

High Quality Seafood, How to Maintain It, and Pacific Fish Yields

Some time ago the University of Alaska published a handy "White Fish Processing Manual" for commercial fishermen. To that they have now added the "Handbook on White Fish Handling Aboard Fishing Vessels," by John P. Doyle and Charles Jensen, published as Marine Advisory Bulletin 36 by the Alaska Sea Grant College Program, University of Alaska, Fairbanks, AK 99775-5040. It is a companion also to MAP Bulletin 8, "Teaching Manual for Extension Course in White Fish Processing Technology" by Per O. Hegge-lund et al. (\$7.00).

The material is designed for fisheries in cold to temperate regions and deals specifically with the species of the North Pacific Ocean and the Bering Sea. However, these basic principles of proper handling to achieve high quality seafood remain useful far beyond Alaskan waters, for the publications are designed to teach the commercial fisherman how to achieve the highest quality and long shelf life for his product.

Following introductory material defining intrinsic and extrinsic seafood quality and the ways that quality is lost, Doyle and Jensen delve into proper methods of catching, landing, and on-deck handling of fish to maintain high quality. Close attention is paid to stowage—icing, boxing, shelving, bulk stowage—giving advantages and disadvantages of the processes. Also reviewed are refrigerated and chilled seawater systems, freezing fish at sea, unloading the fish, cleaning and sanitizing the vessel, and useful references. This is an excellent handbook, well written and illustrated (price not listed).

Another in this series is Marine Advisory Bulletin 18, "Care of Halibut Aboard the Fishing Vessel" by Donald E. Kramer and Brian C. Paust. Like the previous bulletin, this one too is based on the latest scientific information and

consultation with the fishing industry. It provides well illustrated guidance on the landing and onboard handling of this huge flatfish, bleeding and dressing of them, storage on ice and in RSW or CSW, onboard freezing methods, a discussion of the "chalky" halibut and yellow discoloration of belly surface problems and how to avoid them, fish hold design and modification, and vessel cleaning and sanitation. The 30-page paperbound handbook also includes several references for further reading (N/C).

Results of an experiment with salmon in RSW are reported in Marine Advisory Bulletin 34, "Salmon Quality: The Effects of Elevated Refrigerated Seawater Chilling Temperatures" by Chuck Crapo and Elisa Elliot. Here the authors report how slight temperature increases in the RSW system affect the quality of the salmon and what the storage limits are for these systems. Their laboratory study of the quality of salmon held in RSW at over 31°F also indicates how those higher temperatures affect fresh and frozen shelf life of the product. The 12-page paperbound bulletin costs \$2.00 postpaid.

Marine Advisory Bulletin No. 37, "Recoveries and Yields from Pacific Fish and Shellfish" by Crapo, Paust, and NMFS scientist Jerry Babbitt is a unique guide to the average and expected range of product that is "lost" during various processing steps. Such yield and recovery data are useful in several ways—to determine whether roe herring are ready to be fished, to track the efficiency of a filleting operation by documenting daily recovery, to estimate the profitability of a new fishery or processing line, etc. The data provided have been extracted mostly from various scientific publications and represents the average yield from high quality, properly handled fresh fish and shellfish in

good physiological condition. The reported ranges represent the typical variations found within fish populations during the year. Smoked fish yields were calculated using an average 15 percent weight loss during salting/brining and 10 percent in the smoking process. Data is provided for most of the important northeast Pacific commercial fishes and many less well known. The 50-page paperbound bulletin costs \$5.00.

Another useful title for salmon fishermen is "Recommended Salmon Quality Guidelines for Fishing, Tendering and Processing Operations" by the Alaska Seafood Marketing Institute, Alaska Department of Commerce and Economic Development, P.O. Box DX, Juneau, AK 99811-0800. This 39-page paperbound manual provides specific guidance for salmon fishermen on ways to maintain high quality, providing recommended operating procedures for fishermen, chilling and chilled storage during fishing operations, freezing and frozen storage aboard fishing vessels, fishing vessel sanitation, tendering vessel guidelines and recommended operating procedures, chilling and chilled storage aboard tenders, and tendering vessel sanitation. Similar data is given for shore-based and floating processing facilities and operations (price not listed).

Aquaculture Prospects and Potential in Alaska

"Proceedings of the Fourth Alaska Aquaculture Conference", edited by Sue Keller, has been published as Report 88-4 by the Alaska Sea Grant Program, University of Alaska, Fairbanks, AK 99775-5040. While many contributions are specific to Alaska conditions, it also presents a number of finfish and shellfish reviews for more southerly parts of the Pacific coast, along with articles on seaweed culture.

In the seaweed section, contributions address *Laminaria* culture in British Columbia and *Laminaria* resources in Alaska. Others discuss the potential for *Macrosystis* and nori culture in Alaska. Oyster culture in Alaska and the Pacific Northwest is then reviewed, as is scallop

culture in British Columbia. Additional articles examine mussel culture in Alaska, littleneck clam culture in the Pacific Northwest, and abalone culture in the Pacific Northwest and its applicability to Alaska.

Results from sablefish culture experiments in British Columbia are related, as are various practical aspects such as nutritional requirements of farmed fish by Ron Hardy, relation of feed costs to finfish farming, diseases of saltwater-reared salmon, culture site selection, environmental effects of finfish cage culture, and more. Other sections treat business and financing and aquaculture permit aspects of mariculture. The 236-page volume is paperbound, and costs \$8.00.

Another look at sea vegetables is presented in Marine Advisory Bulletin 27, "Seaweed Cultivation in Minamikayabe, Hokkaido, Japan: Potential for Similar Mariculture in Southeastern Alaska," by Wallace M Olson. Minamikayabe claims to be the "Kombu Capital" of Japan, and this publication provides a good look at the area's seaweed industry which involves *Laminaria japonica* and *Kjellmaniella crassifolia*. Both are harvested wild, while *L. japonica* is cultured. Olson reviews culture and harvest techniques, processing, marketing and consumption, product forms and uses, and the economics of kombu culture and then discusses the potential for such operations in Alaska waters. The 23-page paperbound bulletin is well illustrated with photographs and drawings and costs \$1.50. Additional information is available in the Alaska Sea Grant Program's Aquaculture Note series, with number 11 being "Where to Get More Information on Farming Marine Algae in High Latitude Waters" by Curt Kerns, which is a handy guide to sources of information on regulations, research assistance, pertinent publications, organizations working with seaweeds, and an indexed bibliography of 396 articles, books, theses, etc. on farming marine algae. Aquaculture Note 9, by Kerns, "Where to Get More Information on Small-scale Aquaculture," also provides basic information for those interested in starting out in fish and shellfish culture, listing 10 technical

manuals on the topic and several other bulletins, articles, etc. on salmonid and molluscan shellfish and salmonid culture. The "Notes" cost \$1.00 each. Another in the same series (no. 8) provides information on "Farming Salmon and Trout in Net Pens."

The European Markets for Cultured Fishes

The FAO's Globefish Research Program has begun a series of publications, the first of which is "Markets in Europe for Selected Aquaculture Species: Salmon, Trout, Seabass, Seabream," by Susan A. Shaw and Adrienne Curry. The authors here examine the current European markets for these species and the prospects to 1993 for such nations as Belgium, the Netherlands, West Germany (FRG), France, Italy, Spain, and the United Kingdom.

Salmon consumption (fresh and frozen), they note, grew rapidly (more than 200 percent) between 1980 and 1987 in all surveyed nations (and in Spain alone by 800 percent). Rainbow trout showed similar increases. Seabass and seabream supplies played only a marginal role in total fish supply to European countries, but interest in developing the culture industry for those species is regarded as strong; they do bring premium prices, particularly in Italy. The 121-page paperbound issue, Globefish Research Programme Vol. 1, costs US\$40 and is available from Globefish, FIU, FAO, Via delle Terme di Caracalla, 00100, Roma, Italy; or, from INFOFISH, Wisman Pkns (9th Floor), Jalan Raja Laut, P.O. Box 10899, Kuala Lumpur, Malaysia.

Salmon Market Analyses in North America, Europe

Publication of "An Econometric Analysis of Atlantic Salmon Markets in the United States and France" by Bing-Hwan Lin and Mark Herrmann has been announced by the Alaska Sea Grant College Program, University of Alaska, 138 Irving II, Fairbanks, AK 99775-5040. The United States is second to France as a consumer of cultured

salmon and this report discusses the relationship between culture and imports of Atlantic salmon and the effect of it on the demand for Pacific salmon. Using mathematical models, the authors report that the U.S. demand for cultured Atlantic salmon is price and income elastic, that Atlantic salmon is a weak substitute for fresh chinook salmon in the United States, but the two products are not competitors in France, and that the current supply of Norwegian Atlantic salmon to the United States is determined by total Norwegian salmon culture production, previous supply to the United States, and prices paid by the United States and other importers. The 19-page paperbound report (88-5) costs \$2.00 postpaid.

Another report by Lin is "The Demand for Atlantic Salmon in Canada: Issues of Functional Form and Parameter Stability." The results indicate that salmon stock enhancement programs can increase fishermen's revenues substantially, and that there is great potential for the growth of the farmed Atlantic salmon industry in Canada. A market analysis demonstrates that the Atlantic salmon is a luxury item that consumers consider a substitute for lobster (and vice versa). The 11-page report (88-6) also costs \$2.00 postpaid.

To Catch an Octopus

"Fishing for Octopus, a Guide for Commercial Fishermen" by Brian C. Paust is another utilitarian handbook published by the Alaska Sea Grant Program, University of Alaska, Fairbanks, AK 99775-5040. It is, in short, a practical review of biological and fishing information keyed primarily to *Octopus dofleini*, but which also gives tips useful for catching other species. In Alaska, some octopus is sold for food, but much of the catch goes for halibut longline bait. In other areas, octopus is sought for certain ethnic food markets or even for export.

Paust reviews octopus biology and life history, harvest and use worldwide, octopus fishing strategies, and fishing gear selection. Discussed is his Alaska octopus fishing investigation and its results;

listed also are persons who can provide further information and economic factors facing development of an octopus fishery. Methods of handling and dressing octopus on small vessels are included, along with a list of selected references. Published as Report No. 88-3, the 48-page paperbound manual costs \$5.00.

PROBLEMS WITH OCEAN DEBRIS

Marine debris, often of plastic, comes from many sources, some even fisheries related. One publication addressing this problem is **"Persistent Marine Debris, Challenge and Response: The Federal Perspective,"** which is available from the NOAA Office of the Chief Scientist, 14th Street and Constitution Avenue, Room 6222, Washington, DC 20230. Published by the Alaska Sea Grant College Program, it presents material drawn from the larger "Report of the Interagency Task Force on Persistent Marine Debris."

With data and charts, this 41-page color booklet looks at the scope of this problem and its environmental effects, the sources of marine debris, the threat to wildlife and fishes from it, the effects on humans, what different governmental and private groups are doing to combat marine debris problems, and then lists the recommendations of the Federal task force for Federal leadership, a public awareness/education program, implementing laws on marine debris, research and monitoring, and beach clean-up and monitoring.

Another publication is **"Oceans of Plastic, Report on a Workshop on Fisheries-Generated Marine Debris and Derelict Fishing Gear,"** from a 1988 conference in Portland, Ore. This report outlines the problems of marine plastic pollution and the fishing industry's role in it; it then presents some specific steps for a solution: Financial incentive systems regarding gear discarding or loss/recovery; a bounty system to reward fishermen bringing in their old gear or that found at sea; educational incentives for port personnel and seamen; and technological efforts

such as recycling plastics, developing or using degradable plastics, and marking nets to determine ownership. Appendices provide the text of Robert W. Schoning's opening remarks and documents submitted to the workshop for background information on the issue. The 68-page paperbound volume, Alaska Sea Grant Report No. 88-7, costs \$5.00.

Another practical handbook for local action on the problem is Alaska Sea Grant Education Publication No. 3, **"A Guide to Cleaning up Beach Debris in Alaska."** This 16-page booklet lists the steps needed to organize a local beach clean-up—funding, forming committee, setting dates and a theme, providing incentives, getting publicity, needed supplies and logistics, precautions, and sources of materials and further information (N/C).

Marine Pollution and What to Do About It

Problems with oceanic pollution, coastal erosion, and estuarine development, are chronic and sometimes severe. Many of them are detailed in **"The Wasted Ocean"** by David K. Bulloch, published by Lyons & Burford, 31 West 21 Street, New York, NY 10010. One in the "Coastal Waters Series" of the American Littoral Society, this is not an environmental scare-story book; rather, it is more a citizen's handbook for marine protection and conservation that relates certain pollution problems to make its points.

The author, a former president of the American Littoral Society, begins with a brief overview of marine problems, and a look at the pollutants carried to the sea by rivers. This leads to a discussion of various stresses on estuarine resources and consequent biological changes. Another chapter addresses the problems with the coastal and high seas ecosystems. The various laws, regulations, and agencies that attempt to deal with problems of marine pollution and coastal development are also reviewed.

A latter chapter presents "the aquaphile's agenda," a review of major marine/coastal environmental issues that

several environmental groups have agreed on as top priorities in coastal issues, including wetlands protection, reducing pollution at the source, stopping subsidies of flood-plain/estuarine development, setting up an "aquafund" to rehabilitate heavily polluted areas, and enforcement of environment protection laws. This is capped by a chapter on how the average citizen can become involved in helping to protect and restore coastal and marine environments. Appendices outline Federal pollution control and clean water statutes, agencies concerned with coastal waters, environmental groups active on coastal issues, and a glossary of assorted acronyms for terms or phrases that will be encountered in the process. Indexed, the 150-page paperbound handbook costs \$9.95 and is a straightforward and useful guide for citizens who want to work for a cleaner, healthier, and more productive marine environment.

A Guide for the Coastal Angler

Another of the American Littoral Society Books published by Lyons and Burford, 31 West 21 Street, New York, NY 10010, is **"The Compleat Surfcaster"** by C. Boyd Pfeiffer, former president of the Outdoor Writers Association of America and a well known angling writer. Subtitled "Tackle, Strategies, and Techniques," this is a fine introductory guide to a popular segment of marine recreational angling. Unusual, but welcome in outdoors books, is a brief annotated bibliography which would also benefit the beginning angler.

Beyond the usual information on tackle and techniques, Pfeiffer presents some good data on surf-fishing safety (an entire chapter), including thoughts on sportsmanship, courtesy, and conservation; useful tips on preventing or taking care of problems with saltwater corrosion, and directions on modification and repair of surf gear.

The author begins with a review of basic spinning and casting tackle for the surf fisherman, proper riggings and terminal tackle, and baits. Then follow chapters on lures, other needed gear and

clothing, surf casting techniques, reading the surf, beach buggies, fishing from jetties, piers, and bridges, and other types of surf fishing. A final chapter gives basic data on the popular surf-caught species and recommended tackle, baits, lures, and hook sizes for them.

Very well illustrated with both photographs and line drawings, the book provides good technical details on how to cast for both distance and accuracy. This excellent paperback handbook for the beginning coastal angler runs 200 pages and costs \$14.95.

A New Journal on Natural Hazards

The International Society for the Prevention and Mitigation of Natural Hazards has announced its new official scientific publication, entitled *Natural Hazards*, edited by M. I. El-Sabh of the University of Quebec at Rimouski, Can., G. Schneider, University of Stuttgart, F.R.G.; and Y. Tsuchiya, Kyoto University, Japan.

The journal is devoted to original research on the physical aspects of various natural or environmental problems, including many oceanic ones affecting scientists, mariners, and fishermen. Articles will discuss the physical aspects of various natural hazards, the statistics of forecasting catastrophic events, risk assessment, and the nature of precursors of natural and/or technological hazards.

Hazards of interest to be treated in the new journal included in such sections as: Atmospheric, Climatological, Oceanographic, Storm Surges, Tsunamis, Floods, Snow, Avalanches, Earthquakes, Volcanoes, Man-made Technological, Risk Assessment, and others. Analytical papers will be published, as well as those on statistical techniques, case studies, and some state-of-the-art reviews. Departments include related meetings reports, publications, a natural hazards chronicle, announcements, and indexes to names and keywords. Recent papers have been on seismic intensity zoning and earthquake risk mapping, estimation of tsunami hazards from volcanic activity, possible future Pacific tsunamis, and storm surges in the Arabian Gulf.

Published by Kluwer Academic Publishers, P.O. Box 358, Accord Station, Hingham, MA 02018-0358, the journal is available by individual subscription or membership at \$59.00 or by institutional subscription at \$127.50, c/o Dr. S. Venkatesch, Treasurer, Natural Hazards Society, Environmental Prediction Research Section, Atmospheric Environment Service, 4905 Dufferin Street, Downsview, Ontario, Canada M3H 5T4.

History and Sociology of the B.C. Fisheries

Publication of "Uncommon Property, the Fishing and Fish-Processing Industries in British Columbia," edited by Patricia Marchak, Neil Guppy, and John McMullan, formerly a Methuen Publications book, has been announced by the University of British Columbia Press, 6344 Memorial Road, Vancouver, BC, Canada V6T 1W5.

This is primarily a review of the social and economic structures of the Canada's west coast fishing industry, which includes considerable historical data and information for a broader perspective. And its insights into the political economy, sociology, and anthropology of commercial fishing makes it a much more different contribution than just a review or statistical analysis of such a fishery.

The volume sprang from a 3-year project by the University of British Columbia's Department of Anthropology and Sociology, in which the authors surveyed various fishing communities and groups including unions and Native Americans, as well as data on domestic and international markets, historical materials, the work of the Pearce Commission and much more.

The book is divided into three parts with part one devoted to the history of the industry, the role of the Federal and provincial governmental groups in it, raw fish markets and the processing sector, international markets and the British Columbia fisheries role in them.

Part 2 reviews and discusses the labor sector, with chapters on shore workers and fishermen and their working conditions, the history of their labor organ-

izations, the role of the Native Americans in the fisheries, and the United Fishermen and Allied Workers Union newspaper's published perspective on the BC. fisheries. Part 3 then discusses the fishing communities themselves, and the effects on them, their responses to declining catches, and their viability. In sum, the authors have provided a unique reference with broad insights into the fisheries of Canada's west coast. The 424-page book is paperbound and is sold by the UBC Press for \$21.95.

A Reference Guide to Crayfish Literature

Publication of "An Interdisciplinary Bibliography of Freshwater Crayfishes" by C. W. Hart, Jr., and Janice Clark has been announced by the Smithsonian Institution Press, 470 L'Enfant Plaza, Suite 7100, Washington, DC 20560. This is a very comprehensive listing of publications on these important crustaceans, with 12,481 listings and considerable updating since it was first published just a couple of years ago. Hart is a curator of Invertebrate Zoology at the Smithsonian's National Museum of Natural History and Clark is a Museum Specialist with the NMNH's Department of Invertebrate Zoology.

Crayfish, of course, are widely popular as a food item, at least in Europe and parts of the southern United States where they are also farmed. They are also much used by scientists; indeed, the largest single category of references in this book relate to neurophysiological work. Aquaculture papers also make up a large part of the listings, as might be expected. The breadth of the bibliography, however, makes it even more interesting. It includes citations ranging from motion pictures on the crayfish to poetry, yabbie farming in Australia, juvenile and adult literature references to the crayfish, musical items lauding it, postage stamps honoring the species, cookbooks, and more. Thus, this is a one-stop shopping guide to the literature on crayfish from Algicides to Zoogeography. Most important, of course, are the references to the vast and growing scientific literature; in just two years the

authors added nearly 1,300 references. Each citation presents the author(s), date, title of the reference, journal or publisher, and pagination. Also listed are alphanumeric subject codes, genera or species discussed (where known), and, for some, very brief explanatory notes. Each citation is numbered for index reference, and they are arranged alphabetically by author, then by date.

This very thorough, excellent 498-page guide to the crayfish literature is hardbound and available from the publisher for \$35.00.

Safety and Insurance for Fishing Vessels

Alaska Sea Grant Report 88-2 presents the "**Summary Proceedings of the National Workshop on Fishing Vessel Insurance and Safety,**" Brenda R. Melteff, coordinator. The volume contains the summaries of transcripts from the workshop which addressed commercial fishing vessel safety and interactions with vessel insurance. Discussions on fishing vessel insurance aspects, alternative insurance systems in operation, and developing alternative insurance systems were printed separately as Alaska Marine Advisory Bulletin 31, "Self-insurance programs for the commercial fishing industry."

The workshop provided a forum for exchange of a wide variety of ideas, opinions, and suggestions for improvement of fishing vessel safety and on the need for and ways to obtain insurance on fishing vessels, as well as on safety education for fishermen. Included are discussions of legislative and regulatory

aspects of the issues and alternative insurance systems (both currently operating and those then under development). Overviews of safety training programs are provided, as is a discussion of who is responsible for fishing safety. Also given are insurance brokers' views on insuring the fishing industry and national and international perspectives on fishing vessel insurance. The 173-page paperbound report is available from the Alaska Sea Grant Program, University of Alaska, Fairbanks, AK 99775-5040 and costs \$8.00.

Photographic ID of the Humpback Whales

Photo identification of individual humpback whales has grown in use and a guide for that is "**Humpback Whales of the Central and Eastern North Pacific,**" subtitled "A Catalog of Individual Identification Photographs," which is edited by Anjanette Perry, Joseph R. Mobley, Jr., C. Scott Baker, and Louis M. Herman. The authors are affiliated with the University of Hawaii's Kewalo Basin Marine Mammal Laboratory and the volume is published by the University's Sea Grant College Program, 1000 Pope Road, MSB 200, Honolulu, HI 96822.

While the catalog is the greatest part of the book, the text accompanying it provides good background and reference information on the distribution of humpback whales in the world's oceans, their status prior to protection from whaling, and the locations where the photographs for the catalog were made. A section on the use of natural markings tells how

scientists have used color and marking patterns to identify individual whales within a population.

Another section explains how the whales and their flukes are photographed and how comparisons between the photos are made. Also included is a summary of research findings on the species' natural history, including their seasonal migrations, estimates of abundance, and remarks on reproductive roles and social behavior. An appendix summarizes protective legislation for preventing whale harassment by vessels.

But it is the 158-page catalog of whale-tail photographs, 8 per page, provided by many marine mammal specialists, that forms the core of the book. The vast majority are from Hawaii (634) and Southeastern Alaska (464). Ninety-five photographs came from the western Gulf of Alaska, 36 from Mexican waters, and just 18 from California—the species' five major feeding or breeding areas. A total of 1,247 photographs are published, and a photograph of a particular whale appears only once within a region, but if photographed also in another region, that photo is printed there too. A total of 105 whales were resighted in more than one region, and a second Index II provides the resight numbers of these whales, and lists the regions where each one was sighted. The observation index (Index I) is organized by observation number, and when using the catalog, a specific photograph should first be referenced using that number. Cost of the plastic-bound, 233-page volume is \$15.00 and it will probably be used widely by both scientific and recreational watchers of the humpback whale.