

NATIONAL MARINE FISHERIES SERVICE

Woods Hole Biological Laboratory

The Laboratory Mission and Organization

Lab. Ref. No. 70-5

THE WOODS HOLE BIOLOGICAL LABORATORY

The mission of the Woods Hole Biological Laboratory is to study the biology of the groundfish stocks of the northwest Atlantic in order to determine the harvestable surplus that these stocks produce and to determine the levels of exploitation required to insure the continued harvest of these surpluses. This involves the measurement of changes in abundance and a determination as to whether these changes are due to environmental influences or to the pressure of man's exploitation. The Laboratory has the responsibility of advising management officials regarding harvestable yields and alternative methods of conserving the groundfish resources.^{1/} Organizationally the Laboratory's research is divided into two programs: "Groundfish Ecology" and "Population Dynamics".

^{1/} The Laboratory has been called upon to provide similar advice for pelagic species although no money has ever been allotted for that purpose.

GROUND FISH ECOLOGY PROGRAM

Activities in this program are concerned with measuring seasonal and secular changes in the distribution and abundance of all species of groundfish and investigating the factors which affect these changes.

The Groundfish Abundance Unit conducts research vessel surveys each year and, from these, describes trends in the relative abundance of the major species and changes in the species composition. The study of the relation between recruitment and spawning stock size is an important responsibility of this unit.

The unit is also concerned with the efficiency of sampling gear, sampling designs, and methods of analysis. The surveys are conducted in cooperation with other ICNAF countries, states, and universities. The leader of this unit is the chairman of the ICNAF Working Group on cooperative groundfish surveys.

The Environmental Studies Unit monitors seasonal and secular change in the physical environment, particularly temperature. In addition to compiling the physical data collected on the research vessel surveys, this unit also integrates data collected in the area by other agencies. It also provides liaison with other NMFS laboratories, state and other Federal agencies with

the object of ensuring as complete coverage as possible. Analysis of the data collected emphasizes the effects of changing oceanographic conditions on the distribution and spawning cycles of the major species of groundfish.

The Haddock Spawning Studies Unit concentrates on monitoring the spawning of haddock, particularly the Georges Bank stock, to see if this phase of the life cycle is involved in the almost complete failure of all the year classes since 1963.

The Redfish Biology Unit studies the redfish populations in the southern part of the ICNAF Convention Area to determine the effects of greatly decreased fishing pressure during the past 20 years.

The Ichthyoplankton Unit was developed as a nucleus to investigate the problems of sampling fish eggs and larvae and to refine the methods of collection, sorting, and analysis in order to improve the accuracy and precision of the abundance estimates. The intent was to expand this unit, once standard methods were developed, into a quantitative study of the pelagic stages of major species in order to understand the causes of the large fluctuations in year class strength. The sampling gear developed and the methods for its use are now the standards for MARMAP SURVEY I.

The Benthic Invertebrate Unit studies the fauna in, on, and just above the sea bottom. These animals are the major food supply for most of the important species of groundfish. Since the community has not previously been extensively studied, this unit does a great deal of basic taxonomic research with the cooperation of many specialists throughout the world.

Methods for collecting and sorting the samples in order to improve the estimates of abundance have been devised and charts compiled showing the distribution and abundance of all important species. Some species, i.e. shrimp, scallops, clams, and lobsters, are harvested directly but the main interest of this unit is the benthos as a link in the food chain of the groundfish.

POPULATION DYNAMICS PROGRAM

Studies in this program are designed to determine the relation between harvestable surplus and stock density with specific reference to assessing the effects of fishing on stock abundance. These assessments are made on the basis of analysis of commercial fishery statistics and information provided by the Groundfish Ecology Program. Recommendations for management of the fisheries stem from this program. These recommendations include alternative methods of management and evaluations of

regulatory measures already in force. The program is composed of four units, three of which directly support the assessment work.

The Assessment Unit prepares the assessments and advice on management requirements. In addition, it develops models to simulate the fisheries and management schemes.

The Biostatistics Unit prepares the basic data required for the assessment of the state of the stocks and effect of fishing. It prepares length and age compositions and estimates the rate of removals from exploited stocks and estimates the fishing intensity related thereto.

The unit is responsible for setting up sampling designs and analysis procedures to insure the collection of the required data for ongoing assessments at the required levels of precision.

The unit prepares a quarterly stock record for the more important stocks of fish providing information to biologists and industry on current trends in stock density, fishing success, and future trends.

The Age Reading Unit is responsible for determining the age and growth of groundfish stocks of interest to the Laboratory. The studies are based on samples from the commercial catch as well as from the research vessel surveys. In addition

to determining growth rates the unit is responsible for the routine age determination of samples collected for age composition studies. It thus serves the Assessments Unit through the Biostatistics Unit. This work is routine for stocks in which the techniques have been perfected but in many cases the techniques must be developed and validated.

The fourth unit, Automatic Data Processing, serves the entire laboratory and other activities in Region 3. It processes all commercial fishery statistics, provides monthly reports, and also processes all survey data. It provides for data reduction and data reports for investigators, and maintains long term data files for rapid retrieval.

AQUARIUM

The Aquarium has a dual function: research and education. A supply of most of the local species of fish are kept in healthy condition throughout the year. These are used for experimental purposes as the research programs require. Exhibition tanks with informational labels and museum exhibits provide the visiting public with information on the local marine fauna and the role of the government in conservation and management of marine fisheries.

GENERAL SERVICES UNIT

The General Services Unit provides drafting and photographic services to the scientific staff. An electronics technician develops and maintains electronic instrumentation required for execution of the program missions. The librarian is included in this unit.

ADMINISTRATIVE OFFICE

The Administrative Office supervises two units: Administrative Support and Buildings and Grounds.

Administrative Support provides clerical services for all units in the laboratory including the Laboratory Director's office. It also handles all accounting, property, purchasing, and personnel matters.

The Buildings and Grounds Unit maintains all buildings, vehicles, grounds and saltwater supply systems.