says, however, that there are optimistic signs of a recovery in the lobster population.

The South African fishing industry, fearing overfishing of the hake supplies, is urging the International Commission for the Southeast Atlantic Fisheries to impose a limit on the amount of hake caught in the Southeast Atlantic Region. The South African industry wants the annual catch restricted to 800,000 tons, with each nation fishing these waters agreeing to a quota system. The vast area of ocean off the South African and Southwest African coasts is yielding a harvest of 1 million tons of hake a year. South African boats account for about 100,000 tons of this. The remainder is caught by fleets from Russia, Spain, Portugal, Bulgaria, Cuba and Poland.

Cod Quotas Set By Three Nations

Delegations from Great Britain, the Soviet Union and Norway agreed in May 1973 to propose a limitation on arctic cod catches during 1974, reports the NMFS Statistics and Market News Division. According to the agreement the total quota was fixed to 550,000 tons with the following allocations: Norway, 242,850 tons; USSR, 179,500 tons; and Great Britain, 77,650 tons. In addition, Norway was to be allowed a coastal quota of 40,000 tons. The agreement is reported to have been accepted by the British government and there was a reported verbal acceptance from Moscow.

Australian 1972-73 Fish Exports Told

During the 1972-73 financial year, Australia exported edible fisheries products worth US$109 million, according to World Wide Information Service, Inc. Rock lobsters, prawns, abalone and scallops were the main export earners, making up nearly 92 percent of the total value.

ROCK LOBSTERS

The value of rock lobster exports fell from US$51 million in 1971-72 to US$49 million in 1973-74. The quantity of frozen tails exported was 4,600 tons, down 1 percent from the previous year, while the value fell 9 percent to US$45 million.

During 1972-73, the United States took almost all Australian rock lobster tail exports while France bought 44 percent of the whole rock lobsters, and Japan received 35 percent. Western Australia was the main rock lobster exporting state, shipping 70 percent of the rock lobster tails and 59 percent of the whole rock lobsters.

PRAWNS

Prawn exports in 1972-73, amounted to 6,505 tons—18 percent less than 1971-72. They were worth US$36 million, or 9 percent less than the previous year. Queensland shipped 37 percent of the total quantity of prawns; Western Australia, 23 percent; and Northern Territory, 22 percent.

Japan bought 79 percent, compared with 67 percent the previous year. Britain took 11 percent, and the United States and South Africa each took 4 percent.

SCALLOPS

Scallops exports rose 78 percent in quantity and more than doubled in value to 1,704 tons, worth a record US$7.5 million. The United States took 53 percent and France took 32 percent.

Publications

Alaskan Marine Resource Publications

The first in a series of three books on "Alaska and the Law of the Sea" has been published by the Arctic Environmental Information and Data Center (AEIDC), University of Alaska. A major study of the historic development and future of Alaska marine interests supported by the Alaska Sea Grant Program has gathered the information for the series.

The 70-page soft-cover book entitled **"Alaska and the Law of the Sea—National Patterns and Trends of Fishery Development in the North Pacific,"** was written by Eugene H. Buck, research analyst in fisheries for AEIDC.

Statistics compiled in the new book underscore the magnitude of foreign harvest versus Alaska harvest, showing where and on what species foreign fleets have harvested recently in the North Pacific a combined total of more than four billion pounds a year. It compares the United States catch with foreign catches for each species of commercially harvested fish and provides a general summary to be used in national and international fisheries discussion.

For each species, charts depict annual catches, the relative importance of various fishing districts and the divisions of the catch between nations. A page of text aids interpretation of statistics, and a map illustrates district subdivisions, major fishing areas and the general pattern

of national expansion across the region.

Species covered are shrimp; tanner crab; king crab; herring; pink, coho, chinook, chum and sockeye salmon; pollock; Pacific cod; Pacific Ocean perch; blackcod, and halibut and other flatfish.

The new publication should be a useful handbook for fishermen, scientists and agencies responsible for fisheries management. The book provides a basis for asking important questions about management practices and their effect on fisheries, and may be used as a foundation for pursuing statistics on fisheries in more detail.

Copies of the book are available for $3.00 postpaid from AEIDC, University of Alaska, 142 E. Third Ave., Anchorage, AK 99501.

A 690-page compilation of scientific data on the oceanography and renewable resources of the northern Gulf of Alaska has been published by the University of Alaska's Institute of Marine Science (IMS). The publication, **"A Review of the Oceanography and Renewable Resources of the Northern Gulf of Alaska,"** two years in preparation, was financed by the Western Oil and Gas Association and Alaska Sea Grant Program.

Editor of the publication is Donald H. Rosenberg, associate professor of marine science at IMS. Donald W. Hood, director of IMS, and one of the contributors describes the compilation of existing data on the gulf region as the most complete yet assembled. It is a summary of present knowledge and advocates nothing, Hood says.

Much of the study is devoted to the Gulf of Alaska fisheries, the king crab, tanner crab, dungeness crab, shrimp, scallop, clam, halibut, groundfish and salmon fisheries. There are sections on oil seeps and weather in the broad region.

Among other contributors to the new university publication are Victor B. Scheffer, now chairman of the Marine Mammals Commission appointed by President Nixon; F. Heward Bell, former director of the International Halibut Commission; and Max Katz of the University of Washington's College of Fisheries. University of Alaska scientists who contributed sections also include Brina Kessel of the College of Biological Sciences and Renewable Resources; Robert Carlson, director of the Institute of Water Resources; and Howard M. Feder, Robert T. Cooney, Thomas C. Royer, F.F. Wright, and Linda Longerich of IMS. Copies of the report are available through IMS.

SALT-WATER ANGLING SURVEY FOR 1970

The **1970 Salt-Water Angling Survey**, offering a wide range of information on marine sport fishing, has been issued by the Statistics and Market News Division of the National Marine Fisheries Service. It includes estimated numbers of salt-water sport fishermen, methods used, and the size, weight, and area of catches, categorized into 79 species groups. As an aid to clarity, there is also an index of common fish names.

Statistics in this report will be valuable to conservationists, environmentalists and fishermen. The 1970 Salt-Water Angling Survey is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Price is $0.85 domestic postpaid, or $0.60 in G.P.O. bookstores.

Recent NMFS Scientific Publications

NOAA Technical Report NMFS SSRF-673. Steimle, Frank W., Jr. and Richard B. Stone. **"Abundance and distribution of inshore benthic fauna off southwestern Long Island, N.Y."** December 1973. 50 p.

ABSTRACT

This paper describes a qualitative and quantitative census of the inshore benthic fauna off southwest Long Island over the period February 1966 through January 1967, prior to construction of an ocean sewer outfall in the general vicinity. Preliminary analyses of data indicate the presence of three distinct communities: 1) an inshore medium to course grain sand community dominated by the bivalve, *Tellina agilis*, the amphipod, *Protohaustorius deichmannae*, and the echinoderm, *Echinarachnius parma*, 2) an offshore silty fine sand community dominated by the bivalve, *Nucula proxima*, and the polychaete, *Nephtys incisa*; and 3) a community dominated by the blue mussel, *Mytilus edulis*.

Data Report 81. Cook, Steven K. **"Expendable bathythermograph observations from the NMFS/MARAD Ship of Opportunity Program for 1971."** 132 p. (3 microfiche). For sale by U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22131.

ABSTRACT

Results of the first year of operation of the NMFS/MARAD Ship of Opportunity Program in the form of horizontal and vertical distributions of temperature are presented. Operational procedures and problems and data management also are discussed.

NOAA Technical Memorandum NMFS ABFL-2. Trautman, Milton B. **"A guide to the collection and identification of presmolt Pacific salmon in Alaska with an illustrated key."** November 1973. 20 p. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

ABSTRACT

This field and laboratory key contains recommendations for

types of equipment needed, instructions for preserving and labeling specimens, and descriptions of the characters used in identifying five species of Pacific salmon. The key is illustrated with six line figures: 1) juvenile salmon, 2) the first gill arch, 3) head with gill arch in situ, 4) first gill arch and eye for comparison with longest rakers, 5) method of counting anal fin rays, and 6) ventral surface of head showing branchiostegals. Five plates of stippled line drawings of five lengths (25 to 110 mm fork length) for each of the five species of Pacific salmon, an annotated opposable key, and a glossary are also included.

NOAA Technical Report NMFS CIRC-385. Thorson, Lee C. and Mary Ellen Engett. **"Fishery publications, calendar year 1972: lists and indexes."** November 1973. 23 p. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

ABSTRACT

The following series of fishery publications of the National Marine Fisheries Service, National Oceanic and Atmospheric Administration, in calendar year 1972 are listed numerically (with abstracts) and indexed by author, subject, and geographic area: NOAA Technical Report NMFS CIRC (formerly Circular); Data Report; Fishery Facts; NOAA Technical Report NMFS SSRF; and NOAA Technical Memorandum NMFS.

Sea Grant Marine Science Publications

NOAA's National Sea Grant Program awards grants primarily to colleges and universities for programs designed to develop and conserve marine resources. Activities in research, education, and marine advisory services are supported at institutions on all salt water coasts and on the Great Lakes. Publications are a major output of the program and recent Sea Grant publications are listed below. Publication requests should be directed to the author or the originating institution.

A Determination of Budgets of Heavy Metal Wastes in Long Island Sound: First Annual Report: Parts 1 & 2, by Peter Dehlinger, et al., 50 fig., 23 tables, 1 photo, 5 appendices, 189 pp, June 1973. University of Connecticut, Marine Sciences Institute, Groton, CN 06340.

ABSTRACT

Investigations of heavy metal wastes in Long Island Sound are reported. Budgets of potentially harmful wastes are determined through five integrated research projects: fates and concentrations of heavy metals in the water column, concentrations and effects of metals in oysters, water circulation patterns controlling water renewal times and flushing rates, structure and motion of the outflow of the Connecticut River, and transport of suspended materials.

What Seafood Processors Should Know About *Vibrio parahaemolyticus* by J. S. Lee, 4 pp. From J. of Milk and Food Technology, August 1973, Vol. 36, No. 8. Dept. of Food Science and Technology, Oregon State Univ., Corvallis, OR 97331.

ABSTRACT

Information on *Vibrio parahaemolyticus* that is pertinent for its control in food processing operations is compiled and discussed in this paper. The growth potential of this organism and requirement for NaCl are discussed in some detail. Effects of temperature, pH and antimicrobial agents are also presented.

Syllabus of Fish Health Management by George W. Klontz, 227 pp, December 1973. Price $10. TAMU-SG-74-401, Sea Grant Program, Texas A&M Univ., College Station, TX 77843.

ABSTRACT

This manual covers fish culture methods and fish disease diagnosis. Fish culture is discussed in terms of the interrelationships of six basic components: fish, water, container, nutrition, management and money. At least eight categories of fish diseases, treatment, control and management problems arising from intensive propagation of fish are discussed.

Shrimp Fishing with Twin Trawls by David L. Harrington, Martin R. Bartlett, James Higgins, 5 fig., 28 photos, 10 pp, November 1972. Marine Extension Bulletin No. 1. Georgia Sea Grant Program, Univ. of Georgia, P.O. Box 1387, Savannah, GA 31406.

ABSTRACT

Twin trawl shrimp fishing techniques are explained with the aid of diagrams and photos. Methods of converting single and double-rigged boats to the twin trawl method are described.

The Menhaden Fishing Industry in North Carolina by Jonathan W. Whitehurst, 7 figs., 5 maps, 10 photos, 1 appendix, 59 pp, January 1973. UNC-SG-72-12. Sea Grant Program, Univ. of North Carolina, Chapel Hill, NC 27514.

ABSTRACT

Historical development of the menhaden fishing industry is traced. Geographical distribution of the fishery is analyzed in terms of contributing factors such as the continental shelf, estuaries, and food availability. Industrial organization, techniques and spatial distribution are discussed along with problems and prospects facing the menhaden fishing industry.

Natural Resources Management in the Great Lakes Basin by James Arthur Burkholder, 3 charts, 186 pp, May 1973. Great Lakes Management Problems Series. New York State Sea Grant Program, 99 Washington Avenue, Albany, NY 12210.

ABSTRACT

The problem of developing a proper institutional framework for effective natural resources management in the Great Lakes Basin is discussed. The present system of conflicting jurisdictions is analyzed and a model for an international Canadian-American Great Lakes management system, based on the existing International Joint Commission (IJC), is discussed. Two possible phases of development are presented for the model IJC, which would have broad international powers for research, policy-making and administration.

Legal Impediment to the Use of Interstate Agreements in Coordinated Fisheries Management Programs; States in the NMFS Southwest Region by H. Gary Knight, T. Victor Jackson, 4 appendices, 120 pp, September 1973. Louisiana State Univ. Sea Grant Legal Program, Baton Rouge, LA 70803.

ABSTRACT

Existing and alternative systems for coordinated interstate marine fisheries management are identified and analyzed. Four major areas are discussed: present jurisdictional arrangements and problems; issues involved in developing the management program; existing state management systems in the NMFS Southeast Region; and recommendations to facilitate in the use of interstate agreements.

An Evaluation of a Proposed Solution for the Marine Insurance Problems of the Texas Shrimping Industry by Wayne E. Etter, 2 graphs, 8 tables, 1 exhibit, 44 pp, August 1972. Price: $2.00. TAMU-SG-74-202. Texas A&M Univ. Sea Grant Program, College Station, TX 77843.

ABSTRACT

The 44-page report attempts to analyze statistically the problem of extremely high insurance costs of the Texas shrimping industry and to evaluate proposed solutions. Marine insurance data based on questionnaires sent to Texas Shrimping Association members are analyzed according to average premium rates, loss ratios, principle causes of loss and premium rate variances. The industry-owned "captive" insurance company concept and the Pike/Anco group insurance proposal are both evaluated in terms of their long and short-term effects.

A New Look at Sharks by Elizabeth Keiffer, 1 photo, 1 p, September 1972. No. 40. New England Marine Resources Information Program, Univ. of Rhode Island, Narragansett 02882.

ABSTRACT

Narragansett Laboratory shark program studying migration, distribution, food and reproductive habits of Atlantic sharks is described. Possible new roles for sharks as sport fish and food resources are discussed.

Two New Bilingual Fisheries Manuals

A bilingual English-Spanish bulletin explaining the importance of cleanliness in seafood processing is available from the Center for Marine Resources, Texas A&M University. **"Seafood Quality Control: A Manual for Processing Plant Personnel,"** by Dr. Ranzell Nickelson, is aimed at helping seafood plant workers understand how bacteria can affect food, cause spoilage and create public health problems.

The manual answers questions that seafood processing plant employees might ask about certain practices they are required to follow. It is illustrated with drawings and photographs of bacteria and growing bacteria cultures. The importance of each worker's cleanliness to the quality of the plant's final product is stressed in the text.

English and Spanish translations are placed side by side. Each illustration also is explained in both languages. Manuel Pina, Jr., Extension Service Information specialist, prepared the Spanish text. The bilingual quality control manual is the third in a series of four publications about seafood quality. The first bulletins, "Boats and Fish Houses" and "Processing Plants," are available in English only. The final publication of the series, now being prepared, will describe tests and procedures for quality control laboratory personnel. These free publications are available by writing the Center for Marine Resources, Texas A&M University, College Station, TX 77843.

"A Review of the Salmon Hatcheries of the Republic of Korea," by Clinton E. Atkinson et al. published by U.S. Dept. of State (AID) and Republic of Korea Office of Fisheries in Seoul in October 1973 (bilingual edition, Korean and English). Reports on recent attempts to restore and extend coho and chum salmon runs in the Republic of Korea, using in part eggs imported from the United States.

A hatchery program begun in 1968-1969 did not produce the runs expected in 1972, and consequently a team of Korean and U.S. experts examined the situation. This book is a report of their findings and includes discussion of environmental and operational conditions, particularly of water temperature and timing of releases at each hatchery; analysis of these conditions; and recommendations for improving the hatchery program. The book, 263 pages (142 pages in English), is available on loan from Translation Program, International Activities Staff, Fx41, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235.