National Shellfisheries Association

QUARTERLY NEWSLETTER

SPRING 1991 - BALLOT ISSUE

LEWES, DELAWARE

REGISTER NOW FOR THE 83rd ANNUAL NATIONAL SHELLFISHERIES ASSOCIATION MEETING

Plans for the 83rd Annual meeting of the National Shellfisheries Association to be held June 23-27, 1991 at the Sonesta Hotel, Portland, Maine, are in the final stages of preparation. Hotel accomodation and meeting registration information is included in this Newsletter issue (registration information was also provided in the Winter 1991 Newsletter issue). Room reservations must be made by June 2, 1991 to insure accomodations at the convention rate ($62.00/night for up to 2 people/room; $10.00 for each additional person). The Sonesta Hotel has informed us that June is a busy time of year - if your reservations are received after the June 2 deadline they cannot guarantee the discounted rate and room availability. The meeting registration fee prior to April 15, 1991 is $95.00 for members and $75.00 for students and will increase to $140.00 and $100.00, respectively, if your registration form is received by President-Elect Sandy Shumway after April 15 or for registration on-site. The fee includes: admission to all technical sessions, coffee breaks, Sunday President's Reception, Tuesday evening banquet and Wednesday Business Luncheon. As always, there will be a Hospitality Suite for spouses and trips to local sites of interest are planned. Our musically talented members are cordially invited to bring their instruments - hopefully we can get together for an informal jam session. Please take the time to register for the meeting and hotel NOW !!

NSA Technical Program

The preliminary program for the Portland meeting has been prepared by Program Chair Arnie Eversole (included in this issue). This year's program includes sessions on Scallops, Bivalve Early Life History, Feeding by Bivalves, Genetics and Polyploidy and Oyster Recruitment. A workshop on Lobster Biology and Ecology (Wednesday, June 26) and two Video Sessions (Monday and Wednesday) are special additions to the program this year. We also have a Trade Show and large Poster Session scheduled and exhibits and posters will be in close proximity to the oral session rooms. Please be sure to include the exhibits and posters on your list of "things-to-do" at the meeting. Abstracts of all oral and poster presentations will be published in the next issue 10(1) of JSR. Contact Arnie Eversole (803) 656-3117 if you have any questions about the 1991 program. See you in Portland!

President's Message

This Newsletter includes two important items. One is the program and meeting-related information concerning our Portland, ME convention. The program promises to be solid and of wide interest, and we urge your attendance at the meeting in late June. A large number of papers will provide much to think about, and the location is very attractive. We will also be honoring some of our members with Honorary Memberships or with Wallace Awards.

The second item concerns the vital task of electing officers to carry NSA forward into 1992 and beyond. I have found over my years of experience with this and other societies that the heart of an organization's strength lies with the hard work and dedication of interested volunteers who undertake to help the society. The Election Committee has worked diligently and thoughtfully to produce the slate of candidates for office. Please turn to the biographies of the candidates and vote for the individuals of your choice before you put this newsletter down.

I am pleased to report that the society is strong and getting stronger. Secretary-Treasurer Tom Soniat brings us the good news that our cash flow situation has improved nicely. The costs of producing the Journal of Shellfish Research are high and have threatened to overwhelm our budgets in the past. However, we are now in the happy situation of having a solid balance in our budget that will cover the upcoming publication costs of this year's first issue. Your attendance at the Portland meeting will help the society's income, in addition to enlightening and entertaining you. In addition to our improved budget, our journal is thriving and being published on time. We have endowment funds to help with student travel. We have a new, more relevant Constitution. And the recent questionnaire revealed general satisfaction with NSA's activities and efforts on your behalf.

Finally, as you plan for the Portland meetings, make a note about Aquaculture '92, to be held May 21-25 at Marriott's Orlando World Center in FloridA. We plan to emphasize posters to avoid excessive numbers of concurrent sessions. Abstracts will be published and we will make every effort to ensure that posters get solid exposure. We intend to ensure that poster papers are seen to be as significant as oral papers. I hope that you will join your colleagues and others at this major meeting.

RESEARCH NEWS

Studies of Polyanionic Proteins in A.P.Wheeler's Laboratory at Clemson University: Their role in Biomineralization and their potential for Commercialization. by Andy Mount

Biomineralization is a biologically controlled process in which minerals in conjunction with an organic matrix are deposited in a highly organized and often ornate fashion. This process is responsible for the production of hard parts in many different organisms including: siliceous diatom frustules, calcium phosphate bones and teeth of vertebrates and of course, calcium carbonate shells of mollusks.

The oyster has proven to be an excellent model to study biomineralization. Previous efforts in our laboratory have resulted in the isolation of several classes of proteins from oyster shell which can generally be divided into soluble and insoluble components. Earlier studies have focused upon structural and functional characterization of the soluble matrix proteins which were found to inhibit calcification in solution. Results from studies of primary structure indicate that the putative functional region of the protein is rich in aspartic acid residues.

Recently, Dr. Wheeler and our laboratory have become involved in providing scientific expertise to a newly chartered firm that is solely dedicated to introducing polyaspartic-based materials into the marketplace. The commercial potential for polyaspartic polymers is great. The material is comparable in efficacy to the heavily-utilized polyacrylate scale inhibitors, dispersants and detergent additives yet offers the significant advantages of being produced cleanly and, unlike polyacrylate, appears to be completely biodegradable and environmentally benign.

Currently, our basic research efforts are centered upon further structural and functional studies of both soluble and insoluble matrix proteins. Based upon total amino acid content studies it has been suggested that the insoluble matrix may be nothing more than cross-linked soluble matrix proteins. This explanation would help account for observations that the insoluble matrix serves as a substrate for initiation of crystal growth *in vitro* and for its unique super-absorbent properties (it absorbs over 100 times its weight in water).

Graduate student projects include Debbie Swift's research to establish the existence and function of a proteinaceous matrix in the frustules of a diatom. I have initiated research to test the hypothesis that immobilized oyster shell matrix proteins promote crystallization (as calcium carbonate crystals) by binding crystal nuclei from solution. Richard Knaub who has recently joined our laboratory, is interested in the role of phenoloxidase in cross-linking the organic matrix of molluscan shell. Lou DeLuca, a masters level lab associate, is focusing largely on the applied research. Several undergraduates busy at work on projects this semester include Roger Passmore, Keith Bagwell and Randy Swilling.

If you would like more information about our research please write to : Dr. A.P. Wheeler, Clemson University, Department of Biological Sciences, 132 Long Hall, Clemson, SC 29634 or phone us at (803) 656-3597.

BOOK REVIEW

Bivalve Filter Feeding: Hydrodynamics, Bioenergetics, Physiology and Ecology. by C. Barker Jorgensen. Olsen and Olsen, Denmark. L22.00 (approximately $40.00). Sewn, soft-cover binding. 140 pp. ISBN 87-85215-20-1

It has been almost 50 years since C.B. Jorgensen first published on the transport of water through bivalve gills and some 25 years since the publication of *Biology of Suspension Feeding*, a book which serves to this day as a classic reference work. His original book was divided into three sections covering the structure and function of feeding organs, the potential sources of food for suspension feeders and the food of suspension feeders. Information was presented for some 13 phyla ranging from sponges to amphioxus and coverage was adequate but, of necessity, brief for each group. The present volume focuses on one group, bivalve molluscs, and readers are treated to a synthesis of information possible only by a man who has devoted some 45 years to the study of suspension feeding and has an intimate knowledge of his subject.

The book is divided into 20 chapters covering all aspects of filter feeding in bivalve molluscs including an introduction to ciliary feeding and fluid mechanics, the role of mucus, mechanisms of particle retention, characteristics and energetics of the bivalve pump, growth and metabolism, the impact of bivalve filtration, passive filter feeding and exploitation of filter feeding (shellfish culture). Jorgensen has strong opinions and these are apparent. There is a strong bias towards the work of himself and co-workers, e.g. the vast majority of illustrations (over 80%) come from works by Jorgensen and co-workers. Tabular material is limited but does not detract from the work. Perhaps the two most interesting and thought-provoking chapters are "Reconciliation of Views" and "Summary (Recapitulation)".

This is a small volume, handsomely produced and saturated with information. It is clearly written and the level of discussion is thoughtful and penetrating. It provides a comprehensive review of filter feeding in bivalve molluscs with over 400 references cited. It is a highly valuable source of information and synthesis of ideas and the price makes it particularly attractive (affordable).

Hardly any specialist will share all of Jorgensen's opinions regarding the mechanisms of filter feeding in bivalve molluscs but most will applaud his contibutions and this volume will serve both as an historical introduction to the field and as a review of current thoughts and methodologies. It will be a basic academic reference for graduate students and established researchers alike and should serve as a breeding ground for future studies on filter feeding in bivalve molluscs.

Sandra E. Shumway
Editor, *Journal of Shellfish Research*

A copy of this volume will be given to a student selected for the Thurlow C. Nelson Award at the June 1991 meeting in Portland, Maine.

SUNDAY, JUNE 23, 1-6 PM
NSA EXECUTIVE COMMITTE, Room TBA

SUNDAY, JUNE 23, 6-7 PM

PRESIDENTS RECEPTION, Eastland Ballroom

MONDAY-- JUNE 24

	SCALLOPS Moderator: Sandra Shumway Cumberland B	GENERAL BIOLOGY Moderator: Elizabeth J. Turner Cumberland C
8:00 - 8:20		
8:20 - 8:40	Food quality, feeding activity and energy balance in the giant scallop, Placopecten magellanicus (BACON and MacDonald)	A new method for directly measuring bivalve pumping velocity (TURNER)
8:40 - 9:00	Trophic sources and transfer mechanisms to the developing gametes of Pecten maximus (BENINGER, Le Pennec, Dorange and Paulet)	Analysis of the microstructure and fragility of the shells of the geoduck (Panope abrupta) reared in artificial nurseries (VELASQUEZ)
9:00 - 9:20	Self-fertilization in the bay scallop, Argopecten irradians (WILBUR and Gaffney)	A light and scanning electron microscope study of the kidney of the hard clam, Mercenaria mercenaria (EBLE and Ellison)
9:20 - 9:40	Short- and long-term temporal patterns in the reproductive cycle of the giant scallop, Placopecten magellanicus, from Passamaquoddy Bay, N.B., Canada (PARSONS, Robinson, Chandler, Davidson, Lanteigne and Dadswell)	Lectin content and specificity in serum and mucus of oysters (FISHER)
9:40 - 10:00	Temporal variations in the spawning behavior of the sea scallops, Placopecten magellanicus (Gmelin), in the mid-Atlantic resource area (KIRKLEY and DuPaul)	Biotic and abiotic factors influencing the burrowing of the softshell clam, Mya arenaria (BAIER-ANDERSON)
10:00 - 10:20	---------BREAK---------	---------BREAK---------
	POSTER SESSION / TRADE SHOW Room: Cumberland A	
		BIVALVE EARLY LIFE HISTORY Moderator: Heidi Hoven Cumberland C
10:20 - 10:40	Does the behavior of sea scallop larvae influence their dispersal? (TREMBLAY)	Evaluation of Nile Red as a flourescent, lipid specifc stain for use with intact bivalve larvae (Castell and MANN)
10:40 - 11:00	Spatial patterns of spat settlement in the giant scallop, Placopecten magellanicus, compared to hydrographic conditions in Passamaquoddy Bay, New Brunswick, Canada (ROBINSON, Martin, Chandler and Parsons)	Eelgrass as a larval trap: the "Honami" effect (HOYEN, Grizzle, Short and Kindblom)
11:00 - 11:20	Predatory risk of juvenile bay scallops, Argopecten irradians, in eelgrass habitat (BRICELJ, Garcia-Esquivel and Strieb)	Temporal analysis of the recruit-settler relationship in oysters (ROEGNER)
11:20 - 11:40	Reseeding efforts and the status of bay scallop populations in New York following the appearance of brown tide (TETTELBACH and Wenczel)	Alternatives to clamshell for oyster spat production (BROADHURST, Soniat and Haywood)
11:40 - 12:00	Considering a semiannual reproductive cycle for the giant sea scallop (Placopecten magellanicus) on Georges Bank (DIBACCO)	Effect of aerial exposure of Crassostrea rhizophorae spat on growth and survival during grow out (NEWKIRK and Richards)
12: 00 - 12:20	Interactions between at-sea handling practices, regulatory constraints and sea scallop, Placopecten magellanicus (Gmelin), meat quality and volume (DUPAUL, Kirkley and Fisher)	
12:20 - 1:20	---------LUNCH---------	---------LUNCH---------
	PARASITES AND DISEASES Moderator: Stephanie A. Boyles Cumberland B	OYSTERS Moderator: Andrew S. Mount Cumberland C
1:20 - 1:40	Hemolymph sera from sarcomatous and healthy soft shell clams (Mya arenaria L.): different biochemical and functional milieus (SUNILA and Dungan)	A comparison of hemolymph to extrapallial fluid of the American oyster, Crassostrea virginica (MOUNT and Wheeler)
1:40 - 2:00	Recent observations on the spore stage of Haplosporidium nelsoni (=MSX) in the American oyster, Crassostrea virginica (BARBER, Kanaley and Ford)	*In vitro* assessment of growth rate in oyster tissues: the effects of vertebrate growth hormone and insulin (PAYNTER)
2:00 - 2:20	Concentration of Vibrio vulnificus in oysters, Crassostrea virginica, grown in ponds with Pacifc white shrimp, Penaeus vannemei (BURRELL, Sample, Batey and Bobo)	Application of an immunological probe in measuring instantaneous reproductive rate of female American oysters, Crassostrea virginica (CHOI, Powell, Lewis and Ray)
2:20 - 2:40	The incidence and elimination of Vibrios and fecal-borne bacteria from northern New England oysters (JONES, O'Neill, Howell, Langan, Margolin and Grimes)	Effects of immersion time and tidal position on the in situ growth rates of a naturally settled bivalve (CROSBY, Roberts and Kenny)
2:40 - 3:00	Recent developments in the analysis of DSP toxins (MARR, Hu, McDowell, Defreitas, Pleasance, Quilliam and Wright)	Effects of low oxygen on survival and growth of the oyster Crassostrea virginica in Chesapeake Bay (ABBE, Osman and Breitburg)
3:00 - 3:20	---------BREAK---------	---------BREAK---------
	POSTER SESSION / TRADE SHOW Room: Cumberland A	
3:20 - 3:40	Gulf of Mexico oysters: histopathology, parasites and heavy metals (BOYLES, Powell, Taylor and Gauthier)	Oyster culture in Bon Secour Bay, Alabama (NELSON and Wallace)
3:40 - 4:00	Defense mechanisms of Geukensia demissa (TRIPP and Hackett)	Modeling oyster populations: the effect of density and food supply on production (POWELL, Hofmann and Klinck)
4:00 - 4:20	Chemotaxis of Mercenaria mercenaria hemocytes to bacteria (FAWCETT and Tripp)	Survival and growth of eastern oysters held in trays in Corpus Christi Bay, Texas (GRAY, King, Kehoe, Matlock and Colura)
		VIDEO SESSION 1 Moderators J. E. Ward and V.M. Bricelj Cumberland C
4:20 - 4:40	Struggle for survival - the Pacific razor clam and disease (SIMONS and Ayres)	High-speed video analysis of particle capture and selection by mollusc larvae (GALLAGER, Langdon, Davis and Stoecker)
4:40 - 5:00		Direct observations of feeding structures and mechanisms in bivalve molluscs using endoscopic examination and video image analysis (WARD, Beninger, MacDonald, Thompson and Newell)
5:00 - 5:20		Direct observations of feeding in Placopecten magellanicus (BENINGER, Ward, MacDonald and Thompson)

5:20 - 5:40	A time-lapse video benthic monitoring (TLBM) device to estimate feeding activity in mussels: initial field results (NEWELL and Gallager)	
5:40 - 6:00	Suspended scallop culture in Japan - a video summary (COUTURIER)	

TUESDAY -- JUNE 25

	LOBSTER BIOLOGY Moderator: L. S. Incze and J. D. Pringle Cumberland B	BIVALVE GROWTH AND SURVIVAL Moderator: Francisco J. Borrero Cumberland C
8:00 - 8:20	Juvenile Homarus americanus studies from McNutt Island, Nova Scotia (CAMPBELL)	Summer mortality of cultured blue mussels in Prince Edward Island, Canada (SEPHTON and Bryan)
8:20 - 8:40	Implications for lobster fishery enhancement from natural benthic recruitment, hatchery-reared "blues", and experimental cobbles (WAHLE)	Growth rates of Mercenaria mercenaria in Prince Edward Island (LANDRY and Sephton)
8:40 - 9:00	Suspension-feeding by early juvenile American lobsters, Homarus americanus (LAVALLI)	Effects of intraspecific density on the survival of Arctica islandica (L.) within field enclosures located in eastern Maine, USA (BEAL and Kraus)
9:00 - 9:20	Molting and movement of lobsters, (Homarus americanus) in and adjacent to Malpeque Bay, Prince Edward Island, Canada (MAYNARD)	Growth and survivorship of ocean quahogs, Arctica islandica (Linneaus) in an intertidal mudflat in eastern Maine (KRAUS, Beal and McMahon)
9:20 - 9:40	Shallow water spawning and molting areas of American lobsters, Homarus americanus, off Grand Manan, Bay of Fundy, Canada (LAWTON and Robichaud)	The importance of initial size and density on the survival and growth of hatchery-reared individuals of Mya arenaria L. (BEAL and Kraus)
9:40 - 10:00	Courtship and chemical signals in the American lobster (COWAN)	Effects of substrate modification on the growth and survival of planted Manila clam seed (Venerupis japonica) (TOBA, Chew and Thompson)
10:00 - 10:20	---------BREAK---------	---------BREAK---------

POSTER SESSION / TRADE SHOW Room: Cumberland A

10:20 - 10:40	Sex ratio differences between estuarine and coastal lobster populations (HOWELL and Watson)	Pysiological energetics, growth and biomass allocation of mussels across the intertidal zone (BORRERO and Hilbish)
10:40 - 11:00	Change in lobster size at maturity among years and locations (MILLER and Watson)	Geoduck clam research in British Columbia (CAMPBELL and Noakes)
11:00 - 11:20	The demographic consequences of intraspecific competition among lobsters, Homerus americanus (STENECK)	Compliance behavior in the Rhode Island hard-shell clam fishery (BEAN and Sutinen)
11:20 - 11:40	A field comparison of the recapture rates of polyethylene streamer and modified sphyrion tags through the molting of lobsters (Homerus americanus) (LANDSBURG)	
11:40 - 1:20	---------LUNCH---------	---------LUNCH---------

	FEEDING BY BIVALVES Moderator: Lauran R. Cole Cumberland C	
1:20 - 1:40	Egg production and recruitement in a Newfoundland lobster population: is there a relationship? (ENNIS)	Flow cytometric analysis of pure-cultures and natural particle assemblages - going from the sublime to the ridiculous? (SHUMWAY and Cucci)
1:40 - 2:00	Development and distribution of coastal planktonic lobsters (Homerus americanus) in the western Gulf of Maine (INCZE and Ainaire)	Stimulatory effects of microalgal chemical cues on the clearance and ingestion rates of Placopecten magellanicus (WARD and Cassell)
2:00 - 2:20	Offshore studies of larval lobsters (Homerus americanus) in the Georges Bank and Browns Bank region (HARDING, Pringle, Drinkwater, Fraser, Perry and Vass)	Mussel feeding selectivity below the pseudofeces threshold: the importance of particle concentration (NEWELL and Shumway)
2:20 - 2:40	Scotophase regulation of the diel timing of metamorphic molt in larval American lobsters, Homerus americanus (WADDY and Aiken)	In search of the ideal algal diet for oysters: recent progress, with emphasis on sterols (WIKFORS, Gladu and Patterson)
2:40 - 3:00	Estimation of recent growth of field-caught postlarval lobsters from RNA:DNA ratios (COBB, Juinio and Bengtson)	Modifying nursery techniques for pedal feeding juvenile geoducks (Panope abrupta) in a sand substrate nursery (COLE and Beattie)
3:00 - 3:20	---------BREAK---------	---------BREAK---------
3:20 - 4:20	**POSTER SESSION** Presenters must be present Cumberland A	**TRADE SHOW** Cumberland A
4:20 - 5:20	**MASTER'S ROUNDTABLE** Room: TBA	

RECEPTION, 6 -7 PM Room: Eastland Ballroom

MAINE LOBSTER BAKE 7 - 10 PM Room: Eastland Ballroom

WEDNESDAY -- JUNE 26

	GENETICS/POLYPLOIDY Moderator: Christopher Davis Cumberland B	LOBSTER BIOLOGY AND ECOLOGY WORKSHOP Moderators: Lewis S. Incze and John D. Pringle Cumberland C
8:20 - 8:40	Phytiological differentiation in eastern oysters (DITTMAN and Ford)	Lobster Workshop
8:40 - 9:00	Association of allozyme heterozygosity with larval and juvenile vigor in an extensively selected oyster (Crassostrea virginica) strain (HUI)	Lobster Workshop
9:00 - 9:20	Hybridization in Crassostrea: a critical review (GAFFNEY and Allen)	Lobster Workshop
9:20 - 9:40	Hybridization among three species of Crassostrea (ALLEN and Gaffney)	Lobster Workshop
9:40 - 10:00	Susceptibility of diploid and triploid Pacific oysters, Crassostrea gigas, to Perkinsus marinus (MEYERS, Burreson, Barber and Mann)	Lobster Workshop
10:00 - 10:20	---------BREAK---------	---------BREAK---------
	POSTER SESSION Cumberland A	**TRADE SHOW** Cumberland A

CRAB STUDIES

Moderator: Eugene Olmi
Cumberland C

10:20 - 10:40 Hybridization, triploidy and salinity effects on crosses with Crassostrea gigas and Crassostrea virginica (DOWNING)

Functional anatomy of the copulatory appendages of the snow crab, Chionoecetes opilio (O. fabricus) (BENINGER, Elner and Poussart)

10:40 - 11:00 Electrophoretic comparisons of deep-sea, cold-water seep mussels in the Gulf of Mexico (CRADDOCK, Vrijenhoek and Lutz)

Immigration of blue crab megalopae in the York River, Virginia: patterns and processes (OLMI)

11:00 - 11:20 Reproductive isolation between natural populations of the hard clams, Mercenaria mercenaria and M. campechiensis, in South Carolina (DILLON)

Abundance of Cancer crab megalopae and the potential ramifications to population regulation (CLANCY and Cobb)

11:20 - 11:40 Determination of "best parents" in a spawning of hard clams by comparison of parental and progeny genotypes at six enzyme loci (HADLEY and Dillon)

Use of artificial collectors to study growth of small red king crab (DONALDSON, Beyersdorfer, and Blau)

11:40 - 12:00 Studies of embryonic and larval response to selection for increased rate of growth in adult bay scallops, Argopecten irradians concentricus (HEFFERNAN, Walker and Crenshaw)

An overview of crab mitigation in Grays Harbor, Washington (MCGRAW, Armstrong, Weinmann and Pearson)

VIDEO SESSION 2

Moderators: J.E. Ward and V.M. Bricelj
Cumberland B

4:40 - 5:00 Lobsters, crabs and videotapes (LAWTON and Taylor)

5:00 - 5:20 Tracking lobster movement using ultrasonic transmitters (DUGGAN, Pringle, Webber and O'Dor)

5:20 - 5:40 The study of NIX disease and the Pacific razor clam (SIMONS)

5:40 - 6:00 A video assessment of a large mortality event in a population of the giant scallop, Placopecten magellanicus, in the Bay of Fundy, Canada (ROBINSON, Martin, Chandler and Parsons)

6:00 - 6:20 Washington razor clams - digging, cleaning, "conserving" (SIMONS and Rammer)

NSA BUSINESS LUNCHEON, 12- 2 PM

Announcement of Nelson Award winner
Eastland Ballroom

PERKINSUS

Moderator: George Krantz
Cumberland B

2:00 - 2:20 Serological probes for detection of Perkinsus marinus: development and applications (DUNGAN)

2:20 -2:40 Effect of temperature on Perkinsus marinus susceptibility and defense-related activities in eastern oysters, Crassostrea virginica (CHU, La Peyre and Burreson)

2:40 - 3:00 Effects of Perkinsus marinus infection in the eastern oyster, Crassostrea virginica: disease development and impact on growth rate at different salinities (PAYNTER and Burreson)

3:00 - 3:20 ----------BREAK----------

3:20 - 3:40 Use of a hemolymph assay to determine salinity effects on the progression of Perkinsus marinus disease in oysters, Crassostrea virginica (GAUTHIER and Fisher)

3:40 - 4:00 Susceptibility of MSX-resistant strains of the eastern oyster, Crassostrea virginica, to Perkinsus marinus (BURRESON)

4:00 - 4:20 Crassostrea gigas disease exposure to Haplosporidium nelsoni and Perkinsus marinus in Chesapeake Bay waters (FARLEY, Ptatschak and Krantz)

4:20 - 4:40 Chemical inhibition of Perkinsus marinus in an *in vitro* test (KRANTZ)

ECONOMIC ANALYSIS FOR SHELLFISH ENTERPRISES

Moderator: Robert Pomeroy
Cumberland C

Scale economics in hard clam aquaculture (ADAMS and Pomeroy)

Oysters lease transfers, auctions and lending: roles in rehabilitation of Louisiana's oyster industry (ROBERTS and Keithly)

Development and application of a bioeconomic model for the oyster seed fishery of Barataria Bay, Louisiana (MELANCON and Condrey)

----------BREAK----------

Economic feasibility of floating raft oyster culture in Chesapeake Bay (PAYNTER and Shriver)

Economics of freshwater Cherax lobster development (RUBINO)

West coast groundfish - shellfish fishery interactions: management implications (HANNA)

Marine aquaculture enforcement: are public agencies passing the buck? (THUNBERG)

THURSDAY --JUNE 27

OYSTER RECRUITMENT

Moderator: R.I.E. Newell and S.Fegley
Cumberland B

8:50 -9:00 Introduction (NEWELL)

9:00 - 9:20 Long-term trends in oyster recruitment on natural bars in the Maryland portion of the Chesapeake Bay (KRANTZ)

9:20 - 9:40 Measuring oyster spatfall: a comparison of methods (ORTEGA, Fegley, Newell and Barber)

9:40 - 10:00 Effects of tidal position and substrate on spatfall in southeast U.S. oyster populations (CROSBY, Kenny and Burrell)

10:00 - 10:20 Spatial variation in magnitude and timing of settlement of larval oysters, Crassostrea virginica (BARBER, Fegley and Newell)

10:20 - 10:40 ----------BREAK----------

10:40 - 11:00 Variability in the relationship between larval settlement and recruitment in populations of the oyster Crassostrea virginica (NEWELL, Barber and Fegley)

11:00 - 11:20 Relationships between spatial and temporal patterns of successive life-history stages in the oyster Crassostrea virginica (FEGLEY, Newell and Barber)

11:20 - 11:40 Summary (FEGLEY)

POSTER SESSION

Morphological and genetic variation of Mytilus edulis in Newfoundland (Bates and Innes) S

The fate of hatchery-reared juveniles of Mya arenaria L. in the field: how predation and competition are affected by initial clam size and stocking density (Beal)

Repeatability of triploid induction in Crassostrea virginica (Gmelin) using stripped gametes (Bushek and Allen) S

Distribution and retention of Vibrio vulnificus by tissues of the eastern oyster, Crassostrea virginica (Capers and Tamplin) S

Evaluation of a gene probe assay for the detection of enteric viruses in Great Bay shellfish (Chaput and Margolin) S

Effect of salinity on Perkinsus marinus susceptibility and defense-related activities in eastern oysters, Crassostrea virginica (Chu and La Peyre)

Selective breeding for increased growth rate of American oysters (Crassostrea virginica) in a Maine estuary (Davis, Hawes and Hidu) S

Natural spawning versus strip spawning: a preliminary evaluation of success between the two methods in Crassostrea virginica (Debrosse and Allen)

Movement of offshore lobsters (Homarus americanus) displaced to coastal areas of Nova Scotia (Duggan)

Seasonal variation in response to laboratory conditioning in Mercenaria mercenaria in South Carolina (Goodsell and Eversole)

Phagocytosis of Vibrio vulnificus by Crassostrea virginica hemocytes (Hopkins, Tamplin and Fisher) S

Quantitative relationships between postlarval lobsters and new benthic recruits in the Boothbay region of Maine (Incze and Wahle)

The efficacy of blue colormorphic American lobsters in determining the feasibility of hatch and release programs (Irvine, Bayer, Beal, Chapman and Stubbs) S

Ontogenic changes in swimming activity of northern pink shrimp in non-flowing water and flowing water (James) S

Oyster grow-out techniques for the mid-Atlantic: a Delaware Bay model (Jones, Allen and Fegley)

Salinity and temperature tolerance tests on ocean quahogs, Arctica islandica (L.) (Kraus, Beal and McMartin)

Design of a PC-compatable bioeconomic program used in forecasting the Barataria Bay oyster fishery (Landry and Melancon)

Collecting juvenile giant sea scallops (Placopecten magellanicus) with artificial collectors, in Port au Port Bay, Newfoundland (Canada) (Lanteigne, Davidson and Andrews)

Development of a nucleic acid probe for Haplosporidium nelsoni (MSX) (Littlewood, Ford and Fong)

Scanning electron microscopy (SEM) of Mugardia, formerly Anophrys, a pathogenic protozoan of the American lobster (Loughlin and Bayer) S

Release of large numbers of small symbiotic cells by the giant scallop Placopecten magellanicus in Newfoundland (MacDonald, Ward and McKenzie)

Effects of two species of dinoflagellates on the New Zealand mussel, Perna canaliculus (Marsden and Shumway)

Growth, disease resistance and survivorship of diploid and triploid eastern oysters in an MSX environment (Matthiessen and Davis) S

A better use of stock-site combinations to increase blue mussel production in the Magdalen Islands (Quebec, Canada) (Myrand, Gaudreault and Mapaq)

Growth patterns of female offshore lobsters (Pezzack)

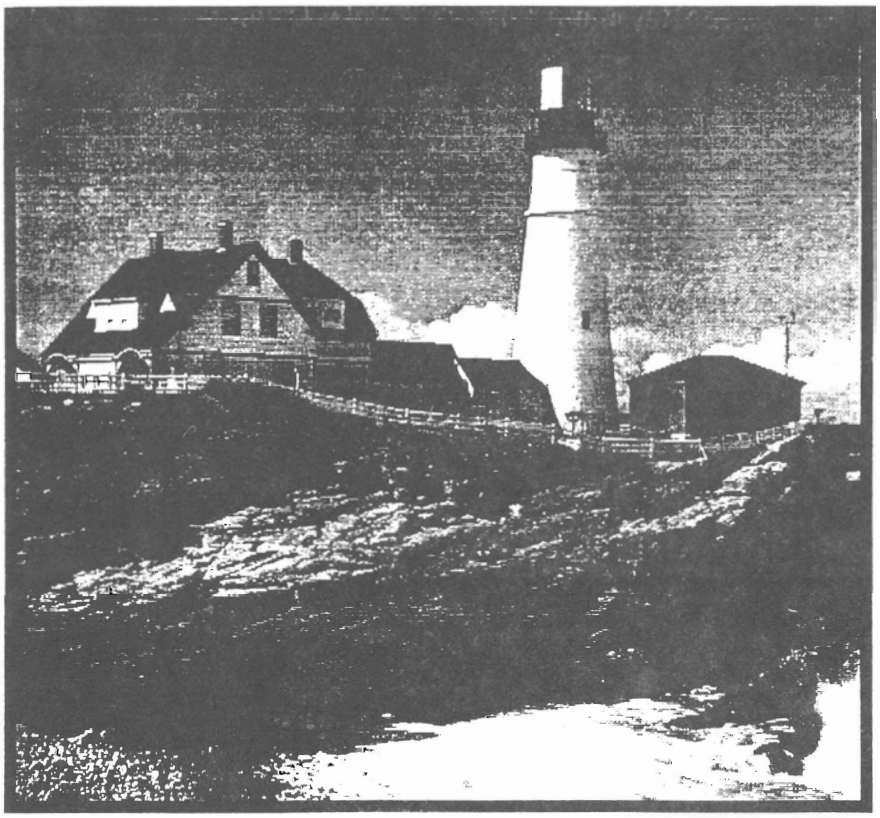
Egg production of lobsters (Homarus americanus) in the Gulf of St. Lawrence, Canada (Savoie and Maynard)

Overwintering survival of triploid American oysters (Shatkin and Allen) S

Patterns of distribution and abundance of lobsters in the Gulf of Maine: ideas on carrying capacity of the environment (Steneck, Wahle, Incze and Belknap)

The role of eelgrass (Zostera marina) in the recruitment of the blue mussel (Mytilus edulis) in Maine (Short, Hidu, Hoven, Kindblum, Newell, Verny and Mathieson)

Seasonal movements of lobsters in the Great Bay estuary (Watson and Howell)



MORE 1991 ANNUAL MEETING NOTES

Budget rent a car

Budget Rent A Car is providing rental cars for the 1991 NSA meeting in Portland, Maine and discounted rates are available to all attendees. To place your reservation call 1-800-772-3773 and refer to NSA and the rate code VAR3NSA. Cars are available by the day, week or weekend and rates range from $33-45 daily, $168-270 weekly depending on size of car. Call and reserve now!

SLIDE SHOW: Chris Davis is putting together a slide collage of NSA member's best shellfish related photos to be shown at the annual meeting in Portland. Chris needs 300 + slides to produce a twelve minute slide show, so don't hold back on what you send him! Please send your best slides (in protective file sleeves) by May 31, 1991 to: Chris Davis, Darling Marine Center, Walpole, Maine 04573 Phone: (207) 563-3146. Be sure to label all slides with name and address to ensure their proper return following the conference. Thanks!!

Short Communications...

Artificial Diet Information Sought: The Laboratory of Aquaculture and the Artemia Reference Center of the State University of Ghent in seeking information concerning the use of algal substitutes in hatchery and nursery rearing of bivalve molluscs. A questionnaire is available concerning algal substitutes, cost and applications, and relative importance and cost-efficiency compared to live algae. Results will form a portion of a Ph.D. dissertation and a free copy of the report will be sent to all those who return a completed questionnaire. For more information and questionnaire forms please contact:

Peter Coutteau
Laboratory of Aquaculture and Artemia Reference Center
State University of Ghent
Rozier 44
B-9000 Ghent
Belgium
Phone: +32-91-643754
FAX: +32-91-644193

The Asian Fisheries Society (Indian Branch) is trying to establish a Fish Farmers Library and is in search of any publications dealing with aquaculture and related subjects. Any reprints and books you can contribute will be greatly appreciated and will go a long way towards helping this young organization. Direct all correspondence to: M.C. Nandeesha, Secretary, Asian Fisheries Society, Indian Branch, c/o College of Fisheries, University of Agricultural Sciences, Mangalore 575 002, Karnataka.

Meetings/Conferences/Courses

A *Shellfish Mariculture Techniques Course* is scheduled for May 12-24, 1991 at the Darling Marine Center in Walpole, Maine. This intensive two week residential course will cover various aspects of shellfish rearing techniques. Topics include: algae production, pathology, genetics, water quality, and aquacultural engineering. Three hours of academic credit is available through the University of Maine. Registration Deadline: April 15, 1991. For more information please contact:

Chris Davis, Course Director
Darling Marine Center
Walpole, Maine 04573
Phone: (207) 563-3146

The *Fifth Annual Intensive Short-Course on Aquaculture Economics* will be held May 27- June 7, 1991 at Clemson University, Clemson, South Carolina. Topics include: role of aquaculture in food production; economic concepts applied to aquaculture; managerial analysis for aquaculture; bioeconomic analysis; marketing aquacultural products; public policy and aquaculture. Course will use examples from both freshwater and salt/brackish water species. Course is available for upper level undergraduate and graduate credit; research, extension personnel and business people with an interest or involvement in aquaculture are encouraged to enroll. For more information please contact:

Robert S. Pomeroy
Department of Agricultural Economics and
Rural Sociology
262 Barre Hall
Clemson University
Clemson, SC 29634-0355 USA
Phone: (803) 656-5789
FAX: (803) 656-5776

The *First Latin American Malacological Congress* will be held at Simon Bolivar University in Caracas, Venezuela on July 15-19, 1991. The congress is sponsored by the Institute of Technology and Marine Sciences, the Los Roques Scientific Foundation, and the Venezuelan Malacological Society. For more information please contact:

Roberto Cipriani
Instituto de Technologia y Ciencias Marinas
Universidad Simon Bolivar
Apartado Postal 89000, Caracas 1080, Venezuela
Phone: (02) 907.32.18
FAX: (02) 962.16.95

Queen Conch Workshop: A workshop on the biology, fisheries, culture and management of the queen conch will be held in Caracas Venezuela on July 16-18, 1991 in conjunction with the First Latin American Malacological Congress (see announcement above). The workshop will include formal presentations and discussions sessions; the proceedings of the workshop will be published. For more information please contact:

Richard S. Appeldoorn
Department of Marine Sciences
University of Puerto Rico
Mayaguez, PR 00709-5000
Phone: (809) 899-2048
FAX: (809) 899-5500
or
Bladimir Rodriguez
Fundacion Cientifica Los Roques
Apartado Postal 1139
Caracas 1010-A, Venezuela
Phone: (02) 261.34.61
FAX: (02) 952.01.32

Deadline for submission of material for next Newsletter issue is July 1, 1991.

NATIONAL SHELLFISHERIES ASSOCIATION - REGISTRATION FORM
83rd Annual Meeting: Portland, Maine - June 23 - 27, 1991

NOTE: Registration **includes** the President's Reception, the Business Luncheon, all meeting sessions, coffee breaks and banquet. (Spouses do not attend sessions but do receive hospitality room privileges.)

REGISTRATION RECEIVED BEFORE APRIL 15, 1991:

	Members (dues must be current)	Non-members (includes dues)	Spouse
Regular registration:	___$95	___$130	_$75
Student registration:	___$75	___$100	

REGISTRATION AFTER APRIL 15, AND ON SITE:

	Members (dues must be current)	Non-members (includes dues)	Spouse
Regular registration:	___$140	___$175	_$105
Student registration:	___$100	___$135	

CHECK OFF CATEGORY - INDICATE AMOUNT HERE $_____

UNPAID DUES FOR CURRENT MEMBERS:

Regular members: $30 ..... $_____

Student members: $20 ..... $_____

ADDITIONAL TICKETS: (for guests **NOT** registered for meeting)

Sunday President's Reception $35 X _____ (no. of tickets) = $_____

Tuesday evening banquet $30 X _____ (no. of tickets) = $_____

Wednesday Luncheon and Annual Business Meeting $25 X _____ (no. of tickets) = $_____

TOTAL PAYMENT ENCLOSED ..... $_____

(US funds only)

NAME: _____

ADDRESS: _____

_____

_____

FOR NEW MEMBERS ONLY

Institutional affiliation: _____

Shellfisheries interests: _____

Send this form and payment in US funds on a US bank to :

Dr. Sandra E. Shumway, Maine Department of Marine Resources,
McKown Point, West Boothbay Harbor, ME 04575

NSA Quarterly Newsletter
College of Marine Studies
University of Delaware
Lewes, DE 19958

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