

National Shellfisheries Association

QUARTERLY NEWSLETTER



Spring 1988

Lewes, Delaware

Final Arrangements Made for NSA — New Orleans

Everything is ready to go for the 80th annual meeting of NSA to be held at the New Orleans Meridian Hotel from June 26-30, 1988. You should already have received a packet of registration information. If not, use the registration form included in this issue of the newsletter and send it to Secretary-Treasurer Ed Rhodes. Also, ask Ed to send you additional information about the meeting and what to do and see while in New Orleans. Ron Dugas and Tom Soniat have done a great job with local arrangements that are sure to make this year's meeting both an interesting and enjoyable one.

Hotel rates at the Meridian will be \$68/night for either a single or double room. Arrangements have been made to accommodate students, three to a room, for \$50/night complete. A limited number of rooms (25 - all triples) have been reserved. Students should call Linda Green at (803) 795-6350 to make room arrangements. Don't wait too long to call Linda! Once the student rooms are filled, all other student room reservations will be at the regular member rate.

Special reduced rates on airfares are available through Piedmont Airlines. For more information, contact Piedmont's convention reservation desk at 1-800-334-8644. For a price quote or to reserve a flight, refer to "Gold File Number 285000" or "Shellfisheries Association in New Orleans" so the operator will know which file to call up on the computer. Budget Rent a Car will serve as the official car rental company for this year's meeting and will be extending discount car rental rates to all attendees one week before and one week after the meeting. For advance reservations, mail in the reservation card that has been provided to you in your registration packet or call either of Budget's downtown locations from your hotel by dialing 525-9417 or 585-9395 to place your reservation.

Shellfish Institute of North America (SINA) members are being invited again this year to register for the meeting at NSA member rates. The meeting registration fee prior to June 1, 1988 — \$90.00 for members and \$60.00 for students — will increase to \$125.00 and \$95.00 respectively, if you pre-register after June 1, 1988 or register at the meeting. The registration fee will cover all technical sessions and will also include an evening jazz cruise on the riverboat "Natchez", a President's reception featuring a variety of Louisiana aquaculture products and other hors d'oeuvres and an awards luncheon. It pays to register early so don't delay. Also, Ken Chew has again lined up another one of his infamous Chinese dinners to be held this time at the New Orleans Botanical Garden. This is an optional event that has become an NSA tradition. For \$15.00 per person (including transportation) how can you go wrong! If you've had the opportunity to attend one of these affairs before, you know what to expect. If not, make sure you sign up early and don't forget to bring your chopsticks.

Overall, when you consider the concurrent technical sessions, planned social events and all the interesting sights, sounds and tastes that New Orleans has to offer, this year's annual meeting adds up to be one of the best ever. Don't wait until the last minute to make your reservations. If you need any additional information or have any questions regarding local arrangements in New Orleans, contact either Ron (504) 568-5678 or Tom (504) 286-7042.

To put things in a historical perspective — NSA met in New Orleans in 1969 at which time 29 papers were presented and again in 1973. New Orleans was also the site of the 1978 meeting at which 23 papers were given. Ten long years have gone by since then so it seems we are way overdue for an annual meeting down in Cajun country. I hope Pete Fountain and the Preservation Hall Jazz Band are in town that week.

Federal Funds for Oyster Disease Research

Oyster populations on the Atlantic and Gulf Coasts continue to be ravaged by the parasites *Haplosporidium nelsoni* and *Perkinsus marinus*. The severe economic impact of these diseases has prompted Congressman Roy Dyson (Maryland) to seek Federal funds for a **National Oyster Disease Research Assistance Act**. This legislation will request \$68 million over a 10 year period to be used solely for scientific research related to diseases in both *Crassostrea virginica* and *Crassostrea gigas*. These funds are to be available nationally for proposals that have been peer reviewed and ranked.

In order for this legislation to be passed it will need bipartisan support which can only be attained if NSA members take time to lobby their elected representatives. If you require further details concerning this legislation, please contact: Dr. Roger Newell, Horn Point Environmental Laboratories, University of Maryland, Box 775, Cambridge, MD 21613 (301) 228-8200.

Contributions to the NSA Quarterly Newsletter

The purpose of the NSA Quarterly Newsletter is to develop communication between members of the NSA and to serve as a forum for the distribution of information of interest to the membership. The newsletter is published four times a year (spring, fall, winter, and ballot —late winter) and prints items relating to NSA business matters, the **Journal of Shellfish Research**, recent publications, future meetings, job opportunities, activities of other professional societies and miscellaneous items of interest. The newsletter is produced on an IBM PC using WordPerfect software. Whenever possible, your contribution (text) should be accompanied by a 5 1/4 inch diskette (which I will return) as either a WordPerfect or DOS text file. Camera ready text should be typeset or laser printed with 7 1/2 inch margins to insure

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compatible type size when reduced. All members are encouraged to submit materials by the appropriate deadline to: **John W. Ewart, Editor, NSA Quarterly Newsletter, College of Marine Studies, University of Delaware, Lewes, DE 19958, (302) 645-4060.**

The deadline for submitting material for the next (fall) issue of the newsletter is **August 1, 1988.**

Other Professional Organizations

The **Crustacean Society** was founded in December 1979 to improve information exchange among those interested in any aspect of the biology of Crustacea. Current membership is approximately 850. One of the Society's goals is the prompt publication of member's shorter manuscripts on crustacea biology. The attainment of that goal has been made possible by the **Journal of Crustacean Biology**, the first issue of which was published in February 1981.

The Society meets annually with the **American Society of Zoologists** and with the **ASZ's Divisions of Invertebrate Zoology and Ecology**. These groups also co-sponsor contributed sessions on crustaceans as well as symposia and workshops. For additional information about the **Crustacean Society**, contact: Paul A. Haefner, Rochester Institute of Technology, Rochester, NY 14650.

The **International Association of Astacology** was founded in 1972 and now has over 275 members from a variety of disciplines in industry, academia and state and federal government wildlife agencies. The objective of the Association is to promote the scientific study of the freshwater crayfish of the world. Eight working groups consisting of members from around the world communicate interests and activities from their respective areas which range from general biology and ecology to zoogeography and species transplantations. The Association publishes a quarterly newsletter and is preparing a membership directory. Meetings take place at two and three year intervals, with the last held in Lausanne, Switzerland in 1987. For additional information about the **International Association of Astacology**, contact: Jay V. Huner, Southern University, Baton Rouge, LA 70803.

NSA Program Set For New Orleans

Scott Siddall, NSA Program Chairman, has prepared a preliminary schedule of the technical sessions for the upcoming annual meeting. Due to the large number of scheduled presentations (79 oral, 12 poster), concurrent sessions will be held again this year. The oral presentations have been arranged so as to minimize conflicts as much as possible. Posters will be attended by authors on Monday afternoon and will be on display throughout the meeting. This year's program will include special sessions on the **Louisiana Oyster Industry, Crawfish, and Water Quality in Shellfish Growing Areas**. Abstracts of all the oral and poster presentations (along with those of our last two previous meetings) will be published in the next issue of **JSR** which will be out prior to the meeting. Contact Scott if you have any questions about this year's program.

(NSA Program Set For New Orleans piece should appear at bottom of pg 2 preliminary program will take up pages 3 and 4)

Publications of Interest

The **Crustacean Nutrition News letter**, published by the World Aquaculture Society, contains useful information for anyone working or interested in the field of crustacean nutrition. Contributions to **The Crustacean Nutrition Newsletter** should be sent to the editor, John Castell, Department of Fisheries and Oceans, Biological Sciences Branch, P.O. Box 550, Halifax, Nova Scotia, Canada B3J 2S7. Subscriptions are available for \$3.00 by contacting the Home Office Manager, World Aquaculture Society, 16 E. Fraternity Lane, LSU, Baton Rouge, LA 70803 (504) 388-3137.

Aquafood Business Associates has published a new, practical manual entitled, **Marine Shrimp Farming: A Guide to Feasibility Study Preparation**. The text is 90 pages in length and features 60 illustrative tables and six appendices. Information on how to accurately estimate land and hatchery requirements, construction costs for ponds, hatchery and processing plant, operating costs and cash flow for the proposed farm. To assist readers who are unfamiliar with marine shrimp farming, the manual summarizes critical information on marine culturing techniques and includes a detailed glossary.

The manual is available for \$99.00, which includes postage and handling. All orders must be prepaid with checks or bank drafts drawn on a U.S. bank. To order, contact: Aquafood Business Associates, P.O. Box 16190, Charleston, SC 29412.

Start Thinking About Aquaculture '89

Aquaculture '89 will be held February 12-16, 1989 at the Westin Bonaventure Hotel in Los Angeles, California. The **National Shellfisheries Association** is a sponsor of this major event along with the **Catfish Farmers of America**, Fish Culture and Bioengineering sections of the **American Fisheries Society**, the **Shellfish Institute of North America**, the **U.S. Trout Farmers Association** and the **World Aquaculture Society**. These are the major sponsors along with several other societies and associations acting as co-sponsors. The meeting will serve to focus on the importance of aquaculture in the U.S. Since NSA is going to be a major sponsor of this event, the Board of Directors of NSA (EXCOM) has voted to have our annual meeting shifted ahead in 1989 from the normal summer meeting time to the dates of **Aquaculture '89**. We will have our own NSA program at this meeting and the fact that we will be sponsoring this event will afford us an opportunity to make some money for the Association provided we get good representation (attendance) from our membership. More information about NSA's participation in **Aquaculture '89** will be forthcoming following the June 1988 meeting in New Orleans.

The **Aquaculture Digest** recently announced the release of a publication entitled **Shrimp Farming in the United States** — a 24 page status report, who's who and buyers' guide.

Written by Bob Rosenberry, editor and publisher of the **Aquaculture Digest**, **Shrimp Farming in the United States** contains a directory, eight advertisements and nine articles. The first three articles update the status of domestic and international shrimp farming. The next three cover developments in Hawaii, South Carolina and Texas, and the final three discuss publications, federal programs and professional organizations. The directory contains 150 names, addresses and phone numbers of farmers, suppliers and researchers.

Shrimp Farming in the United States sells for \$13.50. If you would like to receive additional information or place an order, contact: Bob Rosenberry, **Aquaculture Digest**, 9434 Kearney Mesa Road, San Diego, CA 92126 (619) 271-0133. If ordering, please make payment in U.S. funds drawn on a U.S. bank.

SUNDAY -- JUNE 26

7:00 - 10:00 PM

**PRESIDENT'S RECEPTION
Ile de France**

MONDAY -- JUNE 27

**LARVAE AND
RECRUITMENT:
Ile de France**

Moderator: NANCY HADLEY

| TIME | |
|---------------|--|
| 9:00 - 9:20 | Swimming behaviour of mactrid larvae in response to salinity gradients (Campos and MANN) |
| 9:20 - 9:40 | Larval <i>Mercenaria</i> recruitment: life in muddy waters and little air supply (HUNTINGTON and Miller) |
| 9:40 - 10:00 | Disocilia and paddle cilia in the larvae of <i>Mulinia lateralis</i> and <i>Spisula solidissima</i> (Campos and MANN) |
| 10:00 - 10:30 | ----- B R E A K ----- |
| 10:30 - 10:50 | Induction of settlement and metamorphosis of <i>Mytilus edulis</i> (L.) larvae by DOPA-containing polyphenolic protein (ESTUPINAN and Waite) |
| 10:50 - 11:10 | Factors affecting settlement of the American oyster (<i>Crassostrea virginica</i>) in high salinity southeastern estuary (KENNY, Michener and Allen) |
| 11:10 - 11:30 | Use of image analysis in determination of growth and mortality rates of newly settled <i>Crassostrea virginica</i> (ROEGNER) |
| 11:30 - 11:50 | Temporal and spatial patterns of recruitment of <i>Mercenaria</i> spp. in the Indian River Lagoon, Florida (MARELLI and Arnold) |

11:50 - 1:30 ----- LUNCH (on your own) -----

POSTER SESSION:

Frontenac

AUTHORS PRESENT

Posters displayed until Thursday 5:00 PM
Titles listed at end of program

**BIVALVE GROWTH
AND FEEDING:
Ile de France**

Moderator: V. MONICA BRICELJ

| | |
|-------------|---|
| 2:40 - 3:00 | Feeding behavior of blue mussels: effects of microalgal eutectins (WARG and Targett) |
| 3:00 - 3:20 | Development of a model to seed mussel bottom leases to their carrying capacity - phase I results (NEWELL and Shumway) |
| 3:20 - 3:40 | An <i>in situ</i> estimation of the effect of wind-driven resuspension on growth of the mussel, <i>Mytilus edulis</i> (FRECHETTE, Demers and Grant) |

3:40 - 4:10 ----- B R E A K -----

**MSX:
Orleans**

Moderator: SUSAN FORD

| | |
|-------------|--|
| 2:40 - 3:00 | Effects of the parasite MSX (<i>Haplosporidium nelsoni</i>) on the biochemical composition of the oyster, <i>Crassostrea virginica</i> (BARBER, Ford and Haskin) |
| 3:00 - 3:20 | Immunocytochemistry comparison of haplosporidian spores (ROBINSON and Buzzaon) |
| 3:20 - 3:40 | Experimental planting of seed oysters in Delaware Bay produced from MSX resistant stocks (LEWART, Cate and Timman) |

**TOXINS:
Orleans**

Moderator: SUSAN FORD

| | | |
|-------------|---|--|
| 4:10 - 4:30 | Growth rate of hard clams, <i>Mercenaria</i> spp., from the Indian River Lagoon, Florida, as determined by internal growth line analysis (ARNOLD) | Small-scale spatial heterogeneity and seasonal variation in the quantity and composition of paralytic shellfish toxins retained in chronically contaminated <i>Mya arenaria</i> (CEMBELLA, Provancher, Demers and Frechette) |
| 4:30 - 4:50 | Size and hydrographic factors influencing the growth of <i>Mercenaria mercenaria</i> in Long Island Sound (GOLDBERG) | Accumulation of silver from the alga <i>Eochrysis</i> sp. by the American oyster <i>Crassostrea virginica</i> (ABBÉ and Sanders) |

TUESDAY -- JUNE 28

**CRUSTACEANS:
Ile de France**

Moderator: MICHAEL POIRRIER

| TIME | |
|--------------|---|
| 8:30 - 8:40 | |
| 8:40 - 9:00 | Dredging and Dungeness crabs: impact assessment and mitigation (MCGRAW, Waller, Conquest, Dinnel and Armstrong) |
| 9:00 - 9:20 | Entrainment of estuary organisms by hopper dredging (LARSON) |
| 9:20 - 9:40 | The effects of salinity on nitrite toxicity in the blue crab, <i>Callinectes sapidus</i> Rathbun (POIRRIER and Ary) |
| 9:40 - 10:00 | Effects of substrate and hard clam density on predation by portunid crabs (EQUKE and Lawton) |

10:00 - 10:30 ----- B R E A K -----

| | |
|---------------|---|
| 10:30 - 10:50 | Spatial aspects of foraging in <i>Callinectes sapidus</i> - implications for soft-sediment marine benthic predator-prey dynamics (MANSOUR, Lipcius and Hines) |
| 10:50 - 11:10 | Temperature-photoperiod control of spawning by American lobsters: a facultative regulatory system (AIKEN and Waddy) |
| 11:10 - 11:30 | Functional anatomy of snow crab (<i>Chionoecetes opilio</i>) reproductive systems, and a hypothesis for fertilization (BENINGER, Elner, Foyle and Odense) |
| 11:30 - 11:50 | Applications of molecular genetics techniques for understanding blue crab life history dynamics (MEEHAN and Scoles) |

11:50 - 1:30 ----- LUNCH (on your own) -----

**GENETICS:
Ile de France**

Moderator: RONALD GOLDBERG

| | |
|-------------|--|
| 1:30 - 1:50 | Abnormal gametogenesis in triploid American oysters <i>Crassostrea virginica</i> (LEE) |
| 1:50 - 2:10 | Growth rate of sibling diploid and triploid oysters, <i>Crassostrea gigas</i> (DAVIS) |
| 2:10 - 2:30 | Induced triploidy in <i>Mercenaria mercenaria</i> L.: effects on performance in the juveniles (HIDU, Mason, Shumway and Allen) |
| 2:30 - 2:50 | Selective breeding for rapid growth in <i>Mercenaria mercenaria</i> : early growth and survival of high and mean-selected lines (Manzi and HADLEY) |
| 2:50 - 3:10 | Variations in allelic frequencies in juveniles of the hard clam, <i>Mercenaria mercenaria</i> (MCLEAN, Dillon and Manzi) |

3:10 - 3:40 ----- B R E A K -----

| | |
|-------------|---|
| 3:40 - 4:00 | Determination of null allele frequency at an allozyme locus in a natural oyster population (KATOH and Folta) |
| 4:00 - 4:20 | Genetic variability in populations of <i>Crassostrea virginica</i> from the northern Gulf of Mexico (Grady, SORNIAT and Rogers) |

4:20 - 5:00

7:00 - 9:30

**QUALITY OF
SHELLFISH GROWING
WATERS:
Orleans**

Moderators: DOROTHY LEONARD and MARLENE BROUTMAN

| |
|--|
| Introduction to symposium |
| The quality of shellfish growing waters in the Gulf of Mexico (BROUTMAN and LEONARD) |
| Shellfish growing areas in New York State: current status and trends (DEQUILLFELDT and Hastback) |
| Shellfish resource degradation as a function of land use practices (MACFARLANE) |
| Contaminant distribution in oysters and sediments from the Gulf of Mexico (WADE, et al.) |
| Patterns and relationships of trace organic and metal distributions in bivalves and sediments from the Pacific and Atlantic Coasts (Boehn, FREITAS, Creelius, Hillman and Payne) |
| Tributyltin contamination in bivalves from U. S. coastal estuaries (WADE, Garcia-Romero and Brooks) |
| Hard clam transplants in New York State (HENDRICKSON, Barnes and DeQuillfeldt) |
| Using bioenergetics of intertidal oyster populations as a measurement of anthropogenic perturbations to shellfish growing waters (CROSBY) |

**PANEL:
QUALITY OF SHELLFISH
GROWING WATERS:
LEGISLATIVE AND RESEARCH
NEEDS**

Representatives of
Congress, state shellfish
program managers,
researchers and
industry

RIVERBOAT JAZZ CRUISE

WEDNESDAY -- JUNE 29

| TIME | OYSTER PARASITES: Ile de France Moderator: ERIC POWELL | AQUACULTURE: Orleans Moderator: LEROY CRESWELL |
|---------------|---|---|
| 8:40 - 9:00 | Technique for purifying <i>Perkinsus marinus</i> hyphospores (LEWIS, Choi and Powell) | An examination of state aquaculture leasing systems in the United States: issues and strategies (DEVORE and Mount) |
| 9:00 - 9:20 | The spatial distribution of <i>Perkinsus marinus</i> in relation to its oyster host and an ectoparasitic snail <i>Boonea impressa</i> (POWELL, White, Wilson and Ray) | Results of an oyster-shrimp pond biculture study (Manzi, O'ROURKE, Bobo, Steele and Smiley) |
| 9:20 - 9:40 | A parasitological survey of oysters (<i>Crassostrea virginica</i>) along the Louisiana coast (GAUTHIER and Soniat) | Subtidal cultivation of the American oyster, <i>Crassostrea virginica</i> , in Florida utilizing a flexible belt system (CRESWELL and Holt) |
| 9:40 - 10:00 | Distribution of <i>Perkinsus marinus</i> and its effect on reproductive development in oyster populations in the Gulf of Mexico (WILSON, Powell, Craig and Fay) | A seed-dependent Barataria Bay fishery: oyster roulette? (MELANCON and Condrey) |
| 10:00 - 10:30 | ----- BREAK ----- | |
| | BIVALVE DISTRIBUTION AND MORPHOLOGY: Ile de France Moderator: RENE LAVOIE | |
| 10:30 - 10:50 | Winter burial of northern bay scallops, <i>Argopecten irradians irradians</i> (TETTELBAACH, Smith, Kady, Arroll and Denson) | Food value of tropical microalgae to <i>Mercenaria mercenaria</i> larvae: a preliminary study (TAN TIU and Vaughan) |
| 10:50 - 11:10 | Monthly change of beach profile and the distribution of sandy beach bivalves at the Hasaki Oceanographical Research Facility (HIGANO and Yasunaga) | Effects of seasonal variations of chlorophyll-a and temperature on hard clam (<i>Mercenaria mercenaria</i>) growth. (APPELMANS, Siddall and Malinowski) |
| 11:10 - 11:30 | Pores in the shells of <i>Corbicula fluminea</i> (FRITZ, Ragone and Lutz) | Field nursery of the hard clam <i>Mercenaria mercenaria</i> , using floating upwellers (VAUGHAN and Baptiste) |
| | BIVALVE REPRODUCTION AND PHYSIOLOGY: Ile de France Moderator: JEFFREY KASSNER | |
| 11:35 - 11:55 | The reproductive cycle of the hard clam, <i>Mercenaria mercenaria</i> , in Wassaw Sound, Georgia (HEFFERNAN, Walker and Carr) | |
| 11:55 - 12:15 | Seasonal changes of lipids and fatty acids in oysters (CHU, Webb and Chen) | |
| 12:15 - 12:35 | An immunologic technique for quantitating oyster eggs (CHOI, Lewis and Powell) | |

**LUNCHEON
AND ANNUAL BUSINESS
MEETING
Ile de France**

12:40 - 2:30

OPEN AFTERNOON
Poster and Trade Exhibits
will be open in FRONTENAC

2:30 - 5:00

Optional
CHINESE DINNER
at the
NEW ORLEANS BOTANICAL GARDENS

7:00 - 10:00

THURSDAY -- JUNE 30

| TIME | CRAWFISH: Ile de France Moderator: ROBERT ROMAIRE |
|---------------|--|
| 8:40 - 9:00 | Overview of international and domestic freshwater crawfish production (HUNER) |
| 9:00 - 9:20 | Commercial crawfish cultivation practices (DE LA BRETONNE) |
| 9:20 - 9:40 | Forage and feeding systems for commercial crawfish culture (BRUNSON) |
| 9:40 - 10:00 | Overview of harvest technology used in commercial crawfish culture (ROMAIRE) |
| 10:00 - 10:30 | ----- BREAK ----- |
| 10:30 - 10:50 | Diversification of crawfish management schedule (EVERSOLE) |
| 10:50 - 11:10 | Overview of soft-shell crawfish research and technology (CULLEY and Duobinis-Gray) |
| 11:10 - 11:30 | Crawfish processing (MOODY) |
| 11:30 - 11:50 | Louisiana crawfish products in domestic and international markets (ROBERTS) |
| 11:50 - 1:30 | ----- LUNCH (on your own) ----- |
| | LOUISIANA OYSTER INDUSTRY: Ile de France Moderator: RONALD DUGAS |
| 1:30 - 1:50 | Administering to the Louisiana oyster fisheries (DUGAS) |
| 1:50 - 2:10 | Managing public oyster reefs: Texas experience (Hofstetter and RAY) |
| 2:10 - 2:30 | Oyster hatcheries on the Gulf Coast: history, current technology and future promises (OGLE and Beaugez) |
| 2:30 - 3:00 | ----- BREAK ----- |
| 3:00 - 3:20 | Oil and oyster industry conflicts in coastal Louisiana (SONIAT) |
| 3:20 - 3:40 | The Louisiana oyster industry: economic status and expansion prospects (ROBERTS and Keithly) |
| 3:40 - 4:00 | An oyster farmer's perspective to the past, the present, and the future of the Louisiana oyster industry (PAUSINA) |
| 4:00 - 4:20 | Shellfish sanitation studies in Louisiana (KILGEN, Cole and Hackney) |

POSTER PROGRAM

- Overwintering hard clams, *Mercenaria mercenaria*, in South Carolina shrimp ponds (BATTEY and Manzi)
- An SEM study of haplosporidian spores from *Teredo navalis* (BURRESON and Robinson)
- A video digitizing technique for counting juvenile queen conch (*Strombus gigas*) (DAVIS)
- Do marine bivalves carry unusually high loads of deleterious mutations? (FOLTZ and Sarver)
- Nocardiosis of adult Pacific oysters, *Crassostrea gigas* (FRIEDMAN, Beaman, Hedrick, Beattie and Elston)
- Penetration of cultch mass by eyed larvae of *Crassostrea virginica* (GIBBONS)
- A pathology potpourri from the NOAA Mussel Watch Program (HILLMAN, Boehm and Freitas)
- Genetic differentiation among populations of the bay mussel, *Mytilus edulis* from populations along the coast of California (SARVER)
- Ultrastructural studies of MSX (*Haplosporidium nelsoni*) and oyster hemocyte interactions (Soro and FORD)
- Genetic drift and effective population sizes in commercial stocks of the Pacific oyster, *Crassostrea gigas*, on the U. S. West Coast. (SLY and Hedgecock)
- A microcomputer based shell activity monitor for oyster depuration systems (TAYLOR and Soniat)
- Distribution, abundance and population structure of *Crassostrea virginica* in Caraquet Bay, N. B., Canada (WORMS, Sephton and Bryant)

Meetings, Courses Etc.

The 32nd Annual Gulf and Atlantic States Shellfish Conference will be held at the Holiday Inn — Jekyll Island, Georgia from May 22-25, 1988. For more information, contact: Dr. Stuart A. Stevens, Georgia Department of Natural Resources, Shellfish Program, 1200 Glynn Ave., Brunswick, GA 31523-9990 (912) 264-0542.

A short course in Aquaculture Economics will be offered by Clemson University from June 6-17, 1988. Topics covered by the course will include the role of aquaculture in food production, economic factors affecting aquaculture at the farm level, public policy and aquaculture and international aquaculture development. For more information, contact: Robert S. Pomeroy, Clemson University, Clemson, SC 29631 (803) 656-5789.

A summer course in Marine Shrimp Culture is being offered by the University of Hawaii from June 15 through August 14, 1988. For more information, contact: The Hawaii Institute of Marine Biology, P.O. Box 1346, Kaneohe, HI 96744 (808) 948-6715 or 247-6631.

The Florida Aquaculture Association's Annual Conference and Trade Show will be held at the Hyatt Regency Hotel in Orlando Florida from June 17-19, 1988. For more information, contact: Mike Ednoff at (904) 488-4033 or write to P.O. Box 3989, Tallahassee, FL 32315.

The 54th Annual Meeting of the American Malacological Union will be held from June 19-26, 1988 at the Radisson Francis Marion Hotel, Charleston, South Carolina. For more information, contact: Richard E. Petit, President AMU, P.O. Box 30, North Myrtle Beach, SC 29582.

A National Workshop on Recruitment, Enhancement and Culture Potential of Scallops in Australasia will be held in Hobart, Australia from July 11-15, 1988. For more information, contact: Mike Dredge, Fisheries Laboratory, Burnett Heads, 4670 Queensland, Australia or call (071) 79 4155.

The Louisiana Foodservice and Hospitality Exposition will be held at the Rivergate Exposition Hall in New Orleans from July 30-August 1, 1988. For more information, contact: Sandy Riddle at the Louisiana Restaurant Association, (504) 831-7788.

A Satellite Conference on the Cell and Molecular Biology of *Artemia* Development will be held August 12-13, 1988 in conjunction with the 4th International Congress of Cell Biology. For more information, contact: Dr. A.H. Warner, Department of Biological Sciences, University of Windsor, Windsor, Ontario, Canada N9B 3P4.

Employment Opportunities

The New Jersey Bureau of Shellfisheries has the following employment opportunities:

Assistant Biologist (\$21,343-\$29,877) — Fisheries biologist wanted to organize and conduct field studies associated with ongoing shellfish inventory programs (oceanic and estuarine).

Technician II (\$15,904-\$22,264)—Person to assist in various field activities associated with estuarine and oceanic shellfish resource assessment, water and sediment analysis; sorting and identification of benthic invertebrates.

Summer Research Assistants (salary commensurate with education)—Individuals needed for ongoing projects throughout New Jersey, including field work associated with oyster, hard clam and surf clam resource assessments. Experience preferred but not essential.

Applicants should submit a current resume to: James W. Joseph or Thomas W. McCloy, New Jersey Bureau of Shellfisheries, Nacote Creek Research Station, Route 9, Absecon, NJ 08201.

Summer Internships are available for research project to study the ecology of the American lobster. Project involves: SCUBA diving, laboratory work and computer data analyses. Room provided plus stipend. For more information and an application form, contact: Dr. Robert Steneck, University of Maine, Darling Center Marine Laboratory, Walpole, ME 04573 (207) 563-3146 (lab.) or 549-3062 (home).

Instructions For Job Placement Section

Employment opportunities in shellfish research, management and industry, including graduate student assistantships and personal summaries for individuals seeking employment in these fields will be listed in the newsletter. Employment openings should be described in no more than 300 words and personal summaries should not exceed 150 words. We cannot guarantee that employment announcements will appear before posted closing dates. Anonymous postal box returns are available for persons not wishing to publicize their search for employment.

Please forward descriptions of positions available or sought to: **John W. Ewart, Editor, NSA Quarterly Newsletter, College of Marine Studies, University of Delaware, Lewes, DE 19958, (302) 645-4060.**

Shellfish Aquaculturist position available immediately. Ongoing program in aquaculture with current emphasis on production of disease resistant oysters. Position includes techniques, facility upgrade and liaison with shellfish industry. Salary commensurate with experience. Submit vitae and names of three references to: Dr. John N. Kraeuter, Rutgers University, P.O. Box 687, Port Norris, NJ 08349 (609) 785-0074.

Wanted: challenging position in bivalve aquaculture. Experience with *Crassostrea virginica*, hatchery, maintenance and condition analysis. M.S. in Marine Biology, self reliant ex-Peace Corps volunteer. Contact: Tom Warren, College of Marine Studies, University of Delaware, Lewes, DE 19958 (302) 645-4209.

Castle Shrimp Corporation is seeking experienced hatchery and pond managers, biologists and technicians, as well as feed mill operators and shrimp processors to staff a farm to be built in the continental U.S.. Send your resume to Castle Shrimp Corporation, 207 Paisano, Victoria, TX 77904 (512) 572-0928.

Laguna Madre Shrimp Farm is accepting resumes for the positions of pond and hatchery biologists and technicians. Please send resumes to the attention of Fritz Jaenike, Laguna Madre Shrimp Farms, Inc., P.O. Box 4043, Los Fresnos, TX 78566.

Summer - 1988 shellfish hatchery positions are available at Marine Bioservices Company in mid-coast Maine for students interested in aquaculture. No salary, but meals and housing provided. This is a good opportunity to get some practical "hands on" experience. For more information, call John Sheldon at (207) 644-8537 any time day or night.

The Pacific Coast Section of the National Shellfisheries Association will hold their annual meeting at the Tyee Motor Inn in Olympia, Washington, from September 22-24, 1988. For more information, contact: Ralph Elston at (206) 765-3469, or Chris Langdon at (503) 867-3011.

The 5th Water Quality and Wetlands Management Conference will be held from September 29-30, 1988 in New Orleans, Louisiana. For more information, contact: Bud Brodtmann, 4813 W. Napoleon Avenue, Metairie, LA 70001.

1987 Connecticut Oyster Set Disappointing

Following a banner year of oyster setting in 1986, the 1987 season proved to be minimal. The Connecticut Department of Agriculture Aquaculture Division's oyster larvae and set monitoring program found that oyster setting did not occur until the first week of September. The setting period lasted for about one week, contributing only light densities to the oyster population. Normally, in Long Island Sound, oyster setting starts in mid-July with heaviest densities occurring in August. The late spawning may have been due to the slower than usual warming of water temperatures last spring. The good news is that seed oystermen have been keeping busy harvesting the residual crop of 1986 seed off the State Bridgeport/Stratford Natural Beds and the Housatonic River. Over 70,000 bushels have been transplanted from the seed beds since their fall opening.

(Source: **The Oyster Dredge**; Connecticut Dept. of Agriculture Aquaculture Division Newsletter, Vol. 4 No. 1.)

Monster Disease Comes Back to Kill East Coast Oysters

A mysterious microscopic spore known as MSX continues to loom over the Chesapeake oyster population, bringing production to a standstill.

Oyster production "had to collapse" before the state mobilized against the parasites, said University of Maryland Associate Professor Roger Newell.

MSX (micro spore unknown) virtually destroyed the commercial oyster potential in Delaware Bay after it was first uncovered in 1957. "We've seen it coming up the bay the last 30 years," Newell said. "Everyone was telling the state we needed to do something about it."

Maryland's oyster production dropped below 1 million bushels for the first time last season, and this year's production estimates are even lower. Said Dr. Robert Anderson of the Chesapeake Biological Laboratory: "The oyster fishery is a very important one in the Chesapeake Bay, and MSX has virtually brought it to a standstill."

Also, to maximize this year's crop, the state has opened new waters to oystering that will affect the future's broodstock, Newell said. "It's a very sad situation right now," he said. "The fishery is being managed for this year's harvest, not anywhere down the line."

Both the supply and demand side of the economic coin have been tarnished, as consumers hear reports of the disease, said Anderson. "People have started to be a little

Soft Shell Crawfish

Interest in soft shell crawfish production has recently expanded in Louisiana. The Louisiana Agricultural Center recently sponsored a soft shell crawfish seminar for potential producers. Soft shell crawfish production is a real value added opportunity for producers. Like any other aquaculture product, marketing is important. At present the demand has been generated by the development of the soft shell crawfish as a Cajun delicacy. Such restaurants as "Ralph and Kacoo's" in Baton Rouge feature this item on the menu when available. Soft shell crawfish production is somewhat similar to soft shell crab production. Soft shell crawfish are harvested from ponds or are produced by holding crawfish in intensive artificial systems until they molt. For more information on soft shell crawfish production, please contact the Louisiana Cooperative Extension Service, 202 G. Knapp Hall, Baton Rouge, LA 70803. (Source: *Extension Service Update*, Vol.2, No.2)

leery of oysters because they know it has a disease," said Anderson. There is no evidence that MSX is harmful to humans, researchers say.

To battle the parasite, research is underway to develop more disease-resistant strains of oysters. But the research is a five-to ten-year operation, Newell said. "Right now, there is nothing one can do," he said. Anderson, also studying the oyster's immune capabilities, noted the magnitude of the task of restocking Chesapeake Bay with a new oyster strain. "It's unreal to think you can drop them in," he said. "If you wanted to restore the bay, it would take years."

At this point, the life stages of MSX are unknown as to whether it can exist in another host other than oysters, said Anderson. At an October conference on shellfish disease, a group of scientists said the best hope was several years of good rainfall. MSX thrives in the high salt content brought to the Chesapeake Bay by drought.

At a post conference news session, a retired William and Mary professor said two or three years of good rainfall in the crucial winter and spring would return conditions to normal. "You'd see a marked change after one year," said J.D. Andrews.

A William and Mary marine science professor, William Hargis, predicted a natural rebound in Maryland given five years of adequate rain. With restrictions on taking oysters, the industry would be back to normal in two or three years, he said.

(Source: **AquaCulture News**, 12/87)

Maryland May Lease More Chesapeake Bay Bottom Land

Maryland is seeking ways to increase the downsiding Chesapeake Bay oyster harvests, including leasing more bottom land. The harvest dropped to below one million pounds for the first time last year and is expected to drop lower this season.

The small amount of bottom land in the bay and tributaries now leased yields two to three times the oysters harvested by fishermen in public beds. About 9,400 acres of the bay and its tributaries are leased to oyster harvesters out of the 283,000 acres. State law limits leasing to land free of oysters and clams.

Last year's oyster harvest from public beds brought in less than one million bushels, while the leased beds sold 39 million bushels to licensed buyers. That averages out to fewer than four bushels per acre from public beds, compared to 8 to 12 bushels per acre from leased beds.

Opponents of increased leasing — oystermen — argue that the supply of good bottom land is too small to go around, and the leases will attract the wealthy. State resources official Peter Jensen said, "What they (watermen) are really against is a huge corporation coming in and dominating the market."

However, Gov. William Donald Schaefer's bay coordinator, David Carroll, points to the pressure on the state to improve its oyster industry. Leasing increases the number of people working to develop better, faster-growing and more disease-resistant oysters, he said.

(Source: **AquaCulture News**, 12/87)

Harbor Branch Receives Funding for Hard Clam Research

The State of Florida's Commissioner of Agriculture recently announced that the Harbor Branch Oceanographic Institution of Fort Pierce, Florida would receive funding for an aquaculture research project involving the hard clam *Mercenaria mercenaria*. Under the guidelines of the Aquaculture Market Development Aid Program (AMDAP), Harbor Branch will develop specific grow out techniques for clam farming in Florida and prepare instructional materials for those interested in commercial clam production. AMDAP was established by the 1987 Legislature to develop meaningful research, demonstration and marketing programs to solve aquaculture problems. The program is designed to foster a cooperative relationship between research organizations and private industry for the benefit of Florida's aquaculture industry.

THE NATIONAL SHELLFISHERIES ASSOCIATION WANTS YOU !!

The National Shellfisheries Association (NSA) is an international organization of scientists, management officials and members of industry that is deeply concerned and dedicated to the formulation of ideas and promotion of knowledge pertinent to the biology, ecology, production, economics and management of shellfish resources. The Association has a membership of more than 900 from all parts of the USA, Canada and 18 other nations; the Association strongly encourages graduate student's membership and participation.

WHAT DOES IT DO?

- Sponsors an annual scientific conference.
- Publishes the peer-reviewed *Journal of Shellfish Research*.
- Produces a Quarterly Newsletter.
- Interacts with other associations and industry.

WHAT CAN IT DO FOR YOU?

- You will meet kindred scientists, managers and industry officials at annual meetings.
- You will get peer review through presentation of papers at the annual meeting.
- If you are young, you will benefit from the experience of your elders.
- If you are an elder, you will be rejuvenated by the fresh ideas of youth.
- If you are a student, you will make most useful contacts for your job search.
- If you are a potential employer, you will meet promising young people.
- You will receive a scientific journal containing important research articles.
- You will receive a Quarterly Newsletter providing information on the Association and its activities, a book review section, information on other societies and their meetings, a job placement section, etc.

HOW TO JOIN

- Fill out and mail a copy of the application blank below. The dues are ONLY US \$18 per year (\$15 for students) and that includes the *Journal* and the Newsletter!

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

Name: _____ For the calendar year: _____ Date: _____

Mailing address: _____

Institution affiliation, if any: _____

Shellfishery interests: _____

Regular or student membership: _____

Student members only - advisor's signature REQUIRED: _____

Make cheques (MUST be drawn on a US bank) or international postal money orders for \$18 (\$15 for students with advisor's signature) payable to the National Shellfisheries Association and send to Edwin Rhodes, National Marine Fisheries Service, 212 Rogers Avenue, Milford, CT 06460 USA.

NATIONAL SHELLFISHERIES ASSOCIATION REGISTRATION FORM

80th Annual Meeting: New Orleans, Louisiana — June 26 to 30, 1988

NOTE: ALL REGISTRATIONS INCLUDE THE PRESIDENT'S RECEPTION, THE BUSINESS LUNCHEON, ALL MEETING SESSIONS, COFFEE BREAKS AND THE JAZZ CRUISE.

EARLY-BIRD REGISTRATION BEFORE JUNE 1, 1988:

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| Wednesday Luncheon and Annual Business Meeting | \$20 | X | _____ | = | \$ _____ |
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Lewes, DE 19958



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