New NMFS Scientific Reports Published

Some publications listed below may be sold by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Copies of all are sold by the National Technical Information Service, Springfield, VA 22151. Writing to either agency prior to ordering is advisable to determine availability and/or price (prices may change and prepayment is required).

NOAA Technical Report NMFS 26. Darcy, George H. **"Synopsis of biological data on the sand perch, *Diplectrum formosum* (Pisces: Serranidae)."** March 1985, iv + 21 p., 20 figs., 7 tables.

ABSTRACT

Information on the biology and fishery resources of a common western Atlantic serranid, *Diplectrum formosum*, is compiled, reviewed, and analyzed in the FAO species synopsis style.

NOAA Technical Report NMFS 27. Sindermann, Carl J. (editor). **"Proceedings of the Eleventh U.S.-Japan Meeting on Aquaculture, Salmon Enhancement, Tokyo, Japan, October 19-20, 1982."** March 1985, iii + 102 p. (15 papers.)

NOAA Technical Report NMFS 28. Perrin, William F., Michael D. Scott, G. Jay Walker, and Virginia L. Cass. **"Review of geographical stocks of tropical dolphins (*Stenella* spp. and *Delphinus delphis*) in the eastern Pacific."** March 1985, iv + 28 p., 26 figs., 4 tables, 2 app.

ABSTRACT

Information on geographical variation is reviewed for *Stenella attenuata*, *S. longirostris*, *S. coeruleoalba*, and *Delphinus delphis* in the eastern tropical Pacific, and boundaries for potential management units are proposed. National Marine Fisheries Service and Inter-American Tropical Tuna Commission sighting records made from 1979 to 1983 which were outside boundaries used in a 1979 assessment were examined for validity. Tagging returns and morphological data were also analyzed. Several stock ranges are expanded or combined. Three management units are proposed for *S. attenuata*: the coastal, northern offshore, and southern offshore spotted dolphins. Four management units are proposed for *S. longirostris*: the Costa Rican, eastern, northern whitebelly, and southern whitebelly spinner dolphins. Two provisional management units are proposed for *S. coeruleoalba*: the northern and southern striped dolphins. Five management units (two of which are provisional) are proposed for *D. delphis*: the Baja neritic, northern, central, southern, and Guerrero common dolphins. Division into management units was based on morphological stock differences and distributional breaks.

NOAA Technical Report NMFS 29. Moser, Mike, Judy A. Sakanari, Carol A. Reilly, and Jeannette Whipple. **"Prevalence, intensity, longevity, and persistence of *Anisakis* sp. larvae and *Lacistorhynchus tenuis* metacestodes in San Francisco striped bass."** April 1985, iii + 4 p., 6 figs.

ABSTRACT

Thirteen hundred and seventy-three striped bass, *Morone saxatillis*, were collected from the San Francisco Bay-Delta area to correlate host diet with parasitic infections and to determine the prevalance, intensity, longevity, and persistence of larval *Anisakis* sp. nematodes and the metacestode *Lacistorhynchus tenuis*. There is an increase in the prevalence and intensity of *Anisakis* sp. and in the intensity of *L. tenuis* with increase of age of the host. These increases are probably related to the diet and the persistence of the parasites. The infections of both species are overdispersed. San Francisco Bay striped bass are an incompatible host for both species of parasites. Degenerated *Anisakis* sp. will remain in the host for at least 8 months and *L. tenuis* metacestodes for 22 months. The occurrence of several other species of parasites and a tumor are also reported.

NOAA Technical Report NMFS 30. Shumway, Sandra E., Herbert C. Perkins, Daniel F. Schick, and Alden P. Stickney. **"Synopsis of biological data on the pink shrimp, *Pandalus borealis* Krøyer, 1838."** May 1985, iv + 57 p.

ABSTRACT

This synopsis of the literature was designed to summarize the biological and biochemical studies involving *Pandalus borealis* as well as to provide a summary of the literature regarding the fisheries data published before early 1984. Included are many unpublished observations, drawn from studies at the State of Maine Department of Marine Resources Laboratory in West Boothbay Harbor, Maine.

NOAA Technical Report NMFS 31. Anderson, Emory D., John G. Casey, John J. Hoey, and W. N. Witzell. **"Shark catches from selected fisheries off the U.S. east coast."** July 1985, iv + 22 p., 3 figs., 25 tables.

CONTENTS

Included are three articles: "Analysis of various sources of pelagic shark catches in the Northwest and Western Central Atlantic Ocean and Gulf of Mexico with comments on catches of other large pelagics" by Anderson; "Estimated catches of large sharks by U.S. recreational fishermen in the Atlantic and Gulf of Mexico" by Casey and Hoey; and "The incidental capture of sharks in the Atlantic United States Fishery Conservation Zone by the Japanese tuna longline fleet" by Witzell.

Improving Habitat for Fish and Anglers

"Artificial Reefs," edited by Frank M. D'Itri, has been published by Lewis Publishers, Inc., 121 South Main Street, P.O. Drawer 519, Chelsea, MI 48118. The book, with both marine and freshwater applications, is divided into four parts: I, physical and limnological characteristics of artificial reefs; II, reef design and construction; III, artificial reef ecology; and IV, legal, economic, regulatory, and organization considerations in reef siting and construction. Overall, the 25 papers serve as an excellent overview of the history, current state-of-the-art, and future prospects for man-made reefs.

In Part I, papers review the history of artificial reefs in the United States, enhancement of the marine environment

for fisheries and aquaculture in Japan, the ecology of natural shoals in Lake Ontario and their importance to artificial reef development, physical and geological aspects of artificial reef site selection, and the physical and limnological characteristics of natural spawning reefs in western Lake Erie.

Many of the earlier reports on artificial reefs were often unpublished or published individually or in a "proceedings" volume with limited availability. This book, however, updates several of those studies and makes the data easily available to students, biologists, researchers, fisheries managers, etc.

Part II includes papers on the planning of artificial reefs in Japan, recent approaches in artificial reef design and applications, reviews of artificial reef programs in Hawaii, Virginia, and Lake Michigan; the use of scrap tires and fly ash from coal combustion for reef building; and a review of mid-water fish aggregating devices (FAD's).

Part III, ecology, presents an update on the Smith Mountain Lake, Va., artificial reef project, and discussions of enhancement of fisheries habitat and urban recreational fishing; density estimates of warm-temperature reef fishes associated with an artificial reef, a natural reef, and a kelp forest; a study of the biota, especially prey species, of naturally rocky area of southwestern Lake Michigan and what it means for artificial reef construction; and preliminary studies of an artificial reef as a fishery management strategy in Lake Michigan.

Part IV includes discussions of Federal responsibilities or approaches to regulating artificial reefs, sport fishing needs for artificial reefs, the economic impact of artificial reefs on Great Lakes sport fisheries, and a review of Florida's artificial reef network and strategies that could enhance user benefits. The 589-page hardbound volume is available from the publisher for $49.95.

Meanwhile, the Artificial Reef Development Center, administered by the Sport Fishing Institute, 1010 Massachusetts Ave., N.W., Suite 100, Washington, DC 20001, has initiated a very useful Technical Report Series on various aspects of artificial reef construction, maintenance, etc.

The first Technical Reports Series 1 (24 pages), is **"Permitting Procedures for Artificial Reefs"** by Richard T. Christian, which provides an overview of the legal authorities of the various governmental agencies and their extent of involvement in permitting artificial reefs. It presents a step-by-step guide to the procedures that lead to the acquisition of the required permits for reef construction.

The second is **"Artificial Reef Maintenance"** by DeWitt O. Myatt (30 pages, 5 appendices), and is an excellent guide to long-term planning for the care and maintenance of the reefs, especially the buoys and markers which the U.S. Coast Guard classifies as "special purpose aids to navigation."

Number 3, **"Liability Concerns in Artificial Reef Development"** by Patricia R. Collins (26 pages, 1 appendix), deals with what has been a major constraint to some reef plans. There is little case law on the topic and the author presents a number of suggestions for such concerned parties as material donors, reef contractors, volunteer transporters, permittees, and involved agencies; a discussion of the National Fishery Enhancement Act of 1984 also addresses many of the concerns.

Report 4 is **"Transportation Costs of Artificial Reef Materials"** by Richard T. Christian (19 pages), and recent data is presented from projects in 17 states. Transportation accounts for about 75 percent of reef deployment costs, and depends on the type and amount of material, which also impinges on the type of transportation required. Potential funding sources are also discussed. Report prices vary and they are available from the Institute's Center.

A Review of the Seaweeds of China

China's coastline (18,000 km mainland and 14,200 km islands) harbors about 1,000 species of seaweeds over zones ranging from tropical to warm temperate. And the Chinese are among those who actively utilize seaweeds for food and medicine. At present, 45 genera representing a little over 100 species are of economic value in that nation, being used for food, medicine, fertilizer, and as the raw material for industrial production of phycocolloids (i.e., agar, algin, and carrageenan) and other products such as mannitol and iodine. Indeed, records of the occurrence of *Porphyra* and its food value appeared in a Chinese book published sometime between 533 and 544 A.D.

Now, **"Common Seaweeds of China,"** has been published by the Science Press, Beijing, China, in honor of the XIth International Seaweed Symposium held in Quingdao in June 1983. The handsomely printed volume, a cooperative work by several phycologists, was edited by C. K. Tseng, Research Professor of Marine Biology, Institute of Oceanology, Academia Sinica, Quingdao, and it should serve as an excellent guide to the common marine flora of that region.

Described are 512 species of Chinese seaweeds, including 66 species of the Cyanophyta, 226 species of the Rhodophyta, 1 species of the Xanthophyta, 115 species of the Phaeophyta, 1 species of the Prochlorophyta, and 103 species of the Chlorophyta. Each species described is illustrated with excellent color photographs (mostly made in the natural habitat) and, in some cases, with detailed drawings and micrographs where needed to highlight particular details. However, a few common species were not shown owing to a lack of suitable specimens, and, since the volume is not all-inclusive, there are no keys to the genera and species.

The book begins with a systematic list of species and then presents "ecological photographs" of various species in their natural habitats and scenes of seaweed harvesting and culture. Then follow the plates and descriptions of the 512 species, a selected bibliography, and an index.

Descriptions of the seaweeds include external morphology, color, texture, habitat, occurrence in China, geographical distribution, and internal structure and reproductive characteristics (when needed for identification). Also given are the uses of economically valuable seaweeds.

The hardbound 316-page volume is distributed and sold for $125.00 by Kugler Publications, P.O. Box 5794, Berkeley, CA 94705, or, in The Netherlands, by Kugler Publications BV, P.O. Box 516, 1180 AM, Amstelveen, The Netherlands.

MANAGEMENT OF WILD SALMONIDS

"Proceedings of the Olympic Wild Fish Conference," edited by J. M. Walton and D. B. Houston, has been published by the Fisheries Technology Program, Peninsula College, 1502 E. Lauridsen Blvd., Port Angeles, WA 98362. In this case, "wild fish" refers to the salmonids of the genus *Oncorhynchus* and *Salmo* of the Pacific coast. The editors note that some of these wild stocks have been either neglected, managed, or mismanaged almost to the verge of extinction, and the conference was held so fisheries managers and scientists could present their current management strategies, research findings, and agency philosophies, exchange ideas, and discuss and evaluate critical issues. Those objectives were attained to a surprising degree, with many of the papers providing interesting and sometimes provocative ideas from a variety of perspectives.

The volume is divided into seven major sections: Genetic differentiation of wild fish stocks, lake studies and management strategies, agency management of wild fish stocks, the cutthroat trout, coho and chinook salmon, steelhead trout, and one on "perspectives." The latter contains thoughtful papers on the "Social value of wild fish" by J. T. Martin, and Bill McMillan's review of "An angling community in change," a look at one stream's 25 years of change from a native steelhead fishery to a hatchery-dominated fishery, and the effects on angling techniques and ethics.

In the first section are discussed the concept of a salmonid stock and the methods used to differentiate stocks and problems in gene resource conservation by J. D. McIntyre. Fred Utter et al. discuss the genetic characterization of populations in the southeastern range of sockeye salmon; R. R. Reisenbichler reviews "outplanting," releasing hatchery fish at remote localities, and its potential for harmful genetic change in naturally spawning salmonids. J. H. Helle discusses "gene banks" for wild salmonid stocks and L. A. Riggs presents a scenario for genetic resource management of salmon and sea-run trout.

The second section presents discussions on management strategies for restoration and rehabilitation of sockeye salmon in Lake Ozette, Wash., the early exploitation and current status of trout in Lake Crescent, Wash., and management prescriptions and classification of the lake fishery on Vancouver Island, B.C. The third section presents discussions of the preservation of spring chinook in Puget Sound, Wash.; status and management of anadromous fish in Olympic National Park; James M. Johnston provided an administrator's perspective of wild stock management; and G. S. Morishima provided a look at the inherent problems and tradeoffs involved in or impinging on wild fish management.

And, the fourth through the sixth sections present papers on status, life history studies, habitat utilization, spawning strategies, and management programs for several stocks of cutthroat trout, coho and chinook salmon, and steelhead trout. In sum, the proceedings present a good look at several important if sometimes controversial aspects of the protection and management of wild salmonids. Copies of the 308-page paperbound volume are available from J. M. Walton at the Peninsula College for $15.00.

Soviet Volume on Marine Productivity Translated

"Oceanology: Biology of the Ocean. Volume 2. Biological Productivity of the Ocean," M. E. Vinogradov, editor-in-chief, has been translated into English and published as NOAA Technical Memorandum NMFS-F/NEC-34. Paper copies or microfiche are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (write NTIS for current prices).

Initially published by Nauka Press, Moscow, in 1977, the volume was translated by Albert L. Peabody of the NMFS Foreign Language Services Branch. The English Version Editor was Ken Sherman, Director, NMFS Narragansett (R.I.) Laboratory, and Russian scientists cooperated in reviewing and correcting versions of the English translation.

Part 1, "Ecology of Marine Communities," includes chapters on the ecological concepts, the structure and development of pelagic, benthic, and coral reef communities in different global regions from several viewpoints, including the adaptive significance of schooling in the sea. Primary and secondary production is discussed, as are ecosystem models.

Part 2 focuses on "Human Activity" with a discussion on the potentials for increasing yields from fishery resources in Chapter I and the actual and potential impacts of pollution on marine ecosystems in Chapter II. Altogether, the volume represents an extensive synthesis of Soviet literature dealing with marine ecosystems which is discussed in relation to contemporary ideas of marine ecologists in other countries. An extensive listing of references in Russian and English which supports the synthesis is included.

Methods of U.S. Shellfish Culture

"Crustacean and Mollusk Aquaculture in the United States," edited by Jay V. Huner and E. Evan Brown, has been published by Avi Publishing Company, 250 Post Road East, P.O. Box 831, Westport, CT 06881 (stock no. 443). In its 10 chapters, various authorities review the status, biology, and culture of such species as crawfishes, freshwater prawns, penaeid shrimps, homarid lobsters, other crustaceans (blue and cancer crabs, spot prawn, spiny lobsters, and smaller shrimps), oysters (American, Pacific, European, and Olympia), clams (hard, manila, butter, littleneck, softshell, and surf clams), mussels, and

abalone. The tenth chapter discusses water quality—physical, chemical, and biological variables and pesticides and water analysis—for culture systems. In addition, it presents a short appendix on the life cycle, culture, and utilization of the brine shrimp, *Artemia*.

Many factors influence the commercial profitability of shellfish culture operation in the United States. Most of the species discussed are valued relatively high among seafoods, although a few are also used as bait. However, only the freshwater crawfishes and oysters have yet been cultured on a profitable, large-scale basis within the United States. Several of the others, however (i.e., penaeid shrimps, abalones, and mussels), are cultured profitably elsewhere.

For each species or group is discussed basic biology (life cycles, reproduction, growth, food habits), genetics, environmental requirements, diseases and parasites, culture methods, processing, economics, hatcheries (where applicable), and the current status and future of the species' culture in the United States. Several species are suggested as candidates for expanded culture programs. Each chapter provides a good, succinct review of each species' culture and the volume should be a useful reference for those interested in shellfish culture. Indexed, the 476-page hardbound volume is available from the publisher for $59.00.

The Marine Fishes From Indonesia to Australia

"Trawled Fishes of Southern Indonesia and Northwestern Australia," by Thomas Gloerfelt-Tarp and Patricia J. Kailola, has been published by the Australian Development Assistance Bureau, the Directorate-General of Fisheries, Indonesia; and the German Agency for Technical Cooperation. The volume is an excellent inventory of the ichthyofauna obtained by trawling in the waters from northwestern Australia through the island regions of Timor, Bali, Java, and Sumatra, during a regional fishery assessment project, JETINDOFISH, the Joint Eastern Tropical Ocean Fishery Study from 1979 to 1981. Most trawling was done between 20 and 250 m, although considerable work was done close to coral reefs.

Altogether 1,266 sharks, rays, and bony fishes are described, encompassing 179 families. More than 130 of those species had not been recorded before from either Indonesia or Australia, and about 90 were new to science. The text provides identification guidelines and generic synopses to accompany the 950 color photographs and about 232 drawings. Indonesian and English names are provided for the families, and references to appropriate literature are cited for each family. Identification data accompany each photo or illustration. Also included are drawings of fish anatomy and a glossary of terms utilized in fish identification.

A 60-page species list provides data on the author and date of description, capture locality and distribution details, area from which all recorded specimens were obtained, and other pertinent data. General and specific references are listed in a 19-page bibliography. For many fishermen and scientists working on or with fishes of the region, the volume will be a handy reference. Inquiries on the availability of the 406-page volume should be directed to either: Heng, S.U. Pte. Ltd., Tong Lee Building, Block A, 35 Kallang Pudding Road 02-12, Singapore 1334; or The Indonesia Section, S.E.A.P. Branch, Australian Development Assistance Bureau, G.P.O. Box 887, Canberra, A.C.T. 2601, Australia.

ICLARM Reports on Tropical Fisheries

ICLARM, the International Center for Living Aquatic Resources Management, MCC P.O. Box 1501, Makati, Metro Manila, Philippines, publishes several series of excellent reviews, technical reports, studies, proceedings, bibliographies, etc. Number 8 in the ICLARM Studies and Reviews series is **"Fish Population Dynamics in Tropical Waters: A Manual for Use With Programmable Calculators"** by Daniel Pauly.

Chapter by chapter, the author applies to tropical and subtropical fish and fisheries methods covering length-weight relationships, mesh selection, growth, mortality, population size estimation (e.g., by tagging, virtual population analysis), yield-per-recruit assessments, stock-recruitment relationships, surplus-yield models, the rate of increase of populations, and aspects of multispecies stocks and fisheries. The program listing the user instructions of 30 programs for a programmable calculator are included, and the translation of those programs for use with other types of calculators is discussed. Sixty computational examples, including complete keystroke sequencees, are provided to illustrate the methods presented in the text. Included also is a list of symbols and their definitions, references, an author index, and a program card hold. The paperbound volume costs $25.00 (airmail) and the hardbound volume is $29.50 (airmail). U.S. orders through ISBS should include $2.25 postage.

Number 7 in the same series is **"Caribbean Coral Reef Fishery Resources,"** edited by J. L. Munro. The volume constitutes the full 18-part series originally published as No. 3 in the series Research Reports from the Zoology Department, Univesity of the West Indies," plus an epilogue reviewing progress in coral reef fisheries research from 1973 to 1982. Following an introductory review of the Caribbean reef fisheries by Munro, are chapters on the Jamaican fishing industry, areas investigated and objectives and methods, and the composition and magnitude of line and trap catches in Jamaican waters. Then follow individual chapters which provide detailed accounts of the biology, ecology, and bionomics of such major taxonomic groups as squirrelfishes, hinds and groupers, jacks, snappers, grunts, goatfishes, butterfly and angelfishes, parrotfishes, surgeonfishes, triggerfishes, and spiny lobsters, spider crabs, and other crustaceans. Finally,

Munro assesses information on the potential harvests of commercially important reef fishes. In the epilogue, more recently developed stock assessment methods are used to reanalyze the data collected in the previous decade, and the advances made in that period are reviewed. Well illustrated, and with color plates of a dozen important commercial reef fishes, the volume provides a fine review of the region's coral reef fishery resources. Paperbound copies are available from ICLARM for $16.00 (surface mail) or $33.00 (airmail), and the hardback edition costs $19.50 (surface) and $37.00 (airmail). Like the other ICLARM publications, it is available in the United States from International Specialized Book Services, Inc. (ISBS), P.O. Box 1632, Beaverton, OR 97075, using the "airmail" price.

ICLARM Technical Reports 13 is **"An Atlas of the Growth, Mortality and Recruitment of Philippine Fishes"** by Jose Ingles and Daniel Pauly. The authors present the results of a detailed analysis (ELEFA program) of length-frequency data collected from 1957 to 1981 throughout the Philippines, covering 23 families (including 34 genera and 56 species) which represent 112 stocks of commercially exploited finfishes. The results are presented in the form of 112 plates. For each stock is provided: An outline drawing of the species discussed (including scientific name, sampling location and date), a recruitment pattern used to infer seasonality of spawning and recruitment, and a graph where probabilities of capture are plotted against length to estimate mean length at first capture. For each stock, a brief legend provides the numerical values of the estimates of growth, mortality, and exploitation rate; the source of the data used, brief comments on the biology of the fish, and sources of further information. (Price not listed but is available from both ICLARM or ISBS.)

Recent ICLARM publications on tilapias include Bibliographies 6, **"A Bibliography of Important Tilapies (Pisces: Cichlidae) for Aquaculture"** by Peter Schoenen. This new report lists published papers and reports on the following species: *Oreochromis variabilis*, *O. andersonii*, *O. esculentus*, *O. leucostictus*, *O. mortimeri*, *O. spilurus niger*, *Sarotherodon melanotheron*, and *Tilapia sparrmanii*. For each species is listed a separate bibliography, complete with subject and geographic indexes, and lists of synonyms and misidentifications. Paperbound, the volume costs $7.75 (surface mail) and $15.00 airmail.

Published as ICLARM Technical Reports 14 is **"Experimental Rearing of Nile Tilapia Fry (*Oreochromis niloticus*) for Saltwater Culture"** by Wade O. Watanabe, Ching-Ming Kuo, and Mei-Chan Huang. Presented are experiments made during 1983 at the National Sun Yat-Sen University, Institute of Marine Biology, Kaohsiung, Taiwan, which discuss the utility of early salinity exposure toward the saltwater culture of tilapias. (Price not listed.)

ICLARM Technical Reports 16 is **"Salinity Tolerance of the Tilapias *Oreochromis aureus*, *O. niloticus* and an *O. mossambicus* × *O. niloticus* Hybrid"** also by Watanabe et al. (Price not listed.) And ICLARM Conference Proceedings 10 is the **"Summary Report of the PCARRD-ICLARM Workshop on Philippine Tilapia Economics,"** edited by I.R. Smith, E. B. Torres, and E. O. Tan. Consisting mostly of abstracts of papers and reports of four working groups, the 45-page paperbound item is free of charge from ICLARM.

ICLARM Conference Proceedings 9, **"Theory and Management of Tropical Fisheries,"** edited by D. Pauly and G. I. Murphy, constitutes the results of an international workshop held jointly by the Fisheries Research Division of the Australian Commonwealth Scientific and Industrial Research Organization and ICLARM in Cronulla, Australia. The workshop was based on the premise that tropical countries were in urgent need of a coherent body of rules applicable to the management of their fisheries, many of which have been overfished.

Presentations include reviews of models in use or proposed, current research on stock assessment, and identification of major constraints on stock assessment and management. Other papers compare fish yields from a variety of tropical ecosystems, review the management of tropical multispecies fisheries, explore the realities of fishery management in the Southeast Asian region, and suggest directions for future research in tropical multispecies fisheries. The volume has indexes to geographical locations, names of authors or discussants, and species or taxonomic groups. Paperbound copies cost $17.50 (surface) and $28.50 (airmail); hardbound copies cost $21.50 (surface) and $35.50 (airmail).

Fisheries Technology Proceedings Published

The **"Proceedings of the Ninth Annual Tropical and Subtropical Fisheries Conference of the Americas,"** compiled by Ranzell Nickelson II, have been published by the Marine Information service, Sea Grant College Program, Texas A&M University, College Station, TX 77843 as TAMU-SG-85-106.

The volume contains 21 presentations, edited by their respective authors, relating to the unique problems of production, processing, packaging, distribution, and utilization of tropical and subtropical fishery species. Contributions range from a modified dilution procedure for bacterial examination of seafoods and the occurrence and distribution of *Salmonella* in the Suwanee River estuary to the repacking of fresh oysters, clams, and mussels, potential for problems with *Plesiomonas shigelloides*, planning for marketing jerky products, and processing and quality analysis of dehydrated seafoods. Other contributions discuss *Salmonella* survival in deep-fat fried breaded shrimp (experimental contamination), comparative analysis of shrimp block thawing methods, developing vessel level grade quality standards for the shrimp industry, rapid determination of *E. coli* in *Crassostrea virginica*, effect of salinity on flavor of penaeid shrimps, nutritional, chemical, microbiological, and organoleptical changes in breaded shrimp stored in wholesale and retail freezers, and other. Paperbound, the 344-page volume is available from the publisher for $12.00.