



DISEASES

"Principal Diseases of Marine Fish and Shellfish," by Dr. Carl J. Sindermann. Academic Press of New York and London.

The book "represents the first attempt ever to summarize information about diseases of marine fish and shellfish." It "first reviews the principal diseases of marine organisms, then examines disease-caused mortalities, disease problems in mariculture, internal defense mechanisms, and the relation of human diseases to those of marine animals. It also assesses the impact of disease on marine populations."

The book will be useful particularly to persons involved in oceanography, marine biology, and aquaculture. Because Dr. Sindermann's style is "straightforward and his language not unduly scientific," the book will interest both layman and scientist.

Dr. Sindermann is director of BCF Tropical Atlantic Biological Laboratory (TABL), Miami, Fla.

POLLUTION

"Effects of Abatement of Domestic Sewage Pollution on the Benthos, Volumes of Zooplankton, and the Fouling Organisms of Biscayne Bay, Florida," by Dr. J. Kneeland McNulty. University of Miami Press, Drawer 9088, Coral Gables, Florida 33124. 128 pp., clothbound, \$6.95.

A study of the effects of pollution on marine life. "Such studies are rare because the onset of pollution is generally gradual, and, by the time that the need for a study is recognized, it is too late to obtain data on earlier, unpolluted conditions." The study "is especially important because the fauna and flora of Biscayne Bay are tropical, and very little is known of the effects of pollution in the tropics."

Florida's Biscayne Bay offered the opportunity of comparing polluted conditions with the situation some years after a sewage treatment plant was installed. Various elements of the biota of northern Biscayne Bay were studied before and after abatement of pollution. The pollution consisted of 136 to 227 million liters per day of untreated domestic sewage.

Four years after removal of pollution, some changes had taken place.

Dr. McNulty states: "At distances of 100 to 740 meters seaward from outfalls, in water depths of one to three meters in hard bottom, populations of benthic macroinvertebrates had declined from abnormally large numbers of species and individuals to normal numbers of each, while soft-bottom populations had changed qualitatively but not quantitatively. Adjacent to outfalls, populations had increased in numbers of species and numbers of individuals in hard sandy bottoms only. Volumes of zooplankton had decreased to about one-half the pre-abatement values in poorly flushed waters; elsewhere, they remained about the same. Dissolved inorganic phosphate-phosphorus decreased similarly. Abundance of amphipod tubes had declined markedly, a change not shared by quantities of other fouling organisms (including barnacles), which remained about the same. There was no evidence of improved commercial and sport fishing following abatement; this is interpreted to mean that long-lasting detrimental effects have resulted from pollution and dredging."

THERMAL WORKSHOP

Proceedings of the 2nd Thermal Workshop, U.S. International Biological Program, 'Chesapeake Science', Sept. & Dec. 1969. The workshop was sponsored by the National Academy of Sciences and held at the University of Maryland Nov. 3-7, 1968. Attending

were about 200 persons representing University, Federal, state, and industrial interests from 27 states and 6 nations.

The conference focused on "the effects of temperature and temperature change in the aquatic environment." The biological role of temperature was stressed, although some physical and chemical aspects were covered.

It was divided into 4 sessions: 1) presentations concerning role of temperature--in basic and applied sense--on plant and animal populations; 2) results of cooperative study on ecological effects of thermal discharge from a steam electric station upon the Patuxent Estuary; 3) demonstrations of field and laboratory equipment and methods used in the Patuxent Estuary studies; 4) discussions of research design, methodology, equipment in such areas as primary production, invertebrates, vertebrates, management, and respiration.



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FISH HANDLING

"Recommended Practices For Vessel Sanitation And Fish Handling," by Edgar W. Bowman and Alfred Larsen, Circ. 333, March 1970, pp. 1-27, illus.

Fish-handling practices aboard commercial fishing vessels have evolved "largely through trial and error"--and not through adoption of research findings. Fishermen "have not always kept pace" with public's increasing demands for higher-quality fishery products. This booklet provides industry with a measuring rod to evaluate itself. Also, it recommends ways to improve vessel sanitation and fish-handling techniques.

The gear and techniques of modern fishing have facilitated larger catches in shorter time. The technology of processing and fish use gives the public more new products: from "traditional dried and salted fish to the ultra-convenient boil-in-the-pouch items." Despite sophisticated processing, however, there is

no way to restore fish quality once it has been lost through mishandling aboard the vessel. "The final product placed on sale in the market can be no better than the fish itself."

The booklet covers: fish-handling procedures, refrigeration of fresh fish, holding fresh fish, effective and constant sanitation, personnel sanitation practices, present and future vessel design.

SALMON

"Effect of Flow on Performance and Behavior of Chinook Salmon in Fishways," by Clark S. Thompson, SSR--Fish. No. 601, March 1970, 11 pp., illus.

The author studied adult fall-run chinook salmon (*Oncorhynchus tshawytscha*) during "plunging and streaming conditions of flow in a pool-and-overfall fishway that permitted recycling of fish after each completed circuit." The flows were controlled by adjusting valves in a lock at head of fishway. Individual fish were timed as they ascended a certain number of pools under each condition.

The data suggest that "plunging and streaming flows may be equally suitable for the passage of chinook salmon in a pool-and-overfall fishway." About 60% of fish "ascended slightly faster in the streaming flow"; the average ascent rate for all fish was "slightly higher in a plunging flow."

Mr. Thompson describes orientation of fish to type and velocity of flow. He states: "Most fish preferred to rest in the lower downstream quadrant of the pool in a plunging flow; conversely, the lower upstream quadrant was preferred in a streaming flow. Resting fish always faced the current."



"Birectilinear Recruitment Curves to Assess Influence of Lake Size on Survival of Sockeye Salmon (*Oncorhynchus nerka*) to Bristol Bay and Forecast Runs," by Ralph P. Silliman, SSR--Fish. No. 600, March 1970, 9 pp.

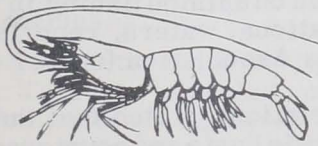
"Comparison of the sizes of lakes and the sizes of sockeye salmon runs to Bristol Bay shows that the two variables are closely related. Birectilinear reproduction curves express quantitatively the dependence of

small returns on escapement numbers and of large returns on lake capacity. Comparison of 'hindcasts' from the birectilinear curves with published forecasts for 1961-67 showed that those from the birectilinear curves were closest to the actual returns. This situation changed in 1968-69. A composite of birectilinear return estimates and 'probability tree' age allocations is worth considering."

SHRIMP

"Western Atlantic Shrimps of the Genus *Penaeus*," by Isabel Perez Farfante, *Fishery Bulletin*, Vol. 67, No. 3, June 1969, pp. 461-591.

"Four subgenera of the genus *Penaeus* are described (*Litopenaeus*, *Penaeus* s.s., *Fenneropenaeus*, and *Melicertus*). Eight species and subspecies (*P. setiferus*, *P. schmitti*, *P. duorarum duorarum*, *P. duorarum notialis*, *P. aztecus aztecus*, *P. aztecus subtilis*, *P. paulensis*, and *P. brasiliensis*) are recognized as occurring in the western Atlantic. Synonymies are given. Lectotypes have been designated for two species, and the disposition of all types is shown. Diagnoses, detailed descriptions, and illustrations are presented for each species and subspecies. Geographic and bathymetric distributions are given. Affinities are discussed, and conclusions concerning ranges of variation and their spatial distribution are based on morphometric studies and other characters. The development of the external genitalia through the juvenile stage and the size range at which each taxon reaches the subadult stage are presented. Many details of ecology and life history are critically summarized and reviewed. A brief appraisal of the commercial importance of each form is also given."



ROCKFISHES

"Fecundity, Multiple Spawning, and Description of the Gonads in *Sebastodes*," by John S. MacGregor, *SSR-Fish*, No. 596, 12 pp., Mar. 1970.

"The rockfishes of the genus '*Sebastodes*' (family *Scorpaenidae*) support an important commercial and sport fishery along the coast of California, where more than 50 species occur. . . . These fishes are of special biological interest because they are ovoviviparous [producing eggs that have a well-developed shell as in oviparous animals, but which hatch within parent's body, as in many reptiles and elasmobranch fishes]. Together with 18 species of viviparous *Embiotocidae* they contribute to a marine fauna that probably contains a higher proportion of species of live-bearing fishes than that in any other similar area in the world.

"Estimating the seasonal fecundity of a fish species presents two primary problems. The first and easier problem is to determine the numbers and size distribution of yolked eggs in the ovary. The second and more difficult is to determine how many times the fish spawns during the spawning season."

"In the ovaries of nine species examined, evidence of two spawnings per spawning season was found in three (*S. ovalis*, *S. constellatus*, *S. paucispinis*) but not in the other six (*S. carnatus*, *S. rosaceus*, *S. serriceps*, *S. serranoides*, *S. atrovirens*, *S. ruberrimus*). Two spawnings were indicated by either (1) small numbers of advanced larvae entrapped in the ovaries and associated with full complements of developing eggs or early embryos or (2) a secondary group of developing eggs along with about equal numbers of advanced embryos. The relative number of eggs or embryos was lower in the three species that gave evidence of two spawnings (162 eggs or embryos per gram of fish) than in the other six species (280 eggs or embryos per gram of fish)."

