

# National Shellfisheries Association

## QUARTERLY NEWSLETTER



WINTER 1992

LEWES, DELAWARE

### President's Message

I have two issues which I would like to discuss in this column: fundraising and participation in the organization. As always, we need money. The most obvious source of funds is dues. Our dues are still considerably lower than those of other societies and we are considering an increase in dues for 1993. This issue will be addressed during the EXCOM meeting in Orlando and your opinions, suggestions or opposition should be made clear prior to that time. While I am no more anxious than anyone else to be spending more money, I believe that our dues need to be increased if we are to survive financially. Our major expenses are publication costs associated with the JSR and our newsletter. Publication costs and postage continue to increase and page charges cover only a fraction of the total costs associated with the publications. Some revenues are gleaned from annual meetings but they are meager. Call one of the officers and let them know what you think.

We will have a new line of shellfish-oriented jewelry available during Aquaculture '92 in addition to our usual line of shirts, mugs and lapel pins. In addition, plans are underway for two other fundraisers. The first is an auction to be held during the 1993 annual meeting in Portland, Oregon. The American Society of Zoologists and other groups have been very successful with these auctions and have raised large amounts of money. Start planning now and be ready to donate something for the event. Anything related to the Association or shellfish will be welcome: prints, photos, shells, books, objets d'art or novelty items with a shellfish motif. We will also have a wine table so plan to bring a bottle or two of your favorite nectar. Bruce Barber and I will be organizing this event and we'll have more information later.

The second potential fundraiser is sale of reprints and books. Dick Petit (AMU) buys and sells published material dealing with molluscs. He is keen to receive any such materials and is especially interested in odd numbers or volumes of molluscan journals. This is the time to clear out your file drawers and send along those papers that you'll probably never look at again. I've started a box myself so send your contributions to me and I'll forward everything to Dick at once. Your donations are tax deductible so do it soon.

The other issue I want to address is active participation in the Association. Vic Kennedy and his committee have just completed the arduous task of assembling a slate of candidates for the upcoming elections. Scott Siddall's task was no easier last year and I'll have to assemble a slate next year. In short, it is very difficult to convince people to take an active role in the Association. NSA can only be as strong as its membership and we need you to participate. Last year I put out a special request for people interested in serving on committees. I had 2 responses. Everybody has a reason, the most common of which is, "I'm too busy". EVERYBODY IS BUSY, yet some still manage to find a bit of time for worthwhile activities. Please give some thought to offering your services. If you can't afford the time or are otherwise not inclined to run for office, please serve on a committee, offer to review a few manuscripts or sell a few sweatshirts. NSA needs you!!

Finally, some of you may have heard about the proposed new ethics rules, "Standards of Conduct for Employees of the Executive Branch" proposed by the federal government. These guidelines, if imposed, will severely limit the participation of scientists who are federal employees as officers in professional societies. Watch for future information regarding these guidelines. I strongly encourage you to support revision of these guidelines to allow full participation by federal employees. Our association, perhaps more than some others, relies heavily upon government employees for leadership and we cannot afford to have these scientists barred from participation. These regulations would have prevented active participation by Loosanoff and Galtsoff. The government should be encouraging ties between federal programs and academia, not driving them apart.

I'll be waiting to hear from you.

Sandy Shumway

### In This Issue.....

USDA Research Initiative Update  
Aquaculture '92 Meeting Information  
Bill Hargis Retires  
Book Reviews

By now you should have received Volume 10(2) of the Journal. There have been a few changes made, the most obvious of which is the reduced type size. This reduction results in a savings of approximately 22% in printed pages, e.g. a paper that previously filled 5 pages of text now only takes 4 pages. Final size of figures and tables has also been reduced. These changes will reduce our set-up charges and make for a more aesthetically pleasing product.

Unfortunately, we have had to increase page charges. The cost is now \$65 per page; however, since your paper will now occupy fewer pages you shouldn't feel the pinch! The cost of printing and postage continues to increase and this was an unavoidable decision.

I am still in need of photos suitable for the cover of JSR, reviewers and suggestions for possible review articles. Your comments are always welcome so let us know what you think.

**YARD SALE:** Copies of some back issues of the JSR are available at reduced rates. Limited time offer!! Order now.

Volumes 1(1), 1(2), 2(1), 2(2), 5(1), 5(2) and 6(1)  
(available for \$5 each)

Volumes 7,8,9 and 10 are available for \$10/issue.

Fill in your missing issues now. Check with your library to see if they need copies of back issues.

Sandy Shumway

### *Zebra Mussel Meeting*

The Second International Zebra Mussel Research Conference, hosted and organized by New York Sea Grant, was held November 18-22, 1991 at the Genesee Plaza Holiday Inn in Rochester, NY. The purposes of the conference were to facilitate the dissemination of important new information resulting from current research on the biology, impact and control of the zebra mussel, *Dreissena polymorpha*, in North American waters, and to enhance international cooperation and coordination in research on the zebra mussel. There were 60 oral and 9 poster presentations made covering a broad range of topics, including biology, physiology, behavior, population dynamics, ecosystem effects, fishery impacts, nutrient/contaminant cycles, predator/prey interactions, mechanisms and rate of spread, range extension, monitoring, biological control/mitigation, chemical control/mitigation, physical control/mitigation and exploitation and beneficial uses. Keynote presentations highlighting the European experience with *D. polymorpha* were given by Abraham bij de Vaate from the Netherlands and Michael Ludyanski from the Soviet Union. Attendance at the conference was well over 300, and all participants left with a much greater understanding of the magnitude of the challenge confronting us here in North America.

Bruce Barber

Dr. Bill Hargis, of the Virginia Institute of Marine Science, College of William and Mary, officially retired in December 1991 and was honored at a ceremony held December 6 at the Waterman's Hall. Dr. Hargis' research interests include pathobiology, parasitology, biological oceanography, fisheries oceanography, resource and environmental management, science administration and information management.

Born in Lebanon, Virginia, he received his A.B. and M.A. degrees from the University of Richmond in 1950 and 1951, respectively, and went on to pursue a Ph.D. at Florida State University where he finished in 1954. Prior to his academic studies he served in the U.S. Army Air Force (1943-1945) and continued his service in the USAF Enlisted Reserve (1945-1948) and USAF Officers Reserve (1948-1955).

Dr. Hargis served as Director of the Virginia Institute of Marine Science (formerly the Virginia Fisheries Laboratory) from 1959 to 1981. Under his direction, the Virginia Institute of Marine Science evolved from a small state fisheries laboratory into a major, nationally and internationally-recognized facility, with expanded programs in not only Fisheries Biology but also Chemical, Geological and Physical Oceanography and engineering areas. He is the author or co-author of over 135 research and scholarly publications and has written over 100 items (essays, reports, testimony statements and educational materials) on, for example, Marine Resources, Resource Management, Coastal Zone Affairs, Sea Grant Colleges and National Oceanography Programs.

While Bill has "officially" retired, he will continue to be in residence at VIMS as Professor Emeritus. Congratulations, Bill, on a marvelous career and the contributions you've made to the Marine Sciences. We wish you well in your retirement!

### *NSA Elections*

Vic Kennedy and the Elections Committee have been busy putting together the 1992 slate of candidates for NSA Executive Committee elected positions. Ballots (along with candidate biographies) will be mailed to all NSA members towards the end of January 1992. Please be sure to review the biographies, mark your ballot and return so that your vote may be counted.

### *Coming Attractions*

Look for the NSA Aquaculture '92 Program in the Spring 1992 issue of the Quarterly Newsletter. We'll also have a Research News article on Scallop Research in Panama, as well as our regular Canadian Connection and Recruits Corner columns. Please send any and all newsletter contributions to Karolyn Mueller Hansen at the address on the back cover of this issue. Deadline for submissions for the Spring issue is February 20, 1992.



## BOOK REVIEWS

### *Mollusc Diseases: Guide for the Shellfish Farmer.*

by Ralph A. Elston, Washington Sea Grant Program publication, 1990, 72 pages, US\$9.95.

All practitioners of aquatic animal husbandry eventually encounter problems associated with parasites and pathogens. Remedial action often involves a foray into the technical literature. For mollusc diseases this can be a daunting experience for an individual more familiar with optimum feeding schedules, water quality testing and physical plant maintenance. In *Mollusc Diseases: Guide for the Shellfish Farmer*, Ralph Elston has successfully provided a concise volume that can steer a shellfish farmer in a clear and precise manner through diagnosis and, where possible, treatment of the major diseases encountered. The text is easy to read and does not assume a significant prior knowledge by the reader.

The guide is arranged by species and disease, with each section including historical commentary, description of geographic range, environmental factors and mortality rates as observed in disease infected animals, diagnosis, and prevention information. Should the reader wish to obtain further information a list of related manuscripts in the technical literature is provided with each section. The organization is logical and generally well illustrated with line drawings and photomicrographs. The first chapter describes Notable Oyster Diseases: Perkinsiosis and Haplosporidian diseases of the American oyster; velar viral disease, Denman Island disease and Nocardiosis of Pacific oysters; Bonamiasis, Marteliasis, Hexamitiasis of the European oyster; and gill disease of the Portuguese oyster. The following chapters examine a wider taxonomic group of hosts, discuss such widespread problems as Hemic Neoplasia and Vibriosis, and a small number of less well documented diseases including Rickettsia and Chlamydia. The volume concludes with a short pictorial description of bivalve anatomy, basics of disease prevention in the hatchery, a guide to seeking professional advice including a listing of commercially available services, and a glossary of technical terms. Warnings concerning use of noxious chemicals in preservation of material for professional examination illustrate attention to possible limited training of the practical shellfish grower; however, this should not be considered as the only user group. Students entering the field of marine science might also use this volume as a useful summary reference or as a source for further reading.

The soft bound volume meets the high standards that I have come to expect in Washington Sea Grant publications, and the modest price is within just about everyone's budget. I recommend this volume to all shellfish growers and biologists with an interest in pathology of marine molluscs.

Roger Mann  
School of Marine Science  
Virginia Institute of Marine Science,  
College of William and Mary  
Gloucester Point, VA 23062

*Fish and Shellfish Quality Assessment: A Guide for Retailers and Restaurateurs* by Ian Dore, Van Reinhold, New York, 1991, 112 pages, \$49.95.

This short Guide is designed to provide information necessary to "judge the quality" of seafood products. It is a simple manual, presumably aimed at those with little experience in the seafood business. Topics covered include quality and freshness of product (both fresh and frozen), substitutions, tips on how to recognize tricks of the trade such as short weights, inferior size and quality and notes on how to test various products for conformation to standards. Much of the information is aimed at the finfish industry; however, a full chapter is devoted to quality and freshness of shellfish.

While the text is well-written and provides much useful information for retailers and restaurateurs, it falls short on quality of illustrations. It is clear from the preface that illustrations in this book were meant to provide readers with clear means of identifying problems associated with fish and shellfish products and thus more attention should have been given to providing clear unambiguous pictures. For example, Figures 1.5 and 1.6 are supposed to show tape and straps on boxes as the key features. These items are barely visible in the photos. Further, both are better illustrated in Figure 3.3 which would have sufficed. Figures 1.13, 6.8 and 6.9 are supposed to show poor product (fish fillets) as compared to "nice fillets". In these photos the poor product doesn't look any better or worse than the good product. Figure 2.1 supposedly compares an aging grouper with signs of fading and wrinkling with a fresh specimen. Again, both individuals appear very much the same. Figure 2.13 is of two fillets which are candled on a light table with a caption indicating that parasites can be seen. The parasites are not evident in the photo. Similarly, Figure 2.17 purports to show blood spots and belly membrane on a fillet. The belly membrane is visible, the blood spots are not so evident. Figures 1.12 and 6.8 are the same photo. Figures 3.10 and 3.11 appear to be the same fish and are purported to show freezer burn and rancidity respectively. How does one show rancidity (having the bad smell or taste of stale fats or oils) in a photograph? Coating defects are shown in both figures 3.13 and 3.14. Figures 1.3 and 3.2 occupy two-thirds of a page each and both show damaged cartons. Figures 5.25, 6.1 and 6.7 would all benefit from scale bars. These photos show three types of scallops, six sizes of shrimp and the difference between two package sizes respectively. Figure 5.13 is an out-of-focus photo of imitation crab. If it weren't for the label the picture would be completely unidentifiable. Figures 4.8 and 4.9 show the undersides of crabs for identification of males vs. females and might be better placed side by side rather than on separate pages. Figures 5.5 (Atlantic cod) and 5.7 (Atlantic pollock) are quite similar and do not clearly differentiate between the two species. Finally, Figure 5.35 (a color photo of swordfish and shark) appears to have the two species identities reversed. There are many color photos that provide useful comparisons, e.g. coloring of oyster liquids, markings of Florida and South American stone crab claws and differences between various species of snappers. Unfortunately, many of the black and white photos are not clearly focused and appear washed-out. In a book consisting of almost 30% pictorial material, more care

should have been taken to provide clear, sharp and informative photographs.

Much useful information can be gleaned from the text; however, readers of a text such as this would be more likely to rely on photographic evidence in assessing their individual situations and in this respect the book falls short.

Sandy Shumway  
Department of Marine Resources and  
Bigelow Laboratory for Ocean Sciences  
West Boothbay Harbor, ME 04575

#### *Two from Fishing News Books:*

*Scallop Farming* by D. Hardy  
247 pp. 147 illustrations £25.00

*Abalone Farming* by Ric Fallu  
202 pp. 23 illustrations £25.00

(both available from: Fishing News Books, Blackwell Scientific Publications Ltd., Osney Mead, Oxford OX2 0EL U.K.)

I think the strongest statement I can make about these books is that they are readable and usable. David Hardy is a British scallop farmer and has provided a text that not only describes the basic biology of scallops, but gives detailed information on how to get started in scallop culture. He covers everything from choice of sites to handling, processing and marketing including chapters on spat collections, methods of cultivation, 'getting under way' moorings and design and manufacture of equipment. Nothing is taken for granted and he even provides a working model by which newcomers to the field can gauge their prospects. There is a comprehensive listing of guidelines to improve profitability and a chapter on diversification, i.e., adding other species to the culture operation. There is a short list of references and a functional index. Illustrations are simple, understandable and used liberally.

*Abalone Farming* is also a comprehensive and well-written book. Ric Fallu is a practicing aquaculturist in Australia. Topics covered include basic biology and life cycle, exploitation, brood stock acquisition and conditioning, disease, stresses and induced spawning. Considerable attention is given to storage of sperm and eggs, artificial fertilization and genetic manipulation. Larval development, feeding of spat and grow-out (including nutrition, natural food and artificial food) are also covered in workable detail. Chapters on ranching, storage, transport and markets round out the book. A listing of over 150 papers for further reading is included. There are few illustrations.

Both authors have managed to provide concise coverage of a vast array of literature and experience. The books are solidly bound to withstand rigorous use and the covers are waterproof. These books will be of interest to anyone contemplating an aquaculture venture and could also be used as supplementary texts for aquaculture courses.

Philip Saugman  
Fishing News Books

## USDA Research Initiative Update

The last issue of this newsletter contained a condensed version of the speech given by Dr. John Patrick Jordan, Administrator of the U.S. Department of Agriculture Cooperative States Research Service (CSRS). The speech was given at the NSA meeting and Dr. Jordan asked the society for assistance in formulating an initiative designed to enhance shellfish production in the northeast.

Three of us, Dr. Mike Crosby, Dr. Stephen Kleinschuster and myself, met with Dr. Jordan in Washington on September 26 to explore more fully the concepts that were outlined in the speech and the summary published in the last newsletter. During our discussions, Dr. Jordan proposed that USDA initiate talks with a number of federal agencies to develop a coordinated program for enhancing shellfish resources. This interest on the part of USDA could become a major stimulus for programs that members of this society have been attempting for many years.

Many society members, including myself, are not attuned to USDA and its many programs. Dr. Jordan is the administrator of the CSRS which is the branch of USDA that is closely coordinated with individual state, regional and national research in renewable natural resources.

The effort on shellfish, if it is initiated by USDA, stems from their National Research Initiative for Research on Agriculture, Food and Environment. This is an ambitious program resulting from a National Academy of Sciences report concerning development of a competitive applied research program to address the broad spectrum of Agriculture policy. Dr. Jordan is aware of the many overlapping rules, regulations, jurisdiction and other bureaucratic impediments that must be considered in order that meaningful results can be accomplished with shellfish. The emphasis of the program, as currently being discussed, is on increasing shellfish in the Northeast through environmentally sound sustainable production practices. This concept implies that resources be rehabilitated and that their rehabilitation is in the best interests of all federal agencies (USDA, USEPA, USDOC, USDOJ, USDOH and others).

In his address to NSA, Dr. Jordan addressed shellfisheries in terms of an industry. While an "industry" may be a difficult concept for those of us who have faced the realities of shellfisheries, it is an important frame of reference if we are to achieve the twin goals of maintaining our environment and enhancing shellfish production. Dr. Jordan has proposed to do this through a strategic plan that would involve many of the agencies listed above. During our meeting, Dr. Jordan convinced us that CSRS has unique experience in pulling together diverse and often divisive governmental groups to work for a common cause.

We, as a society, have a major opportunity to assist Dr. Jordan with sound scientific advice. He has opened a door that may provide more funding for shellfish work and has given us a challenge. Can the society develop the leadership to take advantage of this unprecedented opportunity? Please review the summary of the speech which appeared in the last issue of the newsletter and send any comments and suggestions to Dr. John Kraeuter, Haskin Shellfish Research Laboratory, Rutgers University, Port Norris, NJ 08349.

John Kraeuter



## Canadian Connection

This is the second in a series of articles featuring the work of shellfish scientists in Canadian research institutions.

### *Shellfish Research at Memorial University in Newfoundland*

Many aspects of shellfish research are being carried out at the Ocean Sciences Centre, Memorial University of Newfoundland. Work is being conducted by at least five members of the faculty, three postdoctoral fellows, several students and research assistants. Funding is provided by provincial and federal sources including the Natural Sciences and Engineering Research Council (NSERC), the Ocean Production Enhancement Network (OPEN), one of Canada's national centres of excellence and the Centre for Fisheries Innovation (CFI). Dr. Pat Dabnet has maintained a hatchery for several years and has developed methods to spawn, set and rear the giant scallop, *Placopecten magellanicus*. Dr. Paul Lobel is working on toxicological aspects of the blue mussel, *Mytilus edulis*. Drs. Raymond Thompson, Dave Innes and Ross Jones are investigating genetic factors which regulate improved growth and condition in bivalves. Drs. Bruce MacDonald, Raymond Thompson and Evan Ward are addressing questions on the relationship between food resources, physiological activity and bivalve productivity. This includes studies on feeding behaviour using natural seston, laboratory/hatchery studies using mixed diets, stimulation of feeding activity using microalgal ectocrines, and direct analysis of feeding structures and mechanisms using endoscopic observations (in collaboration with Dr. Peter Beninger, Univ. of Moncton and Dr. Roger Newell, Univ. of Maryland). Newcomer and postdoctoral fellow Jonathan Gardner will be working with Drs. MacDonald and Thompson once he is fully acclimated to the Newfie weather.

### *The Biological Station, St. Andrews, New Brunswick*

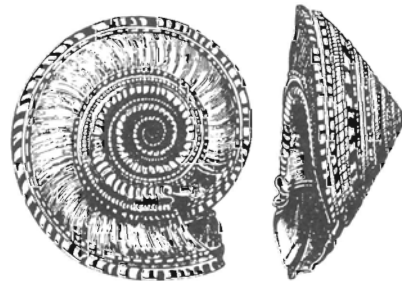
The St. Andrews Biological Station is Canada's oldest fisheries laboratory (established in 1898) and is located in the Passamaquoddy Bay area near the mouth of the Bay of Fundy. It is a federal research laboratory of the Department of Fisheries and Oceans and generally deals with fisheries research on stocks in the Bay of Fundy region.

The Invertebrate Aquaculture program, headed by Dr. Dave Aiken, conducts biological and engineering research to develop the aquaculture potential of invertebrate species such as lobsters and scallops. Current work involves broodstock development, larval and juvenile biology under culture conditions, development of grow-out systems for scallops and systems and strategies for the lobster storage industry. Susan Waddy is conducting fisheries research on the American lobster with emphasis on growth, development, reproduction and behaviour. Current work focuses on how environmental factors influence biological cycles and recruitment success and includes studies on molt synchrony and vertical migration in larval lobsters and on egg production, maturation, migration and behaviour in adult lobsters.

Dr Shawn Robinson and Jim Martin are working on reproductive and recruitment aspects in the sea scallop, *Placopecten magellanicus*, and the soft-shell clam, *Mya arenaria*. Current work involves the distribution and settlement of scallop spat in relation to oceanographic currents and monitoring and enhancement of juvenile recruitment in soft-shell clams. They are also becoming involved in fisheries research on the green sea urchin, *Stongylocentrotus droebachiensis*, as that fishery becomes viable. Dr. Peter Lawton and David Robichaud are investigating the distribution and population ecology of lobsters in the Bay of Fundy. Their other interests center on crustacean behaviour, including feeding, breeding aggregations and movement patterns. Dr. David Wildish is currently working on the effects of flow on mollusc suspension feeding at different velocities in a flume system. Jennifer Martin is monitoring phytoplankton bloom dynamics in southwestern New Brunswick.

Jay Parsons is a Ph.D. student (Univ of Guelph) examining the temporal patterns of reproduction and larval and spat abundance of sea scallops with the aim of trying to discern the determinant of year-class strength. He is also involved in applied studies on scallop aquaculture. Cyr Couturier is a Ph.D. student (Dalhousie Univ.) focusing on the environmental controls of sea scallop reproduction with emphasis on the effects of temperature, photoperiod and nutrition on gametogenesis (particularly vitellogenesis) and spawning.

Contributions to this column should be submitted to Shawn Robinson or Peter Lawton, The biological Station, St. Andrews, New Brunswick, E0G 2X0, Canada. Phone: (506) 529-8854, FAX (506) 529-4274. Next Deadline: January 30, 1992.



## Site Selection, 1994 NSA Meeting

The 1994 NSA Meeting will be held at an as yet undisclosed location on the East Coast in the Mid-Atlantic area. We are soliciting your help in compiling a list of potential meeting sites so please send us your suggestions! What is important to you, our members, as far as a meeting site is concerned: ease of access from airports, trains, etc.? registration costs? cultural activities? Do you prefer a smaller town and city or a larger metropolitan area? Some suggestions for potential sites in 1994 have been Philadelphia, PA, Atlantic City or Cape May, NJ and Charleston, SC. What are your suggestions? Please take a moment and write your ideas down and send them to Carolyn Mueller Hansen, College of Marine Studies, University of Delaware, Lewes, DE 19958. Suggestions will be forwarded to the Site Selection committee for evaluation. Thanks.

## Meetings/Conferences

**Shellfish Growers Workshop**, organized by Washington Sea Grant Marine Advisory Service, February 13-14, 1992, Tyee Hotel, Tumwater, WA. Workshop will cover various shellfish species and the methods used to grow them in the Pacific Northwest, Europe, China, Tasmania and New Zealand. Advance registration \$25.00 (by February 1, 1992), late registration \$35.00. Contact Terry Nosh, Washington Sea Grant Program, University of Washington, 3716 Brooklyn Ave. NE, Seattle, WA 98105. Phone: (206) 543-6600 or FAX (206) 685-0380.

**AQUACULTURE '92**, Triennial meeting of the National Shellfisheries Association, World Aquaculture Society and the American Fisheries Society - Fish Culture Section, May 21-25, 1992, Marriott Orlando World Center, Orlando, Florida. Please see additional meeting information on page 7 of this newsletter.

**Aquaculture Association of Canada, 9th Annual meeting**, May 31-June 3, 1992, University of British Columbia, Vancouver, BC. Program theme: "The Science and Technology of Aquaculture in Cold Water Environments". Titles were due January 1, 1992, abstracts are due February 15, 1992. For program information contact: Blythe Chang, Dept. Fisheries and Oceans, Biological Station, St. Andrews, NB Canada E0G 2X0 (Phone: (506) 529-8854 or FAX: (506) 529-4274).

**World Congress on Cell and Tissue Culture**, June 20-25, 1992, Washington, DC. The Invertebrate Division of the Tissue Culture Association and the Society for Invertebrate Pathology will co-sponsor workshops, paper and poster sessions. Topics for sessions include: Invertebrate Cellular Immunity, Invertebrate Neoplasia - Initiation and Promotion Mechanisms and an evening session on Marine and Animal Cell, Tissue and Organ Culture - Applications to Biotechnology.

Abstract deadline, January 10, 1992. For information on the mentioned sessions please contact: Aaron Rosenfield, NOAA/NMFS, Oxford Laboratory, 904 S. Morris Street, Oxford, MD 21654, Phone (301) 226-5193. For meeting information please contact: 1992 World Congress on Cell and Tissue culture, 8815 Centre Park, Suite 210, Columbia, MD 21045 USA, Phone (301) 992-0946.

## Publications

*Scallop Biology and Culture*, edited by S.E. Shumway and P.A. Sandifer, 1991, 357 pages, soft cover. Volume includes 47 papers selected from the 7th International Pectinid Workshop held April 1989 in Portland, Maine. Topics covered include larval biology, reproduction, age and growth, genetics, population biology, parasitism and predation, fisheries and management, aquaculture and feeding and response to currents. Published by World Aquaculture Society and available for US\$40.00 (non-WAS members) or US\$36.00 (WAS members) plus US\$5.00 per volume shipping and handling. Mail orders with payment to:

WAS Books  
143 J.M. Parker Coliseum  
Louisiana State University  
Baton Rouge, LA 70803 USA.

## Employment

**Postdoctoral Fellowship:** available for an individual with training and interest in the physiology of molluscs (especially zebra mussels). Ph.D. (or pending) in malacology, physiology, biochemistry or related areas. Send CV, statement of research experience and interests and the names of three references to: Dr. Robert L. Preston, Department of Biological Sciences, Illinois State University, Normal, IL 61761. Phone (309) 438-7933, FAX (309) 438-3722, or via E-Mail (Bitnet): RLPRESTO@ILSTU.

## Recruits Corner

With Aquaculture '92 just around the corner, many students are beginning to prepare talks and posters for their respective sessions. In order to provide audiences with presentations which are professional as well as informative, Recruits should consider the criteria on which senior members of NSA judge student presentations when determining winners of the Thurlow C. Nelson Award. Oral papers are critiqued primarily on scientific content, originality and presentation (verbal and visual components). In addition, handling of questions and adherence to schedule are both taken into consideration. The evaluation of posters differs only in that evaluation of the presentation category is based on text and figures.

Maureen Krause is organizing an informal panel discussion, including a question and answer session, to be held during the meeting. This forum is intended to provide information to students concerning careers in science on a professional level, in industry as well as the academic realm. Carter Newell of Great Eastern Mussel Farm will discuss employment and opportunities in private industry, Henry Parker of the USDA, will describe its role and that of the Northeastern Regional Aquaculture Center with emphasis on funding opportunities, Sandy Shumway will provide information on the publication process and paper submissions and a representative from the National Science Foundation will be available to provide information and answer questions concerning sources of funding for postdoctorates.

I still have not received the recruit's information request form published in the Summer 1991 Newsletter from most of our student members. This information is essential if we are to compile a directory of NSA student and postdoctoral members and their academic affiliations and interests. In addition, we are still looking for a "Recruits" logo and I encourage all students to draw one and send it to me: Greg Shatkin, 327 Hitchner Hall, University of Maine, Orono, ME 04469. Thanks.

Greg Shatkin

## Aquaculture '92 Meeting Information

NSA members should have received meeting and registration information from the Crest Organization, organizers of this year's meeting. The pamphlet is white with teal-green printing and fluorescent orange highlights - just in case you misplaced it, here is some pertinent information: registration is MUCH CHEAPER if you register by February 15, 1992, so please do so (see rate schedule below)! The meeting begins with on-site registration and Reception on Thursday, May 21, 1992 and concludes by 5:00 PM on Monday, May 25, 1992. American Airlines is offering special rates for meeting attendees - please call American at (800)433-1790 during the hours of 8:00 AM to 8:00 PM EST and refer to Star Number S01524J. Discount airfares are available between May 18-28, 1992. Room reservations should be made directly with the Marriott Orlando World Center (site of Aquaculture '92) and must be received no later than April 21, 1992. Please reserve early - the closest neighboring hotel is NOT within easy walking distance. Rooms are \$106 for single occupancy, \$118 for double occupancy and \$107 for student triple occupancy (limited space for student rooms). Call the Marriott at (407) 239-4200 to make your reservations (or mail the housing form you received).

To request additional meeting registration forms please contact: Aquaculture '92, c/o The Crest Organization, 940 Emmett Ave., Suite #14, Belmont, CA 94002 Phone: (800) 222-8882 (outside CA), (415) 595-2704 (in CA).

<u>Registration Rates</u>	<u>before 2/15/92</u>	<u>2/16/92-4/20/92</u>	<u>after 4/20/92</u>
Member*	\$230	\$330	\$450
Non-member*	330	430	500
Student	115	140	175
Spouse	175	175	175

\* member and non-member registration includes Sat/Sun/Mon lunch package

BE SURE TO REGISTER EARLY!!!

## HOW TO JOIN

Fill out and mail a copy of the application blank below. The dues are US\$33.00 per year (\$22.00 for students) and that includes the *Journal* and Newsletter!

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### NATIONAL SHELLFISHERIES ASSOCIATION - APPLICATION FOR MEMBERSHIP (NEW MEMBERS ONLY)

NAME \_\_\_\_\_ For calendar year \_\_\_\_\_ Date \_\_\_\_\_

Mailing Address \_\_\_\_\_

Institutional Affiliation, if any: \_\_\_\_\_

Shellfisheries Interests: \_\_\_\_\_

Regular or Student membership: \_\_\_\_\_

Student members only - Advisor's signature **REQUIRED** \_\_\_\_\_

Make checks (*MUST* be drawn on a US bank) or international postal money order for \$33.00 (\$22.00 for students with advisor's signature) payable to the National Shellfisheries Association and send to Dr. Stephen Tettelbach, Division of Natural Sciences, Southampton College, Long Island University, Southampton, New York 11968 USA.



Dr. Karolyn Mueller Hansen  
NSA Quarterly Newsletter  
College of Marine Studies  
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Lewes, DE 19958



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