



“Larvae on the Rock”

Inside this issue

| | |
|-----------------------------|----|
| President's Message | 1 |
| News from the Regions | 2 |
| Section Officers | 2 |
| Upcoming Events | 7 |
| Publications | 8 |
| Section Business | 9 |
| Editor's Ramblings | 11 |

The 31st annual Larval Fish Conference will be held 9-12 July 2007 at the Inco Innovation Centre, located on the campus of Memorial University in St. John's, Newfoundland, Canada.

This will be a 4-day meeting. The conference keynote and contributed papers will be structured around four theme sessions and one contributed paper session. Several keynote speakers will set the tone for some of these theme sessions. There will be no parallel sessions during these keynote presentations. Contributed oral papers will follow keynote talks. According to the number of oral papers, concurrent (parallel) sessions may be necessary. Poster sessions will be in the evenings. Invited (keynote) oral presentations will be a total of 30 minutes, including questions. Contributed oral papers will be a total of 15 minutes, including questions.

...continued on p. 4

President's Message



Summer 2007 is upon us (please excuse my northern hemisphere bias!). For many that means a break from classes, return to research, more time in the field, and anticipation of attending scientific meetings.

Regardless of our posting – whether we are students or faculty; scientists in academic, governmental, or industry facilities; or gleefully retired – early summer is a time of transition. Much like nature or, perhaps more correctly, because of it, our professional activities are seasonal. This seasonality stokes many of nature's most interesting biological patterns, and it provides us with the variety of activities that rejuvenate enthusiasm for our chosen profession. So it is with that sense of inspiration, motivated by variety and opportunity that I write to you today.

I want to briefly discuss three topics. First, this is the season of our annual conference. The 2007 Larval Fish Conference (LFC) is in the air. If you receive this issue of STAGES before the LFC, then these comments should help pique your anticipation for the meeting (it also means that STAGES editor, Lee Fuiman, can work miracles!). If this issue arrives after the LFC, then these words may connect that much more (and Lee still gets his kudos). All LFCs, and all business of the Section, happen because people are inspired to make good things happen. This year is an especially good example of that. As you likely know, the unexpected passing of our President Elect, Joe Brown (Memorial University of Newfoundland),

in September of 2005, left a huge void left for Joe's family, friends, students, and colleagues. Further, Joe and his support group had offered to host the LFC in St. John's in 2007. Fortunately, Joe's friends and colleagues stepped forward and reconfirmed the offer to host the LFC 2007. In particular, the local committee (Pierre Pepin, Bob Gregory, Ian Fleming, and Paul Snelgrove), their cadre of support people, and others – all demonstrating the best spirit of Newfoundlanders – agreed to host the conference. Most of us know what scale of commitment is needed to pull this off and we are truly indebted to them for doing this. The conference program looks outstanding. Many of the contributed papers and posters are oriented around the four exceptional conference theme sessions (see www.larvalfishcon.org for details). The planned and spontaneous social events will introduce the visiting attendees to life in St. John's (visitors are 'from away' as it is said locally). It will be an event that Joe Brown would love to take credit for! I encourage you to enjoy your time in Newfoundland before and/or after the LFC as well.

Secondly, in the last issue of STAGES I stressed the need for recruits. This includes recruiting new and lapsed Section members and ensuring that we all renew our membership annually. But recruitment also applies to the rank and file members who are needed for Section-level duties. The tenure of our elected offices is two years (four

...continued on p. 11

ELHS Back Then

5 years ago: Section approves proposal prepared by Lee Fuiman and Dave Secor to offer subventions in amounts up to \$5,000 for publications by Section members.

10 years ago: Darrel Snyder creates the Section's first website.

20 years ago: After 8 years as newsletter editor, Fred Binkowski suggests the Section might begin to groom his replacement.

25 years ago: At the 6th LFC at Chesapeake Biological Lab, Section members hold the "Solomons Deliberations," a day-long gathering to discuss "Future Directions of ELHS."

Deadline for material to be included in the next issue of **Stages**:

**September 5,
2007**

News from the Regions



Southern Region

Claire Paris

From University of Miami's Rosenstiel School of Marine and Atmospheric Sciences

Joe Serafy is a fishery biologist at NOAA's Southeast Fisheries Science Center and a Research Associate Professor at the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences (RSMAS). His ecological research focuses on two main areas: (1) examining the role of the seagrass-mangrove-reef complex in the ontogeny of economically-valuable coral reef fishes (e.g., groupers, snappers, grunts, great barracuda); and (2) advancing our understanding of the early life history of billfishes. Serafy's former and current graduate students tend to specialize in empirical field and/or laboratory research to address questions relating to essential fish habitat. Recent Ph.D. Stacy Luthy (co-advised by Robert Cowen) completed a multifaceted dissertation on larval sailfish identification, distribution and growth in 2004 (Luthy et al. 2005a, 2005b). She will join the Biological Sciences faculty of the University of the Pacific, Stockton, California this summer.

Craig Faunce finished his Ph.D. at RSMAS in 2005 and is currently a reef fish biologist with the State of Florida. His research focused on mangrove shoreline habitats as reef fish nursery areas (Faunce and

Serafy 2006, Faunce and Serafy in press). Current Ph.D. student Neil Hammerschlag is assessing how juvenile fishes balance food and refuge requirements across the mangrove-seagrass ecotone.

Evan D'Allesandro (co-advised by Su Sponaugle) is focusing his Ph.D. research on the first year in the life of the great barracuda. Serafy is also advising two Master's students at RSMAS. Xaymara Serrano (co-advised by David Die) is investigating the ecophysiology of the gray snapper and Joe Tomoleoni (co-advised by Daniel Suman) is investigating how Everglades Restoration affects the distribution, abundance and size of the rainwater killifish.

Faunce, C.H. and J.E. Serafy. 2006. Mangroves as fish habitat: Fifty years of field studies. *Marine Ecology Progress Series* 318: 1-18.

Faunce, C.H. and J.E. Serafy. (in press) Ontogenic use of coastal vegetated seascapes by two reef fishes. *Bulletin of Marine Science*.

Luthy, S.A., J.E. Serafy, R.K. Cowen, K.L. Denit, and S. Sponaugle. 2005. Age and growth of larval Atlantic sailfish, *Istiophorus platypterus*. *Marine and Freshwater Research* 56: 1027-1035.

Luthy, S.A., R.K. Cowen, J.E. Serafy and J.R. McDowell. 2005. Toward distinguishing larval sailfish, white marlin and blue marlin in Western Atlantic waters. *Fishery Bulletin* 103:588-600.

From University of Texas Marine Science Institute

G. Joan Holt is Director of the University of Texas Marine Science Institute's Fisheries and Mariculture Laboratory. Research in her lab focuses on biological and physical factors that limit or alter larval fish growth and development. This information is critical for understanding changes in natural populations and for increasing production in aquaculture. Early life history research includes studies of larval fish ecology, bioenergetics, nutrition, environmental requirements, and the development of biochemical techniques for species identification and nutritional condition.

There are currently seven graduate students and two research scientist associates working in Joan's lab. Specific research projects include investigations of: 1) seagrass beds as nursery habitat for red drum, 2) weaning diets for marine larvae, 3) bioenergetics of cobia larvae and juveniles, 4) optimal rearing environment for southern flounder larvae, 5) marine ornamental fish larvae culture, and 5) gut contents and nutritional condition of billfish larvae in the Gulf of Mexico.

Field work is a collaboration with Scott Holt and his team.

Megan Fencil (Ph.D. student) is studying ecology of larval red drum in a large (~100 hectare) homogeneous seagrass bed. Her research utilizes field surveys as well as caging and mesocosm experiments to clarify how abiotic conditions, intra- and interspecific competition, and habitat structure affect survival of post-settlement larvae. She found that abiotic variables do not explain much of the spatial variability,

continued on p. 3

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but interactions between new settlers, their predators including larger conspecifics, and use of shelter likely play an important role in determining distribution patterns.

Ken Webb (PhD student) is investigating the role of cholecystokinin (CCK) in the digestion of inert diets in larval red drum. His work includes characterizing the expression of CCK in larvae using immunocytochemistry and *in situ* hybridization, developing an ELISA for quantitative measurements of the hormone, and finally carrying out *in vivo* testing of compounds for positive CCK activity. This summer he will spend a few weeks at the University of Bergen working in the lab of Dr. Ivar Rønnestad who is on his dissertation committee.

If you are interested in further information on any of these studies you can contact us at joan@utmsi.utexas.edu, fencil@utmsi.utexas.edu, kenw@utmsi.utexas.edu.

Recent publications:

Holt, G.J., C.K. Faulk and M.H. Schwarz. (in press). A review of larvae culture of cobia *Rachycentron canadum*, a warm water marine species. *Aquaculture*.

Lazo, J.P., R. Mendoza, G.J. Holt, C. Aguilera, and C.R. Arnold. (in press). Characterization of digestive enzymes during larval development of red drum (*Sciaenops ocellatus*). *Aquaculture*.

Faulk, C.K., A. D. Benninghoff and G. J. Holt. 2007. Ontogeny of the gastrointestinal tract and selected digestive enzymes in cobia *Rachycentron canadum*. *Journal of Fish Biology* 70:1-17.

Palmtag, M. and G.J. Holt. 2007. Experimental studies to improve the survival of fire shrimp (*Lysemata debelius*) larvae to the juvenile stage. *J. World Aquacult. Soc.* 38:102-113.

Webb, K.W., G.M. Hitzfelder, C.K. Faulk, and G.J. Holt. 2007. Growth of juvenile cobia, *Rachycentron canadum*, at three different densities in a recirculating aquaculture system. *Aquaculture* 264:223-227.

Caldarone, E.M., C.M. Clemmesen, E. Berdalet, T.J. Miller, A. Folkvord, G.J. Holt, M. Pilar Olivar, I.M. Suthers. 2006. Intercalibration of four spectrofluorometric protocols for measuring RNA/DNA ratios in larval and juvenile fish. *Limnology and Oceanography: Methods* 4:153-163.

Carreon Martinez, L.B. 2006. Development of a multiplex PCR assay for the identification of sciaenid eggs. Master's Thesis, The University of Texas at Austin, 52 pp.

Faulk, C.K. and G.J. Holt. 2006. Responses of cobia *Rachycentron canadum* larvae

to abrupt or gradual changes in salinity. *Aquaculture* 254:275-283.

Olivotto, I., S.A. Holt, O. Carnevali and G.J. Holt. 2006. Spawning, early development and first feeding in the Lemonpeel angelfish *Centropyge flavissimus*. *Aquaculture* 253: 270-278.

Perez-Dominguez, R. and G.J. Holt. 2006. Interrenal and thyroid development in red drum (*Sciaenops ocellatus*): Effects of nursery environment on larval growth and cortisol concentration during settlement. *General and Comparative Endocrinology* 146:108-118.

Perez-Dominguez, R., S.A. Holt, and G.J. Holt. 2006. Environmental variability in seagrass meadows: Effects of nursery environment cycles on larval red drum (*Sciaenops ocellatus*) growth and survival. *Mar. Ecol. Prog. Ser.* 321:41-53.

Lee A. Fuiman is Director of the Marine Science Institute. Research in his lab includes the decadal changes in shorebird populations and the phenology of their migrations as well as behavioral work on marine mammals, octopus, and whale sharks. But, of course, he also works on larval fishes.

For more than two decades, Lee Fuiman's team has studied larval fish behavior in the context of recruitment and population success, but also the effects of contaminants on fish larvae and the development and function of sensory systems in fishes. Current research focuses on red drum (*Sciaenops ocellatus*), a batch-spawner with huge fecundities and dramatic mortalities during early life stages. Previous studies of the group have shown large among-batch variability in survival skills that could contribute to the variation in recruitment levels reported for the species. These studies were based on experimental protocols developed by the team, to assess putative survival skills of individual larvae. The methods involve high-speed video analyses to measure escape responses provoked by visual and acoustic stimuli that simulate predator attacks, as well as assessments of routine activity.

Currently, Dr. Alfredo Ojanguren (afo@utmsi.utexas.edu) and doctoral student Shinnosuke Nakayama (shin@utmsi.utexas.edu) are working on a project funded by the National Science Foundation which examines seasonal variation in predation mortality and behavior of fish larvae. Most of the experimental work makes use of egg batches obtained from captive adults. In 2005 and 2006, 10 individual spawning pairs were kept in separate tanks and induced to spawn by

altering photoperiod and temperature at a hatchery operated by Texas Parks and Wildlife Department in Corpus Christi. Combining both years, a total of 152 batches were produced by 8 females. (This may be the first time captive red drum have been spawned in pairs.) A subsample of eggs from each batch was used to measure egg size, while another subsample was kept for biochemical analyses of egg quality. Preliminary results revealed large variability in egg dry weight, not only among females but also among batches from the same female (see Figure 1).

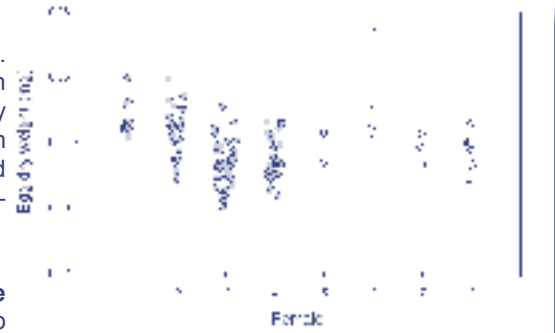


Figure 1. Average batch dry weight of the eggs produced by captive red drum females in 2005 (filled symbols) and 2006 (open symbols).

Eggs from over 60 batches were incubated in the laboratory under controlled conditions of temperature, salinity, photoperiod, and food ration for about 3 weeks, until the larvae were about 10 mm TL. Then the larvae were tested for survival skills including measurements of routine swimming and escape responses to acoustic and visual stimuli. High-speed video was used to record escape responses. Motion analysis software provided information on average responsiveness, latency and several measurements of magnitude of the escape response including distance, duration, speed and acceleration. The analysis of the large dataset generated by these experiments is ongoing but initial results confirm the large variability among and within females in behavioral performance. This variability however does not seem to be explained by time of the spawning season nor egg characteristics. Further statistical analyses will be performed on the same dataset to explore patterns of variability at shorter temporal scales.

A second part of the NSF project involves testing seasonal variability of survival skills of wild fish. Larvae were collected in their nursery grounds (seagrass meadows), using an epibenthic sled net, on several separate dates during the autumns of 2005 and 2006. After 48 hours of acclimation to laboratory conditions larvae were tested for routine swimming and escape responses.

continued on p. 4

Southern Region...cont'd from p. 3

Preliminary results show that late season larvae show lower responsiveness and respond later than their earlier season counterparts. These results are interpreted as a possible consequence of selective mortality caused by varying predator assemblages in the nursery habitats as the season progresses. However, the effects of water temperature, which drops up to 10 °C between September and November (Figure 2), can not be discounted. During the next few months specific experiments will be performed to test these hypotheses and try to isolate the cause of the observed seasonal variability. In addition to these experiments, more larvae will be collected from seagrasses during the 2007 autumn season and tested for behavioral performance in the laboratory. Sampling will start before the arrival of the first larvae to the nursery grounds in early September and continue weekly until all the larvae have left the seagrasses by the end of November.

For his doctoral research Shin Nakayama's is developing an optimality model for the spawning strategy of red drum in predictably varying estuarine environments, taking into account the trade-offs between egg size and number and larval survival (egg mortality, predation, starvation, and intraspecific competition in nursery grounds). His recent study revealed that red drum larvae are more likely to be aggressive with each other when the size difference between larvae is larger, regardless of their developmental states, and that as they grow, they are more likely to shoal. He also found that a larger size difference between larvae induced vertical segregation in habitat use, with smaller larvae staying higher in the water column than larger larvae, compared to their preferred vertical position in the absence of a conspecific. These findings suggest that social interactions among conspecifics may partly determine habitat use when larvae of a variety of sizes co-occur, which is commonly seen in the nursery grounds of red drum due to their batch-spawning strategy.

Shin is also currently working on the trade-off between offspring size and number based on experiments and theory. How does a parent allocate its available reproductive energy to its offspring? Is the observed mean size of offspring the same as the theoretical optimal size that maximizes parental fitness? If not, what is the cause of the deviation from the optimal size based upon theory? He is trying to break through the classical theory on the trade-off between offspring size and number, doubting all assumptions in the classic theory. His final goal is to build an

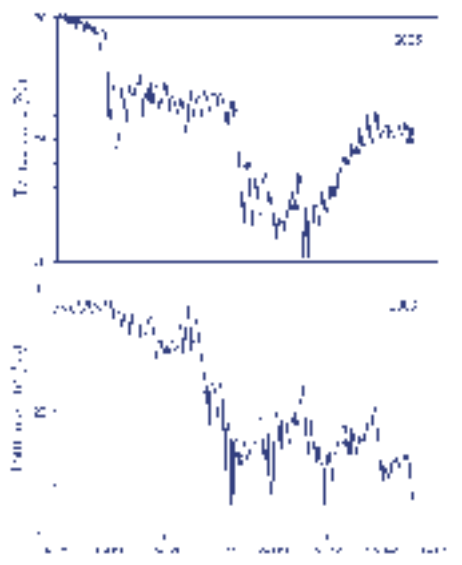


Figure 2. Water temperatures during the 2005 and 2006 reproductive seasons of red drum. Data from the Texas Coastal Ocean Observation Network, Port Aransas station, less than 2 Km from the seagrass meadows where the fish were collected. Dots denote capture dates.

optimality model for spawning strategy that maximizes parental fitness. By simulating different environmental conditions, it might be possible to understand how evolutionary pressure has shaped the reproductive strategy of red drum.

Recent publications:

- Fuiman, L.A., K.M. Madden, T.M. Williams, and R.W. Davis. 2007. Structure of foraging dives by Weddell seals at an offshore isolated hole in the Antarctic fast-ice environment. *Deep-Sea Research II* 54:270-289.
- Alvarez, M.C., C.A. Murphy, K.A. Rose, I.D. McCarthy, and L.A. Fuiman. 2006. Maternal body burdens of methylmercury impair survival skills of offspring in Atlantic croaker (*Micropogonias undulatus*). *Aquatic Toxicology* 80:329-337.
- Lychakov, D.V., Y.T. Rebane, A. Lombarte, L.A. Fuiman, and A. Takabayashi. 2006. Fish otolith asymmetry: Morphometry and modeling. *Hearing Research* 219:1-11.
- Fuiman, L.A., K.A. Rose, J.H. Cowan, Jr., and E.P. Smith. 2006. Survival skills required for predator evasion by fish larvae and their relationship to laboratory measures of performance. *Animal Behaviour* 71:1389-1399.
- Alvarez, M.C., and L.A. Fuiman. 2006. Ecological performance of red drum (*Sciaenops ocellatus*) larvae exposed to environmental levels of the insecticide malathion. *Environmental Toxicology and Chemistry* 25:1426-1432. §

LFC...continued from p. 1

The following theme sessions have been organized:

Physiological ecology

Understanding the factors that influence the condition, growth and survival of larval fish has been a key focus of research for decades. From the laboratory to the field, this session will include all aspects of physiological ecology. The focus will be on studies that deal with the factors that influence larval fish bioenergetics, biochemical measures of condition and adaptation, foraging behaviour, feeding ecology, and predation.

Connectivity and dispersal

Fish populations that were once thought to consist of a single component are now thought to represent multiple sub-populations linked through dispersal and migratory pathways. The concept that stocks are comprised of interconnected units, the loss of any of which can lead to long-term changes in overall productivity, has important implications for management. This session will focus on aspects of larval fish ecology that influence the dispersal and connectivity of populations. Contributions can include laboratory studies of behaviour and swimming ability, field studies of distribution and their relation to physical and biological features, and modeling of drift, dispersal, and retention.

Parental effects

How much of your parent do you carry with you? Aquaculturists know that the characteristics of their brood stock have important consequences for the offspring beyond simply the transfer of genetic material. How this knowledge transfers to the wild, however, is only beginning to be understood. Are non-genetic parental effects adaptive or are they merely physiological side effects? How parental effects relate to genetics, epigenetics, adaptation, growth and survival potential, and how they are influenced by environmental interactions, are some of the elements that will contribute to this session.

...continued on p. 5

REMINDER

Deadline for sending materials to include in the next issue of STAGES:

September 5, 2007

LFC...continued from p. 4

Academia to application with topic areas

Moving from research to practical applications is a step that for many scientists is both daunting and exhilarating. This session is intended to provide scientists with an opportunity to present experiences of moving from research to application and to provide a venue for presentations that introduce conceptual ideas for novel research areas and topics, and how they can serve advisory agencies, industry, and the public. Topics for discussion include aquaculture, fisheries, and resource management strategies.

Contributed paper session

In addition to the theme sessions described above, there will be a contributed paper session in which topics not directly addressed by one of the themes.

The following are the titles of abstracts listed on the conference website as of June 16, 2007:

DEVELOPMENTAL EXPRESSION OF CORTICOSTEROIDOGENIC EN-ZYMES AND GLUCOCORTICOID RECEPTOR GENES AND ONTO-GENY OF THE CORTISOL STRESS RESPONSE IN *SCIANEOPS OCELLATUS*. - Appelbaum, S., Wilson, A., HOLT, J. and Nunez, S. The University of Texas at Austin Marine Science Institute, Port Aransas, Texas, USA 78373, scotta@utmsi.utexas.edu.

MATERNAL EFFECTS OF EGG QUALITY ON PROGENY MORPHOLOGY, SURVIVAL AND GROWTH IN LARVAL ATLANTIC COD (*GADUS MORHUA*). - BACHAN, M.M., Memorial University of Newfoundland, St. John's, NL, Canada, A1C 5S7, michellebac@gmail.com; Fleming, I.A., Memorial University of Newfoundland, St. John's, NL, Canada, A1C 5S7, ifleming@mun.ca; Trippel, E.A., St. Andrews Biological Station, Fisheries and Oceans Canada, St. Andrews, NB, Canada, E5B 2L9, tripple@mar.dfo-mpo.gc.ca.

DEVELOPMENT OF WEANING TECHNIQUES FOR THE CULTURE OF MULLOWAY (*ARGYROSONOMUS JAPONICUS*). - BALLAGH, D.A.ab, Fielder, D.S.a, Pankhurst, P.M.b. a NSW Department of Primary Industries, Port Stephens Fisheries Centre, Locked Bag 1, Nelson Bay, NSW, Australia, 2315, and Aquafin CRC. b School of Marine Biology and Aquaculture, James Cook University, Townsville, Queensland, Australia, 4811. debra.ballagh@dpi.nsw.gov.au.

SURVIVAL WINDOWS AND GROWTH PATTERNS OF WESTERN AND CENTRAL BALTIC YOUNG-OF-THE-YEAR SPRAT *SPRATTUS SPRATTUS* IN RELATION TO TEMPERATURE AND FEEDING CONDITIONS. - BAUMANN, H. (1), Rüdiger Voss (2), Hans-Harald Hinrichsen (2), Jörn O. Schmidt (2), Axel Temming (1) 1 Institute for Hydrobiology and Fisheries Science, Olbersweg 24, 22767, Hamburg, Germany (hannes.baumann@uni-hamburg.de) 2 Leibniz Institute of Marine Science, Düsternbrooker Weg 20, 24105, Kiel, Germany.

DEVELOPMENT OF A MULTIPLEX TAQMAN® PCR ASSAY FOR THE IDENTIFICATION OF FISH EGGS IN THE NORTHERN GULF OF MEXICO. - BAYHA, K.M., Dauphin Island Sea Lab, 101 Bienville Blvd., Dauphin Island, AL, 36528, U.S.A., kbayha@disl.org; William M. Graham, Dauphin Island Sea Lab, 101 Bienville Blvd., Dauphin Island, AL, 36528, U.S.A., mgraham@disl.org.

MESOSCALE DISTRIBUTION OF CLUPEIFORM LARVAE IN AN UPWELLING FILAMENT TRAPPED BY A QUASI-PERMANENT CYCLONIC EDDY OFF NORTHWEST AFRICA. - Bécognée P.(1), Almeida C.(1), Rodríguez J.M.(2), Fraile-Nuez E.(3), Hernández-Guerra A.(3), MOYANO M.(1)*, Hernández-León S.(1) (1) Biological Oceanography Laboratory, Facultad de Ciencias del Mar, Universidad de Las Palmas de G.C., Campus Universitario de Tafira, 35017 Las Palmas de Gran Canaria, Canary Island, Spain. (2) Centro Oceanográfico de Gijón. Instituto Español de Oceanografía. Avda. Príncipe de Asturias 70Bis. 33212. Gijón, Asturias, Spain (3) Physics Department, Facultad de Ciencias del Mar, Universidad de Las Palmas de G.C., Campus Universitario de Tafira, 35017 Las Palmas de Gran Canaria, Canary Island, Spain. * Correspondence. E-mail: marta.moyano101@doctorandos.ulpgc.es Phone: (+34) 928454546.

APPLICATION OF PALINDROME SEQUENCE ANALYSIS (PaSA) OF OTOLITHS IN STUDYING DISPERSAL PATTERNS OF *CHROMIS VIRIDIS*. - BEN-TZVI O., The Interuniversity Institute for Marine Sciences of Eilat, P.O.B. 469, Eilat, Israel 88103, and Tel-Aviv University, Tel-Aviv, Israel 69978, obentzvi@gmail.com; Abelson A., Tel-Aviv University, Tel-Aviv, Israel 69978, avigdorA@tauex.tau.ac.il; Kiflawi M., The Interuniversity Institute for Marine Sciences of Eilat, P.O.B. 469, Eilat, Israel 88103, and Ben-Gurion University, Be'er Sheva, Israel 84105, mkiflawi@bgu.ac.il.

MATCH-MISMATCH BETWEEN PARTURITION AND WINTER UP-WELLING: IDENTIFYING OCEANO-GRAPHIC CONDITIONS THAT FAVOR LARVAL SURVIVAL OF WINTER-PARTURITION ROCK-FISHES. - BJORKSTEDT, E. P., NOAA/NMFS/SWFSC Fisheries Ecology Division and Department of Fisheries Biology, Humboldt State University, Arcata, California, USA, 95521, Eric.Bjorkstedt@noaa.gov; Ralston, S. V., NOAA/NMFS/SWFSC Fisheries Ecology Division, 110 Shaffer Road, Santa Cruz, California, USA, 95060, Steve.Ralston@noaa.gov.

LARVAL FISHES OCCURRING AT NIGHT IN A TEMPERATE ROCKY SHORE: A COMPARISON BETWEEN TOWED NETS AND LIGHT TRAPS. - Borges, Rita, rborges@ispa.pt (1,2); FARIA, ANA, afaria@ispa.pt (1); Gonçalves, Emanuel J., emanuel@ispa.pt (1). 1) Eco-Ethology Research Unit. Instituto Superior Psicologia Aplicada. R. Jardim Tabaco, 34. 1149 Lisboa, Portugal. 2) CCMAR. Algarve University. Campus de Gambelas. 8000 Faro, Portugal.

DRIFTING INTO THE LIGHT: ILLUMINATING GLOBAL TRENDS IN MARINE LARVAL DISPERSAL. - BRADBURY, I.R. *Marine Gene Probe Laboratory, Biology Department, Life Sciences Centre, Dalhousie University, Halifax, Nova Scotia, Canada, ibradbur@dal.ca; Laurel, B., Alaska Fisheries Science Center; NOAA Fisheries, Hat-

field Marine Science Center; Newport OR 97365 USA; Snelgrove, P., Ocean Sciences Centre and Biology Department, Memorial Univ. of Newfoundland, Canada; Bentzen, P.*; Campana, S., Population Ecology Division, Bedford Institute of Oceanography, PO Box 1006, Dartmouth, NS, Canada.

ESTIMATING CONTEMPORARY LARVAL DISPERSAL AND CONNECTIVITY IN AN ESTUARINE FISH: INTEGRATING MOLECULAR AND OTOLITH ELEMENTAL APPROACHES. - BRADBURY, I.R. Marine Gene Probe Laboratory, Biology Department, Life Sciences Centre, Dalhousie University, Halifax, Nova Scotia, Canada, ibradbur@dal.ca; Campana, S., Population Ecology Division, Bedford Institute of Oceanography, PO Box 1006, Dartmouth, NS, Canada; Bentzen, P., Marine Gene Probe Laboratory, Biology Department, Life Sciences Centre, Dalhousie University, Halifax, Nova Scotia, Canada.

LABORATORY AND FIELD EVALUATION OF JUVENILE WEAKFISH (*CYNOSCION REGALIS*) BEHAVIORAL RESPONSES TO DIEL-CYCLING HYPOXIA IN ESTUARINE TRIBUTARIES. - BRADY, D.C.; Timothy E. Targett; Danielle M. Tuzzolino.

A MULTI-SPECIES GROWTH MODEL BASED ON FLUOROMETRICALLY DERIVED RNA/DNA RATIOS AND TEMPERATURE: RESULTS FROM A META-ANALYSIS. - Buckley, L.J. University of Rhode Island/NOAA Cooperative Marine Education and Research Program, Graduate School of Oceanography, South Ferry Road, Narragansett, Rhode Island 02882, USA, lbuckley@gso.uri.edu, Caldarone, E.M. NOAA National Marine Fisheries Service, Narragansett Laboratory, 28 Tarzwell Drive, Narragansett, Rhode Island 02882, USA, elaine.caldarone@noaa.gov, CLEMMESSEN, C. Leibniz-Institute of Marine Sciences, Düsternbrooker Weg 20, D 24105 Kiel, Germany, cclemmesen@ifm-geomar.de.

PARENTAL AND ENVIRONMENTAL INFLUENCES ON VARIATION IN WINTER FLOUNDER EARLY LIFE-STAGES. - CHAMBERS, R.C., Green, B.S. (1), and Davis, D.D.(2), NOAA Fisheries Service, Northeast Fisheries Science Center, Highlands, New Jersey 07732 USA, chris.chambers@noaa.gov, (2) dawn.davis@noaa.gov, (1) TAFI Marine Laboratories Hobart, Tasmania, Australia, 7053, Bridget.Green@utas.edu.au.

NUTRITIONAL CONDITION OF EARLY LIFE STAGES OF SMALL PELAGIC FISHES IN A COASTAL-OCEAN ECOTONE. - CHÍCHARO, M.A.; Luis Chícharo, Ana Amaral, Ana Faria Universidade do Algarve, Faculdade de Ciências do Mar e do Ambiente (FCMA), Centro de Ciências do Mar (CCMAR), Campus de Gambelas, 8005-139 Faro, Portugal.

A SUCKER'S BORN EVERY MINUTE. THEN WHAT? A PRODUCTION ESTIMATE APPROACH TO ASSESS THE AFFECT OF THE CONTROVERSIAL KLAMATH BASIN WATER DECISION ON RECRUITMENT OF TWO ENDANGERED SUCKERS. - COOPERMAN, M.S., Centre for Applied Conservation Research, Department of Forest Sciences, University of British Columbia, Vancouver, BC V6T 1Z4, Michael.cooperman@ubc.ca Markle, Douglas F. (Douglas.markle@oregonstate.edu) 1 Terwilliger,

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Mark (terwillm@ucs.orst.edu)1 Simon, David C. (simond@ucs.orst.edu)1 1 Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR 97331 USA.

POPULATION DIFFERENCES IN EARLY LIFE-STAGE TOXICITY IN ATLANTIC TOMCOD, *MICROGADUS TOMCOD*, TO PCB CONGENERS. - DAVIS, D.D., Chambers, R.C. (2), and Wirgin, I.I. (1), NOAA Fisheries Service, Northeast Fisheries Science Center, Highlands, New Jersey 07732 USA. dawn.davis@noaa.gov, (2) chris.chambers@noaa.gov, (1) New York University School of Medicine, Institute of Environmental Medicine, Tuxedo, New York 10987, USA, wirgin@env.med.nyu.edu.

DOES LARVAL BEHAVIOUR MATTER IN DYNAMIC ENVIRONMENTS? - DICKEY-COLLAS, M., Wageningen IMARES, IJmuiden, The Netherlands; Bolle, L.; van Beek, J.; Erfteimeijer, P.

RESPONSE TO ENVIRONMENTAL ESTROGENS IN *MENIDIA MENIDIA*; POPULATION-LEVEL SUSCEPTIBILITY IS INFLUENCED BY MECHANISM OF SEX DETERMINATION. - DUFFY, T.A., Marine Sciences Research Center, Stony Brook University, Stony Brook, NY, 11794-5000, taduffy@ic.sunysb.edu; Conover, D.O., Marine Sciences Research Center, Stony Brook University, Stony Brook, NY, 11794-5000, dconover@notes.cc.sunysb.edu; McElroy, A.E., Marine Sciences Research Center, Stony Brook University, Stony Brook, NY, 11794-5000, amcelroy@notes.cc.sunysb.edu.

AGE CLASS INTERACTIONS AMONG YOUNG RED DRUM IN SEAGRASS BEDS OF VARYING DENSITIES. - FENCIL, MEGAN C. , Holt, Scott A., Holt, G. Joan, The University of Texas at Austin Marine Science Institute, 750 Channel View Dr., Port Aransas TX 78373, fencil@utmsi.utexas.edu.

MATCH-MISMATCH AND BIGGER-IS-BETTER HYPOTHESES EVALUATION FOR LARVAL AND JUVENILE SMELT (*OSMERUS EPERLANUS* L.): AS ACQUIRED FROM OTOLITH MICROSTRUCTURE. - FEY, D. P., Department of Fisheries Oceanography and Marine Ecology, Sea Fisheries Institute, Gdynia, Poland, 81-332, dfey@mir.gdynia.pl., <http://www.sfi.gdynia.pl/no/fey>.

SEASONAL VARIABILITY IN ESCAPE RESPONSES OF RED DRUM LARVAE: PHYSIOLOGY OR SELECTIVE MORTALITY? - FUJIAN, L.A., Nakayama, S., and Ojanguren, A.F. University of Texas at Austin Marine Science Institute, Port Aransas, Texas, USA, TX78373, lee@utmsi.utexas.edu.

VERY-NEARSHORE LARVAL FISH ASSEMBLAGES AT THE ARRÁBIDA MARINE PARK (PORTUGAL). - GONÇALVES, EMANUEL J., emanuel@ispa.pt (1); Borges, Rita, rborges@ispa.pt (1,2). 1) Eco-Ethology Research Unit. Instituto Superior Psicologia Aplicada. R. Jardim Tabaco, 34. 1149-041 Lisboa, Portugal. 2) CCMAR. Algarve University. Campus de Gambelas. 8000 Faro, Portugal.

THE FOOD OF LARVAL FISHES: ZOOPLANKTON DYNAMICS IN A CYCLONIC EDDY OF THE CHARLESTON GYRE REGION. - GOVONI, J.J.; Hare, J.A.; Chen, M.H.; Davenport, E.D.; Marancik, K.E.

WHAT DO WE KNOW ABOUT DISPERSAL DISTANCE. - GRIMES, C.B., NOAA, NMFS, Southwest Fisheries Science Center, 110 Shaffer Rd., Santa Cruz, CA 95060, USA, Churchill.grimes@noaa.gov.

IS FLOODING A GOOD THING ON TEMPERATE FLOODPLAINS?: THE GROWING LACK OF CONCORDANCE BETWEEN THE SPRING FLOOD PULSE AND STRONG RECRUITMENT. - HALLORAN, B. T., 120 School of Renewable Natural Resources Building, Louisiana State University, Baton Rouge, Louisiana, 70803. email: mahihmah1@hotmail.com; Rutherford, D. A., 119 School of Renewable Natural Resources Building, Louisiana State University, Baton Rouge, Louisiana, 70803. email: druther@lsu.edu.

COUPLING CLIMATE AND FISH POPULATION MODELS: AN EXAMPLE BASED ON EARLY LIFE STAGE SURVIVAL OF ATLANTIC CROAKER. - HARE, J., NOAA NMFS NEFSC, Narragansett Laboratory, 28 Tarzwell Road, Narragansett, Rhode Island 02882.

ONTOGENETIC DEVELOPMENT OF THE ENDANGERED ATLANTIC WHITEFISH (*COREGONUS HUNSTMANNI* SCOTT, 1987) EGGS, LARVAE, AND JUVENILES. - HASSELMAN, D.J. Gene Probe Lab, Dalhousie University, Halifax, NS, Canada, B3H 4J1, dhassel@dal.ca; Whitelaw, J., Department of Fisheries and Oceans; Mersey Biodiversity Facility, Milton, NS, Canada, BOT 1P0, WhitelawJ@mar.dfo-mpo.gc.ca; Bradford R.G. Department of Fisheries and Oceans; Bedford Institute of Oceanography, P.O. Box 1006, 1 Challenger Drive, Dartmouth, NS, Canada, B2Y 4A2, BradfordR@mar.dfo-mpo.gc.ca.

DEVELOPMENT OF ICHTHYO-PLANKTON VERTICAL DISTRIBUTION MODELS: TESTING FOR DIEL, ONTOGENETIC AND ENVIRONMENTAL EFFECTS. - HERNANDEZ, F.J., JR., Dauphin Island Sea Lab, Dauphin Island, Alabama, USA, 36528, fhernandez@disl.org; Hare, J.A., NOAA NMFS NEFSC, Narragansett, Rhode Island, USA 02882, jhare@mola.na.nmfs.gov.

SPATIAL AND TEMPORAL VARIABILITY OF BALTIC LARVAL SPRAT OTOLITH GROWTH: A MODELING STUDY COMBINING ABIOTIC AND BIOTIC ENVIRONMENTAL VARIABLES. - HINRICHSSEN, H.-H., Leibniz Institute of Marine Sciences, Düsternbrooker Weg 20, D 24105 Kiel, Germany, hhinrichsen@ifm-geomar.de; Rudi Voss, Leibniz Institute of Marine Sciences, Düsternbrooker Weg 20, D 24105 Kiel, Germany; Catriona Clemmesen Leibniz Institute of Marine Sciences, Düsternbrooker Weg 20, D 24105 Kiel, Germany.

EFFECTS OF NUTRITION AND TEMPERATURE ON GROWTH AND RNA/DNA IN RED DRUM (*SCIENOPS OCELLATUS*) LARVAE. - HOLT, G.J., University of Texas Marine Science Institute, Port Aransas, TX, USA, 78373, joan@utmsi.utexas.edu.

THE UNUSUAL OCCURRENCE OF TARPON LEPTOCEPHALI IN SOUTH TEXAS ESTUARIES. - HOLT, SCOTT A, University of Texas at Austin Marine Science Institute, Port Aransas, Texas, USA, 78373, sholt@utmsi.utexas.edu.

THE SCALING OF SPECIFIC DYNAMIC ACTION IN ATLANTIC COD: FROM LARVA TO JUVENILE. - HUNT VON HERBING, I. University

of Maine, Orono, ME 04469, i.vonherb@maine.edu; S. Hansen, J. Geubtner and A. McCollum.

GROWTH RATE VARIATION IN A MARINE FLATFISH: INFLUENCES OF TEMPERATURE, COMPETITION, AND PREDATORS. - HURST, T.P., Fisheries Behavioral Ecology Program, Alaska Fisheries Science Center NOAA-NMFS, Hatfield Marine Science Center, Newport, OR 97365 USA (thomas.hurst@noaa.gov); Abookire, A.A., Alaska Fisheries Science Center NOAA-NMFS, Kodiak Laboratory, 301 Research Ct., Kodiak, AK 99615 USA (alisa.abookire@noaa.gov); Ryer, C.H., Fisheries Behavioral Ecology Program, Alaska Fisheries Science Center NOAA-NMFS, Hatfield Marine Science Center, Newport, OR 97365 USA (cliff.ryer@noaa.gov); Knoth, B.A., Alaska Fisheries Science Center NOAA-NMFS, Kodiak Laboratory, 301 Research Ct., Kodiak, AK 99615 USA (brian.knoth@noaa.gov).

GROWTH, DRIFT AND SURVIVAL PROBABILITY OF BALTIC COD EARLY LIFE STAGES. - HUWER, B., Danish Institute for Fisheries Research, Dept. of Marine Fisheries, Charlottenlund Castle, Charlottenlund, Denmark, 2920, bhu@difres.dk Hinrichsen, H.-H., Leibniz-Institute of Marine Sciences Ifm-Geomar, West Shore Campus, Duesternbrooker Weg 20, Kiel, Germany, 24105, hhinrichsen@ifm-geomar.de Boettcher, U., Bundesforschungsanstalt fuer Fischerei, Institut fuer Ostseefischerei, Alter Hafen Sued 2, Rostock, Germany, 18069, uwe.boettcher@ior.bfa-fisch.de.

THE EFFECTS OF SALINITY AND DAY LENGTH ON THE GROWTH AND SURVIVAL OF BALTIC COD (*GADUS MORHUA*) LARVAE IN THE LABORATORY. - Janke, N.; MYRON A. PECK, Institute for Hydrobiology and Fisheries Research, University of Hamburg, Olbersweg 24, Hamburg, Germany, D-22767, myron.peck@uni-hamburg.de; Josianne G. Stætrup, Danish Technical University, Danish Institute for Fisheries Research, Kavalergaarden 6, Charlottenlund, Denmark, DK-2920, jgs@difres.dk.

MEASURING CONNECTIVITY AND SURVIVAL IN ESTUARINE-DEPENDENT FISH. - JONES, Cynthia, and Jason Schaffler, Center for Quantitative Fisheries Ecology, Old Dominion University, Norfolk, Virginia, USA, 23529, cjones@odu.edu

TRENDS IN THE COMMUNITY STRUCTURE OF YOUNG-OF-YEAR FISHES DETERMINED FROM A LONG-TERM SURVEY IN THE HUDSON RIVER. - JORDAAN, A., Marine Sciences Research Center, Stony Brook University, Stony Brook, NY, 11794-5000, Adrian.Jordaan@sunysb.edu; Dunton, K., Marine Sciences Research Center, Stony Brook University, Stony Brook, NY, 11794-5000, dunton@notes.cc.sunysb.edu; Conover, D.O., Marine Sciences Research Center, Stony Brook University, Stony Brook, NY, 11794-5000, dconover@notes.cc.sunysb.edu; and McKown, K.A., New York State Department of Environmental Conservation, Division of Fish, Wildlife and Marine Resources, Bureau of Marine Resources, 205 North Belle Mead Road, Suite 1, East Setauket, New York, 11733.

THE INFLUENCE OF TEMPERATURE ON THE GROWTH OF COD LARVAE: DEFINING THE OPTIMUM. - JORDAAN, A., Marine Sciences Research Center, Stony Brook University, Stony

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Connectivity in Estuarine and Coastal Populations of Fish and Invertebrates



Estuarine Research Federation '07
November 4-8, 2007

Co-Chairs: Dave Secor, Chesapeake Biological Laboratory, University of Maryland Center for Environmental Science, and Claire Paris, Rosenstiel School of Marine and Atmospheric Science, University of Miami.

Description: What are the causes and consequences of estuarine habitat use by coastal fishes? Recent research supports the view that diversity in life cycles of estuarine and coastal fishes represents a key resiliency mechanism in fisheries and habitat management. This session builds on an earlier successful session that was held at the 2003 Seattle ERF meeting (Rooker and Secor. 2005. Connectivity in the life cycles of fishes and invertebrates that use estuaries. *Est. Coastal Shelf Sci.* 64:1-148). Here in a 1-day session, we plan to review progress on understanding the consequences of life-cycle portfolios in coastal fishes. Possible sub-themes include the role of life-cycle diversity in population resiliency (i.e., the storage effect); spatially explicit models of estuarine fish/invertebrate production and life cycles; connectivity between coastal and estuarine essential fish habitats; metapopulation dynamics among and within estuaries; and fishes as nutrient delivery systems between estuarine and coastal environments. For more information, go to erf.org/erf2007/sessions.html.

Course on Identification and Ecology of Larval Marine Fishes

July 29 - August 15, 2007

This is a graduate-level course for students and technical staff with an interest in ichthyology, systematics, taxonomy, larval fish ecology, fisheries science, and biological oceanography. It is presumed that students will have some experience and background in those areas.

Prerequisites include an undergraduate degree in a biological discipline and permission of the instructors.

Instructors: Professors John Olney (Virginia Institute of Marine Science) and Edward Houde (University of Maryland). Laboratories and lectures to be held at the Marine Science Center of the University of New England (Biddeford, Maine). For more information and to apply, please see the course web site: www.vims.edu/adv/657 §

1st International Sclerochronology Conference

July 17-21, 2007, St. Petersburg, Florida, USA

Sclerochronology is the study of physical and chemical variations in the accretionary hard tissues of organisms, and the temporal context in which they formed. Sclerochronology focuses primarily upon growth patterns reflecting annual, monthly, fortnightly, tidal, daily, and sub-daily increments of time entrained by a host of environmental and astronomical pacemakers.

Who Should Attend? Anyone interested in and working on the formation and interpretation of growth increments in accretionary hard parts of invertebrate and vertebrate organisms should attend this conference.

Abstract deadline: March 15, 2007. For more information, go to conference.ifas.ufl.edu/sclerochronology

32nd Annual Larval Fish Conference in Germany

August 4-7, 2008

The 2008 Larval Fish Conference will be held at the Leibniz Institute of Marine Science (IFM-GEOMAR), Christian Albrechts University, Kiel, Germany.

Important Dates:

Registration Opens - February 1, 2008

Registration Closes - August 3, 2008

Abstract Submission Opens - February 1, 2008

Abstract Deadline - March 31, 2008

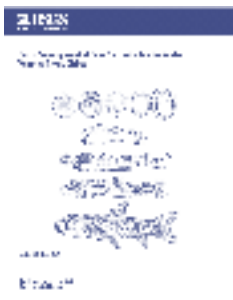
Please contact the conference organizers if you require assistance. Or, go to the conference (www.larvalfishcon.org) website for updates.

STAGES Marketplace

ELHS T-Shirt. Get your 2006 LFC T-shirt while they last. The shirt has the AFS-Lake Placid Conference logo on the left breast (see image at www.afslakeplacid.org) and the LFC montage on the back (see image at: www.larvalfishcon.org). Place your order with Jon Hare (jhare@mola.na.nmfs.gov), stating your size (S, M, L, or XL), quantity, and shipping address. Shirts are \$12 each; two for \$20; add \$3 for shipping! Please pay by personal check payable to 'Early Life History Section.'

ELHS Brochure & Poster. Great for posting at your facility or distribution at meetings. Send Denice Drass, (Denice.Drass@noaa.gov) the number of brochures and posters you want. §

Publications



Available now: Early Development of Four Cyprinids Native to the Yangtze River, China

Edited by Duane C. Chapman

Published in *United States Geological Survey Data Series 239*, 51 pages.

Chapter 1 -- Notes on the Translation and Use of "A Study of the Early Development of Grass Carp, Black Carp, Silver Carp, and Bighead Carp in the Yangtze River, China" By Duane C. Chapman and Ning Wang

Chapter 2 -- A Study of the Early Development of Grass Carp, Black Carp, Silver Carp, and Bighead Carp in the Yangtze River, China By Bolu Yi, Zhishen Liang, Zhitang Yu, Randuan Lin, and Mingjue He

The document *A Study of the Early Development of Grass Carp, Black Carp, Silver Carp, and Bighead Carp in the Yangtze River, China* (Chapter 2 of this volume) was translated from the Chinese with the approval and assistance of the living authors of that study. It contains the most detailed description available, and approximately 200 drawings, of the early development of the subject fishes.

Chapter 1 provides important instructions on the use of the translation, including a description of the Chinese morphometric conventions, which differ from those used by North American scientists. Chapter 1 also provides the historical context in which Chapter 2 was developed, and information on how the larvae of the subject fishes, which have invaded the Mississippi River basin, may be distinguished from other fishes present in the basin.

Availability of hard-copies is limited by funding. However, the document is accessible online at pubs.usgs.gov/ds/2006/239 or contact Duane Chapman at dchapman@usgs.gov. §

Other Recent Publications of Interest

Recent Advances in the Study of Fish Eggs and Larvae. Edited by M. Pilar Olivar and J. Jeffrey Govoni. Published in *Scientia Marina*, Volume 70S2 Supplement 2. ISSN: 0214-8358. 2006.

Eggs and Larvae of North Sea Fishes. P. Munk and Jørgen G. Nielsen. Published by Biofolia Press. ISBN 0849319161. 2005.

Early Stages of Atlantic Fishes: An Identification Guide for the Western Central North Atlantic. Edited by W.J. Richards. Published by CRC Press. ISBN 0849319161. 2005.

Developmental Biology of Teleost Fishes. Y.W. Kunz. Published by Springer Press. ISBN 1-4020-2996-9. 2004.

Early Life History of Fishes in the San Francisco Estuary and Watershed. Edited by F. Feyrer, L.R. Brown, R.L. Brown, and J.J. Orsi. Published by the American Fisheries Society. ISBN 1-888569-59-X. 2004.

Freshwater Fishes of the Northeastern United States - A Field Guide. R.G. Werner. Published by Syracuse University Press. ISBN 0815630204. 2004.

The Development of Form and Function in Fishes and the Question of Larval Adaptation. Edited by John Jeffrey Govoni. Published by the American Fisheries Society. ISBN 1-888569-58-1. 2004.

The Larvae of Indo-Pacific Coastal Fishes: An Identification Guide to Marine Fish Larvae. (2nd edition). J.M. Leis and B.M. Carson-Ewart. Published by Brill Academic Publishers. ISBN 90-04-13650-9. 2004.

The Big Fish Bang. Proceedings of the 26th Annual Larval Fish Conference. Edited by Howard I. Browman and Anne Berit Skiftesvik. Published by the Institute of Marine Research, Bergen, Norway. ISBN 82-7461-059-8. 2004.

Reproductive Biology and Early Life History of Fishes in the Ohio River Drainage: Ictaluridae - Catfish and Madtoms, Volume III. T.P. Simon and R. Wallus. Published by CRC Press. ISBN 0849319196. 2003.

Fishery Science: The Unique Contributions of Early Life Stages. Edited by Lee A. Fuiman and Robert G. Werner. Published by Blackwell Publishing. ISBN 0-632-05661-4. 2002. §

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Brook, NY, 11794-5000, Adrian.Jordaan@sunysb.edu; and Munch, S. B., Marine Sciences Research Center, Stony Brook University, Stony Brook, NY, smunch@notes.cc.sunysb.edu.

'HARD' EVIDENCES FOR LARVAL AGGREGATION DURING THE PELAGIC STAGE: THE CASE OF THE CORAL-REEF FISH *NEOPOMACENTRUS MIRYAE* (POMACENTRIDAE). - Kiflawi, M., The Interuniversity Institute for Marine Sciences of Eilat, P.O.B. 469, Eilat, Israel 88103, and Ben-Gurion University, Be'er Sheva, Israel 84105, mkiflawi@bgu.ac.il; BEN-TZVI O., The Interuniversity Institute for Marine Sciences of Eilat, P.O.B. 469, Eilat, Israel 88103, and Tel-Aviv University, Tel-Aviv, Israel 69978, obentzvi@gmail.com; Abelson A., Tel-Aviv University, Tel-Aviv, Israel 69978, avigdora@tauex.tau.ac.il.

THE INFLUENCE OF REDUCED AEROBIC SCOPE ON FORAGING MODE SELECTION IN YOUNG LUMPFISH. - KILLEN, S. S., Brown, J. A., Gamperl, A. K. Ocean Sciences Centre, Memorial University of Newfoundland, St. John's, NL, Canada, A1C 5S7, r24ssk@mun.ca.

EFFECTS OF TEMPERATURE AND GROWTH RATE ON METABOLISM OF LARVAL AND JUVENILE HADDOCK (*MELANOGRAMMUS AEGLEFINUS*). - LANKIN, K.F., University of Rhode Island, Department of Fisheries, Animal and Veterinary Science, Kingston, RI 02881, USA, klankin@mail.uri.edu; Peck, M.A., University of Hamburg, Institute for Hydrobiology and Fisheries Science, Olbersweg 24, 22767 Hamburg, Germany, myron.peck@uni-hamburg.de; Buckley, L.J., National Marine Fisheries Service, 28 Tarzwell Drive, Narragansett, RI 02882, USA, lbuckley@gso.uri.edu; Bengtson, D.A. University of Rhode Island, Department of Fisheries, Animal and Veterinary Science, Kingston, RI 02882, USA, bengtson@uri.edu.

TEMPERATURE-MEDIATED DEVELOPMENT, SURVIVAL AND LIPID CATABOLISM OF PACIFIC COD EGGS AND LARVAE. - LAUREL, B.J., Thomas P. Hurst, Louise A. Copeman, and Michael W. Davis.

SELECTION FOR FAST GROWTH DURING EARLY LIFE OF YELLOW PERCH IN SMALL OLIGOTROPHIC LAKES SUBJECTED TO FOREST HARVESTING IN DRAINAGE BASIN. - LECLERC, V., Sirois, P., Laboratoire d'écologie aquatique, Département des sciences fondamentales, Université du Québec à Chicoutimi, Chicoutimi (QC) Canada, G7H 2B1, veronique_leclerc@uqac.ca, pascal_sirois@uqac.ca and Bérubé, P., Direction de la recherche sur la faune, Ministère des Ressources naturelles et de la Faune, Québec (QC) Canada, G1S 4X4, pierre.berube@mrf.gouv.qc.ca.

POPULATION SIZE, RECRUITMENT AND UPSTREAM MIGRATION RATES OF GLASS EELS (*ANGUILLA JAPONICA*) ESTIMATED BY A MARKING EXPERIMENT USING VITAL DYES IN AN ESTUARY, JEJU, KOREA. - LEE, T.W., Department of Oceanography, Chungnam National University, Daejeon 305-764 Korea; HWANG, H.B. AND HWANG, S.D., National Fisheries Research & Development Institute, busan 619-900 Korea.

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Please Welcome Our New Secretary-Elect!

Congratulations to Dr. Ione Hunt von Herbing as our new Secretary-Elect of the Early Life History Section! Ione, soon to be of the University of North Texas, was elected by you in a very closely contested race with Frank Hernandez. A most sincere thanks is in order to Ione and Frank for placing their names in consideration for this post. We need this kind of volunteerism!

For those of you who do not know Ione, here is a brief biographical sketch. For the past 11 years Ione has been a tenured Associate Professor in the School of Marine Sciences at the University of Maine where she has been active in research and undergraduate and graduate education. As of August 2007, she will be re-locating as a tenured Associate Professor to the Department of Biological Sciences at the University of North Texas, Denton, Texas. For the summer of 2007, she is the recipient of a New Investigator award at MDIBL (Mount Desert Island Biological Laboratory), Salisbury Cove, Maine, where she is conducting work on the physiology of detection and response to environmental change in the developing marine fishes. Her interests serve many fields including comparative physiology and endocrinology, marine sciences, and aquaculture. Her work focuses on: i) understanding on the functional mechanisms of detection and response to environmental change in the developing marine fishes, and ii) the effects of temperature on the cost of growth and locomotion in the larval and juvenile stages of commercially important fishes. In addition to her work on energy metabolism, she is developing an integrative developmental physiology program that will investigate functional genomics and metabolic regulation of muscle growth and performance in the early life-history stages of marine fishes.

ELHS Voting Demographics

The ballot was distributed on June 8, 2007 via email to all individuals listed as full members (i.e., AFS and Section memberships). The listing used was one provided by AFS through our Section Secretary Denice Drass and to the Acting Election Committee Chair, Chris Chambers, on May 10, 2007. Responses were tallied on June 19th. [NB: If you did not get a ballot yet have paid AFS and ELH Section dues for 2007, please contact our new Section Secretary Denice Drass at Denice.Drass@noaa.gov with this information.] Of the 211 full members on the reference list at the time of mailing, 204 ballots were emailed (7 had no email address in our data base). We received responses (votes) from 65 members (31%).

A note about our elections: First, this is a volunteer-based society and we need all of your contributions! To see the responsibilities of each office on our Executive Committee (that would be President, President-Elect, Secretary, Secretary-Elect, and Treasurer), and the listing of appointed and ad hoc committee memberships, please go to our Section website and browse the Section bylaws and rules under 'About ELHS' (www2.ncsu.edu/elhs/history.html). Our five officers have voting rights on Executive Committee matters. Each officer serves for 2 years with the exception of a 4-year term by our Treasurer. The Executive Committee meets at least annually at the LFC and communicates more frequently by emails and conference calls. Once again, we need your support and involvement, so step up. §

— Chris Chambers, Acting Elections Committee Chair

Ione received her Ph.D. in 1994 under Bob Boutilier's guidance at Dalhousie University, Halifax, Nova Scotia. She did two post-doctoral fellowships, the first at Woods Hole Oceanographic Institution (WHOI) and the second at Harbor Branch Oceanographic Institution (HBOI), with a short 4-month Research Associateship at the Bellairs Research Institute, Barbados, West Indies working on larval recruitment to marine reserves.

In 1996, Ione was hired as an Assistant Professor at the University of Maine. For the last three years Ione served as a Program Director at the National Science Foundation (NSF). While at NSF, she served as Director of the Integrative Animal Biology Program (IAB) in the Division of Integrative Organismal Biology and her responsibilities included: 1) Directing and managing a \$14 million portfolio of the IAB program, 2) serving as coordinator for the Doctoral Dissertation Improvement Grants, and 3) serving as the Biological Sciences directorate representative and program director for the Interagency Education Research Initiative and the Integrative Graduate Education and Research Training Program.

Ione has been an active participant in the Larval Fish Conferences and in ELH/AFS business since being a graduate student. She is chairing a symposium on Developmental Physiology at the 32nd annual Larval Fish Conference in Kiel, Germany. She was a section-only member for many years, but joined AFS after a long hiatus in 2004. §

— Chris Chambers, Acting Elections Committee Chair

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HOW BEHAVIOUR INFLUENCES DISPERSAL IN SMALL, YOUNG LARVAE OF A DAMSELFISH (POMACENTRIDAE). - Leis, JM, Wright, KJ and Johnson, RN Australian Museum, 6 College Street, Sydney, NSW, 2010, Australia, e-mail: jeff.leis@austrmus.gov.au.

LARVAL FISH FEEDING IN THE LOW-LATITUDE OPEN OCEAN: CHARACTERIZING THE FEEDING ENVIRONMENT AND QUESTIONING THE PRESUMED CONSTRAINTS. - LLOPIZ, J.K., Cowen, R.K., Crompton, E.M. Rosenstiel School of Marine and Atmospheric Science, University of Miami, Miami, FL, U.S.A. 33149, jllopez@rsmas.miami.edu, r.cowen@rsmas.miami.edu, e.crompton@umiami.edu.

EARLY PROGRESS IN THE IDENTIFICATION OF SERRANIDAE LARVAE FROM SEAMAP GULF OF MEXICO SURVEYS WITH AN EMPHASIS ON GROUPE (EPINEPHELINAE). - MARANCIK, K.E., NOAA NMFS SEFSC, Mississippi Laboratories and IAP World Services, Pascagoula, MS 39567, katey.marancik@noaa.gov; Richardson, D.E., University of Miami, Rosenstiel School of Marine and Atmospheric Science, Miami, FL., drichardson@rsmas.miami.edu; Lyczkowski-Shultz, J., NOAA NMFS SEFSC, Mississippi Laboratories, Pascagoula, MS, Joanne.Lyczkowski-Shultz@noaa.gov; Cowen, R.K, University of Miami, Rosenstiel School of Marine and Atmospheric Science, Miami, FL, rcowen@rsmas.miami.edu.

SPATIAL STRUCTURE OF THE EARLY DEVELOPMENTAL STAGES OF CLUPEIFORMS IN THE NORTHWESTERN MEDITERRANEAN SEA. - Maynou, F., OLIVAR, M.P., Emelianov, M., Álvarez, I., Morote, E., Fuerstenau, B., Institut de Ciències del Mar (CSIC). Passeig Marítim 37-49. 08003 Barcelona. Spain. maynouf@icm.csic.es, polivar@icm.csic.es.

SOCIAL CONTROL OF SELECTIVE MORTALITY. - MCCORMICK, M. I., ARC Centre of Excellence for Coral Reef Studies and School of Marine and Tropical Biology, James Cook University, Townsville, QLD 4811, Australia, mark.mccormick@jcu.edu.au. Meekan, M. G., Australian Institute of Marine Science, PO Box 40197, Casuarina MC, Northern Territory 0811, Australia, m.meekan@aims.gov.au.

DOES DIEL VERTICAL MIGRATION OF SARDINE LARVAE IN THE SOUTHERN BENGUELA ECOSYSTEM PROMOTE SUCCESSFUL TRANSPORT TO FAVORABLE NURSERY AREAS? AN INDIVIDUAL BASED MODELING APPROACH. - MILLER, D.C.M., Northwest Atlantic Fisheries Centre (DFO), St. John's, NL, Canada, A1C 5X1, millerdcm@dfo-mpo.gc.ca; van der Lingen, C.D., Marine and Coastal Management, Cape

...continued on p. 10

LFC...continued from p. 9

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FOOD HABITS, ONTOGENETIC DIET SHIFT AND SELECTIVITY BY BULLET TUNA LARVAE (AUXIS ROCHEI) IN THE NORTHWESTERN MEDITERRANEAN. - Morote, E., OLIVAR, M.P., Institut de Ciències del Mar (CSIC), Passeig Marítim 37-49, 08003 Barcelona, Spain, morote@icm.csic.es, polivar@icm.csic.es; Pankhurst, P.M., School of Marine and Tropical Biology, James Cook University, Townsville, Queensland, 4811, Australia; Villate, F.; Uriarte, I., Departamento de Biología Vegetal y Ecología, Universidad del País Vasco, Campus de Leioa, Barrio Sarriena s/n, 48940 Leioa, Spain.

SPAWNING DISTRIBUTION OF ATLANTIC COD OVERWINTERING IN SMITH SOUND: A POTENTIAL MECHANISM OF COD RECOVERY ALONG THE NORTH EAST COAST OF NEWFOUNDLAND. - MORRIS, C. J., Bratley, J., and Rideout, S. Fisheries and Oceans Canada, St. John's, Newfoundland and Labrador, Canada, A1C 5X1, MorrisC@dfo-mpo.gc.ca; BratleyJ@dfo-mpo.gc.ca, and Rideouts@dfo-mpo.gc.ca.

MULTI-SPECIES DEVELOPMENTAL MORPHOMETRICS: WHICH HAS THE BEST PREDICTIVE POWER? - MORTON, K., Memorial University, Newfoundland, Canada. A1C 5S7 kathryn.smith@utoronto.ca; & Pepin, P., Fisheries and Oceans, Science Branch, P.O. Box 5667, St. John's, Newfoundland, Canada. A1C 5X1 PepinP@DFO-MPO.GC.CA.

ICHTHYOPLANKTON COMPOSITION AND DISTRIBUTION DURING THE LATE WINTER BLOOM IN THE CANARY ISLAND WATERS. - MOYANO M.(1)*, Rodríguez J.M.(2), Hernández León S.(1) (1). Biological Oceanographic Laboratory, Facultad de Ciencias del Mar, Universidad de Las Palmas de G.C., Campus Universitario de Tafira. 35017. Las Palmas de Gran Canaria. Canary Islands, Spain. (2) Centro Oceanográfico de Gijón. Instituto Español de Oceanografía. Avda. Príncipe de Asturias 70Bis. 33212. Gijón, Asturias, Spain *Correspondence email: marta.moyano101@doctorandos.ulpgc.es.

LARVAL FISH COMMUNITIES ASSOCIATED WITH THE EAST AUSTRALIAN CURRENT SEPARATION FROM THE SOUTH EAST COAST OF

AUSTRALIA. - Mullaney, T.J.1, P.T.P Burns1, I.S. Suthers1 & A.G. MISKIEWICZ2.

DOES FRONTAL RESIDENCE HELP LARVAL FISH? GROWTH AND ABUNDANCE OF LARVAL DAB, *LIMANDA LIMANDA*, WITHIN A DEVELOPING FRONTAL SYSTEM IN THE NORTH SEA. - OLBRICH, R. (1, 3); Peck, M.A. (1); Munk, P. (2); St. John, M.A. (1). 1 Institute of Hydrobiology and Fishery Science, University of Hamburg, Olbersweg 24, 22767, Hamburg, Germany. 2 Danish Institute for Fisheries Research, Jægersborgvej 64-66, 2800 Kgs. Lyngby, Denmark. 3 Present address: Sustainability Economics Group, P.O. Box 2440, 21314 Lüneburg, Germany (olbrich@uni-lueneburg.de).

VARIATIONS IN GREENLAND HALIBUT EGGS BOUYANCY DURING DEVELOPMENT AT THREE TEMPERATURES. - OUELLET, P., Lambert Y. Fisheries and Oceans Canada, Maurice Lamontagne Institute, 850 route de la Mer, Mont-Joli (Québec) Canada. G5H 3Z4 ouelletp@dfo-mpo.gc.ca lamberty@dfo-mpo.gc.ca.

EMERGENCE PATTERNS OF CAPELIN (*MALLOTUS VILLOSUS*) AT BEACH AND DEMERSAL SPAWNING SITES ON THE NORTHEAST COAST OF NEWFOUNDLAND. - PENTON, P. *Department of Zoology, Duff Roblin Building, University of Manitoba, Winnipeg, Manitoba, Canada, umpenton@cc.umanitoba.ca; Davoren, G.K.*; Montevicchi, W.A. Cognitive and Behavioral Ecology Program, Departments of Psychology, Biology and Ocean Sciences, Memorial University of Newfoundland, St. John's, Newfoundland, Canada; Andrews, D.W. Biology Department, York University, Toronto, Ontario, Canada.

TEMPERATURE EXPERIMENTS WITH EARLY LIFE STAGES OF SPRAT (*SPRATTUS SPRATTUS*) FROM THE BALTIC SEA, NORTH SEA AND THE ADRIATIC SEA. - PETEREIT, C., Leibniz Institute of Marine Sciences Kiel, Düsternbrooker Weg 20, D-24105 Kiel, Germany, cpetereit@ifm-geomar.de; Clemmesen, C, Leibniz Institute of Marine Sciences Kiel, Düsternbrooker Weg 20, D-24105 Kiel, Germany; Haslob, H, Leibniz Institute of Marine Sciences Kiel, Düsternbrooker Weg 20, D-24105 Kiel, Germany; Kraus, G., Danish Institute for Fisheries Research, Kavalergården 6, DK-2920 Charlottenlund, Denmark; Ramsak, A., National Institute of Biology, Marine Biology Station, Fornace 41, 6330 Piran, Slovenia; Hanel, R., Leibniz Institute of Marine Sciences Kiel, Düsternbrooker Weg 20, D-24105 Kiel, Germany.

DOES THE PELAGIC BILLFISH, STRIPED MARLIN, EXHIBIT SPAWNING SITE FIDELITY? - PURCELL, C.M., Department of Biological Sciences, Marine Environmental Biology, University of Southern California, 3616 Trousdale Parkway, AHF 306, Los Angeles, California, 90089-0371, U.S.A., purcellc@usc.edu; Edmands, S., Department of Biological Sciences, Marine Environmental Biology, University of Southern California, 3616 Trousdale Parkway, AHF 314, Los Angeles, California, 90089-0371, U.S.A., sedmands@usc.edu.

FINFISH LARVAL BEHAVIOURAL ECOLOGY: A BETTER TOOL FOR AQUACULTURE RESEARCH? - PUVANENDRAN, V. Fiskeriforskning (Nor-

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DIET COMPOSITION AND PREY SIZE SPECTRUM IN SEVEN CO-OCCURRING SPECIES OF FISH LARVAE. - RASMUSSEN, J.; Gallego, A.; Heath, M.; FRS, Marine Laboratory, Aberdeen AB11 9DB, United Kingdom, email: rasmussenj@marlab.ac.uk.

GREEN WATER EFFECT: DOES DIFFERENT MICROALGAE SPECIES AFFECT METABOLIC PATHWAY OF MARINE FISH LARVAE? - RIBEIRO, LAURA, Universidade do Algarve e Centro de Ciências do Mar, Faro, Portugal, 8005-139 Faro, mribeiro@ualg.pt; COUTO, ANA Universidade do Algarve e Centro de Ciências do Mar; ROCHA, RUI, Universidade do Algarve e Centro de Ciências do Mar; FIGUEIREDO-SILVA CLAUDIA, Centro Interdisciplinar de Investigação Marinha e Ambiental e Instituto de Ciências Biomédicas de Abel Salazar, Universidade do Porto; VALENTE LUISA, Centro Interdisciplinar de Investigação Marinha e Ambiental e Instituto de Ciências Biomédicas de Abel Salazar, Universidade do Porto & DINIS MARIA TERESA, Universidade do Algarve - Centro de Ciências do Mar.

THE IMPORTANCE OF CHEMICAL AND PHYSICAL STIMULI ON *Solea senegalensis* LARVAE DIGESTIVE ACTIVITY - PRELIMINARY RESULTS. - RIBEIRO, LAURA, Universidade do Algarve e Centro de Ciências do Mar, Faro, Portugal, 8005-139 Faro, mribeiro@ualg.pt; FERNANDES, ALBERTO Universidade Lusófona; HUBERT, FRANÇOIS, Universidade do Algarve e Centro de Ciências do Mar; & DINIS, MARIA TERESA, Universidade do Algarve - Centro de Ciências do Mar.

PATTERNS OF LARVAL ATLANTIC CROAKER INGRESS INTO CHESAPEAKE BAY. - SCHAFFLER, J.J. Old Dominion University, Norfolk, Virginia, USA 23529, jschaffl@odu.edu, Jones, C.M. Old Dominion University, Norfolk, Virginia, USA 23529, cjones@odu.edu, Reiss, C.S., NOAA NMFS Fisheries Southwest Science Center, La Jolla, California, USA 92037, christian.reiss@noaa.gov, Hare, J.A., NOAA NMFS Northeast Fisheries Science Center Narragansett Laboratory, Narragansett, Rhode Island, USA 02882, jon.hare@noaa.gov.

MATERNAL EFFECTS ON EARLY LIFE PERFORMANCE AND INTERACTIONS BETWEEN OFFSPRING OF ANADROMOUS AND OUVANICHE ATLANTIC SALMON (*SALMO SALAR*) MOTHERS. SIMMS, M.D., Memorial University of Newfoundland, St. John's, Newfoundland, Canada, A1C 5S7, mdsimms@mun.ca; Fleming, I.A., Memorial University of Newfoundland, St. John's, NL, Canada, A1C 5S7, ifleming@mun.ca; Adams, B.K., Dalhousie University, Halifax, N.S., Canada, B3H 4J1, bkadams@dal.ca.

THE IMPORTANCE OF SOUND AT SETTLEMENT AND THE HETEROGENEITY OF SOUNDSCAPES. - SIMPSON, S.D., Institute of Evolutionary Biology, School of Biological Sciences, University of Edinburgh, Kings Buildings, Edinburgh, EH9 3JT, UK, s.simpson@ed.ac.uk

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...continued on p. 11

President's Message...cont'd from p. 1

years for Treasurer). We will need nominees for President-Elect and Secretary-Elect this fall. Their responsibilities will commence at the LFC in 2008. We are in need of Section members to staff our standing, sessional, and ad hoc committees (e.g., Nominations and Mail Ballot, Time and Place, Sally L. Richardson Award, Student Travel Grants – for responsibilities and descriptions, see our Section bylaws and rules at www2.ncsu.edu/elhs/rules.html). Please consider yourself to be a needed colleague whose contributions to the Section will be valued. Ask how you can help!

Lastly, while at the LFC in St. John's we will hold our annual business meeting. If you have topics that you would like placed on

the agenda or, if after the Conference, you would like the Executive Committee to consider, please speak up. As part of our regular business meeting, we will receive a preview of our 2008 LFC in Kiel, Germany, by our host and 2008 Local Committee Chair, Catriona Clemmesen. Please attend!

In closing, we want our Section to stay vibrant and dynamic. This means that, like the seasons, change is a constant in our ranks and is to be embraced. We, as an organization, must continue to ask of ourselves, 'How can the Section best serve its membership?' 'How can we do our job better?' and, 'How can we stay relevant in our rapidly changing research environment?' The answers to these questions include you! §

– R. Christopher Chambers

LFC...cont'd from p. 10

THE ESCAPE RESPONSE OF FOOD-DEPRIVED COD LARVAE (*GADUS MORHUA* L.). - Skajaa K., Fylkesmannen i Aust-Agder (County Governor in Aust-Agder), Miljøvernvedelingen (Environment protection), Fylkeshuset, N-4809 Arendal, Norway, ksk@fmaa.no; BROWMAN, H.I., Institute of Marine Research, Austevoll Research Station, N-5392 Storebø, Norway, howard.browman@imr.no.

A FAMILY-LEVEL COMPUTER-INTERACTIVE KEY TO THE LARVAE OF FRESHWATER FISHES IN THE UNITED STATES AND CANADA. - SNYDER, D.E., Larval Fish Laboratory, Colorado State University, 1474 Campus Delivery, Fort Collins, Colorado 80523-1474; DESnyder@WarnerCNR.ColoState.edu.

MORPHOMETRIC TOOLS AS PREDICTORS OF KINEMATIC CAPABILITIES IN LARVAL FISH. - STANLEY, R., Ocean Sciences Center and Biology Department, Memorial Univ., St. John's, Newfoundland, Canada, A1C 5S7, rstanley@mun.ca; Snelgrove, P. Ocean Sciences Center and Biology Department, Memorial Univ., St. John's, Newfoundland, Canada, A1C 5S7, psnelgro@mun.ca; & Guan, L., Department of Earth and Ocean Science, University of British Columbia, Vancouver, Canada, V6T 1Z4, v521g@mun.ca.

DETERMINING THE MECHANISMS OF POPULATION SELF-REPLENISHMENT IN CORAL REEF FISHES. - THOMPSON V.J., Swearer S., University of Melbourne, Melbourne, Victoria, Australia, 3010; v.thompson@pgrad.unimelb.edu.au and Melville J., Museum Victoria, Melbourne, Victoria, Australia, 3001.

ENVIRONMENTAL FACTORS INFLUENCING LARVAL SPRAT FEEDING IN THE BALTIC SEA. - VOSS, R., Leibniz Institute of Marine Sciences Kiel, Düsternbrooker Weg 20, D-24105 Kiel, Germany, rvoss@ifm-geomar.de, Dickmann, M., Baltic Sea Research Institute Warnemünde, Seestraße 15, D-18119 Warne-

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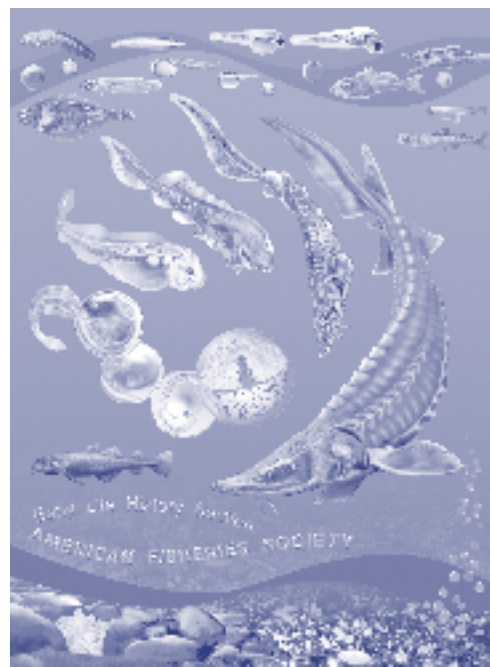
ENERGETICS OF JUVENILE GRAY SNAPPER: EVALUATION OF ABIOTIC AND BIOTIC PROPERTIES OF NURSERY AREAS ACROSS A LATITUDINAL GRADIENT. - WUENSCHER, M. J., Rutgers University Marine Field Station, 800 c/o 132 Great Bay BLVD, Tuckerton, NJ, USA, 08087, wuensch@marine.rutgers.edu, Hare, J. A. NOAA NMFS NEFSC, Narragansett Lab, Narragansett, RI, USA 02882.

QUANTIFYING THE DIFFERENCES IN THE WAY THAT FISHERIES OCEANOGRAPHERS AND LARVAL FISH PERCEIVE VARIATIONS IN PREY AVAILABILITY. - YOUNG, K., Dower, J.F., University of Victoria, Victoria B.C. Canada, V8W 3N5 (kyoung@uvic.ca; dower@uvic.ca); Pepin, P. Fisheries and Oceans Canada, St. John's, Newfoundland and Labrador, Canada, A1C 5X1 (pepin@dfo-mpo.gc.ca).

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EXPLORING THE ASSOCIATION OF GRAY TRIGGERFISH (*BALISTES CAPRISCUS*) WITH SARGASSUM IN THE GULF OF MEXICO. - ZAPFE, G.A., NOAA NMFS SEFSC, Mississippi Laboratories and IAP World Services, Pascagoula,

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**Editor's Ramblings****STAGES: the newsletter of the University of Texas Marine Science Institute?**

We've crammed another issue of STAGES with 12 pages of news and information. A thriving newsletter, don't you think? But, if you look closely, you'll notice that this issue contained the usual regular items: the President's Message, Upcoming Events, and Recent Publications. But most of the issue is filled with the program for the upcoming Larval Fish Conference. There was only a small article from only one of our regions. So, to fill out the issue, Joan Holt and I prepared a summary of research going on in our own labs here at the University of Texas Marine Science Institute. There's a message here. Unless you want to hear more about our institution in future issues (and it will become repetitious), please send material for STAGES to your Regional Representative. We'll all benefit! §



Newsletter Production Team

Stages is published in February, June, and October each year. It is assembled by the Newsletter Editor with contributions from several Regional Representatives and other individuals. Please send any articles, announcements, or information of interest to Early Life History Section members or affiliates to your local Regional Representative or to the Editor.

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