

and existing vessels, of certified "flow-through" devices, which provide adequate treatment of sewage. The Coast Guard/EPA working group was formed to reassess the "no-discharge" standards after a review of more than 150 comments concerning the standards

from the boating public.

Based on the probable revision of the "no-discharge" standard during the next 12 months, the Coast Guard regulations contain a waiver to permit certified "flow-through" devices to be installed on "new" vessels for one year,

thereby effectively treating a "new" vessel constructed during this 1-year period as an "existing" vessel. The new regulations will also permit the recognition of marine sanitation device testing facilities which will certify marine sanitation devices for the boating public.

Publications

Recent NMFS Scientific Publications

Data Report 91. Owen, R. W., Jr., and C. K. Sanchez. "**Phytoplankton Pigment and Production Measurements in the California Current Region, 1969-72.**" November 1974. 185 p. on 3 microfiche. For sale by U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22131.

ABSTRACT

Phytoplankton production, standing stocks, and some relevant environmental characteristics were for the first time systematically measured in the California Current system during the period from 1969 through 1972. This work describes the systems and methods of measurement, and presents the data obtained.

Data Report 92. Misitano, David A. "**Zooplankton, water temperature, and salinities in the Columbia River estuary, December 1971 through December 1972.**" August 1974. 31 p. on one microfiche. For sale by U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22131.

ABSTRACT

Sampling was conducted at seven stations in the Columbia River estuary throughout 1972 to provide baseline information on species diversity, relative abundance, and seasonal occurrence of zooplankton, as well as ambient water temperatures and salinities.

Data Report 95. McNulty, J. Kneeland, William N. Lindall, Jr., and Ernest A. Anthony. "**Data of the Biology Phase, Florida portion, Cooperative Gulf of Mexico Estuarine Inventory.**" Sep-

tember 1974. 229 p. on 4 microfiche. For sale by U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22131.

ABSTRACT

Data of the Florida portion of the Biology Phase of the Cooperative Gulf of Mexico Estuarine Inventory are recorded. They consist of the catches made by seine, trawl, and plankton net at Chokoloskee in the Ten Thousand Islands, Bokeelia in Charlotte Harbor, Maximo Point in Tampa Bay, Atsena Otie Key near Cedar Key, and at the mouth of the St. Marks River. Monthly samples were taken from April 1968 through March 1969. Water temperature and salinity at the times of sampling are recorded.

Data Report 96. Hughes, Steven E. "**Groundfish and Crab Resources in the Gulf of Alaska—Based on International Pacific Halibut Commission Trawl Surveys, May 1961-March 1963.**" October 1974. 87 p. on 2 microfiche. For sale by U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22131.

ABSTRACT

Results of a trawl survey of groundfish and crab resources occurring between Cape Spencer and Unimak Island, Alaska, are presented. The survey was conducted by the International Pacific Halibut Commission during 1961-63; catch records from 1,272 stations were recently analyzed and prepared by the Northwest Fisheries Center. Information presented shows seasonal patterns of geographic and depth distribution, in addition to relative

abundance of all major species occurring in the Gulf of Alaska. For each group (flatfish, roundfish, rockfish, elasmobranchs, and crab) and major species, a brief narrative of results is accompanied by figures showing percentage and catch rate information by area-season-depth categories. In addition, 40 charts show detailed seasonal information on eight major groundfish as well as king and Tanner crabs.

Data Report 97. Pullen, Edward J., and Lee Trent. "**Hydrographic Observations from a Natural Marsh and a Marsh Altered by Dredging, Bulkheading, and Filling in West Bay, Texas.**" October 1974. 15 p. on 1 microfiche. For sale by U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22131.

ABSTRACT

Hydrographic data were collected from a natural marsh and a marsh altered by dredging, bulkheading, and filling in West Bay, Texas. Water samples were taken at 2-wk intervals during the day and night at 10 stations from 25 March to 21 October 1969. This report contains the location, depth, date, and time the samples were taken and corresponding measurements of water temperature, salinity, dissolved oxygen, dissolved organic nitrogen, nitrite, total phosphorus, inorganic phosphate-phosphorus, pH, carbon dioxide, total alkalinity, carbonate alkalinity, and turbidity.

Fishery Facts 7. Hipkins, Fred W. "**A Trapping System for Harvesting Sablefish, *Anoplopoma fimbria*.**" November 1974, 20 p., 17 figures.

ABSTRACT

An improved method of commercial fishing for sablefish, commonly known as black cod (not related to

the family of codfishes), is now used by commercial fishermen from California to Alaska. Fish are captured and impounded in lightly constructed, baited traps. The traps are collapsible (they fold down) but are rigid when set out to fish. They can be completely covered with webbing or steel wire mesh. Fish impounded in the traps, which are attached to groundlines, are alive and in excellent condition when brought aboard the fishing vessels. The traditional setline method for fishing sablefish requires considerably more bait, larger fishing crews, and many more hours of work per day to catch a comparable amount of sablefish.

Details of the trapping gear, setlines, and buoyines, plus the vessel equipment, fishing instructions, and locations of traditional fishing grounds are described.

Fishery Facts 8. Lane, J. Perry. "Sanitation Recommendations for Fresh and Frozen Fish Plants." November 1974, 39 p. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

ABSTRACT

The problem of sanitation in fish processing plants is receiving increasing attention from Federal and State regulatory agencies, as well as private industry. This article covers recommended guidelines that can assist the processors of fresh and frozen fish in evaluating their existing sanitation practices or in establishing new ones.

Fishery Facts 9. Gutherz, Elmer J., Anthony F. Serra, and Edward F. Klima. "Design and Materials Used in Construction of a 16-Foot Shrimp Trawl." December 1974, 14 p., 12 figs., 1 table. (No abstract)

Fishery Facts 10. Parker, R. O., Jr., R. B. Stone, C. C. Buchanan, and F. W. Steimle, Jr. "How to Build Marine Artificial Reefs." December 1974, 47 p., 21 figs., 1 table, 4 app. figures.

ABSTRACT

Artificial reefs provide or improve rough bottom habitat and offer fishery scientists and administrators an effective technique to conserve and develop coastal fishery resources. With careful planning and

organized efforts, local reef committees can build reefs to improve fishing and contribute to the recreational and financial growth of coastal communities. Advice and procedures are presented for: 1) selecting construction materials, 2) determining a suitable reef site, 3) obtaining permits, 4) buoying the reef, and 5) preparing, transporting, and placing reef-building materials. Included in appendixes are instructions for preparing permits, addresses of Federal and State agencies involved in approving or funding reef construction, and addresses of manufacturers of materials and equipment.

NOAA Technical Report NMFS SSRF-681. "Physiological response of the cunner, *Tautoglabrus adspersus*, to cadmium." October 1974. 33 p. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

ABSTRACT

The cunner, *Tautoglabrus adspersus*, was exposed to six concentrations of cadmium, as cadmium chloride ($\text{CdCl}_2 \cdot 2\frac{1}{2} \text{H}_2\text{O}$), for 96 h. At the end of this exposure period, tests of blood serum osmolality and gill tissue oxygen consumption were performed. High levels (48 ppm) of this metal resulted in abnormally high serum osmolality, and an exposure as low as 3 ppm reduced the normal rate of oxygen consumption. Both of these parameters may be related to observed tissue damage.

The histopathological effects of acute exposure of the cunner to cadmium were manifested in the kidney, intestine, hemopoietic tissue, epidermis, and gill. Few significant changes were noted in fish exposed to concentrations less than 48 ppm. The results implicate renal failure as the probable cause of death subsequent to acute exposure to cadmium.

Clearance of intracardially injected bacteria from the blood of cunners exposed to 12 ppm cadmium was examined. The rate of bacterial uptake in the cells of the liver and spleen was increased, but the bacterial death rate within these cells was decreased. Exposure of fish at 3 to 24 ppm failed to influence antibody production against shee red blood cells.

The activity of two liver enzymes changed significantly with exposure to cadmium. Aspartate aminotransferase was lower in the exposed fish, and a magnesium-linked oxidoreduc-

tase in exposed fish required 10 times as much added magnesium to reach the same level of activity as in the control fish.

Chemical analyses were made for uptake and clearance of cadmium from exposed cunners. In the uptake study, cadmium residues averaged 8.5 times higher in liver than in gills. In the clearance study, substantial reductions in cadmium residues were found in the gills and blood of fish held in clean seawater for 6 wk after exposure to cadmium, as compared to fish sacrificed immediately after exposure. Muscle and carcass samples from the "cleared" fish showed little reductions in cadmium levels.

Sea Grant Publications Review Shrimp Diseases and Fisheries Science

Shrimp diseases, an important factor in reducing natural populations and a major consideration for mariculturists, is the topic of the new Texas A&M University publication **Handbook of Shrimp Diseases**, by S. K. Johnson, fish disease specialist for the Texas Agricultural Extension Service in the Department of Wildlife and Fisheries Science. Published by A&M's Sea Grant Program, the book contains detailed descriptions and illustrations of common parasites of shrimp. It is intended as a guide for shrimp mariculturists, commercial fishermen, and others interested in abnormal shrimp conditions. Single copies of the 20-page booklet are available free from the Sea Grant College Program, Texas A&M University, College Station, TX 77843. Request publication TAMU-SG-75-603.

The Sea Grant Program, Virginia Polytechnic Institute and State University, has published **Introductory Fisheries Science** by Robert T. Lackey. This 275-page book covers the major disciplines of fisheries science (management, biology, theory, population dynamics, aquaculture, planning, and economics) from a broad, principle-oriented approach. Copies, \$5.00 each, may be obtained from the Sea Grant Program, Extension Division, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061. Checks should be made payable to VPI&SU Sea Grant.