

National Shellfisheries Association

QUARTERLY NEWSLETTER

SPRING / PROGRAM ISSUE 1993



Lewes, Delaware

President's Message

Please register NOW for the Portland 93 joint NSA - Pacific Coast Section, PacRim Shellfish Sanitation meeting - you will find the meeting registration and hotel room reservation materials included in this newsletter. We have blocked sufficient rooms for the expected attendance but our meeting overlaps with the Portland Rose Festival (which should add some excitement to the meeting week) and we expect a large enrollment for our meeting so additional rooms may not be available at the last minute.

If you have not yet returned your NSA ballot included in the Winter Newsletter, please take a few minutes and do so now. The strength of our association depends on your participation. In addition to electing new officers for the upcoming year, we always need dedicated and interested people to become involved as future committee members and officers. Please assist when asked and volunteer to work on the variety of important tasks.

The NSA is in good condition financially as we continue to provide a high quality scientific forum in the *Journal of Shellfish Research*, publish the Newsletter, and have annual meetings. We need to continue good management of our finances through self-supporting meetings and fund raising activities. We have committed sponsorship for sessions at Portland 93 and other fund-raising activities you will find at that meeting - plan to attend the auction and also to buy some NSA souvenirs at the membership booth.

See you in Portland!

Ralph Elston

NSA Joint PCS-NSA and PAC RIM Shellfish Sanitation Meeting

The National Shellfisheries Association 1993 annual meeting will take place in the City of Roses -- Portland, Oregon. The Hotel Marriott (1401 S.W. Front Avenue, Portland, OR 97201 Phone (503) 226-7600) is located in the heart of downtown Portland, twenty minutes from the Portland International Airport. Make your hotel reservations directly by using the reservation card, or by calling (503) 226-7600. Since our meeting is being held during the annual Rose Festival, we urge you to make your reservations as soon as possible due to the limited number of rooms available. Room rates are: single, \$86.00; double, \$86.00; triple, \$106.00; quad, \$116.00.

You should pre-register for the meeting by filling out the registration form found on page 3 and mailing it along with your check (US dollars, payable to NSA) to Ralph Elston.

The registration includes the Sunday President's Reception, the Wednesday Business Luncheon, the NSA/PacRim Reception, four continental breakfasts, coffee/refreshment breaks, and a program with abstracts. Non-members can qualify for the member registration fee by submitting the \$40.00 NSA membership fee with their registration.

Optional activities include Ken Chew's eleven course Chinese Banquet on June 1 at the Jasmine Tree Restaurant and Lounge, four blocks from the convention hotel. A special musical review for the Rose Festival and a cabaret floor show are included. Dinner will be served at 7:00 pm. Three full-day tours (9:00 am - 5:00 pm) to beautiful surrounding areas of the Rose City are available by pre-registration: 1. May 31 - *The Columbia River Gorge*. This tour includes a visit to Bonneville Dam, fish ladder and hatchery. It offers spectacular scenic views of the Columbia River and majestic waterfalls. You can also see windsurfers enjoying their sport. 2. June 1 - *The Mt. Hood Loop*. This tour loops around Mt. Hood (elevation 11,245 feet) through a national forest, over streams, through the Columbia Gorge to Hood River and then on to Timberline Lodge (a national historical landmark). The lodge is located at the 6,000 foot level of Mt. Hood and offers a spectacular view of the Cascades. 3. June 2 - *The Northern Oregon Coast*. This tour crosses the Oregon coast mountain range and goes through a Douglas fir forest on its way to the Pacific Ocean. You'll stop in Seaside for lunch (seafood at its best!), visit the Tillamook cheese factory, and return to the Rose City in time for the NSA/PacRim Reception. Space will be limited so please register early for Ken's dinner and the tours.

Notes from the Treasurer...

Thank you to all NSA members who have made contributions to the Student Endowment Fund. Your support of this worthwhile cause is greatly appreciated! Those members who have not yet renewed their membership are encouraged to do so as soon as possible. If you did not receive your dues notice or misplaced it, please contact Treasurer Steve Tetelbach or use the membership form on the last page of the Newsletter. Your assistance is requested in locating the following missing members (i.e. those whose addresses are no longer current): Mary Lee, Lynda Fawcett, Herman Pasternak, Brian Emmett, Denise Whitman, Doug Haymans, M. Paige Adams, Oliver Tyson, Greg Shatkin. Thanks!!

IT'S NOT TOO LATE....be sure to cast your ballot for the 1993 Executive Committee - see the Winter 1993 Newsletter for candidate biographies and ballot. Ballots are due by May 15, 1993 so vote today!

Book Reviews

Frontiers of Shrimp Research. 1991. Edited by P.F. DeLoach, W.J. Dougherty and M.A. Davidson. Developments in Aquaculture and Fisheries Science, Volume 22. Elsevier Press, Amsterdam. 294 pages. ISBN 0-444-88346-0. Price: US\$103.00.

The Frontiers of Shrimp Research Symposium was conceived to assess the status of shrimp research over the broad array of subject areas focusing on problems of shrimp fisheries science and mariculture. The volume is organized into eight parts: Fisheries Science, Reproductive Biology, Endocrinology, Nutrition, Pathology, Culture Science, Information Exchange and Shrimp research Tomorrow. The quality of the papers and the distinction of the contributors have resulted in an important collection focussing on some of the latest advances in shrimp research. The contributions in each section provide specialized coverage of some of the important topics pertinent to each subject area rather than attempting a complete review and synthesis. The broad nature of shrimp research and the limited scope of the volume result in obvious gaps and many significant research areas are not covered. The inevitable time lag between organization of the symposium and publication also results in a need for update and expansion of coverage of several topics. Still, this volume brings together much material of great relevance to researchers, students and mariculturists.

Three contributions relate to fisheries science. The first provides a review and synthesis of research on habitats, growth and mortality of *Penaeus aztecus* and *Penaeus setiferus* in estuarine nurseries. The review cites 75 references providing much information on habitat functions and highlighting some areas where more work is needed. This type of information provides the basis for protecting the estuarine habitats of valuable U.S. shrimp fishery species. The second paper explores changes in the relative size and protein, carbohydrate and lipid content of gonads and digestive glands during gonadal development of *P. aztecus* and *P. setiferus*. Differences in patterns of nutrient mobilization were found between the species which may reflect nutritional, habitat and reproductive contrasts. The third paper reviews the historic use of population models in management of the U.S. Gulf of Mexico shrimp fishery, the real possibility of a collapsing fishery suggests need for immediate response from state/federal management agencies and for continued improvement of models for examination of likely impacts of potential management alternatives.

The unit on reproductive biology focuses on the morphology and physiology of the early stages of egg activation and developmental phenomena in selected penaeid species. Penaeid shrimp provide opportunities for basic research on early egg activation. Understanding the physiology of egg activation in penaeid shrimp provides a basis for manipulation of events related to the entry of sperm into the egg's cytoplasm. This timely review updates published works as well as current investigations.

The comparative endocrinology of crustaceans in general and penaeid shrimp in particular has been the subject of a

great deal of research attention. The mechanisms controlling metabolic processes such as growth and reproduction are of great significance and considerable relevance to mariculturists working with commercially important species. Four excellent contributions are included in this volume reviewing some of the research on the endocrine control of vitellogenesis and reproduction, crustacean molting hormones and the chemistry of crustacean neuropeptides by several of the foremost researchers in the field. The final chapter of the book on "Shrimp Research Tomorrow" might have more appropriately been included in this section as the author focuses on his area of expertise: endocrine factors involved in the physiology of reproduction and growth. A useful summary of shrimp endocrinology and suggestions for near term research are given.

Two important approaches to the study of nutrition of penaeid shrimp are summarized. The immunoassay technique can provide qualitative and sometimes quantitative data on the diet of natural populations of penaeid shrimp for ecological investigations. The use of stable isotope ratios is described for exploring the relative contributions of various dietary components to cultured shrimp.

The pathology section is limited to an update on the hosts, geographic range and diagnostic procedures for certain penaeid virus diseases. The review illustrates the limitations of current diagnostic procedures and some of the potential dangers of uncontrolled introductions of shrimp to regions where they may not have previously existed.

The first paper in the Culture Science section makes a theoretical exploration of the potential for development of economically viable shrimp pond growout technology for the U.S. based on the shrimp culture technologies of Ecuador and Taiwan. Although considerable changes have occurred since this paper was delivered, many of the economic factors and suggestions for improvement of conditions affecting profitability are still relevant. The intensive culture technologies reviewed in the second paper suggest that production levels currently achieved by most commercial producers could be significantly increased and should therefore be required reading for shrimp mariculturists.

The next article's examination of information available to individuals seeking basic knowledge, expertise and resources in aquaculture should prove to be quite useful. The appendices provide many names and addresses for important information products.

Overall, I would recommend this interesting and informative volume to members of the research community as well as mariculturists interested in reviewing some of the latest developments in selected areas of shrimp research.

Craig L. Browdy, Ph.D.
Waddell Mariculture Center
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Bluffton, SC 29910

(continued on page 10)

**NATIONAL SHELLFISHERIES ASSOCIATION JOINT PCS-NSA
PAC RIM SHELLFISH SANITATION MEETING
REGISTRATION FORM - PORTLAND '93
MAY 30 THROUGH JUNE 3, 1993 - PORTLAND, OREGON**

Return to: Ralph Elston
Battelle Marine Sciences Laboratory
439 West Sequim Bay Road; Sequim, WA 98382 U.S.A.

NAME & TITLE _____
ORGANIZATION/BUSINESS _____
STREET/MAILING ADDRESS _____
CITY _____ **STATE** _____ **ZIP** _____
COUNTRY _____ **PHONE #** _____ **FAX #** _____

NSA REGISTRATION (Sunday May 30 through Thursday June 3)

Includes Sunday President's Reception, Wednesday Business Luncheon, Wednesday NSA/PacRim Reception, four continental breakfasts and coffee/refreshment breaks.

	<u>BY</u> <u>MAY 1</u>	<u>AFTER</u> <u>MAY 1</u>		<u># OF PEOPLE</u>	<u>TOTAL</u>
MEMBERS	\$145	\$185	X	_____	= \$ _____
NON-MEMBERS	\$190	\$230	X	_____	= \$ _____
STUDENT MEMBERS	\$ 90	\$135	X	_____	= \$ _____
PER DAY REG. (includes continental breakfast & refreshment breaks)					
Before or after May 1	=	\$ 60	X	_____	= \$ _____
NSA MEMBERSHIP	<u>REGULAR</u>	<u>STUDENT</u>			
	\$ 40	\$ 25	X	_____	= \$ _____

PacRim REGISTRATION (Tuesday June 1 through Thursday June 3)

Includes Wednesday NSA/PacRim Reception, three continental breakfasts and coffee/refreshment breaks.

	<u>BY</u> <u>MAY 1</u>	<u>AFTER</u> <u>MAY 1</u>			
FEE PER PERSON	\$ 70	\$110	X	_____	= \$ _____

OPTIONAL ACTIVITIES

PER TICKET

PRESIDENT'S RECEPTION GUEST TICKET (May 30)	\$ 15	X	_____	= \$ _____
NSA/PacRim RECEPTION GUEST TICKET (June 2)	\$ 25	X	_____	= \$ _____
11 COURSE CHINESE BANQUET (June 1, includes floor show)	\$ 18	X	_____	= \$ _____
ALL DAY TOURS:				
COLUMBIA GORGE (May 31)	\$ 35	X	_____	= \$ _____
MT. HOOD LOOP (June 1)	\$ 40	X	_____	= \$ _____
NORTHERN ORE. COAST (June 2)	\$ 50	X	_____	= \$ _____

TOTAL FEES ENCLOSED = \$ _____

**NATIONAL SHELLFISHERIES ASSOCIATION TECHNICAL PROGRAM
PORTLAND, OREGON, MAY 30 - JUNE 3, 1993**

SUNDAY, MAY 30, 1-5 PM
NSA EXECUTIVE COMMITTEE, Room TBA

SUNDAY, MAY 30, 6:30-8:30 PM
PRESIDENT'S RECEPTION, Salon E

MONDAY -- MAY 31

POSTER SESSION/TRADE SHOW SET UP
Salon E (8:30-10:30 am)

POSTER SESSION/TRADE SHOW Salon E
(10:30 am, Monday to 10:30 am, Thursday)

MORNING SESSIONS

PARASITES AND DISEASES I
Moderator: Harold Mears
Salon F (8:00-11:40)

The oyster disease research program of the National Marine Fisheries Service (NMFS): an overview (MEARS)

Comparative physiology of *Crassostrea virginica* and *C. gigas*: growth, mortality, and infection by *Perkinsus marinus* (BARBER and Mann)

Chemical inhibition of *Perkinsus marinus* in an *in vitro* test (KRANTZ)

Spores of *Haplosporidium nelsoni*: findings and speculations (FORD and Barber)

Triploids for field study? The good, the bad, and the ugly (ALLEN)

BREAK (10:00-10:20)

The effect of winter temperature and spring salinity on *Perkinsus marinus* prevalence and intensity: a laboratory study (BURRESON and Ragone Calvo)

Overwintering infections of *Perkinsus marinus* in Chesapeake Bay oysters (Burrenson and RAGONE CALVO)

Infectivity and pathogenicity of two life stages, meront and presporangia, of *Perkinsus marinus* in eastern oysters, *Crassostrea virginica* (VOLETY and Chu)

Perkinsus marinus susceptibility in eastern (*Crassostrea virginica*) and Pacific (*Crassostrea gigas*) oysters: temperature and salinity effects (CHU, Burrenson, Voltey and Constantin)

LUNCH (12:00-1:00)

GENERAL BIOLOGY
Moderator: TBA
Salon I (8:00-11:20)

Development of confluent monolayers from tissues of the eastern oyster, *Crassostrea virginica* (FAISAL, LaPeyre and Roberts)

Oxygen uptake, oxidant production, and luminol-enhanced chemiluminescence by hemocytes of eastern oysters (FRIEDL and Alvarez)

Studies of the sporadic release of epithelial cells by the giant scallop, *Placopecten magellanicus* (POTTER, MacDonald and Ward)

Contrasting foraging tactics of two predators of juvenile bay scallops, *Argopecten irradians*, in the eelgrass canopy (BRICELJ, Bauer and Tanikawa-Ogelsby)

Role of fecal elimination during uptake and depuration of ⁶⁵Zn and ¹⁰⁹CD in the hard clam (EBLE, Ramsbottom and Burkhardt)

BREAK (10:00-10:20)

Abalone withering syndrome at San Nicolas Island, California (REUDIGER and VanBlaricon)

Investigations of physiological parameters of black abalone with withering syndrome (KISMOHANDAKA, Friedman, Roberts and Hedrick)

Morphometric maturity and aggressive mating behavior of tanner crab, *Chionoecetes bairdi* (Decapoda: Majiadae), sampled by scuba and submersible (STEVENS, Haaga, Munk and Donaldson)

LUNCH (12:00-1:00 pm)

AFTERNOON SESSIONS

PARASITES AND DISEASES I (con't)
Moderator: Harold Mears
Salon F (1:00-4:40)

Genetic differentiation among strains of disease challenged oysters (GRAVES and McDowell)

Population models to evaluate the impact of diseases and management options for the James River oyster fishery (MANN)

Utilization of a Geographical Information System (GIS) for the timely monitoring of oyster population and disease parameters in Maryland's Chesapeake Bay (SMITH and Jordan)

Propagation of the oyster pathogen *Perkinsus marinus* *in vitro* (LaPEYRE, Faisal and Burrenson)

In vitro continuous culture of *Perkinsus marinus* trophozoites: optimization of the methodology (GAUTHIER and Vasta)

Evaluation of *Perkinsus marinus* quantification techniques using fluid thioglycollate media (BUSEK)

BREAK (3:00-3:20)

Physiological and immunological measures of Appalachian Bay oysters during a one year period (FISHER, Winstead, Oliver and Edwards)

Perkinsus marinus as a source of oyster mortality in coastal lagoons in Tabasco, Mexico (BURRESON, Vidal-Martinez, Sima-Alvarez)

Chemotherapy of *Perkinsus marinus*-infected oysters: a two week bath treatment experiment with amprolium, cyclohexamine, malachite green, and sulfadimethoxine (CALVO and Burrenson)

The quantitative effects of *Perkinsus marinus* on reproduction and condition in the eastern oyster, *Crassostrea virginica* (DITTMAN)

REPRODUCTION AND RECRUITMENT

Moderator: Eric Powell

Salon I (1:00-4:00)

Instantaneous reproductive effort of the American oyster, *Crassostrea virginica*, in Galveston Bay, Texas (CHOI, Powell and Lewis)

Protein, carbohydrate and lipid levels associated with metamorphic success in larvae of the eastern oyster, *Crassostrea virginica* (PAYNTER, Gallagher and Walsh)

Estimating the survival of Delaware Bay oyster larvae within and between years (FEGLEY, Kraeuter, Ford and Haskin)

A modelling study of the environmental and behavioral factors controlling the vertical distribution of oyster larvae (DEKSHENIEKS, Hofmann, Klink and Powell)

Coastal advective processes and recruitment variability in dungeness crab (*Cancer magister*) populations (McCONNAUGHEY, Armstrong, Hickey and Gunderson)

A juvenile critical stage in the dungeness crab (*Cancer magister*) life history (McCONNAUGHEY and Armstrong)

BREAK (3:00-3:20)

Laboratory study of reproduction in *Argopecten ventricosus* (VILLALAZ)

Growth of microcultured and remote set oysters in coastal waters of Alabama (ROUSE)

STUDENT RECEPTION, 7-8 PM

President's Suite

AUCTION, 7-8 PM, President's Suite

TUESDAY -- JUNE 1

MORNING SESSIONS

PARASITES AND DISEASES II

Moderator: Ken Paynter

Salon F (8:00-11:20)

The physiological effects of protozoan parasitism on the eastern oyster, *Crassostrea virginica*: introductory overview (PAYNTER, Caudill and Burreson)

The physiological effects of protozoan parasitism on the eastern oyster, *Crassostrea virginica*: induction of stress proteins (BROWN, Drew and Paynter)

The physiological effects of protozoan parasitism on the Eastern oyster, *Crassostrea virginica*: feeding and metabolism (NEWELL, Paynter and Burreson)

Several mitochondrial functions in Chesapeake Bay oysters are different in Atlantic oysters: disease or genetics? (PIERCE, Perrino and Rowland-Faux)

Hemocyte responses in *Crassostrea virginica* infected with *Perkinsus marinus* (ANDERSON, Brubacher, Mora, Paynter and Burreson)

The physiological effects of protozoan parasitism on the eastern oyster, *Crassostrea virginica*: effects on cellular free amino acid levels (PAYNTER, Pierce and Burreson)

BREAK (10:00-10:20)

Pathogenesis of disseminated neoplasia in eastern Pacific *Mytilus trossulus* (MOORE and Elston)

Detection, isolation, and host specificity of *Microcytos mackini*, the cause of Denman Island disease in Pacific oysters *Crassostrea gigas* (HERVIO, Bower and Meyer)

Diseases of spot prawns (*Pandalus platyceros*) caused by the intracellular bacterium and a *Hematodinium*-like protozoa (BOWER, Meyer and Boutillier)

LUNCH (12:00-1:00)

AQUACULTURE, ECOLOGY AND MANAGEMENT

Moderator: Skip Kemp

Salon I (8:00-11:00)

On farm computer program for mussel farms (DAVIDSON, McFarlane and Clinton)

Effects of initial clam size and type of protective mesh netting on the survival and growth of hatchery-reared individuals of *Mya arenaria* in Eastern Maine (BEAL)

Factors of mesh size, stocking size, stocking density and environment which affect growth and survival of *Mercenaria mercenaria* (Linnaeus, 1758) in a maricultural growout application in coastal Georgia (HURLEY and Walker)

Over exploitation and signs of recovery: analysis of an offshore whelk fishery (ANDERSON and Eversole)

Growth of the eastern oyster, *Crassostrea virginica*, in floating rafts in North Carolina (BROWN, Butt and Paynter)

Development of the chub ladder oyster culture method (KEMP and Evans)

BREAK (10:00-10:20)

Effects of Hurricane Andrew on Louisiana's oyster resources (PERRET, Dugas, Roussel and Boudreaux)

Health assessment of oyster reefs in Galveston Bay, Texas (SONG and Powell)

LUNCH (12:00-1:00)

AFTERNOON SESSIONS

HARMFUL PHYTOPLANKTON AND SHELLFISH INTERACTIONS

Moderator: Sandy Shumway

Salon I (1:00-5:40)

Domoic acid in the Pacific razor clam *Siliqua patula* (DRUM, Siegbens, Crecelius and Elston)

Impact of harmful algal blooms on scallop culture and fisheries (SHUMWAY and Cembella)

Domoic acid in western Washington waters (HORNER and Postel)

Fisheries management and toxic phytoplankton: the razor clam example (SIMONS and Ayres)

Effect of the Texas brown tide on *Mulinia lateralis* populations and feeding (MONTAGNA, Stockwell and Street)

Effects on the oyster *Crassostrea virginica* caused by exposure to the toxic diatom *Nitzschia pungens* F. multiseriis (ROELKE, Fryxell and Cifuentes)

BREAK (3:00-3:20)

Pseudonitzschia australis Frenguelli and other toxic diatoms from the west coast of the U.S.A.: distribution and domoic acid production (VILLAC, Fryxell, Chavez and Buck)

Update on the Bay scallop fishery in New York: living with the threat of brown tide (TETTELBAACH and Wenzel)

Factors controlling paralytic shellfish poisoning (PSP) in Puget Sound, Washington (RENSEL)

An interspecific comparison of paralytic shellfish poisons in marine bivalves: anatomical and spatio-temporal variation in toxin composition (CEMBELLA, Lewis and Shumway)

"Non-toxic" dinoflagellate bloom effects on oyster culture in Chesapeake Bay (LÜCKENBACH, Shumway and Sellner)

Domoic acid and paralytic shellfish toxic monitoring in British Columbia, Canada (CHIANG)

Phytoplankton monitoring in California (LANGLOIS)

ENVIRONMENTAL HEALTH I, 1-6 PM

Chairman: Dot Leonard
Salon F

Public health--perception vs reality
Moderator: Tim Smith

Risk assessment and management
Moderator: Tom Siewicki

POSTER SESSION 3:20-4:20 PM

Salon E

Presenters must be present

SHELLFISH MASTERS ROUND TABLE 6-7 PM

Room: TBA

WEDNESDAY - JUNE 2

MORNING SESSIONS

NON-TRADITIONAL SHELLFISHERIES

Moderator: Frances Dickson
Salon I (8:00-12:00)

The soft-shell clam fishery in the Canadian maritimes: an industry in change (ROBINSON)

The intertidal clam fishery in British Columbia; a fishery under review (DICKSON)

Fisheries management implications of new growth and longevity data for pink (*Chlamys rubida*) and spiny scallops (*C. hastata*) from Puget Sound, Washington (SIZEMORE and Palensky)

Management of the British Columbia abalone fishery: a square peg in a round hole (FARLINGER and Thomas)

Management of an expanding red sea urchin fishery in British Columbia (THOMAS)

Management of the commercial fishery for spot prawns (*Pandalus platyceros*) in British Columbia (ADKINS)

BREAK (10:00-10:20)

Dig a duck-the commercial geoduck clam fishery in British Columbia (HARBO)

"Knob cod"-management of the commercial sea cucumber fishery in British Columbia (HEIZER)

Exploitation in natural populations: a case study of a "new" fishery (PFISTER)

Continuing studies of green urchin growth and recruitment near Kodiak, Alaska (MUNK and MacIntosh)

NSA BUSINESS LUNCHEON

Room: TBA (12:00-1:00)

ENVIRONMENTAL HEALTH II, 8:20-12:00 AM

Chairman: Dot Leonard

Shellfish restoration
Moderator: Eric Slaughter

Nonpoint impacts and cleanup
Moderator: Duane Fahrengren

NSA BUSINESS LUNCHEON

Room: TBA (12:00-1:00)

AFTERNOON SESSIONS

INTEGRATED PEST MANAGEMENT

Moderator: John Pitts
Salon I (1:00-3:00)

An integrated pest management plan for the control of burrowing shrimp populations on oyster beds in southwestern Washington State (PITTS)

Impacts on benthic invertebrate communities caused by aerial application of carbaryl to control burrowing shrimp in Willapa Bay, WA (BROOKS)

Burrowing shrimp recruitment to intertidal shell habitat: substrate selection, post-settlement survival, and the impact on shell longevity (FELDMAN, Armstrong and Eggleston)

Ballast water and sediments as mechanisms for unwanted species introductions into Washington State (KELLY)

Approaches to the biological control of zebra mussels (MOLLOY)

A proposal to take a closer look at burrowing shrimp recruitment to oyster culture areas in Washington coastal estuaries (DUMBAULD and Feldman)

BREAK (3:00-3:20)

NUISANCE AQUATIC SPECIES WORKSHOP

Moderator: Aaron Rosenfield
Salon A, 1-5 PM

ALASKAN SHELLFISHERIES INDUSTRY PANEL

Moderator: Raymond RaLonde
Salon G, 1-5 PM

SEAFOOD BANQUET, 6-8 PM

Room: TBA

THURSDAY - JUNE 3

MORNING SESSIONS

BIVALVE FEEDING AND NUTRITION

Moderator: Roger Newell
Salon I (8:00-10:00)

Mechanisms of particle transport and ingestion in the eastern oyster, *Crassostrea virginica* (NEWELL, Macdonald and Thompson)

Microcapsules and suspension-feeders-an update (LANGDON)

In situ measurements of bivalve suspension-feeding: comparison between rates of scallops and mussels (WARD)

Vertical gradients in growth of juvenile bay scallops, *Argopecten irradians*, in relation to flow and seston characteristics in eelgrass meadows (BORRERO)

Food availability to natural oyster populations: food, flow and flux (WILSON-ORMOND, Powell, Hofmann and Klinck)

Phytoplankton stocks and the future of the Galveston Bay oyster fishery (POWELL, Wilson-Ormond, Hoffman and Klinck)

BREAK (10:00-10:20)

TRADE SHOW AND POSTER SESSION ENDS (10:30)

GENETICS AND BREEDING

Moderator: TBA
Room TBA (8:00-10:00)

The effect of parental relatedness on progeny growth and viability in the bay scallop, *Argopecten irradians* (WILBUR and Gaffney)

Gonadal neoplasia in *Mercenaria mercenaria*, *M. campechiensis* and their hybrids (EVERSOLE and Heffernan)

The suitability of land based evaluations of *Crassostrea gigas* as an indicator of performance in the field (DEBROSSE)

Effects of growout density on heritability of growth rate in the northern quahog, *Mercenaria mercenaria* (Linnaeus, 1758) (CRENSHAW, Heffernan and Walker)

Second heritability estimate of growth rate in the southern bay scallop, *Argopecten irradians concentricus* (Say, 1822) (HEFFERNAN and Walker)

Assessing reproductive sterility of triploids: aneuploid larvae produced from crosses between triploid and diploid *Crassostrea gigas* (GUO)

BREAK

WEST COAST AQUACULTURE

Moderator: TBA
Salon I (10:20-12:00)

Substrate additive studies for development of hardshell clam habitat (THOMPSON and Cooke)

Hatchery techniques of the rock scallop (*Crassadoma gigantea*) larvae in the Puget Sound region, Washington (RHEE)

The Suminoe oyster - candidate for the half-shell trade? (ROBINSON)

The effectiveness of predator exclusion tubes for growout of the geoduck clam, *Panopea abrupta* (HERRÉN)

Abalone cultivation techniques (McCORMICK)

POSTER SESSION (Monday through Thursday) Salon E

Overwintering hatchery-reared individuals of *Mya arenaria*: a field test of site, clam size and intraspecific density (BEAL)

Reproduction of sea scallops (*Placopecten magellanicus*) and Iceland scallops (*Chlamys islandica*) in the Magdalen Islands (Giguere, CLICHE, and Brulotte)

The effects of airlift circulation on the spatial distribution of *Crassostrea gigas* larvae set on strung cultch in circular tanks (CONTE)

Status and trends analysis of oyster reef habitat in Galveston Bay, Texas (ELLIS and Powell)

Genetic structure of brackish water clams (*Rangia* spp.) (FOLTZ and Sarver)

A comparison of methods for identifying molluscan hemocytes (FORD and Alcox)

Identification of a summer mortality-resistant population of blue mussels in the Magdalen Islands (Quebec, Canada) (Gaudreault and MYRAND)

Potential of hemocytes taken from various body locations of the eastern oyster to interact with foreign materials (Mulholland and FRIEDL)

Ecosystem monitoring studies in coastal Georgia (O'BEIRN, Heffernan and Walker)

Toxic diatoms in western Washington waters (POSTEL and Horner)

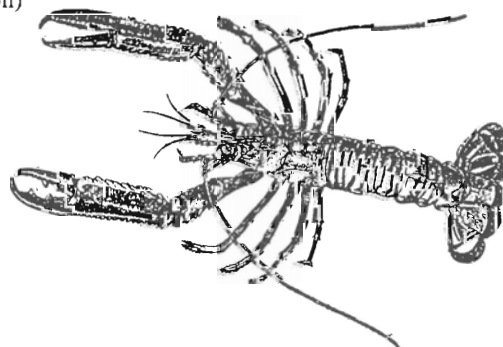
Clam production in Ireland (RICE)

Flow cytometric analysis of histozoic *Perkinsus marinus* cells (ROBERSON)

Comparison of 16S-like rDNA of *Crassostrea virginica* and *Haplosporidium nelsoni* (STOKES and Burrenson)

Age, growth rate, and size of the southern surf clam, *Spisula solidissima similis* (Say, 1822) (WALKER and Heffernan)

Suspension-feeding mechanisms in bivalves: resolution of current controversies using endoscopy (WARD, Beninger, Macdonald and Thompson)



SPRING 1993 NSA MEMBERS' 30% DISCOUNT PROGRAM
for Elsevier's
"DEVELOPMENTS IN AQUACULTURE AND FISHERIES SCIENCE" Series

VOL.	Author	Title	List Price	Member Price
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24	Ikenoue	Modern Methods of Aquaculture in Japan (1992)	143.00	100.15
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The Mussel Mytilus: Ecology, Physiology, Genetics and Culture. 1992. Edited by Elizabeth Gosling. Developments in Aquaculture and Fisheries Science, Volume 25. Elsevier Press, Amsterdam. 590 pages. ISBN 0-444-88752-0. Price: US\$137.25/Dfl 240.

Having been asked by Sandy Shumway to review the new mussel book prior to a NATO meeting in the Netherlands where we gave a paper on mussels feeding on natural particulates, I decided the 24 hour plane and train connections would be a good time to settle down to the voluminous 590 page text. In my haste to catch the international flight from Boston to New York, the book fell out of my carry-on bag which I discovered halfway over the Atlantic. In my concern to track down the book, I missed the 7:00 train connection to Yerseke, which I found out later had crashed, killing several people and injuring dozens. I therefore feel grateful to this text, and after reading my second copy (I felt no qualms about shelling out another \$137), I conclude that it's a must for your personal reference collection: bet your life on it!

Ever since Brian Bayne's book *Marine Mussels* was published (IBP Volume, 1976), there have been numerous papers published about mussels, and there has been an increasing need for leading authorities to publish critical review papers on the literature of the past 15 years. This is especially true in the field of *Mytilus* taxonomy, where workers may wonder what species to call their resident mussel and recent advances in protein electrophoresis have shed some light on the matter. Because of the extensive compilation of references in the text (over 2000), the book is a reference text for workers in so-called pure and applied aspects of mussel biology, with much needed reviews in areas of population genetics, physiological energetics, ecology and the bioaccumulation of environmental contaminants.

There is some very practical information in the text, ranging from SEM micrographs of larval hinge structures distinguishing *Mytilus* from *Modiolus*; comparisons of lethal and sublethal responses of mussels to a variety of toxicants; uptake and depuration times for hydrocarbons; lists of known contaminants of public health significance including accumulation and elimination rates; a review of diseases and parasites of mussels; and a review of the types of mussel culture throughout the world.

For researchers in aspects of cellular biochemistry and physiology, endocrinology, and cellular and molecular aspects of effects of environmental contaminants on mussels, the review chapters will be very valuable. For those who teach courses on marine invertebrates, the chapters on mussel ecology and the functional morphology of *Mytilus* will provide a nice introduction to molluscs for their students.

For myself, Chapter 5 entitled "Physiological interrelations and the regulation of production" (A.J.S. Hawkins and B.L. Bayne) was perhaps the highlight of the book as the endogenous and exogenous influences on production are reviewed in detail. Of interest is the divergence of views be-

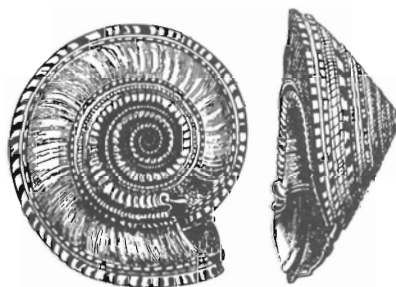
tween Jorgensen's text (*Bivalve Filter Feeding*, Olsen and Olsen, 1990) which considers physiological variability as a function of environmental change, and the views by Hawkins and Bayne that endogenous rhythms of nutrient acquisition and utilization are also important. The importance of metabolic fecal losses in absorption efficiency are stressed, and evidence that *Mytilus* is probably more growth-limited by metabolizable energy than by amino-nitrogen points to the importance of detritus in the diet of mussels in their natural habitat. I was also impressed by the 9-page review on mortality and predation in the chapter "Population and community ecology" (R. Seed and T.H. Suchanek). Too often, books in shellfish biology neglect such important aspects as public health which often have a significant effect on shellfisheries. This chapter ("Mussels and public health", S. Shumway) should provide a useful reference to government agencies and industry members.

Despite the comprehensive nature of the reviews in each chapter, there was little consideration of the importance of hydrodynamics on mussel production or the new emphasis on production modelling. In addition, a few chapters had overlap of subject matter and lacked a few recent references. Overall, however, the book reads well and Elizabeth did an excellent job in pulling together an up-to-date review before it became out-of-date. I highly recommend the new mussel book, and hope members of NSA consider adding it to their collection.

Carter Newell
Great Eastern Mussel Farms, Inc.
Tenants Harbor, Maine 04860

Egg on Face....!

Oops! We made a glaring omission when preparing the NSA membership list for JSR 11(2) - we inadvertently omitted the designation *Honored Life Member* from Bob Ingle's entry. Bob is indeed an Honored Life Member and we apologize for the omission. Just for your information - we presently have 20 Honored Life Members which represents just 2.5% of our total membership, so this distinction is truly an honor!



Meetings/Courses

AQUACULTURE IN THE MID-ATLANTIC '93 will be held June 8-10, 1993 at the Sheraton Inn, Dover, Delaware. Organizers include Sea Grant and Land Grant Colleges, state departments of agriculture, associations and industries in Delaware, Maryland, Virginia, New Jersey, Pennsylvania, West Virginia and the District of Columbia. Topics to be covered include: Planning for Commercial Aquaculture, Broodstock Development and Genetics, Evaluating Risk in Mid-Atlantic Aquaculture, Aquaculture Species, Fish and Shellfish: Consumer Basics and Beyond, Permits and Legal Challenges, Fish Nutrition and Health Management, Fish and Shellfish: Consumer Issues and Concerns, Interactive Aquaculture Marketing Workshop, Practical Applications for Fish Farming in the Mid-Atlantic, Computers in Aquaculture, and Recirculating Systems. A trade show and several field demonstrations are planned. For more information please contact: John Ewart, University of Delaware Sea Grant Marine Advisory Service, 700 Pilottown Road, Lewes, DE 19958 Phone (302) 645-4060.

THIRD INTERNATIONAL CONGRESS OF THE INTERNATIONAL SOCIETY FOR MEDICAL AND APPLIED MALACOLOGY will be held October 18-22, 1993 at Elizabeth Macarthur Agricultural Institute, Camden Park, Australia. Topics to include: Taxonomy by Conventional and Molecular Biology Techniques, Biology of Molluscan Hosts and Susceptibility of Molluscs to Parasites,

Economic Impact of Molluscs in Agriculture, Biology and Taxonomy of Molluscan Pests, Aquaculture, Farming of Terrestrial Snails, Molluscs as Therapeutic Agents, and Molluscs and the Environment. Abstract deadline is June 1, 1993. For additional information, please contact Phil H. Colman, Division of Invertebrate Zoology, Australian Museum, P.O. Box A285 Sydney South, NSW 2000, Australia. Phone: (02) 339 8112 FAX: (02) 360-4350.

BLUE CRAB RECRUITMENT SYMPOSIUM to be held in conjunction with the 12th Biennial International Estuarine Research Federation Conference, Hilton Head, South Carolina, November 14-18, 1993. Symposium will stress an understanding of processes that affect variation in population size of the blue crab. Emphasis will be on environmental controls, such as stochastic events associated with transport and settlement of pre-recruits at local and regional scales, and density-dependent processes, such as predation, cannibalism, and reproductive output. Abstracts are due by April 16, 1993. For further information please contact either Geno Olmi, Virginia Sea Grant College Program, Madison House, 170 Rugby Road, Charlottesville, VA 22903 Phone (804) 924-5965, FAX (804) 982-3694, INTERNET: geno@virginia.edu OMNET: W.RICKARDS or Bob Orth, Div. Biological Oceanography, VIMS, Gloucester Point, VA 23062. Phone (804) 642-7392, FAX (804) 642-7097, INTERNET: jjorth@vims.edu OMNET: R.ORTH.

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