

National Shellfisheries Association

QUARTERLY NEWSLETTER

JANUARY 2003 - WINTER ISSUE

WALDOBORO, MAINE



President's Message

The excitement continues to build in anticipation of our 95th Annual Meeting to be held April 13-17th, 2003, in New Orleans. The Call for Papers has come and gone, and in this issue you'll find information on meeting registration, travel, accommodations, program details, and a description of the special events and field trips we have planned. New activities are slated for students, and there are a variety of interesting excursions and receptions planned. Oh, and yes, expect great food and music! Kudos to Tom Soniat and Lou D'Abramo for organizing such an interesting line-up of functions and sessions. Please note that the early registration deadline is March 15th, and I encourage everyone to book your rooms ASAP.

This is my final message for this Newsletter, and I want to reflect on the state of the Association and comment on various initiatives we undertook during the past eight months. Thanks to sound management of our finances by Treasurer Dave Bushek, and also to the support of the membership for the various rate increases we had to implement in recent years, the fiscal health of NSA has turned around during the past year. Please see Dave's report in this newsletter.

Gef Flimlin has also worked hard to define financial targets and raise fresh capital for the Student Endowment Fund. A new goal has been set to triple the size of the Fund. Contributions to the student fund have typically been made by the generous support of members who attend and spend at the sales booth and auction at our annual meetings. However, Gef has led a campaign to boost direct contributions from all our members through the membership renewal form and other avenues. Thanks Gef, and I encourage all of our senior members to remember what it was like when we were students – please participate in this initiative!

In 2002, we also re-invigorated an *ad hoc* committee designed to screen and recommend a new approach to handling our society's business affairs. The efforts of this

continued on page 14

Don't discover what it means to miss New Orleans

Join us for festivities, science, music and seafood! From April 13th through 17th, 2003 New Orleans will be host to the NSA. The meeting will be held in the Downtown DoubleTree Hotel at the foot of Canal Street, near the French Quarter and Riverwalk. We will feature a return performance of Cajun musician Bruce Daigrepoint, "Up the River" and "Down the Bayou" excursions, student socials, Ken Chew's famous Chinese Dinner, Sandy Shumway's Audacious Auction, and the opening of "A History of the Louisiana Oyster Industry" at the Historic New Orleans Collection in the French Quarter. April is a wonderful time to be in New Orleans. Come join us!

Tom Soniat

In this issue:

- ***Program NSA-2003***
 - ***Registration NSA-2003***
 - ***Treasurers Report***
 - ***PCS Report***
 - ***Recruits Corner***
 - ***Book Reviews***
 - ***Industry Updates***
- and much more!***

Treasurer's Report

NSA's finances are managed for three purposes: (1) to pay general operating expenses for the Association, including publication of JSR; (2) to develop the Student Endowment Fund to a point where interest alone can support student research and travel, and (3) to establish an asset level roughly equivalent to one year's operating funds. Presently, the Treasury remains in relatively good shape. At the end of fiscal year 01-02 (Sep 30, 2002), NSA had a total revenue of \$250,204.99 while expenses for the year were \$250,204.12, a deficit of \$4,507.13. The deficit is attributable to the lag between payment for publication of JSR 21(1) and the receipt of page charges from authors. At the end of December 2002, our account balances were as follows:

NSA Checking	\$3,688.45
NSA Money Market	\$59,260.27
NSA CD	\$35,494.95
SEF Money Market	\$24,431.16
Total	\$122,874.83

Although we have not reached the goal to maintain about a year's worth of operating expenses in the bank, our finances are holding steady. We depend upon timely receipt of member dues and page charges as well as revenue from meetings and are grateful for your support.

Dave Bushek

Recruits Corner

The time is drawing near for NSA 2003. Even if you are not going to be presenting this year, it would be well worth it to come to New Orleans for the meeting. If you have talked to any of the students who have attended past meetings, I am sure they have all told you what a blast they can be. This year will be no exception. We have some activities lined up in order for us to get to know each other better and help break the ice for students attending the meeting for the first time. If anybody is having trouble with funds and would like to split room costs, send your contact information my way and I will get you in touch with other students in similar situations. Volunteers wishing to help out at the NSA booth are always welcome. If you are interested please send email me so that we can start working on a schedule for the meeting. As always the recruits need your input to best help you so if anyone has questions or concerns please do not hesitate to email or call. My new number is (843)762-8572. With that said have a good rest of the winter and see you all in New Orleans.

Cheers
Steve Allen

NSA History

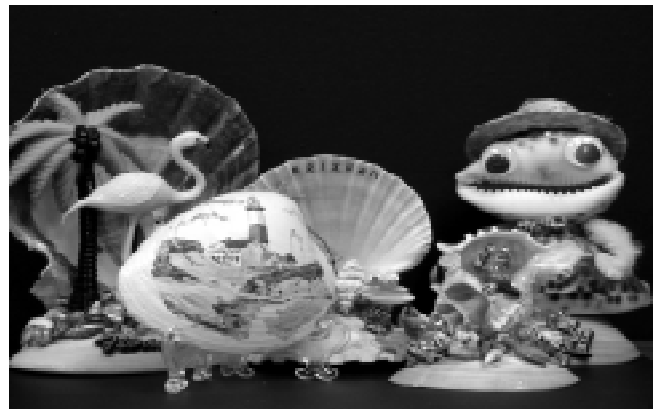
NSA will soon be celebrating its Centenary and, as many of you know, Mel Carriker has been steadily working away compiling the history of our organization. The draft is complete (all 255 pages of it!), fascinating reading, and an obvious labor of love. He is now in the process of assembling the tables summarizing officers, honored life members, Wallace and Nelson Awardees and the like. Some information seems to be elusive and your assistance is needed.

If you received the Nelson Award for Best Student Paper or know of someone who did, please let us know the name and date.

If you have any photographs of past meetings, individuals, or other interesting material that you think might be suitable, please send it along to either me or Mel. Be sure to mark the photographs with your name and address and they will be returned to you. We are especially interested in pictures of individuals, meeting pictures and, auction photos.

Publication of the history, 'The Untamed Oyster', is expected in 2003. Thank you Mel!

Sandy Shumway



NSA Auction

Start your spring cleaning early and get ready for the 12th annual auction to benefit the Student Endowment Fund. Even if you can't attend the meeting, you can send your contribution -- you can even remain anonymous! You can send your goodies to me (but we'll then have to ship everything to New Orleans) or directly to Tom Soniat who will guard them diligently until auction night. Remember, we accept anything and will sell anything.....where better than New Orleans? Tom has arranged for a good feed and lots of beer, so send us your shellfish paraphenalia and see you at the auction!

Sandy Shumway

NSA 2003 Information New Orleans, LA

Registration for New Orleans Meeting

This newsletter contains all of the information necessary for registering for the NSA 2003 meeting in New Orleans, LA, April 13-17. Additional information can be found on the NSA web site (www.shellfish.org). In order to receive the lowest registration rate, your completed registration form must reach Dr. Danielle Kreeger by **March 15th**. Your registration fee covers entry to all programs and events at the hotel. Additional event tickets for friends and spouses can be purchased separately. Tickets to either of the Sunday (April 13th) field excursions and Ken Chew's Chinese Banquet (April 16th) are **not** included in the registration fee and must be purchased separately. Questions concerning registration should be directed to Danielle Kreeger via E-mail (kreeger@acnatsci.org).

Hotel Reservation Information

To make reservations at the DoubleTree New Orleans call 1-800-222-TREE. Ask for the special rate provided for the National Shellfisheries Association. Room prices are \$139 per night for singles and doubles, and \$159 per night for triple and quad occupancy.

Travel Arrangements

Flights should be booked to the Louis Armstrong New Orleans International Airport. Transportation to the downtown DoubleTree New Orleans (300 Canal St.) is by taxi or Airport Shuttle, Inc. The cost of a taxi is about \$20 one-way, whereas the cost of the shuttle is \$20 round trip. Tickets for the shuttle may be purchased upon arrival at the airport or reserved in advance. The Airport Shuttle ticket desks are located on the ground level near the baggage claim area. The shuttle leaves every 15 minutes, but if you prefer to make a reservation call 1-866-596-2699.

Oral Presentations

Slide projectors, overhead projectors, video projectors, PC laptop, and pointers will be available in each of the meeting rooms. A slide pre-view room will be available on the second floor of the hotel. Those using a Power Point presentation must adhere to the following rules. Only Power Point presentations will be supported. Your presentation must be saved on a PC-formatted Zip disk (**100mb**); **CD-ROM and floppy disk will not be supported**. Presentations will be loaded onto the PC-computer dedicated for that room prior to your session (early morning or during lunch break). Dedicated computers will not be disconnected from the video projector under any circumstances, so please do not bring your own laptop and expect it to be interfaced with the projector. We strongly urge people to bring a back-up

version of their talk on transparencies or slides in case of technical difficulties.

Poster Presentations

Posters will be displayed on the second floor. Your poster should fit into a 3 x 4 ft space. Tape, thumb tacks and/or velcro tape will be supplied along with ribbon markers to identify student posters. Posters can be displayed from Sunday afternoon to Thursday noon. Please be sure to be at your poster on Tuesday (15th) between 3:40 and 5:30 PM for the poster session.

President's Reception

The President's Reception will be held Sunday evening (13th) from 7:00 PM until 11:00 PM in the International Ballroom on the top floor of the hotel. The reception will include hors d'oeuvres, cocktails, and seafood donated by several local growers. Renowned Cajun musician Bruce Daigrepoint will provide a lively start to the meeting. Extra tickets for spouses or friends can be purchased on the registration form or at the registration desk on Sunday.

Ken Chew's Chinese Banquet

The Chinese Banquet will be held from 7-10 PM on Wednesday evening (16th). There are a limited number of tickets for this event so purchase them as soon as possible (see the registration form). If any tickets remain, they will be sold at the meeting.

Excursions

"Up the River" excursion: a tour of Louisiana State Universities Aquaculture Research Station. The facility comprises 22,000 square foot of laboratories and offices; 146 experimental ponds totaling 100 surface acres; more than 200 outdoor fiberglass pools; a fish hatchery and a greenhouse. These facilities are used in research projects with crawfish, catfish, hybrid striped bass, tilapia, and other species of value to Louisiana producers. More information can be found at www.lsuagcenter.com/inst/research/stations/aquaculture.

"Down the Bayou" excursion: a trip along South Louisiana's bayous. Tour Motivaitit Seafoods' oyster processing plant including their state-of-the-art ultrahigh pressure system to remove bacteria from oysters, and then on to visit the Louisiana University Marine Consortium laboratory (LUMCON) and its marshes. On the return trip, if time permits, tour the Davis Pond Mississippi River Diversion, the world's largest water diversion for coastal wetlands restoration. Visit the following web sites for more information, www.theperfectoyster.com, www.lumcon.edu, and www.mvn.usace.army.mil/pao/dpond/davispond.htm.

**95th Annual Meeting of the National Shellfisheries Association
 Doubletree Hotel, 300 Canal St., New Orleans, LA, April 13th - 17th 2003**

Registration Form

Complete a copy of this form for each person registering and mail with payment to:

Dr. Danielle Kreeger
 Academy of Natural Sciences
 1900 Ben Franklin Parkway
 Philadelphia, PA 19103, USA

Questions? Contact DK at:
 Email: kreeger@acnatsci.org
 Phone: 215-299-1184
 Fax: 215-299-1079

MAILING INFORMATION:

Name: _____
 Address: _____
 City: _____ State/Prov.: _____ ZIP/Post.Code: _____
 Country: _____ E-mail: _____

NAME BADGE INFORMATION (please print, max. 25 characters for each line):

Name: _____ Organization: _____

NSA 2003 REGISTRATION COSTS:

Fees include entry into technical sessions, refreshment breaks, President's reception (Sunday), student's reception (Tuesday), poster session (Wednesday), and NSA business lunch (Wednesday). Additional tickets for friends and spouses can be purchased (see below) for the President's reception, student's reception and NSA business lunch.

	By March 15th	After March 15th	
NSA Member	US \$230	US \$310	
Non-NSA Member	US \$295	US \$370	
NSA Student Member	US \$130	US \$185	
Daily Registration	US \$120	US \$120	
		Registration Fee =	\$ _____

NSA MEMBERSHIP:

Regular (US \$65) \$ _____
 Student (US \$35) \$ _____

ADDITIONAL TICKETS FOR ACTIVITIES:

	US\$		# tickets		
Presidents Reception (Sunday 13th, 7-11pm)	\$25	x	_____	=	\$ _____
Student's Reception/Auction (Tuesday 15th, 7-10pm)	\$15	x	_____	=	\$ _____
NSA Business Lunch (Wednesday 16th, 12-2pm)	\$25	x	_____	=	\$ _____

SEPARATE EVENT TICKETS:

"Up the River" Excursion (Sunday 13th, 8am-4pm)	\$40	x	_____	=	\$ _____
"Down the Bayou" Excursion (Sunday 13th, 8am-4pm)	\$40	x	_____	=	\$ _____
Chinese Banquet (Wednesday 16th, 7-10pm)	\$20	x	_____	=	\$ _____

TOTAL FEE ENCLOSED (personal check, money order, VISA/Master card) \$ _____

Payment must be in US dollars; checks and money orders must be drawn on US banks.

Make checks and money orders payable to *National Shellfisheries Association*. NSA federal tax ID number is 52-1128-190.

Name on credit card: _____ Signature: _____

Credit card #: _____ Expiration date: _____ Type: VISA / MC

OTHER:

Check here if you prefer a vegetarian option for the NSA Business Lunch _____

MONDAY MORNING APRIL 14, 2003

Time	Oyster Research in the Gulf of Mexico Chair: John Supan	Freshwater Pearls: Commerce and Conservation of Native Mussels in the Southeastern United States Chairs: Catherine Gatenby and Dick Neves	Shellfish Physiology
8:20	Deterrents to black drum predation on oyster leases. BROWN, PETERSON, MCDONOUGH, BANKS, LEZINA	Propagation of freshwater mussels for freshwater pearl production. NEVES, JONES, HENLEY, MAIR	Flow cytometry as a tool to quantify oyster phagocytosis, respiratory burst and apoptosis. GOEDKEN, DE GUISE
8:40	Recommendations to oyster harvesters on removing hooked mussels, <i>Ischadium recurvum</i> . MELANCON, DIAZ, ASRABADI	One man's dream: American cultured pearls. LATENDRESSE	Algal food quantity and quality affect immune function in oysters stressed by high temperature. HEGARET, WIKFORS, SOUDANT, SAMAIN
9:00	Oyster Irradiation: Pathogenic <i>Vibrio</i> response and consumer difference testing. ANDREWS, POSADAS, BURRAGE, JAHNCKE	Tennessee's pearl culture industry. HUBBS	Species-specific variation in thermal tolerance during larval development in Blue mussels, <i>Mytilus</i> spp. LIMBECK, RAWSON
9:20	Consumer preferences and attitudes toward irradiated oysters. POSADAS, ANDREWS	Histological evaluation of early pearl-sac development in the concho pearly mussel (<i>Cyrtoneaias tampicoensis</i>). TOWERS, DIMICHELE, SHEPHERD	Stress responses in scallops and hard clams to heat and cold shock. BRUN, BRICELJ, EXBOSIMBA, MACRAE, ROSS
9:40	Marketing implications of consumer attitudes toward oysters. HANSON, HOUSE, POSADAS	Correlation of flat pearl studies with pearl sac formation in the freshwater mussel (<i>Cyrtoneaias tampicoensis</i>). SHEPHERD	Hard Clam Population Dynamics in Changing Environments Chairs: Cornelia Schlenk and Deirdre Kimball Population collapse, depensation effects, and the time-scale of recovery of hard clam (<i>Mercenaria</i> spp.) fisheries. ARNOLD
10:00	BREAK		
10:40	Status of <i>Perkinsus marinus</i> in Galveston Bay, Texas: Results of the Dermowatch program. RAY, SONIAT, KORTRIGHT, ROBINSON	Mucin secretions and nacre deposition in the formation of pearls. DIMICHELE, TOWERS, SHEPHERD	Evaluation of Raritan and Sandy Hook bay hard clam, <i>Mercenaria mercenaria</i> , stocks for fishery management. FLIMLIN, CELESTINO, KRAEUTER, MACALUSO, KENNISH
11:00	A comparison of finfish assemblages on subtidal oyster shell (clutched oyster lease) and mud bottom in Barataria Bay, Louisiana. PLUNKET, LA PEYRE	Freshwater pearl culture and production in China. DAN	The role substrate characteristics have in altering the behavior, growth and survival of juvenile (post-settlement) <i>Mercenaria mercenaria</i> . LARSON, CERRATO
11:20	A comparison of nekton usage of mud bottom, created limestone, shell, and natural shell reef habitats in Terrebonne Bay, Louisiana. PLUNKET, PETERSON, PIAZZA LA PEYRE	Freshwater Mussels Seasonal and temporal variability in condition index and tissue biochemistry of <i>Elliptio complanata</i> . RAKSANY, GATENBY, KREEGER	Reconstructing the growth of hard clams under brown tide conditions. LAETZ, CERRATO
11:40	Using created oyster reefs as a sustainable coastal protection and restoration tool. PIAZZA, PLUNKET, SUPAN, LA PEYRE	Seasonal variation in the physiological status of three species of mussels in the Allegheny River, PA. GATENBY, KREEGER, RAKSANY, NEVES	The effects of background concentrations of the brown tide alga <i>Aureococcus anophagefferens</i> on growth and feeding in the bivalve <i>Mercenaria mercenaria</i> . GREENFIELD, LONSDALE, CERRATO, LOPEZ
12:00	LUNCH ON YOUR OWN		

MONDAY AFTERNOON APRIL 14, 2003

Time	Oyster Research continued	Shellfish Reproduction continued	Hard Clam Population Dynamics continued
1:20	Ground truthing hydro-acoustic data with commercial oyster dredging. ALLEN, WILSON, ROBERTS, SUPAN, PAUSINA	Immunological studies on the origin of the lamellar complex (LCX) during spermiogenesis of <i>Macrobrachium nipponense</i> (de Haan). YANG	Trophic interaction between hard clams and natural assemblages of plankton. CERRATO, STRECK, LONSDALE
1:40	Biological assessment of storm effects on the Louisiana public oyster resource: Tropical Storm Isidore and Hurricane Lili. BANKS	Microscopic observation of tegument and cement gland distribution of female pleopod in Chinese mitten crab, <i>Eriocheir sinensis</i> . YANG, DOS SANTOS, NARCISO, CALADO, ZHOU, LU, JIANG, YING	Linking hard clam (<i>Mercenaria mercenaria</i>) reproduction to phytoplankton community structure: I. Clam growth and reproductive cycles. TETTELBAACH, NEWELL, GOBLER
2:00	Engineering and economics as related to oysters grown in the Gulf of Mexico. BISHOP	Comparative spermatozoon ultrastructure of Arcidae bivalves <i>Arca olivacea</i> and <i>Scapharca broughtoni</i> . YANG, ZHU	Linking hard clam (<i>Mercenaria mercenaria</i>) reproduction to phytoplankton community structure: II. Phytoplankton community structure and food composition. NEWELL, GOBLER, TETTELBAACH
2:20	Sustainable community development via an inshore molluscan aquaculture park: A concept for the Gulf of Mexico. SUPAN	The morphology and ultrastructure of spermatozoon of the gastropod <i>Bullacta exarata</i> . YING, YANG	A simulation model of the population growth of hard clams (<i>Mercenaria mercenaria</i>). I. Model development and implementation. HOFMANN, KLINCK, POWELL, KRAEUTER, BRICELJ, GRIZZLE, BUCKNER
2:40	Biotechnology Chairs: Karolyn Hansen and Amy Wilbur Nucleic acid-based aquatic pathogen molecular diagnostics for detection, research and environmental monitoring. REECE	Fine structural analysis of spermatozoon of the bivalve <i>Barbatia virescens</i> and its evolutionary characteristics. ZHU, YANG	A simulation model of population growth of hard clams (<i>Mercenaria mercenaria</i>). II. Effects of fishing. KRAEUTER, POWELL, HOFMANN, KLINCK, GRIZZLE, BRICELJ, BUCKNER
3:00	BREAK		
3:40	Development of a single nucleotide polymorphism (SNP) marker set for the hard clam, <i>Mercenaria mercenaria</i> . CARNEGIE, CAMARA, RAGONE CALVO, REECE, GAFFNEY	Optimization of sperm cryopreservation for the pacific oyster <i>Crassostrea gigas</i> : Evaluation of cooling rate. LANG, LANGDON	A simulation model of the population growth of hard clams (<i>Mercenaria mercenaria</i>). III. Effects of brown tide. BRICELJ, KRAEUTER, POWELL, KLINCK, HOFMANN, GRIZZLE, BUCKNER
4:00	Using molecular genetic techniques to assess oyster restoration programs and projects. MILBURY, GAFFNEY	Histological examination of gametogenesis in genetic triploid <i>Crassostrea ariakensis</i> in Chesapeake Bay. ERSKINE, ALLEN	A simulation model of the population growth of hard clams (<i>Mercenaria mercenaria</i>). IV. Effects of climate change. GRIZZLE, HOFMANN, KLINCK, POWELL, KRAEUTER, BRICELJ, BUCKNER
4:20	Estimating the impact of bay scallop restoration efforts using genetic data. WILBUR		Facilitated open discussion for session speakers and audience. SCHLENK, KIMBALL
4:40	Larval ecology: Molecular tools for the black box? RAWSON		
5:00	Measuring patterns of local oyster recruitment using molecular markers. HARE		
6:00-8:00	HISTORIC NEW ORLEANS COLLECTION- HISTORY OF THE OYSTER INDUSTRY		

TUESDAY MORNING APRIL 15, 2003

Time	Integrated Approach to Bivalve Domestication: Genetics, Nutrition, Physiology, Disease Resistance and Environmental Effects Chairs: Fu-Lin Chu and Jean-Francois Samain	Post-harvest Treatment for Shellfish Chair: Marilyn Kilgen	Shellfish Disease Perkinsus
8:20	An integrated approach to bivalve domestication: introductory remarks. CHU, SAMAIN	Utilization of post harvest treatments as a strategy for reducing <i>Vibrio vulnificus</i> illness. MOORE	Development of biomarkers for <i>Perkinsus marinus</i> resistance in the eastern oyster (<i>Crassostrea virginica</i>). KAATTARI, EARNHART
8:40	Family-based selection improves yields of Pacific oysters <i>Crassostrea gigas</i> . LANGDON MATSON, BRAKE, EVANS	History of post-harvest treatment to reduce <i>Vibrio</i> sp. in shellfish. COOK	<i>Perkinsus chesapeaki</i> and <i>Perkinsus andrewsi</i> are the same species. BURRESON, REECE, HUDSON, DUNGAN
9:00	Breeding and evaluation of Easter oyster strains selected for MSX, Dermo and JOD resistance. GUO, FORD, DEBROSSE, SMOLOWITZ, SUNILA	Post harvest treatment validation and verification of critical control points. KRAEMER	<i>In situ</i> determination of <i>Perkinsus marinus</i> transmission dynamics. AUDEAMRD, RAGONE CALVO REECE, BURRESON, PAYNTER
9:20	The role of heat shock proteins in tolerance to parasitic stress in the eastern oyster, <i>Crassostrea virginica</i> . ENCOMIO, CHU	Mild pasteurization of oysters using the AmeriPure process. TESVICH, FAHEY	<i>In vitro</i> <i>Perkinsus</i> sp. From Japanese Manila clams, <i>Ruditapes philippinarum</i> . DUNGAN, REECE, HUDSON
9:40	Progress in the development of a chemotherapeutic protocol for eliminating/reducing dermo disease in infected oysters. LUND, CHU	History of commercial application of hydrostatic high pressure processing to molluscan shellfish. VOISIN	Is <i>Mercenaria mercenaria</i> a host for <i>Perkinsus</i> species? MCCOY, BAKER FRANCIS-FLOYD, WRIGHT
BREAK			
10:40	Host genetic origin an important determinant of QPX disease. RAGONE CALVO, BURRESON, FORD, KRAEUTER, LEAVITT, SMOLOWITZ	<i>Vibrio parahaemolyticus</i> – The west coast perspective. NISBET	Evaluating shell quarantine duration to limit the transfer of <i>Perkinsus marinus</i> when planting oyster cultch. BUSHEK, RICHARDSON, BOBO, COEN, CARDINAL
11:00	Influence of congeneric aquaculture on hard clam (<i>Mercenaria spp.</i>) population genetic structure. ARNOLD, WALTERS, PETERS, BERT, FAJANS	Response of <i>vibrio parahaemolyticus</i> 03:K6 to hot water/cold shock pasteurization process. ANDREWS, DEBLANC	Assessment of the epizootiology of <i>Perkinsus</i> spp. On the Atlantic coast of USA using genus-, species-, and strain-specific molecular probes. PECHER, ROBLEDO, SCHOTT, VASTA
11:20	The registry of tumors in lower animals: A resource for bivalve culture health studies. PETERS, WOLFE, WOLF	Effects of freezing on <i>Vibrio vulnificus</i> content in shellstock oysters. MESTEY, RODERICK	Environmental effects on <i>Perkinsus marinus</i> infection rates, growth and survival among dermo-disease-free juvenile oysters in the Patuxent river, Maryland during drought conditions. ABBE, MORRELL, MCCOLLOUGH, DUNGAN
11:40	Characterization of summer mortalities of <i>C. gigas</i> oyster in France in relation to environmental parameters. SOLETCHNIK, ROPERT, HUVET, MOAL, DEGREMONT, BEDIER, BOUGET, DUBOIS, MARTIN, ENRIQUE-DIAZ, FAURY, LE MOINE, RENAULT, GAGNAIRE, SAMAIN	High hydrostatic pressure inactivation of viruses. CALCI	<i>Perkinsus marinus</i> infection rates in specific-pathogen-free juvenile oysters planted in the Patuxent River, Maryland. MCCOLLOUGH, DUNGAN, ABBE, MORRELL
12:00 STUDENT LUNCH, OTHERWISE LUNCH ON YOUR OWN			

TUESDAY AFTERNOON APRIL 15, 2002

Time	Integrated Approach continued	Post-harvest Treatment of Shellfish continued	Perkinsus continued
1:20	Genetic basis of summer mortality in juvenile cupped oysters. DEGREMONT, BOUDRY, SOLETSCHNICK, BEDIER, ROPERT, HUVET, MOAL, SAMAIN	Validation of post-harvest processing of <i>Vibrio parahaemolyticus</i> in oysters: speed bumps on the road from the research lab to the processing plant. RENO, SU, MORRISEY, NISBET	The antioxidant pathway of <i>Perkinsus marinus</i> : Functional analysis and localization of two iron superoxide dismutases. SCHOTT, ROBLEDOS, PECHER, OKAFOR, VASTA
1:40	Immunological status of selected <i>Crassostrea gigas</i> families and descendants, reared in different environmental conditions. LAMBERT, SOUDANT, CHOQUET, PAILLARD, FROUËL, DEGREMONT, DELAPORTE, MOAL, BOUDRY, SOLETSCHNICK, ROPERT, BEDIER, RENAULT, GAGNIERES, HUVET, SAMAIN	Evaluation of commercial post harvest treatments for control of <i>Vibrio vulnificus</i> in gulf shellstock oysters. KILGEN	HAACP and Disease Transmission Evaluation HACCP in the oyster activity in the lagoon system Alvarado, Veracruz, Mexico. VILLA, REYNOSO, CHAVEZ
2:00	Genetic variability in reproduction and summer mortality in <i>Crassostrea gigas</i> . MOAL, BEDIER, FLEURY, LANGLADE, LECOQUIC, DEGREMONT, BOUDRY, LE COZ, POUVREAU, ENRIQUEZ-DIAZ, LAMBERT, SOUDANT, SAMAIN	Round table discussion with presenters on PHT results.	Evidence of a cold shock response in <i>Vibrio vulnificus</i> , a human pathogen transmitted via raw eastern oysters, <i>Crassostrea virginica</i> , from the Gulf of Mexico. HUELS, BRADY, DELANEY, BADER
2:20	Characterization of summer mortalities of <i>Crassostrea gigas</i> oyster in relation to physiological parameters. MATHIEU, COSTIL, DUBOIS, HEUDE, HUVET, KELLNER, POUVREAU	Round table discussion with presenters on PHT results.	
2:40	Panel Discussion	Round table discussion with presenters on PHT results.	
3:00	BREAK		
3:40-5:30	POSTER SESSION		
7:00-10:00	STUDENT AUCTION		



Do you recognize all these past presidents of the NSA?

WEDNESDAY MORNING APRIL 16, 2003

Time	<p align="center">The Effects of Habitat Alteration on Shellfish Populations/Communities</p> <p>Chair: Marty Chintala</p>	<p align="center">Biology, Fisheries, and Culture of the Blue Crab, <i>Callinectes sapidus</i></p> <p>Chair: Harriet Perry</p>	<p align="center">Feeding and Growth of Bivalves</p>
8:20	Assessing the effect of habitat alteration on shellfish populations. CHINTALA, TAMMI	Hatchery mass production of blue crab (<i>Callinectes sapidus</i>) juveniles. ZOHAR, ZMORA, FINDIESEN, LIPMAN, STUBBLEFIELD, HINES, DAVIS	Zooplankton ingestion by bivalves – more food for thought! LEHANE, DAVENPORT
8:40	Shellfish restoration: It's not just biology that matters. MACFARLANE	Blue crab (<i>Callinectes sapidus</i>) genetic structure and diversity. PLACE, STEVEN, FENG	Growth of quahogs (<i>Mercenaria mercenaria</i>) in response to eutrophic-driven changes in food supply and habitat. CARMICHAEL, SHRIVER, WEISS, VALIELA
9:00	Creating salt marshes to enhance production of fishery species. MINELLO, ROZAS	Assessing the feasibility of stock enhancement for Chesapeake blue crabs (<i>Callinectes sapidus</i>). HINES, DAVIS, YOUNG-WILLIAMS, ZOHAR, ZMORA	Mussel growth and food utilization in relation to water column conditions on raft systems in Puget Sound, Washington. CHENEY, SUHRBIER, CHRISTY, BELTRAN, DAVIS, BROOKS, SMITH
9:20	Selection of appropriate habitats/sites for Bay Scallop restoration. TETTELBACH, SMITH, WENCZEL	Status of blue crab populations in Louisiana based on fishery independent data collections (1967-2002) with observations on relative abundance in other Gulf states. GUILLORY, PERRY, BLUE CRAB TASKFORCE	Finding the wheat in the chaff – oyster larval feeding in turbid, low salinity conditions. MANN, KINGSLEY-SMITH
9:40	Restoration of bay scallops in highly modified and relatively pristine habitats on the west coast of Florida, USA. GEIGER, ARNOLD	Development of derelict trap removal programs in the Gulf of Mexico. PERRY, GUILLORY, DERELICT TRAP TECHNICAL TASKFORCE	Development of an individual, energy-balance based, growth model for the Manila clam (<i>Ruditapes philippinarum</i>). FLYE SAINTE MARIE, FORD, HOFMANN, JEAN, KLINCK, PAILLARD, POWELL
BREAK			
10:40	Is copper required for eastern oyster setting and metamorphosis? FISHER	Population genetics of the blue crab (<i>Callinectes sapidus</i>) in the Gulf of Mexico. DARDEN, KREISER	Modeling individual eastern oyster (<i>Crassostrea virginica</i>) growth in the Maryland portion of the Chesapeake Bay. VANISKO, MILLER
11:00	Establishing minimum flows and levels of freshwater in the Caloosahatchee River, Florida, using responses of oysters. VOLETY, TOLLEY, WINSTEAD	Observations on the unusual abundance of tropical <i>Callinectes</i> species in the south Atlantic bight in fall 2002, and remarks on the non-indigenous <i>Charybdis hellerii</i> . KNOTT, VENNER, THORNTON	The comparison of Pacific oyster (<i>Crassostrea gigas</i>) rearing performances (survival, growth, quality) in French cultivation areas, after a 10-years monitoring (1993-2002) by the IFREMER / REMORA network. FLEURY, LE BER, CLAUDE, CORNETTE, D'AMICO, GUILPAIN, PALVADEAU, ROBERT, LE GALL, ROPERT, SIMONNE, VERCELLI
11:20	Evaluating the impacts of harvesting practices, boat wakes and associated shoreline erosion on intertidal creek habitats in the southeastern U.S.: Managers and restoration programs take note. COEN, BOLTON-WARBERG	Design and implementation of survey of commercial blue crab effort in the Maryland portion of the Chesapeake Bay. CHRISTMAN, GIFFEN, VOLSTAD, FEGLEY	Comparing two <i>Mya arenaria</i> populations as potential candidates for seeding operations. MYRAND, TREMBALY, CHEVARIE, PERNET, MANTOVANI

WEDNESDAY MORNING APRIL 16, 2003

Time	The Effects of Habitat Alteration: continued		Feeding and Growth of Bivalves: continued
11:40	Oyster reef habitat restoration: A review of restoration approaches and an agenda for the future. LUCKENBACH, COEN		Spatial and temporal variation in oyster fitness in San Antonio Bay, Texas, 1998-2002. KREEGER, THOMAS, HERTLER, RAKSANY
12:00-2:00	BUSINESS MEETING LUNCH		

POSTERS

- Clearance rates and feeding selectivity of *Crassostrea virginica* and *Mercenaria mercenaria*; implications of increased eutrophication in the Suwannee River Estuary. BEALS*, BAKER
- Ecdysteroid titers I grass shrimp reflect maternal control of embryonic envelope elevation. GLAS*, TUBERTY
- Optimal planting conditions for maximum reproductive output of cage-planted scallops, *Argopecten irradians*, in Anclote, Florida. PARKER*, ARNOLD, MARELLI
- Growth and mortality of different *Ostrea edulis* stocks cultured in the Ria de Arousa (Galicia, NW Spain). DA SILVA*, VILLALBA, FUENTES
- Differences in disease susceptibility among *Ostrea edulis* stocks cultured in Galicia (NW Spain). DA SILVA*, VILLALBA, CARABALLAL, FUENTES
- Reproduction in Flame scallops, *Lima scabra scabra* (Born 1778), from the lower Florida Keys. DUKEMAN*, BLAKE, ARNOLD
- The blue crab fishery of the Hudson River estuary. KENNEY*, KAHNLE, JURY, HATTALA
- The effect of selected contaminants on in-vitro cultured *Perkinsus marinus*. BUSHEK*, PORTER, HEIDENREICH
- Suitability of oyster clusters as habitat for reef-resident fishes and decapod crustaceans in the Caloosahatchee Estuary. HAYNES*, POULOS, SMITH VOLETY, TOLLEY
- Prevalence and abundance of *Perkinsus marinus* and *Perkinsus chesapeaki / andrewsi* in Chesapeake Bay oyster beds. HUDSON*, REECE, DUNGAN, HAMILTON
- A comparison and feasibility study of two different biomonitoring systems using the Blue Mussel, *Mytilus edulis*, and the American Lobster, *Homarus americanus*. PYE*, WATSON, RILLAHAN, HAMILTON, WISHINSKI
- Reproductive strategy: Variability pattern in two populations genetically determined of *Crassostrea gigas*. ENRIQUEZ-DIAZ*, POUVREAU, FABIoux, LE COGUIC, COCHARD, LE PENNEC
- Characterization of key CDNAS of the endocrine axes regulating reproduction and molting in the blue crab, *Callinectes sapidus*. ZMORA*, TRANT
- Characterization of the *Crassostrea virginica* SLC11A gene (formerly nramp). ROBLEDO*, VASTA
- *Perkinsus marinus* cellular biology using expression sequence tags (EST). ROBLEDO*, SCHOTT, VASTA
- Using hyper spectral remote sensing to map and assess intertidal shellfish resources in the southeastern USA. VINCENT*, PORTER COEN, BUSHEK, SCHILL
- A quantitative, real-time PCR assay to detect the parasitic dinoflagellate *Hematodinium* sp. In blue crabs, *Callinectes sapidus*. STEVEN*, HUNTER-CEVERA, PLACE, SHEPPARD, LEE
- The mitochondrial genome of the blue crab, *Callinectes sapidus*. STEVEN*, FENG, PLACE BOORE
- Development of micro satellite markers in the blue crab, *Callinectes sapidus*. STEVEN*, WILKES, PLACE, HILL, MASTERS
- Manipulation of environmental parameters for out-of-season egg and larval production in blue crab brood stock (*Callinectes sapidus*). GINDIESEN*, ZMORA, HAREL, ZOHAR, YONG-WILLIAMS, HINES
- Fiber digestion in the blue crab, *Callinectes sapidus*. PLACE*, FINDIERSEN ZMORA
- Economic impact of the cultured hard clam industry in Florida. ADAMS, PHILIPPAKOS, HODGES, MULKEY, COMER, STURMER
- Water discharge models, seasonal effluent loading, and best management practices for Procambriid crawfish aquaculture. PARR, ROMAIRE, MCCLAIN

* Denotes presenting author

WEDNESAY AFTERNOON APRIL 16, 2003

Time	Habitat Alteration continued	Genetics and Breeding	Integrated Approach to Bivalve Domestication: Genetics, Nutrition, Physiology, Disease Resistance and Environmental Effects continued
2:00	Form and function in oyster reefs: Influence of reef morphology on habitat function and oyster survival. POSEY, ALPHIN, HARWELL, MOLESKY	Population genetic structure of the Suminoe oyster as inferred from restriction fragment length polymorphism (RFLP) and micro satellite markers. ZHANG, HUDSON, ALLEN REECE	Reproduction, bioenergetic and summer mortality of <i>Crassostrea gigas</i> : experimental approach. POUVREAU, ENRIQUEZ-DIAZ, LE SOUCHU, CONNAN, LE ROY, MINGANT, MOAL, DELAPORTE, LE COZ, SAMAIN
2:20	Productive Capacity and Shellfish Aquaculture Systems Chair: Carter Newell Computational flow modeling of aquaculture systems. RICHARDSON, NEWELL	Production of tetraploid Suminoe oysters, <i>C. ariakensis</i> . ALLEN, ERSKINE, WALKER, ZEBAL	Impact of environmental and nutritive conditions on defense mechanisms of oysters during an annual cycle. DELAPORTE, SOUDANT, MOAL, LAMBERT
2:40	Food availability in a mussel raft. MUNRO, NEWELL	Effects of inbreeding on performance traits in Pacific oysters (<i>Crassostrea gigas</i>). EVANS, MATSON, BRAKE, LANGDON	Persistence of atrazine impact on aneuploidy in the Pacific oyster, <i>Crassostrea gigas</i> . BOUILLY, MCCOMBIE, LEITAO, LAPEGUE
3:00	BREAK		
3:40	An expert system for the optimization of shellfish raft culture. NEWELL, RICHARDSON	Crossbreeding in Pacific oysters. DAVIS, HEDGECOCK	Functional genomics: a powerful approach to study the immune response of the Pacific oyster <i>Crassostrea gigas</i> . AVARRE, GUEGUEN, BACHERE, ESCOUBAS
4:00	Integration of modeling and GIS in studies of carrying capacity for bivalve aquaculture. GRANT, ARCHAMBAULT, BACHER, CRANFORD	Experimental evaluation of crosses within and among five commercial strains of hard clams, <i>Mercenaria mercenaria</i> , across a salinity gradient in Virginia waters. CAMARA, ALLEN	Potential pathogens associated with abnormal mortalities. GARCIA, ARZUL, BERTHE, CHOLLET, JOLY, KERDUDOU, MIOSSEC, ROBERT, NICOLAS
4:20		Chromosomal mapping of ribosomal RNA genes and telomeric repeats in Zhikong and Bay scallops. WANG, GUO	Characterization of <i>vibrio</i> isolated from Pacific oysters' spat suffering from summer mortality outbreaks. GAY, LANCELOT, CHOLLET, RENAULT, COHENNEC, BERTHE, LAMBERT, CHOQUET, PAILLARD, GOUY, LE ROUX, GOULLETQUER
4:40			Oyster vasa-like gene: a specific marker of the germ cell lineage in <i>Crassostrea gigas</i> . FABIOUX, HUVET, LEROUX, LEPENNEC, COCHARD
5:00	Panel Discussion		
7:00-10:00	KEN CHEW'S CHINESE DINNER		

THURSDAY MORNING APRIL 17, 2002

Time	Population Biology of Shellfish	Shellfish Management and Restoration	Algal Toxins and Disease
8:20	Variations in the size structure of lobster (<i>Homarus americanus</i>) populations within the offshore fishery. LITTLE, WATSON	A comparison of two oyster (<i>Crassostrea virginica</i>) stocks to determine suitability for use in oyster reef restoration in Virginia. SORABELLA, LUCKENBACH	The effect of algal toxins on the isolated ventricle of the clam, <i>Mercenaria mercenaria</i> . DEATON
8:40	<i>Polinices pulchellus</i> : The James Dean of gastropods; Living fast, dying young. KINGSLEY-SMITH	Mapping and characterizing eastern oyster (<i>Crassostrea virginica</i>) reefs using underwater videography and quadrat sampling. GREENE, GRIZZLE, ADAMS	Evidence for natural selection for resistance to PSP toxins in early life history stages of the softshell clam <i>Mya arenaria</i> . MACQUARRIE, BRICELJ
9:00	Decadal scale changes in seasonal patterns of oyster recruitment in the Virginia sub estuaries of the Chesapeake bay. SOUTHWORTH, MANN	Intertidal oyster restoration along an eroding shoreline: an assessment of substrate types for stabilization and propagation. YIANOPOULOS, ANDERSON	Comparison along the New England coast of epidemic shell disease in the American lobster, <i>Homarus americanus</i> . HSU, SMOLOWITZ, CHISTOSERDOV, CHIKARMANE
9:20	A fishery-oriented model of Maryland oyster populations. JORDAN, VANISKO	Managing and monitoring intertidal oyster reefs with remote sensing in coastal South Carolina. FINKBEINER, STEVENSON, ANDERSON, YIANOPOULOS, COEN, MARTIN, CULLEN	Preliminary pathological investigation of the white abalone, <i>Haliotis sorenseni</i> . MOORE, ROBBINS, FRIEDMAN, HOOKER MCCORMICK, NEUMAN
9:40	Striking succession of mussels at newly-formed deep-sea hydrothermal vents. LUTZ, SHANK, FORNARI	Declining intertidal oyster reefs in Florida: direct and indirect impacts of boat wakes. WALTERS, SACKS, WALL, GREVERT, LEJEUNE, FISCHER, SIMPSON	First reported occurrence of MSX in Canada. STEPHENSON, MCGLADDERY, MAILLET, VENIOT, MEYER
10:00	BREAK		
10:40	Impact of an invasive tunicate in Atlantic Canada: Recruitment and competition. BOURQUE, DAVIDSON, MCNAIR, LANDRY	Influence of freshwater input on the habitat value of oyster reefs in three southwest Florida estuaries. TOLLEY, VOLETY, SAVARESE, WINSTEAD	<i>Roseimarina crassostreae</i> (gen. nov., sp. nov.) associated with JOD-signs in the absence of significant mortalities, and first isolation from a New York epizootic. MALOY, BOETTCHER
11:00		Optimizing oyster productivity in Caraquet Bay: Coordinating restoration and aquaculture. MALLETT, LANDRY	Characterization of natural killer cell-like activity in the eastern oyster, <i>Crassostrea virginica</i> . MORSEY, DE GUISE
11:20		An evaluation of sea scallop closed area boundaries; Mid-Atlantic. LANGE, DUPAUL, RUDDERS	Presence of pathogenic bacteria in the lagoon systems La Mancha and Alvarado Veracruz, Mexico in water and oyster (<i>Crassostrea virginica</i>). CHAVEZ, ERASMO, SEDAS, REYNOSO

Research Note

A New Drug for Control of Ciliates infesting Larval Bivalve Cultures : Quinine sulfate, an effective agent for control of ciliate protozoan infestations in cultures of larval scallops

David L. Leighton

Carlsbad Aquaculture Research Institute
P.O. Box 2600, Carlsbad, CA 92018 USA

Preliminary studies are showing quinine sulfate dihydrate, applied at 100 µg / mL, is highly effective as a “ciliaticide” and has had no detrimental effect on larval rock scallops, *Crassadoma gigantea*. Quinine sulfate, a potassium channel blocker, is well known for its effectiveness in control of the sporozoan malarial parasites, *Plasmodium vivax*, *P. malariae*, and *P. falciparum*. This knowledge guided me to investigate its potential as a possible quasi-selective culling agent for ciliate protozoans which often plague cultures of bivalves, especially those involving rock scallop larvae.

In our laboratory, quinine sulfate is applied as a dip bath for larvae dispersed on a nylon screen and immersed in a 100 ppm solution of the salt in seawater. An exposure time of ten minutes was adopted since microscope observations had shown time to inactivity and disintegration for most ciliates was 5 - 10 min at 100 - 200 ppm. Following the ten minute bath, larvae are dispersed into filtered seawater, feeding resumed on a regular schedule, and larvae compared on later dates to controls for continued survival and growth. Treated larvae, freed of ciliates, have been comparable in all respects to control larvae.

Typically, ciliates exposed to quinine sulfate display marked hyperkinesis within 1 - 2 min, leaving shells of moribund larvae, spinning at increasing rates, then becoming motionless, to disintegrate within 5 - 10 min.

Research in our laboratory is planned to further quantify dose - effect relations for rock scallop larvae and to extend study to other invertebrate larvae. Should therapeutic application of this substance be made in commercial bivalve production, quinine sulfate must join the list of other chemicals to be scrutinized by USFDA for use in shellfish aquaculture. We are applying for an INAD to facilitate our current research. This preliminary report may stimulate interest at other aquaculture laboratories and help to augment research on quinine sulfate.

Acknowledgments

I wish to thank the Resource Conservation District of Greater San Diego County for its grant (0061) support of rock scallop aquaculture research at the Carlsbad Aquaculture Research Institute.

Book Review

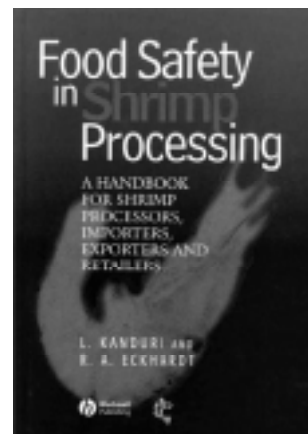
Food Safety in Shrimp Processing

Laxman Kanduri and Ronald A. Eckhardt, 200X,
Blackwell Publishing. XX pp.

This book addresses the application of Hazard Analysis Critical Control Point (HACCP) principles to shrimp processing. Overall, this is a nicely written book, which provides an overview and application of HACCP principles for the shrimp processing industry.

The first chapter describes the origin, concept and application of HACCP principles to food, and summarizes the US HACCP Regulations. It provides a good summary of the Food and Drug Administration (FDA) and United States Department of Commerce

(USDOC) programs. It also explains the differences and relationship of HACCP, which focuses on food safety, and the International Organization for Standardization (ISO) series, which focuses on quality control and quality assurance.



The second chapter describes prerequisite programs such as Good Manufacturing Practices (GMPs) and sanitation procedures that are required support programs for

HACCP. This chapter provides a good summary of the eight key sanitation points extracted from the FDA GMPs (21 CFR, part 110). However, the chapter would have been more complete if descriptions and uses of various cleaning compounds and sanitizing compounds were included.

The third chapter explains how to develop a HACCP plan and demonstrates the application of the seven HACCP principles for shrimp processing. Example forms are shown that processors will find useful in the development of their HACCP program. The fourth chapter applies the written plan to shrimp processing. Examples of a hazard analysis for raw and cooked shrimp, breaded shrimp, and dried shrimp are provided. A HACCP plan is developed for the raw and cooked shrimp products.

Chapter five provides a brief overview of how to sample products and how sampling plans can be used to evaluate products, it also discusses two and three-class sampling plans. This is an important topic, and this chapter would have benefited

continued on page 14

Shrimp... continued from page 13

from a more complete and in depth discussion of sampling issues such as “How to determine if the sampling plan is feasible and cost effective; How is a lot defined?; What is a sampling unit?; How are lots and units selected for sampling?; How well will the plan identify lots of varying quality?; etc. In addition, more examples should have been provided demonstrating the performance characteristics of different sampling plans.

Chapter six provides examples of how to verify and check product quality attributes and product specifications such as net weight, filth, flesh content in batter and breaded products, etc. The information on how to determine net weights, filth in shrimp, flesh content, etc. is available from AOAC Official Methods and various Compliance Policy Guides. However, the benefit of this chapter is that the information is compiled in one location. Thus, processors have ready access to the same procedures used by regulatory agencies to evaluate the quality and integrity of their products.

Chapter seven discusses microorganisms and describes analytical methodology to identify both pathogenic and non-pathogenic bacteria. The microbiological procedures for the listed bacteria are available from the FDA Bacteriological Analytical Manual (FDABAM), and from companies that provide the various rapid test methods. Some of the larger shrimp processors may find the analytical procedure information useful for their Quality Control and Quality Assurance Departments. In general, this chapter would have been more useful if information was also included on the prevalence and types of pathogenic bacteria found on raw and cooked seafood products, and how to control, prevent and eliminate pathogenic bacteria on food contact surfaces and in ready-to-eat seafood products, etc.

Chapter eight is a brief description on current and future application of HACCP principles for seafood safety on a national and international basis.

The appendices contain useful information such as sample HACCP record forms, shrimp product specifications, FDA’s HACCP regulations, recommendations for factory fishing vessels, etc.

In summary, this book will be useful to shrimp processors to help them develop and refine their HACCP-based management systems. It is also a good review of HACCP principles not only for the shrimp processing industry, but for other seafood products as well.

Michael Jahnke
Virginia Polytechnic Institute

President’s Message continued from page 1

“Software Development Committee” are expected to bring our group’s management capabilities up to date, with the potential for a futuristic, web-based system that is more interactive and efficient. Evan Ward also chaired a special *ad hoc* committee to review the society’s By-Laws to ensure that they are consistent with contemporary needs.

Election ballots will appear slightly differently this year. Following up on an old initiative (first discussion appear in the meeting minutes from the late 1980’s), the Executive Committee has unanimously recommended that we include a special question on this year’s ballot with regard to changing the term lengths for several of our elected positions. Over the past ten years, we have faced increasing difficulty in attracting qualified members to serve NSA as elected officers. By increasing the terms for a few key positions, we expect to improve the operation of the society by increasing the efficiency of what can be achieved (by cutting training time) and ensuring that qualified and motivated people are always in leadership positions. Typically, only about 25% of the membership votes each year, and I encourage everyone to register their vote on this topic by returning their ballots.

Finally, I want to take this opportunity to express my gratitude to all of the members who served on committees under my tenure as President. The initiatives mentioned above only acknowledge a few individuals; however, 34 members served on committees this past year, and I wish I had space to comment on everyone’s efforts.

Thank you for the opportunity to serve our wonderful organization during the past year, and I look forward to many years of continued service in other ways.

Danielle Kreeger
President

Note: see “Metamorphosis” column on page 18 for name change explanation.

Note from the Newsletter Editor

The *NSA Quarterly Newsletter* continues to expand with the addition of the *Research Note* column on page 13 in this issue. If you have material you’d like to submit as a note, please send it along to me or Sandy Shumway (contact information on back page). As always, please send along your news and any articles or events you think might be of interest to the NSA readership.

Chris Davis

Book Reviews

The Biology of the Hard Clam. 2001

Edited by J. N. Kraeuter and M. Castagna. Developments in Aquaculture and Fisheries Science Volume 31. Elsevier. 751 pp. (ISBN 0-444-81908-8)

Elsevier has published yet another important addition to the Developments series, this time the long awaited Hard Clam book. Edited by the capable John Kraeuter and Michael Castagna, they have brought together a series of authors notable for their work on molluscan biology and in particular quahogs or as the editors prefer hard clams. The book is well laid out, easy to read and mostly free of typos and formatting errors. The reference list is extensive and covers much of the past, as well as, recent sources both in the primary and harder-to-find grey literature.

The book is divided into three sections and sixteen chapters and covers broad topics such as descriptive biology, environmental biology, and fisheries, aquaculture and human interactions. The individual chapters are organised into taxonomy, shell structure, embryogenesis, anatomy, reproduction and genetics in the first section, functional morphology, physiological ecology, demography, integrating physiology and ecology, predation and disease in the second section, and management, history, aquaculture and introductions in the final section. These topics are comprehensively researched and in many chapters there is an important synthesis of the information with new insights and/or integration of disciplines (e.g., new feeding model of hard clams in chapter 8 and interactions between physiology and ecology to explain interactions between physics and biology in chapter 10). Aquaculture of the hard clams is covered in a chapter by Michael Castagna, but as the editors note, a much more extensive treatment of this particular topic is covered in Elsevier's *Clam Mariculture in North America* book.

The book is of value for hard clam and molluscan researchers and students not only for its extensive review and synthesis of the literature, but also for highlighting further research opportunities. As the editors note "it may be surprising that the information has never been gathered in a single volume". We can now say that this has now been successfully accomplished.

G. Jay Parsons
NSA Past President

Crabs in Cold Water Regions: Biology, Management, and Economics

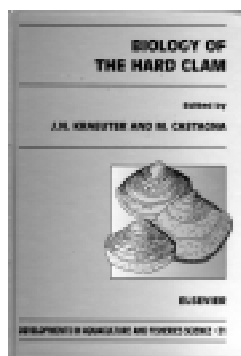
Editors: A.J. Paul, E.G. Dawe, R. Elnor, G.S. Jamieson, G.H. Kruse, R.S. Otto, B. Sainte-Marie, T. Shirley and D. Woodby. 2002 University of Alaska Sea Grant, AK-SG-02-01, Fairbanks, 876 pp. \$40 (US) \$60 (overseas)

This book is the latest in the Lowell Wakefield Symposium Series, sponsored by the Alaska Sea Grant College Program. The meetings are for information exchange on all aspects of the biology, management, economics and processing of fish species and an opportunity for scientists from 'high latitude countries' to interact. This particular volume represents the proceedings of Crab 2001, Crabs in Cold Water Regions: Biology, Management, and Economics, held January 17-20, 2001 in Anchorage, Alaska, and is the 6th crab symposium in the series. It is impressive that the organizers were able to organize the conference, solicit and have the manuscripts peer-reviewed, and publish the book in less than two years.

The first two papers and the last were not part of the Symposium but invited to complete the volume. The first paper discusses the correct spelling and publication date for the golden king crab, *Lithodes aequispinus* Benedict, 1895, and the second provides a checklist of Alaskan crabs. The following 50 papers are divided into six sections: Life History, Growth, and Mortality; Reproductive Biology and Behavior; Recruitment and Population Dynamics; Fisheries and Stock Assessment; Environmental, Ecological, and Habitat Relationships; Syntheses of Fishery Histories, Management Strategies and Economics. As with any symposium, the topics are diverse and range from mundane but necessary topics such as intermolt duration, growth and mortality, to innovative studies of molting using time-lapse video and a proposed new method to estimate duration of molt stages. While this is not a book that will be read cover to cover by many, it is one that will provide a solid reference source for several years. Citations as recent as 2001 are common throughout the text. There are several papers covering distribution, observer programs, bycatch, and stock management that should be invaluable reference sources for managers. The last paper is a comprehensive review of the distribution, biology and fisheries of the Family Lithodidae. It is disappointing that a review of this caliber is not in the primary literature, but it certainly adds to the value of the Proceedings.

The layout, type, and copy editing are excellent and the cover is a striking graphic of crabs in orange and white. The index is comprehensive and, based on a few trial searches, seems to work. Equally appealing is the price. At \$40, the book is a bargain and should find its way to the bookshelves of libraries, scientists, managers and students alike.

Sandy Shumway



Gulf Coast Update

As 2003 begins its trek, the Gulf oyster industry settles down from a hectic holiday sales season. January and February are generally slow times for oyster sales, with restaurant business down due to consumers paying off their Christmas debt. This is the time of year industry members "catch their breath" from filling Thanksgiving and Christmas orders and have time to focus on other things or just to stop and think before sales pick-up again during Mardi Gras and Lent.

There is plenty to think about. Better prices are always in mind and consumer demand/confidence and product availability "steer the boat." Is to plant (i.e., bed, if you're from Louisiana) or not to plant more seed the question? To spend more money for what kind of return is the real question. Preparing for upcoming state legislative sessions take a great deal of effort to preserve the status quo, make things better, but more importantly keeping things from getting worse. It is a good time to hold industry conventions and other meetings to address these and other issues, like "What's in store for the future? Industry laments about its future. Its leadership knows that research is an important part in finding answers. The Gulf oyster industry has been actively involved in the Gulf Oyster Industry Program (GOIP) to help identify and prioritize the region's oyster research needs. Many are actively involved in past, present and proposed projects as industry collaborators, providing important in-kind contributions. The results of GOIP and other oyster research will be presented at the NSA meeting in New Orleans during the Gulf of Mexico Oyster Research Session. The session's diversity of topics is an example of the broad scope of questions the industry and our gulf estuaries need answered.

Future research needs will be addressed at the national oyster summit in Annapolis, February 17-18. Entitled "Oyster Research and Restoration in U.S. Coastal Waters," this meeting will take us from where we are to where we need to go regarding oyster research. Active participation by industry is important to provide input and help organize the needed congressional support.

April is a great time to be in New Orleans! Bivalves and fun go hand-in-hand, help attract tourism and stimulate the economy in all coastal regions. Two oyster dishes have taken over the New Orleans scene. "Barbequed" oysters, like buffalo wings but spicy-fried oysters, at the Redfish Grill on Bourbon Street are worth the walk. The charbroiled oysters at Drago's in Metairie are definitely worth the cab fare from the French Quarter. Just eat lots of oysters..... to help "steer the boat."

John Supan

CLAMANIA: Notes from Florida

Hard clam aquaculture production in Florida exceeded all expectations over the past decade. This emergent industry went from producing less than 10 million clams in 1991 to over 140 million clams in 2001 (FASS 2002). According to the biyearly aquaculture survey conducted by the Florida Agricultural Statistics Service, farm gate sales of clams totaled \$15 million in 2001. From a handful of growers, there are now over 450 industry members certified through the state's lead agency, the Department of Agriculture and Consumer Services (DACS). A number of spin-off businesses (for example, hatcheries, bag suppliers, and wholesalers) have also developed in support of this production. The total value of the industry was recently assessed by marine economists at the University of Florida (UF) using an input-output analysis (Philippakos et al. 2001). The impact to the state's economy was \$34 million in output, \$9 million in labor income, and \$12 million in value added, making clam farming an important agribusiness in Florida.

Then last year the industry ran "head-on" into its first significant roadblock. Dockside prices plummeted by 30% or more. Clams continue to remain on the bottom unsold. The problems encountered may be simply a matter of supply and demand. Clam production is on the rise in just about every state along the eastern seaboard. This happens to coincide with an economic recession. Since clams are considered to be a luxury seafood item, demand is on the downside. Industry observers are speculating as to whether this is just a temporary obstacle or is it time to look to the future of this industry?

With that in mind, local growers associations are starting to activate. A membership drive conducted by the Cedar Key Aquaculture Association resulted in about 200 active members. Other groups are also recognizing the need to unite to face common industry challenges. A forum held in November in conjunction with the Florida Aquaculture Association's annual conference introduced clam growers to several successful agribusiness organizations, such as the Catfish Farmers of America. Funding from the USDA Risk Management Agency through their Targeted Commodity Partnerships Program is being used to develop organizational structures and strategies for the Florida clam industry. These groups are also looking at the formation of the East Coast Shellfish Growers Association as a means of gaining recognition on a national level.

Further development of local, state, and national markets for cultured clams needs to be achieved. State funding allocated by the 2002 legislature to the DACS Bureau of Seafood and Aquaculture Marketing will allow for the initiation of a comprehensive advertising and promotional campaign this year. These efforts are being strengthened by communities'

continued on page 17

ECSGA is off the ground!

Over the past year there has been an effort to start a new grower's association; the East Coast Shellfish Growers Association (ECSGA) patterned after the Pacific and Gulf Coast industry groups. After meeting informally three times over the past year, we held our first official meeting in November at the International Conference on Shellfish Restoration (ICSR). Since March the group has been holding virtual discussions through an internet discussion list which has around 75 subscribers. Online we have been hashing out issues such as membership, dues, organizational structure and our mission statement. At the November meeting the group set forward several goals designed to produce tangible products that support the industry. The first will be to publish a position paper on the beneficial impacts of shellfish culture on the environment. We hope to put the facts in readable language and print it as a glossy brochure that can be distributed to the public, members of the press, public officials, lawmakers, and environmental groups.

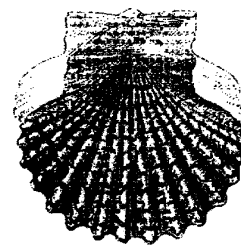
Other goals for 2003 include:

- ✓ Continue development work on the ECSGA website;
- ✓ Send one or two members to represent growers at the International Shellfish Sanitation Conference this summer;
- ✓ Publish four newsletters;
- ✓ Identify funding sources for developing BMPs and apply for those funds; and
- ✓ Hold an annual conference

The organization hopes to offering growers marketing assistance and aims to serving as a united industry voice to address issues that could impact the many growers along the East coast. The ECSGA hopes to eventually hire an executive director who could get out the facts about shellfish and shellfish culture and make sure that public money is focused on issues and research important to the industry. The executive director would be the industry point person who could respond to press questions about shellfish safety issues, disease outbreaks, or other problems.

Getting the group off the ground has been challenging because the East coast industry is a very diverse group, composed of hundreds of small growers spread across a huge geographic range. Few of these growers has the resources to deal with the issues facing our industry. Organizers feel the need for an organization that helps our industry speak with a unified voice, because if we don't speak up for ourselves then someone else will be setting the agenda for our industry.

To join the ECSGA's listserve, send an email to LISTSERV@pete.uri.edu with the message "subscribe ECSGA john.doe@AOL.com John F. Doe" in the body of the email. For more information contact your state growers association or extension agent. The website will be up shortly at www.ECSGA.org.



Bob Rheault

Florida Update continued from page 16

awareness and support of their shellfish aquaculture-based economy. Here are a few examples. In September, the City of Sebastian hosted its first Clam Bake. The weekend event attracted over 10,000 people, all clamoring to consume clams steamed, raw, in chowder, and over pasta. At the 33rd Annual Seafood Festival held in Cedar Key, the newly formed aquaculture association served clams under a banner proclaiming, "We're USA's #1 Producer of Farm Raised Clams!" This boast is also proudly displayed on roadway signs entering the island community.

In addition, finding ways to reduce production costs and increase production efficiency is needed to enhance profitability for growers. Can even a cheaper clam be produced? The recently implemented CLAMMRS: Clam Lease Assessment, Monitoring, and Modeling using Remote Sensing, Project in which "real-time" water quality monitoring stations have been deployed at major growing areas throughout the state, will assist in this effort (check out www.FloridaAquaculture.com/Sondes). Other integral components of this USDA-funded, cooperative project between the DACS and the UF include development and evaluation of a clam production model and monitoring changes in natural food abundance and quality. Utilizing USDA crop assistance programs developed over the past few years for cultured clams will allow growers to reduce production risks and to plan better for the uncertainties that characterize farming. The pilot crop insurance program is undergoing its fourth year of evaluation in Florida and three other states by the Risk Management Agency.

Attention to each of these factors (industry unification, market expansion, promotional efforts, optimizing production practices) is needed to provide for sustainability of the cultured clam industry, which has grown so quickly to be an important source of economic activity in Florida's coastal communities.

Leslie Sturmer

Pacific Coast Section Report

The 56th annual meeting of the Pacific Coast Section of the National Shellfisheries Association was held September 27-30, 2002 in Newport Oregon. As always, the meeting was held in conjunction with the Pacific Coast Shellfish Grower's Association. Fifty presentations were made, with theme sessions for Shellfish Habitat, Estuarine Habitat, Assessment and Management of Public Resources, Crustaceans, Genetics, Geoducks, Invasive Species, Nasty Stuff in the Water, Shellfish Diseases and Hatcheries and Culture. There were also workshop sessions on Legislation and Code of Practice, Marketing, Practical Business Strategies for Growers and Geoduck Farming Techniques.

Thirteen student presentations were made, a steady increase from 4 in 2000 and 7 in 2001. P. Sean McDonald and Kirsten Holsman each won NSA-PCS Student Paper Awards. Kristen's paper was Patterns in intertidal habitat use by subadult Dungeness crab (*Cancer magister*), co-authored with Sean McDonald, David Armstrong and Jennifer Ruesink. Sean's paper was Biotic resistance to European green crab, *Carcinus maenus*, by native analogs in the northeastern Pacific, co-authored with Gregory Jensen and David Armstrong. Heather Macrellis won the PCSGA Student Paper Award for her paper The role of culture practices in structuring interactions between cultured oysters and native eelgrass, co-authored with Jennifer Ruesink and Brett Dumbauld.

We were thrilled with the increase in student involvement this year. Support funding for students presenting papers at the meeting are provided through the Ken Chew Endowment Fund, which provides conference registration, hotel rooms, publishing costs for abstracts in the *Journal of Shellfish Research*, banquet tickets and the Best Student Paper Award. The endowment fund is supported by fund-raising activities including student sponsorships, coffee break sponsorships, silent auctions, barbeques or shellfish feasts at the meeting.

The executive is pursuing development of the NSA-PCS website. Our goal is to provide easily-accessible and regularly updated information, including an electronic newsletter (which will greatly reduce newsletter costs). Check the NSA website later this year for a link to the new PCS website.

Most executive positions were carried over for another year, including Graham Gillespie (Chair), Jennifer Whitney (Vice-Chair) and Don Velasquez (Secretary/Treasurer). Joe Schumacker was elected to an additional Vice-Chair position and four new Members-at-Large were elected: Jon Agosti, David Fyfe, Chris Pearce and Russell Rogers. Three Student Members-at-Large were added to the

executive: Colleen Burge, Amiee Christy and Bridget Smith.

Planning is underway for the 2003 meeting, date and location to be determined. Proposed theme sessions and workshops include Echinoderm Culture and Assessment, Genetics, Invertebrate Assessment and Fishery Management, Geoducks, Estuarine Ecology and Nuisance Species. Registration information will be available on the Pacific Coast Shellfish Grower's Association website (<http://www.pcsga.org>) and those interested in presenting talks at the meeting can contact Graham Gillespie (contact information on back page).

NSA Membership Directory

After only a decade, the new Membership Directory is finally here! You may have received it by the time this newsletter is published. If not, watch your mailbox! Many thanks to Ami Wilbur and Aswani Voley for their efforts and to all who read the page proofs. We have compiled the most complete record we could with the information on hand and the responses we received from members. This is a fluid document and will be updated regularly. We are especially interested in filling in the missing 'interests'. PLEASE SEND ANY CORRECTIONS, ADDITIONS, OR DELETIONS to me or Nancy Lewis (addresses on back page) so they can be included in the next issue.

It would be nice if the next issue was twice as large.....get out there and recruit some new members!!!

Sandy Shumway

Metamorphosis

Danielle Kreeger recently dealt with a lifelong gender condition by transitioning from male to female. For anyone interested in learning more about this, please refer to the url <http://hometown.aol.com/deepix3/myhomepage/profile.html>. She expresses her heartfelt gratitude to all of her friends and colleagues who have supported her through this important life change.

Vista Nieve Update

Mel Carriker writes that he has taken over the distribution of his book "Vista Nieve" because his commercial distributor has gone out of business. Orders by telephone (302-645-4274) or at carriker@udel.edu. Checks and money orders only. Price \$18.95 + \$4 S&H

Upcoming Meetings

Oyster research and Restoration in U.S. Coastal Waters: Strategies for the Future: February 17-18, 2003, Annapolis, MD. For more information, contact Jonathan Kramer, Maryland Sea Grant via email: kramer@mdsg.umd.edu.

Aquaculture America 2003: February 18-21, 2003, Kentucky International Conference Center, Louisville, KY. For more information, contact the conference manager at phone 760-432-4270 or email: worldaqua@aol.com.

23rd Milford Aquaculture Seminar: February 24-26, 2003, Quality Inn, New Haven, CT. For more information, contact Walter Blogoslawski at phone 203-882-6535 or email walter.blogoslawski@noaa.gov.

2003 Freshwater Mollusk Conservation Society Symposium: March 16-19, 2003, Sheraton Imperial, Research Triangle Park, Durham, NC. For more information, contact John Alderman via email aldermjm@mindspring.com or visit <http://ellipse.inhs.uiuc.edu/FMCS/Symposium/>.

Sea Urchin 2003: March 25-27, 2003, Puerto Varas, Chile. For more information, visit www.ifop-aquaculture.cl/seaurchin2003/index.html.

Benthic Ecology Meeting 2003: March 28-30, 2003, University of Connecticut, Groton, CT. For more information, visit www.marinesciences.uconn.edu.

Evolution and Biology of Marine Limpets: March 28-30, 2003, Universities Marine Biological Station, Millport, Isle of Cumbrae, Scotland. For more information, contact Hugh Jones via email hugh.jones@man.ac.uk.

National Shellfisheries Association 95th Annual Meeting: April 13-17, 2003, DoubleTree Hotel, New Orleans, LA. NSA Vice-President Lou D'Abramo is the Program Chair; see the back page for his contact information.

National Conference on Coastal and Estuarine Habitat Restoration: April 13-16, 2003, Hyatt Regency Inner Harbor Hotel, Baltimore, MD. For more information, visit <http://www.estuaries.org/> or contact Heather Bradley, Conference Coordinator at Restore America's Estuaries, Phone: 703-524-0248 or email: hbradley@estuaries.org.

5th International Abalone Symposium: April 23-29, 2003, Ocean University of Qingdao, Qingdao, China. For more information, visit www2.ouqd.edu.cn/paoyu/default_e.htm.

14th International Pectinid Workshop: April 23-29, 2003, Hilton Hotel, St. Petersburg, Florida USA. For information

visit workshop web site at <http://conference.ifas.ufl.edu/scallops/> or contact Beth Miller-Tipton, Conference Coordinator, Phone: 352-392-5930, fax 352-392-9734 or email: bmiller-tipton@mail.ifas.ufl.edu.

World Aquaculture 2003: May 19-23, 2003, Bahia Convention Center, Salvador, Brazil. For more information, contact the conference manager at phone 760-432-4270 or email: worldaqua@aol.com.

69th American Malacological Society Meeting: June 25-29, 2003, Ann Arbor, MI. For more information, contact Diarmaid Ó Foighil by phone Phone: 734 647 2193 or email diarmaid@umich.edu.

9th International Congress of the International Society for Developmental and Comparative Immunology: June 29 - July 4, 2003, University of St. Andrews, Scotland, UK. The Congress remit includes all aspects of comparative, developmental or evolutionary immunology across the whole spectrum of living organisms and will also report findings from new genomic, proteomic and bioinformatic studies. For further information, contact Dr Val Smith by email: v.j.smith@st-and.ac.uk or visit: <http://www.st-and.ac.uk/~seeb/ISDCI/home.htm>.

Aquaculture Europe 2003: August 8-12, 2003, Trondheim, Norway. This year's theme is "Beyond Monoculture". For more information, contact Alistair Lane, EAS Executive Director by phone +32-59-32-38-59 or email ae2003@aquaculture.cc or visit <http://www.easonline.org>.

Aquaculture 2004: March 1-5, 2004, Hawaii Conference Center, Honolulu, Hawaii. International Triennial Conference and Exposition of the National Shellfisheries Association, American Fisheries Society Fish Culture Section and the World Aquaculture Society. For more information, contact the conference manager at phone 760-432-4270 or email: worldaqua@aol.com.

If you would like to announce any meetings, conferences or workshops that might be of interest to NSA members, please contact Chris Davis (see back page for contact information).

AQUACULTURE 2004 - HAWAII MARCH 1-5, 2004

is just around the corner...

There is still time to send Sandy Shumway
your ideas for Special Sessions
(Sandy's contact information is on back cover)

Ms. Nancy Lewis
NSA Bookkeeper
VIMS Eastern Shore Lab
P. O. Box 350
Wachapreague, VA 23480

Forwarding Service Requested

First Class Mail
US Postage
Paid
Waldoboro, ME 04572
Permit #1

Officers, Committee Chairs and Staff of the National Shellfisheries Association

Dr. Danielle Kreeger, **President**
Patrick Center for Environmental Research
Academy of Natural Sciences
1900 Ben Franklin Parkway
Philadelphia, PA 19103
Phone (215) 299-1184; FAX (215) 299-1079
Email: kreeger@acnatsci.org

Dr. Sandra Shumway, **President-Elect; Editor, Journal of Shellfish Research; Steering Comm., Aquaculture '04; Chair, Site Selection Comm.**
Dept. of Marine Sciences
University of Connecticut
1080 Shennecossett Road
Groton, CT 06340
Phone (860) 405-9152; FAX (860) 405-9153
Email: sshumway@uconnvm.uconn.edu

Dr. Lou D'Abramo, **Vice-President; Chair, Program Committee; Co-Chair, Publications Committee**
Department of Wildlife and Fisheries
Mississippi State University
Box 9690, Mississippi State, MS 39762
Phone (662) 325-7492; FAX (662) 325-8726
Email: ldabramo@cfr.msstate.edu

Dr. David Bushek, **Treasurer**
Baruch Marine Field Laboratory
P. O. Box 1630
Georgetown, SC 29442
Phone (843) 546-3623; FAX (843) 546-1632
Email: bushek@sc.edu

Dr. Karolyn Mueller Hansen, **Secretary**
Oak Ridge National Laboratory
Bldg. 4500S, MS 6123
Bethel Valley Road, P.O. Box 2008
Oak Ridge, Tennessee 37831
Phone (865) 691-6808
Email: news@shellfish.org

Ms. Nancy Lewis, **Bookkeeper**
VIMS Eastern Shore Lab, P. O. Box 350
Wachapreague, VA 23480
Phone (757) 787-5816; FAX (757) 787-5831
Email: nlewis@vims.edu

Dr. Melbourne R. Carriker, **Historian**
College of Marine Studies
University of Delaware
Lewes, DE 19958
Phone (302) 645-4274; FAX (302) 645-4007
Email: carriker@udel.edu

Dr. Aswani Volety, **2000-2003 Member-at-Large; Co-chair, Membership Comm.**
Environmental Science
College of Arts and Sciences
Florida Gulf Coast University
10501 FGCU Blvd., Fort Myers, FL 33965-6565
Phone (941) 590-7216; FAX (941) 590-7200
Email: avolety@fgcu.edu

Dr. Loren Coen, **2001-2004 Member-at-Large**
Marine Resources Research Institute
SCDNR, 217 Fort Johnson Road
Charleston, SC 29412
Phone (843) 953-9152; FAX (843) 953-9820
Email: coenl@mrd.dnr.state.sc.us

Dr. Gary H. Wikfors, **2002-2005 Member-at-Large; Chair, Resolutions Committee; Co-Chair, Endowment / Student Awards Committee**
National Marine Fisheries Service Laboratory
212 Rogers Ave., Milford, CT 06460
Phone (203) 579-7025; FAX (203) 579-7017
Email: gary.wikfors@noaa.gov

Dr. G. Jay Parsons, **Chair, Past-Presidents, Elections and Awards Committees**
Marine Institute of Memorial University
P. O. Box 4920, St. John's, NF Canada A1C 5R3
Phone (613) 990-0278; FAX (709) 778-0535
Email: Jay.Parsons@mi.mun.ca

Dr. Fu-Lin Chu, **Co-Chair, Endowment / Student Awards Committee**
VIMS School of Marine Science
College of William and Mary
P. O. Box 1346, 1208 Greate Road
Gloucester Point, VA 23062
Phone (804) 684-7349; FAX (804) 684-7186
Email: chu@vims.edu

Dr. Ami Wilbur, **Co-Chair, Membership Comm.**
Department of Biological Sciences
Center for Marine Studies
University of North Carolina at Wilmington
5600 Marvin K. Moss Lane
Wilmington, NC 28409
Phone (910) 962-2389; FAX (910) 962-2410
Email: wilbura@uncwil.edu

Mr. Steve Allen, **Student Recruits**
Grice Marine Laboratory
205 Fort Johnson Road
Charleston, SC 29412
Phone (843) 406-9727
Email: stevenmallen@hotmail.com

Mr. Graham Gillespie, **Chair, Pacific Coast Section**
Pacific Biological Station
3190 Hammond Bay Road
Nanaimo, BC, Canada V9R 5K6
Phone (250) 756-7215; FAX (250) 756-7053
Email: gillespieg@pac.dfo-mpo.gc.ca

Dr. Jonathan Davis, **Co-Chair, Industry Committee**
15425 Smoland Lane
Bainbridge Island, WA 98110
Phone (206) 842-0894; FAX (360) 765-3028
Email: jdavis32@mindspring.com

Mr. Richard C. Karney, **Co-Chair, Industry Committee**
Martha's Vineyard Shellfish Group
P. O. Box 1552, Oak Bluffs, MA 02557
Phone/FAX (508) 693-0391
Email: MVSG@capecod.net

Tom Soniat, **Chair, Arrangements Committee for 2003**
Department of Biology
Nicholls State University
Thibodaux, LA 70310
Phone (985) 448-4865
Email: biol-tms@nicholls.edu

Mr. George Abbe, **Chair, A-B-F**
Estuarine Research Center
Academy of Natural Sciences
10545 Mackall Road, St. Leonard, MD 20685
Phone (410) 586-9700; FAX (410) 586-9705
Email: abbe@acnatsci.org

Dr. Victor S. Kennedy, **Co-Chair, Publications Committee**
Horn Point Laboratory
University of Maryland Center
for Environmental Science
P.O. Box 775
Cambridge, MD 21613
Phone (410) 221-8286; FAX (410) 221-8490
Email: kennedy@hpl.umces.edu

Dr. Christopher V. Davis, **Editor, NSA Quarterly Newsletter**
P.O. Box 302, 1957 Friendship Road,
Waldoboro, ME 04572
Phone/FAX (207) 832-6067 (call before faxing)
Email: cdavis@midcoast.com