

National Shellfisheries Association

QUARTERLY NEWSLETTER



Winter 1988/89

Lewes, Delaware

Final Arrangements Made for the NSA Annual Meeting at Aquaculture '89- Los Angeles

Everything is ready to go for the 81st annual meeting of NSA to be held as part of Aquaculture '89 at the Westin Bonaventure Hotel in Los Angeles from February 12-16, 1989. 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 (SINA), 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. but is also expected to bring together attendees from Asia, Australia, Europe, Africa, Central and South America representing research, technology, management, aquaculture product manufacturing and distribution, administration, education and investment. Participants in Aquaculture '89 will be allowed entrance (gratis) to Seafare International's 1989 Seafood Exposition, scheduled to begin on February 15th, in Long Beach, California.

You should already have received a packet of registration information. If not, contact the Crest Organization (Aquaculture '89 headquarters) 940 Emmett Ave., Suite #14, Belmont, CA 94002 (415) 595-2704 or contact NSA Secretary-Treasurer Ed Rhodes. Hotel rates at the Westin will be \$81/night for a single and \$92/night for a double room. Special arrangements have been made for students at the Westin Bonaventure. For further information, please contact, Juliette Massey, World Aquaculture Society, 16 East Fraternity Lane, Baton Rouge, LA 70803 (504) 388-3137. Hotel reservations should be made directly with the Westin Bonaventure Hotel, 404 South Figueroa Street, Los Angeles, CA 90071 (213) 624-1000 Telex 67-7628 as soon as possible or no later than January 15, 1989. Make your reservations early to insure getting a room.

Special reduced rates on airfares are available through Delta Airlines and Northwest Airlines. For more information, contact Delta's convention reservation desk at 1-800-241-6760 between 8:00 AM and 8:00 PM EST daily. For a price quote or to reserve a flight, refer to "File Number RO252". Contact Northwest meeting Services weekdays between 8:00 AM and 8:00 PM Central Time at 1-800-328-1111 (in Minnesota call 1-800-272-1408; in Canada 1-800-328-7747). Please mention code "16101" when making reservations. Car rentals will be available through Hertz. To receive special meeting rates call 1-800-654-2240 (in Canada, call :

1-800-263-0600) and ask for the convention desk. Be sure to identify Aquaculture '89 to the agent.

Members in good standing with any of the sponsoring or associate sponsoring organizations can register for Aquaculture '89 by sending payment (U.S. check or international money order) to the Crest Organization. The meeting registration fee between November 2, 1988 to January 15, 1989 - \$195 for members, \$245 for non-members, and \$125 for students will increase after January 15, 1989 or at the meeting to \$295, \$345 and \$125, respectively. Needless to say, it pays to register early. No registrations will be accepted over the phone. Registration includes conference materials, admission to all sessions, the exposition (trade show) and social functions (welcome mixer, exposition reception and President's reception). Spouses and/or guests may purchase tickets for social functions at the registration desk. Numerous tours and activities are also being made available through the Crest Organization. These include aquaculture facilities tours in the regions around Santa Barbara and/or San Diego and tours of Los Angeles, Universal Studios, Disneyland, Las Vegas etc. Refer to your registration packet of contact the Crest Organization for additional information.

PCOGA and NSA (Pacific Coast Section) Hold Annual Meeting

The annual joint meeting of the Pacific Coast Oyster Growers Association and National Shellfisheries Association (Pacific Coast Section) was held at Olympia, Washington on September 22-24. Over 200 members of the oyster industry, government agencies and universities attended the meeting from the states of Washington, Alaska, California, Oregon and the province of British Columbia, Canada. The keynote speech presented by C. Alan Pettibone, Director of the Washington State Department of Agriculture, discussed water quality and the importance of the oyster industries involvement with water quality issues. The theme of water quality and the importance of shellfish industry involvement was further discussed in a presentation by Governor Booth Gardner from the State of Washington given at the close of sessions on Friday and in two concurrent panels which presented government policies concerning water quality and local action plans designed to begin cleaning up selected watersheds. These panels were followed by a presentation by Ken Chew on the status of the Western Region Aquaculture Consortium and Fred Conte and Dorothy Leonard on state and federal shellfish sanitation and water quality assessment programs.

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In Memoriam

With deep regret we report the passing of longtime National Shellfisheries Association member John W. Ropes. He died on September 5, 1988 at his home in Falmouth, Massachusetts. He was 61 years old.

John graduated from Alfred College and did graduate work at the University of Delaware. He began his career in shellfish research with the former United States Bureau of Commercial Fisheries in Newburyport, Massachusetts, Kingston, Rhode Island, and Boothbay Harbor, Maine. In 1963 he transferred to the Bureau of Commercial Fisheries Laboratory in Oxford, Maryland where he published many articles concerning shellfish growth, reproduction, and distribution. In 1976, he was project leader of a special study assessing the impact of anoxic bottom water in the Middle Atlantic Bight on offshore clam populations. In 1977, he transferred to the National Oceanic and Atmospheric Administration's, National Marine Fisheries Service, Northeast Fisheries Center in Woods Hole, Massachusetts. He spent the past 11 years developing unique methods for ageing shellfish from analysis of growth rings present in the shell. John's shell ageing and marking studies with the ocean quahog revealed the unexpected potential longevity of this species of over 200 years. This work has had widespread utility in understanding population dynamics of commercially important bivalves and has direct applications to fisheries management.

He was an active member of the National Shellfisheries Association. During his career he served as custodian of records and publications (1967-1970), co-editor of the Proceedings (1970-1971), and Member at Large (1976).

John's enthusiasm and innovation in his research were readily apparent. His ability to teach and willingness to share his ideas and techniques with his colleagues are to his credit. His many contributions to shellfish biology throughout his productive career

have furthered our collective knowledge.

He is survived by his wife Mary B. Ropes. In his memory, contributions may be made to: The John W. Ropes Scholarship Fund, c/o Woods Hole Women's Club, Woods Hole, Massachusetts, 02543..

(submitted by Ronald Goldberg, Milford, Connecticut)

Sea Fare '89 Set For February in Los Angeles

Seafood choices abound at Sea Fare '89. With American seafood consumption setting records each year, buyers are going to great lengths to find new sources of seafood to keep their customers satisfied. And one place more and more buyers are heading every year is Sea Fare, the annual international seafood exposition held each February in Southern California.

More than 500 international seafood suppliers and 12,000 buyers will fill the Long Beach Convention Center February 15-17, 1989, for the sixth annual Sea Fare. "We make buying and selling seafood simple," says Sandi McKenzie, the show's manager. "Sourcing is the name of the game when it comes to seafood. At Sea Fare, buyers can sample the latest seafood products from the oceans of the world in just three days. It's hard to beat efficiency like that."

Proof that Sea Fare works for both buyers and sellers is indicated by the show's healthy annual growth rate of 30 percent, making Sea Fare Expositions the largest producer of seafood expositions in the world.

"The demand for quality seafood is there. It's finding it that is the tricky part," says Peter Redmayne, publisher of Seafood Leader magazine, the show sponsor. "Sea Fare's Southern California location makes it a showcase for seafood from Latin American and Pacific Rim, the major sources of new seafood supplies for the rapidly expanding U.S. market."

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NSA Program Set For Aquaculture '89

Vic Kennedy, NSA Program Chairman has prepared a preliminary schedule of the technical sessions for the upcoming annual meeting. Due to the large number of scheduled NSA presentations (103 oral; 10 poster) and the programs of the other sponsoring organizations, 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 Human Influences on the Dispersal of Living Organisms and Genetic Material into Aquatic Ecosystems, Water Quality and Toxins, Quahog Culture; State of the Art, Molluscan Disease, West Coast Molluscan Aquaculture and a joint NSA/WAS session on Mussel Culture. Abstracts of all the oral and poster presentations will be published in the next issue of JSR which should be out prior to the meeting. Contact Vic if you have any questions about this year's NSA program.

Special session and symposia topics of interest to NSA members from programs of the other organizations sponsoring Aquaculture '89 include The Status of Aquaculture in Japan, Shrimp Culture in North America, Aquaculture in Developing Countries, Crawfish Culture, Socio-economic Aspects of Aquaculture, Micro-computer Applications in Aquaculture and Financing Aquaculture Ventures plus an International Symposium on Water Quality in Aquaculture



AQUACULTURE ' 89

National Shellfisheries Association

Sunday - February 12

- 1:00 - 9:00 PM: REGISTRATION
6:00 - 8:00 PM: NO-HOST GET TOGETHER

Monday - February 13

- 7:00 - 12:00 PM: POSTER SET-UP
8:15 - 10:30 AM: PLENARY OPENING SESSION
1:00 - 5:00 PM: POSTER SESSION (authors present)
7:00 - 9:00 PM: TRADE SHOW RECEPTION

Tuesday - February 14

- 8:00 - 8:30 AM: PLENARY REVIEW
10:00 - 6:00 PM: POSTER SESSIONS
8:40 - 5:10 PM: NSA TECHNICAL SESSIONS

MOLLUSCAN DISEASE Santa Anita A&B Moderator: Susan Ford

- 8:40 Diseases of cultured molluscs in British Columbia, Canada (Bower)
9:00 *Perkinsus marinus*: Distribution in Atlantic and Gulf Coast oyster populations with suggested control methods (Ray and Anderson)
9:20 Recent changes in the range of "MSX" (*Haplosporidium nelsoni*) (Kern)
9:40 Studies of fatal disease epizootics in Maryland using hemanalysis, a new diagnostic approach for systemic diseases of oysters and clams (Farley et al.)
10:00 COFFEE BREAK
10:30 Hemocyte and humoral activities of two populations of oyster (*Crassostrea virginica*) (LaPeyre and Chu)
10:50 Methods of reducing the impact of MSX upon small-scale oyster culture operations (Matthiessen)
11:10 A regional attack on the MSX problem through genetic selection and manipulation of oyster stocks (Ford and Haskin)
11:30 Growth and survival of hatchery produced MSX resistant oyster stocks in Delaware Bay (Ewart et al.)
11:50 LUNCH

OYSTER GENETICS AND BIOLOGY Moderator: To be arranged

- 1:20 Pedigreed broodstocks for culture and breeding of Pacific oysters (Hedgecock et al.)
1:40 Cell fusion in the Pacific oyster, *Crassostrea gigas*: Tetraploids produced by blastomere fusion (Guo et al.)
2:00 Inhibiting first polar body formation in *Crassostrea gigas* produces tetraploids, not meiotic I triploids (Stephens and Downing)
2:20 Physiology and energetics relating to weight loss and glycogen utilization during starvation in diploid and triploid Pacific oysters (Davis)
2:40 Comparing adult performance of diploid and triploid monospecific and interspecific *Crassostrea* hybrids (Downing)
3:00 COFFEE BREAK
3:30 The establishment of intertidal populations of *Crassostrea virginica* in the York River, Virginia: A result of settlement or recruitment? (Roegner)

- 3:50 Identification of soluble microbial products that induce settlement behavior in oyster larvae (*Crassostrea* spp.) (Walch et al.)
4:10 An integrated model of oyster settlement and metamorphosis (Coon et al.)
4:30 Calorespirometry, a method for examining response of oyster larvae to hypoxia and anoxia (Widdows et al.)
4:50 The location and topography of oyster reefs in the Rappahannock River estuary, Virginia (Whitcomb and Haven)

AQUACULTURE TECHNIQUES Santa Anita C Moderator: Jeffrey Kassner

- 8:40 Principles of marine farm engineering (Benson et al.)
9:00 Observations on grow-out systems for the southern bay scallop, *Argopecten irradians concentricus* (Heffernan et al.)
9:20 Increasing growth rates and survival of giant clams in mariculture (Pitt)
9:40 Techniques for the commercial scale induction of metamorphosis in queen conch *Strombus gigas* (L.) larvae (Davis et al.)
10:00 COFFEE BREAK

QUAHOG BIOLOGY

- 10:30 *In situ* observations of hard clam activity and simultaneous measurements of short-term environmental variability (Fegley et al.)
10:50 Reproductive isolation between the hard clams, *Mercenaria mercenaria* and *Mercenaria campechiensis*, in the Indian River Lagoon, Florida (Dillon and Manzi)
11:10 Species distributions in hard clams (genus *Mercenaria*): Complex patterns reflect natural processes and the influence of man (Bert et al.)
11:30 Growth of the hard clam in grow-out cages in coastal Georgia (Crenshaw et al.)
11:50 LUNCH

QUAHOG CULTURE: STATE OF THE ART Moderator: Michael Castagna

- 1:40 A brief history of clam culture in the U.S. (Castagna)
2:00 Bivalve seed production by a commercial hatchery/nursery using a Maine estuary (Mook)
2:20 Hard clam culture at Aquacultural Research Corporation (Kraus)
2:40 Hard clam (*Mercenaria mercenaria*) seed production (Malinowski)
3:00 COFFEE BREAK
3:30 Hard clam culture in New Jersey by Biosphere, Inc. (Schriber)
3:50 Tray culture of hard clams at Cherrystone Aquafarms, Virginia (Peirson)
4:10 Field nursery culture and growout of hard clams, *Mercenaria*, in commercial scale aquaculture systems (Manzi et al.)
4:30 Clam culture: State of the art in Florida (Vaughan)
4:50 A tour of the facilities of Indian River mariculture of New York, Inc. (Chanley)

Wednesday - February 15

- 8:00 - 8:30 AM: PLENARY REVIEW
9:00 - 5:00 PM: POSTER SESSIONS
8:40 - 5:10 PM: NSA TECHNICAL SESSIONS

HUMAN INFLUENCES ON THE DISPERSAL OF LIVING ORGANISMS AND GENETIC MATERIAL INTO AQUATIC ECOSYSTEMS

PART I: IMPACTS/RISK ASSESSMENT Santa Anita A&B Moderator: Aaron Rosenfield

- 8:40 Introduction (Rosenfield)
9:00 Changes in the sea: The mechanisms of dispersal of marine and aquatic organisms by human agency (Carlton)
9:30 Dispersal of exotic species for aquaculture purposes: Freshwater species (Courtenay)
10:00 COFFEE BREAK
10:20 Dispersal of exotic marine animals for aquacultural purposes, with special emphasis on the Hawaii experience (Davidson and Brick)
10:50 Dispersal of marine plants for aquacultural purposes (Neushul et al.)
11:20 Distribution of microbial agents in marine ecosystems as a consequence of sewage disposal practices (Sawyer)
11:50 LUNCH
1:00 Mass mortalities and infectious lethal diseases in bivalve mollusks and associations with geographic transfers of populations (Farley)
1:30 Geographic dispersion of the viruses IHNV, MBV, and HPV as a consequence of transfers and introductions of penaeid shrimp to new regions for aquaculture purposes (Lightner et al.)
2:00 Dispersal of microbial pathogens through introductions and transfer of finfish (Rohovec and Fryer)
2:30 Microbial pest control agents (Couch)
3:00 COFFEE BREAK
3:30 Engineering marine microorganisms for biodegradation and waste control in the sea (Colwell)
4:00 Fish genetic engineering: A novel approach in aquaculture (Chen et al.)
4:30 Environmental impacts of inbred, hybrid, and polyploid aquatic species (Thorgaard and Allen)

CRUSTACEAN AND BIVALVE BIOLOGY AND CULTURE

Santa Anita C Moderator: Bruce MacDonald

- 8:40 Reproduction of three generations of grass shrimp (*Palaemonetes pugio*) in the laboratory under constant conditions (Van Heukelem and Anderson)
9:00 Aquaculture feasibility of the Australian marron lobster, *Cherax tenuimanus* (Crustacea: Decapoda: Parastacidae), in the U.S. (Rouse et al.)
9:20 Feeding ecology of *Callinectes sapidus* in Chesapeake Bay-- implications for soft-sediment marine benthic predator-prey dynamics (Mansour and Lipcius)
9:40 Effects of inorganic and organic nutrient enrichment on growth and bioenergetics of the blue mussel, *Mytilus edulis* (Tracey)
10:00 COFFEE BREAK

Wednesday - February 15 (continued)

- 10:30 Evidence of feeding selectivity and a feeding selectivity threshold in the mussel (*Mytilus edulis*) fed on natural particle assemblages (Newell et al.)
- 10:50 Food value of tropical microalgae to bivalve larvae (Tan Tiu and Vaughan)
- 11:10 Nonplanktonic development of the pericalymma larva of *Solemya velum* (Bivalvia: Solemyidae) (Gustafson and Lutz)
- 11:30 Evidence of a semiannual reproductive cycle for the sea scallop, *Placopecten magellanicus* (Gmelin), in the mid-Atlantic region (DuPaul et al.)
- 11:50 Unravelling a complex interoceanic dispersal history of the bivalve *Macoma balthica* (Meehan and Carlton)
- 12:10 LUNCH

WEST COAST MOLLUSCAN AQUACULTURE

Moderators:

Christine Hodgson and Ian Whyte

- 1:20 Challenges and opportunities in Alaska shellfish mariculture (Kaill)
- 1:40 Potential for clam culture in British Columbia, Canada (Harbo and Bourne)
- 2:00 Razor clam hatchery development and progress (Tufts and Creekman)
- 2:20 A sand substrate nursery for geoduck clams (*Panope abrupta*) (Beattie)
- 2:40 The potential of the Japanese scallop, *Patinopecten yessoensis*, for West Coast aquaculture: Growth and survival of juveniles in British Columbia waters (Bourne et al.)
- 3:00 COFFEE BREAK
- 3:30 Proven technology now available for efficient commercial abalone production (Oakes)
- 3:50 Abalone nutrition and the potential role of purified diets (Norman-Boudreau)
- 4:10 Effect of dietary algal constituents on the tissue composition and energy in the larvae of the scallop *P. yessoensis* (Whyte and Gintner)
- 4:30 Physiological energetics of Japanese scallop larvae (Macdonald)
- 4:50 A computer-generated video animated tour of the bivalve hatcheries and nurseries of the future (Zebal)
- 5:00 - 7:00 PM: POSTER SESSION BREAK-DOWN
- 7:00 - 9:00 PM: PRESIDENT'S RECEPTION

Thursday - February 16

- 8:00 - 8:30 AM: PLENARY REVIEW
- 8:40 - 5:10 PM: NSA TECHNICAL SESSIONS AND JOINT WAS/NSA SESSION ON MUSSEL CULTURE
- 12:10 - 1:30 PM: AWARDS LUNCHEON/ANNUAL BUSINESS MEETING

HUMAN INFLUENCES ON THE DISPERSAL OF LIVING ORGANISMS AND GENETIC MATERIAL INTO AQUATIC ECOSYSTEMS

PART II: MANAGEMENT/RISK REDUCTION AND SAFETY

Santa Anita A&B

Moderator: Roger Mann

- 8:40 Introduction (Mann)
- 9:00 National biosafety programs for field testing transgenic organisms (MacKenzie)
- 9:15 E.P.A. oversight and assessment of engineered microbial pesticides (Rispien)
- 9:30 Shellfish health and protection (Kern and Rosenfield)

- 9:45 Introduced organisms: Policies and activities of U.S. Fish and Wildlife Service (McCann et al.)
- 10:00 COFFEE BREAK
- 10:30 Effective application of aquaculture disease control regulations--Recommendations from an industry viewpoint (Elston)
- 10:45 California's approach to risk reduction in the introduction of exotic species (Collins)
- 11:00 DISCUSSION
- 11:30 LUNCH
- 1:00 Role of the International Council for the Exploration of the Sea (ICES) in matters concerned with transfers and introductions of marine organisms (Sindermann)
- 1:15 The European Inland Fisheries Advisory Commission of F.A.O. and the management of non-indigenous fish stocks (Rosenthal)

- 1:30 Canadian strategies for risk reduction in introductions and transfers of marine and anadromous species (Drinnan)
- 1:45 Status of UJNR policy on the introduction of exotic species for aquaculture (McVey)
- 2:00 Guidelines for introducing aquatic organisms: Voluntary or mandatory? (Kohler)
- 2:15 DISCUSSION
- 3:00 COFFEE BREAK
- 3:30 Model seafood surveillance program (Meaburn and Garrett)
- 3:45 Economic pressures driving genetic changes in fish (Parker)
- 4:00 Coordination and control of introductions of living organisms: Political considerations (Stella and Dentler)
- 4:15 A framework for managing the risks of deliberate releases of genetic material into aquatic ecosystems (Gregory)
- 4:30 DISCUSSION AND SUMMARIZATION

JOINT WAS/NSA SESSION ON MUSSEL CULTURE

San Jose

Moderators:

Carter Newell and Glen Jamieson

- 8:40 An overview of world mussel culture (Newell et al.)
- 9:00 Raft culture of mussels in Galicia (Spain) and France (Figueras)
- 9:20 Developments in bottom cultivation of mussels and oysters in the Netherlands: Studies on the effects of storm surge barrier construction (Dijkman)
- 9:40 Mussel culture in China (Menzel)
- 10:00 COFFEE BREAK
- 10:30 Mussel culture in Thailand: A synopsis (Chalerawat et al.)
- 10:50 Parasites and diseases of mussels (Figueras)
- 11:10 Infectious diseases of mussels, especially pertaining to mussel transplantation (Bower)
- 11:30 Growth, reproduction, and longevity of mussels (*Mytilus edulis*): Their implications to mussel culture (Jamieson and Heritage)
- 11:50 LUNCH
- 1:20 Recruitment and commercial seed procurement of the blue mussel *Mytilus edulis* in Maine (Hidu et al.)
- 1:40 Seed collection and reproduction (Mallet)

- 2:00 Crustacean predation on bivalve prey: An overview of interactions from northeast U.S. coastal waters (Auster)
- 2:20 An economic analysis of the Maine mussel industry (Wilson and Fleming)
- 2:40 A model of carrying capacity for suspended mussel culture in eastern Canada (Grant and Thompson)
- 3:00 COFFEE BREAK
- 3:30 Shellfish harvest/culture and toxic algal blooms: Are they mutually exclusive? (Shumway et al.)
- 3:50 The NOAA National Status and Trends Mussel Watch Program (Lauenstein)
- 4:10 A case history of fecal coliform contamination in Nova Scotia (Scarratt and Menon)

WATER QUALITY AND TOXINS

Thursday - February 16

Santa Anita C

Moderator: Dorothy Leonard

- 9:00 The quality of shellfish growing waters (Leonard and Broutman)
- 9:20 Impacts from sewage effluent on an open ocean shellfish farm (Young)
- 9:40 Depuration system for mollusks in Tomales Bay, California (Wilson)
- 10:00 COFFEE BREAK
- 10:30 The water quality of coastal shellfish growing areas: The shellfish harvester's troubled past and uncertain future (Kassner)
- 10:50 PSP and other shellfish toxins: recent outbreaks and research (Hall)
- 11:10 Paralytic shellfish toxins: production, detection, and therapy (Benson et al.)

POSTER SESSION

February 13-16

- *Perkinsus marinus*: temporal and environmental aspects of infection in South Carolina populations (Bobo et al.)
- Development of a municipal shellfish hatchery and nursery culture facility as integral components of a public resource management program (Buckner)
- Remote setting and post-set strategies for growing *Crassostrea virginica* in Virginia (Castagna et al.)
- Evaluation of the efficacy of a commercial microencapsulated diet for growth of juvenile American oysters (Chu and Gibbons)
- Description of a new sampling gear for juvenile snow crab, *Chionoecetes opilio* (Coulombe and Mauger)
- Does tidal zonation affect the intensity and incidence of *Perkinsus marinus* in juvenile American oysters in Virginia? (Gibbons and Chu)
- Comparison of enumeration techniques for eyed larvae of the American oyster (Gibbons and Kemp)
- The National Shellfisheries Association: Eighty years of fostering shellfish science (Kassner)
- Design and performance of a saltwater low dissolved oxygen test system (Miller et al.)
- Tests for possible relationships between genetic variability and levels of parasitism by *Perkinsus marinus* in *Crassostrea virginica* (Soniati et al.)

Friday - Sunday - February 17 - 19

AQUACULTURE TOURS (Optional)

Planning for NSA's 1990 Annual Meeting is Well Underway

Planning for the 82nd Annual Meeting of the National Shellfisheries Association moved forward with the recent announcement by NSA President Roger Mann that the Williamsburg Hilton Hotel and National Conference Center has been selected as the site for the 1990 meeting. Tentative dates for the annual meeting are from Sunday, April 1, to Thursday, April 5, 1990. An invitation is also being extended to the Shellfish Institution of North America (SINA) to hold their annual meeting jointly with NSA in Williamsburg. Look for more details about the 1990 meeting in a future issue of the newsletter.

Missing NSA Members

The following NSA members can't be located, and we will be forced to drop them from our roles if we can't find them soon. Please let Ed Rhodes know of their whereabouts if you have that information.

Cristian Crow, 1661 St. Rose Avenue, Baton Rouge, LA 70808

Peter A. Maistrellis, P.O. Box 530, Ipswich, MA 01938

A.J. Battistone, 431 N. 24th Street, Phoenix, AZ 85008

Barbara Child, 127 Hitchner Hall, Dept. of Animal and Vet. Science, Univ. of Maine, Orono, ME 04469

Kwang-Sik Choi, Dept. of Oceanography, Texas A&M University, College Station, TX 77843

Nancy E. Helm, Peace Corps, P.O. Box 880, Apia, Western Samoa

Alex P. Ma, P.O. Box 643, Ocean Star Int., Inc., Snowville, UT 84436

Charles McCarthy, P.O. Box 1674, Southold, NY 11971

Mattana Sanguanruang, School of Forestry, Fisheries and Wildlife, LSU, Baton Rouge, LA 70803.

PCGOA/NSA continued from page 1

Two additional panels were held on Saturday, the first involved a discussion of the positive and negative impacts of shellfish culture practices on the intertidal habitat and brought together industry, researchers and government regulators. The second panel discussed human nutrition and shellfish and featured work done by Dr. Marion Childs (Univ. of Wash.) on the kinds of sterols found in oysters, which has clearly demonstrated the presence of low levels of the cholesterol important to human nutrition in most shellfish and particularly oysters and clams.

The technical session included 25 presentations which covered the areas of oyster genetics, disease, polyploidy, nutrition and biochemistry, predators, habitat interactions of commercially important shellfish, larval settlement and metamorphosis, and shellfish culture. The award for best student paper and a check for \$100.00 was given to Joth Davis for his presentation titled: "Growth rate of sibling diploid and triploid oysters (*Crassostrea gigas*)."

At the business meetings for PCGOA and NSA (Pacific Coast Section) a decision was made to hold next years meeting (1989) in Seattle around the first in September. New officers were also chosen for the Pacific Coast Section of NSA and were as follows:

Ken Cooper Chairman
Coast Oyster Co.

Dan Cheney Vice Chairman
Bay Center Mariculture

Dr. Chris Langdon
Secretary/Treasurer
Oregon State Univ.

Tom Bettinger Member at large
Coast Oyster Co.

Randy Shuman Member at large
Shoalwater Oyster Co.

Anyone wishing to receive information on the upcoming meeting

should contact Chris Langdon at the following address:

Chris Langdon
Hatfield Marine Science Center
Oregon State University
2030 So. Marine Science Dr.
Newport, Oregon 96365-5296

Sea Fare '89 continued from page 2

"Seafood is a complex, international business where supplies, suppliers and prices are all in a constant state of flux," explains McKenzie. "Sea Fare gives anybody that buys and sells seafood the chance to maintain their competitive edge in a competitive business. It doesn't make any difference if it's a chef or a retailer, everybody is always looking for something new in seafood. Sea Fare is the best place to find reliable sources of new seafood supplies. Every year millions and millions of dollars of business are written at the show."

Sea Fare also features an accredited program of practical, profitable seafood buying and marketing seminars organized by Seafood Leader. Buyers will learn new ways to identify quality product and handy tips on how to get the most money when selling it.

For more information on Sea Fare '89, contact Sea Fare Expositions Inc. at 3510 1st Avenue, NW, Seattle, WA 98107. (206) 547-6030 FAX: (206) 789-9193. TELEX: 298558 SFEUR. Source: Aquaculture News 9:88

1989 Dues Notices to Arrive Soon

Ed Rhodes, our Secretary-Treasurer will mail out dues notices for 1989 in the next few weeks. In the past we have waited until February to do this, but the increased expenses of producing the Journal of Shellfish Research that have led to a dues increase have also led to a diminished cash reserve in our coffers. Please respond to the dues request soon. This will put us in better fiscal shape sooner, and save the additional expense of a second notice mailing. Remember that for 1989 regular member dues will be \$30.00(US) and dues for students will be \$20.00(US).

Meetings, Courses, Etc.

The American Society of Zoologists will hold its 1988 annual meeting in conjunction with the American Microscopical Society, Animal Behavior Society, Crustacean Society, International Association of Astacology, Society of Systematic Zoology, and the Western Society of Naturalists from December 27-30, 1988 at the San Francisco Hilton on Hilton Square, San Francisco, CA. For additional information, contact: Mary Adams-Wiley, Executive Officer, American Society of Zoologists, 104 Sirius Circle, Thousand Oaks, CA 91360 (805) 492-3585.

The Ninth Annual Shellfish Biology Seminar will be held on February 21, 1989, at the Milford, Connecticut Howard Johnson's Motor Lodge. Shellfisheries topics include habitat loss, effects of sewage pollution, artificial culture, and disease. For invitations and/or paper contributions, contact: Dr. Walter Blogoslawski, NMFS, Milford Laboratory, 212 Rogers Avenue, Milford, CT 06460 (203)783-4235.

The National Fisheries Institute Annual Convention will be held April 10-13, 1989 in Las Vegas, Nevada. For additional information, contact: Pat McCoy, 2000 M Street, N.W., Suite 580, Washington, D.C. 20036 (202) 296-5172.

The Seventh Annual International Pectinid Workshop will be held in Portland, Maine from April 20-25, 1989. For additional information, contact: Sandra Shumway, Department of Marine Resources, West Boothbay, ME 04575 (207) 633-5572.

The Eighth Symposium of Astacology is scheduled for mid-April 1990 in Baton Rouge, Louisiana. The Symposium will be hosted by the Louisiana State University Agricultural Center. For additional information, contact: L.W. de la Bretonne, Louisiana Cooperative Extension Service, Knapp Hall, Louisiana State University, Baton Rouge, LA 70803 (504) 388-4141, or Robert Romaine,

School of Forestry, Wildlife and Fisheries, Louisiana State University, Baton Rouge, LA 70803 (504) 388-4208.

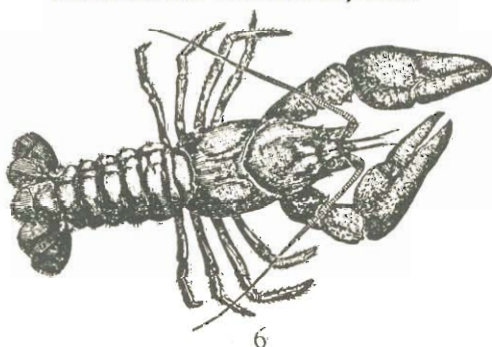
The Louisiana Restaurant Association will sponsor two trade shows on March 5-6, and August 12-14, 1989. For additional information, contact: Sandy Riddle, Louisiana Restaurant Association, 2800 Veterans Blvd., Suite 160, Metairie, LA 70002 (504) 831-7788.

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 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 and Ventura Publisher software. Whenever possible, your contribution (text) should be accompanied by a 5 1/4 inch diskette 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 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 (spring) issue of the newsletter is March 30, 1989.



Employment Opportunities

Nantucket Shellfish Farm has four openings starting in mid-April 1989 to manage oysters through all phases of growout. Desirable skills include: water quality analysis, plankton identification, boat handling, snorkelling, basic carpentry and mechanics and a desire to work on the water. Salary will be \$250-\$300 per week. Summer employment may also be available. Those interested should send two replies. One to each address: Robert Garrison, Apartado Postal 602, Puerto Plata, Dominican Republic and Martin Ceely, P.O. Box 14, Nantucket, MA 02554 (508) 228-0925.

Summer Research Assistants - (salary commensurate with experience). Individuals are needed for ongoing projects throughout New Jersey including field work associated with oyster, hard clam and surf clam resource assessments. Experience preferred but not necessary. Applicant(s) should contact: James W. Joseph or Thomas W. McCloy, New Jersey Bureau of Shellfisheries, Nacote Creek Research Station, Route 9, Absecon, NJ 08201.

Summer Employment - Rutgers Shellfish Research Laboratory seeks applications from interested undergraduate and graduate students for summer employment at our Delaware Bay Laboratories at Bivalve and Cape Shore, New Jersey. Employment can be from May 15 to August 30, 1989. Students will work on a variety of research projects dealing with aquaculture, genetics and breeding of shellfish, parasite and disease studies, computer modeling, data handling techniques, shellfish physiology, shell structure analysis, bivalve larval recruitment and related studies. Individual projects and work-study are encouraged. Salary is \$180.00 per 40 hour week. Dormitory facilities are available at \$25.00 per week. Please contact Dr. John Kraeuter, Associate Director, Rutgers Shellfish Research Laboratory, P.O. Box 687, Port Norris, NJ 08349 (609) 785-0074.

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 20 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 1988 dues are ONLY \$18(US) per year (\$15 for students) and that includes the *Journal* and the Newsletter! Regular membership dues in 1989 will be \$30 per year; student membership will be \$20.

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 payable to the National Shellfisheries Association and send to Edwin Rhodes, National Marine Fisheries Service, 212 Rogers Avenue, Milford, CT 06460 USA.

John W. Ewart
NSA Quarterly Newsletter
College of Marine Studies
University of Delaware
Lewes, DE 19958



Sandra Shumway
Department of Marine Resources
West Boothbay Harbor

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