each year. You could accomplish this by imposing a fee to pay for the resource management. (Heasly)
- The solution to many of the region's fishery management problems lies with conservation engineering or the modification of fishing gear to minimize the impact on ocean bottom fisheries habitat, to reduce by-catch, and provide fishermen access to fishing grounds where they might otherwise be prohibited. The National Marine Fisheries Service and the regional fisheries management councils should support conservation engineering efforts. (Durand)
- The Federal Government should provide incentives to fishermen and gear designers to work collaboratively with a minimum of regulatory hurdles. (Durand)
- Provide a mechanism, through the Sustainable Fisheries Act re-authorization, to develop new models for fishery management decision-making. [Further description provided.] (Richert)
- Develop and apply better principles for fisheries management
  1) Recognize the benefits of precautionary management. The United Nations Food and Agriculture Organization has projected that fish catches could increase significantly in the future if overfishing is reined in now.
  2) Address the impacts of fishing on the environment—for example, reducing bycatch, and mitigating fishing's other impacts on the environment makes business sense as well.
  3) Make international fisheries management a bigger priority—our interests at home are affected in many ways by fishing that takes place far from our shores. (Reilly)
- Encourage the development of measures to address the problem of fishing fleet overcapacity. Consider the problems associated with current government subsidies to the fishing sector, and support the elimination of both domestic and foreign subsidies that contribute to unsustainable fishing. (Reilly)

- The regional capabilities to support management of living marine resources could serve as a model for the rest of the country, particularly as they relate to the development of observational capabilities through systematic surveys. (Murawski)
- Living resource recommendations: Congress should: 1) strengthen the Sustainable Fisheries Act; 2) authorize the development of resource rents for all major commercial and recreational marine activities to create a dedicated funding stream;, and 3) amend the CZMA to promote the development of inventories and identification of strategic coastal infrastructure. (Shelley)
- Maintain the regional organization of fisheries management and science. The character of our fisheries can only be maintained through local governance and the complex problems will be addressed most effectively by using the knowledge and information of fishermen who have chosen to participate in the process. (Hill)
- The Council's job would be more straightforward, and the industry and public would be better served, if Congress would allow the Council to make value judgments as to which standards might be optimized in a given management action. This was the originally intended purpose of the Magnuson-Stevens Act—regional Councils making regional judgments in developing fishery management plans. (Hill)
- Develop a more simplified process to accomplish meeting environmental standards, promoting transparency, and providing for full public participation. A legislative solution will fully resolve this issue. (Hill)
- Appointments to Councils should be made on the basis of a person's knowledge of the broad range of issues that now constitutes fisheries management, in addition to safeguarding the interests of fishing ports and gear types. (Hill)
- Councils should be allowed more flexible rebuilding timeframes in light of new and improved scientific information. (Hill)
- Urge the adoption of proper safeguards, tools, and funding, as well as the flexibility to accomplish the task of proposing a number of remedies, on a regional basis. (Hill)
- Convene an ongoing symposium of all stakeholders in the discussion, from institutions such as Woods Hole Oceanographic Institute and the Conservation Law Foundation to a contingent of the commercial fishermen themselves. (Berkowitz)
- The following items do not, at this time, have a clearly defined national policy and it is recommended that a policy should exist:
  1) Address capacity issues in commercial and recreational fleets. Need a census of fishing capacity and how much extra effort is needed. Then, create a policy to reduce excess capacity in an orderly manner instead of shifting it from fishery to fishery.
  2) Marine Protected Areas—The U.S. needs a coherent policy stating goals and objectives, stating no extraction of natural resources from these areas, defining what activities will be allowed on the ocean surface, and how to educate the public as to the benefit to the nation.
  3) National decision on individual fishing quotas and individual transferable quotas. The fishing industry needs to know whether or not IFQs and ITQs will be used as a tool of management and what the rules governing their use will be.
  4) Timely availability of fisheries data. The U.S. should set a date after which time all data necessary for management will be available within three months of collection.
  5) National policy on cooperative research.
  6) Establish meaningful management regime for trans-boundary stocks. Work with other nations.
  7) Educate American public on the effects of land-based activities on the oceans. Mandate Sea Grant or a similar agency to conduct educational campaigns explaining how many land based activities, such as filling of the tidal wetlands, fertilizer, pesticide and biocide runoff, even the improper disposal of birth control pills, are having serious and perhaps long term deleterious effects on our oceans. (Goethel)

- Reform the composition of the existing fishery management councils to expand the representation of stakeholders other than commercial and sportfishing interests. (Phillips)
- Clearly establish the authority to set target catch limits within the Federal fishery management agency rather than at the fishery council level. (Phillips)
- Manage fisheries based on data and not on theory. In this regard, it is imperative that fisheries are defined as "over fished" only when fishing caused the decline. (Sanfilippo)
- In order to address the long-term changes in the piscivorous finfish populations that represent a combination of offshore fish harvesting and inshore habitat loss/degradation, there should be interjurisdictional coordination between local/state/Federal agencies and even within a given governmental level cooperation between water quality agencies and those that oversee fisheries. (Dow)
- We must use science, not emotion, in the management of our living resources. (Tillion)
- The burden of proof needs to be on the side of conservation. This should be a very clear understanding and mandate. It's difficult to legislate that but that is the balance. (Benton)
- As far as recommending a structural change on the Magnuson Stevens Act, one suggestion is to look at having a requirement in the Act that very specifically says Councils will have a scientific and statistical committee, and it will be broadly constituted with multiple disciplines. Right now that is not in the Act, it is not really ensconced in law. Some Councils are more aggressive about employing that tool than others and that's part of the problem. (Benton)
- The way the Councils should use the advice that is given is difficult. It's sort of mutual terror, mutual trust. The Act should say that a group of scientists would set catch levels and that the Council should do the rest of the business. If that were to happen there would be a lack of accountability from the scientists to make sure that the data they use is accurate and the data is credible and that there is a transparent process. (Benton)
- The Commission's report should recommend that the Regional Fisheries Management Council system continue to allow those directly involved in the fishery to manage the resource responsibility but without second guessing by Federal officials. A regionalization concept preserves resources much better than does a national concept.
- The Commission can enhance and accomplish several of the charges in the Oceans Act of 2000 by incorporating the Western Alaska CDQ program into permanent U.S. policy. (Crow)
- The Commission and Congress should support removal of the restriction on the CDQ program, and adopt an exemption from the ownership caps for the CDQ participants. (Crow)
- Develop incentives that will allow the other regions of the country and other Councils to achieve sustainable fisheries within this framework. (McCabe)
- Require each Governor to submit no fewer than seven names for a Council seat and to provide balance in the list. Provide the Secretary the authority to reject an entire list and to request that the Governor submit a new list. (Leitzell)
- Require each Council to appoint a Science and Statistical Committee of no fewer than ten members, with membership from Federal and state agencies and from academic institutions. Require that a Council receive advice and recommendations from its SSC before taking final action on any matter and require that the SSC Chair certify that its advice has been given. (Leitzell)
- Reject any new requirement for additional peer review of NMFS research that supports fishery management and conservation decisions. (Leitzell)
- Add a statutory requirement that environmental and conservation groups be included in each advisory panel (AP) and that each AP consist of at least twelve members. Require that each Council receive advice and recommendations from its AP on each matter before the Council for final action and that the AP Chairman certify that its advice and recommendations have been given. (Leitzell)

- Revise the Act to provide NMFS with the authority to initiate a revised action to be acted upon by the Council. Following disapproval, if the Council does not approve a revised action within 60 days, the NMFS Regional Administrator on that Council may propose a revised action and the Council must vote on that proposal at its next scheduled meeting. (Leitzell)
- Revise the Act to require that the NMFS Regional Administrator and each Council Chairman agree to a written agenda for that Council for the subsequent year. (Leitzell)
- There is a recommendation, a legislative recommendation floating around, that scientific statistical committee recommendations should go to outside completely unaffiliated scientists for further peer review. Some people think the current process is not independent. Some of us believe that NMFS is the best in the world on this and that their science is straight forward and unbiased. (Leitzell)
- Ecosystem based management plans must include people. Ecosystem based management considerations, including socio-economic implications and traditional knowledge need to be incorporated into regional FMPs. (Stinson)
- Rights based fisheries management would allow harvesters and managers additional tools to meet increasing regulatory mandates. Federal fisheries in the Gulf of Alaska are being economically marginalized by entities with a more efficient market structure combined with the cumulative effects of severe environmental regulation that constrains our ability to operate. (Stinson)
- A national fisheries observer program should be instituted, based on an equitable cost structure, regional needs and the information requirements of specific fisheries. (Stinson)
- An ecosystem-based approach to fisheries management should be phased in reflecting recommendations by the National Ecosystem Principles Advisory Panel report to Congress. (Childers)
- Make habitat conservation a deliberate and central feature of our fishery management system. (Childers)
- Reform fisheries management to reward clean fishing practices through economic incentives to support a smooth transition from today's bottom trawl fisheries to less intensive practices. (Childers)
- Recognition of regional differences: what may work in one region of the U.S. may not necessarily make sense in another region due to many factors such as differences in ecosystems, population bases, or types of fishing fleet. (Winther)
- Support for the regional management council system: this has proved to be a successful process in the North Pacific in developing practical management measures while providing for conservation of marine resources. (Winther)
- A key element of sound fisheries management policy is an appropriate TAC setting process: the cornerstone of successful management is the ability to assess abundance and establish harvest levels that will provide for a sustained fishery. (Winther)
- The Commission is urged to strongly recommend continuation of the regional management council system. The proof that it can work is the track record of the NPFMC. (Winther)
- Replicate North Pacific successes [discussion provided]. (Clarke)
- Reduce bycatch and bycatch mortality. (Clarke)
- Manage fisheries through science, not litigation. [discussion provided] (Clarke)
- Anything that can be done to improve cooperation and communication is great. We cannot legislate intelligence and probably can't even legislate morality, but we can surely legislate communications. (Balsiger)
- Promote ecosystem-based management. (Balsiger)

- For something like fisheries where we do surveys on an annual basis and try to react to that continually accumulated scientific information, it is difficult to fit it into the NEPA process because by the time you go through all the steps—the public involvement, the development of alternatives, the drafts and final examinations and then make a decision—you have a new survey from the next year in place. A potential fix for that is that the Magnuson-Stevens Act itself contemplates a very public process that interacts a little more quickly than following the exact steps of NEPA. This is perhaps a method that could be used by itself outside NEPA to make decisions on a timelier basis. (Balsiger)
- The regional approach to fisheries management is robust. Each region has unique and complex issues and tensions that collide in the management process. They must be addressed regionally. (Pautzke)
- Recommend legislative changes that may prompt regional councils to move toward ecosystems-based management, but recognize that extensive information is needed to do it successfully. (Pautzke)
- The destruction of North Pacific coral and sponge habitat and the degradation of the Aleutians is an indicator of the failure of the current management paradigm, and underscores the need to move to a science ecosystem-based management approach to fisheries management. Establish an ecosystem-based management approach for fisheries management. (Ayers)
- Provide the North Pacific Fishery Management Council the tools needed to establish a comprehensive program designed to address the needs of all parties that might be affected by a (significant and needed) rationalization of the Bering Sea crab fisheries. (Garner)
- We need to begin to seek a common understanding among the multitude of management agencies that don't currently agree on priorities for managing our fish and wildlife. The obvious lack of agreement on what constitutes a healthy ecosystem is problematic. (Gillis)
- It is important for the Oceans Commission to understand and promote a unified vision for what "ecosystem management" means, and to ultimately answer the question "can an ecosystem be managed". (Gillis)
- Responsible, on-going fisheries development must remain a goal of U.S. ocean policy. (Jones)
- Oceans policy must provide the freedom and support necessary to solve problems and encourage development of underutilized stocks. It must be recognized that the ocean environment changes and so do the fish stocks within it. Policy and regulation must be flexible enough to allow reaction to new situations. (Jones)
- Oceans policy must also consider that increasingly the oceans will be looked at as the source for meeting the food supplies of an ever-expanding global population. (Jones)
- Support the proposed amendments to the Marine Mammal Protection Act regarding improvements to co-management and Section 119 of the Act. (Riedel)
- Support participatory involvement by Alaska Natives through the co-management process, which in part is based on our long history of traditional knowledge. (Riedel)
- Provide that NMFS—not Fisheries Management Councils—is responsible for the development of fishery management plans. [Further description provided.] (Sterne)
- Amend the Sustainable Fisheries Act, and appropriate sufficient monies into a newly established Fishing Fleet Capacity Reduction Fund, with which commercial fishing fleets in the U.S. EEZ can be retired. (Steiner)
- Management regimes must achieve restoration. (Davis)
- The Joint Strategic Plan is one of the best examples of cooperative fishery management anywhere on earth. (Gaden)

- Fisheries: We think we have to move away from single species management towards ecosystem managements and, again, we would like to see through these regional councils working with fishery councils, the implementation of tools that would allow for that kind of approach to sustainable fisheries. We are looking at how do you separate the scientific decision about how many fish ought to be caught from the process of dealing with whom should catch them. (Panetta)
- Recommend arresting the further depletion and restoration of marine living resources. Global overcapitalization of vessels engaged in fishing must be attended by international agreements. There is a need to augment the present international agreements to take a census of marine life presently underway under the aegis of CORE. (White)
- The OC must recognize that sound marine fisheries depend on healthy and sustainable fishery resources. (Radonski)
- Sustainable Fisheries Management—four recommendations presented. (Eichenberg)
- Concerning IFQs, we have a set of mandatory standards that we have been pushing for. (Weissman)
- Concerning nominations, the council is one thing that I think the Ocean Conservancy would definitely like to see. (Weissman)
- Specific recommendations are presented for: marine mammals; whaling; sea turtles; overfishing; ecosystem alteration; habitat impacts, and bycatch. (Rufe)
- Government fishery scientists and managers would likely find an increased level of cooperation, understanding and support if they dedicated more resources to public outreach programs. (Loftus)
- Coastal and marine restoration and conservation (includes four specific recommendations) (CSO)
- Fisheries management and community impacts (includes five specific recommendations) (CSO)
- Specific recommendations are presented. (Allen)

TOPIC: *LIVING MARINE RESOURCES*

KEY ISSUE: *Ocean-Use Planning and Ecological Zonation*

ISSUES RAISED

- In state and territory MPAs "no-take" does not mean "no impact" where tourism is critical component of economy. (Colom-Agaran)
- Description of the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve provided. (Johns)
- Majority of coral reefs of U.S. lie within NWHI and deserves special attention from the Commission. (Raney)
- "No take" zones in MPAs are a cost effective and efficient management strategy with demonstrated benefits for biomass increase and less demonstrated benefits for biomass overflow. (Etnoyer)
- Concept of adaptive management and notion of "phasing in" reserve networks piece at a time are sensible management options and deserve serious consideration. (Amoroso)
- Completing an innovative process of cooperation between state and Channel Islands NMS regarding the identification and potential designation of marine reserves in both state and federal waters. (Baird)
- Issues at the federal level that may benefit from CA experience:
  1) Federal authority to create "no-take marine reserves" outside of a marine sanctuary isn't clear;
  2) Terminology for marine protected areas needs to be clarified at the federal level;
  3) Federal process for establishing policy for MPAs must seek out stakeholder involvement from the beginning;
  4) Federal scheme for MPAs must include the critical elements: clear purpose and design for the site or system; plan for management and enforcement; plan for education and outreach; plan for evaluation and research. (Baird)
- MPAs are useful and flexible tools for solving multiple problems and achieving multiple goals. Marine reserves can help protect marine biodiversity [discussion with statistics provided]. Marine reserves can help achieve the primary goal of fisheries management: protection of sufficient spawning biomass to sustain fisheries. (Fujita)
- Marine reserves are more cost effective than harvest control for at least two reasons:
  1) Greater assurance that a given number of fish are actually protected;
  2) Each fish is likely to create many times more eggs within reserve because they are generally larger and older. (Fujita)
- Reserves can improve fisheries management and help change management from single species to ecosystem approach; particularly helpful where fishing mortality is not well known, like sport fisheries. Recent information indicates certain game species many times more abundant in reserves than in fished areas. Reserves help fill ecosystem gap in fisheries management by protecting representative habitat types. (Fujita)
- Clear mandate to establish marine reserves would be helpful as long as it didn't include specific siting recommendations; need lots of stakeholder involvement. (Fujita)
- Confusion and tension over MPAs comes from:
  1) Continuing uncertainty on the terminology used to define what is an MPA, or what activities will be prohibited if an MPA is established;
  2) Mistaken belief that there is some specific percentage of the marine environment targeted to be set aside from all use. (Hogarth)

- What are MPAs and how they are used:
  1) Term broadly used to describe specific marine areas given some sort of special protection; many types of MPAs and management practices; short-term and long-term protection. [detailed discussion of variations, purposes, and uses of MPA's is provided]
  2) If established, MPAs must include: enforcement of any conservation measures that have been enacted; and, monitoring of effectiveness to verify the site is fulfilling goals for which it was created. (Hogarth)
- Maximum stakeholder participation is an overarching need through all phases of MPAs. (Hogarth)
- Executive Order 13158 - [detailed description provided]. NOAA's FY 2002 budget contained $3 million to help implement E.O., same level requested in President's request for FY 2003. (Hogarth)
- Science is mixed as to MPA issues, depending on the question. Does science think a MPA would be useful tool to try? Yes. Important step for MPAs is to try to assure the independence of the scientific judgment. (Kennel)
- Thoughts about MPAs: One size does not fit all; region-based appropriate; reserve systems will prove to be an important part of whatever proposals Commission puts together. (Ford)
- As a result of MPA Executive Order, the Channel Islands National Marine Sanctuary asserted itself as a stakeholder and influenced consensus of forum. Sanctuary program's new role as stakeholder advocating a policy of percentages needs to be addressed. (Miller)
- Concerned about MPAs being used as fishery management tool too early on; destructive to the freedom of the people involved and the oceans. (Raftican)
- One-size-fits-all does not work; i.e., no fishing zones are broad-brush; often arbitrary closures. (Dodds)
- MPAs have clear role in protecting habitat. (Mahood)
- Clear that single-species approach does not work, SAFMC now considering MPAs. (Sedberry)
- Coastal and marine ecosystems of the southeastern U.S. and northern Caribbean are critically important, ecologically complex and geographically linked [discussion provided]. These critically important ecosystems are increasingly threatened by a combination of water quality degradation, coastal habitat destruction, and overfishing [discussion provided]. Most serious overall threat to ecosystems is fragmentation of management systems [discussion/example provided]. (Rader)
- Commercial and recreational fishing industry is familiar with, and has generally accepted use of MPAs as management tools, particularly for regulating gear use. Marine reserves where all fishing is prohibited is newer concept and less acceptable to industries, especially to certain elements of recreational sector. Currently states, NOS, USFWS, and NPS have authority to establish MPAs. If framework allows some other entity to create MPAs then some of industry will not be favorably disposed. Arguments on both sides can be made concerning effectiveness of reserves. (Swingle)
- Marine reserves are tools to protect ecosystems and give rise to productive fish and shellfish populations. (Hopkins)
- More marine fish stocks are fully or over utilized today than prior to M-S Act. Long-term sustainability of fisheries and ecosystem function requires new approaches; large, interconnected systems of marine reserves one tool. (Rassam)
- Less than one-half of one percent of U.S. waters are protected by marine sanctuaries. (Rufe)
- Provides typical criteria for selection of MPAs in categories: ecological; cultural; economic; feasibility. Appropriate site and design of MPAs should be strongly influenced by specific objectives. (Rufe)

- No country has good fishery management model. U.S. behind many countries in using MPAs. (Safina)
- There is a lot of good information that the Commission should look at concerning MPAs. Use of MPAs is not a conspiracy to kick fishers off the oceans. (Chandler)
- Marine zoning is similar to land-based zoning; both are predicated on recognition that some activities are not logically compatible and need separation. Differences: land-based zoning usually affects property owned by private citizens or the public; marine zoning affects areas that are deemed as "commons" with shared public access. (Causey)
- No disconnect between MPA and marine sanctuary management: confusion is over term MPA and marine reserve. Sanctuary is MPA and may, or may not, have marine reserve. (Causey)
- Single authority or jurisdiction for all MPAs, parks, etc. may have some advantage but many drawbacks. Multiple agencies can leverage and share resources and information. (Causey)
- The U.S. needs a national system of MPAs, including no-take reserves and ocean wildness areas, to bolster and sustain dwindling fish populations; to restore health of ocean ecosystems; to deepen understanding of the complexity of ocean life and our impacts on that life; and to ensure that our use of economically valuable marine resources is sustainable. (White)
- Science tells us MPAs work [a specific example is provided]. (White)
- The U.S. lags behind other countries in establishing MPAs. (White)
- Process of establishing national system of MPAs should incorporate guidelines:
  1) All stakeholders, not just fishing and conservation interests, must be involved in collaborative process from beginning;
  2) Education is a key first step; include primer on MPAs, lessons learned from other sites, and review of current status including available biological and socioeconomic information;
  3) Discussion should begin by exploring specific objectives;
  4) Scientific information is critical and should be referenced at every step of the process. (White)
- Sea needs wilderness areas too. [discussion provided] (Hayes)
- One of the potential roles of the marine protected areas is to use them as a tool, apart from the strategy, to help keep up with inadequate science. (Fletcher)
- The Surfrider Foundation's definition of a "fully protected marine reserve": A marine protected area that prohibits dredging, hooking, dragging, netting, blasting, drilling, spearing and dumping, has strict water quality protection provisions and is fully accessible to non-extractive vessel traffic and recreational use. (Evans, C.)
- Less than half of one percent of the U.S. exclusive economic zone is presently protected marine reserves. This is an atrociously small amount. (O'Keefe)
- A lot has changed in the last five years. Among other things, there is increased capacity to be more specific about our knowledge of the ocean and to be clearer about zoning boundaries, etc. (Reilly)
- The ecosystem is pretty efficient at growing fish if it's given half a chance, and if it's not overharvested. So a future of a completely engineered ocean zone is not particularly attractive or necessary as long as it is managed appropriately. (Shelley)
- The Sierra Club still supports the designation of Marine Protected Areas for both environmental and species protection and research. (Nelson)
- MPAs also have their place in fisheries management, if they are based on sound scientific research and fisheries management principles. MPAs seem more appropriate where a fish spends its whole life in that area. (Winther)
- There is much confusion over terms that apply to marine protected areas. Definition of terms is presented. (Weissman)

- The establishment of Marine Protected Areas may well be appropriate to address certain identified risks, but two cautions need to be borne in mind. First, if the at-risk species or eco-system is threatened by non-maritime sources. Second, enforceability must be a key criterion considered before adopting any new regulatory regime. (Collins)
- Difference between Marine Protected Area and refugia is explained. (Eichbaum)
- The MAC recognizes the value of MPAs as a fishery management tool as part of a comprehensive management plan and in the past has called for such protection over artificial reefs (then called Special Management Zones) constructed with private funds meant to be solely for the use of recreational anglers. The MAC does object to MPAs whose objectives are undefined and exclusionary. (Radonski)
- Marine Protected Areas (MPAs) are gaining wide acceptance as major tools of an effective ocean policy. These zones are effective fishery management tools because they reduce fishing mortality, leading to increases in abundance of spawning fish and enhancing yields in nearby fished areas. (Munson)
- Our National Park System is home to 50 park units with marine components, and has a statutory mandate to protect marine resources while providing for education and recreation. Marine Parks offer an excellent opportunity to serve as models for new marine management techniques. (Munson)
- EPAs proposal to establish a no-discharge zone for Florida Keys would prohibit the use of available technology for treating waste on recreational and other vessels. (Husick)
- There is much confusion over terms that apply to marine protected areas. Definition of terms is presented. (Weissman)
- Protecting critical coastal and marine ecosystems: Discussion of background and current issues for: coral reefs; and, MPAs and ocean wilderness. (Rufe)

PRESENTER RECOMMENDATIONS

- Support of strong management regime for the Northwestern Hawaiian Islands Reserve; at least for 2-3 years until better science and data can be produced to show that there has not been a measurable and constant decline in the fishery landings of the Reserve [detailed discussion and statistics are provided]. (Agard)
- Promote implementation of NWHI Coral Reef Reserve (Raney)
- Look at recent CA MPA activities as models:
  1) Established a clear authority and process for creating marine protected areas;
  2) Established a process to consolidate, clarify, and specifically re-define classifications for state “marine protected areas;”
  3) Redefined approach to establishing a master plan for MPAs, to seek out additional stakeholder and technical input;
  4) Defined area of interest in a regional manner captured ecological and oceanographic differences. (Baird)
- Developing objective criteria for MPAs will help avoid politicization of process. (Baird)
- Create legislative mandate for existing federal agencies or for new Oceans Department to protect marine biodiversity and ecosystem health with a national network of marine reserves, while allowing uses that are compatible with this overarching goal. (Fujita)
- Define distinct biogeographical provinces and inventory the nation’s marine biodiversity to support the development of a national network of marine reserves. (Fujita)
- Create marine reserve planning and research processes at workable scales, and integrate them at larger scales (e.g., community-based planning and management integrated with regional planning and management) using decision-support tools. (Fujita)

- Create legislative mandate for more funding for MPA management and research. (Fujita)
- Amend M-S Act to emphasize need to protect marine biodiversity and ecosystem health with marine reserves, (perhaps modeled after CA Marine Life Management Act and Protection Act). (Fujita)
- Amend M-S Act to reconfigure regional fishery management councils as ecosystem management councils to carry out this mandate. (Fujita)
- Reject any policies, such as the Freedom to Fish Act, that pre-empt the ability of the federal government or states to establish marine reserves. (Fujita)
- Commission should consider the following MPA recommendations:
  1) Have clear understanding of the goals and objectives of MPAs; create regional network of MPAs; rank according to effectiveness; identify gaps;
  2) Set realistic management objectives based on resources available;
  3) Take long-term approach to MPA management and resource conservation;
  4) Garner local community support and high level agency support for the MPA;
  5) Consider full range of management alternatives; employ multiple techniques based on goals and objectives. (Causey)
- Articulate quantifiable no-take targets for National Marine Sanctuary. Management needs a number or range of numbers. (Etnoyer)
- Establish a network of marine protected areas that includes a full range of ocean ecosystems. (Danson)
- Congress should pass, and the President sign, new legislation to establish a national system of fully protected marine reserves that protect, within biologically sound, viable borders, the "best" places in America's undersea lands and preserve representative samples of all ecosystem types in each of the nation's marine biogeographic regions. Primary purpose of system is to protect and recover biodiversity within America's EEZ. (Werny)
- Enact new legislation to establish a national system of fully protected marine reserves that protect, within biologically sound, viable borders, the "best places" in America's undersea lands and representative samples of all ecosystem types in each of the nation's marine biogeographic regions. Primary purpose of system is to protect and recover biodiversity within America's EEZ. [reasons why this would make a difference, and who should do it, are provided] (Norse)
- Resolve the science on reserves, either we are taking a community-based approach to the MPA E.O. or we are under a policy of minimum percentages [discussion provided].
- Develop a clear process for looking at an over all design for reserves along the West Coast [discussion provided]
- Create a comprehensive mitigation strategy for reserves' initial loss to fishery yield.
- Create regional data management councils where the community has independent technical support and oversight [discussion of each provided] (Miller)
- Strengthen habitat protection by establishing process to create MPAs that contain stronger water quality protection policies and end overfishing. (Wan)
- MPAs should start as community-based for buy-in and build from there, with monitoring of effectiveness. (Sedberry)
- MPAs will be an essential component of an effective ecosystem-based network in the Southeast. [discussion provided] (Rader)
- Amend existing federal and state laws to place increased emphasis on ecosystem protection; enact new laws to fill gaps in current MPA system; eliminate destructive fishing practices and other resource extraction activities in reserves; increase funding for, and research on, MPAs. Build national system of MPAs. (Rufe)

- Concept of zoning must be moved off the land into the sea; zone for fishing gear types. (Safina)
- Zoning: map sea floor according to habitat types; 80% should be zoned for various or mixed use; reserve boundaries based on sea floor maps and good science advice. (Safina)
- Make a firm and consistent commitment to the use of MPAs as a marine management tool. A decision must be made that an adequate national system of MPAs, including "no-take" and ocean wilderness areas, is essential to protecting the public interest and will be developed. (White)
- Enact new legislation creating a system of marine reserves that fully protect sample of all major ecosystems in nation's biogeographic regions. [discussion provided] (Hayes)
- Marine Protected Areas:
  1) Enact legislation to establish a National system of fully protected marine reserves that protect hotspots of marine biodiversity and the system of habitat types that will allow depleted marine resources to rebound.
  2) Support the continuation of the Northwest Straits Initiative.
  3) Marine Sanctuaries, like Olympic Coast NMS, need to identify and establish protected areas within their boundaries, both in intertidal and subtidal. (Fletcher)
- Congress should pass and the President should sign into law new legislation to establish a national system of fully protected marine reserves that protect, within biologically sound, viable borders, the "best places" in America's undersea lands. The primary purpose of this system is to protect and recover biodiversity within America's EEZ. (Evans, C.)
- The Federal government should speed up the processes for designating Marine Protected Areas and Marine Reserves, both through the National Marine Sanctuary Program and the fishery management council process. (Hamilton)
- Explore the possibility of extending the opportunities to preserve U.S. territory/land as Wilderness—to off-shore. (McCaffrey)
- Establish a networked system of marine protected areas and reserves. (Revell)
- Establish three additional National Estuarine Research Reserves located on the West Coast—in CA's Humboldt Bay, in Willapa Bay, and in a major port of the Puget Sound, such as Bellingham, Tacoma, Seattle, or Olympia—to analyze how ecosystems are affected by the human environment and provide a forum to promote public education and research. (Scranton)
- The Commission on Ocean Policy should take a proactive role in protecting ocean biodiversity and vital ocean ecosystems by creating a legislative mandate for the establishment of a national network of marine protected areas, including fully protected marine reserves, incorporating the local, statewide, and regional initiatives that are currently taking steps to develop small-scale networks of MPAs. (Taylor)
- Also recommended is the strengthening of the MPA Executive Orders to provide more funding for MPA management and research. It is only by gaining more knowledge of how our ocean ecosystems function that we can preserve bountiful and diverse oceans for the future. (Taylor)
- Look into zonal management and put more marine reserves in place as part of precautionary management for the future. Look at assessing capacity, both the capacity of the ecosystem to produce, and the capacity of humans to be able to extract from it. (Wing)
- We want marine protected areas, firstly, for intrinsic value. The defense of the wilderness is an inherent part of the American character. They can also provide an insurance policy against overexploitation. So even if we predict wrongly how many fish we are going to have, then we will have some percentage where we haven't been fishing at all and those fish will be there to repopulate the other areas. (O'Keefe)
- The Commission should recommend that we enhance and expand our network of marine reserves to where it is a fully representative national network through the U.S. EEZ. (O'Keefe)

- There should be areas designated out there that have that special designation of MPA so that not only the marine fish species are protected, but also the ecosystem as a whole. (Durand)
- Conserve the most biologically important marine areas:
  1) Use networks of protected areas to conserve the oceans' web of life.
  2) Focus on the tropical oceans—in particular, highlight the importance of the U.S. leadership in global coral conservation efforts and voice even stronger support for the International Coral Reef Initiative. (Reilly)
- Improve ocean governance: Establish marine zoning regimes, particularly in the near shore environment. (Reilly)
- There should be very clear scientific hypotheses associated with every MPA that is established. Research is needed for all MPAs. For biodiversity purposes, there have to be some no-take areas. (Shelley)
- A new ocean policy should include a national system of marine protected areas that would provide the framework for comprehensive management of critical areas and a forum for agency coordination as well as opportunities for the application of stewardship principles while balancing the increasing number of competing uses of ocean resources. [discussion provided] (Delaney)
- Establish a network of no-take Marine Protected Areas to protect and restore representative ocean ecosystems. (Phillips)
- There is a need for overall coordination regarding the Marine Protected Areas. (Buchsbaum)
- Some MPA management should be top-down and some should be bottom-up. MPAs should not be forced because 82% of the resource in the Aleutian Islands is in state waters. There are already areas closed there. On the other hand, coordinated work should take place with groups that are trying to find the Gorgonian coral beds because it's in our state and national interest to close destructive types of fishing in those areas. Areas should not be closed because of fear of Washington. (Tillion)
- The new national oceans policy should authorize and obligate the Secretary to designate marine protected areas. (Van Tuyn)
- Immediately identify special management areas in need of protection, and take action to protect them until research and proper management plans can be completed. (Ayers)
- Enact legislation to establish new and expanded Marine Protected Areas and Ocean Wilderness. [Further description provided.] (Steiner)
- Marine zoning for the protection of ocean resources is increasingly seen as a powerful management tool for addressing current problems we are facing. Zoning in the near shore environment is a relatively low-cost, effective management option of dealing with conflicting uses and interests. The concept of Marine Management Areas (MMAs) based on a comprehensive system of zoning can provide a variety of options for the management of species, habitats and uses of marine resources and waters. (Eichbaum)
- Concerning MPAs, I suggest that we must adopt a systems approach and make sure that we are tackling the right problem. In many cases, that problem is ashore. (Collins)
- Protected areas or reserves should be part of a toolbox and developed at the local level. (Panetta)
- We urge you to express strong support for employing Marine Protected Areas (MPAs) as tools to achieve resource protection and healthy marine ecosystems. (Munson)
- To ensure the long-term survival and health of our marine systems, we must create a strategically designed system of no-take marine reserves, covering a broad range of representative marine habitats, especially important to spawning. The Park Service, as one of the federal agencies focused on conserving wildlife for future generations, should play a leadership role in implementing such a system. (Munson)

- As far as MPAs, include ocean wilderness areas. (Weissman)
- Specific recommendations are presented for: coral reefs; and, MPAs and ocean wilderness. (Rufe)
- The moratorium on new sanctuaries must be lifted, and serious consideration to the creation of additional sanctuaries must be undertaken. Areas for consideration should include the east coast, and the Gulf of Mexico. (Cousteau)
- The National Marine Sanctuary Program should be given greater authority to use innovative management techniques, such as marine zoning. Implementing such policy changes would allow the NMSP to (actually) manage sanctuaries as ecosystems, with a strong science-based approach. (Cousteau)
- The governance structure within NOAA for the National Marine Sanctuary Program should be changed to allow the Program to have a more direct impact on communities and with its partners at the local, state and federal levels. Therefore, we strongly recommend the NMSP be elevated to 'line office' status within NOAA, making it equivalent to the Fisheries and Weather Services. (Cousteau)
- MPAs are of value as fishery management tool, but not when objectives are undefined and exclusionary. (Loftus)

TOPIC: *LIVING MARINE RESOURCES*

KEY ISSUE: *Conflicting Mandates*

ISSUES RAISED

- 35-40 longline boats have left after excluded from some fishing grounds because of incidental take of leatherback turtles; current fishery management efforts not working. (Colom-Agaran)
- Cooperation at working level of agencies outstanding, lacking at higher levels in Western Pacific primarily due to failure of Western Pacific Regional Fishery Management Council [Four reasons are listed]. (Raney)
- Consider ways to streamline council process and decrease "bureaucracy" associated with adopting regulations and implementing management decisions:
  1) Currently a double process for West Coast groundfish; council and then NMFS;
  2) Consider amending M-S Act to allow Council process to satisfy NMFS. (Bunn)
- Multiple mandates have become unwieldy, subjected the agency to litigation, are not responsive to current state of fisheries, and are inadequately funded [detailed discussion provided]. (Hogarth)
- Critics say council process has become overtly political; appointments and deliberations. (Katsouros)
- Politicalization has eroded balances between national policy and local concerns and between and among user groups and between Congressional oversight and executive action. (Katsouros)
- Administrative rulemaking is highly structured and an insider's game. (Katsouros)
- Critics argue Congress has exercised too much oversight through regulatory intervention, special legislation, line item appropriations and budget language. (Katsouros)
- Fishery governance is a complex and often confusing mix of local, state, regional and federal authorities. (Katsouros)
- Can take two years to do a plan under NEPA and by then stocks have changed. (Hogarth)
- Court challenge to summer flounder management plan lost citing 30 day statute of limitations; absurd to assume harm can be realized in 30 days. (Schill)
- U.S. imports swordfish that violate our own laws and regulations. (Schill)
- When M-S Act, ESA and MMPA are applied together they fuel litigation; conflicting mandates. (Shipman)
- Charter under the Atlantic Coastal Act was developed to guide interstate fishery management program and is not as prescriptive as M-S standards: has worked well for us. M-S Act has become so prescriptive it is imploding on itself. (Shipman)
- Marine Recreational Fisheries Statistics Survey is poorly understood or accepted by constituency it serves. (Radonski)
- Problem between ACFCMA and M-S Act is they employ different management philosophies: ACFCMA uses adaptive management; M-S prescriptive management. Must share a philosophy to be effective. Science is adequate however, government uses risk adverse strategy and commercial fishing industry uses risk prone strategy; same data but operate from opposite ends. (Radonski)
- Detailed discussion of contradictory laws. (Rassam)

- Fishery management measures proposed by Gulf Council must conform to 10 national standards of, M-S Act, NEPA, ESA, etc. This complexity is heavy burden for council; staff inadequate to handle requirements. Complexity of preparing documents pushes councils toward considering one species at a time in order to complete assessments. (Morris)
- Florida's federal conformance procedure works well and allows expedited rulemaking for Florida to conform to new federal rules. (Morris)
- Federal process is too slow when stock in question is commercially valuable and targeted. (Morris)
- Example of efforts to work through Byzantine collection of fishery regulations, including examples of obstacles and voids in understanding and research needed to set priorities. Red grouper is good example; Gulf Council has been working on an amendment for almost three years [a detailed description of the process is provided]. (Morris)
- There are a lot of overlap, conflict, and gaps between various acts. (Kurkul)
- There are conflicting laws—some conflicting objectives of different laws. The Endangered Species Act wants us to protect steller sea lions, and all marine mammals. The Magnuson Act wants us to provide economic opportunity, to provide protein for the nation's tables. The conflict between these two acts is in fact the proper role for the politics of the Council, for the working groups of the agency to address. We don't want to eliminate either law. We look forward to working through the conflicts. (Balsiger)
- The most significant constitutional infirmity in the Magnuson-Stevens Act is Section 304(h), which mandates that the Secretary of Commerce can repeal or revoke a fishery management plan only if three-fourths majority of the voting members of a Fisheries Management Council approves such an action. With the existing Section 304(h), we have officials (i.e., on Fisheries Management Councils) who are outside the Federal system of government exercising supreme authority over the manner in which the Act is implemented, by virtue of their veto power over the Secretary. The Act, therefore, runs afoul of the Appointments Clause of the U.S. Constitution. [Further description provided.] (Sterne)

PRESENTER RECOMMENDATIONS

- Require NMFS to provide timely notification to regional fishery management councils when there is a need to revise proposed fishery management plans and other actions to bring them in compliance with existing laws or executive orders, thereby saving taxpayer dollars and unnecessary adversarial contests with public interest groups. (Raney)
- M-S Act requires balance of interests, although this does not always happen. Might look at appointment process language for incorporation into Act. (Swingle)
- Need to look at NEPA process: too long and cumbersome. (Hogarth)
- Review 30 day statute of limitations for regulations and management plans published in federal register. (Schill)
- Implementation of the MMPA and ESA:
  1) Need scientific research community to obtain permitted exceptions to the laws when appropriate; review ESA and MMPA relative to scientific permitting;
  2) Permit requirements and time frames to obtain permits should be more consistent between the two permitting agencies, USFWS and NMFS. (Haddad)
- Revisit the Magnuson-Stevens Fishery Conservation Management Act and consider the consequences of policies that seemed to make sense at the time but need to be adjusted in keeping with today's realities. (Earle)
- Review and clarify environmental and fishery laws and regulations. (Brown)

- The Saltenstall Kennedy grant program should be re-designed. It should fund development, gear modifications, more science and collaborative research. (Wing)
- NMFS should heed the advice of the Take Reduction Team and place conservation measures for porpoises under the Marine Mammal Protection Act (MMPA) rather than the Magnusson Act. (Young)
- The Commission should look closely at the overall policy and reconcile some of the various Acts so that there is no "catch 22" on procedure. (Benton)
- The following recommendations are regarding existing policies which are contained primarily in the Magnuson Act and the Sustainable Fisheries Act:
  1) Make sure overfishing definitions are standardized and workable.
  2) Should have better definitions of essential fish habitat. Current definitions consider essential fish habitat to be any place where any given fish swims.
  3) Congress should rank the national standards. Congressmen often seem to have a clear intent as to what the national standards mean to them and how they ranked them in importance. This is almost always not the way that the NMFS has interpreted them.
  4) Clearly state what is known and not known relative to any given species.
  5) Address rebuilding schedules. Some of the rebuilding schedules for New England groundfish can only be met by virtually eliminating the commercial and recreational fisheries.
  6) Change the Council Oath. Council members should represent the fish, not be perceived constituencies of user groups.
  7) Create, within the Sustainable Fishery Act, the ability to test experimental management techniques.
  8) Create National Standards to consider ecosystem interactions. Management actions on one species will affect many others.
  9) Adequate funding—if the U.S. is serious about having well managed oceans, the taxpayer must get serious about paying for it. Our agriculture system receives billions of dollars and feeds much of the world. Our oceans receive millions, which allows little more than an ocean policy triage.
  10) Require bureaucrats to spend one week per year observing the industry they oversee. (Goethel)

TOPIC: *LIVING MARINE RESOURCES*

KEY ISSUE: *Effective Enforcement*

ISSUES RAISED

- Enforcement key element of management system; cooperative programs with Coast Guard and states working well. (Hogarth)
- Most glaring inadequacy in fisheries management process is government's inability, or unwillingness, to abide by Congressional mandates: example of summer flounder managed by a "target", resulting in recreational component overshooting target for 7 consecutive years. (Schill)
- Enforcement is an area in which new partnerships could be used. (Shipman)
- Major problems exist with enforcement capability of both NMFS and NOAA General Counsel's office: Not enough personnel to enforce and/or prosecute. (Swingle)
- Cannot see an active enforcement role for Councils; would like greater role in specifying penalties for violations of rules.
- Increase cooperative enforcement agreements with states and provide funds to states for that purpose. (Swingle)
- Currently Coast Guard role in fisheries enforcement is diminished because of 9/11, but needs to be regained at some point. (Loy)
- In Seventh Coast Guard District, 5 main concerns: enforcement of ship reporting system for North Atlantic Right Whale calving grounds; enforcement of fisheries management (i.e., Tortugas Reserve); protection of coral reefs; control of invasive species; illegal discharges of harmful pollutants [Description of each included]. (Carmichael)
- Better enforcement and new technology will help with some of the issues related to bycatch. Technology is a different issue than science. (Brown)
- Protecting our national resources through strong enforcement of environmental law is a top priority for the Department of Justice in Alaska. We carry it out in the following ways: [discussion provided on all three]
  1) Through efforts to protect the security of our marine resources, ports, waterways, and maritime commerce and transportation.
  2) Through the protection of our marine resources from vessel pollution.
  3) Through our fisheries enforcement efforts. (Burgess)
- Even prior to September 11th, law enforcement in Alaska worked steadily to prevent terrorist acts that could seriously harm marine resources and commerce. We work closely with the FBI, the Coast Guard, and other Federal and state law enforcement agencies to ensure the protection of our ports, waterways, and maritime commerce. [discussion provided] (Burgess)
- The existing law does provide that passengers or crewmembers who make reports of discharges on board can receive monetary compensation. For example, when All American Lines was prosecuted in 1998 for direct discharges of oil it was because an engine room crewmember came forward. The Federal District Court awarded that person half of the million-dollar fine for coming forward and reporting the violation. (Burgess)
- The Coast Guard fishery enforcement operations in Alaska emphasize four areas: maritime boundary line in the Bering Sea; high seas driftnet; domestic fisheries; and regulations on endangered species. [Further description provided.] (Underwood)
- Discussion and examples of on-water enforcement in Australia is presented. (McPhail)

PRESENTER RECOMMENDATIONS

- Assist states in marine fisheries and habitat protection law enforcement:
  1) Increase federal funding for ongoing joint cooperative enforcement agreements between NMFS and states to ensure wise management compliance and sustainable harvesting of commercial and recreational fisheries;
  2) Transfer technologies like remote sensing, GIS, and GPS from feds to states to assist in enforcement of fisheries and habitat protection laws. (Carpenter)
- Funding Joint Enforcement Agreements with states should continue. (Morris)
- Increased port security significantly reduced enforcement of fisheries and related environmental laws, including OPA. (Carmichael)
- There is a need for better support for a national fishery observer program – better funding, more standardized training, and more rigorous, and the whole program should be made to be more professionalized. (Spain)
- Each year we work on appropriations and we specifically try to get funding for VMS so that NMFS can conduct their enforcement. (Weissman)

TOPIC: *LIVING MARINE RESOURCES*

KEY ISSUE: *Other*

ISSUES RAISED

- Overcapitalization must be viewed from processors' and boat owners' standpoint; seems limited entry into fishery based on historical participation is fairest way to address overcapitalization. (Amoroso)
- Have tools to deal with overcapitalization. (Gutting)
- It is important to think in terms of not being in the restaurant business selling fish, but actually being in the fish business, operating restaurants. The difference is significant. Long-term sustainability of our oceans should be our focus—just as it is for a conservationist. In order to have our family businesses continue for future generations, it is important to think like conservationists when it comes to the seafood industry. (Berkowitz)
- One factor that has been wrongly ignored during these debates is the bottom-line healthfulness of seafood. Seafood is among the healthiest of all protein, and its importance in everyday diets cannot be undervalued. The Omega-3 fish oils found in seafood lower the "bad cholesterol", LDL, which often contributes to a dangerous buildup of plaque in coronary arteries increasing the risk of heart disease. A diet rich in seafood and low in red meat also decreases one's risk of colorectal and prostate cancer. (Berkowitz)
- To Alaska natives, subsistence is the most important issue after self-determination. Subsistence is not sport. Subsistence is what provides for our cultural, spiritual, and nutritional health. It gives you a perspective that you are part and parcel of the ecosystem, that you are participating in the events of nature. (Johnson)
- Our Alaskan villages depend on fish, wildlife and gathering for a majority of the food put on the table and to continue a relationship with the land and sea begun thousands of years ago. (Quyana)

PRESENTER RECOMMENDATIONS

- Focus laws and policies on habitat reclamation and preservation to ensure sustainable resources and provide incentives to reclaim lost resources:
  1) Provide federal assistance for failing coastal municipal sewage systems;
  2) Provide federal assistance for voluntary acquisition of non-state owned tidally influenced areas;
  3) Conservation Reserve Program should provide for conversion of agricultural lands to natural land cover and Wetlands Reserve Program for conversion of marginal/timberlands to original land cover. Provide federal buyouts and conversion to natural land cover throughout coastal zone;
  4) More clearly define wetlands and map rates/patterns of loss by type over past 30 years;
  5) Conduct and track on nationwide basis, by eco-regions, wetlands mitigation projects efficacy rates. Develop mitigation tracking programs that allow easy follow-up and enforcement;
  6) Study and develop policies on deforestation and other land cover conversion rates and impacts associated with biomass alterations on health of coastal, estuarine and ocean environs;
  7) Develop financial assistance program for immediate relief after natural coastal and ocean disasters, with thorough advance mapping, planning, and logistics for coastal zone in detail. (Carpenter)

Appendix 1

TOPIC: *POLLUTION/WATER QUALITY*

KEY ISSUE: *Ocean Pollution Sources; Point and Nonpoint*

ISSUES RAISED

- One of most pressing issues is marine debris: past 4 years 150 tons of nets and line removed from NW HI islands; debris is coming from elsewhere. (Colom-Agaran)
- Fundamental issue is water quality. (Etnoyer)
- 30 years after passage of Clean Water Act, U.S. coastal waters still have numerous critical water quality problems; although there have been improvements in water quality from point sources. Regulations of nonpoint source pollution generally only through TMDL approach; states and EPA need to proactively develop TMDLs and ensure implementation. Reducing stormwater and nonpoint runoff is nothing short of pathetic:
  1) Severely under-funded by two or three orders of magnitude or more;
  2) Effort to move urban stormwater into point source provisions of CWA without clear and meaningful water quality standards is ineffective;
  3) Federal enforcement on municipal stormwater non-existent;
  4) Lack of true regulatory and enforcement of CWA for nonpoint. (Gold)
- Another major source of pollution is contaminated sediments; no national strategy to clean up sediments. (Gold)
- Increased development with more nonpoint pollution and wastewater. Santa Barbara sewage treatment plant discharging a lot of solids. Goleta Sanitary District requesting another 5-year waiver to not fully treat waste. (Maassen)
- Nation's efforts to control point source discharges, sludge and wastes dumping successful. Pollution from nonpoint runoff and atmosphere largely unabated and new provisions in CWA and CZMA not effective. (Boesch)
- Nitrogen has emerged as most widespread and measurable effect of pollution on living resources and biodiversity in U.S. coastal waters; excess results in eutrophication. Two-thirds of surface area of estuaries and bays in U.S. suffers one or more symptoms of nutrient over-enrichment. (Boesch)
- Federal role in response to nonpoint huge; decides policies and funding. (Boesch)
- Effects of nutrient pollution on coastal zone are long lasting (e.g., destruction of seagrass, corals, etc.), the manifestations sometimes are ephemeral. (Boesch)
- Nutrient pollution one of most serious water quality problems in nation and is major threat to coastal water quality; leading cause of pollution of Iowa's surface water and groundwater. (Heathcote)
- Iowa has some of the most nutrient rich waters in the world, with significant amounts of nitrogen and phosphorous. Agriculture dominant source of water pollution in Iowa, including farm fields, livestock manure, and intense production of corn, soybeans, and hogs. Iowa must do something about its contribution to the Dead Zone in the Gulf. If we don't solve water quality problems in Iowa and upper Midwest we're not going to have an effect on hypoxia. Task force came up with adaptive management approach as best way. (Heathcote)
- There have been encouraging changes to the Farm Bill. In particular, increased conservation funding for new conservation security program. (Heathcote)

- Need a different direction, not just implementing what is on the books. Need to really examine agriculture policy; some going on this year in Farm Bill. Whole infrastructure is geared towards commodity crop production; won't change that overnight. Reducing yield by limiting nitrogen application complicated by real economics of crops. (Heathcote)
- Answer to lowering concentration of livestock and diversifying farming not really size of operation but concentration of animals on the land; need better manure management and reuse. Attitude of farming community is changing; more trying to solve nutrient problem and talking about hypoxia; networks are forming like Clean Water Network that includes agricultural groups. (Heathcote)
- Second largest zone of hypoxia ("Dead Zone") in world is on continental shelf adjacent to outflows of Mississippi and Atchafalaya rivers. [detailed discussion about hypoxia in Gulf of Mexico is provided] federal interagency efforts include Integrated Assessment of Gulf of Mexico Hypoxia, Hypoxia Action Plan submitted to Congress and approved by federal, state, and tribal nations in October 2001. Plan outlines voluntary, incentive-based sub-basin strategies intended to sum to overall 30% reduction. Hypoxia Plan had to avoid using "R" regulatory word in order for agreement. No single strategy will account for most of nitrogen removal, but modified agricultural practices and restoring wetlands and riparian buffer strips within Mississippi basin will provide most nitrogen removal. Solving hypoxia problem in Gulf and improving water quality and habitat within Mississippi River basin will require 30% nitrogen load reduction. (Rabalais)
- Successful plans generally span geopolitical boundaries, e.g., Chesapeake Bay Agreement, NEPs, etc. (Rabalais)
- Great concern about Gulf of Mexico's dead zone. Need to have healthy Gulf ecosystem: start with chemical fertilizers and pesticides dumped into upper reaches of Mississippi River; we've started with the farmers, now focus on those who sell them fertilizer and pesticides. (King)
- Concerned about mercury in Gulf. [discussion of reports provided] (Kohl)
- Want help to tie concerns of the upper Mississippi River communities to regional community on lower Mississippi/Gulf origin; want a more cohesive and integrated view of Gulf of Mexico. (Sullivan)
- Impacts of land-based activities in coastal areas; nonpoint pollution: "Clean Coastal Waters: Understanding and Reducing the Effects of Nutrient Pollution" (Alberts)
- Disposal of materials in the ocean:
  1) Despite laws and regulations, things are still happening that pose threat to marine life, e.g., entanglement, etc.;
  2) "Oil and the Sea" report out next spring;
  3) Recent report on dredging and long-term impacts from ocean disposal. (Alberts)
- Outstanding issues regarding water quality and pollution include reducing impact of nonpoint source pollution and minimizing the introduction of invasive species. (Bodman)
- Management of human activities related to ocean must account for the land-sea connection, including silt from clear cutting; agriculture-induced silt and pesticide run-off, over fertilization from excessive fertilizer and farm animal sewage; and human sewage. The air-sea connection includes transport and deposition of pollutants; changes in atmospheric chemistry; and warming. Transport in water through ship ballast carry species worldwide; direct exploitation (oil drilling; fishing). (Safina)
- Land and water connected; must engage and energize people who live in Mississippi watershed to deal successfully with coastal problem. (Wayland)
- Major challenge is nonpoint pollution. (Wayland)

- Florida's coastal environment is especially vulnerable to nonpoint pollution because extent of karst nature of the platforms allows great interaction between ground and surface waters, and low gradient of the land results in high water tables. [discussion of these issues is provided] (Chanton)
- Primary problems facing marine and coastal resources, not already addressed in comments to Commission, are associated with three types of anthropogenic alterations of Florida's aquifer system: 1) groundwater mining; 2) aquifer-injection of wastes; and, 3) so-called aquifer "storage" and "recovery." [discussion of each provided]
- Desalination of sea water is viable alternative to groundwater mining. Alternatives to waste injection exist: Vermont Law School; Use carrot and stick approach. [description provided]
- Alternatives exist to Florida's current unscientifically founded approach for replenishing the aquifer system; use pervious pavement; freeze federal funds for programs and support to Florida and all coastal states that are destroying natural recharge areas.
- EPA has exhibited no evidence that it comprehends nature of groundwater responses associated with aquifer-injection: should halt all groundwater injections until detailed studies have been conducted to determine adverse impacts to coastal and marine systems. Transfer EPA oversight to USGS. (Bacchus)
- Marine debris:
  1) Perceived as visual indicator of pollution;
  2) 80% from land-based sources.
- National Monitoring Program:
  1) Scientifically designed with 180 sites monitored monthly by volunteers;
  2) Designed to determine amount of debris decreasing and major sources;
  3) 5 year data in Gulf may show trends. (Schwartz)
- Oil Spill: Priority in Washington is to prevent spills by focusing on large vessels and marine facilities, while working with Coast Guard and stakeholders. (Shultz)
- Yes, the state would like to engage in inspections that go over and beyond the Coast Guard inspections. In the INTERTANKO decision, Washington State would enter in different standards of inspection than what the national standards are. Would like Congress to modify it: Congress would make the national standards, but they would allow states that have an effective program be able to have standards that could be more stringent or a little different than the Federal standard. This would relieve some of the burden on Congress. The Coast Guard, as we know, is being asked to do a great deal and this process would relieve some of their burden. (Shultz)
- The Puget Sound area has done a pretty good job at minimizing the amount of sewage being discharged, but the largest problem has been with British Columbia and Vancouver, both of which have dumped raw sewage into the straits. I do not know if there are any waivers but I will find that out. (Smitch)
- Principal justifications that states use for 301(h) waivers', including:
  1) The belief that current discharge of blended effluent (primary and secondary) is not harming the environment;
  2) The belief that secondary treatment provides no reliable or significant disinfection or risk reduction from a sanitary engineering perspective;
  3) The belief that monitoring requirements for facilities operating under 301(h) waivers are more stringent, and that removing the waiver would result in less frequent monitoring and thus fewer beach postings and advisories;
  4) The belief that nonpoint sources produce more significant impacts than point source discharges; and
  5) The belief that waste water treatment plant upgrades (to secondary treatment) are prohibitively expensive. [Further description provided.] (Evans, C)

- Nonpoint source pollution entering the coastal zone is a problem of national scope needing national level solutions. Such programs are massively under-funded. (Hamilton)
- Pollution—aquaculture, and specifically farm salmon, is a form of pollution that threatens the economic and the fisheries of Alaska. Cruise ship pollution issues are not a small issue, but cruise ship pollution is one hundred percent preventable. (Ayers)
- Some good news: Oils spills have dropped over fifty percent since 1991; there has been 1.5 gallons of oil spilled per million gallons shipped; there have been no spills over one million dollars. These are not accidents, but have occurred through a lot of cooperation and new initiatives. (Berkowitz)
- The Gulf of Maine's challenges:
  1) The water quality of the Gulf of Maine is under tremendous pressure from population increases.
  2) The newest source of pollution in the Gulf of Maine is salmon aquaculture farming operations.
  3) The nightmare that looms over every ecosystem is a catastrophic event such as an oil tanker accident. (Shelly)
- Marine water pollution emanating from land based activities must be addressed at all levels of government as an integral part of ocean policy and include the full enforcement of the Clean Water Act. [discussion provided] (Delaney)
- The town of Falmouth has begun a project to manage nitrogen loading from septic systems and fertilizer usage in town that has diminished the water quality in the coastal embayment. [discussion provided] (Dow)
- "The Voyage of the Odyssey", an Ocean Alliance program, is aimed at quantifying a serious threat to ocean life from synthetic compounds known collectively as POPs (Persistent Organic Pollutants). Included are compounds such as DDT, DDE, PCBs, aldrin, endrin, dieldrin, dioxins, furans, etc. Their other name, Endocrine Disrupting Compounds (EDCs), describes their greatest threat to humans—that some of these compounds are hormone mimics which even at concentrations as low as a few parts per billion can upset fetal development, cause reproductive disorders and malformation of sex organs, compromise immune systems, do neural damage, and, in young children, diminish their ability to concentrate and learn. (Payne)
- Many countries around the world have recognized the environmental threat posed by the cargo and/or bunker oils and chemical cargoes remaining aboard shipwrecks located in their respective waters, and that the time had long since come when action must be taken to deal with those pollution threats. (Witte)
- The risk of a major pollution incident will exist as long as bunker and/or cargo oils or other petroleum and chemical cargoes are not properly removed from shipwrecks. Studies performed have demonstrated that among other possibilities plate perforation and oil escape can be expected from corrosive pitting, and that corrosion rates have been found to increase dramatically after the first twenty years of submersion. (Witte)
- Published accounts indicate that are as many as 28,500 barrels of lubricating oil remaining onboard the COIMBRA in eight cargo tanks that were not inspected during the 1967 survey, which was directed by President Johnson to determine how to best meet the national need to address the problem of oil pollution. (Witte)
- The threat to the environment that these wrecks represent is a most important issue for coastal and ocean protection; one of specific concern to the Northeast region of the United States as well. (Witte)
- The cost to the public of removing the oil from wreckages now, while it is still contained, is significantly less than the costs will be if the oil is allowed to escape into the environment with the attendant destruction of natural resources, aquatic mammals, and fishery habitats, and significant economic losses suffered by seaside communities. (Witte)

- The Environmental Committee of the Cruising Club of America has done research and funded experiments in waste systems for yachts so that with our new processes, the wastewater can be clean enough to meet environmental concerns. (Higginson)
- It does not make sense to us that regardless of how clean our wastewater is, discharge from yachts will not be allowed. (Higginson)
- Yachtsmen do not use their pump-out stations, because they are not pleasant. If more technology would be fostered to clean our wastewater in yachts, it would be a productive and useful approach to this problem. The industry, however, has not been interested because of the number of areas that have no discharge. (Higginson)
- One more complexity to add to the Commission's plate is the subject of mercury pollution of our shores. Mercury becomes concentrated in the food chain, as well as other nasty things that have already been discussed. Mercury comes from power plants burning coal and municipal solid waste incinerators. The amount of mercury that comes out is small, but it is lethal, and it gets brought up in the food chain. The top fish in the fish chain dies, falls to the bottom, rots, and the mercury gets right back into the system. [discussion provided] (Bradley)
- The two major human threats to Alaska oceans are pollution and destructive fishing practices. We will not totally solve these problems; our responsibility is to stop the preventable and develop the tools for the next generation to overcome challenges. (Ayers)
- Persistent Organic Pollutants (POPs) are of particular concern in Northern latitudes where internationally transported chemicals settle out in cold climates and remain in the food chain. [Further description provided.] (Ayers)
- Maritime commerce is a critical link in Alaska's economy, and the risks and consequences of maritime spill disasters are high. (Keeney)
- NOAA assists with maritime spills through prevention, preparedness, response, and restoration activities. [Further description provided.] (Keeney)
- A critical lesson of the Exxon Valdez disaster is that a framework must be in place before an event occurs in order to organize decision making; to understand appropriate response strategies; and to establish mechanisms for evaluating the environmental tradeoffs among different approaches and the implications of response strategies for restoration. [Further description provided.] (Keeney)
- One of the lessons learned from the Exxon Valdez spill and other incidents is that restoration is delayed when the focus is on establishing the monetary value of natural resource damages rather than on the costs of restoration. [Further description provided.] (Keeney)
- One of the NOAA programs deals with non-point source pollution in its coastal zone management program. The CZM program has placed a certain priority on states to put together enforceable programs that look at non-point source. Approximately a third of the states have programs in place, another third have programs within reach of being put in place and another third have a ways to go to put them in place. The EPA is a significant player in this arena, particularly when it comes to emission controls and atmospheric deposition. (Keeney)
- Once an oil spill occurs, the best we can hope for is to minimize the 'total negative impact' of the event on public health and safety, environmental degradation, property damage, and direct and indirect economic losses and cleanup costs, both public and private. (Ross)
- Oil spill response is the art of making difficult, time sensitive decisions with potentially major consequences and – all too often – making those decisions on less information than we would like to have. (Ross)

- The legislative foundation for oil spill response is found primarily in the Clean Water Act and the Oil Pollution Act of 1990 (OPA '90), requiring the preparation of a National Contingency Plan, various Regional Response Plans, and robust Area Contingency Plans. [Further description provided.] (Ross)
- In the U.S., the onus of conducting planning and response to an oil spill lies on the owners whose businesses create the potential for spills (the Responsible Party); as a result a response contractor industry has grown up. [Further description provided.] (Ross)
- The basic organizational model used by the Coast Guard is the Incident Command System (ICS), containing a multiple decision-maker structure that includes the Responsible Party. [Further description provided.] (Ross)
- Among the issues the Coast Guard and other members of the response community are grappling with are the difficulties of maintaining a viable commercial response community in the face of declining accident rates. (Ross)
- The National Response System, while not problem free, is a significantly better and stronger system than existed prior to the Exxon Valdez. OPA '90 deserves much of the credit for the improvements that we have seen. (Ross)
- Until the Coast Guard receives the necessary resources it will rob Peter to pay Paul a bit—which is nothing new for the Coast Guard. (Ross)
- The methods that are appropriate for point sources, whether it's an industrial facility or a tank ship, are not appropriate or suitable for non-point sources. EPA has a storm water runoff program (for petroleum hydrocarbons that enter the sea from storm drain runoff, etc.). That EPA program has not been well funded. (Ross)
- The area of marine emergency planning and response will get better. The national strike force, the Coast Guard strike teams are elements that are critical for response to hazardous chemical events. The Coast Guard ran site safety at ground zero in New York. The Coast Guard strike teams ran site safety for the Anthrax response in Washington, New Jersey, and Florida. The Coast Guard is a national asset and the capabilities and skills to deal with oil, chemical spills, and whether they're industrial accidents or transportation accidents or deliberate criminal events are skills directly transferable. The solution is not to split the Coast Guard up or to put it in this department versus that department. The solution is to provide the Coast Guard with resources they need to do all of the things needed for the American people. [discussion provided]. (Ross)
- There are a number of informal working relationships, for planning events for example, that exist between the Coast Guard and NOAA in the response arena. There are no existing effective mechanisms for a new initiative to require across agency funding. There is no knowledge of budget coordination mechanism at a high level. (Ross)
- For oil spill prevention and response, The Oil Spill Recovery Institute has industry, Coast Guard, Federal and state agencies, and the public involved in helping to implement these technologies to make better decisions in the future. (Thomas)
- The Oil Spill Recovery Institute has been putting core money into the Prince William Sound Science Center and it's run between $300,000 and $600,000 a year. People have been able to receive grants through the competitive bidding process and have been able to either double to triple that kind of funding. So, the whole effort to build a bioregional program and have a regional host is really inexpensive and when one looks at the kind of information that comes out of it, it is apparent that we cannot afford to NOT have this kind of regional emphasis in the future. (Thomas)
- Both the new Federal and state law protect only Alaskan waters; they do not bring vessel discharges under the NPEDS permitting requirements or the technology force and requirements of the Clean Water Act. (Balliet)

- Since the Exxon Valdez spilled oil (and not chemicals), not enough urgency in prevention and preparedness has been directed at the marine transportation of bulk chemicals. [Further description provided.] (Utley)
- Most chemical carriers still do not have written response plans that would assist in protecting the public and minimizing the environmental impact during a major incident. (Utley)
- Another area of increasing concern in the U.S. is our inland waterway network. Almost 37 million tons of chemical fertilizers are moved in and around the U.S. every year with approximately 50% in operation on the Mississippi River. (Utley)
- Under the Clean Water Act, only the EPA has the authority to designate a chemical as a "hazardous substance", but that list has not been updated since 1979. (Utley)
- Of the 782 internationally recognized noxious liquid substances, only 134 appear on the EPA's list of hazardous substances. Yet, in the Coast Guards' view, these 134 cargoes do not necessarily represent those cargoes posing the greatest threat to the marine environment. (Utley)
- The current active regulatory paradigm ignores modern science and frustrates the sustainable oceans policy. Specifically between 300 and 200 miles it remains legal under the Clean Water Act to dump toxic drilling and production wastes into our fisheries and marine habitats. EPA has banned the discharge of drilling muds, cuttings, produced waters, and chemical additives in all coastal waters in the U.S. except for Cook Inlet. The discharge rules remain firmly fixed in the archaic notion that dilution is the solution to pollution. Now a growing body of apt scientific evidence is telling us what common sense already knew, that our fragile marine ecosystems are susceptible to toxic pollution. [discussion provided] (Shavelson)
- Toxic chemicals have profoundly affected Great Lakes ecosystems. These chemicals accumulate through food webs and have affected the health of humans and animals including bald eagles, osprey, mink, and lake trout. Species like Lake Erie's blue pike is extinct, in part, as the result of pollution. (Hartwig)
- Nonpoint source pollution is the most pervasive source of water pollution in the United States today. Much of our NPS pollution today is the result of past activities. However, many of our biggest future challenges lie in preventing new problems that are resulting from the continued development and growth of our coastal communities. (Wayland)
- Description of the National Nonpoint Source Pollution Program is provided. (Wayland)
- Opportunities to abate nonpoint source pollution include State Coastal Nonpoint Source Pollution Control Programs, watershed-based planning and TMDL's. (Wayland)
- Two major sources of funding, in addition to Section 319 funds, warrant special attention: Farm Bill and State Revolving Loan Fund. (Wayland)
- Left unaddressed, nonpoint source pollution could actually erode away the gains made by controlling point sources of pollution. (Wayland)
- Serious threats are posed by nonpoint source pollution to coastal and ocean waters. Nonpoint source pollution, including nutrients, toxins and pathogens that run off farms, city streets and suburban areas, presents the most significant pollution threat. (Chasis)
- Nitrate has been identified as a contributing factor to the Hypoxia Zone in the Gulf of Mexico, with where I live, being identified as a major contributor of that nitrate. Nitrate comes from many sources; industry, agriculture, background, urban areas, and septic systems. In the last 10 years the amount of nitrogen used in the Raccoon River watershed has decreased, the amount of crop removed has increased, but the levels of nitrate in the Raccoon River have also increased. (Bardole)
- One of the greatest impediments to change is an elderly, and/or absentee landlord. Most of these landlords want income from their investment, the land. (Bardole)

- In today's large confinement operations, much of their problems are point source. The problem is large confinements being placed too close together and therefore having more crop nutrients than can be economically spread. (Bardole)
- Clean Coastal Waters: Understanding and Reducing the Effects of Nutrient Pollution, provided a detailed analysis of the scientific and management issues posed by nutrient pollution and outlined the key elements of a nationwide strategy to address the problem. Oil in the Sea III: Inputs, Fates, and Effects suggests that oil may need to join nutrients, pesticides, and mercury on the list of non-point source pollution threats to the coastal environment. (Walker)
- Chronic low-level releases associated with the consumption of petroleum account for 70 percent of total and may pose significant risks to the sensitive estuarine environments where these inputs most often enter the marine environment. Volumetrically the most significant anthropogenic source of petroleum entering the marine environment is land-based, non-point source pollution. (Walker)
- Non-point source nutrient pollution—no single policy approach will be appropriate in all cases. (Walker)
- Oil in the sea each year off North America: natural seepage of crude oil from geologic formations below the seafloor to the marine environment is estimated to exceed 47 million gallons; activities associated with oil and gas exploration or production introduce on average an estimated 880,000 gallons; transportation of crude oil or refined products (including refining and distribution activities) results in the release on average of an estimated 2.7 million gallons; and an estimated 25 million gallons are input from diffuse sources. (Walker)
- The severity of nutrient problems and the importance of the coastal areas at risk led the National Academies to call for the development and implementation of a National Nutrient Management Strategy, which as proposed in Clean Coastal Waters would coordinate local, state, regional, and national efforts to combat nutrient over-enrichment in coastal areas, with the goal of seeing significant and measurable improvement in the environmental quality of impaired coastal ecosystems. (Walker)
- The realization that nonpoint sources of nutrients, specifically nitrogen (N) and phosphorus (P) from agricultural lands represent a significant water quality issue is relatively recent. (Keeney)
- Policy and agricultural technology has not kept pace with the science of water quality. Agricultural lands are not managed in general to reduce nonpoint nutrient sources, and there are few if any rewards and incentives for doing so. Farm policy rather has continued to emphasize and reward production, especially of row crops, which are by far the largest contributors of nutrients. (Keeney)
- The farming community is suspicious of efforts to control nonpoint source pollution. Hence non-point source control has low political weight at state and national levels, and tends to be a "cause" for environmental groups rather than a responsibility of farm operators and landowners. Little if any rewards accrue for control of offsite pollution. (Keeney)
- A new concept, the working landscape, is emerging in Europe and the United States. Working Landscapes looks at ways to couple voluntary, incentive-based policies with landowner innovation and private enterprise. (Keeney)
- The Conservation Security Program of the 2002 Farm Bill offers many stewardship options that if properly used and adequately funded can be a positive step toward a new agriculture. (Keeney)
- Ballast exchange will become mandatory with the new NISA bill. (Harkins)
- Dept. of Agriculture has been working very closely with EPA on TMDLs as well as the animal feeding operation rules that they had proposed. (Knight)

- We've made good progress in over 30 years on direct sources of pollution, on point sources. But over the last 30 years, what's happened is we've had increased pollution from nonpoint sources. (Panetta)
- With advent of improved testing, estimates of sediment contamination increased dramatically. Sediment contamination in harbors, estuaries, coastal waters, and at dumpsites, must be recognized as a pollution issue of consequence to the marine environment. (Zipf)
- Discussion is provided of the extent and severity of contaminated sediment in U.S. coastal and ocean waters. (Zipf)
- Discussion is provided of threats to fisheries and shellfisheries from exposure to contaminated sediments. (Zipf)
- Discussion is provided of the New York-New Jersey region: A case study in remediating ocean contamination and treating and reusing contaminated sediments. (Zipf)
- Discussion of background and current issues for nonpoint and marine debris. (Rufe)
- Findings, goals and objectives for marine and estuarine pollution. (CSO)

PRESENTER RECOMMENDATIONS

- Marine Debris:
  1) Work with IMO to establish additional policies focusing on dumping or discarding fishing gear.
  2) Establish international committee to work with net manufacturers to develop methods of tagging nets to identify fishers discarding gear.
  3) Establish international bounty program to buy back discarded nets; national incentives program for new methods to recycle and/or reuse them for other products. (Colom-Agaran)
- Encourage responsible local and municipal wastewater management and water quality monitoring programs. (Etnoyer)
- Clean Water Act - 301(h) Waivers: Amend the Clean Water Act to remove the 301(h) waiver program. (Werny)
- Reduce the impact of stormwater runoff on coastal waters:
  1) Limit urban development along shorelines, particularly impervious cover;
  2) Preserve and construct wetland and riparian buffers and submerged aquatic vegetation;
  3) Limit use of fertilizers, herbicides and insecticides on lawns and landscaping.
  4) Encourage best management practices in agriculture;
  5) Educate the public regarding the ecological values of natural landscapes. (Chanton)
- Need national contaminated sediment regulatory program including: sediment quality standards based on chemistry and toxicity; requirements for dredging and disposal in an environmentally sound manner. USACOE should include program with maintenance dredging. (Gold)
- New approaches to reduce diffuse source pollution of nation's coastal waters must be key facet of a new U.S. ocean policy. National ocean policy in the 21st century must reach out and influence national agricultural policy, energy policy, transportation policy and land use policy. For example, U. of Maryland convened Common Ground Summit involving agriculture and marine scientists. (Boesch)
- There are a variety of ways to deal with nonpoint pollution: restoration; better education of homeowners. To protect what is there: buffers, better site design principles for development, etc. (Max)
- Adopt policies that encourage diversification of agriculture landscape:
  1) Short term: add new crops to corn and soybean rotation, especially perennial crops like alfalfa and grass;

2) Move away from concentration of livestock in large confinement facilities back into smaller diversified farms;
3) Long term: need to completely reshape agriculture focus away from grain to wider diversity of food and fiber, including fruits and vegetables. Will need more incentives, not just subsides for commodity crops. (Heathcote)

- Improve farm management including applying fertilizer at right time in right amount:
  1) All farms should be required to develop nutrient management plans with nitrogen and phosphorous budgets for inputs and outputs, and accounting of all nutrient losses;
  2) Provide incentives for demonstrated efficiency in nutrient use through record keeping and monitoring of air and water. (Heathcote)
- Must put back natural wetland and riparian filters to reduce nitrogen pollution. (Heathcote)
- Need to move forward with funding and implementation of Hypoxia Action Plan agreed upon in 2000. (Heathcote)
- Incentive-based programs to take land out of production are needed. Need to educate farmers that they don't necessarily need to risk crops if they make small adjustments in nitrogen use. (Rabalais)
- Farm runoff (vegetable and livestock) top priority for pollution issues. (Safina)
- Recommend additional sediment contamination research to document mercury and other heavy metals occurrences around oil and gas platforms. (Kohl)
- Reduce nonpoint pollution by implementing strong nutrient standards, coupled with market-based incentives for compliance (i.e., small-scale nutrient stripping wastewater treatment technologies). (Hopkins)
- Reduce the polluted runoff that enters coastal waters from streets, agricultural lands, construction sites, and other sources. Enhance the efforts to control pollution from sewage treatment plants, stormwater systems, and industrial plants. (Danson)
- Groundwater protection:
  1) Homes in coastal areas should be connected to central sewer system;
  2) Onsite sewage systems (septic systems) don't work well in karst or high water table areas;
  3) Where onsite systems must be used, advanced secondary levels of treatment are preferred to aerobic units;
  4) Agriculture must develop and use best management practices to reduce fertilizer usage, animal waste from chicken houses and concentrated animal feedlots. (Chanton)
- Reduce the impact of groundwater on coastal waters:
  1) Increase setbacks of septic systems from shoreline to 50m (from 23m);
  2) Raise septic system drainfields to 1m above water table; grandfathered systems should be upgraded. (Chanton)
- Marine Debris:
  1) Encourage FAO and IMO to work together to address fishing debris;
  2) Assist in bringing MARPOL special areas into force;
  3) Implement Wider Caribbean Initiative on solid waste;
  4) Funding for net removal, monitoring, education, prevention, mitigation;
  5) Revive MERP or similar program.
  6) Increase agency involvement;
  7) Establish interagency coordinating committee. (Schwartz)
- Reduce plastic and other marine debris. (Hopkins)

- Oil Spills:
  1) Should urge the Federal government to provide matching funds to support a dedicated rescue tug at Neah Bay.
  2) Coast Guard and DOJ should provide additional resources to address the intentional and illegal dumping of oil. [discussion provided]
  3) Recent U.S. Supreme Court decision has made it critical that the Federal government delegate appropriate inspection authority to states that have well-funded and effective oil spill prevention and response programs. [discussion provided] (Shultz)
- Enforce the Clean Water Act: agriculture and urban nonpoint; Wastewater treatment 301 (h) waivers are a problem [discussion provided] (Hayes)
- Abolish 301 (h) waivers from CWA. (Hayes)
- Amend the Clean Water Act to remove the 301(h) waiver program. (Evans, C.)
- Congress and the President should commit to the Clean Water Act's primary goal of ending the discharge of pollutants in fishable and swimmable waters:
  1) Need adequate funding for enforcement and effective oversight by EPA.
  2) Phase out "mixing zones".
  3) Require that urban run-off meet water quality standards and support monitoring and enforcement.
  4) Enforce the law with meaningful penalties that spur compliance, and permit fees that reflect the cost of effective permit programs.
  5) The "fund" in Superfund must be reauthorized. (Fletcher)
- Catastrophic oil spills need to be prevented: need Federal funding for a tug at Neah Bay. (Fletcher)
- Many of the impacts to our oceans come from pollutants washing off the land. The Commission should recommend that sections of the Clean Water Act that deal with non-point source pollution be significantly strengthened. (Revell)
- Support legislation that controls, monitors, and enforces the regulation of sewage off of cruise ships, which are simply floating cities. (Ayers)
- Give agricultural interests in eastern Washington an opportunity to be heard. Too often, ocean policy ignores extreme upland landowners. (Brautigan)
- Congress should provide financial assistance for state and local governments implementing the Clean Water Act. [details provided] (Shultz)
- Federal and state governments must fully implement the provisions of the Clean Water Act and embark on a comprehensive and accelerated effort to clean up impaired coastal waters; U.S. EPA should expeditiously complete "aquatic animal production" effluent guidelines; U.S. Coast Guard programs must be upgraded and expanded; international mechanisms to improve coordination and management should be expanded. (Shelly)
- Federal resources need to be made available to deal with the shortage of wastewater disposal infrastructure in coastal areas that have experienced rapid population growth in recent times, since localities lack the financial resources to address this problem. (Dow)
- One of the best ways to study EDC concentrations in the seas is to analyze the fats of whales—especially predators like sperm whales. Bearing in mind that the U.S. government forbids the sale of fish containing more than two parts per million of PCBs, and that anything with more than 50 parts per million is classified as a toxic waste, killer whales have been found with 400 parts per million of PCBs. [discussion and more examples provided]. (Payne)
- The U.S. must address the threat to the ocean environment posed by the aging population of shipwrecks located off its coasts. (Witte)

- Congress and the Administration should provide the U.S. Coast Guard with both the mandate and the financial support that it will need to address and eliminate the threat of wreck related oil pollution. (Witte)
- Set or consider having the Federal government set national standards for the release of wastewater from yachts and to apply those standards rather than just a straight no-discharge zone. (Higginson)
- Minimize pollution and contaminants. (Clarke)
- Remove marine debris. (Clarke)
- The U.S. Senate should immediately ratify the POPs treaty (Jefford's Bill) for the twelve listed POPs and ensure an efficient, effective process for adding new chemicals to the treaty. (Ayers)
- The Clean Water Act should be amended to prohibit POPs and persistent bioaccumulative toxins in mixing zones. (Ayers)
- Continue to improve cooperation among trustees and responsible parties involved in spill planning and response. (Keeney)
- Streamline the claims process through the National Pollution Funds Center. (Keeney)
- Institutionalize state Natural Resource Damage Assessment (NRDA) programs and forge stronger partnerships with other trustees; improve efforts to transfer NOAA's expertise to other natural resource trustees. (Keeney)
- Support advanced research and development on the increasingly complex fate and effects of multiple contaminants and the efforts to restore the affected resources. (Keeney)
- Support a more institutionalized regional approach to risk reduction and prevention that focuses on partnerships among industry, government, and communities to identify and respond to specific threats to marine safety – and the resources needed to respond to those threats. (Keeney)
- Establish an expanded role for NOAA in marine transportation system improvements that would better utilize its expertise on waterways management and port development activities in collaboration with the Coast Guard and the Army Corps of Engineers, and regionally and locally with state and community agencies and industry. (Keeney)
- Place new emphasis on training and preparedness to address deficiencies and the new challenges we face from ageing infrastructure, increased vessel traffic, and threats of terrorist attack on vulnerable energy facilities. (Keeney)
- Institutionalize an on-going research and development program within an oil spill research institute, including continued research and development on the fate and effects of multiple contaminants on the restoration of natural resources. (Keeney)
- Support efforts to develop faster and more efficient ways to assess injuries and for planning and implementing restoration. (Keeney)
- Expand incentives for industry, agencies, and other partners to encourage more cooperative approaches to assessing damage and implementing restoration. (Keeney)
- Ensure that the level of funding in the Oil Spill Liability Trust Fund is sufficient to respond effectively to spills of national significance and to allow the fund to be used to support prevention and preparedness activities. (Keeney)
- Recommend national legislation to reduce and regulate all cruise ship discharges to improve water quality, protect public health and safeguard sensitive marine ecosystems. (Balliet)
- Urge Commission to require mandatory reporting and improved monitoring inspection. (Balliet)

- Urge the Commission to recommend legislation to reduce and regulate all cruise ship discharges, to implement national affluent standards for cruise ships and remove regulatory exemptions on gray water and ballast water. (Balliet)
- Urge that the Justice Department should seek more aggressive penalties by cruise ship companies to deter future criminal conduct and aggressively pursue enforcement cases against foreign flag vessels. (Balliet)
- Urge the Coast Guard to increase enforcement, ideally with an increase in Federal funding, implement surprise inspections, expand the scope and frequency of inspection and utilize onboard observers. Aggressively pursue enforcement cases against these foreign flag vessels. (Balliet)
- Request help from Congress for national legislation. (Balliet)
- We need to be proactive and establish a strategy upon which laws and policies meet future risks and not just respond to past events. Put another way, we need to instill "risk-based decision making" as the process by which to examine emerging sources and trends that could contribute to oil and chemical pollution in U.S. waters over the next 10 years or longer. [Further description provided.] (Utley)
- Mandate system redundancy on all new oil tankers in U.S. waters, by amending OPA '90 to require redundant steering and propulsion systems and bow thrusters, in addition to the existing double-hull requirements. [Further description provided.] (Steiner)
- Close the loophole on toxic oil and gas dumping. (Shavelson)
- Urge Commission to help find creative ways to direct our managing Federal agencies involved with the Arctic Ocean activities to deal with the failings of responsible parties in spill response. Such creative mechanism may include moratoriums of offshore production or mitigation impact funds available to the local people. (Snyder)
- I would suggest for your consideration the growing concern over the bacteriological quality of Great Lakes beaches. Illinois, as in other Great Lakes states, has seen an increase in the number of days that our public beaches have had to close because they did not meet minimum standards. (Vonnahme)
- Chemical Pollution:
  1) Full implementation of best land use management practices in all watersheds to reduce nonpoint source chemical and nutrient pollution and minimize erosion;
  2) Sustained and increased efforts to minimize point source and air and water pollution of the Great Lakes basin and the Nation, by reviewing the protectiveness of water quality standards and revising those standards to achieve full protectiveness of aquatic and terrestrial species;
  3) Increased effort to clean up contaminated sediments in Great Lakes bays, harbors, and estuaries, especially at the 43 most highly degraded areas in the Great Lakes Basin which have been designated by the International Joint Commission as Areas of Concern, and at Superfund sites and other contaminated sites on the shoreline and in the Basin; and
  4) Closer and more timely coordination and cooperation among the various natural resource management and cleanup agencies to identify sources and effects of pollution, and achieve relevant and effective cleanups and environmental restorations. (Hartwig)
- Current law needs to be strengthened to better control nonpoint pollution: EPA should enforce the existing TMDL regulations under the Clean Water Act so that governments and the public know where the pollution is coming from, how much there is, and what limits are needed to protect water quality standards; EPA should require states to develop ambient water quality standards for nutrients in order to better control the sources of nutrient pollution, assess compliance and measure progress; NOAA and EPA should target funding to those states that develop and implement coastal nonpoint pollution control programs to meet federal standards;

- The Agriculture Department should target funding under the 2002 Farm bill (in particular, the Environmental Quality Incentives Program, EQIP) 1) to reward states that are performing well in controlling nutrient runoff as well as other pollutants, and 2) to encourage projects, such as implementation of BMPs on cropland and animal feedlots, that have the greatest water quality benefits, such as reducing fertilizer runoff; and EPA and the Corps should abandon any efforts to change the existing definition of "waters of the United States" so as not to limit protections for wetlands. (Chasis)
- Recommend the following elements be incorporated into a much enhanced national policy to control nonpoint sources of pollution: Utilization of best management practices (BMPs) to control/reduce polluted runoff should be required rather than voluntary (as is too often the case now); EPA should set baseline standards for BMPs, as it has done with effluent guidelines for point sources; significant federal funding should go to implementation of clean-up programs for nonpoint pollution; and wetlands, which are an important filter for polluted runoff, need to be protected and restored. (Chasis)
- Current law needs to be implemented more effectively; Sections 303, 319, 402(p) and 404 of the Clean Water Act and Section 6217 of the Coastal Zone Management Act. (Chasis)
- Congress should take the following specific steps to implement this national policy: Increase funding under the State Revolving Fund, section 319 of the Clean Water Act and Section 6217 of the Coastal Zone Management Act for implementation of nonpoint pollution control programs; State Revolving Loan Fund eligibility should be explicitly expanded to put urban runoff projects on a par with traditional sewage treatment plants; make polluted runoff control programs enforceable; link implementation of best management practices and state nonpoint control programs with access to federal funds in a meaningful way; amend Section 6217 to provide meaningful sanctions and disincentives for states that do not develop or implement approved coastal nonpoint programs; amend Section 303 to strengthen the mandate for control of nonpoint pollution as part of state implementation of TMDLs; amend Section 319 of the Clean Water Act to require states to implement enforceable management measures to address nonpoint pollution sources, including for upstream sources that contribute to downstream coastal water quality impairments; close loopholes in the wetlands provisions of the CWA to clarify coverage of so-called "isolated" wetlands and reform the Army Corps's oversight of that program to really achieve "no net loss" or transfer the whole program to EPA; require that as a condition of receipt of crop subsidies and other federal farm aid farmers implement BMPs that will reduce runoff of nitrogen and other nutrients. (Chasis)
- I believe the solution is written whole farm plans. These plans must be based on Best Management Practices that work for the soils and weather conditions expected where he farms. (Bardole)
- The federal government through CRP, WRP, and EQIP is providing large sources of money to install and maintain good practices. This is very positive and I would not change these programs. (Bardole)
- The federal government must adequately fund the USDA so the Farm Service Agency and Natural Resources & Conservation Service can have the staff they need to implement these programs and enforce conservation compliance. (Bardole)
- Broadly applicable approaches for addressing non-point source pollution include: accessible data, information, and expertise; expand Federal leadership in the setting and obtaining of nationwide goals; expand monitoring capabilities; conduct periodic comprehensive assessments of coastal environmental quality; develop a susceptibility classification scheme; and, expand and target atmospheric research. (Walker)

- I recommend that the conservation provisions of the 2002 farm bill be adequately funded and that the federal government, specifically the NRCS, be urged to apply these programs in targeted areas of the upper Midwest that would be most likely to reduce nitrogen output. These programs, and allied state federal and university rural development efforts should use the working landscapes concept as they are developed and initiated. (Keeney)
- We are strongly advocating the establishment of a quantitative Ballast Water Treatment performance standard; protocols for testing, verifying and reporting on BWT technologies; and a program to help promote shipboard testing and operation of promising BWT technologies. (Collins)
- There needs to be a body for enforcement of ballast water controls on ships in Great Lakes. (Jimenez)
- We need to strengthen the Clean Water Act and try to deal with the non-point sources of pollution. (Panetta)
- Ocean Water Quality Protection—five recommendations presented. (Eichenberg)
- Cruise Ship Pollution—four recommendations presented. (Eichenberg)
- Locate and identify contaminated sediments: A nation-wide ecosystem-based approach should be adopted that monitors sediments that threaten marine life. Levels of contaminates that are causing adverse impacts should proactively trigger regulatory and remediation action. A system for identifying and assessing contaminant levels found in biota should also be implemented. (Zipf)
- Reduce contaminated sediments in the ecological system: EPA should analyze its national contaminated sediment site survey, and the national listing of fish advisories and bans, to identify contaminated sediment sites that require priority removal or clean-up/remediation as a way to eliminate fish advisories or bans. (Zipf)
- Remediate areas and sediments that are harmful to marine life: EPA could develop a Memorandum of Agreement with the Corps, or the EPA could develop guidance, that would place the use of environmentally sound decontamination, treatment, remediation, and reuse technologies as the preferred approach to managing contaminated sediments. EPA, through its ability to review dredging permits and through its ability to establish remediation standards, could create a management hierarchy that would place the remediation, reuse, treatment and decontamination approaches at the top. (Zipf)
- Devise funding strategies to support the identification, reduction, and remediation of contaminated sediments: Amend the Water Resources Development Act to increase the Federal portion of the project cost-share if decontamination technologies or treatment technologies are proposed as part of the project's operations. (Zipf)
- Protect existing methods for addressing contaminated sediments from weakening changes. (Zipf)
- Recommendations are provided. (Allen)
- Recommendations are provided. (Rufe)
- Marine and estuarine pollution recommendations (three specific recommendations) (CSO)

TOPIC: *POLLUTION/WATER QUALITY*

KEY ISSUE: *Monitoring*

ISSUES RAISED

- Concern is how we monitor coastal waters; regional monitoring programs have not been adopted nationally. (Gold)
- Concerned about the longevity of the monitoring systems; has experienced a 25 percent cut in on-going monitoring. (Newton)
- Much of the Corps monitoring is contracted through the USGS and NOAA, etc. (Griffin)
- Discussion of background and current issues for beach water quality. (Rufe)

PRESENTER RECOMMENDATIONS

- Need standardized information, especially beach monitoring. (Gold)
- Establish national system for beach water quality; consistent standards, monitoring, and notification procedures. (Nichols)
- Oil in the Sea III recommends that federal agencies work to develop and implement a system for monitoring input of petroleum to the marine environment from land-based sources via rivers and storm- and wastewater facilities. (Walker)
- Clean Coastal Waters recommended that USGS monitoring should be expanded with the objective of assessing nutrient inputs to estuaries and monitoring how these change over time. (Walker)
- Monitoring efforts must move beyond fecal coliform counts and dissolved oxygen or simple “oil and grease” measurements to routinely and consistently monitor for dissolved nitrogen and phosphorus, TPH, PAH, and other known compounds of concern. (Walker)
- Beach Protection—three recommendations presented. (Eichenberg)
- Recommendations presented. (Rufe)

TOPIC: *POLLUTION/WATER QUALITY*

KEY ISSUE: *Land-Sea-Air Interface*

ISSUES RAISED

- Mission of NIEHS: develop science base to prevent contribution of the environment to human illness or disease. How massive quantities of toxic agents polluting environment contribute to diseases and disorders a matter of concern. Ocean influences on human health range from threats to public health associated with climatic events such as El Nino to benefits from marine bioprospecting for new drugs. Harmful algal blooms most notorious marine hazard to man and animal; toxic materials produced. [areas of future research provided]. Vector and water-borne diseases still a leading cause of death among children from all nations; many can be conveyed by sea water, plants or animals in sea water. (Dearry)
- Every drop of Rio Grande and Rio Colorado is allocated; occasionally these rivers never get to the sea, when they do they dump wastes, toxins, metals, etc., into oceans. Reasons:
  1) No one takes responsibility for oceans or monitors border waters;
  2) What reaches oceans far exceed U.S. standards because infrastructure of border region inadequate;
  3) Governance focused on other issues; IBWC, NAFTA-CEC, etc.;
  4) Requires multi-disciplinary expertise; multi-media input on impact of pollutants, etc. (Van Schoik)
- Areas of low oxygen (hypoxia) and degraded water quality from excess nutrients delivered to estuaries and coastal areas are of concern throughout U.S. Factors leading to degraded waters begin elsewhere in watersheds and airsheds that deliver nutrients from point, and mostly non-point sources. Oceans, coastal seas, and estuaries are intimately linked to the land and air that border them and deliver water, sediments, nutrients and pollutants. (Rabalais)
- Healthy oceans mean healthy fish populations, healthy fisheries, healthy wildlife that feed on fish, healthy tourism that watches that wildlife, healthy sportfishing industry that thrives on those healthy fisheries—a healthy ecosystem for a healthy America. (McCaffrey)
- Acknowledge that the oceans are dependent on the beaches and estuaries—the marine environment does not stop at the water's edge. (Revell)
- There are intimate biological connections between human activities far inland and the health of our nearshore oceans, and these impacts can and do cumulatively affect ocean health far out to sea, and eventually worldwide. (Spain)
- Global warming is the issue overriding on all other issues dealing with the world's oceans. Unless this nation leads the world in a realistic, progressive, and common sense response to global warming, all of the issues that the industries are dealing with will mean nothing because the need for science on global warming is overwhelming. (Hinsley)
- The White House issued a report last week under the White House auspices, which found global warming to be significantly caused by human activity and that it will have very significant impacts on America continentally. (Hinsley)
- The Executive branch of the U.S. government has decided that the response will be one of adaptation rather than confrontation. Your scientists will tell you that a policy of adaptation is a policy of failure when it comes to the management of the ocean's resources, and that this has the capacity to dramatically change the role of the oceans. (Hinsley)
- Estuaries and inland waters are strongly linked to the ocean. Climate variation is intimately entwined. Estuaries have a "triple whammy" in terms of their influence from climate:1) influence from local weather; 2) influence from the ocean; 3) influence from the watershed. (Newton)

- Limnology is the study of inland waters. This would not appear to be appropriate to the subject of ocean policy but it is. (Jumars)
- Water exchanges with the ocean through groundwater on land. It exchanges through rivers. Ammonia comes into the coastal ocean from things like hog feed lots and fixed nitrogen comes through the atmosphere from rain deposition of ammonia. There are many examples of connections. (Jumars)
- Harmful algal blooms (HABs) are an expanding problem in the coastal zone. The number of HABs and the economic costs of their impacts have increased considerably in the past 30 years. (Anderson)
- HABs impact public health, fisheries, aquaculture, tourism, and coastal aesthetics. More specifically, HAB impacts include various types of shellfish and fish poisonings, brown tides and other noxious booms, fish and other faunal mortalities, pfiesteria, macroalgal blooms, and freshwater toxins. (Anderson)
- There are a variety of potential reasons for the increasing incidence of HABs, including species dispersal or introduction via natural currents and storms; better scientific investigation and reporting; increased aquaculture; dispersal by human activities; and pollution (especially nutrient enrichment). [Further description provided.] (Anderson)
- States are monitoring HABs effectively and fatalities or illnesses are rare, however state agencies are struggling with the increasing frequency of HABs in an era of tighter budgets. (Anderson)
- A coordinated National HAB Program has been formulated and partially implemented. (Anderson)
- The process to develop the algal bloom research agenda included all stakeholders—scientists as well as industry, managers from various states, shellfish industry people, etc. A report was produced and distributed, but nothing much came of it. It was at that time Congress came in and told a number of agencies they should cooperate on marine issues. An interagency task force meeting was held where the program managers got together and found common areas within our program that they could support. Working groups were held to put priorities under each topic, but this resulted in too many priorities. People were asked to focus on four or five priority topics rather than on individual priorities. The result was to have cross-section partners who sold the idea together. (Anderson)
- Two broad issues that have had dramatic ecosystem-wide effects in Narragansett Bay and other estuaries are nutrient pollution and climate change:
  1) Nitrogen that causes massive algae blooms has increased in the Bay by five-fold since records have been kept in the area. Additionally, nitrogen levels are expected to continue to increase exponentially.
  2) Regarding climate change, over the past two decades, the average spring water temperature of Narragansett Bay has increased by about 3.4 degrees Fahrenheit. Though it may not seem like much, small temperature changes can have big effects on what can live in the water. For example because of the warm winter and excess nitrogen non-stinging comb jellyfish were found in the thousands. They are able to grow unchecked and their population has exploded due to the increased water temperature and an abundance of the plankton to eat. (Spalding)
- There is a phenomenon that exists on the coast of Alaska known as the Alaska coastal currant. It is a coastal currant that hugs the coast of Alaska and has its origins with the Columbia River down in Washington state and is comprised of all the fresh water inlets from British Columbia up through the coast. This fresh water lens lies on top of the ocean and hugs the coast and it's from 100 to 500 feet deep. It travels north at two to two and a half knots. The cruise ships utilize this in order to gain two and a half knots and save on oil, etc. Yet this coastal river has a lower salinity than the surrounding oceans and therefore has the capacity for carrying pollutants and materials that are dumped into it without significant dilution. These are then deposited on the shores. (Sensmeier)

- Global change is a concern for Great Lakes. (Vonnahme)
- NRCS has the lead for the US Government in developing new guidelines for reporting agriculture greenhouse gas offsets. The President has directed USDA to identify new targeted incentives for sequestration. As a result, we will be looking for opportunities as we implement new and expanded conservation programs to further greenhouse gas sequestration. (Knight)
- Interactions and feedbacks among freshwater flow, water quality and coastal ecosystem dynamics must be better understood in order to predict the response of these systems to future changes in landward forcing functions. (Jumars)

PRESENTER RECOMMENDATIONS

- Apply principles of conservation design and begin all ocean protection measures well upstream on land. (Van Schoik)
- Transboundary environmental impacts should be assessed, minimized and mitigated. (Van Schoik)
- Begin reversing the process of climate change. [discussion provided] (Hayes)
- Oceans begin in the watersheds. Ocean protection policies must take this fact into account. The health of the ocean resources is directly related to human activities in our watersheds. (Spain)
- Any comprehensive ocean protection policy must address the continuing influx of industrial and agricultural chemicals, in vast amounts, that wash into our estuaries and contaminate our nearshore environments and ocean ecosystems, threatening the nation's fisheries and human food chains. (Spain)
- There are airshed issues that need to be addressed that are beyond the scope of local/state managers and must be addressed at a national level. Atmospheric nitrogen deposition is only one example, but one should also consider mercury deposition which has lead to fish health advisories for fish consumption in our local freshwater ponds. Acid rain has led to low pH levels in freshwater ponds. (Dow)
- Make recommendations on the land-use impacts on the ocean and marine habitat. (Nelson)
- The Commission should take the connection between the ocean and human health into consideration because it is beginning to be understood that epidemiology is really but a subset of ecology. We're finding that climate does play a major role in many infectious diseases, and that the oceans play a role in determining climate. We've found that something as simple as sea surface temperature actually controls the cholera epidemics that occur twice a year in massive amounts on Bangladesh. Algal toxins create a serious problem—60,000 individuals in the U.S. alone. There is a lot to do and the Commission should take this all into account. (Colwell)
- Sustain and enhance support for the National HAB Program. (Anderson)
- Implement programs on prevention, control, and mitigation, and on oceans and human health. (Anderson)
- Encourage interagency partnerships. [Further description provided.] (Anderson)
- Support methods and instrument development for land- and mooring-based cell and toxin detection and bloom forecasting. [Further description provided.] (Anderson)
- Incorporate HAB monitoring into a U.S. Ocean Observing System. (Anderson)
- Support long-term water quality and HAB monitoring in coastal waters. (Anderson)
- Implement agriculture and land use policies that reduce point and nonpoint source loadings to coastal waters. (Anderson)

- Enact legislation to reduce U.S. carbon emissions to mitigate effects of global warming. [Further description provided.] (Steiner)
- A cross-agency initiative modeled after the Climate Change research Initiative, or a single agency grant competition for studying these interactions, would be the first step in fostering collaboration between terrestrial, freshwater and marine scientists. (Jumars)
- More emphasis must be placed on linking land-use and the management of aquatic systems. Future policy must integrate information and activities from watershed to the oceans. (Allen)

TOPIC: *GOVERNANCE*

KEY ISSUE: *Scope of Ocean Governance Authorities*

ISSUES RAISED

- California Marine Life Management Act is dramatic shift from traditional single species to measures that account for ecological interaction; has led to impressive compilation of science on near-shore ecosystems and creative new ideas how to manage these resources. (Geever)
- Working on voluntary achievement of nutrient sediment allocations driven by fear of regulatory hammer. (Max)
- Without mandates for programs like Gulf of Mexico Program it is much harder to persuade federal counterparts to move through consensus. (Palmer)
- NOAA reprogramming authority and coordination of regulatory measures to prevent, rather than allow activities. (Bodman)
- We have good laws but they are not being enforced. (Perfetto)
- LOS codifies customary international law and will enhance U.S. national security by preserving freedom of navigation and overflight. (Carmichael) (Hirshon)
- The Federal statutory framework is having a profound effect on individuals and our region on a daily basis. (Lashever)
- It is important, firstly, to have a clear understanding of what the particular statute requires. Secondly, the government has the responsibility to make it very clear that they are the final maker, and they believe certain kinds of inputs are required to make a decision. But, at the same time, open space for the kinds of processes that were described to help them formulate the best way to achieve that end. If we say you have six months, we give you flexibility of how you're going to go out and try to do it. If you don't do it, we're going to make a decision. (Ehrmann)
- Current ocean policies and fisheries management laws are unable to grapple with the inland problems. For the most part, fisheries management agencies do not have the legal jurisdiction over the inland issues, and thus do not have control over any portion of the salmonid life cycle other than when actually in the oceans. (Spain)
- The ACOE's expertise and ability are not being used to best effect because the Corps' policies, processes, and the laws under which it operates remain historic. (Stahl)
- The two existing laws regulating dredged material disposal create inconsistencies and do not adequately accommodate implementation of new technical advances. [Further description provided.] (Koning)
- It is extremely appropriate to have the authority of the Corps both as a regulatory authority and the civil works planning authority. [discussion provided] (Koning)
- For the most part, the consultation process works well, and only a few of the more than 2000 project proposals each year becomes difficult or controversial. However, where there are differences of technical opinion, there is no impartial arbiter and NOAA and other resource agencies are considered merely as advisors to the agencies having permitting authority. (Kurkul)
- The U.S. Fish and Wildlife Service is significantly involved in many coastal issues—on fish, wildlife and habitat issues affecting our nation's coastal resources. The hallmark of all our efforts is partnerships that are inclusive, interactive, adaptable and based upon sound science. The second hallmark of our efforts is to be accountable for our actions and do our best to meet short-term and long-term fish and wildlife conservation goals and objectives. (Geiger)

- Until programs are developed to fill these "regulatory gaps" no one is served, including in particular Federal, state, regional and local regulators. "Regulatory gap" describes among other things the situations where there is nothing that says to the regulator, "you may not do it." (Gill-Austern)
- We've talked quite a bit about whether NEPA applies beyond three miles. Of course one of the tough parts of a NEPA analysis is looking at the cumulative effects of other activities upon the particular activity that you're trying to analyze. A lot of the fisheries that take place outside of three miles, or even outside of 12 miles, are species of fish that depend on environments inside of three miles. So we're not sure if we don't have to look at NEPA outside of three miles because of the cumulative aspects of the analysis that it's going to give us a change in requirements. (Balsiger)
- The Coast Guard's primary role in fisheries management is to enforce regulations, and to assist with dockside boarding for monitoring catch offloads. (Underwood)
- The Coast Guard in Alaska has the authority against cruise ships in gray water, at this point. Also, throughout the U.S. internationally against any oil discharge. But we don't have gray water authority in the lower 48, or in other locations. The authority means that the Coast Guard could prosecute within he U.S. (Underwood)
- The nature of the cruise industry is not the same in Alaska as it is everywhere else. In Alaska the cruise ships come in and they're in inside waters for the majority of the entire cruise. That's not the case when the cruise stops in Los Angeles, San Francisco, Seattle, Miami, or Fort Lauderdale. In those ports they go in, they load their passengers, and they go back out to sea—to the high seas, and so they don't have the same restrictions on their capabilities in the international waters as they do here. (Underwood)
- Why has only Alaska been able to get both Federal and state legislation in place? Perhaps it is because we're Alaskans and we're rather industrious and always out there on the cutting edge—it's the last frontier. There is a lot of pride in that legislation and it is a good example for the rest of the U.S. (Balliet)
- The Clean Water Act of 1972 formally designated the Coast Guard as the lead agency in preventing and responding to oil and chemical spills in the coastal and offshore waters of the U.S. (Utley)
- Despite the many programs and regulations that affect coastal and marine resources, areas and activities, there are few, if any, basic principles or processes for establishing authority and accountability in the management of marine resources and the uses of marine space. The United States manages its ocean resources on a sector-by-sector regulatory basis. (Eichbaum)
- River Basin Commission concept good idea but they were dominated by Federal partners and the states were overwhelmed in votes. (Kudrna)
- IJC is advisory only. (Chandler)
- We have responded and continue to respond to the natural resource conservation needs and goals of the local communities and, most importantly the objectives and needs of individual farmers, ranchers, and other private landowners. Collectively, however, our attempts to think globally have been limited in scope by political borders, watershed boundaries, and a general lack of understanding by others of our technical capabilities. (Knight)
- In the coming months I am going to ask our experts responsible for science and technical tools to provide me with recommendations on how we build upon existing partnerships. One specific action that I will be initiating is to jointly develop, with the Administrators of both the National Marine Fisheries Service and the National Oceanic and Atmospheric Administration, a Memorandum of Understanding that will reflect new directions in baseline information gathering on coastal and estuary resources. (Knight)

- NOAA was seen primarily as a service agency. Our major regulatory function came some years after NOAA's formation with the passage of the Magnuson fisheries act. I was prepared to tackle some major fisheries reorganization, to fence off so to speak, that part of the agency dedicated to fisheries regulation. (Knauss)
- The Civil Works Program of the Corps intersects National Ocean Policy in several key areas—navigation and shore protection. (Griffin)
- Currently a host of laws and Presidential Executive Orders constitute national ocean policy. (Radonski)

PRESENTER RECOMMENDATIONS

- Ensure recommendations are feasible to implement, and use expertise within agencies for review. (Loy)
- Do not put in place regulations you cannot enforce. (Jennings)
- Affirm as necessary the right of the USFWS to manage marine resources within the boundaries of national wildlife refuges. (Raney)
- Support legislation such as H.R. 1310 to reform the U.S. Army Corps of Engineers. (Werny)
- Need to better clarify and eliminate ambiguity in environmental laws, without exempting DOD from compliance. (Willard)
- Enact new legislation such as an Exclusive Economic Zoning Act (EEZA) that would establish a mechanism leading to comprehensive zoning of U.S. 4.4 million square statute mile EEZ as means to increase protection for biological resources while providing major classes of users greater assurance of being able to operate with minimal or no competition from other classes of users. [detailed reasons why this would make a difference, benefits of zoning, and who should do it, are provided] (Norse)
- Revision of ocean governance must include regulatory structure to govern actions of those who use ocean resources with clear lines of authority to make decisions. (Oynes)
- New legal authority needed to govern use of ocean for non-energy facilities associated with deepwater development; support facilities, housing, emergency landing, field hospitals, waste management, etc. (Oynes)
- Ratification of UNCLOS should occur. (Clark) (Fry) (Gutting) (Hirshon) (Loy) (Weldon) (Carmichael) (Van Dyke)
- Reexamine concept of national security; consolidate statutory authorities to reduce bureaucratic inefficiencies. (Underwood)
- Reevaluate national security in context of ocean issues (need to import more fish). (Underwood)
- Streamline and consolidate statutory authorities. (Underwood)
- Pass legislation providing a comprehensive look at ocean policies and strengthening of programs. (Weldon)
- More laws should be passed regulating fishing, offshore oil and gas drilling, building and development on beaches and pollution control. (Rothrock)
- The Commission should pay attention to how our laws direct us to use science; need a thoughtful review of ways that our laws approach the use of science in the regulatory process. (Lashever)
- A comprehensive ocean policy should strengthen existing barriers or provide stronger barriers preventing offshore oil development in any area that may impact regional fisheries. (Spain)

- The ACOE's regulatory and operational functions should be integrated so that both serve the same goals: the nation's natural infrastructure of beaches and wetlands. (Stahl)
- Replace the existing statues regarding dredged material management with a single statute that addresses the regulation of dredged material placement in both inland and ocean waters of the United States. Incorporate flexibility in the evaluation approach and include the ability to incorporate the full range of management techniques and future technical advances. (Koning)
- Additional authorities are needed other than extending that authority to the other 48 states. The Alaska model, with is both modeled on the Murkowski bill, Federal legislation, as well as legislation that the state enacted, be taken out via national legislation to regulate cruise ships in the lower 48 as well. (Balliet)
- The teeth of the Commission's policy recommendations should include jail time for all transgressions and violations of laws pertaining to the oceans. Fines are not enough. Actual removal from operation will ensure that people will respect the law. (Ulery)
- The Great Lakes Commission supports the development of an organic statute that would provide guidance to federal agencies with respect to their roles and responsibilities for freshwater and marine policy. We further believe that the development of a large-scale, consensus-based national ocean plan is needed to guide coordination efforts. (Kudrna)
- The U.S. Commission on Ocean Policy would be well advised to thoroughly investigate and actively participate, as appropriate, in current and prospective international organizations and summits for ocean management. (Kudrna)
- Reauthorize the Coastal Zone Management Act to provide enhanced national ocean and coastal governance based on Federal partnership with the states (includes five specific recommendations). (CSO)

TOPIC: *GOVERNANCE*

KEY ISSUE: *Federal Government's Response to Ocean Policy Issues*

ISSUES RAISED

- Eight major purposes of Oceans Act are not equal; promotion of responsible stewardship provides overarching ethic and constraint within which the other purposes operate. (Raney)
- Need enforceable measures to restore water quality as well as public education; incentives for land use planning; use of innovative and natural solutions; implementation of watershed clean-up plans; and increased funding. (Danson)
- Features of successful partnerships: early joint planning; multi-year funding at specified ratio; commitment to stable multi-year funding; commitment to maintaining agreed upon funding ratios; explicit expected outcomes; roles and responsibilities for each party; each partner treats the others as important constituencies; partners leverage multiple funding sources; joint pursuit of funding, political, and constituent support; responsible party in each organization for maintaining partnership; open access to relevant data and information; respective constituents are well organized. Should be formed at lowest level where work is actually being done. [examples provided] (Davidson)
- Partnerships will be increasingly necessary, not only for intellectual but financial leveraging. (Davidson)
- Need conservation ethic for users, administrators, and managers of resources. (Dodds)
- There is a serious need to ensure ocean and coastal policy decisions are based on sound science. (Fletcher)
- Would like to see government provide some vision and structure but in way that nourishes diversity of programs, people, etc. (Fletcher)
- Partnerships important: look at grants and loans to acquire interests in real property worthy of conservation. State and federal programs needed like CARA. (Stallworth)
- Chief barriers to better stewardship are institutional because of traditional boundary lines and jobs given to agencies. Lack framework that focuses on solutions and stewardship. (Davis)
- USACOE and other federal agencies continue issuing permits at alarming rate even while we talk about land loss. (Armingeon)
- Management and governance of resources in U.S. waters:
  1) Broad look in 1999 report "Sustaining Marine Fisheries";
  2) Recent report "Marine Protected Areas";
  3) Agencies need to work together: 1992 report "Oceanography in the Next Decade, Building New Partnerships" led to NOPP. (Alberts)
- Issues of critical importance to DOD:
  1) Navigational freedom; navigation and overflights;
  2) Stewardship;
  3) Encroachment; restrictions are hampering training. (West)
- Have developed strong bipartisan effort in Congress: - Oceans Caucus. (Farr)
- Natural resources are diminishing; our endless frontier is gone. Next frontier is an intellectual frontier to understand issues the best we can from scientific perspective. (Gilchrest)
- Ocean ethic is absolutely important; fundamental. (Gilchrest)

- Must account for long-term protection of diverse, healthy, and productive marine environment. (Underwood)
- Avoid underestimating presence or scope of emerging environmental threats. (Underwood)
- Seriously engaged members of Congress are bringing oceans to center stage and may help bring diverse "turf" focused committee/subcommittees together on these issues. (Underwood)
- Political parties and Congress closer on oceans agenda than any other environmental agenda. (Weldon)
- Need to get various appropriation and authorization committees to understand it is easier if common unifying effort of oversight. (Weldon)
- Building new partnerships with governmental, commercial, and NGOs will strengthen U.S. leadership in ocean management and stewardship. (Thoroughgood)
- Burden of proof shifts to environmental and scientific communities when information lacks. (Dobrzynski)
- Focus on measuring performance not activities. Set your marker 30 years forward; judge on cargo capacity of ports, health of reefs. (Struhs)
- Need a national ocean policy driven by sound science; education and research are the backbone of the sound science. (Hastings)
- Do something for future generations. (Lane)
- It is difficult to get people to come to the table and do the difficult work that is necessary when they cannot get clear direction from the Federal government. (Smitch)
- There is State agency coordination, which is critical to managing the recovery of fish, but Federal government coordination is also crucial. Working without oversight or direction from the White House would be simply impossible. Working with the ocean issues requires White House coordination. (Smitch)
- One thing that has not been addressed is the need for people to synthesize and apply what we do know about the oceans, what science has taught us. (O'Keefe)
- Governance of ocean resources within U.S. territorial waters historically has been dictated by the practice of "first come, first serve." (Durand)
- Often the Federal officials reviewing new exciting projects lack the regulatory tools and resources to keep pace with industrial progress. (Delahunt)
- An increased number of proposals for offshore projects may come in the future, including proposals (for example) for offshore aquaculture, wave energy, fish processing, casinos, mineral and oil extraction, and power and communications. (Kurkul)
- It's a sad fact that unofficially I sometimes think the agencies themselves want to be sued because they don't have sufficient resources. And once litigation is filed, everybody rushes to put resources in. And if you look at the marine mammal issues right now, sea lions, manatees, right whales, all of them have been accompanied by litigation. It becomes a really ugly circular thing at times. (Young)
- The oceans are a public resource, and they should be treated as such. They should not be privatized and given over for private profit in a private way that is not open or transparent. (Nelson)
- The human being should also be considered along with the whales and the plovers, and everything else.
- Humans should not be considered the enemy. [discussion provided] (Sullivan)
- The health of American's oceans is in peril. [discussion provided]. (Knowles)

- The North Pacific provides a very good example of what leads to the litigation. In 1990 the NMFS recognized that it was out of compliance with the NEPA in not looking at the full environmental impacts of the North Pacific ground fish fisheries. Sometimes the decisions that are made are not well justified by the agency and that's what leads to litigation. Because there are creative lawyers practicing administrative law we find flaws through that—what some people term as process, we think is substance. The way to protect the environment in many instances is to force an agency to go through appropriate hoops and hurdles for transparent decision-making and informed decision-making. Maybe lessons in administrative law would be a good idea for Regional Administrators, for Council Chairs, to see if this is a legitimate structure for decision-making. (Van Tuyn)
- What is going to be required is a thoughtful integration of scientific and security related constraints and issues that the Commission itself, together with help from the Senate and the White House, will have to explain and justify a substantive change in our attention to these things. (Dorman)
- Nearly all of the 17th District's operational assets are multi-mission capable, giving the Coast Guard the ability to quickly transition from one activity to another (whether that be law enforcement, search and rescue, or homeland security). (Underwood)
- Speaker brought a jar of fresh Exxon Valdez oil collected a week ago from the beaches of Prince William Sound, thirteen and one half years after the incident. The jar was brought in to underscore the importance of this Commission to do its job boldly and strongly and do it right. The lack of clean up is what happens when government and industry don't operate together effectively. (Steiner)
- The choices the Commission makes have the power to destroy our world. It is not a legal issue, but a moral issue. (Hykes-Steere)
- I support the Commission's list of 10 elements that should form the basis of a robust national ocean policy. (Vonnahme)
- A new threat to the Great Lakes is the efforts of the Army Corps of Engineers to advance unsustainable expansion of the Great Lakes navigation system. The proposal calls for deepening navigation channels, expanding locks and enlarging harbor capacity throughout the system from the St. Lawrence Seaway at Montreal to Duluth. It also seeks to revive the earlier failed concept of maintaining year round navigation by engineering means. (Botts)
- Concerned that the education group of the Commission will overlook, out of convenience or politics, one major ocean threat—military encroachment in the name of national security. After small whales were beached and died on Cape Cod beach this past August, the most frequently asked question was whether or not the beachings had occurred because of low-frequency sonar use on the coast of New England. (Amundson)
- We can do all that we are being asked to do in the future—and we will do it all with the same operational excellence for which we are now known—if we are provided the appropriate means to do it. Consider the Coast Guard's Rescue 21 project and our efforts to address long-standing shortfalls in our coastal Search and Rescue capability. Rescue 21 will replace the National Distress System, our aging and hard-to-maintain maritime 9-1-1 rescue communications system which also doubles as our coastal command and control system. Collins)
- The Coast Guard also is rebuilding the numerical strength, experience levels and professionalism in our coastal small-boat stations. The material condition of our small-boats is also being improved, along with their equipment allowances. Improving our Maritime Domain Awareness (MDA) is a high priority Coast Guard Homeland Security goal. Enhancing our MDA capability will also improve performance in fisheries, drug and migrant enforcement, search and rescue, marine safety and environmental protection. (Collins)
- EPA is unwilling to use best available science in their deliberations. EPAs proposal to establish a no-discharge zone for Florida Keys would prohibit the use of available technology for treating waste on recreational and other vessels. (Husick)

- Watershed management plans will continue to emphasize assistance to the agriculture sector. (Connaughton)
- The Stratton Commission was in an enviable position compared to the one in which the Watkins Commission finds itself today. In the late 60's, we were faced with similar problems, but legislation addressing most of them had not been enacted. (White)
- Integral to almost all inland and coastal navigation and flood damage reduction projects is the consideration and management of sediment. We have initiated a new concept "Regional Sediment Management" which is an approach for managing sediments from projects incorporating principles of integrated watershed resources management. (Griffin)
- New Coastal Initiatives include participating with other Federal agencies to implement the Estuary Habitat Restoration Act - a nationwide program to restore a million acres of estuary habitat by the year 2010, and Corps and the State of Louisiana working together to restore and protect that State's shrinking coastal wetlands, and stem an ongoing loss of up to 20,000 acres per year. These initiatives are part of what we hope will be a new direction for the Corps of Engineers – one that gets us away from projects with a single focus, designed for a specific locality, and begin to look at watersheds as integrated systems, where what we and others do in one place has numerous consequences elsewhere. (Griffin)
- In the summer and fall of 2000, the Corps of Engineers held a series of 16 "listening sessions" around the Nation to hear what Americans thought were the major water challenges for the 21st Century. One of the frequently raised topics was the need to address water challenges from a watershed view, highlighting collaboration and integration. (Griffin)
- The Corps is working to become more a "virtual team." We want to be more vertically aligned to produce a product. (Griffin)
- Unfair to describe the U.S. ocean research effort as being disorganized and ineffective. (McPhail)
- Input from individuals or organizations representing facets of the marine recreational community has been sparse.
- It is sometimes very difficult to convince Congress that an investment in science is needed. (Turner)
- EPA is unwilling to use best available science in their deliberations. (Husick)
- The Commission should exercise caution in considering broad new ocean governance laws. Although problems such as delays in the CZMA process are well documented, the existing framework of federal law and agency responsibilities is generally adequate and appropriate to protect the marine environment and balance the use of ocean and coastal resources. (Fry)

PRESENTER RECOMMENDATIONS

- Specific needs:
  1) More collaboration among all levels of government and with other countries;
  2) Better use of public/private partnerships to support symbiotic relationship between health of economy and environment. (Murley)
- Consider importance of partnerships as recommendations are developed. (Davidson)
- Support establishing innovative partnerships where resources and assets are brought together to create solutions. (Colom-Agaran)
- Develop partnerships to allow public and private sectors to work together for effective decision making regarding ocean resource management. [example of cruise ship agreement provided] (Murley)

- Involve all stakeholders and partners at the highest levels; Set far-reaching science-based measurable goals. Set bold goals with clear end points and with temporal context; Ensure public support by knowing what people are concerned about. (Max)
- Most critical changes needed at federal level to address major environmental problems in Gulf of Mexico:
  1) Move away from current crisis-oriented management toward decision making that is coordinated among various agencies, is adaptive, and comprehensive;
  2) Identify changes in federal policy that drive coastal habitat destruction (flood insurance, transportation, etc);
  3) Make a commitment of federal resources aimed at addressing threat to Gulf's resources by nitrogen pollution. (Sartou)
- Problems created by flood insurance policies and specific recommendations for change:
  1) Present requirements of national flood insurance program to reduce flooding are not enforced;
  2) Does not require development be directed away from flood-prone areas;
  3) Rates charged by flood insurance program remove development from normal market forces;
  4) Federal government is systematically subsidizing cost of living in risky areas;
  5) Recommendations—long and detailed list of changes is provided. (Sartou)
- Focus on improvements in how we govern under existing laws, as much as new regimes. Fundamental need is to develop and implement clear ocean policy goals. (Talbert)
- Military resources should be used where appropriate for environmental purposes. (Weldon)
- Congress should modify current committee structure to reduce number of committees with overlapping jurisdiction. (Rufe)
- Encourage diversity in management and science personnel; NSF, NOAA, and EPA should develop program for recruiting and developing minority students. (Haddad)
- Would like the Federal government to tell us what they want and we will figure out how to get there. Need to know the ground rules for dealing with an issue, which is even more complicated because it is by definition transboundary and multijurisdictional. (Smitch)
- An ocean ethic is needed that allows us to think globally with our oceans. This ethic needs to parallel the land ethic of the 20th century, an ethic that would transcend walls to think about the value of the oceans in new ways. Should use common sense practices without using up the natural systems that sustain us. (Earle)
- The Commission should look at what it is doing today in terms of the future, in 25 or 100 years from now, and think of how those in the future will regard us at this point in time. Think of the recommendations, the decisions, the influence you have on our nation's policy, on the world's policy with respect to the ocean. Do not hesitate to think big; do not think of what people today will think of you, rather, think of what those in the future will think of you. (Earle)
- Decide what we want as an overall oceans policy; construct clear and concise policy, through E.O. and statute, stipulating which path to take. (Moore)
- A policy is needed to restore the marine ecosystem—an ocean restoration policy. (Fletcher)
- Presidential and Federal agency leadership in Ocean and Coastal stewardship is necessary to bring out the best in citizens for the common good and future generations. (Evans, N)
- Simplify: make Federal grants more accessible, timely, flexible and transferable; and expand existing Federal grant programs. (Ehrmann)
- Support legislation such as H.R. 1310 to reform the Corps of Engineers to better serve all coastal interests. (Evans, C)

- Management decisions regarding our oceans need to be based on sound science, not economics or political will. Science-based decisions, however, are not possible if the science does not exist. (Gaydos)
- Need to cultivate an ocean ethic. The threats to our oceans need to be a part of a societal conversation, not a debate about marine reserves or private property rights. (Revell)
- A bold vision is needed; one that is not hampered by political ties, but one that lays out a course of action for our future and the future of every living organism on our ocean planet. (Revell)
- Prioritize living and renewable resources over non-renewable resources. (Revell)
- Federal support is needed to combat the regional issues of national significance that have not been adequately addressed on the West Coast—species diversity and complexity, exotic species management, human population growth, fish maturation, chemical pollutant treatment and bioaccumulation. (Scranton)
- The Administration's stance to ignore the precautionary principle and have future generations adapt to global warming impacts is unacceptable. (Scranton)
- Consider the health of the oceans whenever industry or military uses are being promoted. The Navy's new planned anti-sub sonar system should not be allowed to be used due to the horrible damage it does to whales and the potential threats to sea life in general. (Wallen)
- The Commission should encourage more scientists to synthesize and apply what is currently known about the science and the policy issues.
- Regional management efforts, such as the regional fisheries management councils, should not be dictated by a "one size fits all" approach. (Durand)
- Seek to not only protect life in the sea but also to advance the well-being of those whose livelihoods depend on the ocean. Seek to protect our national interest as well. (Reilly)
- Closing the gaps between scientific understanding, the formulation and implementation of effective environmental policies, and public understanding requires significant progress on at least three fronts:
  1) Rapid detection and timely predictions (the rates at which environmental data are acquired and processed are not well tuned to the time scales on which decisions need to be made);
  2) Local expressions of large-scale changes (although most of the changes occurring in the coastal ocean are local in scale, they often reflect changes occurring on larger scales in the ocean basins, coastal drainage basins, and airsheds); and
  3) Creating an environmentally literate public. [Further description provided.] (Malone)
- Review and consider all the recommendations that are emerging from the Pew Oceans Commission—an important initiative from the private sector. (Shelley)
- Distrust claims of sustainability. Past resource exploitation has seldom been sustainable. Claims of sustainability in the face of burgeoning populations and development may lead to false complacency. (Young)
- Confront uncertainty. Effective policies are possible under conditions of uncertainty, but they must take uncertainty into account. (Young)
- What is needed is a full-scale coordinated habitat restoration plan at the Federal level, such as the one called for in the Estuary Restoration Act of 2000. This Act calls for the coordination and prioritization of coastal and estuarine habitat restoration efforts nationally. (Spalding)
- Create an environment that is not from a natural standpoint, but from the standpoint of all these people, the environmental, commercial, academic, etc., can come together. The ocean should benefit everyone. (McGowen)

- It is time for America to unequivocally declare a national policy to protect, maintain, and restore the health, integrity, and productivity of our oceans by adopting a National Oceans Policy Act. [discussion provided] (Knowles)
- Congress should announce a new policy aimed at protecting and restoring the health, abundance, diversity, and functioning of marine life, ecosystems, food webs, and habitats. (Van Tuyn)
- The new law should emphasize that the National Environmental Policy Act applies to all Federal action in U.S. waters. (Van Tuyn)
- The law should include provisions to ensure that an open and public process is used prior to final agency action. It should also allow for citizens to sue to enforce provisions of the law. (Van Tuyn)
- We should not be making decisions in trying to avoid litigation. (Van Tuyn)
- The U.S. Congress should ratify: 1) the Stockholm Convention to avert further contamination of the marine environment from persistent organic pollutants; and 2) the Climate Convention to reduce greenhouse emissions and arrest human-induced climate change. (Childers)
- Stop treating the Arctic as a 1-State issue. Alaska's delegation of 3, excellent as they are, should not be asked to shoulder the brunt of the load. (Dorman)
- Alaska and the Arctic should play a significant role in the Commission's deliberations. The Commission should pay some attention to how Alaska deals with policy and Federal R&D management. (Dorman)
- The new Department of the Oceans should be governed by a National Oceans Policy Act, which provides an overarching protective mandate governing human exploitation of the oceans. (Sterne)
- Establish the Pacific Environment Council. Authorize and finance U.S. leadership and participation in the establishment of a new, intergovernmental institution for ocean governance across the Pacific Basin, called the Pacific Environment Council. [Further description provided.] (Steiner)
- Establish the U.S. Marine Fisheries Commission. Authorize and appropriate funds for the establishment of an independent, professional oversight body (similar to the Marine Mammal Commission) to oversee implementation of all Federal fisheries legislation and administrative actions. [Further description provided.] (Steiner)
- Establish the U.S. Seabird Commission. Authorize and appropriate funds for the establishment of an independent oversight body to oversee implementation of all Federal legislation related to seabird management and conservation. [Further description provided.] (Steiner)
- Demand that in the discovery process of this Commission it finds the keystone issues of these problems and create solutions to these fundamental inequities in the current ocean policies. (Ulery)
- At no time should re-issuance of permits, leases or other activities be allowed without full analysis. There should be a full accounting of all elements, and particularly essential elements of marine ecosystems should be fully evaluated. (Lakosh)
- The Commission must have clear definitions. Paranoia abounds from undefined terminology that could have the ultimate power to trump any local concern. Ecosystems, for instance, is such a vague concept it cannot truly garner the support it needs until the term itself is better defined and until the processes by which we apply ecosystems approaches are clearly defined. Everyone believes in the intent, but there must be a definition of the application. (Vick)
- Be aware of any burden of proof that is not equally applicable to user, researcher, policy maker, or litigant. Alaska's coastal communities and fisheries have suffered the extreme form of burden of proof on the Steller sea lion issue. The communities are bearing the price of being guilty until they prove themselves innocent. They do not have the resources or the science to fight litigation that is immune from its own premise. (Vick)

- I urge you to keep the Great Lakes in mind in all your discussions and hope that in your reports we merit specific discussion of federal policy and resource allocation needs. (Vonnahme)
- The formulation and implementation of a national ocean policy must fully recognize and address the critically important issues and opportunities associated with our nation's freshwater resources and, specifically, the Great Lakes. The policy must build upon and fully utilize existing water resource management institutions. It must be state and region-based, enlist partnerships at all levels within and outside of government, and place an emphasis on strong federal/state relationships. It must be science-based, guided by principles of sustainable development, and accommodate issues and opportunities ranging from environmental protection and resource management to transportation and sustainable economic development. Further, any such policy must be accompanied by adequate, long-term and reliable funding to ensure that goals can be met and sustained. (Kudrna)
- Recommended guiding principles for ocean governance are presented. (Kudrna)
- Treat the Great Lakes as this country's fourth coastline. (Reutter)
- The need for effective, coordinated and aggressive ocean conservation is urgent. People are largely unaware of this urgency. (Boehm)
- Commission should not only address public outreach around this issue, but the Commission itself should be working with our current Administration to bring protection of the ecosystems to the front of our policy and military consciousness. (Amundson)
- We need a systems approach to oceans policy. (Collins)
- Need help to enlighten EPA regarding passing law that will certify and regulate a new device whose performance is far superior to anything on the market today. Existing law refuses to recognize technology improvements. (Husick)
- Encourage the Commission not shrink away from nonpoint issues. (Chasis)
- Need a much stronger agency advocate for the oceans within Federal government. (Chasis)
- It is very important to extent possible that both commissions try as much as possible to complement each other in terms of our recommendations. I think there's a huge danger if one commission does one thing and the other commission does another thing. (Panetta)
- For a Council to really work it should be established by law and the President has to say ocean policy is something I care about. (Panetta)
- NOAA, in cooperation with the Navy and NSF, should continue to build partnerships with academia, building on such examples as the cooperative institutes. (Withee)
- Expand coastal management career opportunities to minorities. (Wellenberger)
- A comprehensive national ocean policy that seeks to prevent pollution and expand marine stewardship is sorely needed in this country. (Zipf)
- Urge the Administration to formally support and maintain the current mission, structure, and function of the National Sea Grant College Program (NSGCP), and that NSGCP should presently remain a part of NOAA within the U.S. Department of Commerce.

TOPIC: *GOVERNANCE*

KEY ISSUE: *Improved Coordination*

ISSUES RAISED

- Coordination does not require centralization or a single agency to address coastal or ocean related issues. Cooperation among agencies can take many forms. Governing institutions should facilitate opportunities to customize to particular circumstances. Performance measures are important. Need adaptive solutions tied to performance measures and monitoring in addressing coastal and ocean issues. (Kearney)
- Freedom of navigation critical to Navy's ability to deploy ships, aircraft, and personnel. Training is most critical component of nation's military readiness:
  1) Environmental limits imposed on training ranges has created overall impact to training readiness and is negative and cumulative; referred to as encroachment; impacts or precludes Navy's ability to execute its mission;
  2) Marine Mammal Protection Act and Endangered Species Act pose greatest challenge to Navy training and operations; "taking" is broadly defined [examples provided];
  3) Also overly broad and ambiguous environmental laws and regulations subject to liberal application and inconsistent interpretation: Endangered Species Act, Marine Mammal Protection Act, Migratory Bird Treaty Act. (Willard)
- Difficult to figure out many offices and programs in just NOAA, let alone interactions of other federal jurisdictions like EPA, ACOE, NMFS, USFWS, etc. (Nichols)
- Federal marine programs have proliferated without necessary coordination between states, academia, and resource users, and lack sufficient funds. (Cooksey)
- National Association of Marine Laboratories has high degree of networking among member institutions and synergetic interactions with other national/regional organizations (e.g., CORE, NASULGC, NSE, etc.). (Fletcher)
- Need collaborative research, management, and education efforts. (Stallworth)
- Most serious overall threat to ecosystems is fragmentation of management systems. [discussion/example provided] (Rader)
- Governance structure for ocean and coastal areas is a complex set of agencies, laws, and policies that can contribute to long delays and increasing costs for MTS projects. (Nagle)
- Two issues need to be addressed:
  1) Series of federal/state programs that deal with coastal areas need to be less fragmented and more cohesive;
  2) Conservation dollars to protect coastal resources. (Gilchrest)
- Numerous federal agencies with different and often conflicting mandates have jurisdiction over ocean resources. (Rufe)
- Coordination among local, state, and federal agencies, and other states in region, is needed to ensure Florida's economic base is maintained while minimizing impacts on ocean and coastal natural and social systems. (Murley)
- Top two issues Florida wants the Commission to address:
  1) Identify and implement institutional changes that would improve integration of existing state and federal programs;
  2) Develop comprehensive state-federal ocean resource management partnership with specific strategies and performance goals. [list of goals provided] (Struhs)

- California, Oregon, and Canada have not agreed on a regional cooperative approach yet, but Washington State is interested in it. The motivation for us all is consistency in the shipping industry. (Smitch)
- One example of coordination is The Puget Sound Water Quality Action Team that is composed of several state agencies that work to coordinate a variety of activities within Puget Sound, including education. (Smitch)
- It is important to note how the environmental and resource management laws interact with one another, the extent to which they impose conflicting requirements that result in high transaction costs, and to figure out how to best direct scarce resources into achieving effectiveness in resource management. (Lashever)
- Integrated management—No overarching national ocean and coastal governance framework exists to coordinate among and within disparate public and private interests. (Hamilton)
- Pacific Northwest shares a tremendous amount of water—Strait of Juan de Fuca and the northern Puget Sound—with neighbors in Canada. What happens to one end of the Sound has an impact on the other. That goes for the different regulatory missions. (Berkowitz)
- The reason that policy development moves forward at a speed that far outstrips the research necessary to form that policy wisely is because the enemy has been identified, and it is us. Scientists are beginning to understand that cooperation and collaboration are necessary but it has not worked well in the past. Each has worked according to their own subset of disciplines. Working together would allow us to achieve more than the sum of the parts. (Colwell)
- Several years ago, Save The Bay helped found Restore American's Estuaries (RAE) to advance estuarine habitat restoration at the Federal level. ROE has identified 74 separate programs related to habitat restoration, which fall under seven Federal agencies at several jurisdictional levels including the EPA, Commerce, Defense, Transportation, Health and Human Services. The fractured nature of governance sometimes leads to non-productive competition among agencies, lack of clarity and a lack of public understanding. (Spalding)
- The traditional focus of ocean and coastal policy and management has been on marine fisheries and the living resources of the ocean itself. Management of estuaries and near-coastal waters is much more complex. (Spalding)
- There are numerous sources of impact on marine ecosystems in Alaska including contaminants, global warming, oil and gas development, and fisheries; each is treated by different management authorities in isolation from one another. We do not have a cohesive way to consider them all as a whole. (Childers)
- The Great Lakes Commission recognizes an unmet need for a national policy on marine and freshwater resources that present a clearly articulated vision and a series of science-based goals, objectives and strategic actions needed to both achieve and sustain that vision. A multiplicity of Federal agencies presently shares planning and policymaking responsibilities for the nation's marine and freshwater resources. (Kudrna)
- A broad spectrum of coastal and marine issues must be considered for managing resources and safeguarding ecosystem integrity while minimizing conflict. Better integrated governance is essential for the coastal and marine areas of the U.S. (Eichbaum)
- Fragmentation among federal and local agencies and the lack of participation and coordination of interests at the local level are two fundamental flaws to the existing systems of ocean governance and management. Single-purpose and uncoordinated laws that characterize the present system of various local, state and federal authorities should be addressed as a starting point for developing a coherent and purposeful national ocean policy. (Eichbaum)

- The increasing number of government agencies overseeing land and water management use has hampered effective decision-making. We urge coordination of functions — a clearing-house where federal, state and local programs can be developed and the elimination of overlapping functions. (Johnston)
- There is generally a broad lack of coordination. There is conflicting guidance that is often provided. (Panetta)
- Interagency collaboration is essential to the success of the nation's ocean policy. Any agency charged with implementing U.S. Ocean Policy, if successful, must play a strong role in promoting interagency collaboration and cooperation. (Munson)
- Coordination and Integration of Ecosystem and Fisheries Research and Management: The scientific knowledge required to implement an ecosystem-based approach to fisheries is incomplete, due in large part to the fractionation of research funding sources and portioning of responsibilities among agencies. (Jumars)
- There is an essential need to make some fundamental changes in the current fragmented approach to managing and studying our coastal and ocean systems. Better coordination and efficiency within and among Federal agencies and programs are necessary. (Allen)
- Fostering program integration within NOAA in support of an integrated U.S. Ocean Policy: background and rationale statements provided. (DeVoe)

PRESENTER RECOMMENDATIONS

- Regulatory agencies need to better understand and give due consideration to DOD training and readiness requirements when within the law to do so. (Willard)
- Need a collaborative process for dealing with ocean issues. (Cooksey)
- Modify federal law to make it easier for universities, NGOs, businesses, and federal agencies to interact by passing through of funds, student and faculty support, etc., for studying changes over decadal time periods. (Steiner)
- Look at how Coastal America came about, people wanting to collaborate. (Struhs)
- Examine overlapping federal jurisdiction over marine resources and uncertainty and inconsistency that results. (Kearney)
- To achieve the Oceans Act goal of coherent and consistent regulation and management of ocean and coastal activities, require WPRFMC/NMFS to work cooperatively with the USFWS and other agencies to replace conflicting and confusing management regimes with an integrated and cooperative approach that embodies the most stringent protections where there are overlapping jurisdictions. (Raney)
- Recommend:
  1) Federal agencies should consult with states during the planning of their operational activities to avoid surprises (especially DOD);
  2) Coordinate with states on all federal permit and approvals for activities in federal waters;
  3) Allot adequate time for effective consultation and problem solving;
  4) Establish state and federal agency place-based work groups to consider and reconcile complex issues;
  5) Consider specific statutory or rule changes to improve NEPA coordination and linkage to CZMA, OCSLA, and state regulatory and proprietary evaluations. [examples provided] (Struhs)
- CSO endorsed principles:
  1) Renewed commitment to federal/state coastal ocean partnerships;
  2) Recognition of sovereign rights and public trust responsibilities of coastal states;
  3) Adoption of common coastal ocean stewardship mission as core element of federal agencies;

4) Need coordinated and sustained coastal and ocean research agenda at relevant scale for management. (MacDonald)

- Need increased cooperation between states, Federal government, tribes, and the international community. (Shultz)
- Require Federal research and information collection activities be integrated with State and local management needs and require information transfer from Federal agencies to state and local governments. (Evans, N)
- Reduce agency overlap and inefficiency by coordinating Federal resources. (Berry)
- Federal natural resource agencies and tribes should work collaboratively to develop a process to achieve coordination through inter-regional and interagency teams to address ecosystem problems that extend beyond governmental boundaries and agency jurisdictions. (Ehrmann)
- Federal agencies should establish a lead person in every local office (e.g. Extensions—land grant and sea grant, Resource Conservation and Development Councils (RC&Ds), conservation districts, etc.) responsible for working with watershed groups. (Ehrmann)
- All the pertinent Federal agencies and organizations that oversee or use water should form an inter-governmental group or caucus to provide assistance to state, tribal, local government, and private watershed interests for protecting in stream flows and related watershed issues. (Ehrmann)
- Create adequately empowered "National Ocean Council" in the executive branch and formally establish a network of "Regional Ocean Councils." (Hamilton)
- Recommend a funding mechanism having a focus on regional studies. NSF and ONR are too regional, parochial. Sea Grant doesn't have the funding. We need a change to say that regional systems specific research is important—for the regions but also important to work together and see the collective view. The funding agencies need a change in their view of funding. (Newton)
- We are on the cusp of a revolution in how we detect, understand, and predict changes in the marine environment, but greater coordination is essential. (Malone)
- Cooperation and coordination between and among state and Federal agencies are critical. The key to this partnership is frequent and interactive communication, using the best available science and decision-making, personal interrelationships between and among key resource managers, a real focus on listening to the concerns of our partners and ensuring that people are fully engaged in the process of management to the fullest extent possible. (Geiger)
- Create a national oceans agency to consolidate the many Federal bodies responsible for ocean resource management. (Phillips)
- Develop recommendations that can help streamline and make our government more efficient. (Evans, D)
- We need a process by which to create a master action agenda that: (a) prioritizes the hundreds if not thousands of recommendations from all these documents, and (b) articulates what the ecosystem itself needs in terms of funding to be a healthy life support system for current and future generations. (Davis)
- The Commission should encourage a re-thinking of how the Executive and Legislative Branches can work together to more effectively provide the tools and resources needed to tackle what is clearly a problem of nationwide scope and importance, non-point source pollution and its impact on coastal environmental quality. (Walker)
- Recommend further development and protection of our coastal resources. Interaction among agencies of the Federal, State and local governments needs to be regularized and implemented. (White)

- A good example of how a consortium of Federal agencies might work is Coast Louisiana 2050. (Griffin)
- We ask you to look into innovative mechanisms to promote interagency cooperation and collaboration. (Munson)
- Coordination and Integration of Ecosystem and Fisheries Research and Management: Encourage a more thoroughly integrated management structure that allows for a more tightly coordinated approach to habitat and fisheries management, and research funding that rewards efforts to merge ecological and fisheries-oriented studies. (Jumars)
- Encourage NOAA to coordinate and, where possible, consolidate its many advisory committees, boards, and commissions.(DeVoe)

TOPIC: *GOVERNANCE*

KEY ISSUE: *Alternative Governance Regimes and Models*

ISSUES RAISED

- Oceans should be governed for the public trust; ensure oceans are sustainably used and can be fully appreciated by future generations. (Danson)
- Consider visionary changes to way we manage oceans; adopt a proactive, integrated, and adaptive approach rather than crisis-based. (Danson)
- Policy question is do you pursue economic activities everywhere in ocean before knowing impact, or do you take precautionary measures first and study effects as you go along? We support precautionary approach. (Fujita)
- Must move towards a policy of ecosystem-based management not single species. Must vigorously protect naturally functioning marine ecosystems and ensure that resource extraction is truly sustainable. Must move towards policies of recovery and stewardship of ocean ecosystems. (Norse)
- Much of what drives efforts like Chesapeake Bay Program is federal regulatory regime. (Boesch)
- Still need framework that ties concepts into policy that allows goals to be set and offers strategies to bring success; 2000 Chesapeake Bay Agreement is a good model. Five sections (living resources, vital habitat, water quality, sound land use, outreach and stewardship) contain key concepts needed to build policy. (Harrison)
- U.S. ocean policy today is less than the sum of its parts. Ocean governance challenges:
  1) move away from predominately sectoral management to area-based, multiple-use management;
  2) provide overall national guidance on use of U.S. waters (0-200) through articulation of national ocean policy;
  3) Develop a code of ocean stewardship principles;
  4) Develop more integrated planning and decision making capacity for resolving ocean use conflicts and anticipating new uses;
  5) Integrate better the actions of ocean-related federal agencies (horizontal integration);
  6) Integrate better the actions of ocean-related state and federal entities (vertical integration). (Cicin-Sain)
- A detailed description of the Chesapeake Bay Program is provided. Included are important elements including: setting clear and measurable restoration goals that the public can relate to; development of extensive, multi-faceted sets of environmental indicators to clearly illustrate goals set; data management; Local Government Participation Action Plan; Community Watershed Initiative; Chesapeake Bay Small Watershed Grant Program. Chesapeake Bay program successes include working in partnerships and as watershed basis. (Max)
- Georgia achieves effective marine resource management and habitat stewardship through interstate and state/federal partnerships. (Shipman)
- Important models exist to help build an integrated coastal and marine ecosystem management system. [discussion and models provided] (Rader)
- U.S. ocean policy needs a foundation of knowledge. When scientific evidence is inconclusive, dictate a precautionary approach to management. (Dunstan)
- Health of oceans not related to political boundaries. We need to modify our approach to stewardship of marine resources. Laws, regulations and policies related to ocean health cannot be structured along political lines. (Carpenter)

- Oceans, estuaries, and fisheries are treated as boundless systems in province of special interests and agencies to divvy up. Result is poor understanding of systems and management geared at balancing short-term stakeholder interests rather than sustainable stewardship. (Davis)
- Gulf of Mexico Program meant to bring state, federal, local, public, private representatives to identify resources that could be joined to deal with issues. But as good science was generated, connections of solutions with human activity got people concerned. Program is now less than it was years ago. (Palmer)
- New ocean governance:
  1) Caution considering broad, new ocean governance laws and clear identification of "governing" problems before we solve them; Do not believe creation of new ocean "super agency" is necessary;
  2) Take care to maintain and improve benefits of existing federal structure. (Talbert)
- Adaptive management will be important as we move ahead. (Wood)
- Have science-based approach not just engineering. (Woolsey, C)
- Greatest challenge is the issue of governance; current policies address ocean issues individually (i.e., species) (Bodman)
- Ecosystem approach requires big picture; how law and use of oceans affect economy, environment, health and how they provide long-term needs; identifying and coordinating roles of federal, state and local governments, and NGO's and private sector interests. (Bodman)
- Urges Commission to ensure environmental impacts are considered and minimized in context of all issues; research, education, marine operations, governance, stewardship, investment and development. Economic benefits will only flow if conservation and sustainable use become high priorities for all agencies. (Hopkins)
- Do not need to pursue all or nothing extractive approach for marine environment. (Hopkins)
- Deficiencies in current ocean policy stem from management based on sectoral, rather than holistic (ecosystem) thinking. (Loy)
- Canada (Oceans Act) and Australia (National Oceans Policy) provide integrated approaches to ocean management. (Rassam)
- Chesapeake Bay Program has worked to communicate and provide information. (Gilchrest)
- Facilitating interdisciplinary approach and partnerships will not be difficult; it is what everybody is looking for. (Hollings)
- Ecosystem management: extent of ecosystem should be based on broad spatial scale, recognizing the significance of watershed or catchments influences on downstream natural communities. (Causey)
- Challenge in ecosystem management approach is to get resource managers and scientists to create vision that extends beyond jurisdictional boundaries, both at national and international scales, and establish broader objectives in ecosystem management. (Causey)
- Lessons learned from FKNMS (Causey)
- Excellent model for interagency cooperation is the National Ocean Research Leadership Council (NORLC) of NOPP. NOPP and Ocean.US is good model for new way of doing business at federal level because it is participatory, creates priorities and is open forum for identifying and setting those priorities. (Groat)
- Healthy oceans depend on a strong stewardship ethic. [list of recommendations to address threats to living marine resources and ecosystems in Florida is provided] (Murley)
- Need to develop ethic "ocean for ocean's sake." (Damme)

- If we try to maintain current conditions our marine ecosystems will not make it; if we continue to "balance" ecosystem damage with hoped for mitigation, our marine ecosystem will not make it. (Fletcher)
- It is possible to define what ecosystem management is, how it should be done, and come up with a way of doing it. The premise of the exercise should not be revolved around making fish harvest decisions. By its very nature, you need the people that are involved in all the aspects of the marine environment, the harvest, etc. To go in this direction, it would be necessary to discuss reforming the fisheries council process. (Fletcher)
- A Shared Strategy is a regional policy group that involves all levels of government in interest groups and that it involves a combination of the services, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, as well as the tribal and state co-managers in the state. The goals of the Shared Strategy are communicated to watershed groups that then take the goals and decide what actions they can take in their watershed group to achieve those targets that have been given to them by the agency. (Ruckelshaus)
- It is difficult to combine the science and policy in the public arena. The public will hear our scientific results and not understand them. We then tried an alternative method and asked them to assist in picking target numbers within the range, and translating fish based goals into habitat actions. We won them over with this alternative method. (Ruckelshaus)
- The technical recovery teams are made of scientists from different agencies and groups. There are also observers from the political side. We do not wait until the science is complete, packaged and peer reviewed. We are constantly going through peer review and changing. All of this is time consuming but important. The Councils and Commission may consider some lessons from this process. (Varanasi)
- The best arrangement to be made with the private sector happens when you can put something that links marketable or public appeal or awareness with a corporate interest. Exxon put ten million dollars into tiger conservation because their mascot is the tiger. You can "marry" corporate interests. (Berry)
- Sound science, innovative approaches, and regional management flexibility are key to balancing biological sustainability with economic sustainability. (Durand)
- The challenges of the Ocean Commission will be finding the funding for new initiatives, reorganizing programs and agencies with new missions, and developing well-reasoned policies that can be embraced by a wide range of constituencies. (Hartman)
- The Gulf of Maine ecosystem should have predictive capacity in 2010. The linkages between the physical and biological, between habitat and the species, are now understood. It will be possible to say that if "X" percent of the habitat is disturbed, "Y" percent reduction or below can be anticipated. Part of it also has to do with the involvement of fishermen and others in the gathering of that information that will help build that predictive capacity. It is necessary to be comfortable with the science in order to have predictive capacity.
- The fate of the earth's oceans is inextricably tied to other U.S. strategic interests, including economic prosperity and national security. (Reilly)
- Some sort of regional structure outside of the existing structure in necessary. Projects are well coordinated on a project-by-project basis but a directive does not exist to coordinate regionally on a mission basis. National guiding principles that feed into a regional structure are necessary. (Kurkul)
- The Gulf of Maine Council on the Marine Environment was created as a cooperative body and has succeeded in establishing a framework for continued cooperation in research, education, data collection, and policy development. The Council was not created in response to any immediate crisis and was not designed to usurp regulatory or management functions of state, provincial, and national agencies or legislative bodies. [Further description provided.] (Skinner)

- One of AMCC's guiding principles is that the ecosystem has intrinsic value and that it is our responsibility to manage our own human behavior in a manner that prevents over-exploitation or destruction of habitat. Of particular concern to us is bottom trawling because of the known impacts on sensitive seafloor habitats. [discussion provided] (Childers)
- The coastal community view to our ecosystem approach is to build the information system that provides the kind of information with which we can make better decisions on operating vessels, operating aircraft, managing fisheries, and managing hatcheries. The Science Center's formula for building an ecosystem program is to implement a comprehensive circulation model based monitoring program in the Sound synoptically with acoustic optical monitoring based modeling program on the dominant animal populations. [discussion provided] (Thomas)
- Political jurisdictions in the binational Great Lakes region have long recognized the benefits of multi-jurisdictional cooperation for the development and implementation of water resources management policies, plans and programs. Our regional, multi-jurisdictional institutions are the key elements in this highly complex "institutional ecosystem." (Kudrna)
- A few durable mechanisms have been created to coordinate policy, identify and resolve conflicts and ensure the undertaking of good marine stewardship. These bodies include the Coastal Zone Management program, the National Marine Sanctuary program and the National Estuary program. These three programs demonstrate that it is possible, under the existing legislative framework and in certain situations, to improve marine area governance. (Eichbaum)
- My purpose is to describe this successful model for collaborative conservation, to specifically underscore the important role that the federal government has played in its success, and to suggest its use as a model elsewhere. As federal agencies increasingly take on the challenge of managing natural resources in urban areas, Chicago Wilderness offers an innovative model for urban resource management and helps federal partners accomplish their missions in this important metropolitan region. (Rogner)
- Has proposed creation of a Great Lakes Fund, to give the resources needed to protect and invest in this the most precious of natural resources. The Trust reflects our values as a community; clean and healthy drinking water, access to clean beaches, dry basements and clean rivers. Highlights include: preventing new and eliminating current pollution; restoring and protecting habitat for fish and wildlife; flooding and property damage; and conserving land and water. Number one is to ban oil and gas drilling under the Great Lakes. (Emanuel)
- Need for a regional Great Lakes council with authority is being discussed. (Vonnahme)
- Existing Commissions and Councils of Great Lakes each have different purpose and intent. (Vonnahme)
- Federal Invasive Species Council is still young and going through growing pains. (Williams)
- We concluded that fisheries councils are probably a good place to start for defining ecosystems. (Panetta)
- The Corps Civil Works program is done in close partnership with states and local governments and increasingly private non-profit groups like the Nature Conservancy and Ducks Unlimited. The most notable example of course is the Everglades restoration but much of this work is occurring in our oceans estuaries and coastal zone though efforts like the Coastal America partnership. (Griffin)
- Water experts and the public are increasingly looking towards integrated water management as the way to achieve environmentally sustainable solutions that can also be implemented faster and at a lower cost than traditional engineering projects. Assuring the success of this approach, however, will eventually require landmark legislation. (Griffin)

- Australia views the resources of the seas as entirely analogous to those of the land. The seas represent the natural capital from which much of the world's protein is derived, target species exist within identifiable ecological systems, and their use and exploitation demand the application of best practice and best knowledge sustainable use policies. National and international policy has begun to recognize that the resources of the seas are finite, that many fish species are under heavy pressure, that seabed mining, shipping and other uses require an accepted multiple use framework within which to function. (McPhail)
- A number of countries have made very significant strides in developing approaches to ocean management. (McPhail)
- Australia's ocean policy of 1998 is the first comprehensive attempt to adopt a large ecosystem management approach to the Exclusive Economic Zone. The policy incorporates approaches ranging from representative areas designated for high-level protection to the reinforcement of the economic value of the oceans' resources, to the nation if used sustainably and intelligently. Most of all the policy reinforces the argument that the management of the resources of the ocean requires an integrated approach to meet the multiple objectives of environmental, social and economic good. The natural capital of the sea is the asset on which the maritime economy is based. (McPhail)
- A feature of the implementation of the Ocean Policy at Commonwealth level has been the creation of the National Oceans Office. The Office is an executive agency of government, in that it is separate from each of the constituent departments whose ministers make up the board. (McPhail)
- No Australian State, thus far, has signified its endorsement of the Oceans Policy, which is highly regrettable. Therefore, one of the great policy initiatives of this generation is not accepted as a national initiative, but is being perceived by the States as another federal intervention. (McPhail)
- In the end, the management of the coasts and oceans comes down to political will. (McPhail)
- There is a constant need to remind ourselves about the need for science in policy arena. (Turner)
- Discussion of background and current issues for ocean governance, ecosystem approach, interagency council, and investment. (Rufe)
- Findings and goals and objectives for Coastal and Ocean Governance. (CSO)

PRESENTER RECOMMENDATIONS

- Recognize through new laws, policies, and institutions that oceans are a vital public asset and must be managed as a public trust. (Garrison)
- True ecosystem-based management will require the development of a new entity charged with its design and implementation. (Rader)
- Effective restoration of these systems will require development of a scientifically derived and ecosystem-based management plan. [discussion and examples provided] (Rader)
- Concepts for a successful oceans policy:
  1) Smart land use;
  2) Sustainable resource management;
  3) Effective partnerships;
  4) Adequate funding with accountability. (Harrison)
- Institutional options for achieving greater integration include: naming a lead agency; creating interdepartmental coordinating body (national ocean council); creating a larger agency encompassing wider range of ocean functions; and, creating a standing ocean commission. (Cicin-Sain)
- National integration is particularly useful to consider in creation of a national ocean council:
  1) Possible characteristics of council [list provided];
  2) Council functions; [list provided]
  3) Need incentives; [types provided]

Possible principles for national ocean policy. [list provided]

Regional Integration:

1) Defining marine regions is complex, Large Marine Ecosystems one approach;
2) Could begin with state-initiated regional ocean governance plans and group together; encourage process; [suggestions listed]
3) Federally-initiated; ecosystem-based multiple-use regional councils; [list of functions provided]

Guiding principles for future deliberations:

1) Ocean regions should be delimited and managed using ecosystem approach;
2) Federal and state entities should be partners in management of marine regions;
3) Regional institutions should be coordinated and overseen by national ocean council.

National Oceans Policy Act possible mechanism to implement policy; [list of suggested titles provided]

Council should report to highest levels of government (i.e., president or vice president);

Provide broad national goals. (Cicin-Sain)

- Coordinated/comprehensive ocean policy must include:
  1) Freshwater inflow policy related to health of coastal, estuarine and ocean environs. Ensure historical use of limited resources, including fisheries and fresh water, would continue and relate to sustainable land and water use policies;
  2) Restructure federal agencies so all coastal and ocean programs can be housed in or coordinated by one agency, perhaps expanding NOAA interests inland beyond immediate coastal zone, or formal communication requirements between agencies and states;
  3) Regulate by eco-regions rather than political boundaries, particularly wetlands. Technology allows mapping of eco-regions and governments often operate within interstate compacts. (Carpenter)
- Consider: Long-term vision; Ecosystem wide issues; sustainable ocean management vs. exploitation. (Pate)
- Evaluate Gulf of Mexico Program, if there is something we need to shore up, fine, if something else would be better, let's do it. (Palmer)
- Ocean policy must be premised on balanced, multi-use approach and should advance goals including; strengthening nation's energy security, protecting and enriching ocean and coastal resources, enhancing maritime commerce. (Caveney)
- Develop a national policy to protect ocean ecosystems:
  1) Move fishery management away from single species model; allow uses that sustain all living marine resources;
  2) Recognize importance of nonconsumptive uses of the ocean;
  3) Encourage use of tools that protect ecosystems;
  4) Authorize and encourage use of fully protected marine reserves and other protected areas. (Notthoff)
- Give the new federal ocean agency an ecosystem protection mandate and broaden authority:
  1) Give responsibility for determining catch levels and other science-based management measures to federal agency;
  2) Role of industry-based councils should be advisory, focused on allocation;
  3) Use zoning to restrict potentially damaging gears. (Nothoff)
- Enact a national ocean policy that establishes ecosystem protection standards that must be followed. (Wan)
- Encourage a broad or ecosystem-based approach to setting policy for coastal systems. (Allen, D)

- Ocean management "super council" may be like a wheel; goes out to a regional, smaller council. (Cooksey)
- Look at CZM model for ocean plans; federal goals with states developing plans within those goals. (Cooksey)
- Federal consistency process one important way to get at federal agency conflicting mandates. (Cooksey)
- Emulate success; Bay Program is one to use as model, it has attempted to be incentive-based, additional funds, not sanction-based. CZMA is a good model for state/federal partnership. (Harrison)
- Stewardship must begin with sound policy framework rooted in fact that oceans are sensitive resources that we do not fully understand. (Davis)
- Create new ecosystem councils to develop regional ecosystem management plans for the ocean. (Danson)
- Suggest a more holistic approach to oceans that does not view fisheries, habitat, estuary health, water quality, and human use as separate issues but as part of whole. (Davis)
- Look at how Coastal Wetlands Planning and Protection and Restoration Act has changed attitudes for cooperation and getting job done; outside that Act attitudes have not changed. (Davis)
- Governance: Many good examples of successful governance exist. [4 examples provided] (Oynes)
- Place a much greater emphasis on conservation; in Gulf of Mexico may need to manage what's already there in way to protect resources left; in other areas avoid risk. (Wiyqul)
- Examine existing governance models and how they might be made effective (i.e., CZMA and fishery management) (Bodman)
- Investigate innovative governance strategies at all levels including local and state governments. Interest groups are now part of the process and should be considered for future efforts; incorporate indigenous cultures and traditions. (Underwood)
- Zoning/MPA concept is new; did not exist during Stratton; locally established reserves in Guam help locally and nationally. (Underwood)
- Move ocean policy away from crisis-oriented management toward coordinated, adaptive, comprehensive decision making. Focus has been on use over conservation. Oceans are under increasing pressure. (Rufe)
- Specific recommendations to help integrate federal/state/local management:
  1) First step is holistic perspective that recognizes the interconnected relationships of habitat type and condition, population and community structures, and overall system ecology.
  2) More inclusive approach to better resource management would more fully integrate state authorities with federal mandates; Atlantic States Marine Fisheries Commission and CZMA are examples. (Haddad)
- Create regional ocean councils: In California examples include; Cal/Fed, shoreline erosion, research. (Nichols)
- Faced with limited fiscal resources, increased Federal contribution and greater cooperation with stakeholders will be needed. (Shultz)
- Establish a clear governing system.
  1) Currently, authority over ocean related issues resides in various places in the U.S. government.
  2) One solution would be establishing Department of Oceans. (Moore)
- Change laws to reflect reality and get us out of the lawsuit mess.
  1) Need to understand that oceans and fisheries are dynamic, not static.
  2) Weigh relative worth of fisheries and actions we take to conserve and manage them.

3) Recognize and accept that science is imprecise.
4) Time frames involved in fisheries management should allow ample public comment and participation. (Moore)

- Do not design a marine ecosystem management plan nationally, because while it is fine to have national standards, the people who know the most about it are people like Kathy Fletcher, Ralph Brown, and Usha Varanasi, and their teams. They should receive their marching orders, and then come up with the ideas. (Moore)
- Models exist, such as the ones right here in Puget Sound, that could be used as examples of ecosystem management. (Fletcher)
- The Northwest Straits Initiative should get continued support because it is an extremely promising effort. A combination of top down and bottom up approach is best. There is a need for both; especially with respect to the outer coast there is a tremendous need for national policy in this area. (Fletcher)
- The marriage of science, policy, and implementation should be strong when discussing ocean policy. (Varanasi)
- Believe regional ocean governance structure is required to enable all parties to regularly come together to address issues. (Soliday)
- An integrated ocean governance structure should include the following:
  1) A comprehensive legislative framework;
  2) Defined governance structure and process;
  3) Identified and supportable area of jurisdiction and interest; and
  4) Accountability. (Evans, N)
- A regional governance area must be based on knowledge of the ecological and economic coherence of ocean and coastal areas. (Evans, N)
- Mechanisms (formal or informal) must exist to require accountability to plans and policies through political and budgetary processes. (Evans, N)
- It is hard to say if a department of oceans is the right choice but we do know that we have to follow the money because that will reflect where the priorities are. Regardless of whether there is a department of oceans, there needs to be a mechanism to integrate the budget choices and to drive the budget policy. It is important that it is not compartmentalized. It has to be networked and have all the affected parties and parties with any responsibility at the table. That is state, local, and Federal agencies. It will include industry interests and public interests. And then be driven top down at the same time it is driven bottom up. (Evans, N)
- We need to put together a working mechanism concept of this coordinating body, to which we all keep referring. An ocean management act somehow has to empower agencies and interests that do in fact have a defined scope of interests and jurisdiction simply to get at the same table together and say, yes, these boundaries do exist, but we have the authority to go forward and solve cross boundary issues. That is one of the things missing right now. (Evans, N)
- Regional Councils have to have both the state and the Federal government empowered to work on the councils. The fishery management councils, of course, do not provide for that. We have to get over the boundary 3-mile issues. The way to empower both the Federal government and state government is to think on a regional level. (Evans, N)
- Need to be very proactive—like the Nisqually—it is one of the healthiest watersheds in Puget Sound. People started the process way before the Endangered Species Act threatened them. They went out and did it—and that was without any Federal incentive. (Beck)

- The ocean, the single defining feature of our planet, was regarded as sacred, an elemental force in global life. A remarkable paradigm shift is now occurring. Some say there is a powerful resurgence toward the original ocean ethos. This is a good thing and we strongly urge this Commission to use this paradigm shift as a filter when it writes its recommendations to the President. (Evans, C)
- A coherent set of policies to govern human behavior is needed, devised around principles of respect and appreciation for the complex and intricate trophic relationships and chemical and atmospheric pathways that make up marine habitats. (Garrett)
- We need an ocean restoration policy on national and global scales. (Garrett)
- Develop an Ocean Restoration Policy.
- Ocean policy must be strongly worded to work towards sustainability over the long term (200 years and on), focusing not on healthy industry, but on healthy ecosystems (industry will follow only with a healthy ecosystem). (McCaffrey)
- Fellowships should include a management policy component to encourage any scientists to not only do state of the art research but also to synthesize what we know now and apply it to ongoing policy programs so the best science can be used in making policy decisions. (O'Keefe)
- Commit to achieving by 2010 a fully operational ecosystem approach to the management of ocean resources. [Further description provided.] (Richert)
- Create a hospitable economic environment for ocean conservation—economic incentives are more often than not inconsistent with the stated objectives of current ocean policy. This lack of harmony is most pronounced in the fisheries sector, where economic incentives encourage the expansion of fishing fleets that are already too large, and stimulate a race for fish that is neither biologically sound nor economically prudent. (Reilly)
- Recommend the Ocean Commission review legislation and initiatives in public waters and make recommendations to the Congress to help devise a more comprehensive management regime that achieves a responsible balance. This would be an invaluable contribution to the legislative process and ultimately to the long-term conservation and responsible management of new activities in the coastal zone. (Delahunt)
- Through a regional ocean planning process, permitting decisions would be based on prior consideration of siting and jurisdiction. [Further description provided.] (Kurkul)
- Establish the authority and a coordinated process to achieve comprehensive ocean planning, involving local, state, and Federal interests. (Kurkul)
- Stress the importance of a regional approach to ocean planning, and realize that cooperation and coordination are best accomplished at the local level. (Kurkul)
- Make changes at the Federal level to more fully encourage, recognize, and support regional approaches to marine ecosystem management. (Skinner)
- Maintain continuity in commitment, leadership, and staffing; specifics include:
  1) Develop a proactive agenda that causes people at the right level to participate;
  2) Recognize that inertia and culture often impedes progress – develop approaches to overcome these obstacles;
  3) Create and nurture champions;
  4) Steadfast commitment pays off; and
  5) Develop and monitor indicators of commitment. (Skinner)

- In considering regional ocean policy, focus must be placed on regional needs shared by all partners:
  1) Emphasize regional issues that require collaboration or cooperation to be effectively addressed;
  2) Be inclusive in priority setting and provide adequate time for priorities to emerge;
  3) Initially take on tasks that can be achieved – look for quick successes;
  4) Build relationships with others that are lasting and productive;
  5) Focus on a small number of priorities and prepare a plan or strategy to achieve them;
  6) Set bold targets and be visionary; and
  7) Adopt measurable goals, create baselines and track progress – these produce accountability. (Skinner)
- The ultimate biological health of the Gulf of Maine is a direct function of our capacity and effectiveness in four managing interactive system variables: water quality, living resources, extraction rates, habitat protection and governance. [discussion provided] (Shelley)
- Improve ecosystem governance recommendations: need new legislation or an executive order to develop the capacity for integrated Federal management at the scale of the regional sea; regional Federal task forces must be organized and charged with the task of identifying, integrating, promoting, and protecting strategic Federal interests in the nation's oceans; and ocean zoning or area management strategies must be developed. (Shelley)
- Include human motivation and response as part of the system to be managed. (Young)
- Act before scientific consensus is achieved. Additional scientific studies are not necessary to tell us that human activities are affecting ecosystems. (Young)
- The kind of commitment that is being made to Chesapeake Bay must be made to all estuaries. In addition, the statutory framework must be reworked based on our years of experience with watershed management approach. (Spalding)
- Since much of the atmospheric deposition entering the Waquoit Bay watershed is attenuated by the forests, wetlands, and vegetated boundaries along streams before it reaches the bay, other areas of the country should consider adopting the Land Bank Program found on Cape Cod where a property tax surcharge is approved by a town to purchase open space. The Commonwealth of MA helps support the Land Bank Program; it is a successful local/state partnership. (Dow)
- Urge the Commission to recommend adopting a national oceans act that sets criteria, indicators, and policies to protect ocean ecosystems. (Phillips)
- Trying to clean up environmental policy mistakes that came, in part, from the lack of foresight. The culture of science is such that there will usually be doubt. Please don't gamble with our future because of this inevitable uncertainty. Please be courageous by practicing just a little bit of our idealism. (Nugent)
- Regional marine ecosystem plans should be prepared and implemented and would serve as the overarching management document to guide human interaction with the marine environment. (VanTuyn)
- We need a stricter Federal presence. What we need to say is that activities that may affect the ocean should not be allowed unless the proponent demonstrates that the activity will not harm the ocean. That's an example of the authority that would have to be met. (Van Tuyn)
- An ecosystem-based approach is needed along the lines of the Ecosystem Principles Advisory Panel report to Congress in 1998. (Childers)
- Environmental regulations are necessary but they are a financial burden. Financial resources are needed to help our communities build the infrastructure to allow them to live in a healthy environment. (Hermann)

- Policy can be set at many levels (local, regional, state, Federal, and international). But compliance to policy is another issue. (Hermann)
- Help create a new vision that incorporates the value of protecting America's marine and coastal ecosystems as wild, natural places. (Miller)
- Establish your policy recommendations binding to all stakeholders, the knowledge and wisdom to be locked into place immovable by the lobbying efforts of special interest groups. (Ulery)
- The entire community must develop the definition of sustainability. The larger community of interested parties needs to come together in open dialogue that is egalitarian, and have no governing body that is directing how discussion will go, and explore and define what sustainability means to that community. (Marcy)
- Recommend that the U.S. has a Bering council—a council made up of Canada, the U.S., Russia, Japan, and possibly Korea. The emphasis should be on contaminants. (Parker)
- Urge the Commission to think about the big picture and the big responsibility of ocean policy and take it beyond the role that the U.S. government plays. The North Pacific Anadromous Fish Commission and its fledgling international cooperative research being done through BASIS is a good example of what is possible, when nations come together on a common goal. (Ulmer)
- The Commission's vision to consider ecosystem-based management is a very good one. (Snyder)
- Consideration should be given to an extension service program throughout NOAA and modeled after the National Sea Grant approach. (Kudrna)
- Three specific initiatives come to mind that may provide useful models for improving our existing approach to resource use, protection and management of marine and freshwater resources on a national scale: program evaluations and benchmarking; regional, multi-jurisdictional management institutions; and regionwide agreements and plans. (Kudrna)
- If we are to address the numerous demands and stresses on the coastal marine environment we need a coherent and pragmatic national system for ocean governance. (Eichbaum)
- The United States is in need of a coherent system of governance that is based on a set of overarching principles and processes that address: guiding principles of a federalist system; institutional arrangements and responsibilities (national marine council, regional marine councils, improve existing systems, improve existing tools). (Eichbaum)
- A guiding example is Australia's National Ocean Policy. (Eichbaum)
- Establishing basic principles and effective processes for the governance of the ocean and coastal areas is a prerequisite both to economic investment and to sound environmental stewardship and would make a more reasonable, less adversarial approach to resolving conflicts possible. (Eichbaum)
- We need a governing body that can set strategic direction and provide a mechanism to coordinate ocean and coastal policy, both at the national and the regional levels. There are a number of existing models to consider in crafting such a governing structure. The most obvious is the Office of National Drug Control Policy—there are others. Perhaps it is time to consider the feasibility of a National Oceans Policy Advisor. (Collins)
- We must put increasing emphasis on awareness and prevention. (Collins)
- National Council should set priorities in a very limited number of areas—should not be sweeping—defined critical national interests in the marine environment. Regional Councils should be formed ad hoc and last as long as the issue does. Description provided. (Eichbaum)
- Your report to the Congress and the President should specifically refer to the need for investment in conservation technology to help develop and evaluate conservation practices to ensure that the best science available is being utilized to address natural resource concerns. (Knight)

- This country has to pass some kind of national ocean policy act— implemented through what we would call regional ecosystem councils. We think it's very important to restore some coordination at the national level. So we are going to recommend the national oceans council that basically brings the agencies and departments together in some kind of coordinating council at the White House level. (Panetta)
- We need to take this broad view of looking at the ecosystem and try to govern pursuant to that kind of approach. (Panetta)
- Would like to see each regional council develop regional "plan" for issues of the area. (Panetta)
- The OC must recognize the fragile and unique nature of the coastal and ocean environments, and that any development of those resources shall be done in the most environmentally safe manner possible. (Radonski)
- Concerning the guiding principles we encourage you to keep the first one on stewardship, that the ocean resources are held in public trust. (Weissman)
- Ocean Governance—three recommendations presented. (Eichenberg)
- Help identify and highlight a family of action imperatives for managers, citizens and legislators. (Stupak)
- Need to become more inventive at restructuring traditional institutional arrangements—not by just reorganizing and renaming, but by fundamentally improving their effectiveness. (Stupak)
- Search for a more productive interface between public and private action, and encourage a broad vision that is not bound up in traditional roles. (Stupak)
- We favor the creation of a national ocean policy council and working with the National Academy of Sciences to develop much needed national strategies for environmental research, monitoring, and education. (Allen)
- Policy and management must be based on ecological-hydrological units rather than on political boundaries. (Allen)
- The link between science and management can be facilitated by establishing peer review as a standard procedure prior to the approval and implementation of major management initiatives or programs. (Allen)
- Specific recommendations are presented for: ocean governance; ecosystem approach; interagency council; and, investment. (Rufe)
- Take an ecosystem approach to coastal zone management. (Wellenberger)
- Encourage NOAA to establish a cross-cutting administrative mechanism and foster agency-wide integrated programmatic planning and implementation of its research, education, and outreach functions. (DeVoe)
- Encourage NOAA to integrate and enhance its educational and outreach activities in partnership with the extramural community in support of balanced use and conservation of the nation's coastal, marine, and Great Lakes resources. (DeVoe)
- Recognize and promote Sea Grant as a unique and currently underutilized university-based program that can serve all of NOAA and its divers clientele throughout the country. (DeVoe)
- Recommend that Sea Grant become the nation's primary extramural, university-based research, education, training, and technical assistance program in support of coastal, marine and Great Lakes resource use, management, and conservation. (DeVoe)

- We urge the Commission to examine where realignment and consolidation of ocean-related government functions are attainable in a way that provides greater effectiveness and accountability. Keep the research and regulatory arms separate while ensuring that the best available research results guide regulatory decision making. Develop an efficient and integrative system of information exchange and coordination among federal agencies. Enhance State and local capacity. We believe that marine/ocean outreach capability would be improved if NOAA would create a new Office of Outreach, Education and Public Engagement. (NASULGC)
- Embrace an ecosystems-based approach to management for all of the nation's marine resource activities, including environmental and human dimensions as well as mechanisms for adaptive management. (NASULGC)
- We urge holding a major White House Conference and the establishment of an office or designated staff person in the National Economic Council to develop a long-term national strategy addressing declining workforces in Federal agencies that deal with ocean issues. (NASULGC)
- Recommendations for new and creative governance mechanisms should be guided by 10 proposed principles. (Fry)
- Industry endorses the development of a more comprehensive, integrated approach to these issues within the existing federal resource management structure; it supports a wide variety of suggested new and creative solutions. (Fry)
- Enhance governance, in partnership with states and territories, to address ecosystem management at the regional, state and watershed level (includes three specific recommendations). (CSO)
- Coastal and Ocean Governance (includes six specific recommendations). (CSO)

TOPIC: *GOVERNANCE*

KEY ISSUE: *Roles in Ocean Governance*

ISSUES RAISED

- Merge of traditional and cultural approaches with Western style of management of resources is ongoing challenge for both small Pacific Island nations and U.S. Federal structures. Acknowledgement of existing patterns and incorporation of traditions and cultural norms is key to implementing successful resource management program in Pacific. Recognizing integration is required when instituting resource management programs is advocated as critical starting point and to be merged in implementation approaches. (Peau)
- Role of public government:
  1) Facilitate development of vision;
  2) Ensure benefits do not accrue to just one organization, region, institution; make sure there is leveraging, partnership, funding. (Davidson)
- Try and remove layers of federal management and simplify process; figure out who can do it and give them responsibility. (Dodds)
- One of the challenges for Commission is to think carefully about role of federal government in helping to clarify federal interest. (Stallworth)
- Commission should set goals for federal and state governments to follow. (Stallworth)
- Challenges:
  1) Increasing devolvement of decision-making to state and local level;
  2) Limits of new legislative mandates in addressing complex environmental challenges; need for more incentive- based collaborative processes;

  NGOs private sector play increasingly important role. (MacDonald)
- International cooperation necessary to resolve most oceans issues. Issues affecting international ocean policy flow through four levels of government: local, national, regional, and global. Global and regional must be linked to national and local to ensure international solutions meet local and national needs. (West, MB)
- Four current international oceans policy issue may be of interest:
  1) Ratification of UNCLOS;
  2) Spread of invasive species through ballast water discharge: need shipboard technologies to eliminate organisms and pathogens;
  3) Coastal management: U.S. could improve effectiveness in Caribbean countries;
  4) Marine transportation system security-ships, ports, offshore facilities-vulnerable. (West, MB)
- Optimal role of State Department in brokering international marine science collaboration: diplomacy, policy development, and implementation of international science cooperation. (West, MB)
- Effectiveness of international large programs led by U.S.:
  1) Need to bring into force those instruments that are not yet in force (i.e., FAO Compliance Agreement);
  2) Need to continue to develop better measures where new technologies permit improvements;
  3) Ensure international measures are implemented. [includes description of global and regional programs] (West, MB)
- Urge thinking about environmental/defense connection abroad (U.S./Russia/China); oceans/environmental agenda can help reduce conflict. (Weldon)

- A database exists from UN conference on environment and development for 2,000 tasks from program of action; what they are and who is responsible. (Antrum)
- Coast Guard is principal federal maritime law enforcement agency; also regulates portions of maritime industry for safety, security, and environmental protection. (Carmichael)
- DOI has significant responsibility for coastal and ocean environments. [list of agency programs and activities provided] (Groat)
- Not all answers are up to government. Need to maintain sense of public/private partnership. (Struhs)
- Sea Grant conducts priority-driven research, transfers scientific results to public, provides educational opportunities from K-12 to graduate degrees. [detailed description of Sea Grant is provided] Portfolio includes: promote sustainable fisheries; encourage development of responsible aquaculture; support quality community development in coastal areas; mitigate coastal hazards; create value through marine technology; expand public literacy. [discussions provided] (DeVoe)
- People are the missing link to solving many of our ocean resource problems. (Berry)
- International leadership—the U.S. lacks effective leadership roles in international ocean affairs due to nonparticipation in key international treaties. (Hamilton)
- The Gulf of Maine Council may provide a good model—to work between the states' programs and the potential extension into some regional entity that has some broader or new mandate from the Federal level. (Durand)
- USFWS broad areas of concern related to stewardship of ocean and coastal resources and protection of the marine environment are:
  1) Water quality and quantity in the Northeast [discussion provided];
  2) The health of fish and wildlife [discussion provided];
  3) Aquatic nuisance species [discussion provided]; and
  4) Watershed health assessment techniques [discussion provided] (Geiger)
- In order to sustain our operations, Congress has appropriated direct funds through agencies. In addition, applications have been submitted for competitive grants through NOAA's Coastal Services Center. (Skinner)
- There is something to be said for telling agencies to do their job so things do not end up in court. There needs to be more emphasis on the non-marine agencies doing their job when it comes to the oceans. (Goldburg)
- The City of Gloucester led in the formation of the Northeast Seafood Coalition, representing fishermen and seafood processors throughout the region. The City is fully engaged in the deliberations on the current northeast fishery management plan, as well as discussions regarding the reauthorization of the Magnuson-Stevens Act. The City faces a broad array of ocean policy issues in the day-to-day business of local government. (Bell)
- The roles and missions 2000 study of the Coast Guard has not been updated. All of the roles are still valid for the Coast Guard and the addition of the homeland security role being molded into the port security, is all a mission growth area. The need for any additional staffing and vessel requirements will be relayed to the Coast Guard headquarters. (Underwood)
- An emerging and increasing part of the Civil Works program is aimed at using the scientific, engineering and collaboration skills of the Corps to restore the Nation's environment. (Griffin)
- Because oceans and their resources do not recognize national boundaries, international cooperation is necessary to resolve most ocean issues. (Turner)

- U.S. leadership is essential and should take several forms. First, we obviously need to be a model ourselves. We must practice at home what we want others to practice abroad. Second, we must continue to work the international forums to develop treaties and non-binding instruments necessary to address oceans issues. Third, we must be creative in finding new ways to address problems such as through work in the WTO to reduce or eliminate subsidies that contribute to overfishing and overcapacity. Finally, as a nation with many resources we must actively engage in capacity building for others to enable them to manage their coastal areas and resources. Our White Water to Blue Water initiative is one such example. (Turner)
- Enhancing the Sea Grant Role within NOAA in support of an integrated U.S. Ocean Policy: background and rationale statements provided. (DeVoe)

PRESENTER RECOMMENDATIONS

- The U.S. must allow its Territories and Commonwealths to manage the living and nonliving resources within their 200-nautical-mile EEZ and to utilize the revenues generated from these resources for their own prioritized purposes. (Van Dyke)
- Should emphasize consideration and evaluation of cultural practices or traditional governance strategies of indigenous populations; can provide insights an alternatives how to manage marine resources sustainably. (Underwood)
- Ocean governance regime should include strong role for coastal states and effective federal-state partnership with strong federal consistency review provisions. (Wan)
- The U.S. must work through the WTO to strengthen the global commitment to environmental protection, and to ensure that the value of free trade, as important as it is, does not overwhelm the equally important values of promoting biodiversity and protecting threatened and endangered species. [discussion provided] (Van Dyke)
- Coast Guard-supported agencies must establish clear and objective requirements to address. (Carmichael)
- Need to get people political, not partisan, to hold Congress accountable. (Weldon)
- Recommend continued state-federal partnerships as mechanism for meeting objectives of Oceans Act. Recommend close cooperation among all government agencies to ensure consistent management, appropriate funding and facilities support, cost-effective operations and enhancement of state-federal partnerships. (Sedberry)
- State and local governments have important roles in ocean policy; emphasize communication and conflict resolution. (Talbert)
- Up-current (international) needs must be addressed. (Rader)
- Make NOAA a functioning agency; it is currently dysfunctional.
  1) Organic act setting clear responsibilities and articulate ocean policy.
  2) Consider removing “dry” side so it just deals with water. (Moore)
- Sub-basin planning is one way of achieving success using all the technical teams’ information. Local planning should be supported by some of the broad scale science issues and the management issues. (Varanasi)
- Commission needs to involve jurisdictional interests and key stakeholders as co-equals for ocean planning and management. (Evans, N)
- State and Federal interests must be structurally integrated: appropriated management scales; research and monitoring; funding; capacity building; communication and coordination. (Evans, N)
- Policy/framework plans must be developed by many players (like OPAC) to guide integrated management.

- Bolster limited ocean management resources by engaging the private sector. Since corporations also need to be responsible stewards of land and water resources, it is critical to engage them in dialogue and assist them in conservation investments. (Berry)
- There should be more local involvement. (Berry)
- Accept and include people and economics as part of the conservation equation; invest more resources into local volunteer efforts to secure the success of the larger programs. (Berry)
- Empower agency representatives who work with watershed groups to make decisions and commitments and to clarify what decisions they can and cannot make. (Ehrmann)
- Assist in building sustainable, local capacity by funding leadership and facilitation training. (Ehrmann)
- Establish a "clearinghouse" to provide one-stop shopping that would enhance the flow of information about watershed protection and restoration, technical assistance and funding, and other relevant data. (Ehrmann)
- USCOP should continue to work with the Bush Administration to ensure that ratification of LOS takes place as soon possible. (Hamilton)
- We should go into the EEZ and develop a regulatory structure that meets the needs of that area and then bring some of the standards, patterns and models back to the near shore environment to help solve many of the emerging conflicts there. Have one or two agencies that are committed to leading this effort. They would be administrative lead(s); DOC/NOAA are recommended. A particular area of activity, such as aquaculture, should be focused. (Swecker)
- Must have participation by adjacent states if the desired outcomes are to be used as models for problem solving in the Coastal Zone. Resources should be provided to other jurisdictions to fund the cost of participation. The goal of the group would be to develop a streamlined permit process for aquaculture projects in the EEZ. (Swecker)
- Transnational seafood corporations must be increasingly scrutinized to guarantee the protection of U.S. Commerce, to deal with economic and tax returns from national assets. (Taufen)
- The OPAC process would be much better served if there were a Federal oceans department to which they could address their recommendation for marine reserves in federal waters off Oregon and future recommendations for activities taking place in the Ocean Stewardship Area. Having one or more Federal representatives sit on the OPAC would also enhance opportunities for cooperation and coordination. (Taylor)
- Strengthen the Federal government's role in ocean governance, in partnership with states. (Durand)
- It is critical, however, that people do not lose sight of the huge successes made in improving the health of our nearshore coastal waters and of the programs—Federal, state, and local—that continue to play important roles. [Further description provided.] (Hartman)
- Recognize the important future roles that existing Federal programs can play in ocean and coastal governance. (Hartman)
- A Federal ocean policy must place a high priority on strengthening state and local capacity to manage development, reduce nonpoint source pollution, minimize exposure to coastal hazards, and preserve open space against development pressures. (Stahl)
- The NORLC can play a role on formulating the ocean strategy. (Colwell)
- Work more closely with the Office of Science Technology Policy (OSTP). (Colwell)
- Rely on scientists to recognize problems, but not to remedy them. (Young)

- One of the roles the Federal government can play is to be much stronger about the needs for the nation's watershed, so other estuaries can get the same support that the Chesapeake Bay receives. They have firm agreement accountability and they have interjurisdictional conversation. The same is needed for all estuaries. Chesapeake Bay Foundation put a billion or more dollars into the restoration of Chesapeake Bay. This should be properly calibrated. At some level, the same kind of commitment must exist across the board for all estuaries, within some kind of structure. Some of that exists within the National Estuary Program, but nothing like what you see for the Chesapeake Bay. (Spalding)
- Alaska has quite a good idea of the sorts of Arctic issues we should be focusing on, and understand full well the immediacy of their human impact. The Commission should use this knowledge. (Dorman)
- Those most dependent on a resource should be involved in the public policy process that addresses those management issues. Grassroots stakeholders should be included in the process at the highest levels. (Herrmann)
- Develop policies in ways that inclusive of local stakeholders, keeping in mind the grassroots people who are going to have to live with those policies. (Herrmann)
- Produce a straightforward explanation of how the tribes and rural residents can use the policies for their own benefit. (Herrmann)
- Policies should always have an implementation plan that states who is responsible for implementation and what resources (and from where) will be needed to implement actions. (Herrmann)
- Establish Regional Citizens Advisory Councils in sensitive and vulnerable U.S. coastal waters that empowers citizens to provide oversight of government and industry activities in coastal regions. [Further description provided.] (Steiner)
- Demand the inclusion of equal weight of small boat fishers to any and all governing bodies set forth by this Commission. The inclusion of citizen oversight and third party review in the decision making process will ensure that all stakeholders are represented. (Ulery)
- Get the stakeholders more directly involved. (Vick)
- Support citizen's oversight models and local involvement and training, and the reauthorization of the Marine Mammal Protection Act to further define the statutory language supporting co-management of marine mammals between Alaska Native tribes and Federal agencies. (Snyder)
- A national approach to ocean policy development is needed, but the building blocks for that approach must be assembled at the regional level. Toward that end, we suggest that consideration be given to the structure provided in the Water Resources Planning Act of 1965 as it related to the formation of a national system of (multi-state) river basin commissions and a federal U.S. Water Resources Council. (Kudrna)
- OMB ought to be at the table of the Ocean Council—once you get somebody involved with the money, the power flows very quickly. (Panetta)
- Councils should have equal representation from key state agencies and not be dominated by Federal agencies. (Panetta)
- We urge the Commission, to call on Congress to provide a forum for debate and resolution of conflicts inherent in both the present and future ocean policy debate. (Schwabacher)

Appendix 1

TOPIC: *COASTAL ZONE MANAGEMENT*

KEY ISSUE: *Roles of Governments in Managing Coast - Includes CZMA Issues*

ISSUES RAISED

- Coastal management of limited island resources formidable challenge in U.S. Insular Areas due to dependency on narrow economic base, growing population, changes in societal expectations. Development impacts are magnified on small island states. Priority issues: escalating impacts of population growth, applying regional network approach to significant environmental issues, maintaining balance between economic growth and sustainability, re-thinking the sustainability of reef fish stocks, need for research on physical parameters and ocean dynamics and impacts on ocean resources. (Brighouse)
- S. 6217 of CZMA overly broad and lacks regulatory teeth; no implementation funds. CZMA only has voluntary requirements for nonpoint program; no teeth (Gold)
- Coastal Zone Management: Coast is far from saved [description of CA and national coastal demographics]. Conflicting federal programs: provide perverse incentives to develop vs. attempt to manage development and protect vital areas. After 30-year tenure, CZMA has helped promote better land use management in some states, but failed to adequately protect coastal habitat and sensitive areas. (Nothoff)
- California Coastal Commission jurisdiction is state's coastal zone; through CZMA, federal consistency has review authority beyond coastal zone. Many federal activities have potentially significant affects on ocean and coast and only voice is through Commission federal consistency authority. Most important coastal management tool CZMA provides CA is federal consistency review authority; understand oil industry and DOD have asked for amendments to CZMA to weaken this provision. (Wan)
- Relationship between state, federal, and local programs. Local efforts are essential to fulfilling goals in any national and state efforts; temptation is to put in more regulations when some are working well, then you produce resistance. Flexibility, education, encouragement, rewards, site specificity, are all important for regulatory program to work. (Jennings)
- Ultimate success of outcome of Commission efforts depends on state government actions. (Cooksey)
- States need guidance to help sort out complex issues such as conflicts between man and nature and balance multiple use conflicts. Examples include:
  1) Ocean shorelines;
  2) Interdependent species management (horseshoe crab);
  3) Conflicting federal mandates (i.e., dredging permits, COE, NMFS, EPA) (Cooksey)
- In 1980s, North Carolina embarked on multi-year effort to identify its ocean resources and policy issues as well as to begin identifying options and actions. Several reports have been prepared [description provided] New issues: Severe hurricanes and need to reduce risk to property; fiber optic cables; reauthorization of CZMA immediately. (Ross)
- Importance of CZM prompted Louisiana to establish new way to manage coastal resources, largely responsible for discovery of severity of coastal erosion problem and many coastal use guidelines were crafted to address wetland loss. (Caldwell)

- Benefits of CZM: reduce adverse impacts to coastal resources while still allowing economic engine to run, federal consistency has helped get federal agencies to assist state in reducing coastal impacts and beneficial use of dredged material. (Caldwell)
- States take the lead in protecting natural resources. (Cooksey)
- States are key to a coordinated and comprehensive National Ocean Policy. (Cooksey)
- Partnership established by CZMA remarkably productive; More than 97% of national coastal areas fall under a state CZM plan. (Cooksey)
- Governors firmly believe all federal activities within or outside of coastal zone that may affect the zone should be subject to consistency review process. (Cooksey)
- Many coastal states have developed their own management expertise over coastal resources. (Underwood)
- Integration of ocean resource management into state CZM began in 1996-97:
  1) Florida Ocean Policy Roundtable: dialogue among public and private groups;
  2) Looking Seaward: Development of a State Ocean Policy is an overview and assessment of law and policy related to management of Florida's ocean resources;
  3) Statewide Ocean Resource Inventory (SORI) is a desktop GIS;
  4) Governor's Ocean Committee (1998) was charged with raising public awareness of the importance of the ocean to Florida and how to manage it better;
  5) Florida Alliance was formed by several members from Governor's Committee; serves as clearinghouse for information on key ocean and coastal issues and monitors and publicizes actions related to oceans and coasts; focuses on outreach and educational activities (conferences, white papers, etc). (Murley)
- Development and implementation of ocean policy in US VI significantly influenced by, and often dependent on, physical, ecological, social, economic and political characteristics of territory. (Ragster)
- Territory needs to build capacity to address policy development and implementation. (Ragster)
- Regulating agencies have become partially paralyzed, decisions are reactive not proactive. (Powell)
- The Port of Seattle and the people of King County are proud of the Terminal 5 redevelopment and clean up, a superfund site, and the regional efforts to protect the Chinook salmon, yet unfinished, by elimination of untreated sewage discharges and cooperative clean up of the lower Duwamish River. Strong relationships, cooperation and partnerships made these successes possible. (Edwards)
- Oregon's Coastal Management Program includes a statewide planning goal specific to Ocean Resources; one of 19 goals that frame the statewide land-use planning program. The Goal 19, Ocean Resources, sets the overarching policy standards for management and protection of ocean resources. All State and Federal agencies must meet the requirements of Goal 19. (Soliday)
- Ocean Resources Management program, created by legislature in 1991, builds on authorities of existing state programs and brings affected interests into a process. (Soliday)
- State ocean management—Improved state-level capacity for management of an expanded territorial sea is needed. (Hamilton)
- Currently, the Ocean Policy Advisory Council (OPAC), a state ocean advisory body that reports to the Governor, is assessing whether marine reserves would be useful tools for achieving Oregon's statewide conservation goals. (Taylor)
- Current state regulations articulate priorities for the use of all tidelands subject to the public trust, and require that any private use of tidelands be mitigated by some type of public benefit. (Durand)

- One of the many areas of continuing interest to New Hampshire is that of Federal consistency. (Hartman)
- Without CZM consistency as a cornerstone of any national ocean policy, it will be difficult to effectively achieve balance of the diverse interests and values associated with our coast. CZMA must be as an essential foundation and then all Federal programs that affect ocean and coastal management can be effectively coordinated and streamlined. (Stahl)
- Much work has been done by the National Estuary Programs (NEPs). Massachusetts has two NEPs: 1) The Massachusetts Bay NEP, and the 2) Buzzards Bay NEP. They both have been essential with the local communities. The Buzzards Bay Program has been instrumental in getting towns in the southeastern part of MA to address nutrient-loading issues. The Mass. Bay Program provided funding in the Plum Island Sound region, which helped us to do an analysis of issues, and to work with the local communities to get programs to update their regulations. (Buchsbaum)
- The Federal government will never be able to force communities to make substantial changes just on the sheer politics of it alone. FEMA will not get involved unless the Presidential declaration comes forth. EPA and the Coast Guard have their programs and jurisdiction and FEMA has their programs and jurisdictions. FEMA has informal meetings and communications with the Coast Guard and NOAA. FEMA shares quite a bit of information with other Federal agencies in mapping special flight hazard areas. The flood model that is used actually belongs to the USACOE. That flood model was developed to map both river and coastal flood zone areas. The vast majority of the various flood maps were actually done by other Federal agencies, normally ACOE and USGS. Currently, private contractors do most of the mapping because they can do it faster than the Federal agencies that have fewer resources. There is great coordination both regionally and nationally. FEMA has developed a Coastal Construction Manual that specifies coastal building design and construction standards for coastal areas. (Pennington)
- The Federal Emergency Management Agency (FEMA) is responsible for the National Flood Insurance Program (NFIP). Community participation in the NFIP is voluntary and each flood-prone community must assess its flood hazard and determine whether insurance and floodplain management would benefit the community's residents. (Pennington)
- In May 2000, FEMA commissioned a report by the Heinz Center for Science, Economics, and the Environment, which concluded that approximately 25% of homes within 500 feet of the U.S. coastline would fall victim to the effects of erosion with the next 60 years. (Pennington)
- One response by FEMA has been to develop a plan to achieve a nationwide updating of Flood Insurance Rate Maps (called the Map Modernization Initiative). (Pennington)
- The tribes in Alaska are very concerned about their environment, their resources, and the health of their people. (Herrmann)
- The 2002 Farm Bill provides $5.6 billion in Environmental Quality Incentives Program cost-share and technical assistance through FY 2007 that will be available to farmers and private landowners to improve soil, water, and air quality. As a subset of EQIP, Congress also established a new Ground and Surface Water Conservation Program and authorized funding of $310 million through Fiscal Year 2007. The Wildlife Habitat Incentives Program is providing $360 million in funding. The Wetlands Reserve Program was expanded in the Farm Bill to restore, enhance, and protect more than 1 million acres of additional wetlands. (Knight)
- Three national programs have been developed in past ten years; Coastal Training Program, System-Wide Monitoring Program, and Graduate Research Fellowship Program. (Wellenberger)

PRESENTER RECOMMENDATIONS

- Require and provide opportunities for increased input from the territories in the development of policy and the strategies devised to implement them:
  1) Create local ocean/coastal working groups of federal and local officials;
  2) Recognize need for appropriate communication strategies for involving local stakeholders;
  3) Include and support active USVI representation on U.S. delegations for international or national environmental policy (e.g., IOCaribe, UNEP-Caribbean Environment Program). (Ragster)
- Nonpoint programs of CZMA and stormwater 319 program of EPA need to be reviewed for duplication and new model for state-federal partnership in coastal nonpoint program needs to be implemented. (Haddad)
- Recognize the need to include capacity building for the territory in the implementation phase of all policies:
  1) Identify local expertise that can assist;
  2) Ensure funding is available to implement new policies;
  3) Require effective communication with, and education of, VI public;
  4) Provide assistance to develop strategy for a coherent framework. (Ragster)
- Recommend:
  1) Marketing, education and outreach- expand public information efforts on coastal and ocean stewardship; federal cooperation in education and development of professional coastal zone managers using scholarships, grants, internships and foreign exchange programs.
  2) Hazard mitigation: federal initiatives for hazard mitigation is successful, continue support for these efforts to prevent beach loss, curb vessel spills and discharge, resist alien species, improve land use planning.
  3) Economic analysis: need better picture of nationwide impacts and economic contributions of coastal related activities.
  4) Regulatory environment: need national standards for shoreline setbacks, coastal armoring, public access, dune protection, jurisdictional boundaries, floodplain and coastal development. (Blane)
- Improve communication and planning by state and federal agencies:
  1) Better dialogue between commercial users and government with clear and obtainable objectives;
  2) Private industry needs to partner with government to reach financial and conservation objectives. (Coon)
- Coastal Zone Management Act:
  1) CZMA Enhancement Grants Program should be amended to facilitate the creation of a national standard of beach health indicators and provide incentives for state CZM management agencies to maintain records on beach health indicators.
  2) CZMA Enhancement Grant Program should be amended to provide incentives for state CZM programs to increase public awareness regarding beach and coastal health. (Werny)
- Key message: not only oppose any weakening of federal consistency, recommend strengthening it; federal agencies should not be allowed to ignore states by claiming they "attempted" to be consistent to the "maximum extent practicable":
  1) preclude use of inadequate federal funding as excuse for non-compliance [Navy example provided];
  2) Any renewal of federal permits and licenses for OCS uses subject to consistency review [OCS leases example provided]. (Wan)
- Strengthen CZMA policies to improve ability to manage resources:
  1) habitat protection on land must be considered part of any overall ocean ecosystem approach;
  2) concerned about nonpoint pollution. (Wan)
- CZMA Sections 302 and 303 should recognize coastal watersheds and place greater emphasis on conservation of ocean resources. (Wan)

- Target acquisition of important coastal resource lands:
  1) Important wildlife habitat and resources (barrier islands, wetlands, etc.) should be acquired and permanently protected through variety of funding mechanisms like competitive grants and public bonds.
  2) "Healthy coast surcharge" percentage of each real estate transaction for transfers goes to acquisition fund.
- End perverse federal incentives for coastally destructive development:
  1) National Flood Insurance Program and Army Corps beach nourishment and armoring;
  2) Coastal Barrier Resources Act (CBRA) should be expanded to Pacific coast [description provided]
- Institute meaningful growth control measures to protect coastal resource lands:
  1) Limit impervious surfaces in watersheds to less than 10% of total land area;
  2) Set residential densities at levels that can support transit and reduce vehicle trips per household;
  3) Protect important coastal habitats. (Nothoff)
- New funding under CZMA should be tied to state and local governments instituting growth management regulations conforming to growth management principles.
- Strengthen polluted runoff controls in the CZMA:
  1) Coastal Nonpoint Pollution Control Program, CZARA, must be reauthorized, integrated into CZMA with increased dedicated funding, and strengthened to provide meaningful incentives and penalties;
  2) Monitor and evaluate state nonpoint control programs to ensure implementation;
  3) States should be required to set meaningful specific goals and held accountable.
- Maintain state and federal partnership through strong consistency authority:
  1) Consistency authority should be maintained legislatively and upheld legally. (Nothoff)
- Changes: Act should remain unchanged with two exceptions; eliminate or raise cap on Section 306 funding (now at $2 million); Modify Section 309 Enhancements to fully fund enhancements or eliminate section. (Caldwell)
- Reassess federal laws and policies regarding future development of coastal environs:
  1) Define "water dependency" and develop policies to ensure wise use of shorelines for truly water dependent endeavors;
  2) Develop policy requiring "in-kind" mitigation for the most endangered wetlands;
  3) Review federal subsidies for developments in 100 year flood plain;
  4) Tie information gained from natural hazards response programs to permitting programs to minimize probability of future impacts;
  5) Facilitate federal/state interagency meetings as part of permitting process to ensure all aspects of legislated environmental protections are addressed. (Carpenter)
- Coastal zone consistency: OCS oil and gas development needs predictability and clarity. Concerned about new conditional concurrence provisions. (Oynes)
- Better permitting for considering cumulative impacts best handles on local level through zoning and planning. (Palmer)
- Sustainable economic development and stimulus for coastal communities:
  1) Improve rigor of NEPA environmental assessments [five recommendations provided]; and
  2) Develop market-based incentives to encourage sustainable development [four recommendations provided]. (Hopkins)
- Improvements to CZMA:
  1) Limit state's CZMA consistency review of private permits over activities outside of its own coastal zone;
  2) Allow a single consistency certification for an OCS plan to cover all activities, including air and water permits;
  3) Grant the Secretary of the Interior the authority to determine information requirements for consistency certifications;

4) Provide the Secretary of the Interior with the authority to determine state appeals concerning OCS energy activities;
5) Ensure timely decisions on override appeals. Appeals to consistency determinations are often drawn out by the Commerce Department's implementation requirement that the deadline for decision making does not begin to run until the administrative record is closed;
6) Examine efficient state consistency permitting practices that are already in place. (Talbert)

- Reauthorize CZMA with strong nonpoint pollution control provisions. (Giles)
- Rationalize the coordination of federal agencies involved in development and implementation of policy:
  1) Communicate how it will work and how implementation will be more effective;
  2) Consider providing liaison for each policy under consideration. (Ragster)
- Recognize that federal and local government agencies need orientation and strategies to enable them to work in multi-sector or cross-sector teams during policy development. (Ragster)
- It would be helpful to have an amendment to the CZMA to be clearer on the expectations of the communities and local governments, and what guidelines they want regarding consistency along the coast. (Shultz)
- Growth issues should be included in the CZMA. It is a goal for local governments to direct growth new development away from the shorelines, and minimize the impact of shoreline ecosystems and habitats. (Shultz)
- It would be valuable if when local governments did their comprehensive planning under the State Growth Management Act, they could do environmental analysis at that level, and then when projects came in that were consistent with the plan and direction of growth everyone had agreed to through the planning process, you wouldn't have to do site specific environmental review. (Lashever)
- The Coastal Zone Management Act—Coastal Zone Enhancement Grants Program should be amended to facilitate the creation of a national standard of beach health indicators and provide incentives for state coastal zone management agencies to maintain records on beach health indicators. (Evans, C)
- Through amendments to the Coastal Zone Management Act and/or the Outer Continental Lands Act, expand and clarify the state role in management of the expanded territorial sea. (Hamilton)
- Keep the Federal consistency process at least as strong as it is, and possibly reinforce it to make the states' role more assured than it is right now. (Hartman)
- A great place to start when developing a comprehensive ocean policy would be to vigorously support the Federal Coastal Zone Management Act and the programs developed under it. (Stahl)
- Balance must be achieved. There are great efficiencies in having the Coastal Services Center create a set of maps nationwide and we're looking for Federal agencies to work the data into a format that is useful on a national basis. There is still clearly a need to build the capacity at the state level so they can issue better water quality permits or help the aquaculture industry. (Keeley)
- Seek legislation to authorize the Map Modernization Initiative, as well as consideration of coastal erosion data in the flood insurance rating schedule. (Pennington)
- Coastal management by regions really represents a scale that hasn't been addressed in a lot of the major programs that have been conducted by NOAA in the states, but they are extremely important to the public and they really deserve some consideration for programmatic funds in the future. (Thomas)
- In order to have our local resident play roles in the data collection in their remote location, they must understand their waters, understand the communities, and be able to provide valuable hands for the collection of marine date. They need some training and they need some education in it. (Pawlowski)

- The tribe should begin to develop a Local Area Management Plan (LAMP) for the Unalaska Bay Area, one that is based on ecosystem principles. (Pletnikoff)
- It is imperative for Mayors and other local government officials to have ongoing and meaningful opportunities to influence the development and implementation of the policies you have been charged with reviewing. (Jimenez)
- Mayors and municipalities should have an equal voice and vote in what and how the Great Lakes are managed. (Jimenez)
- Engage states in whatever ocean policy model is adopted. Set regional marine objectives then allow structures to form around them. (McPhail)
- Develop stronger partnerships between NERRS and CZMP with a Reserve in every CZMP state. (Wellenberger)
- Elevate NERRS role in coastal land stewardship. (Wellenberger)

TOPIC: *COASTAL ZONE MANAGEMENT*

KEY ISSUE: *Increasing Population and Development Pressures*

ISSUES RAISED

- Threats to coastal resources: CZM program concentrates on identifying and responding to continual threats to coastal resources
  1) Erosion: beach loss from armoring and sea level rise
  2) Pollution: agriculture runoff, sedimentation, poorly treated wastewater, urban drainage.
  3) Coral reef loss: bleaching from global warming, alien species, polluted runoff, vessel groundings, marine debris.
  4) Poor land use planning.
  5) Natural hazards: hurricanes, lava flows, local flooding, tsunamis.
  6) Cultural alienation: heavy influx of foreign and mainland visitors have had major impact on traditional Hawaiian culture.

  Challenge and Response:
  1) Better marketing, education and outreach. Community workshops, elementary school programs, public service ads, citizen advisory councils.
  2) Hazard mitigation: improved ability to predict and respond to threats.
  3) Better economic analysis: done poor job of quantifying economic contributions of coastal resources; far easier to ask for funding when you show return on investment
  4) Regulatory efforts: promoting concept that environmental protection is good for business; more consistent and user-friendly regulations. (Blane)
- Concerned that marine protection efforts stop at water's edge, beach bears brunt of development pressure. (Etnoyer)
- Hope Commission will incorporate measures to stem population growth and strive for sustainability. (Grigg)
- Environmentally harmful coastal development springs from many sources: insufficient funding; perverse incentives and lax or nonexistent standards are a few. (Nothoff)
- Coastal population densities are now four times greater than national average. [testimony is a description of the Model for Predicting Future Urban Growth in Charleston, SC] (Allen, J)
- Many pressures on oceans (overfishing, introduced species, agriculture) but coastal development is one of the most daunting. Population density is just part of the issue. 10 Percent Rule: when more than 10% of watershed acreage is covered with impervious surface, the rivers and streams within those watersheds become seriously degraded. If today's development trends continue, our estuaries will experience sharp and irreversible decline in health and productivity. Because land use is a local matter, reforms must be made by tens of thousands cities, counties, and towns. (Beach)
- Of all lessons learned, perhaps most important is connection between land use and everything else. Policies should be initiated that motivate local governments (where land use decisions occur), communities, and developers, to grow smart. Smart growth means smart business. (Harrison)
- Total population living, working, recreating at coast is increasing; population is getting older and richer. Traditional populations, often specific racial or ethnic, are being displaced by rising property values. (Orbach)
- Quality of beach and water access is extremely variable across region; access still low, increasingly difficult because of trend towards "exclusive" business/residential. (Orbach)

- Most coastal municipalities and counties in the region lack basic comprehensive planning frameworks and resources. (Orbach)
- In general, still a lack of understanding of common natural phenomena such as barrier island movement, sea level rise, tide and storm impacts on estuarine function, etc; problem is worse the farther offshore you go. (Orbach)
- Have set up an opposition between development and environmental interest; need a different model that addresses it as design problem therefore need to involve many more people. (Orbach)
- Pew Commission on coastal development:
  1) Increased human occupation of the coast is irreversible and will continue;
  2) Need to understand the importance of our actions and the relationship of our actions to the environment. (Riley)
- Oceans start inland; protection must extend inland. (Lane)
- Issues always seem to come back to population growth, because population is primarily oriented along coast. (Powell)
- Ocean policy issues and concerns for USVI:
  1) Challenge of undertaking development on small islands with steep slopes, dense populations and fragile inshore coastal systems can be seen in the serious impacts of land-based nonpoint sources of pollution on reefs and other coastal ecosystems. Public education and communication programs and changes in development laws are major strategies to decrease effects;
  2) Solid and liquid waste disposal a major challenge;
  3) Stress on coral reefs from fishing and pollution have led to proposals for marine reserves and other restrictions create social issues among different stakeholders; need to address conservation and resource use as a community. Challenge is to realize appropriate level of integration of conservation efforts into development activities;
  4) Threats of natural hazards (hurricanes and earthquakes) raise concerns about how current policy addresses mitigation and recovery for manmade and natural systems;
  5) Need data to make critical decisions, not always clear if data exist or how to access the information needed. (Ragster)
- Land Use: Have laws to protect shorelines and ensure public access and enhance wildlife. Have acknowledged past mistakes and great strides have been made to correct them. (Shultz)
- Human population growth has a great impact on environmental consequences. Demands on the resources of the world for feeding and sheltering this mass of people is reaching limits. We have reached a stage where all the events produced by man are intertwined and each affects the other. (Poole)
- Fisheries resources are an excellent case where population growth has reduced the available fish and causes changes in the views of how this resource should be managed. (Poole)
- The cumulative impacts from individually planned and permitted coastal projects are undermining our larger efforts at coastal management. The individual projects add up to a wasteful pattern of development that has fiscal, environmental, and social consequences. [Further description provided.] (Richert)
- Development of coastal areas, watersheds and habitats is essentially irreversible, a permanent loss of our natural capital. (Stahl)
- Commercial, recreational, charter boat businesses, and subsistence needs are all competing for a limited amount of resources. [Further description provided.] (Pletnikoff)

- While there are not the extreme problems here that face coastal communities around the nation, the essential problem is shared of how to continue making a decent living to keep the fabric of the communities and make sure they do not unravel. (Vick)
- Over the past two decades, numerous large-scale marinas in excess of 500 slips have been built throughout the Great Lakes and Canada to fulfill the demand of a large recreational boating industry. Sales in the recreational boating industry have fueled this growth. (Dikmen)
- Important issues include: importance of beaches to economy, keeping beaches open, water quality and Federal support for upgrades, repair and replacement of water and sewer infrastructure. (Jimenez)
- Development is clearly impacting on our wetlands and marshes and we are losing them as a result of that kind of development. The problem is that the threat from the resources largely is from ourselves, from our own behavior. (Panetta)
- Most of the politics, the pressure and the impacts upon the oceans occur in the coastal zone within a relatively short distance from the coast. (McPhail)
- Development and building continues without adequate recognition of real total costs involved. (Jumars)
- Discussion of background and current issues concerning coastal development. (Rufe)
- Findings and goals and objectives for Coastal and Ocean Stewardship: Planning and management of growth impacts, shorelines and coastal hazards. (CSO)

PRESENTER RECOMMENDATIONS

- Need to develop and enforce policies that protect areas from harmful coastal development. (Giles)
- Must change pattern of coastal development to maintain healthy estuaries. Need to start scenario modeling for metropolitan areas of U.S. coast. Regional planning and federal consistency with the plans is needed. Develop quantifiable standards and goals that regions can seek to achieve. Thinking about the future should occur at regional scale asking 3 questions: 1) risks with not changing projectory; 2) choices and alternatives; 3) mechanisms for implementing right choice? (Beach)
- Need: moratorium on coastal development before limits of growth are exceeded. (Monroe)
- Do not limit your thinking to first 50 or 100 or 1,000 feet of coastline, think upstream, right to headwaters of rivers that feed the ocean. This is where fate of bay or ocean will be determined. (Harrison)
- Land preservation has to be a key element of anything we do. [description of MD programs provided] (Harrison)
- Land Use:
  1) Reauthorize and amend CZMA creating a new coastal communities program to assist states in working directly with local governments to improve planning and management that balances growth and economic needs, protects critical resources and revitalizes waterfront areas. [details provided]
  2) Urge support for the establishment of a Coastal and Estuarine Conservation Fund—a permanent, dedicated funding source for coastal land conservation and habitat restoration. [details provided] (Shultz)
- More financial support and educational opportunities are needed to help our Northwest coastal communities diversify. (Revell)

- Incentives need to be created, an infrastructure built, and regulations enacted that will direct development to suitable nodes in coastal watersheds, and that will preserve critical masses of habitat, coastlines, and rural areas. (Richert)
- Reauthorize and strengthen the Coastal Zone Management Act to make it fully consistent with and build capacity for state and local initiatives for "smart growth." [Further description provided.] (Richert)
- Move aggressively forward in acquiring and protecting undeveloped land on the coast and in coastal watersheds. (Stahl)
- National ocean policy should also stop providing incentives for regressive programs that endanger our security against coastal hazards. The Federal government should eliminate subsidies and incentives (e.g., availability of new government-sponsored insurance) for development and redevelopment in coastal high hazard, flood and erosion areas. (Stahl)
- The National Flood Insurance Program is the classic example of contradictory Federal policies and should be reformed to eliminate the costly subsidization of development in coastal hazard prone areas. The funding saved should augment a new very substantial land acquisition program dedicated to the protection of coastal critical habitats, open space and public access. [discussion provided] (Delaney)
- The use of Comprehensive Harbor Management Plans should be utilized to reach consensus on water quality restoration plans, dredging strategies, maritime economic development activities and public waterfront uses. [discussion provided] (Delanay)
- Large-scale marinas should be of great concern for every county and municipality and state in the Great Lakes region. It is imperative that we scale them properly and allow for expansion, as the market requires. Therefore, before new marina building initiates, marinas should be reviewed with diligence and scrutiny for full approval from both local municipalities, and state and federal entities surrounding the Great Lakes. (Dikmen)
- We need to expand ways to change land development practices to reduce runoff. We need to promote efficient development. (Panetta)
- More consistent regulations and enforcement of regulations on ownership and development of coastal properties to prevent future losses should be implemented. (Jumars)
- Specific recommendations are provided for coastal development. (Rufe)
- Planning and management of growth impacts, shorelines and coastal hazards (includes seven specific recommendations). (CSO)

TOPIC: *COASTAL ZONE MANAGEMENT*

KEY ISSUE: *Use of Science and Technology*

ISSUES RAISED

- Coastal and oceans lack sufficient information or data that concerned citizen can understand. (Werny)
- Land Use-Coastal Ecosystem Study (LU-CES) key issues:
  1) Linking transport of forcing functions (e.g., contaminants), determining their fates (where do they end up) and identifying their effects on living resources;
  2) Spatial scaling.

  LU-CES research products intended to be used to enhance abilities of decision makers and resource managers; helped create unique partnerships between academic and government scientists, and between federal, state, and local resource management and planning agencies; provides data that can accessed in variety of ways and levels of technical expertise, in format designed to inform decision making process. (Kleppel)
- Detailed information and statistics regarding population demographics and urbanization patterns. (Kleppel)
- Having good science and engineering helps us prepare for when the money comes. (Caldwell)
- Ideas about prioritizing restoration needs based on science rather than politics. [detailed discussion and statistics about value of Louisiana industries, wetlands and land loss is provided] (Caldwell)
- Congress charged USGS to develop comprehensive and integrated national coastal program to address diversity of issues facing coastal communities. Impacts of rapidly growing coastal populations place increasing demands on developing ocean resources and space for economic benefit; understanding and mitigating the economic and environmental impacts of development is critical. Increasing populations require balance between sustainable resource use, environmental protection, assurance of safe communities and reliable marine commerce systems; federal government faces challenge of providing the information and tools to understand and mitigate resource and hazards vulnerability, to support and assess development of public policy, and to assess consequences of policy, resource management, and development decisions. (Groat)
- USGS has significant science capabilities [list provided] and priorities include:
  1) Information and monitoring [detailed discussion provided, with examples];
  2) Research;
  3) Integrated Information, Decision-Support Tools, Models and Assessments;
  4) Partnerships and collaboration. (Groat)
- Science seems to be brought in when we're almost at a crisis. Then, it is always too late and it takes too long to bring in the science. (Varanasi)
- Long-term continuous trend data about the health and status of shoreline resources are essential ingredients to these decisions. (Keeley)
- There is an increasing need for data collection in our coastal zone to support management efforts of NOAA, EPA, USFWS, and state agencies. Through a national policy we can build programs that employ our local people in using their knowledge to support data collection for science-based decisions. (Pawlowski)

PRESENTER RECOMMENDATIONS

- Need accurate inventory of projects and programs currently underway throughout federal, state, and local governments, academia, and the private sector. (Groat)
- Way to focus the science on critical management issue is to have the management drive the science priorities. (Groat)
- Formatting information for the public in ways that the public participates is important change in getting information out; coasts and oceans need to be in front of people everyday. (Orbach)
- Greater scientific understanding and information about marine resources and how they are affected by human activity. (Murley)
- The Commission should bring in the science ahead of the problems, and develop the science to work out the problems. It is just not possible to turn science on and off like a faucet. (Varanasi)
- The Commission should build on our understanding of watersheds and take it to the next step. Take a "Sandshed" approach. While we do not understand all of the transport mechanisms in our oceans, we do know that sand and sediments move from the mountains, the sea cliffs, and the dunes onto the beaches and all the way offshore. (Revell)
- Consider the entire sandshed and the linkages between each ecosystem that is dependent on the sandshed. Measure the health of each linkage to understand where to target our conservation and restoration efforts. One such indicator is water quality. (Revell)
- The nation lacks a standardized set of beach health indicators that can be used to measure the effectiveness of coastal zone management. (Evans, C)
- Support a strong program for the mapping of Alaska's coastal zone and EEZ. (Pawlowski)
- Coastal and ocean management must make better use of existing scientific knowledge. Access to and translation of technical information must be improved. (Allen)

TOPIC: *COASTAL ZONE MANAGEMENT*

KEY ISSUE: *Citizen Involvement*

ISSUES RAISED

- Volunteer based restoration projects significantly contribute to restoring habitat at a meaningful scale. However, on the other hand, the overall effort of restoring at a large scale cannot be done by volunteer projects. (Fletcher)
- The young, like myself, should exercise their voice. Inexcusably, many young people who are eligible don't even vote. They don't even understand or follow the policymaking process. Maybe they're discouraged. Maybe they don't realize how important it is yet. Forgive us. We'll be in your shoes someday. (Nugent)
- Alert, well-informed citizens are a key resource. (Stupak)

PRESENTER RECOMMENDATIONS

- Remember the citizen, the voter, the taxpayer who ultimately foots the bill; but oceans and coastlines and bays are national treasures; there needs to be strong national participation in management of these areas. (Harrison)
- Success of Bay Program: top-level attention; game plan with goal; involvement of citizens to maintain support; tributary teams. (Harrison)
- Coastal peoples should be included in the decision making process, farm salmon impacts, and the economic issues facing the state. (Ulcry)
- Recommend to the Commission to think carefully and recommend processes that step away from the management regime and go to the people. The people want to speak. The people of Alaska, the native community in particular, want their chance. (Marcy)
- We need direct citizen group participation in commissions, task forces, and other bodies to oversee efforts for ensuring that real ecosystem and public health are protected and for establishing clear restoration priorities. (Davis)

TOPIC: *COASTAL ZONE MANAGEMENT*

KEY ISSUE: *Economic Contributions of Ocean and Coastal Resources*

ISSUES RAISED

- Sustainable tourism: tourism not part of Hawaii's economy—it is the economy; if we lose or degrade coastal resources the impact on economy would be swift and painful. Tourism is highly symbiotic and must be integrated with quality of life of local residents. (Blane)
- Ocean industries important to Hawaii economy; 98% of goods are shipped to the islands. Hawaii has been discovered by cruise ship industry; 1/3 increase in port-calls over previous year; expansion of facilities needed but funds, time, and restrictions make it difficult. (Colom-Agaran)
- Ocean tourism industry in Hawaii highly segmented and dynamic. (Coon)
- Balance a sustainable ocean tourism growth model and making adjustments in how things are done; conflicts will arise and left unaddressed net result will destroy the very dynamics which make Hawaii such successful model for ocean tourism. (Coon)
- Ocean tourism industry needs a business-friendly environmentally-focused government. (Coon)
- Threats to ocean tourism:
  1) Federal marine mammal approach regulations are paramount threat perceived by commercial ocean user; no provision for "innocent passage" or demonstrate some "intent to harass"
  2) Degradation of Habitat: lack of coordination results in incremental, disjointed management
  3) Poor communication and planning by state and federal agencies. (Coon)
- Information about coast and coastal economy is essential part of any equation when considering ocean policies, but one that has been missing. Economic data can bridge from science to policy if understood properly. Importance of ocean and coastal economy [list of statistics provided]. To understand what programs and policies are effective, they must be able to measure change: No way to do that for coastal development: must understand people. We know very little about the coastal economy. (Kildow)
- National Ocean Economics Project:
  1) Little archived time series economic data for coastal economy; hard to get what does exist;
  2) Must ensure that data we develop is consistent, accurate, and clearly documented;
  3) First report at end of year: provide nation and each coastal state with estimates of the contribution of the coastal sector to the GDP.

  What we've learned so far:
  1) Federal marine expenditures in 2000 were less than half of 1970;
  2) For traditional manufacturing sectors, coastal economy not the fastest growing part of U.S. economy;

  Service sector is dominated by tourism and recreation; coastal tourism 85% of tourist dollars in U.S. (Kildow)
- In general, economies of coastal areas converting from extractive/heavy industries to dependence on leisure, tourism, and retirement (i.e., commercial fishing becoming displaced by competition for waterfront land and marinas for recreational clients) (Orbach)
- New England's economy and heritage have derived much from the sea. More than $1 billion is generated in revenue. (Delahunt)
- Alaska's oceans are a vital part of life in the 49th state:
  1) Alaska has more coastline—44,000 miles—than the rest of the U.S. combined

2) Alaska is bordered by three seas—the Bering, Chukchi, and Beaufort—two oceans—the Pacific and the Arctic, and the Gulf of Alaska
3) Alaska produces roughly half the seafood landed in the U.S.
4) Sport fishing supports over 10,000 jobs annually
5) A common local saying is: "When the tide is out, the table is set." (Knowles)

- Today half of the nation's population lives in coastal areas. By 2025, the figure will grow to 70%. Over 30% of the gross domestic product and 40% of the new commercial and residential development occurs on our coastlines. 95% of our international trade is shipped over the ocean and by 2010 the value of that trade will double to $5 trillion. In the Magnuson Act the domestic fisheries is defined to be out to 200 miles. (Stevens)
- Statewide, the fishing industry provides more private sector jobs than any other source and a large portion of coastal residents rely on marine resources for subsistence. [Further description provided.] (Robards)
- Unlike oil and gas, if managed properly Alaska's fisheries have the potential to be a perpetually sustainable asset to Alaska's economy. (Robards)
- Since 1990, over 70 Bering Sea crab fishermen have lost their lives in our nation's most dangerous occupation. Once robust crab stocks have declined, and fisheries dependent coastal communities have suffered lost employment and diminished tax revenues. (Thompson)
- GOAC-3 is a non-profit membership drive organization representing people who have made their living from the sea for millenniums. There are 43 viable communities in the Gulf of Alaska with an approximate population of 44,000 people. These communities are almost totally marine dependent. This includes commercial, subsistence, recreational fishing, shellfish aquaculture, tourism, transportation, and offshore mineral development. (Vick)
- Nature-based recreation like kayaking and "birding" is a booming industry. More businesses are competing to show that they're going beyond producing goods and providing services to caring for nature. (Davis)
- The marine angling community creates a large economic benefit to society. (Radonski)
- Findings and goals and objectives for Value and Economic Benefits of Coastal and Ocean Resources. (CSO)

PRESENTER RECOMMENDATIONS

- Government needs to assess coastal economy as carefully and completely as rest of the economy. Should be reporting standards for all sectors, like National Income and Product Accounts. Decisions about methodology and data collection must be at arms-length from government (Kildow)
- Assessment of the coastal economy requires continuous, reliable funding. (Kildow)
- Establish National Coastal/Ocean Economic Assessment; consistent data collection, analysis, storage and retrieval systems to assess impact of oceans on economy of coastal states and nation. (Nichols)
- Coastal economies best stimulated by: recovery of abundant fish populations; sustainable fishing policies; tradable fish-access quotas; health habitats and corals; attractive beaches. (Safina)
- Recognize the ocean generates incredible value to economy. (Murley)
- Empower communities through support of locally driven stewardship and management; simultaneously consult with watershed councils. (Berry)
- We must all protect the recreational and economic value of our beaches. Chicago tests daily the levels of e. coli bacteria at each of the city's beaches to make sure they are safe for public use. (Jimenez)

- The OC must recognize our community's significant role in coastal communities' social and economic well-being. (Radonski)
- Value and Economic Benefits of Coastal and Ocean Resources (includes four specific recommendations). (CSO)

Appendix 1

TOPIC: *NONLIVING MARINE RESOURCES*

KEY ISSUE: *Coordination and Responsibility for Management*

ISSUES RAISED

- Coastal sediment management Issues:
  1) Shoreline recession;
  2) Reduction in sand supply;
  3) Loss of coastal wetlands;
  4) Contaminated sediment loading;
  5) Lack of coordination.

  Current activities to address coastal sediment management challenges:
  1) Bypassing of sediments where navigation structures interfere;
  2) Restoration of coastal ecosystems; dredging in-situ polluted sediment and enhancing wetland and estuarine ecosystems by increasing circulation and restore lost habitat;
  3) Identify opportunities to beneficially reuse dredged sediments;
  4) With EPA, identifying and designating ocean disposal sites for non-contaminated sediments;
  5) Studies to control contaminated sediments at their source.

  National Programs:
  1) National regional sediment management demonstration program: assessing benefits of managing sediment resources as regional scale resource;
  2) Shoreline erosion control development and demonstration program: evaluates functional and structural performance of innovative approaches for abating erosion. (Thompson)
- Issues with federal consistency in other Gulf states than Florida: Texas, Louisiana, Mississippi, and Alabama successfully balance interests and "adequately consider" energy development. [excerpts from program's provided] (Fury)
- Why oil and gas program has so much difficulty along Atlantic and Pacific coasts and Florida:
  1) Gulf of Mexico has long tradition and realizes economic benefits;
  2) Industries image tarnished with 1969 Santa Barbara blowout, people need to understand new technologies better. (West,JR)
- Role as manager of nation's OCS energy and nonenergy mineral resources, MMS long-term strategy seeks to: assess availability of OCS energy and nonenergy resources; determine, in consultation with affected parties, if resources can be developed in environmentally sound manner; and, regulate all operations activities when leasing occurs to ensure safety and environmental protection. (Oynes)
- Changing legislation may make it easier for platforms to be reused for other purposes. Financial issues biggest problem with reusing platforms, particularly for aquaculture. (Oynes)
- Development of resources from submerged lands of federal OCS involves coordination of converging interests. (Talbert)
- Major MMS issues:
  1) Deepwater development (1,000 ft)— unparalleled expansion in deepwater began in 1996, likely to continue;
  2) Deep gas in shallow water: production in decline, MMS trying incentives for exploration;
  3) Ability to integrate conflicting mandates: MMS has merged commands from 10 major laws to produce growing level of energy production;
  4) Safety: OCS oil and gas program has remarkable safety record; [data provided]
  5) Sand Program: partnerships with states to identify sand deposits in federal waters for beach nourishment;

6) Scientific and technical research: robust program, GOOMEX study found mercury levels in fish near platforms no different from levels away from platforms, Technical Assessment and Research program supports research associated with operational safety and pollution prevention and spill response;
7) Proposed Atlantic Pipelines do not involve production only transport through OCS; Blue Atlantic Pipeline, Ocean Express pipeline. (Oynes)

- Most serious impediment to implementation of a predictable offshore energy program that Commission could offer a recommendation: Lack of predictability caused by regulations and statutes that govern consistency determinations under CZMA. Industry wants a clear process and timeframe for evaluating risks. (Talbert)
- OCSLA and CZMA recognize importance of cultivating domestic energy; however, conflicts between many uses of ocean resources have cropped up:
  1) Enhanced communication under CZMA often not the case; central and western Gulf multiple uses of oceans generally successful, other areas (Atlantic, Pacific coasts and eastern Gulf) CZMA misused to block responsible energy development;
  2) Lessons from Gulf of Mexico and common sense improvements in CZMA will go a long way to achieving reliable and efficient energy production. (Talbert)
- Perhaps not too late to begin thinking about impacts of OCS development in coordinated way. Debate for central Gulf must be over how to live with the leases and development that are there:
  1) Onshore cumulative impacts not being fully evaluated now; NEPA does not capture full cumulative impacts: i.e., Port of Fourchon;
  2) Overall approach to impacts, and potential impacts; mercury from drilling muds moving up the food chain should be of concern to all; err on side of caution; apply the precautionary principle (not without precedent in law). MMS could apply principle, particularly for rig removal. (Wiyqul)
- CZMA consistency process is most serious obstacle to explore and produce offshore oil and gas. (Caveney)
- Offshore oil and gas industry has served as an incubator for innovation/catalyst for leading-edge technologies. (Fry)
- CZMA has been misused by states to stall or halt offshore development on public lands. (Fry)
- Key challenge facing DOI is need to balance protecting coastal and marine environments, providing recreational opportunities in those environments and meeting needs of American public for food, energy, and mineral resources. (Kearney)
- Federal consistency: do not tamper with it. [detailed discussions provided] (Jackalone)
- The regulatory structure for offshore development is complex, overlapping, and not well coordinated in state and Federal waters. (Durand)
- Our nation lacks a policy and the mandate to develop long-term regional plans to address shoreline protection and sea level rise mitigation needs. (Koning)
- Current government processes for reviewing proposed submarine cables have multiple problems. A proposed new cable system must run a gauntlet of Federal, state, and local reviewing agencies. On the Federal level, the FCC, the ACOE and NOAA each play a role. (Shorb)
- The current governmental review procedures have a number of problems that threaten not only to unfairly burden and delay projects that are in the national interest, but also to kill such projects through delay. [discussion provided]. (Shorb)

- Regarding a special permit for cables to cross a National Marine Sanctuary, the August 2000 publication by NOAA was titled: "Advanced Notice of Proposed Rule Making." NOAA has not explained why special use permits should be required for commercial cables crossing sanctuaries and not other cables, for example. Two of the three commercial cables that have crossed National Marine Sanctuaries required a special use permit from NOAA. NOAA has been a bit inconsistent. Also, in dealing with the states and the Coastal Zone Management Act, there are routing restrictions or requirements for the cable to be buried or compensation to be paid to fishermen, out to 1000 fathoms, which is a practical limit for trawling on the West Coast. Similar permit conditions have gone out that far, dozens of miles from shore, which is beyond the state's territorial jurisdiction and going into offshore into Federal waters. That is also way beyond the limits where the Federal government should be restricting cables according to UNCLOS. (Shorb)
- What is absent is a long term plan for restoring and protecting this great natural treasure – a system wide plan that will address key issues associated with the Great Lakes such as international shipping that has brought in many invasive species, the value of the drinking water supply to those within and without the Great Lakes basin, drilling in the lakes, toxic sediment cleanup and much more. (Jimenez)
- We must manage the resource of the Great Lakes for our collective use and for the future. Municipalities are on the front lines of management, as we care for the shores of the lakes and safeguard most of the interactions between people and the water. (Jimenez)
- The Great Lakes Governors have committed to the development of a Comprehensive Great Lakes Restoration Plan that will outline our vision, guiding principles and our priorities for action to ensure that needed restoration activities are undertaken, and which will allow for continued environmentally responsible economic growth in the region. Have established guiding principles. (Vonnahme)
- Today, preserved by the waters on which they once served, the historic shipwrecks of the Great Lakes are arguably the world's best collection of shipwrecks. This underwater museum presents a unique opportunity to open windows to the past that would otherwise remain shut. Despite the incredible preservation of sites, shipwrecks are among the most fragile resource in the underwater environment. Unlike most natural resources, shipwrecks are non-renewable. Once a site or artifact is damaged or lost, it is gone forever. Removing artifacts from a shipwreck without conducting proper archaeology robs the site of its historic integrity, permanently diminishes its recreational and educational value. (Gray)
- The importance of weather information for commodity analysis can not be over emphasized. Weather data are closely scrutinized to analyze the impact on crop yield potential. On a daily basis, meteorologists track global weather developments and keep analysts informed of forecasts and predictions in the major crop areas around the world. The agricultural meteorologists interpret the impact of seasonal weather to date on crops at their various growth stages. (Motha)
- Existing U.S. legislation for archaeological sites on land are clearly designed to protect and preserve these resources for the benefit of humankind. Unfortunately, sites underwater do not receive the same level of protection. (Keith)
- Concur with comments and opinion of Advisory Council on Underwater Archaeology. (Noble)
- In the U.S., ownership of a particular historic shipwreck rests with either the Federal government or the state in whose waters it is located. While some U.S. states do not permit non-scientific recovery of submerged cultural material, others allow it and are awarded a share of the spoils. (Neyland)
- The most serious governance impediment to the nation's offshore energy program currently is the lack of predictability caused by implementing regulations and statutes that govern state/federal consistency determinations under the Coastal Zone Management Act (CZMA). (Fry)

PRESENTER RECOMMENDATIONS

- Begin work on National Shoreline Management Study. (Thompson)
- Participate in RSM National Policy Development. (Thompson)
- Set up national low interest loan program administered by DOT to improve shipping infrastructure. (Colom-Agaran)
- Give MMS primary responsibility for permitting OCS-related activities (one-stop shopping). (Oynes)
- A clear and predictable regulatory structure:
  1) Adheres to a transparent and consistent process to arrive at determinations within reasonable timeframe;
  2) Frustrating for companies involved in CZMA disputes is lack of consistency, example between review of pipeline impacts (o.k.) and platform impacts (denied). (West, JR)
- Clearly define roles and responsibilities of regulatory, enforcement, intelligence agencies, and coordination conducted by a lead agency staffed with expertise to identify and allocate tools available to protect Gulf resources. (Thompson)
- Examine CZMA regulations for projects on-and-offshore. (Kearney)
- We need a cohesive Federal national salvage policy. Should identify a Federal agency to take the lead for managing such a policy, such as the Coast Guard, Navy or other agency who is best suited for the role Once the appropriate agency assumes responsibility, there should be some high profile issue that will start things off. (Feldman)
- A more comprehensive EEZ management and leasing authority is needed to provide planning, coordination, regulatory oversight, leasing, and environmental protection for the full range of EEZ uses, including open ocean aquaculture. (Durand)
- Create a Federal 2050 and 3000-shoreline profile and institute management plans accordingly. (Koning)
- North American Submarine Cable Association (NASCA) believes that the Executive Branch should clarify the jurisdictional issue, and that a nationally consistent Federal permitting regime should be created to set the conditions for installing submarine cables. This Federal regime would operate in lieu of state and local permitting processes. This recommendation may be carried out by NOAA more strictly policing the state coastal zone management programs. NOAA could protect the national interest in telecommunications infrastructure by requiring certain provisions and procedures as a condition of Federally approving those state programs. (Shorb)
- Charge NOAA's Ocean and Coastal Resource Management division with overseeing the development of a coordinated and proactive framework for environmental protection, economic use, and scientific exploration for the EEZ, as well as state territorial seas. [Further description provided.] (Durand)
- The industry is asking for a more simple process from the principles of the CZMA, similar to what they did with the Natural Gas Act. (Shorb)
- Urge the Commission to consider the energy potential of Alaska and remember that Alaskan natives have relied on living marine resources for thousands of years and will do so for 1,000 more. The effort to develop marine resources off our North Slope must respect their subsistence living tradition. If the future is to include energy exploration activity off Alaska's coast, due consideration has to be given to the subsistence traditions of our areas. History shows that energy can be developed without interfering with subsistence activities. (Stevens)
- The Commission must consider the future of the gas and not make proposals that will lead to Congress and the Federal government to make enormous withdrawals of the areas off the shores of Alaska that will prevent eventual exploration and development of the oil and gas resources of the outer continental shelf for future Americans. (Stevens)

- Anything that sets up a process of withdrawals off the Alaska's shores that are not managed by the local area would be opposed by me. (Stevens)
- The City of Chicago, and other cities and rural areas around the Great Lakes, need federal support for the development of a Great Lakes protection and restoration plan. (Jimenez)
- Federal policy must above all seek to protect the Great Lakes, for all they mean to us as a natural environment, an economic resource and a cornerstone of our shared culture and identity. Clearly we must clean up pollution that has been introduced to the Lakes and prevent further degradation. (Jimenez)
- Part of a funded strategy for protecting and restoring the Great Lakes would almost certainly include the infrastructure investments cities need to make. (Jimenez)
- Shipwrecks are underwater museums that need research, protection and management to ensure continued enjoyment and educational benefit for future generations. (Gray)
- A uniform national policy that embodies the basic provisions of preservation for the benefit of humanity, as found in the UNESCO Convention, and research guidelines for sites that guarantee scientific study, as codified in the annex rules of that document. (Keith)
- Strengthening the Abandoned Shipwreck Act to remove problematic language that has resulted in treasure salvage and control of state-managed shipwrecks. (Keith)
- Drafting and supporting new legislation that prohibits the treatment of underwater cultural heritage sites and objects as items to be exploited for their alleged commercial value. (Keith)
- Place the responsibility for management of underwater cultural heritage beyond three miles under the umbrella of the National Park Service. (Keith)
- Work towards full implementation of the UNESCO Convention provisions even though the U.S. is not a member of UNESCO. (Keith)(Noble)(Neyland)
- Adopting a uniform national policy similar to that proposed by UNESCO for underwater cultural heritage worldwide would be a way to ensure that submerged archaeological sites are preserved and studied by scientists and enjoyed by the public in perpetuity. (Neyland)
- Improvements in the CZMA process with respect to energy-related actions and projects through appropriate statutory, rule and/or policy amendments are proposed. (Fry)

TOPIC: *NONLIVING MARINE RESOURCES*

KEY ISSUE: *Federal Policy Regarding New and Emerging Uses and Activities*

ISSUES RAISED

- There are no alternative energy resources on the horizon that can be developed in a timely manner. (Craven)
- Conceive of an alternate development strategy: must first adopt a concept of complementary and supplementary energy resources and recognize greatest untapped pool is the cold deep ocean water. (Craven)
- A supplementary energy resource has been developed for U.S. military submarines: pressurized water nuclear reactor. Pressurized water reactors at 300 feet or more depth could feed 1000 megawatts of power each. (Craven)
- Drilling has increased nationwide but gas deliverability not keeping up with demand. [statistics provided] To fully develop OCS potential must develop deep subsurface reservoirs. [statistics provided] (French)
- Development of new technologies needed to fully develop potential of OCS; [examples of new technologies being tried are provided] (French)
- Precluding areas from pre-leasing activities inhibits, rather than promotes, gathering information needed to make informed decisions. (West,JR)
- System of regulation utilized in oversight of deepwater port activities like LOOP has been successful as well as user-friendly. Lead agencies were designated at federal and state levels to coordinate regulatory and permitting issues eliminating potential for conflicting requirements and expectations. Having lead agency identified in statute to issue permit made permitting clear. (Thompson)
- Everything that happens on federal OCS affects state waters, and the land and people of adjoining states. (Wiygul)
- U.S. in intellectual leadership role internationally for hydrates, lagging behind in dollars spent. (Woolsey)
- Much of the energy needed to meet nation's future energy requirements lies under U.S. waters off coasts but is currently off limits. A sounder policy could correct this. (Caveney)
- Policymakers have limited industry's access to hydrocarbons. (Fry)
- Executive Order and Congressional statute placing entire OCS lands off East and West coasts good example of negative impact on industry; neither necessary because of OCS Lands Act. (Fry)
- Chevron drilling at Destin Dome. [detailed discussion of Chevron's track record: oil spills, offshore drilling pollution and illegal water pollution] (Jackalone)
- Energy security versus oil dependency: Only route to national security through energy independence is breaking fossil fuel industry's hold on renewable energy research and make use of available sources of nonpolluting, decentralized natural energy. (Jackalone)
- Concerns: Florida ports are competing in a dredging frenzy to accommodate larger ships; injection well drilling in FL does not have science backing it; offshore oil and gas development off coast of Florida; MOU between cruise industry and FL-DEP instead of adopting enforceable laws. (Lee)
- Leaders must think "out of the box." A comprehensive energy policy based on facts, not fears, must be enacted. Constructive engagement and real attempts at formulating future solutions are needed. Rainey Preserve is good example; owned by Audubon and oil drilling is allowed; money buys other lands. (Moore, E)

- Create a national goal. Need to create an ocean use plan for the EEZ; zoning; We know a lot about our EEZ, no reason this cannot happen. Lots of good examples to look at. [example provided] (Ogden)
- Industry concerned about submerged cultural resources and any ocean or coastal policies, which may affect them. Believe that professional salvage, archaeology, and conservation work can be accomplished and should be financed as much as possible without tax dollars. Be careful of wording recommendations. Any government claiming a pre 1900 warship because of technology or loss of life is just performing a grab. Sometimes professionals have misguided conceptions about issues such as "in situ" and "intact collections." [discussion of each provided]. Urge Commission to consider submerged cultural resource plans that truly have the resources at heart. (Abt)
- Majority of shipwrecks in U.S. and Caribbean are in various states of progressive decay. Without help of private sector who will rescue imperiled artifacts from shipwrecks. [discussion provided]. Governments and private sector need to learn to work with each other and support multiple uses of the resources. (Sinclair)
- Underwater archaeological resources: Ideas for a workable underwater cultural heritage resource policy;

  Common ground: Adherence to strict archaeological guidelines reaps financial gain for salvors; enhances value of artifacts, media rights, public acceptance. Archaeological community has seen need to demonstrate more business acumen in addressing funding requirements of their own expeditions;

  Artifact dilemma: should define different categories of artifacts; 1) those whose economic resource value outweighs archaeological significance; and, 2) those whose archaeological or cultural importance should preclude sale or dispersal. Could distinguish between "Trade Goods" and 'Cultural Artifacts"; [discussion of each provided]

  Artifact registration and documentation would be way to minimize loss of access and keeping track of ultimate disposition. (Stemm)
- There is presently no policy framework to address the licensing, leasing, or permitting of non-extraction energy facilities (such as wind or wave turbines) in waters of the U.S. (Koning)
- Submarine cables are essential infrastructure because they are the primary way that communication cuts across the oceans. The telecommunications services these cables provide consist not only of voice calls but also data transfers and Internet telecommunications traffic between the U.S. and points outside of North America. The main reason that submarine cables rather than satellites are the dominant international communications infrastructure is that modern fiber-optic technology allows huge and increasing capacity per cable. Submarine cable projects typically cost $1/2 billion to $1 billion each. (Shorb)
- A threat exists today from wind power. This threat will use public Federal land to destroy the peace, the tranquility, the recreational public usage, the natural ecosystems and basic public access to one of the nation's most beloved coastal areas. (Gill-Austern)
- Yes, there is certainly the appreciation that there are significant methane hydrate reserves, to be used as a potential energy resource, in Alaska. (Newton)
- One thing that we have not talked about very much is permafrost and the climate change. The permafrost is decaying significantly. The U.S. and the State of Alaska have already moved two villages in Alaska because of the threat to the ocean. (Newton)
- We are working to secure permits to build America's first offshore wind farm on Horseshoe Shoal in Nantucket Sound. We would harvest the winds on this shoal five and a half miles off the south shore of Cape Cod, to provide, on average, half of the power used on Cape Cod and the Islands from clean, renewable energy. (Rogers)

- US offshore wind resources are abundant, inexhaustible, sustainable and secure. Europeans are now greatly accelerating their use of ocean based wind power which they first pioneered twelve years ago. Of these ocean renewable technologies, offshore wind is the farthest along in being commercially available and cost competitive and it is consistent with the Stewardship Working Group's goal to promote ocean policy that enables the nation to use its ocean resources in a responsible and sustainable manner. (Rogers)

PRESENTER RECOMMENDATIONS

- The U.S. must help establish a comprehensive and effective regime to govern the sea shipments of radioactive materials. [discussion provided] (Van Dyke)
- Promote sensitive energy exploration and new clean energy sources:
  1) Provide incentives to use and develop environmentally sensitive methods for tapping existing petroleum reserves in coastal areas;
  2) Continue to promote development of renewable, clean, low-impact energy sources to minimize probability of environmental damages from petroleum product spills. (Carpenter)
- Consider new or modified oil and gas policies: With concentration of anything, problems occur. Other areas of country should be open to mineral extraction so effects may be distributed rather than concentrated in Gulf. (Simpson)
- The U.S. must allow its Territories and Commonwealths to manage the living and nonliving resources within their 200-nautical-mile EEZ and to utilize the revenues generated from these resources for their own prioritized purposes. (Van Dyke)
- Reexamine need for moratoria that prohibit offshore drilling and development in most U.S. waters. (Caveney)
- Continue funding further development of beneficial uses of dredged material. Continued need for dredging: federal funds and re-establish regional dredging teams. (Edmunds)
- Request Commission includes the need to provide adequate federal funding for our beach restoration. (Daughters)
- Define a national policy for non-extraction energy projects in ocean and coastal waters. (Koning)
- U.S. energy policy is inextricably linked to a successful ocean policy. Any new ocean policy initiative must be accompanied by a progressive energy policy that emphasizes conservation and renewable energy. [discussion provided] (Delaney)
- Legislation that recognizes the national interest in this infrastructure and creates a nationally consistent, Federally-implemented process for reviewing such projects and timely approving them, with appropriate conditions to protect the environment. Congress granted the Federal Energy Regulatory Commission similar power in Section 7 of the Natural Gas Act. (Shorb)
- No authority exists for the Federal government to convey rights to develop certain projects, including the Cape Wind project. The Commission has a responsibility to recommend appropriate policy principles in this void. (Gill-Austern)
- Congress should confront the gaps in HR 5156, a just-introduced bill that proposes new measures that would broadly authorize any use of the outer continental shelf not already authorized. There should be clear policy and a commitment to specific protocols. (Gill-Austern)
- Please vote a resolution that would speak nationally, while at the same time send to the ACOE the message that there should be no action on the Cape Wind project until all responsible Federal agencies have the benefit of your deliberations and your recommendations. We urge the Commission to vote a resolution entitled Towards Protecting the Federal Public Trust. [discussion and draft resolution included] (Gill-Austern)

- Address the issue of compensating the public for the loss of the public lands that are now being proposed. Design a program similar to the Outer Continental Shelf Lease program to compensate the public. (Buchsbaum)
- The Commission's recommendations on the energy policy should not be used to grease the skids for industries to take over our ocean resources. Look carefully at extraction of resources from the ocean, oil, and gas. (Nelson)
- Cape Wind Associates respectfully ask this Commission to use your unique perspective and expertise to make recommendations that encourage and expedite our nation's development of ocean based renewable energy to help protect the health of the ocean and to demonstrate the commitment of the United States to ocean stewardship. (Rogers)
- One of the most important outcomes of the Commission's ocean governance recommendations should be clear support for the President's National Energy Policy. (Fry)

TOPIC: *NONLIVING MARINE RESOURCES*

KEY ISSUE: *Assessment, Distribution, and Use of Federal Revenues Derived from Nonliving Marine Resource Activities*

ISSUES RAISED

- Direct revenue to federal government from Louisiana OCS Mineral Leases by year- through 2001 is $91.6 billion; disbursement to Louisiana from OCS federal production by year through 2001 is $928 million. (French)
- Detailed discussion of production revenues provided. (West,JR)
- Federal and state governments have received funds from offshore leasing and development under Land and Water Conservation Fund and National Historic Preservation Fund. (West,JR)
- Governors support legislation that dedicates and equitably distributes meaningful portion of OCS mineral revenues with all states and territories. (Cooksey)
- Economic effects of offshore drilling in the Gulf of Mexico on Florida's economy. [detailed discussion and facts provided] (Jackalone)
- In Federal waters, no fee structure exists, except for the extraction of hard minerals, oil, and gas. (Durand)

PRESENTER RECOMMENDATIONS

- Divert part of existing healthy revenue cash flow stream to conservation, etc. (French)
- Need the President to say CARA is good and it will probably pass. (Caldwell)
- Stimulate more activity by foregoing some up front revenue and getting back revenue later on. (French)
- Should look further at more equitable OCS revenue support for coastal communities that directly support offshore energy production. Some revenues that flow into federal treasury should enhance local counties, parishes, and municipalities that support development. (West, JR)
- Attention must be given to effective allocation of resources for homeland security. (Thompson)
- Support an economic stimulus package for living marine resources under the Conservation and Reinvestment Act:
  1) Portion of OCS revenues should go to states for fisheries and coastal wetlands activities. Legislation like CARA would provide dedicated, much needed funds for fishery and habitat work;
  2) Revenue from onshore drilling is shared 50/50 with states, 100% of OCS revenue from oil and gas leases goes to U.S. Treasury. (Simpson)
- Sufficient resources should be allocated for development and improvement of onshore public infrastructure to support growth of marine-related commerce. (Thompson)
- Support efforts such as proposed Conservation and Restoration Act of 2000 and Coastal and Estuarine Land Conservation Program of 2002. (Murley)
- Should look at CARA-like revenue sharing legislation. (Fry)
- The funds from marine environment and land and water conservation funding, that principally come from leases from the marine environment should be targeted to reduce impact to the coastal zone and some of it for coastal acquisition. There is not an existing mechanism to direct those funds. (Beck)

- Establish a Federal EEZ leasing structure as a means of ensuring that the public receives benefit from privatization of public resources. Lease payments could be used to help support ocean and coastal management efforts, or related projects, such as monitoring and mapping. (Durand)
- Revisit the system of distributing OCS revenues proposed in the CARA legislation of previous years. (Stahl)

TOPIC: *NONLIVING MARINE RESOURCES*

KEY ISSUE: *Environmental Concerns*

ISSUES RAISED

- Environmental impacts and perceptions of offshore development on onshore ecosystems and life needs to be addressed by more attention and funding for impact assessment and amelioration: Louisiana incurred substantial costs in building and sustaining infrastructure for offshore development activity; does not share in wealth from offshore development other than 27% share in narrow 3-mile wide transition zone. (French)
- Industry has story to tell about environmental and safety record. Development operations clean, ready to contain and capture oil spill should one occur. Have reduced impact to wetlands by 90% since 1982. Why oil and gas industry has such hard time connecting with American people:
  1) Lack of knowledge about energy; industry and government must work together to demonstrate energy production does not compromise environmental quality;
  2) Administration's May 2001 National Energy Policy establishes basic principles that are applicable to national ocean policy. [3 policies stated] (Fury)
- Concerned about offshore fisheries and hypoxia, discharges only under strict permit limits, structures provide important habitats. (Fury)
- Flower Garden Banks National Marine Sanctuary partnership with oil and gas industry good example how to utilize science and partnerships to achieve multiple-use goals; energy security and environmental conservation. (Fry)
- What the energy industry is doing to get its story of environmental ethic and programs to public:
  1) API, NOIA, Offshore Operators Committee, state trade groups conduct public outreach and education oriented toward environmental stewardship activities; API website has media and education information;
  2) Industry associations and companies are active in coastal communities sponsoring beach, marine life, wetlands programs each year along Gulf
  3) Industry also supports research, education and outreach with federal agencies; [listed]
  4) Workshops for policy makers and citizens in Florida about mercury in OCS drilling fluids;
  5) Rigs-to-Reefs program. (Fury) (West,JR)
- Ecological effects of offshore drilling in Gulf of Mexico. [detailed discussion with facts provided] (Jackalone)
- Florida maintains that oil and gas exploration or development in territorial seas of coast poses real risks to other Florida coastal interests; lack adequate scientific data on offshore physical and biological communities. (Haddad)
- There is a nation-wide problem of contaminated sediments in urban rivers and estuaries, resulting in the degradation of aquatic productivity, threats to human health, and long-term economic liability. (Koning)
- Submarine cables are environmentally benign: Submarine fiber-optic cables typically have only the diameter of a garden hose. They typically are laid by a large specialized cable-laying ship, spooling the cable out of huge holding tanks. (Shorb)
- Four cable installation techniques may be used:
  1) At the shoreline, directional drilling is often used to install cable conduits passing under the beach and any near shore reef
  2) When crossing soft bottom areas that are potentially subject to ship anchoring and trawling or other bottom-fishing techniques, the cable typically is buried, to protect the cable from the fishing gear

3) When crossing hard bottom areas where burial is infeasible and anchoring or bottom-fishing gear is expected, "armored" cable is used. It has a diameter no more than a soft drink can. The evidence shows that such cables do not move laterally once placed.
4) When crossing the deep ocean where no anchoring or bottom-fishing gear is expected, the cable typically is just laid flat on the ocean bottom. It has no known adverse effects. (Shorb)

- Cables have been taken out of telecommunication service, not because they don't work, but because they are not as economically effective as the high-capacity cables that have been used and are available to be used. So, there are owners that one could deal with and they most likely could convert those cables for scientific use. No cable is laid without the bottom first being surveyed by sonar techniques. Those records are also not kept forever but the last five years are still probably available and have been used for scientific research that hinges on topography such as wave effects on the ocean bottom. (Shorb)
- The DOI has launched an aggressive new oil and gas leasing program across Alaska's Outer Continental Shelf. [Further description provided.] (Miller)
- Offshore exploration and development threatens the integrity of the Arctic Refuge from oil spills caused by offshore wells, noise from industrial activity, and the threat of onshore support infrastructure in the biological heart of the refuge itself. (Miller)
- The cumulative impacts from offshore development (and associated onshore infrastructure and practices) are altering biological communities and ecosystem processes. (Miller)
- But considerably more offshore development is planned for the future. [Further description provided.] (Miller)
- Just 30 miles of coastline are protected, and just 5% of Alaska's North Slope is protected (both within the Arctic National Wildlife Refuge). (Miller)
- Offshore oil and gas development off Alaska endangers the fragile marine environment, including endangered species, seabirds, and marine mammals, rich fishing grounds, national parks, wildlife refuges, forests, and wilderness areas. [Further description provided.] (Robards)
- Coastal communities are at risk from potential blowouts and pipeline oil spills. [Further description provided.] (Robards)
- Undersea noise is deleterious to many acoustically sensitive organisms, particularly cetaceans. [Further description provided.] (Steiner)
- A recent investigative news series in the mobile register showed how MMS' own studies found excessively high mercury levels in fish taken near oil and gas platforms in the Gulf of Mexico. Significantly, MMS found mercury levels known to pose harm to human consumers and these findings relate to the very same types of discharges currently allowed. Perhaps equally important, MMS' seems to appear to have a conflict of interest, which undermines public confidence. (Shavelson)
- The last half of the last century, each decade has been warming on the order of a degree Celsius per decade. There are temperate glaciers that occur around 32 or 0 degrees Celsius and polar glaciers such as Greenland and Antarctic. Seventy-five percent of the world's fresh water occurs in glaciers and 97 percent of Alaska glaciers are in the sub-Arctic. Temperate glaciers that occur in Alaska are key and sensitive indicators of climate change. Glaciers can affect various fisheries and economic issues. One near Juneau, the Taku Glacier, is presently advancing and has actually closed off its fjord. Extensive research shows in the state that less than one percent of the some 2,000 glaciers in Alaska are presently advancing. There has been so much emphasis on fish and the oceans, it is important to note the importance of coastal areas and the indicators in those coastal margins. Temperate glaciers, again, are unique indicators of climate change. [discussion provided] (Miller)

- The North Slope provides approximately one-fifth of our nation's non-renewable resources of domestic oil. The rapid growth in population, economic development and national security are continuing to create more needs for energy. The responsible parties for offshore development in the ice ridden Beaufort Sea have not proven that they can respond to a major spill in an environment where heavy ice conditions and long, dark and severely cold winters are a reality. (Snyder)

PRESENTER RECOMMENDATIONS

- MMS needs to implement a comprehensive study program to address documented lack of information for Eastern Gulf of Mexico, Straits of Florida, and South Atlantic. (Haddad)
- Need to separate past poor environmental practices from current practices. (French)
- Continue Prohibitions on New Leasing in Environmentally Sensitive Areas Such as the Pacific Coast: [discussion provided]
  1) NRDC opposes MMS' planned opening of "frontier" OCS basins in fragile Alaskan waters. (Nothoff)
- Reduce the Risk of Oil Spills:
  Establish additional tanker safety routes along environmentally sensitive coastlines. (Nothoff)
- Support OCS moratorium and presidential deferrals, and within Alaskan waters (cleanup infeasible). (Hopkins)
- Establish a dedicated fund and program authority for the evaluation and remediation of contaminated sediments in our coastal watersheds. (Koning)
- The Commission should see that the oil companies involved in the Exxon Valdez oil spill finish their ongoing litigation with the local people affected by the spill before they are allowed to exploit more resources. (Riedel)
- The Commission is urged to call for Alaska's immediate inclusion in the moratorium on offshore oil and gas development. (Robards)
- Enact legislation to reduce undersea noise, mandating the incorporation of ship quieting technologies for all new merchant vessels. (Steiner)
- Close the loophole on toxic oil and gas dumping. (Shavelson)
- Incorporate in your report a total system approach to global climate change addressing glaciers and how they can affect various resources in the oceans and the oceans and climate itself. (Miller)

TOPIC: *NONLIVING MARINE RESOURCES*

KEY ISSUE: *U.S. Policy Regarding International Issues*

ISSUES RAISED

- International attitudes on oil and gas include: no large areas off-limits in North Sea; governments do all they can to encourage/support exploration and production. (West,JR)
- A few of the countries signed UNCLOS reserving the rights to exert jurisdiction beyond the 12-nautical-mile limit but it is difficult to say what the mechanisms are to, for example, influence China or Russia. (Shorb)
- The United States delegation to the World Summit on Sustainable Development was extraordinarily successful on a number of fronts. In the area of oceans, we achieved particularly dramatic successes. First, the Plan of Implementation contains strong, positive oceans language. Second, a number of important oceans-related partnerships were announced. (Connaughton)
- Annex 2001 calls for decision making standards that govern the conditions under which water may be withdrawn from the Great Lakes Basin. (Davis)
- History and purpose of the International Joint Commission is presented. (Chandler)
- Since 1997 IMO has been actively engaged in the development of a globally applicable instrument to control the spread of aquatic nuisance species from discharges of ships ballast water and sediments. A diplomatic conference to conclude this treaty is tentatively scheduled for November 2003. A largely complete convention text has been drafted, using a base text developed by the United States. The draft treaty has two substantive mechanisms to control ballast water and sediment discharges. These are commonly known at IMO as “Tier 1” and “Tier 2.” (Kenney)
- A description of the IOC is provided. (Bernal)
- IOC research projects have left behind a legacy of permanent Ocean Services, that is, ensemble of automatic instruments operating over vast extensions of oceans deployed to optimally acquire data and information on a specific set of properties of the world ocean. (Bernal)
- Operational Oceanography is being made possible by the development of the Global Ocean Observing System, GOOS: the integrated operation of a series of Ocean Services covering the world Ocean. (Bernal)
- In an unprecedented step forward in inter-agency co-operation, the 13th Congress of the World Meteorological Organization (WMO) and the 20th Assembly IOC of UNESCO, approved the fusion of several long standing independent committees belonging to both organizations into a single body: The Joint Technical Commission for Oceanography and Marine Meteorology (J-COMM). JCOMM is charged with the supervision of all the technical groups in charge of the operational systems for the Global Ocean Observing System. (Bernal)
- From a practical point of view, there are absolute limits (spatial scale) beyond which appropriability of data from private observation networks face diminishing returns and a point where profitability eventually breaks down. (Bernal)
- The information obtained from these systems, once in the public domain, can be used and is being used by specialized organizations to generate and provide a wide range of applications and services, both public and private. Challenges include: institutional development, requirements for an organization of sophisticated systems for processing, modeling and distributing the information, and economic scale. (Bernal)

- Unless we do put coordination where the money is, there is no way that you can really go against years and decades of organizational culture asking for cooperation across very difficult, even intellectual boundaries. (Bernal)
- A challenge for the IOC is a single platform that can be shared private and public, but will need to negotiate certain important agreements that would guarantee access to this information to every user. (Bernal)
- Science in the U.S. can be a very big door opener and relation builder with other countries. (Turner)
- The Commission's concerns with regard to the Law of the Sea Treaty are well considered and noteworthy. At the same time, similar merits support ratification of the Convention on Biological Diversity and U.S. support for the Convention on Climate Change. (Schwabacher)

PRESENTER RECOMMENDATIONS

- A newly energized federal effort to address complex and often bi-or-multi-national issues (Van Schoik)
- Endorse a new world environmental agency and court to make sense of the hundreds of laws, treaties, and disputes over ocean issues. (Van Schoik)
- Recommend that the U.S. not encourage other nations to violate the norms of UNCLOS by violating them ourselves. (Shorb)
- The U.S. should use its numerous opportunities to regain its leadership position in the international arena beginning with the ratification of the United Nations Law of the Sea Convention and the Kyoto Treaty and supporting the ocean and water quality provisions that were presented at the World Summit on Sustainable Development in Johannesburg, South Africa in August 2002. [discussion provided] (Delaney)
- The U.S. cannot become dependent now on gas from overseas the way it has become dependent upon oil from overseas. The gas potential of this country lies offshore. (Stevens)
- Ratify the UNCLOS and commence immediately a program of bathymetric surveys to meet requirements of Article 76 on all the U.S. coasts. (Newton)
- Recognize and consistently support what the USA has been leading in the International arena to build a Global Ocean Observing System. (Bernal)
- We urge the creation of a World Ocean Organization under the auspices of the United Nations to spearhead international cooperation on technical issues related to ocean management, including ocean and climate forecasting, hazard prediction, living resource management, and other issues. (NASULGC)

TOPIC: *RESEARCH, EXPLORATION AND MONITORING*

KEY ISSUE: *Setting Research Requirements*

ISSUES RAISED

- The advantage of centralizing within an agency is if the right person is running it, to maintain the interest of the people and the money so it does not have temptation to go elsewhere to other things. If you put it in an agency like NASA or NOAA, there would constantly be battles of where the money would go. We need a system that has the right feedback to encourage appropriate behavior. One model to lessen the territorialism is to take the heads of four agencies and rotate them every two years to the next agency. The Navy does this all the time. The idea of the president's panel was that 75 million dollars should be money that was coordinated to do these major ocean explorations. (McNutt)
- Whatever research is now being done by U.S. agencies—NSF, NOAA, and NASA—is not coordinated, and is not part of an integrated observation plan. (Spindel)
- The Arctic Ocean is split by national jurisdictional claims, making research access difficult, and the trend is towards even more claimants. (Spindel)
- There is an NSF, Arctic support section. Some think it works well and others do not. In the context of logistic capabilities it has worked well. They are highly developed for the Antarctic. (Spindel)
- The Arctic Research Commission was established in part to make sure that we didn't wind up in the situation that we're in right now. They would not do as the vehicle to increase our active research efforts. (Spindel)
- The ocean scientists are part of the problem, because we each have our own agendas. (Spindel)
- There is a need for more scientific research on our oceans and the wildlife and organisms they support. (Gaydos)
- Sill lack the knowledge needed to sustain and restore ocean ecosystems. (Revell)
- The National Ocean Research Leadership Council (NORLC) can identify those areas in which agencies can leverage efforts of common interest, through coordination and collaboration. (Colwell)
- We are concerned about the ocean research into carbon cycling over the next few decades. The role of carbon dioxide and green house gases on the warming of the earth and the importance that the role of the ocean has in mitigating the release of carbon dioxide, is very important. The carbon dioxide releases in the air have influenced 35% of this industrial area. The ocean has taken up 30% of the carbon dioxide. If the ocean had not been such an efficient absorber, the current concentrations in the atmosphere would be double what it is today. That is why we are so concerned with planning research on this issue of carbon cycling in the oceans. (Quay)
- The comprehensive mapping of marine ecosystems and habitats is fundamental to understanding the marine environment and appropriately managing underwater habitats. (Durand)
- The advances that have been made in biology have been extraordinary. It is the era of biology. But it is important to recognize that biology is built, on physicists, chemists, mathematicians, even social and behavioral scientists who understand the data about our living world. It is an interdisciplinary era with a focus on understanding ourselves and the organisms around us. (Colwell)
- NOPP can serve as a mechanism for making strategic investments for programs of high national priority that serve to advance those areas of shared interest. (Colwell)

- The NOPP model is supported on the national level for coordination of research, industry and management entities and partnership activities and coordination of all the relevant agencies. GoMOOS is trying to be a regional version of the NOPP in the sense of fostering regional partnerships. (Bogden)
- NOPP is a coordinating body, an interagency organization representing the Federal agencies which fund the majority of ocean related research and education in this country. (Gagosian)
- It is hard to have an organized method when working in the environment because every time you tug on something in nature, you find that it's connected to everything else. So, it's a matter of being in the 21st century with 21st century tools and not just looking at the catch limit, for example, but the focus is on the effect that is has on the rest of the biota on the human aspect of it, and on the environment. A holistic approach is critical. (Colwell)
- Ocean.US currently has an important role at NOPP, however, it is mostly a coordinating role for the various programs. (Gagosian)
- Yes, a science plan can be built for the next five to ten years—a visionary approach as opposed to the disconnected individual approach. A reason for the difficulty in the past is that "ocean sciences" is really a misnomer. It is really a set of sciences that work on the ocean and consequently, it's all of science. This country has not done a very good job of prioritizing within disciplines, or in cross-disciplines. Your example of success in funding the Cold War was true. It worked because there was one issue: The Cold War and there was a societal imperative. The major ocean issues are coastal ocean, deep-sea exploration, ocean life, and ocean and climate change. If these focused umbrellas were prioritized, there would be fewer, more crosscutting, projects. (Gargosian)
- Our members observe that more and more of marine science funding is being oriented in a top-down fashion with very complicated strict rules for what must be in a proposal. (Jumars)
- The coordination of ecosystem and fisheries research is not well integrated either culturally or structurally. (Jumars)
- In Alaska and the Arctic, when we think of ocean research and of ocean policy, human dimensions are central to all our deliberations and our objectives must be to protect and sustain economy and culture as well as the ocean environment itself. [discussion provided] (Dorman)
- Virtually all of the global climate models seem to indicate the magnitude and effects of warming and other changes will be largest in the Arctic. Real human concerns are not just about 'climate' but also about the other elements of environmental change, such as the ecosystem changes in the Gulf and the Bering, Beaufort, and Chukchi seas—most notably weather. (Dorman)
- Connectivity—of Alaska to other areas and to other programs—is critical. [discussion provided] (Dorman)
- There is interested and capable research talent in Alaska. (Dorman)
- We are at the point where one starts with a physical model of the oceans. In a variety of cases, we are at the stage where they can be reasonably reliably committed and done; the computational capacity is there. There are already integrated efforts to attempt to at least model the physical environment. [discussion provided] (Dorman)
- The modeling centers we have such as the GDFL, and those in the Navy, NOAA, and NASA, are fundamentally adequate. This is the case thanks to the high performance computing programs that have been stimulated on the Federal level. So, the computational capacity is there. There is great interest in the climate and climate change and extending the weather processes. So the fundamental structural capacity is there but we do need some reform in the operational perspective in our thinking process. (Dorman)

- With regard to the potential for significant impact from methane release and permafrost, this is something that has been widely debated, not proven. But certainly given the greenhouse gas potential of methane, this is a very significant issue and the potential feedback, positive feedback processes should this occur, are quite scary. With regard to research about methane release, the U.S. is led significantly by a number of European nations as well as by the Japanese. We have limited programs particularly associated with the clathrates of methane hydrates at the Universities. One of the things we are looking at is sequestration of carbon dioxide as a replacement as we extract the methane. (Dorman)
- The Arctic Ocean has profound effects on the world's climate and, in turn, is profoundly affected by climate change. The presence of sea ice and the changes in its abundance and distribution make the Arctic Ocean a unique and powerful indicator of climate change. (Newton)
- Arctic Ocean sea ice is decreasing its summer extent by as much as 3.5% per decade, while average thickness of sea ice has decreased over the last 30-40 years by as much as 2.6 meters per decade. (Newton)
- Changes in the location of the edge of sea ice have important biological, physical, and chemical effects of both regional and global significance. [Further description provided.] (Newton)
- The principal climate change research program currently underway in the Arctic is the interagency Study of Environmental Arctic Change (SEARCH), established to coordinate the research of several institutions and programs on questions pertaining to natural vs. human-induced climate change. [Further description provided.] (Newton)
- The principal funding agencies for research in the Arctic Ocean are the National Science Foundation, the Office of Naval Research, and NOAA. (Newton)
- If warming in the Arctic leads to opportunities for trans-Arctic shipping (e.g., for Japanese automobile cargoes), then we can expect a large increase in ship traffic through the region. (Newton)
- We expect the Senate will eventually ratify the UNCLOS. From the date of our accession to the Convention, we will have ten years to submit our claim to the sea floor beyond our 200 mile EEZ under Article 76. However, the U.S. currently has virtually no data in the Arctic Ocean Basin on which to base an Article 76 claim. (Newton)
- Other people must be convinced of the very vital importance of the Arctic Ocean. If we don't choose to be a dominant player then somebody else is going to take it from us. We, therefore, must generate the interest within the Executive Branch to make special exceptions, and to take advantage of unique opportunities, such as the Mendell Rivers decommissioning two years ago. We need a large resource, like a submarine, like the USS Hawkeville, to solve and answer some very vital questions. [discussion provided] (Newton)
- We are seeing the decline of permafrost and sub sea permafrost because of global warming, causing a receding ice line, and an increase in storms and their severity along the coast of Alaska. It is going to mandate that we understand permafrost better. (Newton)
- Sub-regional, often referred to as bioregional scale, is a tool to do ecosystem information gathering. A workshop took place last July and there's a report that's forthcoming on ecosystem approaches around the U.S. and it will be submitted to the Commission as soon as it's completed. (Thomas)
- The Arctic Ocean is on the frontier of global climate change – a serious concern to Alaskans. (Miller)

- There is a need to improve our understanding of the Great Lakes basin's hydrology, particularly the interaction of groundwater and surface water. There is also a need to undertake the research needed to determine how decisions regarding withdrawals can impact the Great Lakes ecosystem. The primary federal research institutions such as the National Oceanic and Atmospheric Administration's Great Lakes Environmental Research Laboratory and the United States Geological Survey, along with other federal agencies such as the Corps of Engineers and the U.S. Fish and Wildlife Service, need to be tasked and funded to develop the data bases and to perform the analyses needed to assist the States and Provinces in their efforts to "manage for sustainable water use" in the Great Lakes basin. (Vonnahme)
- Basic research on the large lakes of the world lags far behind similar research on the oceans. Basic research on the world's large lakes provides more than the wonder of discovery, however; it serves as the basis for assessing human impact on large-lake ecosystems, and for developing sound policy for managing and protecting these invaluable bodies of fresh water as our global environment evolves. (Johnson)
- There appears to be a major mismatch between the importance of the nation's freshwater inland seas and the level of support they are receiving from NSF. The current level of NSF funding for basic research on them is extremely low, typically less than 1% of what is spent on ocean sciences in any given year. (Johnson)
- Regardless of the degree to which climate variability and change result from anthropogenic influences, coping with both will be easier if we can predict what is coming, over a broad spectrum of time scales ranging from tomorrow's weather through the next season to as far in advance as science will permit. (McPherson)
- Useful prediction of the Earth's fluid envelope involves three components: observations, modeling, and provision of services. Education and institutional arrangements are necessary to ensure that services are effective, dependable, and subject to continuous improvement. (McPherson)
- Improvements for climate prediction rely critically on the establishment and maintenance of quality observing networks, particularly in the global oceans. Also crucial for improved climate prediction capability are increased computational and human resources and more coordinated management of current resources for model development. (Goddard)
- The current state-of-the-art in climate prediction employs a two-tiered dynamical prediction system; sea surface temperatures (SSTs) are predicted first, which then serve as the lower boundary forcing to atmospheric general circulation models (AGCMs). (Goddard)
- Unfortunately the skill of AGCMs in reproducing seasonal climate has not increased much in the last 10 years. Model results are especially sensitive to differing parameterizations of convection and cloud processes, which have implications for both local thermodynamics related to local radiation and global thermodynamics related to the global hydrological cycle and the global heat budget. (Goddard)
- The future of seasonal-to-interannual climate prediction is coupled ocean-atmosphere models. In this "one-tier" prediction methodology, SST anomalies are generated by anomalies of the overlying atmospheric circulation instead of being imposed. (Goddard)
- Considerable research and development is still required for coupled models. Most coupled models have large systematic errors in reproducing the mean state and seasonal cycle as well as the interannual variability of the tropical oceans. (Goddard)
- Our ideas about "climate" have been changing, in part due to the recent success in prediction of El Niño in the Equatorial Pacific Ocean. Thinking is centered around slow changes to our climate and how they will affect humans and the habitability of our planet. Yet this thinking is flawed: it ignores the well-established fact that Earth's climate has changed rapidly in the past and could change rapidly in the future. Presently, there is only one viable mechanism identified that may play a major role in determining the stable states of our climate and what causes transitions between them: it involves ocean dynamics. (Joyce)

- Evidence and processes of abrupt climate change related to the oceans is discussed in detail. (Joyce)
- Global climate is moving in a direction that makes abrupt climate change more probable, that these dynamics lie beyond the capability of many of the models used in IPCC reports, and the consequences of ignoring this may be large. (Joyce)
- Scientific research is often impaired by inadequate interdisciplinary communication. (Johnston)
- The Northeastern Association of Marine and Great Lakes Laboratories (NEAMGL). NEAMGL is a regional association of the National Association of Marine Laboratories (NAML), a nonprofit organization of approximately 120 member institutions that encompass a variety of academic, research, and public service programs. (Frasier)
- Despite the importance of the lakes to the people in the basin and to the United States and Canada as a whole, we understand only a small part of how the lakes function as an ecosystem. (Fraser)
- Areas of future attention: Great Lakes fisheries; future climate change; watershed hydrology and biogeochemistry; social science and the concept of sustainability in the Great Lakes; food web dynamics; health issues in Great Lakes Area of Concern (AOC's); and chemical, hydrodynamic and ecosystem models. (Fraser)
- Critical research objectives include development of multi-media models to link air, water, and land processes, basin-wide models to compute the transport and fate of pollutants of concern in the lakes as a connected hydrologic system, aquatic ecosystem models to address such issues as nutrients, trophic transfer of chemical contaminants, toxics cycling and bioaccumulation, exotic species, and fisheries production and dynamics, and models to assess impacts of global warming and water level control on lakes. Critical needs to accomplish these objectives include computer hardware and software, training for modelers, and funding for development of large, coordinated, multi-disciplinary, multi-institutional, research programs that have policy and management value. (Fraser)
- Field Labs and facilities play important roles and need continued support. (Bushek)
- July science workshop report will outline how $10 million per year should be spent in the NSF budget. (Johnson)
- Input of coastal and ocean scientific advice for our decisions tends to come from other Federal agencies. (Knight)
- Ocean circulation, together with the atmosphere, constitutes the mechanism by which solar energy is re-distributed from the tropics to the entire planet. Therefore, improved understanding of this interaction is critical to improved weather and climate prediction. (Asrar)
- Understanding the dynamics of ocean circulation requires systematic measurements of the velocity field at a frequency of at least weekly, but also spanning decades. Only global satellite observations can meet these needs. Our efforts in the past decade have resulted in a wealth of observations, but NASA could not have been successful had we worked alone. Our collaboration with other Federal Agencies and international partners was a critical element in this success. (Asrar)
- NASA's research in oceanography is all extramural, in partnership with academia and other Federal laboratories around the nation and its focus is on utilization of space-based observations. (Asrar)
- An increasing fraction of basic research funding is tied to very strict rules set out in broad agency announcements with short lead times and rapidly changing rules. (Jumars)
- The oceans are a planetary resource and are important in planetary-scale process. However, there are many gaps in knowledge about how removal or exploitation of marine resources cascade through marine ecosystems. (Jumars)
- More information on the effects of coastal pollution on marine systems, as well as criteria for evaluating marine pollution is needed to better understand causes and consequences of eutrophication events. (Jumars)

- A comprehensive national ocean policy must speak to numerous pressing national needs. Among the most immediate are understanding global climate change, sustaining the marine environment, managing living and nonliving marine resources, preserving our coastal areas, and enhancing our national defense at sea are among the most immediate. Effective and enduring solutions to these issues require a renewed and strengthened commitment to oceanographic research. (West)
- Findings, goals and objectives for coastal and ocean research. (CSO)
- Public health in Pacific Islands is sensitive to climate variability and change largely through effects on infectious disease vectors and pathogens, fresh water resources and food supplies. Pacific Assessment focused on exploration of climate "vulnerability" in order to understand climate exposure and sensitivity (impacts) and opportunities to enhance resilience (adaptive capacity). Effects of climate variability and change on marine and coastal resources categorized in two ways: effects on human populations and effects on natural resources upon which coastal communities depend. (Lewis)
- The oceans role in climate, and oceanic impacts of climate variability and change. [detailed discussions provided] (Lucas)
- Impediments to better understanding of oceans role in climate and applications:
  1) Inadequate numbers of long multivariate time series;
  2) Ignorance of connections between spatial structures and temporal variability;
  3) Ignorance of marine ecosystem dynamics and inability to observe key elements;
  4) Gaps between research programs;
  5) Logistics and political barriers. (Lucas)
- Marine organisms offer promising source of novel compounds with therapeutic potential.
- Technical difficulties and lack of knowledge of marine environment prevent scientists from more fully exploring use of marine life. [3 obstacles provided] (Dearry)
- Just now recognizing role of oceans in future of human treatment. Major opportunities exist for fundamental scientific discovery and commercial development. Multidisciplinary programs are needed which facilitate this activity. National Institutes of Environmental Health Services and National Science Foundation collaborative program "The Oceans and Human Health." (Fenical)
- Funding has been flat for ocean research. (Knox)
- "Biodiscovery" encompasses all types of scientific work on marine invertebrates, from taxonomic census to materials of use for agriculture, aquaculture, veterinary and human-directed pharmaceuticals and food. One of the major sources for funding in U.S. for biodiscovery related to human diseases is National Institute of Health, National Cancer Institute; others are National Science Foundation and Sea Grant. (Newman)
- USACOE Coastal Field Data Collection Program:
  1) Field research facility, Duck, N.C.
  2) Wave hindcasting program
  3) Coastal Data Information Program (Thompson)
- Critical need to invest in infrastructure of nation's coastal and Great Lakes labs. (Fletcher)
- Microorganisms rule the earth. Critical that scientists be supported in their search for new and novel microbes in ocean. (Grimes)
- Recently authored report recommends support for interdisciplinary studies of marine diseases, focus on better molecular and computational tools and on understanding mechanisms of disease resistance in marine organisms. Understanding comes from basic research; mitigation capability from applied research and technology development. (Grimes)

- Also part of National Research Council committee reviewing impacts of ocean on human health with recommendations:
  1) Elucidate connections between oceans and human health;
  2) Evaluate present state of knowledge about these connections;
  3) Suggest how current and future efforts may be directed to anticipate and respond to future health needs and threats. (Grimes)
- Energy industry concerned about future talent and leadership in ocean and energy sciences:
  1) Decline in interest, and school enrollment, is rooted in dated perceptions of oil industry;
  2) Campus recruiting and partnerships with academic institutions beginning to turn trend around. (West, JR)
- Certain degree of research competition among federal agencies likely to always be there. Need a coordinated plan for agencies to work with and get funding for. (Palmer)
- Research relating to advancements in energy resource technology is critical to our long-term economic strength and environmental responsibilities. Such research also imperative in providing good stewardship for the environment and accessing various new non-conventional energy sources. (Woolsey)
- Division of research between industry and government: energy industry in-house research relates to proprietary interests, improving operational efficiencies; government sponsored research successful in addressing long term and high risk areas. Example of appropriate government sponsored research is DOE and DOI gas hydrate research in U.S. EEZ. [description of CMRET research on hydrate stability zone provided] (Woolsey)
- Effective management requires a wealth of intellectual resources with intimate understanding of the dynamics of the Gulf of Mexico who are in constant touch with Gulf habitats and resources from its shorelines to its abyssal depths. Texas A&M Corpus Christi prepared to contribute. (Tunnell)
- Developing knowledge base required to address pressing marine issues must include:
  1) Consistent internal and external investments;
  2) Objective prioritization of needs;
  3) Coordination to avoid duplication;
  4) Technological improvements to acquire and deliver data. (Bodman)
- NOAA science and development funding breakdown. (Bodman)
- NOAA responsibility for in-house research relative to academic entities. (Bodman)
- Global ocean ecosystem dynamics program demonstrates utility of basic science linked to commercially harvested species. (Colwell)
- U.S. lacks basic ecological and oceanographic knowledge to successfully implement “ecosystem-based” fisheries management. New observing systems and other platforms will help provide data for new approach. (Colwell)
- Connection between oceans and human health becoming clearer. Recent research is developing potential for pharmaceutical applications of novel marine products. [example provided] NSF is presently developing a collaborative research initiative on oceans and human health. (Colwell)
- NOPP is an important development in coordinating and funding ocean research. (Colwell)
- Linkage of NSF Ocean Observing Initiative with broader systems; steady state requirements for oceangoing fleet/facilities and agency support of research; NSF plan for under-ice research; value of MEDEA and defense/intelligence data source products; design/development of more robust data archive and distribution system; understanding open ocean vs. continental and coastal zones in controlling climate change; pathways to incorporate NSF results into national/local policy; understanding how climate change affects marine resources; better integration of interdisciplinary research; integration of NGOs and industry with science funding and proposal selection. (Colwell)

- The U.S, leads the world in public sector funding of gas hydrate research. (Fry)
- The situation in ocean sciences: federal funding cannot and does not provide continuity; there is an excellent chance to establish scientific and financial linkages with commercial, civic, state, and industry groups. [list provided] (Betzer)
- Ocean research and development directed budgets are approximately what they were 30 years ago. (Brown)
- There is a cornucopia of needs and unprecedented opportunity, but no clear strategy for investment or implementation. Why? Ocean science has relied on governmental funding rather than commercial marketplace and has become "soft" science. Ocean science has high cost associated with it. (Brown)
- Structural problems are characterized as: end-to-end responsibility, agency-to-agency coordination, programs at the agency and/or discipline interface, linking research to applications to operations, and congressional review and oversight. (Brown)

PRESENTER RECOMMENDATIONS

- Support regional marine research by recommending increased resources and National focus on fisheries and marine habitat activities. [details provided] (Shultz)
- NSF's grants should be for longer term support but should also be open to new answers and new attitudes as they become apparent. (McNutt)
- Establish an interagency authority for Arctic Ocean research. The National Ocean Research Leadership Council might be the right vehicle. (Spindel)
- Include a high level diplomatic component in our plans for future arctic research to assure research access. (Spindel)
- Change the NSF's attitude and its bias so that the Commission will support an increase in Arctic support. (Spindel)
- The Arctic component should be a major priority and receive emphasis in any integrated marine system plan. It pays a large role as an indicator of the climate. We have to have a global observing system and the Arctic must be a part of it. (Spindel)
- Must balance the funding between the Antarctic and the Arctic. We maintain our presence in the Antarctic to maintain national presence so that essentially we establish some ownership to the continent. Certainly what is happening in the Arctic Ocean is quite different. In fact, maybe one reason the Russians are attempting to occupy the EEZ is to just establish a larger presence. (Spindel)
- We need to get our act together and put forward a coherent agenda. Two mechanisms may be appropriate: the NORLC, the newly formed Ocean Research Leadership Council. The other is the core of institutions. (Spindel)
- There is a need for basic understanding of large-scale ecosystem functions. This need to understand physical and biological processes extends far beyond salmon and the Endangered Species Act. (Lashever)
- The Commission should focus on our nation's need for the understanding of ocean processes and how to collect and disseminate information in a manner that can inform, rather than hinder decision making, and that fairly spreads the burden. (Lashever)
- The Commission should recommend the creation of a dedicated program that supplies long-term funding for independent researchers to study our oceans and its resources. This ocean-specific Federal grants program could be modeled after grant programs administered by the U.S. Dept. of Health and Human Services' National Institutes of Health or the Federal Government's National Science Foundation. (Gaydos)

- Recommend additional funding and support for scientific research, and to engage local experts, surfers, ocean recreational users, and fishermen to understand their intimate knowledge of the ocean. Until we have the appropriate science, management decisions need to apply the precautionary principle and be conservative. Think long term. (Revell)
- Commission should recommend a research focus on understanding the relationships between pollutants, water quality testing indicators, and human and marine species health. (Revell)
- Expand an existing research program established to study Equatorial climatic variations. Establish a buoy array spaced 100 km apart along the West Coast of the U.S. covering coastal waters and waters of the EEZ to help oceanographers and atmospheric scientists create models for ocean and atmospheric conditions. They would also establish a baseline of information to aid in monitoring global warming and natural ocean and climatic oscillations. (Scranton)
- The NORLC is nicely positioned to provide leadership for the broad research endeavor and to lead the necessary interagency cooperation. [discussion provided] (Colwell)
- If we are going to improve our predictions of future carbon dioxide levels in the atmosphere, we must encourage government support for research of carbon cycling in the ocean. (Quay)
- One of the major goals of NSF should be to extend their remaining awards from the current two years, to five years. That is, copy not just what the DOD has done, but also the NIH model where the rewards are for five years, and an automatic renewal is subject to satisfactory progress. Otherwise we are just looking at the short-term management of science, rather than the long-term investment. (Norwell)
- We urge you to support the ratification of the treaty to ban the use or production of persistent organic pollutants (POPs), and funding research with regard to POPs. (Ayers)
- The Commission is urged to support mapping and exploration of all our ocean areas. The goal should be to develop information by the year 2012 on our ocean areas comparable to terrestrial maps that currently guide management efforts on land. (Durand)
- Three specific roles for the NOPP should be:
  1) To provide a valuable forum for addressing shared needs of importance to the ocean science community, including oceanographic facilities and ocean education
  2) To facilitate and coordinate the transfer of research results into applications that meet societal needs
  3) To provide a mechanism for identifying and developing oceanographic research directions that cut across agency missions. (Colwell)
- Expand NOPP's function by creating a major ocean initiative for this country under an umbrella organization that will initiate it, manage it, and coordinate the major needs for the ocean Federal agencies. Most importantly, it would be responsible for making sure that the highest level of intellectual content is reached. (Gagosian)
- One initiative under one umbrella—could call it the Planet Ocean Initiative—could encompass all these elements. Under this Initiative, a coherent, logical sequence of programs and requests can be coordinated. (Gagosian)
- NOPP would be made up of the Federal agencies, and would be the mechanism by which the agencies could get the resources to accomplish what they want for their mission. Yes, it would mean "new" money, or actually "more" money. The money could flow into the agency but there would have to be firewalls so the money is targeted and does not get directed elsewhere. (Gagosian)
- One possibility of combining research-oriented scientists with policy makers is to have one major organization that deals with the science, but have members of that organization be in another organization that had policy makers involved. The science would be translated and transitioned to another group. A second possibility would to have a large coordinating office for the science folks to have frequent meetings with the "board" of that group, and get the policy makers' input from the very beginning. (Gagosian)

- What is needed is an IPO, an Integrated Program Office, which has both the responsibility and the authority, via funding, to coordinate the development of the system. In terms of the grand concept of establishing research priorities in the context of some grand strategy, clearly, military research is driven by mission requirements. Research is prioritized based on the mission requirements of the particular agencies involved. (Malone)
- There is a debate right now about whether science and the management process should be separated. When good science is available, it should be used, not be lost because the focus is on funding issues and other resource issues. (Malone)
- Urge the Commission to help Alaska get more knowledgeable about climate change and to convince the national government that this is something that is not just for Alaska, but that it's of national interest. (Stevens)
- A national backbone is needed to support the regional programs Alaska already has underway, such as the Gulf of Alaska Ecosystem Monitoring and Research Program (GEM), and the North Pacific Research Board (NPRB). (Penney)
- Restart the SCICEX dedicated cruises either as part of the above or as essential research activities on their own merits. (Newton)
- Integrate Arctic Ocean research in the National Ocean Research Plan and the Integrated Ocean Observing System. Integrate Arctic Ocean planning in planning by all ocean research agencies. (Newton)
- Include Arctic Ocean studies in planning for the President's Climate Change initiative. (Newton)
- Restore the funding for the Office of Naval Research High Latitude Program to the $10-15 million per year range. (Newton)
- Follow the Federal Oceanographic Fleet Coordinating Committee (FOFCC) Plan and build the Alaska Area Research Vessel (AARV). (Newton)
- We must include local indigenous knowledge to complement that of scientific understanding. (Blatchford)
- One or two jobs in the coastal community in marine research are a measurable percentage in the workplace. As jobs move out of fisheries it is important that there is recognition that marine research is a career field. (Pawlowski)
- Subsistence is the way of life for our Unangan people, and our tribe needs to direct research to ensure that we have healthy environments to provide adequate subsistence resources. (Pletnikoff)
- We need a smarter science. Sometimes the way the U.S. does science doesn't get us to where we need to go. Science has to be connected to the management questions and the value, the sustainability issue that needs to be addressed. (Marcy)
- Urge this Commission to incorporate the proven science developed by Alaska Natives in ecosystem management that has been theorized. (Snyder)
- There is a need to accelerate efforts to conduct detailed seafloor mapping. (Estabrook)
- The large lakes community needs sustained funding for: investigator-driven, individual research projects on the biology, chemistry, geology and physics of large lakes; multi-investigator, large research initiatives, some involving sustained (multi-year) time-series measurements of key environmental parameters; research vessel operations; new instrumentation, including "ocean" observatories and autonomous underwater vehicles; fellowship support for graduate students who will comprise the next generation of scientists and government managers of large lakes ecosystems. (Johnson)
- Establish a separate budget of $10M per year in the Geosciences Directorate at NSF for large lakes research. (Johnson)

- All Sea Grant Funding should be based on merit. Currently, the National Sea Grant College Program awards about 2/3 of its total support to the 30 individual state programs in a fashion that is not based on merit. (Reutter)
- It appears that earmarking within the National Undersea Research Program is hindering the program's ability to address issues in the Great Lakes. Currently NURP has 6 regional centers, but half the funding must go to the two centers on the west coast. Furthermore, the Great Lakes are lumped with the Northeast Regional Center in New England making it very difficult for dollars to reach the region. This support could be very helpful in documenting the expansion of mussels onto soft substrates. (Reutter)
- Support for equipment and facilities at marine laboratories within NSF is woefully inadequate. (Reutter)
- Policies that affect monitoring, prediction, and/or modifying the components of this coupled system should recognize that it is coupled. Comprehensive numerical models of the coupled system must also be coupled. Prediction and other environmental information services, when provided as a "public good" return on the public investment, should also be organized according to the notion that the system is coupled. (McPherson)
- The AMS is supportive of an integrated global observing system for monitoring the state of the coupled ocean-atmosphere-land system on a continuing basis. Such a system should be built by extending the existing system of in situ and remotely sensed observations of the oceans, atmosphere, rivers, streams, and lakes, ice-covered areas, and land surfaces, to be more comprehensive than at present. This integrated global observing system should be designed and operated with full recognition that the information that it will produce will have multiple uses. (McPherson)
- Organizing the national effort to routinely observe the coupled Earth system, managing the information flow, modeling the coupled system, and providing services suggests that care should be taken to reflect the coupled characteristics of the system. (McPherson)
- Encourage enduring and comprehensive observational networks. (Goddard)
- Bridge gap between optimal design of observing networks and their ultimate value in forecast systems. (Goddard)
- Encourage national coordination of efforts and resource investments toward development and improvement of climate modeling and climate prediction tools. (Goddard)
- From an economic as well as an environmental point of view an essential thrust of the Commission must be to emphasize the ocean's effects on the weather and climate. (White)
- The operational and user communities must be involved at all stages of planning, from mission formulation, to technology development and infusion, and finally to applications development. We must also continue to plan for research satellites to fill the gaps in critical datasets. (Asrar)
- Research needs to translate into action. (Stupak)
- Field Labs and facilities play important roles and need continued support. (Bushek)
- Although there is value and need in mission-oriented research, a greater proportion of marine science funding should be available for innovative research in the marine sciences. (Jumars)
- Regulations should be proactive and include impact statements with the best available information on how resource use affects biological, chemical and physical systems and their interactions. (Jumars)
- Fund research and interdisciplinary scientific endeavors to understand the effects of coastal pollution on marine systems, as well as criteria for evaluating marine pollution. (Jumars)
- Develop national programs to study ocean and estuarine processes. (Wellenberger)
- Regularly develop synthesis reports of Federally supported research and monitoring. (Wellenberger)

- Call for the development of a detailed biogeophysical assessment of the territorial sea and the Exclusive Economic Zone along the coasts of the U.S. and its territories. (DeVoe)
- Call for the development and implementation of a national coastal and ocean resource "audit." (DeVoe)
- Recommend the development of a national research and education plan for the nation's coasts, ocean, and Great Lakes to encourage the generation of high priority science-based information and educational materials for use by resource managers, decision makers, educators, and the public. (DeVoe)
- Foster some mechanism for encouraging interdisciplinary collaboration among institutions that monitor and assess environmental change, social change, and the interaction of the two. (NASULGC)
- Promote mechanisms for sustaining a strong, comprehensive program of research on all dimensions of the natural and social systems of the oceans through a consortium of university- and agency-based cooperative agreements and joint centers. (NASULGC)
- A means for integrating agency contributions to ocean research bridging agency missions and congressional committee responsibilities is essential. The National Oceanographic Partnership Program (NOPP) is one model, but there must be an incentive for agency contributions to and participation in the program - this is the biggest problem facing NOPP today. (West)
- Recommendation presented for coastal and ocean research. (CSO)
- Specific recommendations presented. (Allen)
- Increase NOAA supported research and monitoring in NERRS. (Wellenberger)
- Ways to enhance resilience of Pacific Island communities and resources:
  1) Adopt flexible, adaptive resource management;
  2) Reduce the risk of economic losses in the critical fisheries sector;
  3) Pursue integrated coastal zone management principles;
  4) Control the introduction of invasive and alien species;
  5) Enhance education and public awareness programs.
  6) Adopt principles [List provided] (Lewis)
- Data assimilation and modeling: work the interface between coasts and blue water, and between physics and biogeochemistry. Inter-program and inter-agency coordination/cooperation: Increase funding, target gaps. (Lucas)
- Develop centers of excellence in oceans and human health. (Dearry)
- Adequately fund research to better understand ocean ecosystem complexities. (Monroe)
- Most important thing for ocean sciences and academic fleet particularly; prod nation to unshackle ocean science from end of the soup line. (Knox)
- Biodiscovery—Marine reserves could become equivalent of "source country." Researchers who are recipients of competitively funded U.S. government grants would be permitted to remove small quantities (10g or less) of invertebrates and/or soil samples from marine reserve "plots." (Newman)
- Strengthen the role of science and shift burden of proof:
  1) Establish national science commission with regional arms;
  2) Shift perspective of management; assume new activity remains at pilot level until enough information gathered to show no harm. (Nothoff)
- Look into establishing a coordinating body of government agencies, academic representatives and industry to begin tackling complex logistical issues for cooperative research programs; NOPP may be such a body with sub-group (MMS lead). (Talbert)

- Develop a national coordinated research program for marine resources: national funding to enhance understanding of how estuarine and marine ecosystems function and how fishing activities interact with them; recognize ecological value not just economic value; watershed-level research of estuary function and effects development has on their health; integrating biological component of estuaries and marine communities with physical is important. (Reinert)
- Remind agencies and contractors who develop models that arid and less rainy parts of the country cannot use the tools if developed only by and for temperate zones. (Van Schoik)
- Universities need to change reward system; recognize that partnerships are the way to go and faculty should be given credit. (DeVoe)
- Urge ocean science funding be increased to support critical research and for sustained coastal and ocean observing system with long-term monitoring efforts of coastal and marine labs. (Fletcher)
- Encourage the expansion of both the scope and completeness of scientific information bases. (Allen, D)
- Expand ability to understand ocean resources and to respond to their needs. (Davis)
- MMS environmental studies needed: understanding oceanographic issues and data surrounding future deep water drilling. (Fury)
- Science: good examples exist of cooperation. [3 examples provided] (Oynes)
- To give "science underpinning" need to invest in studies and research. (Hollings)
- Increase funding for basic research in ocean sciences (should be 7% of federal research budget—$1.4 billion/yr). (Thoroughgood)
- Improve the scientific basis for decisions about use of marine resources and protection of marine ecosystems and public health. (Thoroughgood)
- Mechanisms for academic community to engage in science and understand problems:
  1) Provide public funding for competitive, peer-reviewed investigation. Strengthen basic research components of agency budgets (e.g., time-series observations and ocean observing system);
  2) Integrate agency contributions to ocean research (i.e., NOPPS). (Thoroughgood)
- Creation of an advisory council made up of oceanographers and representatives of prospective user groups that would be asked to consider the particular problems that oceanographers could become involved in addressing. (Betzer)
- Need to secure recurring state funding and small working group should develop framework for collaborative action. (Betzer)
- Improving current situation:
  1) Improve NOPP coordination; has a good start with increased inter-agency interactions and coordination; interagency partnership dimension should be enhanced; perhaps have budgetary dimension for each NOPP agency;
  2) Linking research and development to operations; NPOESS Joint Program Office is excellent example;
  3) More efforts like The Ocean Caucus, NOPP and CORE: full time staff for The Ocean Caucus would help. (Brown)
- Research Needs:
  1) Interaction between groundwaters and surface waters;
  2) Behavior of contaminants in the subsurface;
  3) Approaches to track sources of contaminants and groundwater discharge; molecular techniques; stable isotope tracing; natural/artificial tracers;
  4) Linkage of airsheds with watersheds;
  5) Determination of loading contaminant factors associated with agricultural activities. (Chanton)

TOPIC: *RESEARCH, EXPLORATION AND MONITORING*

KEY ISSUE: *Ocean Exploration*

ISSUES RAISED

- The area the region knows least about but clearly has one of the major impacts on resources, including salmon resources, is the ocean. (Smitch)
- Very little is known about the oceans and we have only seen, let alone fully explored, 5% of the ocean. A whole century after the first national park was established, the National Marine Sanctuary Program was brought into being formally with legislation. It has taken a long time to get here. (Earle)
- The biggest problem facing us regarding the oceans is our ignorance, our lack of knowing. (Earle)
- Our nation would greatly benefit from a program in ocean exploration. Knowledge acquired through exploration is already, and will become even more, essential for policy makers, researchers, resource managers, and conservationists. Such a program should be conducted with full involvement of all relevant Federal agencies, the academic community, the private sector, and ideally, international partners. (McNutt)
- We cannot answer the most basic questions about why the Arctic has changed without sustained, continuous observations, and we have stopped making them. We are losing logistic capability. (Spindel)
- The Voyage of the Odyssey, a 5-year research program currently in its second year, is designed to quantify pollutant concentrations in the world's oceans. The Odyssey is now in the middle of the Indian Ocean. {Background and details of the Odyssey experiment provided]. (Payne)
- Scientific Ocean Drilling: NSF Integrated Ocean Drilling Program:
  1) Ocean drilling; [description of its importance]
  2) Present phase of Ocean Drilling Program will end in 2003;
  3) Planning for Integrated Ocean Drilling Program has been initiated [description provided];
  4) New ship required; modified from existing drill ships. (Leinen)
- A sea floor "base map" is essential as a foundation for seafloor issues: recent issue of MTS journal has collection of papers about new seafloor mapping technology. Urge this type of fundamental information be made available to fisheries resource managers quickly. (Wilson)
- There is need for exploration of unique regional habitats such as spawning banks and shelf-edge upwellings; additional mapping of habitats; additional oceanographic work and study of reproductive biology to determine sources and fates of larvae from spawning aggregates. (Sedberry)
- One of greatest areas for improvement in federal agency coordination and energy industry involvement is in ocean exploration and observation. (Talbert)
- Ocean exploration critical: Presidents Panel on Ocean Exploration excellent. (Farr)
- Selling Congress on need to explore the southern hemisphere is not easy, would start with Secretary Evans, Vice-President, and then to House members with good information why it is important. (Gilchrist)

PRESENTER RECOMMENDATIONS

- One candidate model for how to establish a program in exploration, is the Ocean Drilling Program (ODP). It is the premier example of a successful international program. [discussion provided]. (McNutt)

- The following Federal agencies should be involved in a program in ocean exploration: NSF, the Navy, NOAA, and NASA. The following agencies' participation must be encouraged: U.S. Geological Survey, the Minerals Management Service, the Environmental Protection Agency, and the Department of Energy. The program in ocean exploration must be discovery-based, have a vision and be conducted in an organized and systematic manner, and must be inclusive. (McNutt)
- Understand what is happening in the arctic, and why. Reinvigorate our Arctic Ocean research program.
- Prioritize construction of a UNOLS ice-capable vessel, and we need to support regular, continuous operations rather than sporadic forays. (Spindel)
- We need to invest in research about the oceans. (Ayers)
- To create an ocean exploration program for the U.S., an interagency group would need to sit down and actually look at the areas with the capability for the biggest advances. Exploration on the whole does not have a particular problem to solve so it would need to be broken down into segments of problems to solve. It should have a Federal structure such as in the Oil Drilling Program Initiative. It could be under the umbrella of something like the Planet Ocean Initiative and under something like a NOPP-type structure. When people go in to talk to their Senator about one of the many ocean-related issues, they would all say they are interested in the "Planet Ocean Initiative" and it all begins to come together in Congress' mind. (Gagosian)
- A national ocean policy is needed that supports work on the kind being done aboard the Odyssey and which also supports the kinds of programs Ocean Alliance is doing in partnership with educational institutions across the country. (Payne)
- Commence planning for the replacement of the Polar Class icebreakers and review their operating mode. (Newton)
- Funding should be provided for research on the sources and impacts of POPs in the subsistence diets of Indigenous people in the U.S. (Newton)
- Specific recommendations presented. (Allen)

TOPIC: *RESEARCH, EXPLORATION AND MONITORING*

KEY ISSUE: *Ocean and Coastal Monitoring*

ISSUES RAISED

- It is important to do monitoring and evaluation of whatever planning we do. Whether it is a marine protected area, or basin planning and recovery, there has to be a large-scale monitoring scheme to see how it is working. (Varanasi)
- Responding to the question 'is self-monitoring acceptable', Surfrider Foundation reports instances where permittee monitoring and independent monitoring produced major discrepancies, and for this reason mandatory independent monitoring of all waste water treatment plants should be considered. [Further description provided.]. (Evans, C)
- It is clear that the Arctic is more affected by climate change than Antarctica is. There are villages whose airports were inundated by seawater last year. Several of them may need to be moved back because of the ever-increasing water level. (Stevens)
- Monitoring systems are not well developed because of extreme costs. (Chandler)
- Findings, goals and objectives for environmental monitoring. (CSO)
- Coastal and estuarine monitoring—states' perspective on Ocean Observing Systems:
  1) Long-term status and trends monitoring is critical to manage the potential impacts to coastal and marine environments; also allows for determining if desired results of management actions are met or need adjustment;
  2) Monitoring may be perceived to be competing with investigative and process research funds when they are actually interdependent. Funds often provided for start up research and false start monitoring. (Haddad)
- Long-term monitoring and assessment programs by SCDNR have resulted from, and stimulated interest in, several state-federal partnerships (i.e., NOAA-NMFS) and provided data to management sections of SCDNR, ASMFC, NMSP, MMS, etc. [detailed description of, and results from, Marine Resources Monitoring, Assessment and Prediction (MARMAP)] (Sedberry)

PRESENTER RECOMMENDATIONS

- Support regional fisheries and marine habitat monitoring efforts. (Shultz)
- Develop and execute a plan for sustained, long-term observation in the Arctic. (Spindel)
- Continue to fund completely the BEACH Act to ensure that the program is fully implemented by all states and territories. Not only will the monitoring of ocean water quality for recreational health protect the health of the beach going public, it will provide an important tool in measuring water quality problems and will raise awareness about this important issue for coastal ecosystem health. (Evans, C)
- Make monitoring a requirement of any Federal grant that involves restoration. Some of our NOAA's Community Restoration Grants are very valuable for salt marsh restoration projects, but many times they don't include any money for monitoring. This would be one way to help solve that information gap that was discussed. A lot of restoration is being done but the managers are not being provided with information about the successes or how the projects and system should be revised to make sure they are being carried out right. (Buchsbaum)
- Recommendations presented for environmental monitoring. (CSO)
- Specific recommendations presented. (Allen)

- Develop consolidated federal initiative and policy for long-term monitoring with focus on integrating federal, state, and local programs that recognizes the resolution and types of information needed to evaluate resource management strategies. Should have a clear linkage to process oriented research but considered an operational management tool. (Haddad)
- Beaches Environmental Assessment and Coastal Health Act of 2000: continue to fund completely the Act to ensure the program is fully implemented by all states and territories. (Werny)
- Important to involve fishermen in development of monitoring plans or they won't buy in: create partnerships with them for sampling, etc. (Sedberry)
- Implement long-term, comprehensive inventory, monitoring, and assessment program to establish baseline to examine resource change. (Murley)
- Suggestions how best to integrate monitoring programs and recommendations the Commission should make in this area:
  1) Monitoring programs need to be integrated and coordinated so data collected for particular problem or fine scale can be merged into regional applications; EPA's EMAP and Florida's Watershed Monitoring Programs are good examples;
  2) Monitoring must be recognized and funded as a separate recurring expense;
  3) Consolidated independent federal initiative directed at long-term monitoring is needed. (Haddad)

TOPIC: *RESEARCH, EXPLORATION AND MONITORING*

KEY ISSUE: *Intellectual Property Concerns*

ISSUES RAISED

- The idea of real-time broad sharing of data from exploratory actions comes into play because it's important that all groups should know the same information rather than some groups being at a disadvantage. Data quality control would be immediately available over the Internet through web-based servers and anyone could call up this data and get access to it. There would have to be exceptions, if appropriate. (McNutt)
- On the subject of data policy and agencies being more open with their Federally funded data, it is already happening. Some of the funding already requires data to be open, almost immediately, to everyone. On the other hand, if our field is compared to the biomedical field, there is still a long way to go. (Gagosian)
- Existing data need to be more accessible. (Bushek)
- As our data acquisition platforms and sensors improve, our ability to collect environmental data increases at an exponential rate; as the capabilities of our customers grow, the performance of their systems is increasingly dependent on environmental data of even greater resolution and more rapid refresh rate. But our ability to assimilate and apply these data, and disseminate the associated products must keep pace with—and anticipate—these increased needs of the customers. (Spinrad)
- Offer that two overarching themes are relevant to the issue of ocean data management:
  1) The U.S. Navy uses a set of operational principles governing data management strategies. These principles emphasize that the Navy data management is part of a greater overall process where we address the customers' needs, effectively utilize the capabilities of data acquisition, analysis, and fusion centers, and maintain a strong link with the research and development community while robustly supporting our operational fleet at sea; and
  2) The U.S. Navy has mechanisms and infrastructure to meet current data management needs, and plans to exploit fully the continued growth in volume and diversity of data (especially remotely sensed data) in order to meet future operational needs. (Spinrad)
- If NOAA or the Navy gets data sets they are freely available. In the area of biology, fisheries, ecosystems, coastal data, those are more difficult and the restrictions more complicated. (Withee)
- Existing data need to be more accessible. (Bushek)
- People should realize that government data collection efforts benefit many sectors, ranging from the commercial to the non-profit. (Etnoyer)
- There is pressing need for better information about the marine environment; NORLC, 1999. (Seim)
- Energy industry already releases quite a bit of information but might be opportunities to do more. (Fury)
- Potential for an industry-wide program to offer a broad range of research and data gathering, as well as data sharing options with ocean research community:
  1) Industry is interested to do its part to advance accumulation of scientific understanding but primary role is production and marketing of energy;
  2) Extensive infrastructure throughout Gulf of Mexico example of the technological innovation and opportunity for cooperative progress in scientific arena;
  3) Industry not willing to shoulder financial or liability burden of non-industry related research;
  4) Industry vessels may be suitable platforms for instrumentation but safety, liability, maintenance issues must be resolved before industry can move forward with cooperative programs;

Some cooperative programs are underway [examples provided]. (Talbert)

- Design/implementation of NOAA data archive and distribution system. (Bodman)
- Industry willing to share some proprietary oceanographic data and environmental information voluntarily. (Caveney)
- Navy is attempting, and making progress, on releasing data and maps to oceanographic community, according to national security requirements. (West)

PRESENTER RECOMMENDATIONS

- Data acquisition and processing for natural hazard mitigation, marine operations, national security, public health and safety, and healthy ecosystems and living resources need not and should not be done in isolation. (Malone)
- The answer to sharing Federally funded data will be different whether you are talking about information for an operational system or information in a research program. For an operational program, the data has to be free access. For examples like XPT programs, XPTs should not be given to anybody unless they agreed to serve the XPT in real time. On the research side, there are good reasons that go all the way from quality control to the time it takes to analyze data and peer review to have a certain period of time in which someone else should have proprietary access to it. (Malone)
- We must deal effectively and efficiently with the increasing data flow that supports customer needs. (Spinrad)
- Need an effective data management governance framework. Authority for such a framework exists today in the National Oceanographic Partnership Program's National Ocean Research Leadership Council (NORLC). (Spinrad)
- Need a data management infrastructure that integrates all appropriate systems, platforms, and sensors. This coordinated national strategy for ocean observation integration should include expansion of NPOESS's and NOPP's authority. (Spinrad)
- Ocean data archive: Current levels and anticipated increases in the amount of ocean data dictates that the community work together to address data management and archiving. (Withee)
- Access to ocean data: Access to ocean data is of utmost importance. The Commission should endorse Ocean.US efforts to develop a national strategy for ocean data management. (Withee)
- Data assimilation and modeling are key to providing decision makers with information with economic and policy relevance. (Asrar)
- Continue to support and encourage data distribution efforts. (Etnoyer)
- A new Pacific Climate Information System could link climate science with decision making. (Lewis)
- Data and analysis should be made available on the Web to scientists and educators as envisioned through NSF-COSEE program. (Sedberry)
- Encourage Commission to improve access to and the use of existing scientific information for decision making. (Allen, D)
- Should examine how ever-increasing volumes of data should be managed. (Bodman)
- Develop protocols for data management that encourage integration and exchange through Web-based technology. (Murley)

Appendix 1

TOPIC: *EDUCATION*

KEY ISSUE: *K-12 Ocean Curricula*

ISSUES RAISED

- Sea Grant conducts priority-driven research, transfers scientific results to public, and provides educational opportunities from K-12 to graduate degrees. (DeVoe)
- A breakdown of NOAA's Education/Outreach budget and description of NOAA programs that address K-12 education are provided. (Bodman)
- A description EPA's K-12 education program is provided. (Wayland)
- Oceans play minor role in national science education standards, included as small component within Earth and Space Science sections. K-12 teachers are inadequately trained to teach marine science or incorporate ocean learning into the classroom. (Prager)
- Many highly regarded teacher training and K-12 education programs are struggling or have disappeared altogether. Many seek funds through NSF's new Center of Ocean Science Education Excellence for programmatic support rather than the coordination effort as it was intended. (Prager)
- Have a formal curriculum for young people about importance of oceans. (Weldon)
- K-12 ocean education; try to duplicate successful NASA program. (Hollings)
- Community Action is a small organization and is intensely involved in education. They have 23 schools in the Seattle area in which there are salmon in the classroom programs. (North)
- Children in kindergarten through 12th grade are poorly educated about ocean science and management issues. (Hamilton)
- Supportive school curriculum materials and science education programs that extend the experiential base are important to challenge all students. Quality science education programs provide the appropriately active "doing of science" experiences as opposed to the often used, passive approach of "read, rote, and regurgitate". (Mohling)
- The effort to enhance the scientific literacy of the nation's citizenry was underscored in the initiative to develop the National Science Education Standards brought forward and supported by NSTA to the National Academy of Science. The result of the collaborative effort between the science and science education communities has been the rededication to involve ALL students in quality science learning programs. (Mohling)
- Although not all ocean science content is included in the K-12 National Science Education Standards it is evident that topics of ocean science are encompassed in the content standards at every grade level. (Mohling)
- Ocean education within schools is essential. Ocean messages, however, can become lost within a school district's broader science education objectives. The National Science Teaching Standards barely mention the oceans and contributing experts for those standards do not include ocean scientists. (Carr)

PRESENTER RECOMMENDATIONS

- Oceans must be better represented within the national science education standards. (Prager)
- Recommend the expansion of the program. (North)

- Incorporate ocean science and management curriculum into the national science standards. Include ocean and marine science and management issues within state and Federal K through 12 testing standards. Establish ocean education coordinators for each coastal zone state. (Hamilton)
- We need strong educational programs in Earth system science that also stress the coupled, integrated nature of the system. These should underpin not only the training of professionals, but also K-12 education of the general populace. (McPherson)
- Ocean science content must be incorporated into the National Science Education Standards and state education standards [discussion provided]. (Allen, W)

TOPIC: *EDUCATION*

KEY ISSUE: *Coordination Among Existing Ocean Education Efforts*

ISSUES RAISED

- NSF beginning Centers for Ocean Science Education Excellence to enhance ocean learning opportunities for all ages and networking between oceanographic researchers and educators. (Keener-Chavis)
- National Marine Educators Association another vehicle for cooperation. (Keener-Chavis)
- API "Energy and Society" K-8 program in partnership with environmental education Project Learning Tree, provides educators with tools to educate students and parents about role of energy. (Fury)
- Partnering with state or federal agencies to provide information and develop local & state knowledge:
  1) Many companies sponsor high school and college scholarships, internships, etc.
  2) Offshore energy industry supports "ocean and coastal literacy." (Fury)
- There are many examples of folks who want to do good things for science education but too many examples of reinventing the wheel. (Mohling)
- As programs are developed in, or funded by, government agencies with the goal of public education about the importance of the oceans that there be some organic mechanism to bring members of the aquarium community in early, either as partners or as contributors. (Boyle)

PRESENTER RECOMMENDATIONS

- Coordinate efforts to educate all citizens about the economic, environmental, and cultural importance of ocean resources, and encourage greater public participation in protection and conservation of ocean resources. (Murley)
- National Oceanographic Partnership Program (NOPP) provides a valuable forum for addressing shared needs of importance to the science community, including oceanographic facilities and ocean education. (Colwell)
- Specific recommendations presented. (Allen)
- Through our Good Mate Program we have been working with the Coast Guard for quite some time developing educational material, providing outreach to recreational boaters. (Weissman)
- Collaboration between the education and research communities must increase to effectively incorporate the excitement of ocean investigation, exploration, and monitoring into formal classrooms, aquaria, museums, and public media throughout the country [discussion provided]. (Allen, W)
- Ocean education and outreach must be effectively coordinated and promoted at the national level [discussion provided]. (Allen, W)
- Improving ocean literacy calls for development of a national vision for ocean education resulting in a strategic plan that includes multiple Federal agencies, state governments, non-governmental organizations, school systems, and institutions of higher learning. (Allen, W)
- We urge the creation of a National Graduate Fellowship Partnership between Federal Agencies and Universities. (NASULGC)

TOPIC: *EDUCATION*

KEY ISSUE: *Teacher Training and Preparation*

ISSUES RAISED

- BRIDGE Web site provides educators with free, fast, and convenient access to accurate, peer-reviewed materials and information. (Keener-Chavis)
- The recently enacted federal legislation, No Child Left Behind, promises to bring changes to schools nationwide. There are key changes that impact science education initiatives. The law requires states to develop plans with measurable objectives that will ensure that science teachers are "highly qualified" by the end of the 2005-2006 school year. States must administer an annual assessment of student achievement in science at least once in grades 3-5, 6-9, and 10-12, beginning in 2007. (Mohling)

PRESENTER RECOMMENDATIONS

- NOAA Ocean Exploration Program unprecedented opportunity. (Keener-Chavis)
- Increase educator training on coastal and marine science and on current ocean issues; encourage teachers to introduce ocean themes in diverse curricula. (Murley)
- Must provide means to disseminate excellent marine science curricula and activities with adequate teacher training provided. (Prager)
- Quality teachers of science must have a firm command of the content they are teaching, sustained professional development for continued learning, and time in the school day to plan, strategize and collaborate with their colleagues. (Mohling)
- Professional development for in-service and pre-service teachers in ocean education must be enhanced [discussion provided]. (Allen,W)

TOPIC: *EDUCATION*

KEY ISSUE: *Ocean Literacy and Public Outreach*

ISSUES RAISED

- Effective extension education programs rely on current research, both basic and applied. (Bacon)
- Educational outreach programs are being developed and conducted for 113 Calhoun Street Project, Charleston. (Bacon)
- Many groups now profoundly under represented at professional levels in the marine science, resource management, and technology work force. Solution is education and participation. (Gilligan)
- Stewardship is an ethic that must be shared by the public at large; challenge is to raise awareness about importance of marine environment to our lives and future. (Bodman)
- A breakout of NOAA Public Affairs budget is provided. (Bodman)
- In dealing with complex programs like the marine sanctuary program, considerable outreach and education is a challenge; diverse and changing audience. (Causey)
- Scientists and policy makers must impress upon the public the importance of properly treating wastewater and changing actions that contribute to contaminants in stormwater runoff; brochures help. (Chanton)
- How to communicate with the public in light of the established communities that already exist and lack of willingness to alter lifestyle:
  1) Most people very concerned about environmental issues and want to change their behavior to live less harmfully on earth, but they don't know what to do and get no leadership from elected officials;
  2) Environmental health is a form of public health, public environmental education should be conveyed by the same avenues as public health education; environmental health should be advertised as is public health information. (Chanton)
- Several federal agencies now require outreach to be part of research proposal; good start but not necessarily effective means to combine science with education. Scientists are good at science not education. (Prager)
- Few broadcast media give science a chance. (Prager)
- Education played an important role in obtaining legislative approval for the $3 billion Florida Forever Plan. [discussion provided] (Struhs)
- Educational efforts to illustrate why natural resources matter encourages changes in social behavior. (Struhs)
- Information and outreach play an important role in giving public awareness and understanding of the status and threats of resources. (Struhs)
- One of most important topics facing us today is creating "ocean literate" society. (Cousteau)
- The sea and its mysteries can be used to engage students to think how they are connected to the sea and how oceans play a role in our collective future. (Cousteau)
- Zoos and aquaria are trusted providers of information on the environment; they are popular and people trust them. (Andrews)
- Technology support has greatly expanded the opportunities to learn about the oceans. The JASON Project has been noteworthy in using advanced technology to bring students in touch with ocean discoveries. (Mohling)

- Educating the public about oceans and the Great Lakes requires both technical mastery and popular appeal. (Carr)
- The need for education is undeniable. Abundant research portrays alarming changes to ocean ecosystems that predict immediate challenges to the quality of human life. Public understanding of oceans and ocean issues can best be described as dismal. (Carr)
- America's aquariums form the core of a network of educational institutions that daily deploy an array of effective educational experiences about oceans and the Great Lakes. Collectively, these institutions have demonstrated the ability to reach any audience, any message, any need. (Carr)
- The John G. Shedd Aquarium here in Chicago is a stellar example. Its mission reflects its singular focus: "The Shedd Aquarium promotes the enjoyment, appreciation and conservation of aquatic life and environments through education, exhibits and research." (Carr)
- A 1996 poll by the Mellman Group named aquariums and zoos as the third most trusted messenger concerning conservation and the environment. (Carr)
- The Ocean Project is an international network of institutions working to increase awareness and appreciation of the importance and value of the oceans to all people. The aim is to significantly increase the effectiveness of ocean conservation efforts through an unprecedented collaboration among aquariums, zoos, science, technology, and natural history museums. (Boyle)
- When people become aware of the effects their actions have on the waters of the world, they may be more likely to make land and water management decisions that are beneficial to those waters. (Johnston)
- The Lake Michigan Federation has learned many lessons of how to interact with the public. Need to use the media that people relate to and watch and read in order to get the message across. (Davis)
- Discussion of background and current ocean education issues. (Rufe)
- Another critical element in developing and sustaining innovative approaches to ocean governance is the much-needed improvement in U.S. ocean literacy, and in the nation's ability to attract people to ocean science and leadership positions. (NASULGC)
- Findings, goals and objectives for education. (CSO)

PRESENTER RECOMMENDATIONS

- To accomplish inclusiveness, we need to:
  1) Insist upon minority representation in programs, panels, boards, etc.;
  2) Insist upon respecting criteria for evaluation of proposals for federal awards that address broader impacts on society and infrastructure of science;
  3) Use oceans as a unifying thematic base in education to demystify science, view global issues, stimulate math and science achievement, and performance in schools that enroll significant percent of under represented groups, and build cultural bridges;
  4) Reinvent the process by which individuals become ocean explorers, scientists, and resource managers;
  5) Provide level of capacity building and support to the places that have demonstrated their effectiveness. (Gilligan)
- National guidelines for ocean literacy:
  1) Understanding oceans facilitates operational ocean observing system as a research and educational tool;
  2) Ocean science a part of teaching and learning in educational institutions;
  3) NASA Oceanography, with others, will champion establishment of ocean literacy guidelines for educators. (Lindstrom)
- Educate policymakers and public about importance of oceans. (Loy)

- Engage public in forthright discussion of what we want fisheries and ecosystems to look like. (Rassam)
- Improve awareness and understanding about the importance of the oceans and develop a sense of stewardship toward coastal and ocean areas. (Murley)
- Create and support innovative partnerships to engage the public in learning and caring about ocean resources. (Murley)
- Marine sanctuaries offer opportunity to engage students and be centers of learning and connection. (Cousteau)
- National policy must include as a first order priority the education of the public "all the way up the stream," throughout watershed. (Carpenter)
- Enhanced research and education capabilities and expanded public information and outreach efforts need to be supported as a basis for improving decision-making about ocean resources. [discussion provided] (Delaney)
- To get to most people, the majority of scientific data that is generated must be reduced to 3-D color animations that clearly present the problem and solutions. This is the Dr. Ballard's telepresence and the Jason Program. And that starts with the kids and the college students. (Lobecker)
- A charismatic leader, much like John Kennedy, is needed who will tell us to go to the oceans, young man, in order to focus the national priority. It is not the scientists, educators, businessmen that represent the constituency that will really set the priorities. It is the people like the Red Sox, Patriot and Yankee fans, the people on the beaches and who fish for and eat the fish, and most importantly, the legislators. (Lobecker)
- An effort to improve learning in science and technology, both in public literacy and in encouraging individuals pursuing careers, will require a sustained commitment, of 10 to 20 years. First, we must excite and engage a generation in the fields of science and technology, who will then communicate that excitement. We must make the latest and most exciting science and technology easily available to children and adults. (Lindstrom)
- The oceans community will need to do an assessment of its "assets" and identification of those which are current, timely and fresh; all the while keeping in mind issues of scalability and sustainability. (Lindstrom)
- It is important here to note the growing trend to employ evaluation and audience research throughout development of educational programs and exhibits. (Carr)
- Shedd Aquarium, with its 70-year history in aquatic education, stands ready and eager - along with over 200 other North American zoos and aquariums - to address this urgency and facilitate the educational initiatives that will surely evolve from the Commission's work. (Boehm)
- Monterey Bay Aquarium Splash Zone Exhibit is good example of aquarium learning experience. (Carr)
- The task we face is a need to increase the urgency of ocean protection. (Boyle)
- Three elements of an effective message on oceans:
  1) Ocean messages should: recreate and reinforce the positive connections many Americans already have to the oceans, especially recreational and emotional connections.
  2) Frame the messages and animal care needs of the projects in the values. Use the values framework of the balance of nature when presenting information about the oceans and their functions because this holds a high level of credibility with the Board.
  3) We also need to emphasize the importance and power of individual responsibility for this project. (Boyle)

- There is a major need for ongoing support for effective programs to increase the public's ocean awareness as outlined in this report. This should be a specific program, managed as a separate federal mandate to increase ocean awareness among the public, as opposed to a sub-program within the existing structure of the agencies with jurisdiction over the U.S. oceans and coastal zones. Typically, funds for public education in the budgets of these agencies often remain unidentified, unspent, or directed to other purposes. (Boyle)
- Somehow we've got to make people think about the relationship between what happens on land does affect what happens in the ocean. (Panetta)
- Coastal and ocean education must be improved at all levels; a better-informed citizenry is a key element to the success of a national policy on the oceans. (Allen)
- Ocean literacy among the general public must increase [discussion provided]. (Allen,W)
- Specific recommendations are presented. (Rufe)
- We urge that the outreach models, both university-based and non-university, serve as the vehicle for disseminating information simultaneously among jurisdictions (from local, to regional, and national levels) about those natural (e.g. hurricane) or human-induced (e.g. eutrophication) events that may be locally derived but ultimately affect the entire nation. (NASULGC)
- Recommendations presented for education. (CSO)

TOPIC: *EDUCATION*

KEY ISSUE: *Federal Government Role in Ocean Education*

ISSUES RAISED

- Federal programs have supported development of marine science teacher training programs and curricula; there are few means to provide funding to sustain, disseminate or coordinate these programs. (Prager)
- Education and Outreach; ways to capture attention of public; no investment in outreach is wasted. (Farr)
- Education is a shared responsibility between the academic institutions and the Federal Government. (Nowell)
- NASA has exciting subject matter that stretches the imagination; heroes that have gone where few dare, expertise that draws on the best minds in the world, images and data that show us what no one has ever seen. It is a winning package that has inspired television programs, motion pictures, museums, and new realms of research. (Lindstrom)
- NASA's role has been to continue gathering images and data and then disseminate them. The channels of dissemination have evolved into programs that encourage students and faculty in the study of our planet and space through faculty and graduate workshops, fellowships, and funding resources. We are also building partnerships with an array of informal learning organizations. (Lindstrom)
- NASA has a finely tuned educational program that supports all citizens. Its success began with the images taken by astronauts of the Earth and the moon, and continues today with data images and movies about the universe and Earth's environment. (Lindstrom)
- The most important lesson we have learned is to consider all of our efforts in the context of their ability to be scalable and sustainable and then we focus in on issues related to meeting the needs of the education community. (Lindstrom)
- Federal and state government agencies play an important role in supporting science education. In addition to those mentioned elsewhere, a range of programs provided by NOAA, NASA, EPA, and other agencies have made unique contributions to the professional development and enhancement of teachers of science. (Mohling)
- National Invasive Species Plan calls for a national, well coordinated, educational campaign. (Williams)
- The Sea Grant program is spending a tremendous amount of money to get out and reach individual charter captains, individual anglers and bait producers and stores. About $2.2 million a year for research, education and outreach—but it is still not enough. (Reutter)
- Some of the Discovery missions had a one or two percent earmark set aside for education and public outreach programs. Education is now a core mission of NASA. Most agencies don't have a sustained budget or effort required to provide support that's needed in education. (Mohling)
- The Cooperative Research and Extension Service has a primary education role and very important work that they do through youth programs such as 4-H; we have some educational outreach we do as far as the conservation community as well. (Knight)
- The Office of Naval Research's (ONR) role in supporting graduate education has declined since its high point during the 1980s when ONR was a leader in this area. In addition, the National Oceanic and Atmospheric Administration (NOAA) has been significantly absent throughout its history in supporting graduate education on a national scale, other than through research assistantships associated with specific contracts or grants and a small program of marine policy and industry fellowships. (West)

PRESENTER RECOMMENDATIONS

- Sea Grant should become nation's primary university-based research, education, training, and technical assistance program in support of coastal, marine, and Great Lakes resource use, management, and conservation. (DeVoe)
- Sea Grant should be positioned within NOAA to most effectively contribute to the overall environmental, economic, and educational goals of the agency and nation. (DeVoe)
- Data and analysis should be made available on web to scientists and education networks as envisioned through NSF/COSEE program. (Sedberry)
- Enhance ocean science education support and human resource development. (Thoroughgood)
- Need coordination and commitment over long-term; establish Office of Education and Outreach within NOAA to coordinate educational programs nationwide and facilitate national ocean outreach campaign. Beginning budget of $10-20 million for National Science Bowl, Jason, competitive grant program for ship time use in education. (Prager)
- NOAA should direct its labs in OAR and NMFS to encourage their scientists, in practical and beneficial ways, to join in partnership with nearby academic institutions in teaching courses, advising students and providing experiential learning opportunities for undergraduates. (Nowell)
- NOAA should take responsibility to provide training funds to universities to support students. (Nowell)
- NSF should break down the barriers between its science directorates and its education directorate. (Nowell)
- NSF should look at the NIH institutional traineeship model that has proved so effective in the health and medical sciences. (Nowell)
- ONR should reconsider its dwindling investment in graduate education and consider how it could provide increased number of fellowships under the NDSEG heading especially as a long-term investment in homeland security. (Nowell)
- The Commission should encourage universities to increase the teaching of oceanography at the undergraduate level. (Nowell)
- Support education and training programs that enable our residents to contribute to research data collection needs in their remote locations. (Pawlowski)
- A national ocean education strategy must: draw on our reservoir of present day ocean science explorers and adventurers to inspire interest and excitement about the ocean; dovetail into the broader education context – earth system science, biological sciences, general science education, and geography; and work across government agencies, educational institutions, and the private sector. The Education Strategy being developed under the National Oceanographic Partnership Program is on the right track. (Lindstrom)
- We have recently introduced an educational outreach program for kindergarten through 12th grade concerning our navigation mission through an interactive website. There are many opportunities for all of us to spread the message about the value of our oceans and the need for all Americans to take part in preserving and protecting our coastal resources. We need to work together to improve this dialogue. (Griffin)
- Given the scale of the agency and its potential import in addressing issues of resource management and sustainable development, it is imperative that NOAA take on a significant share of the responsibility for supporting graduate education and training across the marine sciences and public policy arenas. (West)
- Science education should be part of each federal ocean agency's mission. (West)
- The Commission should support more cooperative programming between the Education and Human Resources (EHR) Directorate and the Geosciences Directorate at NSF. (West)

TOPIC: *EDUCATION*

KEY ISSUE: *Academic Institutions and the Training of Educators in Ocean Sciences*

ISSUES RAISED

- This Commission has an opportunity to make substantive and implementable recommendations that can affect the types and quality and availability of graduate and undergraduate students coming from the 60 or more academic institutions that produce doctoral students, and the one or two universities that are also engaged in undergraduate teaching of ocean science majors. (Nowell)
- Progress in the science of oceanography in America now suffers from one of its greatest handicaps, for progress in this science is a matter not only of ships, laboratories and money, but far more of men, which implies opportunities for education. (Nowell)
- As far as employment opportunities in the marine related areas, I can take a local example in the School of Oceanography at the University of WA. Forty percent of faculty will turn 65 by the year 2007. Many will retire, as will those of the same age in the Federal agencies. There was a boom of hiring in the 1970s. In the next five to ten years there will be a desperate need for those knowledgeable in the marine sciences. (Nowell)
- Over twenty years ago, the University of Massachusetts Boston recognized that one of the most promising frontiers for advancing science and education would occur at the interfaces of disciplines, and established its first graduate program in Environmental, Coastal, and Ocean Sciences (ECOS). This department is unique in that it brings together faculty with expertise in biology, chemistry, physics, geology, economics, management, planning, law, and policy. (Delaney)
- Scientifically trained individuals with knowledge of coastal and ocean environments are needed to provide managers and policy makers with information to make decisions. (Jumars)
- The future quality of ocean sciences in the United States and our nation's capability to understand and manage marine issues related to environmental quality, economic well-being, and national security depend upon maintaining graduate educational programs of high caliber. (West)
- Graduate student support is not being provided in the ocean sciences at a level comparable to the life sciences. (West)

PRESENTER RECOMMENDATIONS

- Concerning education, there is a need to open it up to other social sciences including liberal arts, conservation, etc. (Weissman)
- Funding for undergraduate research internships is highly encouraged. Allow and encourage Federal marine resource managers to attend annual conferences of scientific societies to help bridge the gap between science and management. (Jumars)
- Minority representation and participation in the ocean community must increase to change the demographic composition of this community to reflect the changing demographics of our country [discussion provided]. (Allen, W)
- Recommend sustained funding for ocean education at a level that is at least ten times greater than current funding levels [discussion provided]. (Allen, W)
- At present, the financial aid system for graduate students is too dependent upon research assistantships. (West)

TOPIC: *EDUCATION*

KEY ISSUE: *Other Issues*

ISSUES RAISED

- Perceptions, misconceptions, and general lack of understanding exists between scientific and education communities of what teachers "do" in classroom as teaching professionals, and what scientists "do" as scientific researchers in lab or field. (Keener-Chavis)
- Lack of action has resulted in: missed opportunities for program collaboration among scientists and educators, lack of educational product development based on exciting ocean science, general lack of information dissemination, lost opportunities to leverage funding, ineffective efforts to recruit educators, scientists, students. (Keener-Chavis)
- Ocean research offers opportunities to bring science to classrooms and public; now is the time to expand educational efforts. NSF developing centers for ocean science education excellence to foster integration of ocean research into high quality educational materials. (Colwell)
- Research, education, and integration of technical information into marine operations critical to continued improvements of MTS. (Nagle)
- Must invest in ocean and coastal science education; all grades,K-12, undergraduate, and graduate. Looming need to replace retiring marine scientist in academics and Federal agencies. (Fletcher)
- NASA spends about $150 million for education. (Prager)
- Examples where research has been integrated into education and outreach:
  1) Our Ocean World radio spot (www.ouroceanworld.com)
  2) The Jason Project
  3) Teacher training programs that encourage participation in research
  4) The Sea Education Association (www.sea.edu) (Prager)
- Education is a key first step for national system of Marine Protected Areas (MPAs), including primer on MPAs, lessons learned from other sites, and review of current status including available biological and socioeconomic information. (White)
- Programs to increase public awareness of ocean issues and how living marine resources interact and are affected by man's actions:
  1) Farm runoff affects hypoxic areas in Gulf: eutrophication has been greatly accelerated by human activity. [examples provided]
  2) Marsh loss due to natural (subsidence, sea level rise) and man-induced (reduced freshwater and sediment input, dredging, etc.) causes has reached crisis.
  3) Flood control levees have effect on salinity regimes and deprived marshlands of needed water and sediments. (Simpson)
- Need minority role models in communities and in mentoring positions to encourage minority students to enter these fields. Hiring by federal agencies will not solve the problem. (Hinkey)

PRESENTER RECOMMENDATIONS

- Education should be the foundation of an ocean strategic plan; it is how we will engage citizens, politicians, media, business community in support of oceans. (Prager)
- Examine ways some groups have attempted to educate about energy issues: National Energy Education Development project, network of students, teachers, businesses, and industry. (West, JR)

- Consider mechanisms to reverse current approach to getting minorities into marine fields and replace it with bottom-up recruiting approach: fellowships, partnerships, and funding to make salaries at MSIs and in local and state resource management agencies as attractive as federal positions essential to keeping minority marine scientists or managers in community as role models, not in Silver Spring as statistic. (Hinkey)

Appendix 1

TOPIC: *TECHNOLOGY AND MARINE OPERATIONS*

KEY ISSUE: *Strategy for Technology Development to Meet Nation's Needs*

ISSUES RAISED

- Hawaii has a robust and dynamic technology-based ocean community and world-class ocean oriented academic institutions, but far removed from Washington D.C. and often overlooked. (Friedl)
- Best way to assure talent and attitude of Hawaii's technology-based community as part of nation's ocean future is to assure ocean development programs are open, competitive, and dynamic. (Friedl)
- Concerned about state of marine technology compared to its potential. Need to find and implement promising new technologies; raise the visibility of the highly underutilized potential of marine technology sector. (Wiltshire)
- Variety of technologies enables us to access the ocean from surface to deep in the seafloor. (Leinen)
- Appropriate infrastructure and technology innovation are needed to improve our decisions: "Illuminating the Hidden Planet, the Future of Seafloor Observatory Science." (Alberts)
- Ocean industries represent U.S. $750 billion annual expenditures: half oil and gas industry, a third in support of navies of the world. Major advances and breakthroughs in technologies of ocean industry result from research and development of these two components. (Clark)
- The increasingly complex nature of ocean science and technology requires fresh and unconventional partnerships among all members of the ocean science community. As Federal agencies, they must be agile, resilient, and interconnected, just like the science and technology itself. (Colwell)
- Connectivity is very important. As a matter of fact, the cyber infrastructure, one of the most ambitious connectivity efforts ever is in progress. The cyber infrastructure is the connection, in this case, of high-speed computing to every part of the country. Investing in information technology will continue. (Colwell)
- Many of the important global science programs are isolated from each other in their approach, objectives, and goals. And, they are focused on the narrower objectives of the individual facilities themselves and not on the broader scientific questions or strategic mission that all the observatories should be addressing. (Gagosian)
- Data and understanding lead to models and validation, which then leads to prediction. The predictions from numerical simulations can never be better or more comprehensive than the data used to initialize the model, nor the underlying physical and other processes of the model. (Gagosian)
- The Marine and Oceanographic Technology Network (MOTN) is a trade association dedicated to promoting the success of marine technology business. MOTN provides services and help to expand the business opportunities of its members, which is currently 68. This region has the highest concentration of marine science and technology firms and institutions in the world. (Merrill)
- Many of the same problems that are being dealt with today, were being dealt with 37 years ago. Some drastic changes are needed in the way this is all approached. Modern technology has a lot of those answers. (Lobecker)
- The use of remote sensing technologies in Alaska has not been great, primarily because there are not the assets that can respond. (Underwood)

- The Coast Guard has a number of remote sensing capabilities but what we have seen most often used are actual patrols and over flights by C-130s. We have had a number of incursions that are detected by remote sensing but we have never successfully completed the task because the violators simply turn around and run into international waters or waters of a foreign country. It is not really a matter of detecting the violators but also having the assets in place so that we can actually respond. (Burgess)
- Multi-beam mapping, and other existing technologies, provides depth and other information, allowing scientists to define differing bottom types and to quantify slope areas known to support certain types of fish. (Pawlowski)

PRESENTER RECOMMENDATIONS

- Recommend continued development and improvement of technologies for use in ocean and coastal research and monitoring activities. (Sedberry)
- Sustained government investment to support development of new technologies to conduct commerce (i.e., NOAA Office of Ocean Technology). (Clark)
- Prioritize federal research and development to facilitate large scale oil skimming vessels with greater recovery and storage capacity in broader range of sea conditions. (Hopkins)
- There should be continued support for innovation and increased technology transfer from the academic environment, research institutions and Federal laboratories into the private sector. (Merrill)
- Support is needed to continue to assist marine technology firms worldwide in their efforts to sell instrumentation all over the world and provide services. (Merrill)
- Provide more focused assistance in the newer markets in South America, Asia, and the new republics. (Merrill)
- Streamline domestic regulations. (Merrill)
- Support business improvement opportunities. (Merrill)
- Recognize the importance of existing technologies, like multi-beam mapping, in supporting science-based decision making for coastal and marine programs. (Pawlowski)
- The best technology available should be utilized for protection of marine sources from pollution and other adverse effects. (Lakosh)
- Recommend strengthening and advancing present outstanding ocean scientific and technological capabilities. What is needed is a considerable investment in technological development so that thirty years from now, we can look back and say that the advancements in this period were also spectacular. (White)
- Need help to enlighten EPA regarding passing law that will certify and regulate a new device whose performance is far superior to anything on the market today. Existing law refuses to recognize technology improvements. (Husick)
- For the multi-national Integrated Ocean Drilling Program to be a success, the United States must continue its support of the program, including a replacement for the Resolution. (West)

TOPIC: *TECHNOLOGY AND MARINE OPERATIONS*

KEY ISSUE: *Development of New Sensor Systems and Platforms for Working and Living at Sea*

ISSUES RAISED

- Parameters for success:
  1) Facilities with technical expertise and charter to support complex sensors, robotic platforms, and data needs of scientific community;
  2) Centers of excellence to develop first-rate sensors, platforms, and observation techniques on a community basis;
  3) Competitive processes that encourage periodic upgrades of facility capabilities;
  4) Mechanisms to support adoption of new paradigms of ocean observation. (Bellingham)
- Cost to develop molecular tools expensive, but as clinical laboratories develop them cost comes down; sensor technology is on verge of happening: NIH, NSF, DOE, USDA, EPA involved in technology. (Grimes)
- Three new sensor systems of particular relevance to ocean science and proposed user groups are underwater mass spectrometer, long path length spectrophotometer, dual-laser imaging system. (Betzer)
- MARAK is a meteorological company that has installed world's largest private coastal mesonet of about 200 stations along coast and Great Lakes for sailing and windsurfing communities. Public agencies have realized the value of this private sector data for variety of applications. [examples provided] (Titlow)
- Yes, sensors are put on fish, sea lions and Orcas. The elephant seals work very well because they are so large. To my knowledge there are no examples of salmon or another fish that have worn sensors that were heard inside a predator. The Orca that was mentioned, that died about ten years ago and was found to have 15 sea lion tags in its belly, is very interesting. Yes, it is a good way to learn about the food chain. (Grassle)

PRESENTER RECOMMENDATIONS

- Industry interactions: need to develop partnerships with oil and gas industry to share their data; increase development of sensors; industry interested in product development for specific user groups. (Seim)
- Urge NOAA to start now earmarking some funds for the development of biological sensors, so they can get to the same level as the physical and even chemical sensors. (Evans, D)

TOPIC: *TECHNOLOGY AND MARINE OPERATIONS*

KEY ISSUE: *Development of an Operational Coordinated Ocean Observing and Prediction System*

ISSUES RAISED

- Ocean observing systems allow us to take pulse of planet:
  1) Tropical Atmospheric Ocean array identify recurrence of El Nino;
  2) Not limited to climate change; includes weather forecasting and restoring and maintaining healthy ecosystems and living marine resources (e.g., fisheries);
  3) GOOS and APEC examples of data applied to managing resources;
  4) Goal is to integrate state and local governments, industry, and academia into consistent and accessible national system;
  5) Operational needs key driver; need to identify key ocean research areas and technological requirements. (Lautenbacher)
- Operational observing system can provide scientific data for:
  1) Management of living marine resources, including coral reefs;
  2) Ocean and coastal management and uses, including tourism and development. (Lautenbacher)
- NSF is working with academic community to provide new infrastructure for gaining access to oceans. Infrastructure is integrated network of ocean observatories that complements satellite, mooring, and float technologies and allows acquisition of long-term time-series and data on the ocean interior and seafloor. Will facilitate "temporal" exploration of oceans. Ocean observatories and observation system will complement, not replace, research vessels. (Leinen)
- Historic view of oceanography: most of previous century could be called "century of undersampling." Satellites have revolutionized oceanography; the ability to sample adequately and globally. Remote sensing enhances the need for shipboard observations; "sea-truth." Next two revolutions: climate and combined biological/physical/chemical models of ocean processes. Future: first priority is establishment and maintenance of an Ocean Observing System; dual goal of managing and sustaining ocean assets and of understanding ocean processes. [essential ingredients provided in Figure 5]. Probably most difficult requirement is that of "sustaining" observations. (Munk)
- Coastal observation systems: federal government can provide national framework, standards of protocols, definition of requirements, stable/opportunistic funding. (Davidson)
- There is national need for sustained and integrated observations of coastal waters. (Fletcher)
- Observing systems in east and southeastern U.S. [descriptions provided] (Seim)
- Concern from academic community that establishment of an observing system will cut into already slim funds; would be comfortable with restructuring. (Seim)
- Industry can participate in national observing system and is engaged in promoting and enhancing arrangements for offshore platforms providing research tool for academic and scientific community. (Caveney)
- Development of integrated ocean observing capability required, including moored high bandwidth telemetry buoys and arrays of seafloor sensors through government/industry partnerships; lacking motivation and funding. (Clark)
- Systems designed for long-term monitoring may serve double-duty as homeland sentinel systems. (Clark)
- Ocean observations:
  1) Long time-series data key for managing living resources, understanding ocean ecosystems, resolving uncertainties about role of oceans in climate change;

2) Providing new infrastructure beginning with integrated network of ocean observatories, incorporating advanced sensors for chemical and biological measurements [description of elements included] and provides basic hardware and infrastructure. (Colwell)

- Need to educate potential partners in effort to build effective observations system. (Colwell)
- NASA needs global ocean observing system:
  1) Integrate: combining "in situ" and space-based subsystems with ocean models and data assimilation techniques;
  2) Integrate: long-term data collection for research quality products and infusion of system design and technology change;
  3) Integrate across disciplines (physics, chemistry, biology). (Lindstrom)
- Ocean observations important issue for DOD: DOD collects significant amounts of data and bridge national security and civil communities by declassifying more data. [a one-page statement "The Importance of Ocean Observations to Naval Operations" is provided] (West)
- Ocean Observing Systems important to understand, manage, and protect coastal resources. (Farr)
- The cost of insufficient information is high and it is important that an investment is made in a real-time ocean observing system. (Richert)
- To complicate the issue further, each observatory seeks its own funding, thereby competing amongst the other observations. (Gagosian)
- The nation has the technology and the science potential. Priorities must be focused and the funding coordinated towards a common goal. (Gagosian)
- The design of an observing system to answer basic questions about the biology of the oceans will build on capabilities needed for safe and efficient coastal ocean operations of all kinds. The following are examples of information of immediate economic and strategic importance needed for understanding processes controlling the distribution and abundance of life in the ocean:
  1) Management of commercial and recreational operations in increasingly congested estuaries, embayment, and open coastal areas requires tracking systems and real-time, high—resolution information on ocean circulation.
  2) Continuous monitoring and management of pollutants and pathogens from point and non-point sources is necessary to protect human health.
  3) Rapid deployment of an observational and predictive capability to make unknown environments known has become an essential element for success of military operations.
  4) Forecasts of weather and ocean conditions affect peoples' daily lives as well as the viability of every coastal business—responses of fish, marine mammals, drifting gelatinous animals, clams, and crabs respond to atmospheric and ocean weather. (Grassle)
- The Gulf of Maine Ocean Observing System, Inc. (GoMOOS) is a prototype regional, user-driven, coastal ocean observing system. As such, our immediate goal is to provide data and information to serve a wide variety of public and private sector needs for decision-making, problem solving and research in the Gulf of Maine. GoMOOS has partnered with the research community to implement a versatile and state-of-the-art observing system for the Gulf of Maine. GoMOOS has two major components: 1) a technical component, which includes the infrastructure for acquiring, managing, archiving, and disseminating oceanographic and meteorologic data on an hourly basis; and 2) an institutional component, which allows GoMOOS to operate as an effective partnership within the region. (Bogden)
- GoMOOS should make the transition from being dependent on congressional plus-ups because that dictates year-to-year basis of looking for funding. Right now for a state agency to look at GoMOOS as providing a long-term commitment and return on its investment is a bit tenuous because our primary support is Federal funding. A model is being developed after a new kind of entity, a regional, coastal oceanic version of the Weather Service. And the same type of support is needed before other kinds of resources can be developed. (Bogden)

- A problem related to ocean observing systems transcends those very high technology observing systems. All of our members are acquiring data at unprecedented rates and the data stream is coming in at a much more rapid rate than it can be turned into useful information. (Jumars)
- Ocean.US, established under the National Ocean Partnerships Act, is the ocean agencies' effort to begin the implementation of an integrated and sustained ocean observing system. The interagency Ocean.US office's overall goal over the next decade is to integrate existing and planned elements to establish a sustained ocean observing system to meet the common research and operational agency needs in the following areas:
  1) Detecting and forecasting ocean components of climate variability;
  2) Facilitating safe and efficient marine operations;
  3) Ensuring National security;
  4) Managing resources for sustainable use;
  5) Preserving and restoring healthy marine ecosystems;
  6) Mitigating natural hazards; and
  7) Ensuring public health. (Evans, D)
- The integrated ocean observing system will comprise four main activities: [discussion provided]
  1) Operations and routine observations;
  2) Long-term research observation and observatories;
  3) Technology development to support the Ocean.US objectives and tools; and
  4) A web-based "commons" for access to models, algorithms, numerical techniques, etc. to foster improved productions by users. (Evans, D)
- Ocean.US is staffed by personnel assigned by the signatory agencies, presently Navy, NOAA, and NSF. And NASA is assuming the responsibility of providing a leader from the office no later than September, 2002. (Evans, D)
- Currently there is a very informal system that constitutes the Ocean.US framework. There is an MOU between nine agencies, nine of the 12 NOPP agencies that says they will participate to the extent that they have interest; that they will contribute resources that are in some way proportional to what they think they are getting out of it. And they will donate some people. But, the level of organization, the governance mechanism, is not much beyond a handshake—it is probably the lowest level or organization that one might imagine for such an important activity. (Evans, D)
- Ocean.US is headed toward success. The current funding situation is difficult right now but the attitudinal portion of it is positive. The executive committee meets regularly and the people who have authority over the programs are the people who come to those meetings. They come with the attitude of trying to figure out how to make the program work. The economy has changed over the last 18 months. And the availability of funds for accelerating initiatives, even those with very high potential payoff is greatly constrained. It is difficult to be optimistic about the receptiveness of OMB to even very important issues right now. There are other priorities that are consuming their attention. (Evans, D)
- There are very explicit connections between this as a Federally focused activity and all the grass roots efforts that are emerging in regions around the country. For example, in the Earline workshop, you will see that the vision for building the coastal component of the observing system really is to put together a consortium of all kinds of regional activities. This is a good approach because the measurement requirements, and the users of the data will vary from region to region. It is very important to put together these systems so they consider the users and products, and that somebody wants to take ownership for them. [discussion provided] (Evans, D)

- There is a tremendous interest in developing coastal observing systems in Alaska, and especially in the important bioregions, like Prince William sound, Kodiak, Bristol Bay, and Sitka Sound. There are a number of coastal communities that are rich in resources and have populations of people that are very dependent upon those resources and are interested in getting better information. (Thomas)
- There really is no fundamental difference between the definition of a military operational oceanographic requirement and a civil operational oceanographic requirement. (Spinrad)
- An integrated observing system will promote improved understanding of the oceans and climate with immediate applications for addressing a ranging of pressing problems ranging from agriculture to severe storms. (Withee)
- While funding of new instruments is essential, support for analysis of long term data sets derived from past and future research is equally important. (Jumars)
- Findings, goals and objectives presented for coastal and ocean observing. (CSO)

PRESENTER RECOMMENDATIONS

- Ocean observations: build on the evolutionary TOGA model. (Lucas)
- Provide incentives for federal agencies to be active participants in the regional systems. (Seim)
- Ensure proper support for regional observing systems does not come at expense of basic ocean research. (Seim)
- Direct funding (to NOPP) of the national ocean observing system must be established for sustained program to exist. (Seim)
- Coastal States Organization supports very comprehensive coastal and ocean observing systems. (MacDonald)
- Implement an integrated and sustained coastal and ocean observing system. (Thoroughgood)
- Improve interagency coordination and integration mechanisms (supports renaming and expanding authority of NORLC). NIH should participate in NORLC. (Thoroughgood)
- Ensure robust and innovative technical infrastructure:
  1) Restore ocean sciences portion of federal basic research budget to 7%;
  2) Adopt newly available technologies for high-speed, large band-width communications;
  3) Develop and maintain cadre of trained professionals and students; develop partnerships for exchange of personnel between academia, industry, and government (i.e., Intergovernmental Personnel Act). (Thoroughgood)
- Recognizing experimental capabilities as national assets requires balance between operational oceanography—within purview of ocean agencies—and innovative research. Best served by flexible partnerships among academic institutions and government. Remove competition by clearly defining scope of federal laboratory research, and stay within it. (Thoroughgood)
- Crucial that, through NORLC, federal agencies arrive at consensus for the operational requirements of an ocean and coastal observing system. (Thoroughgood)
- Operational systems need to include research goals to encourage continuous technological innovation and develop more effective capabilities to detect and predict meaningful changes. (Thoroughgood)
- Observing system must accommodate change, address numerous scientific and practical objectives simultaneously, and encourage seamless relationship between research and monitoring. (Thoroughgood)
- Balance between small and large scale programs will only be achieved with adequate funding that requires policymakers to understand the importance of the balance. (Thoroughgood)

- Endorse and recommend funding of the integrated and sustained ocean observing system. (Newton)
- There are several aspects of the ODP model that are also quite applicable for ocean observing systems and integrated discovery programs. One is the need for a long term funding line. Each time it is renewed it has new aspects to it, and they can do long term planning that way. That is absolutely essential for ocean observations, just as it is for ocean exploration. Ocean observing system and ocean exploration need to work together in proposals. There needs to be a big plan, finding the holes, and informing the community of where those holes are and encouraging people to put in proposals to fill the holes. (McNutt)
- Establish a National Coastal Ocean Observing System, coordinated by the Federal Government and implemented at the regional level by a federation of regional coastal ocean observing systems. [Further description provided.] (Richert)
- The Census of Marine Life group should be viewed as a cross-cutting science program that should be adopted in a number of different agencies. Business partners are very critical in the development of these regional needs. For example, forecasts have value, dollar value. The dollar-value forecasts are looked at, as are individuals' business plans, to see how they affect the bottom line. This is important because a lot of government funding is needed. In time, however, that government funding will transition to private funding, so the value added is increased. (Grassle)
- Urge Congress to fund the infrastructure required to observe the ocean and foster regional partnerships among industry, academia, and government to sustain observing systems. The elements of the Integrated and Sustained Ocean Observing System (ISOOS) have been defined and the recommendations of the Ocean.U.S. Workshop should be implemented. (Grassle)
- There has to be a national academic partnership of observing systems. There also needs to be a funding mechanism for phasing in regional systems, regional systems that respond to user needs in regions. It cannot be one size fits all. There should be strong linkages to science programs, which will emerge and have particular contributions at particular moments in time to the development of the system. It should be coordinated by Ocean.US and be a fully operational system. (Grassle)
- This nation has the technology and has the need. The resources must be allocated to create and sustain a national system. A recent NOAA cost/benefit analysis quantified the benefits from GoMOOS in dollar terms. Their conservative estimate of $30M/year exceeds operating costs by a factor of ten. In human terms, they estimated that GoMOOS observations applied to Coast Guard search and rescue could save six or more lives per year in the Gulf of Maine alone. (Bogden)
- Three recommendations that will allow the GoMOOS partnership to continue and will allow nascent systems in other regions to benefit as well:
  1) Long-term Federal funding for a national coastal ocean observing system
  2) Support for the national system as a federation of regional systems
  3) Coordination at the national level between the regional systems and the relevant Federal agencies.
- Perhaps all three of these objectives could occur through the expansion of the National Oceanographic Partnership Program (NOPP), and related offices such as Ocean.US. (Bogden)
- Engage CZM programs in the design and implementation of a national ocean observing system that meets coastal managers needs. This will require national legislation that establishes an ocean observing system. (Keeley)
- Make local, state, and regional investments in ocean observing. Federal funding should be used to leverage the investment of state resources in a national ocean observing system. (Keeley)

- Synthesize data into useful products. Ocean observing and prediction systems should be tasked with generating data and products for the primary purpose of making data products: national legislation that established an ocean observing system should authorize annual funding levels that provide significant resources, in a separate line item, for data synthesis and product development. (Keeley)
- Build state capacity. The Federal-state partnership that is required to make a national ocean observing system functional and useful will require an ongoing shared investment in building and maintaining local and state user capacity. National legislation that establishes an ocean observing system should contain statutory and authorization language that leverages and supports state efforts to use the intended data and products. (Keeley)
- The time is right to develop an observing system that (1) is based on sound science; (2) is responsive to the information needs of many user groups; (3) makes more effective use of existing resources, knowledge, and expertise for the public good; (4) provides a direct window to the ocean environment for research and public education; and (5) provides a framework that will enable government agencies to achieve their missions and goals more effectively. (Malone)
- Develop and fund a regionally based national system of observations and analysis that transcends existing jurisdictional and political boundaries, one that is better tuned to the scales of change in marine systems. (Malone)
- An integrated ocean observing system must be able to provide multi-disciplinary (physical, chemical, and biological) data and information to many user groups, and effectively and efficiently link observations; data acquisition, management, and dissemination; and data assimilation, modeling, and analysis in "end-to-end" fashion. [Further description provided.] (Malone)
- Mechanisms should be established to enable government agencies to collaborate more effectively, to take full advantage of new research capabilities, and to develop a more effective synergy between research enterprise and operational oceanography. (Malone)
- Recommend the Commission provide some impetus for the living resource community to get more involved with Ocean.US, including both the community at large, but also the people who have the resources to make things happen right now. (Evans, D)
- This effort must continue even if no other funds are received, and that is actually what is happening. (Evans, D)
- Seek the resources needed to develop and deploy an Ocean Observing System. (Keeney)
- Vigorously support efforts to establish an international, integrated ocean observing system. [Further description provided.] (Estabrook)
- The observing system and the science and technology associated with it present a range of opportunities to engage all citizens and educators, in particular, in many aspects of the ocean. (Lindstrom)
- There has to be a lead agency for ocean observing system. (McPherson)
- Should not just restore the observational system we used to have because we figured out how to do things better. (Joyce)
- The United States and its international partners should prepare a global ocean observing architecture plan based on shared operational requirements to ensure the system 1) takes full advantage of planned observation systems, 2) orchestrate common intersections towards efficiency, i.e., getting the best ocean observing system with available resources, and 3) actively considers important synergies between satellite and in situ systems. (Withee)
- Operational observing systems should be budgeted and implemented as integrated, quality, end-to-end systems that provide sound scientific data. (Withee)

- The ocean community must focus on an end-to-end strategy to provide products that meet the needs of the user community. This strategy must:
  1) Ensure continuity and integrity of calibrated data and information.
  2) Integrate remote sensing data with in situ observations.
  3) Develop comprehensive and realistic coupled land-ocean-atmosphere models.
  4) Coordinate efforts among researchers, data providers, and users of ocean and climate data and services.
  5) Develop applications and infrastructure to deliver meaningful products to users. (Asrar)
- Recommend the development and implementation of a comprehensive Ocean Observation and Prediction System. (White)
- Establish a synthesis program to support efforts to analyze large, long-term data sets with the goal of producing overview papers and to aid in identifying "data gaps" in the data. (Jumars)
- Develop a Coastal/Estuarine Observation System that recognizes links between watershed, estuary and ocean. (Wellenberger)
- Develop global oceanic and atmospheric observatories with support/or effective data management and assessment. (NASULGC)
- It is critical that we expand the reach of our ocean observing systems throughout the marine environment, including our nation's coastal areas. In addition, we must develop and deploy a robust data integration and management system and enhance our modeling capability to insure full benefit and utilization of the observational product from this system. This must include integration of biological data currently held captive in a variety of agencies. (West)
- Recommendations for coastal and ocean observing. (CSO)
- Specific recommendations presented. (Allen)

TOPIC: *TECHNOLOGY AND MARINE OPERATIONS*

KEY ISSUE: *Future Satellite Sensor Systems*

ISSUES RAISED

- Satellite measurements of oceanic and air-sea interaction quantities now play a fundamental role in oceanographic and climate research, as well as in weather and ocean state prediction. The technical ability to make accurate and useful ocean measurements from space has been demonstrated and consistent, decadal time series of a few key ocean quantities have been obtained. (Freilich)
- Spaceborne ocean observations have revealed new phenomena and allowed scientific studies of processes on critical space and time scales that were previously inaccessible using only data from in situ observing systems. (Freilich)
- Several significant obstacles must be surmounted before a comprehensive satellite ocean observing system for research and operations will become a reality. These challenges include the need for better temporal sampling and spatial resolution than is possible with individual satellite missions and present instruments; development and refinement of spaceborne techniques for measuring additional ocean quantities such as sea-surface salinity and the variables that control internal oceanic mixing processes; and, most importantly, national and international commitments to acquire simultaneous, multi-decadal ocean data sets. (Freilich)

PRESENTER RECOMMENDATIONS

- The whole constellation of satellites needs to be thought of in that context of a coordinated calibration/validation priority setting exercise. (Grassle)
- The US should make an investment in finding optimal means to utilize satellite data, in combination with in situ data, in our ocean, and air sea coupled models, demonstrating their utility in an operational setting. (Withee)
- Continued progress requires surmounting three main technical and programmatic challenges:
  1) Developing and demonstrating techniques for extending the set of ocean variables that can be measured accurately from space, including (for example) sea-surface salinity and quantities related to deep ocean mixing processes;
  2) Increasing the temporal and spatial resolution of the full suite of spaceborne ocean measurements to extend both the geographical (e.g., into the societally critical coastal zone) and the phenomenological extent of the data sets; and
  3) Extending the duration of the full, simultaneously measured ocean (and associated forcing) data set to allow resolution of important decadal ocean and climate processes – time scales well beyond the design lifetime of individual satellite measurements, but well within the demonstrated capability of operational satellite constellation programs. (Freilich)
- Need to establish predictable and efficient programmatic mechanisms for transitioning techniques and satellite missions – originally developed and demonstrated in the research context – to the operational observing systems designed to supply consistent, accurate, and timely measurements for decades into the future. (Freilich)

TOPIC: *TECHNOLOGY AND MARINE OPERATIONS*

KEY ISSUE: *Integrating Marine Operations Across Federal Agencies*

ISSUES RAISED

- NOAA home to National Water Level Observation Network, Physical Oceanographic Real Time System and National Data Buoy Center and Environmental Satellite and Data Information Service. (Lautenbacher)
- Portion of scientific community sees remotely operated vehicles (ROVs) as eventual replacements for occupied submersibles. Both are needed; there are aspects of submergence science best carried out with onsite human presence. Six critical areas in which occupied submersibles exceed capabilities of ROVs: engagement of the operator; visibility from vehicle; maneuverability; unobtrusiveness; reliability; and capacity for education, outreach and recruitment. [discussion of each provided] (Fryer)
- Renewal of the U.S. academic research fleet, (e.g., UNOLS fleet) in an orderly and planned set of steps over next two decades. UNOLS is 31-year old nonfederal consortium of about 60 oceanographic institutions with governing council and several standing committees. [description of UNOLS provided] (Knox)
- NSF has clear interest in enhancing facilities for performing basic ocean science research, along with Navy, NOAA and Coast Guard. Federal Oceanographic Facilities Committee of NOPP provides advice related to oceanographic facility use, upgrades, and investments. (Leinen)
- Fleet Renewal—What is the Problem?:
  1) Ships don't last forever. Can forecast probable useful lifetimes of existing fleet as done by FOFC [charts of ship days available and optimal ship days vs. average days needed, by class, are provided];
  2) Need new ships to do ocean science of the future. Autonomous observational devices will not replace research vessels; anticipate using smart combinations of unattended devices and directed adaptive observations from ships. [detailed discussion provided]

  Planning to solve the fleet renewal problem; FOFC "Fleet Plan" is first overall long range planning document for fleet renewal; contains timeline for recommended new ships:
  1) Document is only prospectus; contains no steps toward agency budget items and actual funded designs or acquisitions;
  2) Implementation steps must go forward as soon as possible;
  3) UNOLS approach would build additional three ships (FOFC recommended one) with fleet reduction of one; still short of actual demand. (Knox)
- Academic fleet: FOFC authored 2001 report "Charting the Future of the National Academic Research Fleet: A Long Range Plan for Renewal" commonly referred to as "Fleet Plan." Defines a federal interagency renewal strategy for the national academic research fleet. [detailed discussion of fleet and report recommendations provided] Focus is now implementation and Navy and NSF are exploring opportunities for funding for construction of regional vessels. (Leinen)
- Other FOFC coordination activities:
  1) Making effective use of autonomous underwater vehicle technologies and platforms will require new coordination mechanisms;
  2) New design and construction of human-occupied submersibles underway;
  3) Will soon start review of aircraft used for marine research and observations. (Leinen)
- Federal agencies asking for large investment over next decade to pay for renewal of academic fleet, U.S. component of ocean observing system, NSF observatories, IODP, and other oceanographic facilities. (Leinen)
- Ships, other research platforms, and ocean observing systems represent foundation of ocean science discovery for next several decades. (Leinen)

- Future vessel needs: Oceanographic research vessels capable of multi-mission operations; fishery vessels; fast patrol vessels; oil spill response vessels; and oil and gas exploration and drilling. Vessels themselves must be "green ships" like double hulls. (McCreary)
- Autonomous underwater vehicles is an emerging technology waiting for commercial application (mapping continental shelf). (Clark)
- The growth in maritime activity is having an impact on Coastal Guard mission:

  Marine Transportation System (MTS) (95% of cargo crossing our borders moves by ship):
  1) Increasing reliance on oceans for transportation of goods and people; [detailed statistics provided]
  2) New approaches to management of MTS required, including input from stakeholders;
  3) Decisions to increase port infrastructure should include vessel traffic considerations and impacts on local environment.

  Living Marine Resources:
  1) Increased port security significantly reduced enforcement of fisheries and related environmental laws, including Oil Pollution Act;
  2) In Seventh District there are five main concerns: enforcement of ship reporting system for North Atlantic Right Whale calving grounds; enforcement of fisheries management (i.e., Tortugas Reserve); protection of coral reefs; control of invasive species; illegal discharges of harmful pollutants. [description of each included]

  Maritime Security
  1) As land-based security increases, it is expected that a greater threat level of smuggling will be attempted via maritime environment (narcotics, people, weapons);
  2) Must build maritime domain awareness through combination of technology and increased international and interagency cooperation. (Carmichael)
- Telecommunications, submarine transoceanic cables, represent important market and challenges for maintaining (security, repairs, etc.). Marine biotechnology, marine minerals mining, mariculture, marine surveys, and undersea vehicles important ocean industries. (Clark)
- Research vessels need state-of-the-art technology; FOFC developing long-range renewal plan for academic research fleet. (Colwell)
- Recommendations with respect to multi-mission assets should give due consideration to full mission portfolio to which assets are dedicated. (Loy)

PRESENTER RECOMMENDATIONS

- Recapitalize scientific infrastructure and support systems (highest priority: UNOLS fleet and supercomputing capacity). (Thoroughgood)
- U.S. must make continuing commitment to upgrade, update, and replace facilities that support ocean technologies (submersibles, vessels, etc). (Clark)
- USGS:
  1) Immediate funding for creation of a USGS facilities infrastructure program to build a set of marine research labs associated with DOI parks and refuges in American Samoa, Palau, Midway, Palmyra Atoll, and Hilo Bay. [discussion provided]
  2) Immediate creation of a $10 million/year program within USGS aimed at biological support in the marine realm for DOI managers of marine resources. (Steiner)
- The federal government, through the interagency Federal Oceanographic Facilities Council, prepared a course for renewing the fleet in the report Charting the National Future for the National Academic Research Fleet: A Long-Rang Plan for the Future. CORE supports the plan, urges that adequate funding be made for its implementation, and recommends its endorsement by the Commission. (West)

TOPIC: *TECHNOLOGY AND MARINE OPERATIONS*

KEY ISSUE: *Strategy and Implementation Plan for Integrated Marine-Related Commerce and Transportation*

ISSUES RAISED

- Concern for maritime port security. Challenge is how to implement security strategy that ensures seaports and maritime industry against terrorism while maintaining flow of cargo and preserving efficiencies. Port security covers wide range of issues, waterways, industries, and facilities and impacts public and private facilities, both waterside and landside. Critical to move first line of defense off our shores to ports of origin; need to be in partnership with trading allies and maritime customers to ensure cargo as declared and verified. Security plans have evolved from emergency preparedness plans. Waterway security in place but lacking: Coast Guard coordinating with port and local police, but undermanned. (Edmunds)
- Comprehensive ocean policy will require special emphasis on transportation needs of those working in this environment. (McCreary)
- Classification is the mechanism by which the international maritime industry has traditionally regulated itself. Codifying standards through international conventions lies with International Maritime Organization; national agencies like Coast Guard implement standards. [detailed description of classification is provided] Current system of self-regulation through classification is most effective, practical method of further improving maritime safety. (Wade)
- IMO looking at vessel identification issues. (Wade)
- Outstanding issues: U.S. maritime trade- ocean policies must facilitate maritime trade; Need to address threats to our nation's security, including how science and services can support these efforts. (Bodman)
- Necessary to consider national security: Consider importance of marine transportation. Ports are essential for maintaining vital sea lines of communication for re-supply of deployed troops; source of vulnerability (i.e., containers). (Loy)
- The Marine Technology System (MTS) report was given to Congress as "the whole" and proved to be difficult for subcommittees to deal with, probably should have given one piece at a time to act on. (Loy)
- Overview of the MTS is provided. (Nagle)
- Investments being made in MTS include: vessels, navigation channels, land-side cargo handling facilities, and connections to interstate highway and rail. Federal government has been shifting financial responsibility for funding navigation services to others. General revenue funding most appropriate way for federal government to maintain U.S. trade. (Nagle)
- Port authorities serve as environmental stewards of America's coastlines and waterways; many port projects include conservation and enhancement features. (Nagle)
- Research, education, and integration of technical information into marine operations critical to continued improvements of MTS. (Nagle)
- Competition among ports is healthy and provides choices for consumer. Value in having wide range of ports. (Nagle)
- Have now developed competing priority to traditional role of moving commerce in form of providing security to our borders. (LaCapra)

- Seaport managers are scrambling for financial resources to respond to terrorism threats; hope short-term gap measures are adequate responses to unknown and undefined threats. Using funds previously committed to seaport customer for moving commerce. (LaCapra)
- Florida has reacted to meet post September 11 security in many ways. [list of 6 measures is provided] (LaCapra)
- Lessons to be learned from experiences of air travel industry:
  1) Federal standards and funding-minimum standards with funding;
  2) Seaport security plans—"production-ready" based on vulnerability/threat assessment;
  3) Integration/coordination of federal, state, and local agencies seaport security measures: communication and intelligence sharing by federal agencies inadequate;
  4) Maritime Security: ultimate goal is a "security zone" outside U.S. territorial waters with coordinated use of high-tech security equipment [examples provided] that may have dual role with ocean technology. (LaCapra)
- The Puget Sound Steamship Operators Association (PSSOA) encourages sustained maritime trade in concert with the modern principles of environmental stewardship and works to eliminate factors that unreasonably increase the cost and complexity of doing business in Washington State ports. (Hutchins)
- The PSSOA and other industry groups have attempted to push the safety envelope as far as possible without unbalancing the equilibrium existing between the Puget Sound trade region and its most ardent competitor in Canada and the province of British Columbia. (Hutchins)
- An issue that has not been addressed adequately is the pressing need for consistency of regulation along the coast and throughout the nation. (Hutchins)
- Puget Sound Harbor Safety and Security Committee have taken the initiative to be proactive in issues of marine safety and environmental stewardship. (Schneidler)
- Washington sits next to Canada. There are two ports that are hugely important, not only to Washington's economy, but to the U.S. economy. But, Washington, Oregon, and California are all going their own way. The shipping industry has no predictability. (Brautigan)
- The crisis of 9/11 has given us a greater need to know when vessels are coming in. We have 96 hours of notice in advance of when they will be here. (Berkowitz)
- One of the goals of the Maritime Administration is to actively promote and develop the domestic merchant marine so as to advance America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation. (Ostrom)
- The question of whether or not focus can be placed on trying to prioritize transportation projects is really dependent on if there is political will in the various segments. The various segments have long been operating on their own and them actually be pulled together, since not all projects can be funded is not an easy challenge. (Ostrom)
- The demand on our national transportation system is growing so rapidly that it will be difficult to build ourselves, physically or financially, out of the approaching capacity crunch. The existing infrastructure cannot handle the projected growth in freight movements, and there are clearly limits to how much capacity can be increased on interstates and rail lines. (Ostrom)
- The expanded use of the marine transportation system has obvious benefits. In general, waterborne transportation is the most economic of modes on a ton-mile and a TEU-mile, that is 20 equivalent units mile basis. Congestion relief on main corridors will reduce business costs related to transportation delays. Marine transportation is also environmentally friendly. Vessels are less polluting on a per-container basis and have far fewer accidental spills or collisions than surface vehicles. (Ostrom)

- Challenges facing U.S. ports:
  1) Landside access
  2) Marine terminal, including the ship-to-shore interface
  3) Vessel traffic. (Ostrom)
- Intermodal connections between the transportation modes are often the weakest link in the nation's transportation system. The major ports of the nation are predominantly located in large metropolitan areas where truck and rail traffic compete with commuters on crowded highways. The Department of Transportation has been working on the issue of marine congestion for some time. The Maritime Administration and the U.S. Coast Guard have been charged with the responsibility of identifying and recommending water-based solution to transportation and planning needs. (Ostrom)
- A national port and harbor 'vision' is needed that coordinates a national strategy for future port deepening and that establishes regional alliances. (Koning)
- There are several intermodal projects which exhibit real potential for economic growth. The NY/NJ plan will feed containers to remote locations directly by barge, thereby alleviating congestion at NJ container terminals and on regional highways and effectively expand port facilities far beyond their present size. In San Francisco Bay, the Bay Area Water Transit Initiative believes an increased use of ferries for commuting will help the environment, relieve highway congestion, provide choice and reduce commuter stress. The only transportation system still functioning after the collapse of the world Trade Center, on 9/11, was the New York City maritime system. New York used the marine system VHF radios to maintain emergency communication after the attack. It was the only communication system still working. (Ostrom)
- If there was a national policy that addressed the regional transportation issue and encouraged that there were some benefits to regional cooperation, then it would be more likely to occur and the benefits would be received down the line. (Koning)
- The development of a port and harbor vision, and the national transportation strategy that Mr. Ostrom referred to need to be discussed around one table. (Koning)
- Yes, there is a potential for intercoastal use. If a vision was created that looked at larger ports and feeder ports, and the connection between those main ports and feeder ports, then the necessity for their increase may be realized so both their commercial and the recreational purposes may be accommodated. (Koning)
- Our marine transportation system is a key national asset that allows our ports to handle over 95% of the volume of cargo moving in and out of the country. (Leone)
- This discussion reflects on a regional port. The Port of Boston is the only full service port in New England. It handles over 1 million tons of containerized cargo per year with weekly direct service to and from Europe and Asia by a consortium of the largest steamship lines in the world and weekly feeder services from Halifax and New York. (Leone)
- The regional port is a vital component of the marine transportation system and the regional economy. (Leone)
- It is important to have a system whereby each region can develop the way it feels it is necessary. It's important at the local area to be able to plan what is important for your marine transportation needs. Not every port will go and build so that it can support the largest steamship lines and the largest vessels. Some ports should be 35, 45, 50 and 55 feet. The communities should be able to decide what they need and what they can support. Let the regional economy survive. (Leone)
- Some companies will decide to build very large vessels to try to reduce their ocean transportation costs. Other companies will build small, faster vessels. And you can't put the steamship industry all into one particular category. They've been innovative and they've tried to find ways to service. Ocean transportation rates have fallen, much to the chagrin of the industry, but to the benefit of the consuming public. They are trying to find ways to remain competitive. (Leone)

- The "Port of Boston Action Committee," which is a group of all the importers and exporters, has been asked what their needs are in this port and the clear answer is that they need to have direct all-water service into this port. It is clear that the people who rely on trade in this area need to have a lot of transportation into this particular port. Another part of it is containerized freight. We've talked to travel agents to try to promote the cruise business into this port, and we've brought in automobile imports and other bulk commodities as well. (Leone)
- The issue of port security is a complex issue because ports are both domestic and part of our border infrastructure. The port security efforts, the vulnerability assessments and the security measures that are going to be coming over the next few years will address both the domestic and the international sides. (Ross)
- The impact of the cruise ships in both economic and environmental terms is huge. Although cruise ships generate a tremendous amount of waste from the thousands of people on board, they are not subject to the same wastewater regulations that govern municipalities of comparable size. Cruise ships are exempt from any sort of water quality permitting requirements. While ships are required to treat sewage waste if dumped within three miles of shore, on-board treatment systems are rarely, if ever inspected. A recent Alaskan study found every ship inspected to be in violation of water quality standards. [discussion provided] (Balliet)
- Alaska has the greatest amount of Critical Survey areas in the U.S., followed by the Gulf of Mexico. (Whiting)
- The national survey capabilities in the private industry are more than adequate to take over this survey responsibility. A teaming arrangement is superior because somebody has to set the standard, somebody has to have that core capability in the government to provide the adequate oversight of contractor relationships and adequacy of our data. The government has the capability. (Whiting)
- In conducting marine surveys in Alaska, it is important to recognize the lack of coastal data and infrastructure. Alaska has 60% of the nation's charting backlog, and lacks accurate tidal datums for determining coastline. (Pawlowski)
- Marine Exchange of Alaska is a non-profit organization. The marine industry has supported us in this and developed this organization. The organization's goal is to provide information communication services to insure safe, secure, efficient, and environmentally responsible maritime operations. Alaska is the nation's maritime state. Our position is that protecting Alaska's rich maritime environment is a shared commitment. Our group is committed to work with government, the maritime industry, and the collective public on a problem that requires attention. Marine Exchange of Alaska prevents maritime casualties and assists with compliance of safety and environmental regulations. There is a plethora of regulation but the challenge is to have the regulations in the hands of mariners so they have them readily available and they can comply with them. Eighty percent of maritime casualties are attributable to the human element and that is the first priority. The group tries to work together with the maritime community to develop a cadre of maritime professionals [discussion provided] (Page)

PRESENTER RECOMMENDATIONS

- Lead agency for port security should be Coast Guard. (Edmunds)
- All ports must have security plan based on specific needs and requirements and not on mandated national standard. There is fundamental need for financial assistance. Imperative that all federal agencies share databases, improve lines of communication, and provide appropriate information to local agencies and police. (Edmunds)
- Customs Service in need of personnel and new technologies to increase speed and volume of container inspections. (Edmunds)
- Navigation charts are old and outdated, new surveys and data needed. (Edmunds)

- Implementation of low visibility navigation systems should have high federal priority. (Edmunds)
- Automated identification systems worth looking at for security and other issues. (Edmunds)
- Review interagency effort on Marine Transportation System. (Bodman)
- Don't focus on just large ports, smaller ones as well. Consider impact of deep dredging for 50-foot draft boats. (Woolsey, C)
- Need tighter regulations for chemical transportation. (McCreary)
- Safety at sea must be priority: accurate navigation charts with clear delineation of designated safety zones; monitoring airspace and vessel traffic with appropriate intercept and enforcement authority. (Thompson)
- Enhance Marine Transportation System: accurate nautical charts; safe access to ports/harbors (enhance dredging). (Caveney)
- Needed equipment is expensive. Consider making financial burden easier to bear:
  1) Expand MARAD Title XI policies;
  2) Promote "green ships" through tax incentives and incentives for vessel owners and operators;
  3) Establish high priority for oceanographic and fisheries research vessels. (McCreary)
- "Green Ships":
  1) All new chemical tankers should be built with double hull, those that cannot comply be phased out in expedited schedule;
  2) All vessels that carry potentially hazardous-to-the-environment cargos should be regulated under a national ocean policy;
  3) Segregated cargo tanks should be designed to allow fully independent loading and emptying of each unit; tank materials with high-yield strength and corrosion resistant properties, including coatings, should be encouraged;
  4) Tanker owners and crews should be required to participate in ongoing education to assure compliance with operational and safety standards. (McCreary)
- Consider innovative governance structures that can move us beyond simply using funding and discussion as only way to solve conflicts in MTS. (Nagle)
- Key to safe and secure maritime environment is to exploit all available information and threats, referred to as Maritime Domain Awareness (MDA). Achieving MDA beyond capability of single agency and requires mix of cooperation and technology. Port securities committees are representative of concerted efforts to foster and support exchange of information and coordinate security activities into comprehensive port security plan, similar to oil spill contingency plans. Need timely access to detailed information in three overlapping MDAs: international; coastal and harbors; port infrastructure. (Carmichael)
- Key to solutions is legislative guidelines that allow management of seaport security with Best Management Practices (BMPs):
  1) Minimum standards for the several security issues required by each port;
  2) An atmosphere of self-regulation in achieving standards BMPs;
  3) Incentives for private sector to engage with public domain to achieve partnership in protecting our borders and defining BMPs;
  4) Provide training of seaport security personnel in BMPs. Provide 75/25 match between federal government and seaports for cost of such personnel located at seaports;
  5) Provide that legislative intent is to ensure that seaport security and moving commerce are compatible priorities in order to ensure safety, security, and economic viability of moving international commerce. (LaCapra)
- PSSOA recommends the Commission recognize the region's accomplishments and trade competitiveness sensitivity. In formulating your plans and recommendations, we encourage you to complement the efforts of PSSOA and share their sensitivities. (Hutchins)

- The PSSOA urges the Commission to formulate your recommendations so that all regulations apply consistently throughout the nation. (Hutchins)
- Establish a state champion for navigation issues and have them compare efforts with neighboring states and then at a regional (e.g., eastern seaboard) and international level. (Koning)
- The model for regional transportation cooperation should have the policy work be at the national level with feedback, or fed to, a regional perspective and regional interests. A system would be necessary that allowed for differences between the regions and then implement it at the regional level. (Kurkul)
- Federal funding must adequately support The Port of Boston to dredge the channels and ensure the safety and security of our maritime borders. It must be maintained and improved to adequately serve the growing marine transportation needs of local and regional businesses and to meet the marine transportation needs of ocean carriers. (Leone)
- Support expanded authorities that would allow agencies to collaborate more effectively on marine transportation issues, such as codifying and clarifying the role of the Interagency Committee on the Marine Transportation System. (Keeney)
- There is a tremendous need for increased focus and priority placed on mapping and charting, particularly in the port and transportation system arena. NOAA is playing catch up with some of our important port transportation programs due to lack of funding. The volume of goods going into the ports is going to double by the year 2020 and the number of containers alone will quadruple by 2020. There is a great need for planning for the increased use of the ports in a way that has not been done in the past. (Keeney)
- Cruise ships pose additional problems worth mentioning in Alaska. Disturbance of wildlife is another problem that needs to be addressed. Fatal collisions with whales by cruise ships, as in Glacier Bay last year, and disruption of pupping harbor seals are two notable concerns. (Balliet)
- The cruise industry should be a model for environmental conduct because it depends upon the continued existence of our nation's pristine natural areas for its economic basis. (Balliet)
- There is a need to consider the most effective use of (hydrographic survey) contractor assets and personnel. (Whiting)
- Procurement issues to be dealt with include: hydrographic survey contracts; shoreline initiatives through the NGS; vessel time charter; and new national contracts for LIDAR and Hydro. (Whiting)
- I would like to emphasize the importance of the MTS to the nation and the necessity of ensuring that ocean and coastal management decisions don't affect the MTS in unacceptable ways. It is important that we address the many important issues necessary to strengthen the MTS—issues such as the need to implement a systematic approach to planning and development to incorporate environmental and concerns; the need to further identify port vulnerabilities and design plans to address them; and the need to find ways and means to fund the growing needs of the MTS. (Collins)

Appendix 1

TOPIC: *INVESTMENT AND FEDERAL GOVERNMENT ORGANIZATION*

KEY ISSUE: *Federal Government Structure*

ISSUES RAISED

- Oceans Department with mandate to protect ecosystem health is in step with where nation is going. (Fujita)
- Independent agency raises question of scale in Washington D.C., could it survive on its own. (Bodman)
- We're never going to assemble all of the ocean-related activities from all the agencies of the Federal government to a single agency. (White)

PRESENTER RECOMMENDATIONS

- Create separate federal agency charged with administration of key coastal programs; assemble coastal and ocean programs from NOAA, DOI, DOA, EPA, and Coast Guard. This would streamline federal bureaucracy by reducing duplication, improving efficiency and consolidating staff. (Blane)
- Consider establishing a new Cabinet level department for the oceans that is chartered to protect ocean ecosystems. (Danson)
- Create new ecosystem councils to develop regional ecosystem management plans for the ocean. (Danson)
- Elevate ocean management to Cabinet level guided by new Ocean Policy Act with emphasis on ecosystem protection, rather than extraction, as guiding principle. (Nichols)
- Create regional ocean councils: incorporate regional governance approaches.
- Create Cabinet level Ocean Department:
  1) Elevate oceans within federal system;
  2) Create coordinating council. (Nothoff)
- Supports proposals for a Cabinet level Oceans Department; overarching policy for protecting ecosystems of biodiversity; regional ecosystem councils; new federal mandate to create a network of marine reserves. [comments on policy elements provided] (Garrison)
- Look at Global Climate Change Research Program as alternative to restructuring government. (Davidson)
- Sea Grant: [discussion of each recommendation is provided]
  1) Mission, structure, and functions of National Sea Grant Program be maintained and part of NOAA/DOC;
  2) Sea Grant should become nation's primary university-based research, education, training, and technical assistance program in support of coastal, marine, and Great Lakes resource use, management, and conservation;
  3) Authorization and appropriations levels should be significantly increased to enable the program to meet the needs and expectations of its varied constituencies;
  4) Program should be positioned within NOAA to most effectively contribute to the overall environmental, economic, and educational goals of the agency and nation. (DeVoe)
- Management and conservation of ocean resources should be vested in independent agency outside DOC. As interim step, create a permanent Cabinet level interagency oceans advisory council to coordinate management; an intergovernmental panel on oceans to regularly assess status of oceans, resolve scientific controversies, and set cooperative research priorities. (Rufe)
- Move Fisheries Service to DOI. (Safina)

- If you put all marine agencies together and create independent agency that can connect people to the coast, you create a vision people are ready for. (Helvarg)
- Consider a new location for the ocean agencies. We view the ocean and what is out there in today's world differently than we did in the 1970s when the decision was made to use the Department of Commerce. (Earle)
- Recommend creating an independent oversight body, an independent Federal agency, a scientific advisory committee. It would oversee the conservation of fishery resources, their habitats and related ecosystems, components of U.S. waters, with specific emphasis on precautionary principles, promoting sound decision making, ecosystem based fishery management, fostering interagency coordination in research and management. (Earle)
- In order to get the level of resources, level of growth, and level of commitment we need, need to have a department at the cabinet level. The government works effectively as an agency if we can make sure the passion is strong. (Berry)
- Recommend the Commission adequately employ the National Ocean Council and the executive branch. Coordination and organization should be part of the primary function. The Council should process decision making as well, and be held accountable for the nation's oceans in addition to the Federal agency representatives of the regional ocean councils who are members of the National Ocean Council. (Hamilton)
- The development of some new structure, perhaps an interagency council with leadership from the White House, would enable agencies of government to talk to one another more frequently and more effectively. (Reilly)
- Be cautious against any structural change that adds complexity and additional bureaucracy, or that does not clearly streamline and reduce layering. (Kurkul)
- Institutional, budgetary and governance aspects of coastal and ocean resources must be elevated as a national priority and implemented through an integrated approach led at the Federal level by a new, independent Ocean Agency with a Congressional mandate to ensure the protection and sustainable use of coastal and ocean resources. [discussion provided] Delaney)
- A coordinated body is needed that has input from the executive branch through the Office of Management and Budget that would deal with an integrated ocean policy implementation scheme that carries out policy, not just state a policy. It must be worked between the executive and legislative branches. (Stevens)
- Congress should create a new, independent agency (a Department of the Oceans) to implement U.S. Oceans policy, coordinate and regulate activities impacting ocean organisms, ecosystems, and habitats, and to oversee and administer funding for scientific research concerning ocean ecosystems. (Van Tuyn)
- Remove NMFS from the Department of Commerce (which is inherently biased in favor of commercial interests) and create a new Department of the Oceans. (Sterne)
- It is better to separate the regulation from the science within agencies. I would like to see an agency put together with parts of NOAA, USGS, and other organizations, as an independent agency with clout. The agency would have three components; observations, services, and research. (McPherson)
- At least take NOAA and make it an independent ocean agency that can operate separately in the ocean's area. (Panetta)
- NOAA could probably stand on its own but should add some marine operations at Interior and even Dept. of Agriculture. (Panetta)

- Consider recommending the establishment of a new institutional framework for the conduct of oceanic and related environmental activities. Seriously consider wedding the Geological Survey and NOAA into an Ocean and Environment Administration. Serious consideration should also be given to divesting NOAA of certain conflicting regulatory functions. In this way the new institution would become the authoritative agency for observing, predicting, and assessing the environment, serving all governmental and private sector needs. (White)
- I would look at the Corps and see whether the things that relate to the oceans, would they be better off in a new agency than they are in the Corps. (White)
- If we are truly to set the stage for revamping national ocean policy, we must turn to Congress and look at how better to integrate these interests within the legislative framework. Two options deserve further consideration: a joint House-Senate Oceans Committee (similar to the Joint Economic Committee) and a temporary or select Committee on Ocean Affairs established to evaluate and implement the recommendations from both the U.S. Commission on Ocean Policy and the Pew Oceans Commission. (Schwabacher)
- An Ocean Policy Coordinator could be established in the Executive Office of the President, such as in the Office of Management and Budget. The purpose of this coordinator would be to establish and maintain a collaborative mechanism through which the various Federal agencies would agree upon and implement policy goals and objectives. (Fry)
- We recommend that the Commission support establishing a coordinating body composed of government agencies, academic representatives and industry trade groups that could begin to tackle the complex logistics involved. An adequate framework may already exist in the National Office for Integrated and Sustained Ocean Observation ("Ocean. US") and the National Oceanographic Partnership Program. A sub-group of this partnership, with Minerals Management Service as the lead agency might begin by tackling individual issues on a discrete basis and resolving concerns in a prudent manner. (Fry)

TOPIC: *INVESTMENT AND FEDERAL GOVERNMENT ORGANIZATION*

KEY ISSUE: *Federal Budget Process*

ISSUES RAISED

- Department of State can help other agencies at OMB and Congress with Department of State related priorities. (West, MB)
- Horizontal budget coordination is primarily role of OMB. (West, MB)
- Funding must be available for research and monitoring programs, public education and outreach, enforcement, and technical capacity. (Evans, N)

PRESENTER RECOMMENDATIONS

- Set minimum cap on T21 funds for environmental improvements. (Gold)
- Look at grants and loans to acquire interests in real property worthy of conservation: state and federal programs needed like CARA. (Stallworth)
- Need strong OSTP tied directly to OMB: people listen if you have money. (Alberts)
- Look at broader cross-section of investment potential as well as OCS revenue. (MacDonald)
- Oceans Act a potential new mechanism for cross-cutting budget review/analysis through biannual report. (West, MB)
- If NOAA budget is to increase, need to rebuild interest and get away from downsized government. (Hollings)
- Establish an ocean budget that comprehensively details efforts and funding dedicated to ocean related activities. (Giles)
- Support more funding for Coast Guard for enforcement. (Lee)
- Sufficient resources to support research are important. For example, we need resources to meet the requirement of reporting to the Coast Guard. Resources for technology are also important. (Smitch)
- The priority scheme for funding is very difficult. The resources and the infrastructure necessary to do what is needed are lacking. More oceans related funding is needed. (Smitch)
- Make meaningful investment in ocean and coastal management at the national, regional and state level. (Evans, N)
- A tax policy, tax incentives, are needed to help deal with direct impact. Whether it is on acquisition or easement protection, providing and creating a national tax policy that reimburses and rewards private stewardship to protect these critical habitats and resources. This would be not just in the coastal area, but also throughout the country. The only way we'll deal with it to that scale is to have a tax policy. (Berry)
- We must be defined as important enough to justify a substantial scientific commitment and important enough to be put into the budget. We must have support on Capitol Hill, with not just the senators from Alaska, but also throughout the Congress and the House. (Newton)
- Seek support for Coast Guard programs to recapitalize aging assets. (Underwood)
- Alaska needs help in finding a way to cross-cut Federal budgets. (Parker)

- Agencies need to ask for money in their budgets for environmental observation and prediction. (White)
- Formally request a doubling of authorization and appropriations levels for the National Sea Grant College Program to enable the program to meet the needs and expectations of its varied constituencies. (DeVoe)
- The National Marine Sanctuary System remains severely under funded and should, at a minimum, be funded at the authorized level of $40 million for operation and $10 million for construction. However, this minimum level is, in our view, still egregiously inadequate. Serious consideration should be given to significantly increasing funding for this program. As you will see in our analysis below, we believe $400 million would be a more appropriate annual funding level, especially when system expansion is accounted for. (Cousteau)
- It must be a priority to at least restore the ocean science portion of the federal basic research budget to its historic level of 7 percent. (West)
- Support sustained and dedicated funding, investment, and other incentives for state and local governments to address priority coastal and ocean ecosystem management problems (includes three specific recommendations). (CSO)

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