

National Shellfisheries Association

QUARTERLY NEWSLETTER

WINTER 1995



SOUTHAMPTON, NEW YORK

President's Message

Upon leaving office, I would like to express my gratitude to everyone who served the organization in the last year. Aquaculture '95 promises to be a professional and financial success due to efforts of many, but particularly, Sandy Shumway who represented NSA on the Steering Committee and Steve Tettelbach who helped organize the program. Sandy continues to improve the quality, timeliness, and visibility of the *Journal*. Karolyn Mueller Hansen managed pregnancy, childbirth and a successful transfer of the Newsletter to the equally capable hands of Maureen Krause. Keith Benson, our new Historian, has been a welcome addition to NSA; he is assisting Dot Leonard with the Shellfish Masters Roundtable to be held in conjunction with the annual meeting. George Abbe prepared an excellent fiscal document which serves as a blueprint for our financial future. Rick DeVoe served as Secretary with his typical energy, competence and efficiency, and Evan Ward did an excellent job as Chair of the Endowment/Student Awards Committee. John Ewart continued his service to our student members by organizing an employment service for the annual meeting. Carolyn Friedman served as Chair of the Membership Committee and Susan Ford presided over the Awards Committee. Neil Bourne agreed to spearhead efforts to obtain biographies of Wallace Award recipients and Honored Life Members. Carter Newell continues to assist in strengthening NSA ties with industry, Susan Bower drafted numerous NSA resolutions, and John Kraeuter and Mike Castagna provided sage advice and helpful suggestions. Roger Newell is organizing the 1996 meeting which will be held in Baltimore, Maryland. This has been a year of transition for the office of the Treasurer; Steve Tettelbach transferred duties to Christine Hodgson who has taken over what everyone realizes is the most important job in the organization. I have undoubtedly left out many others who have assisted the society; I am truly appreciative of your contributions.

I prepare to leave the organization in the capable hands of Bill Fisher, who has also been busy organizing the NSA meeting for 1997. As Past-President I will serve as Chair

of the Elections Committee and I ask you to consider becoming more involved in your organization by running for office. Our future depends upon the time the effort contributed by the members. I truly appreciate being given the opportunity to serve you.

Tom Soniat

GOING ONCE! GOING TWICE! . . .

The NSA AUCTION to benefit the student endowment fund has become a fun-filled tradition at annual meetings, but in order for it to be a success, we depend on YOU to donate items for sale. This year our stocks are low, so please, PLEASE bring your home brews and vintages and shellfish-related items such as books, jewelry, clothing, and knick knacks to Aquaculture '95 or send them to Sandy Shumway before January 21st.

See you in San Diego!

SOLD!

NSA 1996 Annual Meeting

Roger Newell reports that, for a person who normally does not possess any calendar, actually being the proud owner of a 1996 calendar since November of 1994 is highly unusual.

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The reason for this phenomenon is that Roger has just finished negotiations with the Holiday Inn in downtown Baltimore where the 1996 annual meeting will be held from Sunday, April 14 through Thursday, April 18. The President's Reception will be on Sunday at the nearby National Aquarium in Baltimore, which has very generously provided access to all aquarium exhibits in the building for the evening. The annual general meeting and awards presentation will follow a Wednesday evening dinner at the hotel. Regulars will be pleased to hear that Sandy Shumway has agreed to provide her infamous book/clothes/striptease auction in aid of the student endowment fund as a cabaret act after the speeches are over! The other 3 nights are free, but Dan Kreeger and Evan Ward are compiling a list of special hot-spots in Baltimore for the night owls and "dancin' fools" amongst us. Please mark these dates metaphorically if you do not own a 1996 calendar yet! It is also not too soon to be planning special sessions for the meeting.

Recent Metamorphoses

Reports are that the ballots for the recent NSA election were delivered to the post office by **Karolyn Mueller-Hansen** on her way to the hospital, but that's not all she delivered: Congratulations to Karolyn on the birth of a healthy baby boy, Benjamin Charles. Talk about dedication!

Dr. Evan Ward is now at the Department of Biological Sciences, Salisbury State University, Salisbury, Maryland 21801-6837.

Brian Beal, University of Maine - Orono, has successfully completed his Ph.D. dissertation entitled "Biotic and abiotic factors influencing growth and survival of wild and cultured soft-shell clams, *Mya arenaria* L., in eastern Maine" (advisor Bob Hawes).

Kevin Stokesbury, University of Laval, has also completed his Ph.D. dissertation, entitled "Influence des facteurs physiques et biologiques sur la distribution spatiale du petoncle geant, *Placopecten magellanicus*". Kevin's new address is: Center for Marine Science Research, UNCW, 7205 Wrightsville Ave, Wilmington, NC 28403.

Congratulations as well to **John Bonardelli**, University of Laval, for completion of his Ph.D. dissertation, "Relation entre la ponte chez le petoncle geant, *Placopecten magellanicus*, et les facteurs environnementaux".

Bob Hillman will be retiring from Batelle Ocean Sciences this year. We wish you well - and keep running!

In memoriam: **Paul P. Yevich** passed away from a heart attack on December 3, 1994 in Peace Dale, Rhode Island. He was 70 years old. His biography will appear in Volume 14(1) of the *JSR*.

Do you have an item for this column? Please send it to Jay Parsons at: Biological Station, St. Andrews, N.B. E0G 2X0, or email to j_parsons@bionet.bio.dfo.ca

Recruits Corner

Students have the opportunity to play important roles in the Aquaculture '95 meeting next month in San Diego. Join in and help represent NSA at the NSA sales booth. All proceeds from the NSA sales booth go to the Student Endowment fund. This fund provides meeting registration and housing costs for several students every year. There is also a need for students to run the projectors in the sessions. Recruits taking advantage of this opportunity will earn discounts on registration fees (this is a good deal). Time slots are filling up fast, so call or email Margaret Dekshenieks at (804) 683-3234 or deks@ccpo.odu.edu to reserve your spot!

Speaking of good deals, the recruits will be raffling off "Scallops: Biology Ecology and Aquaculture" (Elsevier) and a free student membership. Make sure you buy your tickets at the meeting. Finally, don't forget the student reception and the 3rd annual NSA auction planned for Thursday, February 2. Rummage through your advisor's office today and find something good to donate to the auction!

Margaret Dekshenieks



Student Research Grant

The Western Society of Malacologists, in conjunction with the Santa Barbara Malacological Society and the Northern California Malacozoological Club, are offering a student research grant in malacology. These grants of up to \$1,000 are intended to support research in malacology including, but not limited to, field and laboratory equipment, chemicals, photographic supplies, computer time and supplies, microscope usage fees, and reasonable research travel costs. Full-time undergraduates and graduate students from ALL COUNTRIES are encouraged to apply. The applicant's research must focus primarily on the systematics, biology, ecology, physiology, biochemistry, or paleontology of marine, terrestrial or freshwater molluscs. Application deadline is May 1, 1995, and awards will be announced by July 31, 1995. For further information or an application please send a self-addressed, stamped (US residents only) envelope to:

Malacology Grant
Department of Invertebrate Zoology
Santa Barbara Museum of Natural History
2559 Puesta del Sol Road
Santa Barbara, CA 93105 USA
FAX: (805) 569-3170
email: inverts@sbnmh.rain.org

Employment Service at Aquaculture '95

The National Shellfisheries Association will participate in the employment service at Aquaculture '95. Several job categories will be listed including: mollusks, shrimp, fish, graduate assistantships/post-docs, student internships, consulting and miscellaneous. Assistance will be provided at the meeting to answer questions, help employers set up interviews, etc.

To have your job announcement included in the employment service, send four copies of each position announcement on your company or institution letterhead to the address listed below. Students and other NSA members seeking employment should send four copies of a one-page resume which summarizes your professional interests and goals, educational background and previous work experience.

The deadline for submitting job announcements and resumes for posting at the annual meeting is Monday, January 16, 1995. Send all job listings and inquiries to: Dr. Thomas M. Soniat, Department of Biological Sciences, Nicholls State University, Thibodaux, LA 70310

Results from the Industry Committee

Survey:

The message is loud and clear, but where do we go from here?

Based on the 48 responses from NSA's recently completed survey of industry members, there is overwhelming support for an official NSA liaison between industry priorities and the research agendas of NSA's scientist members. Interested in learning how to improve the "bottom line", many of the industry members attend meetings to network with researchers, learn new techniques and learn more about shellfish aquaculture. While industry members only attend about 22% of the meetings on average, many would travel great distances when sessions address more applied production problems. The ISSC and regulatory problems also surfaced as issues of top priority, and the vast majority of respondents rated water quality as very important topic.

The typical industry member was involved in aquaculture, in the hatchery, nursery, grow-out or wholesale business, liked winter meetings, thought the fees were fair, had read 4.2 issues of the JSR, liked the newsletter (wanted an industry section), and had a wide variety of research priorities (i.e. nursery, grow-out, disease, technology development, predation). Over 95% of the respondents would join an NSA industry committee, thought technology transfer was an important aspect of NSA, wanted NSA to play a bigger role in the ISSC (as an official member), and wanted to be kept up to date on new developments at the ISSC. A plethora of written

recommendations came forth from the survey in such subject areas as increasing membership; improving the meetings; and improving the newsletter (one suggested nude photos in the newsletter - how about a nudibranch?). The respondents suggested functions for the industry committee, prioritized areas which needed research and listed the factors most important to their business. We certainly thank them for their thoughtful responses to the survey and their willingness to help prepare sessions for future meetings and help with a NSA newsletter column (next issue?).

A small minority were despondent (one wouldn't attend a meeting unless coerced with a loaded shotgun or by slowed rotation of the earth), and over half thought scientists were somewhat out of touch with industry needs. Interestingly, a majority of east coast industry members thought researchers were out of touch with industry needs, whereas those from the northwest U.S. thought that they were in touch. What lessons do you have for us, Ken Chew?

The message is clear - we need to act on the survey results in order to expand our industry membership base and maintain the relevance of our research in the future. It will be up to some committed individuals to pitch in and get the industry committee off the ground, first by acting on the survey recommendations in future years. Hopefully, its activities will become as popular as the NSA student auction (where anything can happen), and will benefit all the shellfish growers and water quality enthusiasts worldwide.

Carter Newell, Member-at-Large

Aquaculture Resource Guide

A new guide containing contacts and publications in aquaculture is available at no cost from the Aquaculture Information Center of the National Aquaculture Library. This 157 page guide features the names, addresses, phone numbers and fax numbers of more than 500 individuals and publications dealing with aquaculture.

To order, contact the Aquaculture Information Center at 10201 Baltimore Boulevard, Beltsville, MD 20705, phone: (301) 504-5558, FAX: (301) 504-6409.

Mariculture Merger

Atlantic Littleneck Clam Farms, Inc. has merged with Cultivos Marinos Internacionales S.A. to form SeaPerfect Plc effective November 8, 1994. Sea Perfect produces Chilean northern scallops, *Argopecten purpuratus*, in Chile and Atlantic hard clams, *Mercenaria mercenaria* in South Carolina. The new company is headquartered in London, England and its shares will be traded on the London Stock Exchange.

Upcoming Meetings

Northeast Conference on Non-Indigenous Aquatic Species: January 25, 1995, Connecticut, USA. Sponsored by the Sea Grant Marine Advisory Program, Connecticut Sea Grant College Program and the Connecticut Institute of Water Resources, University of Connecticut. Exact location will be announced shortly. For further details, contact Nancy Balcom, Sea Grant Marine Advisory Program, 1084 Shennecossett Road, Groton, CT 06340-6097. Phone: (203)445-8664; FAX: (203)445-1049.

Texas Aquaculture Association's 25th Convention & Exposition: February 8-10, 1995, Austin, Texas, USA. For information, contact Carol Moore. Phone: (512)474-4600; FAX: (512)345-7869.

15th Milford Aquaculture Seminar: February 21-23, 1995, Milford, Connecticut, USA. Annual meeting of aquaculturists from the northeast to exchange technical information on finfish and shellfish culture. Contact Walter Blogoslawski. Phone: (203)783-4235 or FAX: (203)783-4217 for more information.

International Boston Seafood Show: March 14-16, 1995, Boston, Massachusetts, USA. Please contact Brian Perkins. Phone: (204)774-0076; FAX: (204)772-5059.

Discoveries From the Sea: Current and Future Uses of Chitin: April 17-19, 1995, Jane S. McKimmon Center for Extension and Continuing Education, North Carolina State University, Raleigh, North Carolina, USA. A scientific workshop on the biomedical, nutrition/dietary and food uses of chitin, sponsored by the International Commission on Natural Health Products and the American Chitoscience Society. For more information contact ICNHP's Sue Taylor or Wendy Alpine at (404)252-3663.

10th International Pectinid Workshop: April 26 - May 2, 1995, Cork, Ireland. For details contact Dr. Gavin Burnell, Dept. of Zoology, University College Cork, Lee Maltings, Prospect Row, Cork, Ireland. Phone: 353 21 276871 (ext. 4745), FAX: 353 21 270562.

New Book

The papers given at the symposium "Molecular Techniques and Molluscan Phylogeny" held in Siena at the 1992 Unitas meeting have been published as Supplement 2 of *The Nautilus*, issued with volume 108. These papers are available as a separate volume from *The Nautilus*, P.O. Box 7279, Silver Spring, MD 20907, USA, at a price of \$40, postpaid. A table of contents of this book may be electronically requested from Simon Tillier at tillier@cimrs1.mnhn.fr.

Aquaculture Europe '95: April 26 - May 2, 1995, Trondheim, Norway. Conference and Trade Show organized by the European Aquaculture Society and the Nor-Fishing Foundation. For further information contact: European Aquaculture Society, Aquaculture Europe '95, Coupure Rechts 168, B-9000 Ghent, Belgium. Phone: 32-9-2237722; FAX: 32-9-2237604.

Pearls '95 International Conference & Exposition: May 13-18, 1995, Maui, Wailea, Hawaii, USA. International forum for the pearl industry. For an idea of the scope of this meeting, see the abstracts from Pearls '94 which appeared in the *Journal of Shellfish Research*, vol. 13(1). For information contact Crest International. Phone: (415)595-2625; FAX: (415)595-3379.

Aquaculture Canada '95: June 4-7, 1995, Coast Bastion Inn, Nanaimo, BC, Canada. 12th annual meeting and trade show of the Aquaculture Association of Canada. This year's theme is "Aquaculture and the Environment: an essential partnership." For information write to Aquaculture '95, Unit 537 9-B, 150 Terminal Ave., Nanaimo, B.C. V9S 5T8, fax (604)753-6329, or call (506)529-4766.

Sustainable Aquaculture '95: June 11-14, 1995, Honolulu, Hawaii. International symposium and exhibition. If interested, please contact: PACON International, P.O. Box 11568, Honolulu, Hawaii 96828. Phone: (808)956-6163; FAX: (808)956-2580; email: saxena@wiliki.eng.hawaii.edu

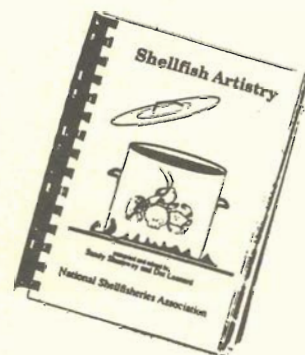
International Society for Invertebrate Reproduction, 7th International Congress on Invertebrate Reproduction: August 5-11, 1995, Santa Cruz, California, USA. An international forum for all those interested in any aspect of the reproductive biology of invertebrates. For more information, contact John Pearse. Phone: (408)459-2455; FAX: (408)459-4882; email: pearse@biology.ucsc.edu or Hans Laufer. Phone: (203)486-4117; FAX: (203)486-4331. Deadline for registration and receipt of abstracts is March 31, 1995.

Larvi '95: September 5-8, 1995, University of Ghent, Belgium. Fish and shellfish larviculture symposium. For preregistration form and further information please contact: Larvi '95 Conference Secretariat, Laboratory of Aquaculture and Artemia Reference Center, University of Ghent, Rozer 44, B-9000 Gent, Belgium. Phone: 32-9-2643754; FAX: 32-9-2644193, email: magda.vanhooren@rug.ac.be

Estuarine Research Federation: November 12-16, 1995, Corpus Christi, Texas. This year's theme is "Estuaries: Bridges from Watersheds to Coastal Seas." The absolute deadline for receipt of abstracts is June 15, 1995. Email for more information: ERF95@utmsi.zo.utexas.edu or call (512)985-9266.



SUPPORT THE NSA STUDENT ENDOWMENT FUND!



NSA Hats, Coffee Mugs, and Cookbooks will be on sale at Aquaculture '95!

**Pewter and gold lapel pins featuring your favorite organisms also for sale!
(scallops, mussels, oysters, shrimp, blue crabs, freshwater and saltwater fish, and more!)**

NSA Hats (great colors!)	\$10.00	Pewter pins	\$5.00
NSA Coffee Mugs	\$5.00	Gold pins	\$10.00
NSA Cookbooks	\$10.00	Mini pins	\$3.00

THEY MAKE GREAT GIFTS!

Remember, all sales benefit the student members of NSA. If you're not attending Aquaculture '95 and would like to order any of the above items, please send a list of items requested, your complete mailing address, and a check, money order, or VISA number payable to **National Shellfisheries Association** to Sandy Shumway, Division of Natural Sciences, Southampton College, LIU, Southampton, N.Y. 11968.

How to Join the National Shellfisheries Association

Fill out and mail a copy of the application blank below. The dues are US \$45.00 per year (\$25.00 for students). Membership entitles you to receive *The Journal of Shellfish Research* and the *NSA Quarterly Newsletter*!

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 \$45.00 (\$25.00 for students with advisor's signature) payable to the National Shellfisheries Association and send to Ms. Christine Hodgson, BC Ministry of Agriculture and Fisheries, 2500 Cliffe Avenue, Courtenay, BC V9R 5M6 Canada. We also accept VISA!

**NSA MEMBERS' 30% DISCOUNT PROGRAM FOR ELSEVIER'S
"DEVELOPMENTS IN AQUACULTURE AND FISHERIES SCIENCE" SERIES**

Vol.	Author	Title	List Price	Member Price
2	Korringa	<i>Farming the Cupped Oysters of the Genus <u>Crassostrea</u></i> (1976)	111.25	77.90
3	Korringa	<i>Farming the Flat Oysters of the Genus <u>Ostrea</u></i> (1976)	111.25	77.90
7	Boyd	<i>Water Quality Management for Pond Fish Culture</i> (1982)	143.75	100.60
13	Allen <u>et al.</u>	<i>Bioeconomics of Aquaculture</i> (1984)	178.25	124.80
16	Bird & Benson	<i>Seaweed Cultivation for Renewable Resources</i> (1987)	175.50	122.85
17	Sindermann & Lightner	<i>Disease Diagnosis and Control in North American Marine Aquaculture</i> (1988)	150.75	105.50
18	Saila <u>et al.</u>	<i>BASIC Fishery Science Programs</i> (1988)	103.75	72.60
19	Manzi & Castagna	<i>Clam Mariculture in North America</i> (1989)	160.75	112.50
20	Huguenin & Colt	<i>Design and Operating Guide for Aquaculture Seawater Systems</i> (1989)	120.75	84.50
21	Shumway	<i>Scallops: Biology, Ecology and Aquaculture</i> (1991)	194.75	136.30
22	DeLoach <u>et al.</u>	<i>Frontiers of Shrimp Research</i> (1991)	116.50	81.50
23	Fast & Lester	<i>Marine Shrimp Culture: Principles and Practice</i> (1991)	173.00	121.10
24	Ikenoue	<i>Modern Methods of Aquaculture in Japan</i> (1992)	154.75	108.30
25	Gosling	<i>The Mussel <u>Mytilus</u>: Ecology, Physiology, Genetics and Culture</i> (1992)	148.25	103.80
27	Timmons & Losordo	<i>Aquaculture Water Reuse Systems</i>	167.75	117.40

OTHER ELSEVIER BOOKS OF INTEREST:

Chapman	<i>Wet Coastal Ecosystems</i> (1977)	164.75	115.30
Gjedrem	<i>Genetics in Aquaculture III</i> (1990)	150.00	105.00
Gall & Chen	<i>Genetics in Aquaculture IV</i> (1993)	162.00	113.40
Ketchum	<i>Estuaries and Enclosed Seas</i> (1983)	334.25	234.00
Marx	<i>Elsevier's Dictionary of Aquaculture</i> (1991)	162.00	113.40
Nash	<i>Production of Aquatic Animals</i> (1991)	175.50	122.80
Negedly	<i>Elsevier's Dictionary of Fishery, Processing, Fish and Shellfish Names of the World</i> (1990)	238.75	167.10
Smayda & Shimizu	<i>Toxic Phytoplankton Blooms in the Sea (5th International Conference, Newport, RI)</i> (1993)	220.75	154.50
Hochachka & Mommsen	<i>Biochemistry and Molecular Biology of Fishes:</i>		
	<i>Vol. 1 - Phylogenetic and Biochemical Perspectives</i> (1991)	184.74	129.30
	<i>Vol. 2 - Molecular Biology Frontiers</i> (1993)	232.50	162.75
	<i>Vol. 3 - Analytical Techniques</i> (1994) (hardbound)	225.00	158.00
	(paperback)	65.00	45.50

All orders should be sent to: Ms. Christine Hodgson, BC Ministry of Agriculture and Fisheries, 2500 Cliffe Avenue, Courtenay, BC, V9R 5M6 Canada. Please specify: your name and FULL SHIPPING ADDRESS, the cost and quantity of titles you wish to order (be sure to compute your total order using the member prices!), and make check payable to: NSA (checks MUST be drawn on a US bank). We also accept VISA. Orders will be forwarded to Elsevier and shipped directly from their offices. No additional postage is required. Please allow at least 6 - 8 weeks for your order to arrive.

Book Review

The Oosterschelde Estuary: a case-study of a changing ecosystem. 1994. P. H. Nienhuis and A. C. Smaal, eds. Developments in Hydrobiology, 97. Reprinted from *Hydrobiologica*, 282/283. 624 pp. ISBN 0-7923-2817-5. Distributed by Kluwer Academic Publishers Group, P.O. Box 358, Accord Station, Hingham, MA 02018-0358, USA. Price: 475 NLG (approximately \$275 US)

Unless you receive the journal *Hydrobiologia* (and even if you do, you'll miss out on 31 attractive color photographs at the beginning), you may not have heard about the recent compilation of 35 papers consisting of studies aimed at determining the ecosystem effects of building a storm-surge barrier in the Oosterschelde in the Netherlands. This enormous project consists of the barrier (65 x 18,000 ton concrete piers supporting 62 steel gates which block off the estuary from the North Sea during high tides) and two secondary dams, and is a major feat of civil engineering. Completed in 1987, it gives residents of the delta protection from devastating floods and future sea level rises. In contrast to the original idea of just building an enormous dam, the project allowed for the continuation of important mussel and cockle fisheries and maintains important wetlands and waterfowl habitat by allowing salt water exchange through the barrier. The reduction of tidal volume (28% less) was sure to affect the ecosystem, and a team of researchers was assembled in 1980 to analyze the structure and function of the Oosterschelde and to provide insight into future management. Integrating physical, chemical, geological and biological research, the project provides a case-study of human effects on a changing ecosystem. The studies in this volume examine pre-barrier and post-barrier conditions from 1979-1991, including modelling. This research provides a good example of how coordinated, long-term, multidisciplinary research can increase our understanding of estuarine ecosystem processes.

The book is divided into eight major themes, namely:

- Hydrodynamic and geomorphological changes in the tidal system
- Structure and function of the pelagic system
- Structure and function of the benthic system
- Ecology of the salt marshes
- The response of benthic suspension feeders to environmental changes
- The analysis of a dynamic simulation model for the Oosterschelde ecosystem
- The higher trophic levels
- The Oosterschelde estuary: an evaluation of changes

In each section, an introduction provides a helpful summary of the papers that follow and emphasizes their conclusions. Thus, the major themes of the work are not lost "between the lines."

From dissolved nutrients to seals, the coverage of the volume is impressive. I was especially interested in primary

productivity changes in the pelagic and benthic systems, as well as the effects on zooplankton and benthic filter-feeders (some 12 chapters were devoted to these topics alone). Since current speeds and riverine inputs both decreased due to the storm-surge barrier, a reduction in turbidity and decrease in nutrients along with a shift in phytoplankton species created a homeostasis in which annual primary production was relatively unchanged. Those interested in algal blooms will find the chapter on nutrient ratios and diatom-flagellate relations especially helpful. Interactions among zooplankton biomass, primary production and water residence time were interesting, as was the major role filter feeders (mussels and cockles) play in recycling nutrients within that system. With regard to the macrobenthos on intertidal flats, the presence or absence of severe winters (normal climatic fluctuations) caused as much variation as the man-made perturbations. For those interested in modelling, several chapters go into great detail concerning the parameters which effect model results, uncertainty in those parameters, and model verification of predictions (during post-barrier conditions).

For the Oosterschelde mussel farmers, the increased sedimentation in low-current areas and reduced horizontal flux of seston in some important grow-out sites caused some losses, but results from new experimental plots in hitherto unproductive sites (where currents were over 60 cm s⁻¹) were promising. Now, the limitation of mussel production in the area is not physical (too high currents) but biological: model results indicate further increases in mussel biomass will reduce primary production. Farmers are now encouraged to practice more control over seeding densities to obtain higher yields.

The compilation of published papers into a book such as this has some important advantages - the cross-references cited in many papers may be found elsewhere in the book, the 5 page subject index is handy and some unexpected results are found (did you know that the major competition for cockle resources is between fishermen and wading birds?). However, the over 30 diagrams of the Oosterschelde estuary are somewhat redundant, and a few typos were noted. Nonetheless, the book is a welcome addition to the personal library of anyone interested in estuarine and coastal sciences, and will provide an important resource to engineers, ecologists, biologists and managers alike.

Carter Newell

Missing members

Does anyone out there know the whereabouts of any of the NSA members listed below? If you do, please contact Christine Hodgson, Treasurer, at (604) 334-1408 or email her at chodgson@galaxy.gov.bc.ca

John Batt, Nova Scotia, Canada

Thomas Warren, Texas

Dale Mulholland, Florida

Mike Marcus, South Carolina

Mark Malchowski, California

Dr. Maureen K. Krause, Editor
NSA Quarterly Newsletter
Natural Science Division
Southampton College of Long Island University
Southampton, New York 11968 USA



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Officers, Committee Chairs and Staff of the National Shellfisheries Association

Dr. Thomas Soniat, President
Department of Biological Sciences
Nicholls State University
Thibodaux, LA 70310
(504) 448-4700
FAX (504) 448-4923
E-mail: biol-tms@nich-nsunet.nich.edu

Dr. William Fisher, President-Elect
US EPA/GB ERL
Gulf Breeze, FL 32561
(904) 934-9394

Dr. Stephen Tettelbach, Vice President and Program Chair
Natural Science Division
Southampton College
Long Island University
Southampton, NY 11968
(516) 287-8418

Mr. Richard DeVoe, Secretary
South Carolina Sea Grant Consortium
287 Meeting Street
Charleston, S.C. 29401
(803) 727-2078

Ms. Christine Hodgson, Treasurer and Chair, Pacific Coast Section
BC Ministry of Ag. and Fisheries
2500 Cliffe Avenue
Courtenay, BC V9R 5M6 Canada
(604) 334-1408
FAX (604) 334-1410
Email: chodgson@galaxy.gov.bc.ca

Mr. Carter Newell, 1992-1995 Member-at-Large
Great Eastern Mussel Farms
Tenants Harbor, ME 04860
(207) 372-6317

Mr. John Ewart, 1993-1996 Member-at-Large
College of Marine Studies
University of Delaware
Lewes, DE 19958
(302) 645-4060

Dr. Susan Bower, 1994-1997 Member-at-Large and Chair, Resolutions Committee
Dept. of Fisheries and Oceans
Pacific Biological Station
Nanaimo, BC V9R 5K6 Canada

Dr. Keith Benson, Historian
Dept. of Medical History and Ethics
School of Medicine SB-20
University of Washington
Seattle, WA 98195
(206) 543-5447

Mr. George Abbe, Chair, Audit-Budget-Finance Committee
Estuarine Research Center
Academy of Natural Sciences
10545 Mackall Road
St. Leonard, MD 20685
(410) 586-9709
FAX (410) 586-9705
Email: abbe@acnatsci.org

Dr. J. Evan Ward, Chair, Endowment/Student Awards Committee
Dept. of Biological Sciences
Salisbury State University
Salisbury, MD 21801-6837
(410) 543-6139
FAX (410) 548-3318
Email: jeward@sae.ssu.umd.edu

Dr. Susan Ford, Chair, Awards Committee
Haskin Shellfish Research Laboratory
P.O. Box B-8
Port Norris, NJ 08349
(609) 785-0074

Dr. Carolyn Friedman, Chair, Membership Committee
Bodega Marine Laboratory
P.O. Box 247
Bodega Bay, CA 94923
(707) 875-2067

Dr. John Kraeuter, Chair, Presidents Committee and Elections Committee
Haskin Shellfish Laboratory
Rutgers University
Port Norris, NJ 08349
(609) 785-0074

Dr. Sandra Shumway, Editor, *Journal of Shellfish Research*
Southampton College
Long Island University
Southampton, NY 11968
(516) 287-8407
FAX (516) 287-8419
E-mail: sshumway@sunburn.liunet.edu

Mr. Michael Castagna, Chair, Publications Committee
Virginia Institute of Marine Science
Wachapreague, VA 23480
(804) 787-5816

Dr. Maureen Krause, Editor, NSA Quarterly Newsletter
Southampton College
Long Island University
Southampton, NY 11968
(516) 287-8397
FAX (516) 287-8419
E-mail: mkrause@sunburn.liunet.edu