



Newsletter of the
Early Life History Section
of the American Fisheries Society

Volume 36, Number 2

Lee A. Fuiman, Editor

June 2015

Inside this issue

President's Message	1
News from the Regions	2
Section Officers	2
People	5
Upcoming Events	6
Publications	13
Editor's Ramblings	16

Larval Fish Conference in Vienna Next Month

We are very pleased to inform you that 146 participants (53 students!) from 36 countries have registered for the conference. In all, 151 abstracts have been submitted.

Thanks to the input of our scientific committee, we have seven keynote speakers, all are leading scientists from different fields of research: Edward Codling, Shaun Killen, Michael Miller, Richard Nash, Dimitri Pavlov, Kimberly Selkoe, and Su Sponaugle.

Confirmation of Abstracts: Please check if you received a formal confirmation of your abstract, oral and/or poster presentation via e-mail.

Hotels: We recommend that you book your hotel as soon as possible! There is a strong demand for rooms in Vienna at this time of year. Our event management offers a number of selected fine hotels with a special rate, located near the venue and also close to the city center.



...continued on p. 14

ELHS Back Then

10 years ago: ELHS shocked & saddened by the untimely death of recently elected President-Elect Joe Brown.

15 years ago: Bob Hoyt's massive Early Life History Bibliography becomes available online.

20 years ago: Tom Miller takes over as Newsletter Editor and gives the newsletter a new look and a new name: STAGES.

25 years ago: After years of declining manuscript submissions from LFCs, the 14th LFC is first not to publish proceedings of the meeting.

35 years ago: Happy Birthday! ELHS was officially sanctioned 35 years ago at the AFS annual meeting in Louisville, Kentucky. Darrel Snyder was appointed as Provisional President.

President's Message



I am writing my third president's message to you on a (somewhat rare) sunny day in Hamburg, sitting in my garden, pondering our section's impressive past, active present, and exciting future. I am filled with three emotions: gratitude, pride, and anticipation. Unfortunately, one of those is considered a deadly sin – but, let's not dwell on the negative...but try to accentuate the positive. Let me briefly explain.

Today (when writing this), we are less than three weeks away from our 39th annual Larval Fish Conference in Vienna, Austria! The organizing team, led by Hubert Keckeis, has created a jam-packed agenda of science immersion and cultural excursion (of which even the former Austrian Emperor Franz Joseph would be proud). Having spent most of the summers of my life on the shores of Lake Michigan, I find the program of this year's meeting particularly compelling. Research will be presented on early life history research conducted in a wide range of aquatic habitats (from lakes, rivers, estuaries, and open ocean regions - not to mention the studies on catadromous and anadromous species). Fishes are one of the most successful groups of vertebrates, having colonized habitats from alpine lakes to the deep ocean and, in all of these habitats, the fate of early life stages is critical to the persistence of fish populations. Over the course of four days at this year's meeting, we will

...continued on p. 15

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

Oct 2, 2015

News from the Regions



Pacific Rim Region

Akinori Takasuka

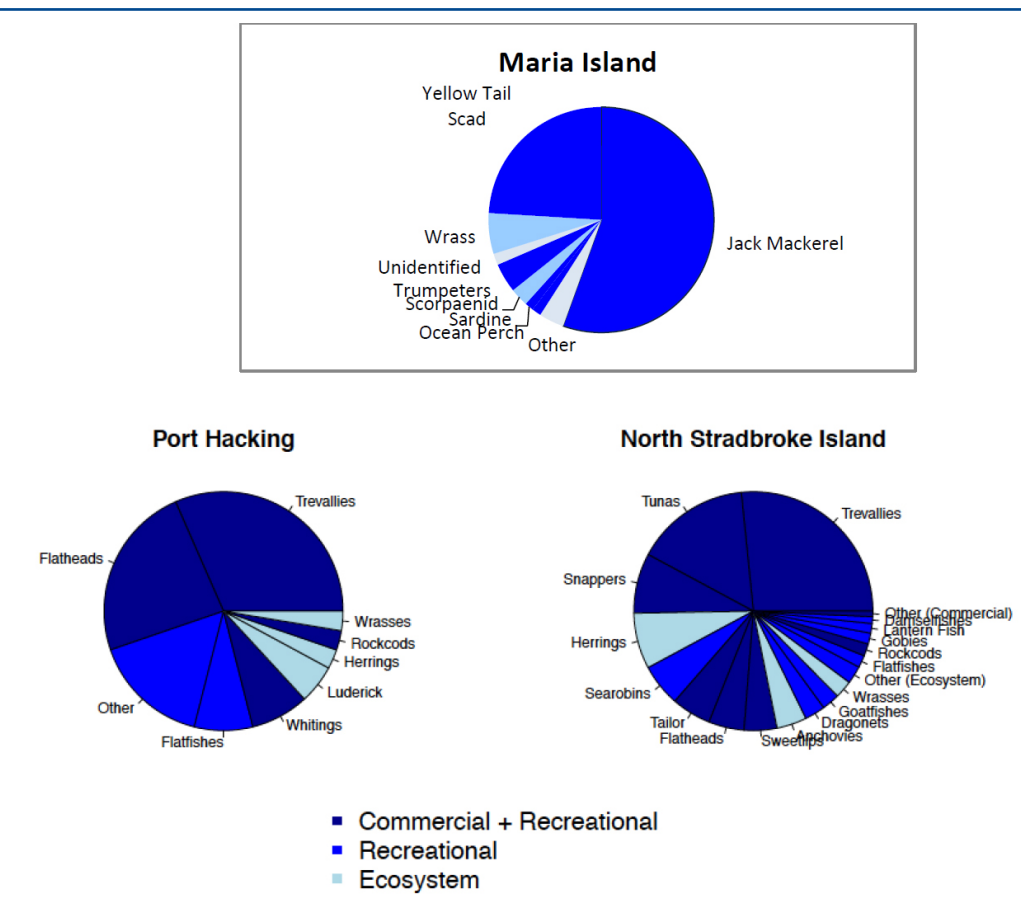
Symposium on “Growth–survival paradigm in early life stages of fish” in Yokohama (November 2015)

Three years have passed since I submitted a news article to STAGES for the first time (June 2012). At that time, we reported Japan–Canada collaboration workshops on growth–survival paradigm in early stages of fish (Volume 33, Number 2, p 4.). Finally, a symposium event on this topic will come true. Please see the “Upcoming Events” (p. 6). We will definitely welcome you.

Ichthyoplankton long-term monitoring at National Reference Stations

Ana Laura-Lopez (IMOS), Anthony Richardson (University of Queensland), Tim Ward (SARDI), Kerrie Swadling (University of Tasmania), Tim Lynch (CSIRO), Paul van Ruth (SARDI), and Iain Suthers (University of New South Wales)

A proof-of-concept phase for monthly ichthyoplankton sampling has commenced at the National Reference Station moorings which are part of Australia’s Integrated Marine Observing System (IMOS).



Composition of fish larvae from Port Hacking, Maria Island, and North Stradbroke Island since September 2014.

The vessels that visit the moorings for maintenance and calibration are used for this new project, although ichthyoplankton monitoring is not yet officially part of IMOS. The project started sampling at Port Hacking (near Sydney) and Stradbroke Island (near Brisbane) stations in September 2014, followed by Kangaroo Island (near

Adelaide) in October 2014 and Maria Island (near Hobart) in November 2014. Since then, we have sampled these stations monthly, when weather permits, concurrent with the established National Reference Station sampling for physical-chemical variables, phytoplankton and zooplankton.

...continued on p. 4

Section Officers

President

Myron Peck
 Institut für Hydrobiologie und
 Fischereiwissenschaft
 University of Hamburg
myron.peck@uni-hamburg.de

Secretary

Fred Scharf
 Department of Biology & Marine Biology
 University of North Carolina, Wilmington
scharff@uncw.edu

Treasurer

Jeffrey Buckel
 Center for Marine Sciences &
 Technology
 North Carolina State University
jeffrey_buckel@ncsu.edu

President-Elect

vacant, election pending

Secretary-Elect

vacant, election pending

**HELP KEEP
STAGES INTERESTING...**

Send us a report of your
research activities.



Northeast Region

Dave Richardson

from: Ken Able, Rutgers University Marine Field Station (RUMFS), Tuckerton, New Jersey

Our larval fish collection time series reached a milestone in the last year. We measured our one millionth larva. Fittingly, it was a summer flounder (*Paralichthys dentatus*) from the night of January 20, 2014 that was part of our weekly collections (25+ years at Little Egg Inlet, New Jersey). This event is chronicled in the preface of a new book by Ken Able (Station 119: From Life Saving to Marine Research, Down the Shore Publishing, anticipated publication April – May 2015). The book traces the history of research in southern New Jersey estuaries from the late 1800s to the present as viewed from the eyes of RUMFS. Recently, (2012-2014) we have expanded the coverage of our sampling to include other inlets and thoroughfares in adjacent Barnegat Bay to evaluate the spatial variation in larval supply. In addition, we have begun to determine connectivity in summer flounder populations along the east coast of the U.S. with genetic (led by Malin Pinsky, Olaf Jensen, and Ken Able from Rutgers) and otolith microchemistry (with Joel Fodrie from the University of North Carolina) techniques on larvae from our time series at Little Egg Inlet as well as Roosevelt Inlet in Delaware Bay, York River in Chesapeake Bay, and Beaufort Inlet in North Carolina, with support from Sea Grant programs. §



Western Region

Dan Margulies

from: Jeanne Wexler, Inter-American Tropical Tuna Commission (IATTC), La Jolla, California

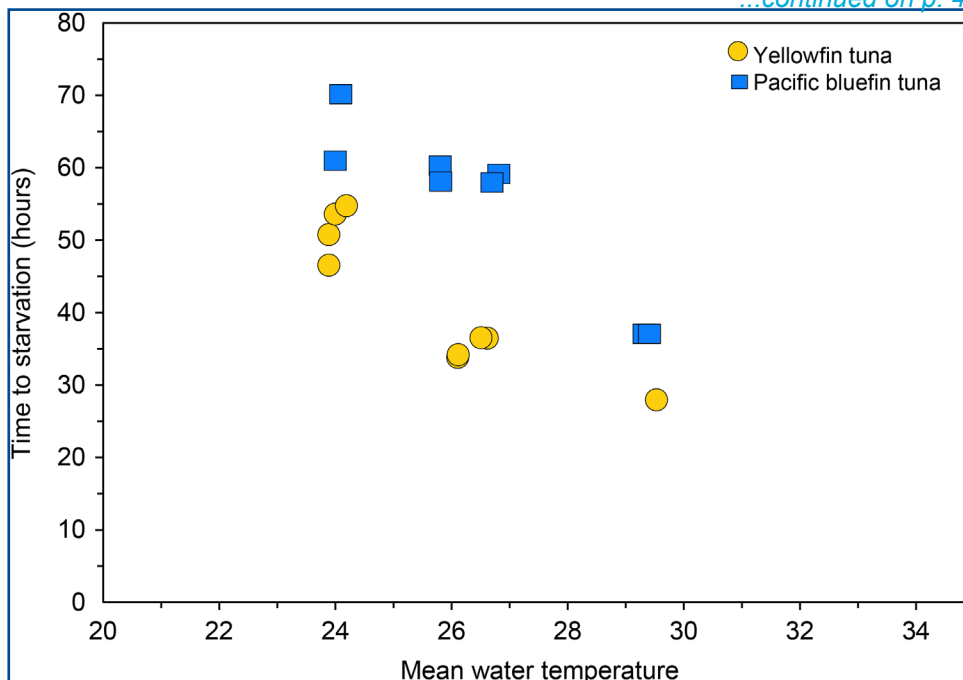
The Early Life History Group of the IATTC conducts ecological research on the reproductive biology and early life stages of tunas. The group members are Daniel Margulies, Vernon P. Scholey, Jeanne B. Wexler, and Maria S. Stein. The following is a summary of ongoing comparative research on the early life histories of Pacific bluefin and yellowfin tuna.

Comparative growth and survival studies of yellowfin (*Thunnus albacares*) and Pacific bluefin (*Thunnus orientalis*) tuna larvae. by Jeanne Wexler*, Daniel Margulies*, Maria Stein*, Yang-Su Kim, Tsukasa Sasaki, Vernon Scholey, Tomoki Honryo, Angel Guillen, and Susana Cusatti, Yoshifumi Sawada.

*Wexler, Margulies and Stein are co-lead authors of the study.

Comparative growth studies of yellowfin (*Thunnus albacares*) (YFT) and Pacific bluefin (*Thunnus orientalis*) (PBT) tuna larvae were conducted between 2011 and 2014 at the IATTC's Achotines Laboratory in Panama and the Kinki University Fishery Laboratory in Japan as part of a 5-year research project of the SATREPS Program (Science and Technology Research Partnership for Sustainable Development) funded by JICA (Japan International Cooperation Agency) and JST (Japan Science and Technology Agency). As part of the SATREPS program, scientists of the IATTC's Early Life History Group and KU staff members completed an ongoing series of growth experiments with Pacific bluefin and yellowfin tuna larvae to compare the survival and growth potential between the two species after exposure to a gradient of relatively low and high mean daily food levels (170-, 318-, 505-, 2022-, and 3752 prey L⁻¹) of uniformly small prey during the first 10 days of feeding and after exposure to a 2-day delay in feeding of optimal prey levels. Experiments were also conducted in 2013 and 2014 to estimate starvation duration of PBT and YFT larvae reared at water temperatures between 24°C and 29°C. These experiments were conducted from the time of first feeding until the time when 100% mortality occurred.

...continued on p. 4



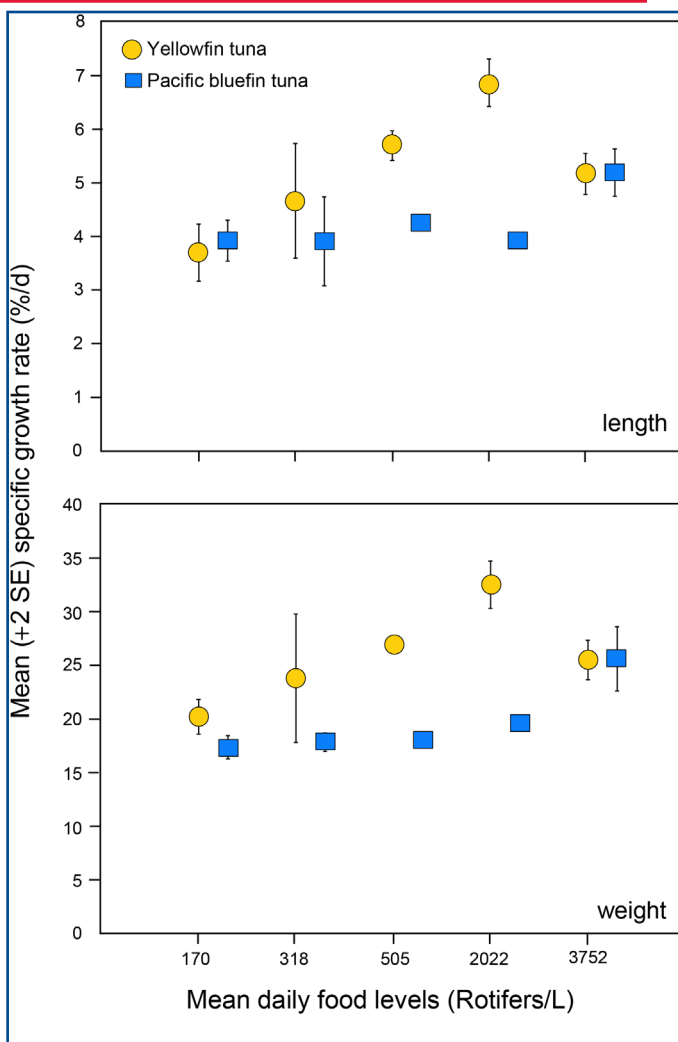
Starvation durations of Pacific bluefin and yellowfin tuna larvae at different water temperatures.

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

Prey availability has a large influence on vital rates (i.e., growth and mortality) of tuna larvae especially during the first week of feeding when larvae may encounter suboptimal feeding conditions. Although PBT are temperate to subtropical and yellowfin are tropical to subtropical in their adult life histories, the early life stages of both species require warm-water ecosystems (> 24°C) as nursery grounds, thus providing a common background for comparative studies. PBT larvae may be vulnerable to adverse feeding conditions given the spatio-temporal limitations of PBT spawning compared with that of YFT.

Comparative experiments are ongoing, but preliminary results indicate that PBT larvae hatch and initiate feeding at slightly larger sizes than YFT. PBT larvae, given their larger size and greater endogenous energy reserves, exhibit greater resistance to starvation at first-feeding (9-25 h longer, depending on temperature) compared to YFT (see figure on p. 3). However, larger size confers no apparent advantage on Pacific bluefin

larvae in terms of growth (see figure on right) or survival when small microzooplankton prey are the prevalent forage. YFT larvae exhibit greater growth potential and higher survival when foraging on small microzooplankton prey. However, greater size of PBT larvae may confer feeding and growth advantages when foraging on large zooplankton prey, and this hypothesis is being experimentally investigated in 2015. The growth and survival characteristics of both species will be integrated into models that may be used to predict pre-recruit survival based on measureable physical and biological processes. §



Mean specific growth rates in standard length (top panel) and dry weight (bottom panel) for yellowfin and Pacific bluefin larvae over a range of mean daily food levels during the first 10 days of feeding.

Pacific Rim Region...cont'd from p. 2

The 85-cm diameter ring net with 500-µm mesh is towed near-surface at 1.5 knots capturing abundant fish larvae, fish eggs, and the large zooplankton that is missed by using the National Reference Station drop net.

We have begun sorting and identifying fish larvae. There has been a mix of commercially important and recreational species, along with other fish larvae that are important ecosystem components (see figure on p. 2). We have found more species of fish larvae off North Stradbroke Island, including important commercial and recreational species such as trevallies, tunas, snappers, tailors, flatheads and sweetlips. Off Port Hacking, the major commercial and recreational fish larval species we have found include trevallies, flatheads, whittings and rockcods. Time series of larval abundance of this species will provide new insights into the seasonal and inter-annual dynamics of these species. Off Maria Island we have found sardine, jack mackerel, yellow tail scad and flathead.

In this initial 12 months we wish to resolve the costs and logistics of this program, and to determine how the

monthly sampling concurs with broader scale sampling for the larval sardine monitoring program.

How to identify formalin-preserved eggs of Japanese jack mackerel *Trachurus japonicus*.

Formalin-preserved eggs of Japanese jack mackerel *Trachurus japonicus* have long been considered difficult to identify. This problem has been a bottleneck in utilization of formalin-preserved egg samples taken by egg and larval surveys in Japan. Recently, Nishiyama et al. (2014) provided a practical identification of Japanese jack mackerel eggs from formalin-preserved samples based on morphological characteristics with validations through DNA sequencing and a rearing experiment. The

...continued on p. 7



*Formalin-preserved egg of *Trachurus japonicus* 1 year after fixation. Arrow heads indicate the segmentation of the yolk. Bar: 0.1 mm.*

Joanne Lyczkowski-Shultz Retires

Joanne Lyczkowski-Shultz retired from the National Oceanic and Atmospheric Administration Lab (NOAA), National Marine Fisheries Service (NMFS), Mississippi Laboratories, Pascagoula, Mississippi in January 2015 after 23 years of Federal service.

Joanne was born in upstate New York, near Lake Erie in 1947. She received a B.S. degree in Biology from the State University of New York at Buffalo in 1979. She went on to receive her M.S. degree in Marine Science from the College of William and Mary in Virginia in 1971, conducting her research at the Graduate School of Marine Science, Virginia Institute of Marine Science (VIMS). Joanne received her Ph.D. in Oceanography from the University of Maine, Orono, in 1980. Her dissertation research was a comparison of the early life history of five species of marine sculpins (Cottidae), which emphasized a comparison of larval diets.

A colleague of Sally Leonard Richardson, Joanne worked with Sally as a Research Associate at Oregon State University then moved to Mississippi to work at the Gulf Coast Research Laboratory and the University of Southern Mississippi, before joining NOAA.

At the Pascagoula Lab, Joanne served as a Supervisory Research Fisheries Biologist. She was Leader of the SEAMAP (Southeastern Area Monitoring and Program) Plankton Team. She served as the Southeast Fisheries Science Center (NMFS) representative to the Poland and the United States of America Joint Fisheries Ecology Program Advisory Committee. In this capacity, Joanne visited the Zakład Sortowania Oznaczania Planktonu (ZSIOP), the Polish Sorting Center, to coordinate larval fish taxonomy for the Southeast Fisheries Center with her close Polish colleagues.

Throughout her career, Joanne's research focused on the early life history of fishes. After her dissertation research, much of her work was in the taxonomy of larval marine fishes, but she also thought about the application of larval fish characters to systematic relationships and to fisheries science. An example of Joanne's productivity in larval fish taxonomy is her contributions to W. J. Richard's "Early Stages of Marine Fishes: An Identification Guide for the Western Central North Atlantic" (2006). Joanne authored 12 chapters and co-authored 5 others, including an introduction of the larvae of the order Pleuronectiformes, chapters on the three pleuronectiform families, and chapters on 14 other families unrelated to the pleuronectiforms. In recent years, Joanne added process-oriented papers on larval fish ecology and distribution to her repertoire.

Joanne was a naturalist, a lover of both plants and animals. As a natural historian, a story of Joanne's fascination with birds comes to mind. While at sea looking for spawning areas for blue-fin tuna (and other scombrids) in the northern and



Joanne Lyczkowski-Shultz is seemingly never without a smile. Photo from www.digitalplankton.lsu.edu/django/planktonarchive/col/people

central Gulf of Mexico, a cattle egret happened aboard NOAA Ship *Chapman* one evening, and stayed aboard for several days. For birds that normally inhabit terrestrial habitats to come aboard ships at sea far from land is not entirely uncommon as they occasionally do so following migratory routes, but for an obviously vagabond, terrestrial bird to remain onboard for any length of time, is unusual. Joanne determined that the cattle egret was dehydrated and disoriented, as well as hungry, and probably displaced. She adopted the bird, providing it with Gatorade and food from the galley, and even brought the bird into the "Chief Scientist" cabin, which she occupied, at night, much to the amusement of both the ship's crew as well as the scientific party. She saved the bird, which she named it "Wilbert" (the given name of NOAA Ship *Chapman's* namesake), and released it when we returned to port, two weeks later.

A member of the Early Life History Section, Joanne gave the keynote address at the 30th annual Larval Fish Conference in Lake Placid, New York. Her talk was on the role of larval fish surveys in stock assessment.

Joanne retires to her home in Ocean Spring, Mississippi, to tend her garden, and pursue her other avocations, though time will be split with her other home in Arkansas. §

— Jeff Govoni
ELHS Historian

Upcoming Events

Growth-Survival Symposium in Yokohama, Japan

A symposium on “Growth–survival paradigm in early life stages of fish: Controversy, synthesis, and multidisciplinary approach” will be held in Yokohama, Japan, November 9–11, 2015. Registration is now open. We are also accepting contributed papers. The symposium will focus on growth and survival, but the poster session will welcome a broader range of topics on early life biology of fishes. Please check the website (cse.fra.affrc.go.jp/takasuka/gsp) for details.

Symposium website: We will look forward to seeing you in Yokohama this autumn.



Organizers: Akinori Takasuka, Dominique Robert, Jun Shoji, and Pascal Sirois (Japan–Canada collaboration team).

Summary of the symposium:

An open-style symposium and a workshop (invited participants only) will be held to challenge fundamental issues on the “growth–survival” paradigm in early life stages of fishes, which postulates that larger and/or faster-growing individuals are more likely to survive than smaller

and/or slower-growing conspecifics. The “growth–survival” paradigm has been given much attention in studies on recruitment dynamics of fishes. Indeed, numerous studies have tested the paradigm during the last quarter century. However, that growing body of literature has revealed contradictory evidence from field, laboratory, and modeling studies across systems and taxa. The objectives of the present symposium/workshop are (1) extracting controversial issues on the paradigm (controversy), (2) proposing ideas for reconciling and synthesizing contradictory results based on different perspectives from different study groups (synthesis), and (3) promoting a collaborative framework for field, laboratory, and modeling studies (multidisciplinary approach). The symposium is mainly constructed of oral presentations from invited speakers, although relevant contributed presentations may also be accepted. The goal of the subsequent workshop is to produce manuscripts for publication from the discussion of key topics. Overall, we aim to improve our understanding of growth–survival relationships in order to facilitate the prediction of recruitment dynamics through numerical modeling. §

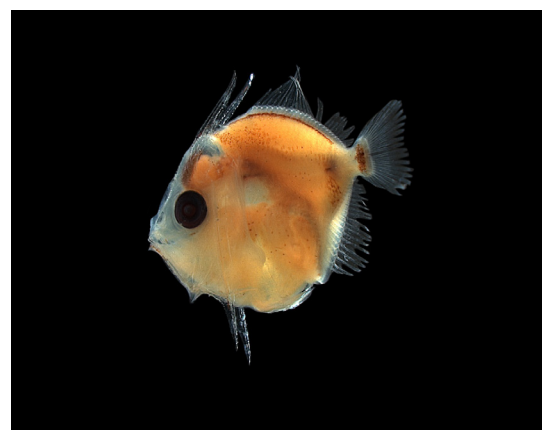
Larval Fish Workshop at the Virginia Institute of Marine Science

The Virginia Institute of Marine Science Nunnally Ichthyology Collection in Gloucester Point, VA, is home to a large ichthyoplankton collection. This collection contains samples from the tropical and northern Pacific Ocean, the Southern Ocean, the Amazon Plume, Sargasso Sea, the Caribbean, the Mid- and South Atlantic Bights, and the Chesapeake Bay. As part of our current NSF CSBR grant, we are hosting a larval fish workshop from October 5–16, 2015. Goals of the workshop include: 1) how to sort and identify larval fishes; 2) preparation, storage, and curation of larval fish collections; and 3) imaging techniques for larval fishes.

The workshop is open to students, collections managers, curators, and other museum and research professionals.

The focus of the first week of the workshop will be on mesopelagic samples collected in subtropical Hawaiian waters and the subarctic North Pacific. The second week will focus on samples from the western tropical Atlantic in and adjacent to the Amazon River plume. Participants will sort and identify ichthyoplankton samples to the family level under the guidance of four expert taxonomists: Drs. Jeff Leis (University of Tasmania), Ann Matarese (Alaska Fisheries Science Center, NOAA), Nalani Schnell (Muséum National d’Histoire Naturelle), and G. David Johnson (Smithsonian Institution).

If interested please contact Dr. Peter Konstantinidis (peterk@vims.edu) for an application form, or you can download one from the VIMS Nunnally Ichthyology Collection website: www.vims.edu/research/facilities/fishcollection. Applicants can attend both weeks of the workshop or either the first or second week. However, preference will be given to individuals that are able to attend both weeks. Applications are due on August 1, 2015 and a notification of acceptance will be made by August 15, 2015. §



Tips for Successful Grant Writing

The newly formed Early Career Committee (ECC) of the Early Life History Section is hosting a short workshop at this year's Larval Fish Conference in Vienna. Based on the results we received from the short survey we circulated in March; the theme of this short workshop is advice for successful grant writing. In addition to focusing on grant writing, this workshop will also cover writing techniques for non-native English speakers that can be applied generally to scientific writing. We will also be providing additional information regarding potential funding sources, especially for travel and research supplies, within the European Union and North America.

The workshop will be hosted by the ECC members, Alison Deary, Matthias Paulsen, and David Costalago, with Dr. Myron Peck providing additional expertise and suggestions. The workshop will be held on Wednesday July 15th in the early evening after the oral sessions have finished and will last approximately 1.5 hours. Please refer to the conference schedule during the meeting for the specific time and location of the workshop. This event is open to all interested individuals and we look forward to seeing you in Vienna in July!

— Alison Deary and ECC

Pacific Rim Region...cont'd from p. 4

diagnostic characteristic for identification was the egg diameter and the segmentation of the yolk, which was maintained in formalin-preserved samples even long after fixation (see photo on p. 4).

Nishiyama et al. (2014) received the 2014 Award of Excellence for Scientific Papers from the Japanese Society of Fisheries Science on March 29, 2015. A photo of the occasion is shown below. The paper was highly evaluated for its potential contribution to the stock assessment of Japanese jack mackerel.

Reference

Nishiyama, M., Saito, M., Sanada, Y., Onoue, S., Takasuka, A., and Oozeki, Y. (2014) Revisiting morphological identification of Japanese jack mackerel *Trachurus japonicus* eggs preserved in formalin. *Fisheries Science*, 80:517–529.

Masato Nishiyama (right, first author) and Mami Saito (left, co-author) showing the award certificate at the ceremony of the Japanese Society of Fisheries Science in Tokyo on March 29, 2015.



Early Life is Good circles the globe. Our ELHS members and supporters Paula Patrick, South Africa Institute for Aquatic Biodiversity, and Karen Chan, Honk Kong University of Science and Technology. Game on!

Support the EHLs Wherever You Are!

The challenge is on. Show us you in your ELHS, “Early Life is Good” t-shirt and we’ll show you off. Best photo wins a 2015 version of our shirt. The 2014 style is still available in either women’s short-sleeve (sizes L, XL; color: blackberry – see photo) or men’s/unisex cut (S, M, XL in navy) with a few men’s long-sleeve (S only; charcoal – see photo in Oct 2014 STAGES, p. 7). Any one is yours for a \$20 donation to the ELHS. Get one for your students, friends, or yourself – onesie version available – all are great recruiting tools!

Contact Chris Chambers for details (chris.chambers@noaa.gov). All proceeds beyond cost go to support ELHS Student Activities.



39th Annual Larval Fish Conference Program

Oral presentations

Session 1: Dispersal and Early Life History of Early Stages in Rivers

THE DISTRIBUTION OF FLATFISH LARVAE IN RELATION TO VARIABLE OCEANOGRAPHIC CONDITIONS DURING THREE CRUISES ALONG THE NORTEHRN NSW COAST OF AUSTRALIA. - Tony Miskiewicz (Australia)

OTOLITH CHEMISTRY TO IDENTIFY SOURCES OF LARVAL YELLOW PERCH PRODUCTION AND GUIDE THE CONSERVATION OF THEIR ESSENTIAL HABITATS IN A FLUVIAL LAKE. - Pascal Sirois (Canada)

EARLY-LIFE HISTORY PRODUCTIVITY LANDSCAPES IN A LARGE HETEROGENOUS RIVER SYSTEM (ST. LAWRENCE, CANADA-US). - Frederic Lecomte (Canada)

THE DRIFT OF EARLY LIFE STAGES OF PERCIDAE AND GOBIIDAE IN THE AUSTRIAN DANUBE. - David Ramler (Austria)

FISH SPAWNING DOWNSTREAM OF IGUAÇU FALLS - IGUAÇU NATIONAL PARK: SEASONAL AND LONGITUDINAL VARIATIONS OF EARLY STAGES. - Maristela Makrakis (Brazil)

IMPORTANCE OF HIGH AND LOW FLOWS FOR RIVERINE FISH SPAWNING IN THE WET-DRY TROPICS OF NORTHERN AUSTRALIA. - Alison King (Australia)

THE BIOCHEMICAL PRECONDITIONS OF INTRAPOPULATION DIFFERENTIATION OF YOUNG FISH OF ATLANTIC SALMON *SALMO SALAR* L. - Nina N. Nemova (Russian Fed.)

BIOLOGY OF LAMPREY DURING ITS LARVAL STAGE. - Dmitry S. Pavlov (Russian Fed.)

COMPARATIVE PATTERN OF FISH LARVAE DRIFT IN THE DANUBE IN VIENNA. - Paul Meulenbroek (Austria)

IMPACT OF WATER OBSTACLES ON MIGRATING EELS: INSIGHTS FROM TRANSCRIPTOME AND BEHAVIORAL ANALYSES.. - Tomasz Podgorniak (France)

TEMPORAL-SPATIAL PATTERN OF LARVAL FISH ASSEMBLAGE IN THE LOWER REACH OF THE YANGTZE RIVER: POTENTIAL EFFECTS OF RIVER-LAKE CONNECTIVITY AND TIDAL INTRUSION. - Fei Cheng (China)

AMBITIOUS AMPHIDROMY: USING OTOLITH MICROCHEMISTRY TO DETERMINE THE NATAL SOURCE OF WHITEBAIT. - Mike Hickford (New Zealand)

SPACIAL AND TEMPORAL VARIABILITY OF DOWNSTREAM MIGRATION OF AMPHIDROMOUS GOBIES FREE EMBRYOS. - Raphaël Lagarde (France)

DRIFT OF FISH LARVAE IN THE RHINE BEFORE AND AFTER THE GOBY INVASION. - Jost Borcherding (Germany)

DOWNSTREAM MIGRATION AND MECHANISMS OF DISPERSAL OF YOUNG FISH IN RIVERS.. - Dmitrii Pavlov (Russian Fed.)

INTEGRATING LIFE HISTORY THEORY AND DISPERSAL IN RIVERINE FISHES. - Paul Humphries (Australia)

EARLY ONTOGENESIS OF EUROPEAN SMELT (*OSMERUS EPERLANUS*) IN VARIABLE ENVIRONMENTS. - Timo Arula (Estonia)

THE RELATIONSHIP BETWEEN LARVAL FISH STRUCTURE AND ENVIRONMENT CHANGE IN THE EAST CHINA SEA. - Yichen Wang (Taiwan)

Session 2: Particle Tracing, Hydrodynamic Models and Dispersal of Fish Larvae

VALIDATION OF HYDRODYNAMIC OCEAN MODELS USING EMPIRICAL DATA FOR THE PURPOSE OF LARVAL DISPERSAL MODELLING. - Roxana Vasile (Australia)

MODELLING ANCHOVY LARVAL GROWTH, SURVIVAL AND VERTICAL MIGRATION PATTERNS IN DIFFERENT AREAS OF THE BAY OF BISCAY. - Agurtzane Urtizbera (Spain)

EVALUATING SURFACE TRANSPORT PREDICTIONS OF ALTERNATIVE OCEAN-ATMOSPHERE MODELS USING SURFACE DRIFTERS IN THE BELIZEAN BARRIER REEF. - David Lindo-Atichati (USA)

THE DESIGN OF AN INDIVIDUAL BASED LARVAL MODEL (ILAM) RELIANT ON MOVEMENT PATTERNS AND BIASED RANDOM WALK TO ACCOUNT FOR RHEOREACTION WITHIN RIVERINE ECOSYSTEMS. - Martin Glas (Austria)

CONNECTING SURVEY DATA IN SPACE AND TIME: MODELLING BEYOND PASSIVE DRIFT!. - Marc Hufnagl (Germany)

CORAL DIVERSITY AS A KEY FACTOR IN REEF FISH LARVAL DISPERSION AND SETTLEMENT. - Romain Chaput (USA)

IS COASTAL COD (*GADUS MORHUA*) RECRUITMENT STRUCTURED WITHIN HYDRODYNAMIC PROVINCES?. - Mats Huserbraten (Norway)

INTERACTION BETWEEN SPAWNING HABITAT AND COASTALLY STEERED CIRCULATION REGULATE LARVAL FISH RETENTION IN A TEMPERATE BAY. - Itziar Alvarez (Spain)

TRANSPORT MECHANISMS IN THE LARVAL MIGRATION OF JAPANESE SPINY LOBSTER. - Yoichi Miyake (Japan)

USING PLANKTON AGGREGATIONS TO UNDERSTAND OIL DISTRIBUTION IN NEARSHORE RIVER-DOMINATED ECOSYSTEMS IN THE NORTHERN GULF OF MEXICO. - Alison L. Deary (USA)

...continued on p. 9

39th Conference Program...cont'd from p. 8

CALIBRATION OF A SOLE LARVAL TRANSPORT MODEL USING ICES SURVEY ASSESSEMENTS. - Leo Barbut (Belgium)

SARDINE EGG AND LARVAE DISTRIBUTIONS OVER THE ATLANTIC IBERIAN SHELF. - Maria Angelico (Portugal)

Session 3: Larval dispersal and population connectivity - genetic approaches to ecological problems

NOT FINDING NEMO: LIMITED REEF-SCALE RETENTION IN CORAL REEF FISH. - Michael Berumen (Saudi Arab)

PREFERENTIAL HABITATS OF SPAWNING AND GENETIC FLOW OF *PROCHILODUS LINEATUS* IN A NEOTROPICAL REGULATED RIVER. - Maristela Makrakis (Brazil)

DISPERSAL IN PUGET SOUND BROWN ROCKFISH (*SEBASTES AURICULATUS*) FROM GENETIC PARENTAL IDENTIFICATION AND OCEANOGRAPHIC MODELS. - Lorenz Hauser (USA)

PELAGIC LARVAL DURATIONS AND RECRUITMENT PATTERNS OF CORAL REEF FISHES IN THE ENVIRONMENTAL GRADIENT OF THE RED SEA. - Vanessa S N Robitzch (Saudi Arab)

LINKING LARVAL TRAITS AND GENETIC TRAITS: PERSPECTIVE FROM HAWAIIAN REEFS. - Kimberly Selkoe (USA)

HIGH INTERANNUAL VARIABILITY IN THE GENETIC POOL OF A TEMPERATE CLINGFISH (*LEPADOGASTER LEPADOGASTER*, BONNATERRE (1788)). - Maria Klein (Portugal)

OCEANOGRAPHY AND LIFE HISTORY PREDICT CONTRASTING LARVAL DISPERSAL AND GENETIC POPULATION STRUCTURE IN TWO ANTARCTIC FISH SPECIES. - Emma Young (United Kingdom)

NOVEL, HIGH-THROUGHPUT DNA BARCODING OF THE ICTHYOPLANKTON OF THE GULF OF AQABA PROVIDE NEW INSIGHTS INTO THE ECOLOGY OF CORAL-REEF FISHES. - Naama Kimmerling (Israel)

MURRAY COD LARVAL DRIFT IN AN UPLAND RIVER. - Alan Couch (Australia)

PATTERNS AND PREDICTORS OF SPATIAL GENETIC STRUCTURE WITHIN A CORAL REEF FISH METAPOPOPULATION. - Cassidy D'Aloia (USA)

A COMPLETE MARINE LARVAL DISPERSAL KERNEL. - Peter Buston (USA)

SEASONAL OCCURRENCE AND RECRUITMENT OF THE LARVAL FISH OF THE THREE *MUGIL CEPHALUS* CRYPTIC SPECIES IN TAIWAN. - Kang-Ning Shen (Taiwan)

SELF-RECRUITMENT VERSUS LARVAL DISPERSAL BETWEEN POPULATIONS OF SKUNK CLOWNFISH AROUND UNGUJA ISLAND, ZANZIBAR. - Filip Huyghe (Belgium)

SPATIAL GENETIC STRUCTURE IN THE SADDLE SEABREAM (*OBLADA MELANURA*, [LINNAEUS, 1758]) SUGGESTS MULTI-SCALED PATTERNS OF CONNECTIVITY BETWEEN PROTECTED AND UNPROTECTED AREAS IN THE WESTERN MEDITERRANEAN SEA. - Antonio Calò (Spain)

IDENTIFICATION, SPATIOTEMPORAL DISTRIBUTION AND GENETIC CHARACTERIZATION OF GREY MULLET FRY IN TUNISIAN RESERVOIRS. - Sami Mili (Tunisia)

Session 4: "The secret life of larvae" - individual life history and fate from otolith studies

NATAL ELEMENTAL SIGNATURES IN THE OTOLITHS OF *LIPOPHRYS PHOLIS* (PISCES: BLENNIIDAE). - Roxana Vasile (Australia)

THE PROBLEM OF LIFE AND DEATH IN THE PLANKTON: USING OTOLITH MICROSTRUCTURE TO EXAMINE SELECTIVE MORTALITY IN YOUNG FISHES. - Su Sponaugle (USA)

HATCHING PERIOD AND YOUNG OF THE YEAR GROWTH OF THE ANNULAR SEABREAM, *DIPLODUS ANNULARIS* (LINNAEUS, 1758), BASED ON OTOLITH MICROSTRUCTURE ANALYSIS. - Hakan Ayyildiz (Turkey)

THE INTERACTING EFFECTS OF PREY AVAILABILITY AND TEMPERATURE ON LARVAL FISH GROWTH: POTENTIAL IMPLICATIONS FOR THE "GROWTH-SURVIVAL" PARADIGM. - John Dower (Canada)

SIZE SELECTIVE MORTALITY OF CULTURED ATLANTIC BLUEFIN TUNA LARVAE INFERRED FROM OTOLITH MICROSTRUCTURE ANALYSIS. - E Blanco (Spain)

EARLY LIFE STAGES OF FLATFISH: OTOLITH MICROSTRUCTURE REVEALS PATTERNS OF DISPERSAL AND JUVENILE DYNAMICS. - Andreas Bavière (Belgium)

EARLY LIFE HISTORY TRAITS OF HORSE MACKEREL RECRUITING TO A NEARSHORE ROCKY REEF AREA. - Maria Klein (Portugal)

SHAPING YOUR PAST: CAN OTOLITH SHAPE AND STRUCTURE IDENTIFY DISPERSAL HISTORIES IN AN AMPHIDROMOUS GALAXIID?. - Eimear Egan (New Zealand)

DAILY AGE ESTIMATION OF YOUNG OF THE YEAR COMMON PANDORA, *PAGELLUS ERYTHRINUS* BASED ON OTOLITH MICROSTRUCTURE ANALYSIS. - Aytac Altin (Turkey)

Session 5: Ecophysiology of early life stages: From measurements to models

INDICATION OF INTERSPECIFIC DIFFERENCES IN METABOLIC ACTIVITY AND HYPOXIA TOLERANCE IN EARLY LIFE STAGES OF KEY FISH SPECIES FROM THE NORTHERN BENGUELA UPWELLING SYSTEM,

...continued on p. 10

39th Conference Program...cont'd from p. 9

NAMIBIA, DERIVED FROM METABOLIC ENZYMATIC ACTIVITIES. - Rashid Musa Imam (Germany)

BEHAVIOURAL AND PHYSIOLOGICAL RESPONSES TO PREY MATCH-MISMATCH IN LARVAL HERRING. - Myron Peck (Germany)

PHYSIOLOGICAL RESPONSE ON A NEW LEVEL - GENE EXPRESSION ANALYSIS IN HERRING LARVAE IN RELATION TO TEMPERATURE AND CO₂. - Catriona Clemmesen (Germany)

GLOBAL CHANGE AND STRESS: BALANCING ENERGETICS OF INNER AND OUTER ECOSYSTEMS IN DEVELOPING FISHES.. - Ione Hunt von Herbing (USA)

OCEAN ACIDIFICATION INCREASES FATTY ACIDS LEVELS OF LARVAL FISH. - Carlos Diaz Gil (Spain)

SKELETAL DEVELOPMENT AND TRANSCRIPTION OF GENES ASSOCIATED WITH VITAMIN C BIOSYNTHESIS, GROWTH, AND OXYGEN SENSING DURING EARLY DEVELOPMENT OF STURGEONS. - Arash Akbarzadeh (Iran)

METABOLIC PROGRAMMING IN A MARINE FISH LARVA. - Lee Fuiman (USA)

PROJECTED HABITAT LOSS FOR MARINE FISH IN THE BALTIC SEA. - Björn Illing (Germany)

EFFECT OF FREE AMINO ACIDS AND NATURAL EXTRACTS ON THE TRYPTIC ENZYME ACTIVITY OF EUROPEAN SEA BASS LARVAE (*DICENTRARCHUS LABRAX* L.). - Myron Peck (Germany)

ROUTINE SWIMMING SPEED OF BLUEFIN TUNA LARVAE MEASURED IN THE LABORATORY. - P Reglero (Spain)

Session 6: Natural mortality in the egg and larvae stages of fishes

HOW MUCH OF THE SOLE EARLY LIFE STAGE MORTALITY VARIABILITY IS EXPLAINED BY EGG AND LARVAL DISPERSAL AND BY MISMATCH WITH ALGAL BLOOM IN THE NORTH SEA?. - Geneviève Lacroix (Belgium)

SURVIVAL AND GROWTH OF HERRING (*CLUPEA HARENGUS* L.) EGGS AND LARVAE AT DIFFERENT SALINITIES. - Arild Folkvord (Norway)

SPAWNING BED SELECTION OF ATLANTIC HERRING (*CLUPEA HARENGUS*) IN COASTAL WATERS OF THE WESTERN BALTIC SEA. - Dorothee Moll (Germany)

LARVAL ATLANTIC HERRING (*CLUPEA HARENGUS*) FEEDING ACTIVITY IN RELATION TO PREFERRED PREY ABUNDANCE AND SURVIVAL OFF THE COAST OF NEWFOUNDLAND. - Carissa Currie (Canada)

EXPLORING LINKS BETWEEN MICROZOOPLANKTON AND LARVAL HERRING (*CLUPEA HARENGUS*) IN THE IRISH SEA. - Franziska Bils (Germany)

ANCHOVY EGG MORTALITY IN THE GULF OF CADIZ AND ITS APPLICATION TO EGG PRODUCTION ESTIMATION. - Paz Diaz (Spain)

DO YOU LIKE IT WARM OR COLD? TEMPERATURE DEPENDENT MORTALITY OF EARLY LIFE-STAGES OF ATLANTIC COD (*GADUS MORHUA*) IN THE NORTH SEA. - Anna Akimova (Germany)

RESOLVING POTENTIAL PREY FIELDS OF ATLANTIC HERRING (*CLUPEA HARENGUS*) LARVAE IN THE NORTH SEA. - Carlos Palacio-Barros (Germany)

Session 7: Early Life History of Eels

LINKAGE BETWEEN ATLANTIC EEL LARVAE DISTRIBUTION AND MESOSCALE EDDIES IN THE SARGASSO SEA.. - Peter Munk (Denmark)

EARLY LARVAL GROWTH RATE AND HATCHING TIME OF ATLANTIC EELS IN THEIR SARGASSO SEA SPAWNING AREA. - Michael Miller (Japan)

NEW INSIGHTS INTO FEEDING BIOLOGY OF THE EUROPEAN EEL (*ANGUILLA ANGUILLA*) VIA MOLECULAR ANALYSES OF GUT CONTENTS, MARINE SNOW AND ZOOPLANKTON. - Daniel Ayala (Denmark)

ORIENTATION OF EUROPEAN GLASS EELS (*ANGUILLA ANGUILLA*) ARRIVING AT THE NORWEGIAN COAST. - Alessandro Cresci (USA)

THE SPATIAL AND TEMPORAL DISTRIBUTION OF THE TOTAL LENGTH OF *ANGUILLA LEPTOCEPHALI* FROM THREE RECENT SARGASSO SEA SURVEYS. - Håkan Westerberg (Sweden)

BETWEEN THE JAWS OF THE LEPTOCEPHALUS LARVA: MORPHOLOGY AND BIOMECHANICS OF A RARELY OBSERVED ORGANISM. - Mathias Bouilliart (Belgium)

THE BIOLOGY AND ECOLOGY OF *ANGUILLID LEPTOCEPHALI*: IS LARVAL SURVIVAL A KEY TO RECRUITMENT SUCCESS?. - Michael Miller (Japan)

THE INTERANNUAL VARIATION OF OCEAN CIRCULATION AND THE IMPACT ON JAPANESE EELS DISPERSAL MIGRATION IN WESTERN PACIFIC OCEAN. - Yu-Lin Chang (Taiwan)

Session 8: Biology and Ecology of Early Life Stages

MULTIDISCIPLINARY APPROACH FOR THE STUDY OF LARVAL POPULATION STRUCTURE OF *SARDINELLA AURITA* IN TWO DIFFERENT SITES OF THE MEDITERRANEAN SEA. - Marco Torri (Italy)

WHAT KINDS OF FISHES USING THE KENTING SEA AREA, SOUTHERN TAIWAN AS THEIR SPAWNING AND NURSERY GROUND WITH DNA BARCODED IDENTIFICATION. - Han-Yang Lin (Taiwan)

LARVAL FISH ASSEMBLAGES FROM YEARS WITH DIFFERENT OCEANOGRAPHIC CONDITIONS IN THE SOUTHEASTERN BRAZILIAN BIGHT. - Claudia Namiki (Brazil)

EFFECTS OF TEMPERATURE ON BEHAVIOR AND PHYSIOLOGICAL DEVELOPMENT OF LARVAE OF A COLD STENOTHERMAL FISH, THE BROWN TROUT (*SALMO TRUTTA*).. - Tatiana Colchen (France)

...continued on p. 11

39th Conference Program...cont'd from p. 10

STUDIES OF PLANKTON AS AN EFFECTIVE TOOL TO DETECT NEW INVASIONS. - AP Torres (Spain)

EVALUATING METHODS IN LARVAL FISH TAXONOMY: DNA BARCODING, MORPHOLOGY AND LABORATORY PRACTICES. - Stephanie Borchardt (Germany)

IDENTIFICATION OF FISH EGGS USING METAGENOMICS. - Jae Myung Yoo (South Korea)

CRITICAL TRAITS FOR ADVERSE POPULATION EFFECTS OF MATERNALLY TRANSFERRED TOXICANTS IN FISH. - A.J. Murk (Netherlands)

LARVAL YEAR CLASS STRENGTH AND SPATIOTEMPORAL DISTRIBUTION PATTERNS OF EUROPEAN WHITEFISH (*COREGONUS LAVARETUS* L.) IN PRE-ALPINE AUSTRIAN LAKES. - Josef Wanzenböck (Austria)

LARVAL GROWTH AND DEVELOPMENT OF THE BLACK-FACED BLENNY, *TRIPTERYGION DELAISI* FROM THE ARRABIDA MARINE PARK, PORTUGAL. - Farahnaz Solomon (Portugal)

INVESTIGATING NUTRITIONAL EFFECTS ON GROWTH RATES OF LARVAL HERRING IN THE WESTERN BALTIC SEA. - Matthias Paulsen (Germany)

FISH LARVAL DISTRIBUTION ACROSS HABITATS IN COASTAL EAST AFRICA. - Per Hedberg (Sweden)

LIPIDS AND FATTY ACIDS IN EARLY LIFE HISTORY OF THE MARINE FISH *LEPTOCLINUS MACULATUS* (FRIES, 1838) IN THE ARCTIC WINTER. - Svetlana Pekkoeva (Russian Fed.)

FEEDING STRATEGY OF DOWNS HERRING LARVAE IN THE ENGLISH CHANNEL AND NORTH SEA. - Jeremy Denis (France)

IMPORTANCE OF PLANKTON SEASONALITY ON LARVAL HERRING AND YEAR-CLASS ABUNDANCE OF THE GULF OF RIGA SPRING SPAWNING HERRING (*CLUPEA HARENGUS* M.). - Timo Arula (Estonia)

ECOLOGICAL VERSATILITY ALTERS THE STRENGTH OF PRIORITY EFFECTS FOR SETTLEMENT-STAGE CORAL REEF FISHES IN A DEGRADING ENVIRONMENT. - Davina Poulos (Australia)

ONTOGENY OF ORIENTATION IN ATLANTIC HADDOCK LARVAE MEASURED IN SITU. - Claire B. Paris (USA)

SPATIO-TEMPORAL DYNAMICS OF LARVAL FISH IN THE MAHURY RIVER ESTUARY (FRENCH GUIANA). - Yann Rousseau (F. Guayana)

COLLIDING INDUSTRIES: DISTRIBUTION OF SPAWNING AND FRY OF NORTH SEA FISHES IN THE LIGHT OF SEISMIC EXPLORATION. - Hannes Höffle (Norway)

EIGHT YEARS OF MONITORING LARVAL FISHES IN YORK RIVER, CHESAPEAKE BAY. - Cindy Marin Martinez (USA)

PUFA RICH OIL EMULSION AND ITS EFFECT ON CLOWNFISH *AMPHIPRION SEBAE* LARVAE. - Iyyapparajanarasimapallavan Gunasekaran (India)

EFFECTS OF OCEAN ACIDIFICATION ON THE SKELETAL DEVELOPMENT IN LARVAL STAGES OF HERRING AND COD. - Nalani K. Schnell (France)

CHARACTERISTICS OF AMPHIDROMOUS GOBIOID LARVAE IN RELATION TO LARVAL RETENTION AND DISPERSAL. - Midori Iida (Japan)

A COMPARATIVE EVALUATION OF THE TROPHIC ECOLOGY FOR ATLANTIC BLUFIN TUNA *THUNNUS THYNNUS*: GULF OF MEXICO AND MEDITERRANEAN SEA. - Trika Gerard (USA)

COMPARISON OF FISH AND INVERTEBRATE ASSEMBLAGES AMONG VARIABLY ALTERED TIDAL CREEKS IN A COASTAL LANDSCAPE. - Paul Rudershausen (USA)

LARVAL FISH RESPOND TO CHEMICAL STIMULATION BY DIMETHYLSULFIDE. - Matt Foretich (USA)

FATTY ACID CONSTITUENTS OF STORAGE AND MEMBRANE LIPIDS IN BIOCHEMICAL ADAPTATIONS OF POSTLARVAE AND JUVENILES OF *LEPTOCLINUS MACULATUS* (FRIES, 1838) IN SVALBARD WATERS. - Svetlana A. Murzina (Russian Fed.)

BATHYPELAGIC PERCID FRY, THE ONLY COMMUNITY IN THE VÍR RESERVOIR. - Zuzana Sajdlova (Czech Rep.)

EFFECT OF TEMPERATURE ON THE EARLY LIFE STAGES OF NORTHERN PIKE: *ESOX LUCIUS*. - Emilie Realis-Doyelle (France)

GLOCHIDIA INFECTION OF FISH EARLY LIFE-STAGES: AN EXAMPLE OF HOW INFLUX OF EXOTIC SPECIES AFFECTS HOST-PARASITE RELATIONSHIPS. - Michal Janác (Czech Rep.)

SPATIAL DISTRIBUTION OF FISH LARVAE IN THE ENGLISH CHANNEL AND NORTH SEA INFERRED FROM THE IBTS-MIK SAMPLING. - Christophe Loots (France)

DISTRIBUTION AND DYNAMIC OF LARVAL FISHES IN THE MIDDLE YANGTZE RIVER: PRELIMINARY ANALYSIS ON IMPACT OF THE THREE GORGES DAM. - Yiqing Song (China)

PHOTOTACTIC BEHAVIOR IN LARVAL PIKE PERCH (*SANDER LUCIOPERCA*): A CHANCE FOR GENTLE SIZE GRADING IN AQUACULTURE.. - Moritz Tielmann (Germany)

ONTOGENETIC DEVELOPMENT OF PEPSIN ENZYME AND PEPSINOGEN GENE EXPRESSION IN SOBEITY SEA BREAM LARVAE, *SPARIDENTEX HASTA* (VALENCIENNES, 1830). - M.A. Nematollahi (Iran)

GROWTH, SURVIVAL AND ISOTOPIC COMPOSITION TO EVALUATE FOOD ASSIMILATION IN FIRST FEEDING SEAHORSES. - Sonia Valladares (Spain)

...continued on p. 12

39th Conference Program...cont'd from p. 11

SEASONAL VARIATION OF THE ICHTHYOPLANKTON ASSEMBLAGES IN SHALLOW COASTAL WATERS AROUND GOKCEADA ISLAND (NORTH AEGEAN SEA). - Ismail Burak Daban (Turkey)

LARVAL FISH HABITATS IN A MESOSCALE DIPOLE EDDY IN THE GULF OF CALIFORNIA. - Ethel Apango Figueroa (Mexico)

LEARNING FROM FAILURE: A NEW UNDERSTANDING OF THE FEEDING MECHANISM IN FISH LARVAE. - Victor China (Israel)

EFFECT OF DIETARY L-CARNITINE SUPPLEMENTATION ON GROWTH PERFORMANCE, SURVIVAL RATE AND RESISTANCE TO ENVIRONMENTAL STRESSES IN SOBAITY SEABREAM FRY (*SPARIDENTEX HASTA*). - Iman Sourinejad (Iran)

SPAWNING HABITAT OF *ENGRAULIS ANCHOITA* IN THE SOUTHERN BRAZILIAN BIGHT: A COMPARISON WITH *SARDINELLA BRASILIENSIS*. - Jana Menegassi del Favero (Brazil)

A REVIEW OF RESEARCHES AND APPLICATIONS ABOUT EARLY LIFE HISTORY STAGES OF FRESHWATER FISHES IN CHINA. - Songguang Xie (China)

A REVIEW OF RESEARCHES AND APPLICATIONS ABOUT EARLY LIFE HISTORY STAGES OF FRESHWATER FISHES IN CHINA. - Songguang Xie (China)

MORPHOLOGICAL DEVELOPMENT OF THE DOCTOR FISH (*GARRA RUFA*) LARVAE. - Pinar Celik (Turkey)

SPAWNING SEASONS AND GROUNDS OF REEF FISHES IN THE RED SEA BASED ON ICHTHYOPLANKTON SURVEY. - Mohamed Abu El-Regal (Egypt)

ATLANTIC BLUEFIN TUNA SPAWNING HABITAT IN THE GULF OF MEXICO AND WESTERN CARIBBEAN: RESULTS FROM A RECENT SURVEY OF CUBAN WATERS.. - John Lamkin (USA)

HOW TO MAINTAIN IN AN UPWELLING AREA? SPAWNING STRATEGIES AND LARVAL RETENTION MECHANISMS. - Maik Tiedemann (Germany)

SURFZONE CHARACTERISTICS APPEAR TO DRIVE DIRECT RELATIONSHIP BETWEEN REPRODUCTION AND RECRUITMENT IN A COMMON INTERTIDAL CRAB. - Erin Satterthwaite (USA)

A LARVAL-CENTRIC VIEW OF AMPHIDROMY AND CATADROMY: A LIFE HISTORY CONTINUUM DELIVERING FISH LARVAE TO PELAGIC REARING HABITAT ACROSS CONTRASTING HYDROLOGICAL LANDSCAPES. - Gerry Closs (New Zealand)

NICHE PARTITIONING AND ECOMORPHOLOGY IN EARLY LIFE HISTORY STAGE DRUMS (FAMILY SCIAENIDAE) FROM THE CHESAPEAKE BAY. - Alison L. Deary (USA)

FISH LARVAL COMMUNITY CHANGES PATTERNS IN CREEKS AND ESTUARIES HABITATS (1996 & 2013),

BUSHEHR PROVINCE - PERSIAN GULF. - Mahnaz Rabbaniha (Iran)

ADDITIVE AND SYNERGISTIC EFFECTS OF CONCURRENT ACIDIFICATION AND HYPOXIA ON EARLY LIFE STAGES OF THREE COASTAL FORAGE FISH. - Hannes Baumann (USA)

Poster presentations

PATCHINESS OF EGGS AND LARVAE OF *ENGRAULIS ANCHOITA* FROM THE SOUTHEASTERN BRAZILIAN BIGHT. - Jana Menegassi del Favero (Brazil)

THE EFFECTS OF TEMPERATURE ON GROWTH, SURVIVAL AND AEROBIC SCOPE OF EUROPEAN WEATHERFISH LARVAE (*MISGURNUS FOSSILIS*). - Benjamin Schreiber (Germany)

SIZE DEPENDENT GROWTH IN LARVAL HERRING - ALWAYS AN ISSUE?. - Matthias Paulsen (Germany)

MULTIVARIATE MOPHOMETRIC AND EARLY LIFE STAGES GROWTH PATTERNS OF *AUXIS ROCHEI* (RISSE, 1810) RELATED TO ENVIRONMENTAL CONDITION IN SICILY CHANNEL. - Angela Cuttitta (Italy)

ANTIOXIDANT ENZYME ACTIVITIES VITAMIN E AND LIPID PEROXIDATION DURING EARLY DEVELOPMENT IN UNFED RAINBOW TROUT (*ONCORHYNCHUS MYKISS*) LARVAE. - Hatayi Zengin (Turkey)

OPTIMAL DESIGN FOR LARVAL FISH SAMPLING: A CASE STUDY IN THE TAMSUI ESTUARY, NORTHERN TAIWAN. - Yu-Ming Shih (Taiwan)

SEA-LAGOON CONNECTIVITY: TWO YEARS MONITORING OF EGGS, LARVAE AND POSTLARVAE OF FISH IN THE VENICE LAGOON. - Francesco Cavraro (Italy)

LARVAL FISH ASSEMBLAGES ALONG AN OCEAN-ESTUARINE GRADIENT: CONNECTIVITY EVIDENCES. - Sandra Ramos (Portugal)

DIETARY PHENYLALANINE REQUIREMENT OF LARVAL OLIVE FLOUNDER (*PARALICHTHYS OLIVACEUS*). - Kyeong-Jun Lee (South Korea)

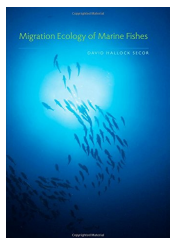
SPATIAL DISTRIBUTION OF ATLANTIC BLUEFIN TUNA LARVAE IN TUNISIAN WATERS IN RELATION WITH ENVIRONMENTAL PARAMETERS. - Wael Koched (Tunisia)

IS THERE A LINK BETWEEN CANNIBAL STATUS AND PERSONALITY IN PIKEPERCH (*SANDER LUCIOPERCA*) LARVAE?. - Elodie Faux (France)

CHARACTERIZING SPATIAL AND TEMPORAL FLOW PATTERNS IN SUCTION FEEDING FISH LARVAE. - Liraz Levy (Israel)

INFLUENCE OF ENVIRONMENTAL VARIABLES ON THE LARVAL STAGES OF ANCHOVY, *ENGRAULIS ENCRASICOLUS*, AND SARDINE, *SARDINOPS SAGAX*, IN ALGOA BAY, SOUTH AFRICA. - David Costalago (France)

...continued on p. 14



Available now: *Migration Ecology of Marine Fishes.*

By David Hallock Secor

Published by Johns Hopkins University Press. 2015. 304pp.

ISBN-13: 978-1421416120

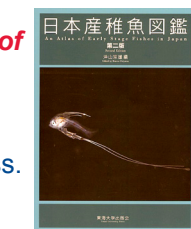
Available from Johns Hopkins University Press, c/o Hopkins Fulfillment Service, P.O. Box 50370, Baltimore, MD 21211-4370, USA or www.press.jhu.edu

With stunning clarity, David Hallock Secor's *Migration Ecology of Fishes* finally penetrates the clandestine nature of marine fish migration. A synthetic treatment of all marine fish taxa (teleosts and elasmobranchs), this book employs explanatory frameworks from avian and systems ecology while arguing that migrations are emergent phenomena, structured through schooling, phenotypic plasticity, and other collective agencies.

The book provides overviews of the following concepts:

- The comparative movement ecology of fishes and birds
- The alignment of mating systems with larval dispersal
- Schooling and migration as adaptations to marine food webs
- Natal homing
- Connectivity in populations and metapopulations
- The contribution of migration ecology to population resilience

Special 30% discount available. Or order by phone: 1-800-537-5487. Be sure to mention the code HNAF to receive the 30% discount.



Available now: *An Atlas of Early Stage Fishes in Japan.* 2nd edition

Edited by Muneo Okiyama

Published by Tokai University Press, Hadano, Japan. 2014.

ISBN: 978-4-486-01775-2 C3645

Available from: Mr. Hiroshi Ina, Tokai University Press (inaair@keyaki.cc.u-tokai.ac.jp). §

Identification of Eggs and Larvae of Marine Fishes. Edited by A.W. Kendall, Jr. Published by Tokai University Press. ISBN-978-4-486-03758-3. 2011.

Ecology of Estuarine Fishes: Temperate Waters of the Western North Atlantic. By Kenneth W. Able and Michael P. Fahay. Published by Johns Hopkins University Press. ISBN-0801894719. 2010.

Early Stages of Marine Fishes Occurring in the Iberian Peninsula. P. Ré and I. Meneses. Published by IPIMAR/IMAR. ISBN-978-972-9372-34-6.

Ecology of Anguilliform Leptocephali: Remarkable Transparent Fish Larvae of the Ocean Surface Layer. M.J. Miller. Published by Aqua-BioScience Monographs. TERRAPUB. 2009.

Advances in Early Life History Study of Fish. C. Clemmesen, A.M. Malzahn, M.A. Peck, and D. Schnack, eds. *Scientia Marina*, volume 73S1, Supplement 1. Consejo Superior de Investigaciones Científicas. 2009.

Plankton. A Guide to Their Ecology and Monitoring for Water Quality. I.M. Suthers & D. Rissik. Published by CSIRO Publishing, 272 pp. 2009. ISBN: 9780643090583.

Manual of Recommended Practices for Modelling Physical – Biological Interactions during Fish Early Life. Edited by E.W. North, A. Gallego, and P. Petitgas, Jr. ICES Cooperative Research Report No. 295. 111 pp. 2009. ISBN: 978-87-7482-060-4.

Early Life History of Marine Fishes. B.S. Miller and A.W. Kendall, Jr. Published by University of California Press. ISBN: 978-0-520-24972-1. 2009.

Fish Larval Physiology. R.N. Finn and B.G. Kapoor. Published by Science Publishers. ISBN: 1578083885. 2008.

Reproductive Biology and Early Life History of Fishes in the Ohio River Drainage

Volume VI, Elasmobranchs and Centrarchidae. Edited by R. Wallus and T.P. Simon. Published by CRC Press. ISBN 978-0-8493-1923-8. 2008; 472 p.

Volume V, Aphredoderidae through Cottidae, Moronidae, and Sciaenidae. Edited by R. Wallus and T.P. Simon. Published by CRC Press. ISBN 978-0-8493-1921-1. 2006; 360 p.

...continued on p. 14

Other Publications

Guide d'Identification des Post-larves de Méditerranée. Edited by G. Lecaillon, M. Murenu, F. Hackradt, and P. Lenfant. Ecocean Nova Science Publishers, Inc.. 2012.

Proceedings of the 36th Annual Larval Fish Conference. Edited by H.I. Browman and A.B. Skiftesvik. *ICES Journal of Marine Science* 71(4). 2014.

A Handbook to Help Identify Hudson River Fish Larvae. By L. G. Arvidson and J. B. Alber. Published by the authors, Rosendale, New York. 2013.

Larval Fish Aquaculture. Edited by Jian G. Quin. Published by Nova Science Publishers, Inc.. ISBN:978-1-62417-899-3. 2013

Zooplankton of the Atlantic and Gulf Coasts: A Guide to Their Identification and Ecology. 2nd edition. By William S. Johnson and Dennis M. Allen. Published by Johns Hopkins University Press. ISBN-13:978-1421406183. 2012.

Larval Fish Nutrition. Edited by G. Joan Holt. Published by Wiley-Blackwell. ISBN-0813817927. 2011.

Publications...cont'd from p. 13

Volume IV, Percidae – Perch, Pikeperch, and Darters. T.P. Simon and R. Wallus. Published by CRC Press. ISBN 978-0-8493-1920-4. 2006; 648 p.

Volume III, Ictaluridae – Catfish and Madtoms. T.P. Simon and R. Wallus. Published by CRC Press. ISBN 0849319196. 2003; 232 p.

Ecology of Juvenile Salmon in the Northeast Pacific Ocean: Regional Comparisons. Edited by C. B. Grimes, R. D. Broder, L. J. Halderson and S. M. McKinnell. American Fisheries Society, Symposium 57, Bethesda, MD. 2007.

Early Stages of Fishes in the Western North Atlantic Ocean: Davis Strait, Southern Greenland and Flemish Cap to Cape Hatteras. Michael P. Fahay. Published by North Atlantic Fisheries Organization.

Early Development of Four Cyprinids Native to the Yangtze River, China. Edited by D.C. Chapman. *U.S. Geological Survey Data Series* 239. 2006. accessible online at pubs.usgs.gov/ds/2006/239

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

Eggs and Larvae of North Sea Fishes. P. Munk and J.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 J.J. 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 H.I. Browman and A.B. Skiftesvik. Published by the Institute of Marine Research, Bergen, Norway. ISBN 82-7461-059-8. 2004.

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. §

39th LFC Program...cont'd from p. 12

IMPACT OF A JUVENILE TROUT FARM ON SOME PHYSICO-CHEMICAL PARAMETERS OF RIVER WATER. - Hadi Fadavi (Iran)

APPLICATION OF AN INORGANIC FERTILIZATION METHOD IN CORAL REEF FISH LARVICULTURE. - Kwee Tew (Taiwan)

MOLECULAR IDENTIFICATION OF *AUXIS* SPP. LARVAE (PISCES: SCOMBRIDAE) OF GULF OF CALIFORNIA. - María José Ochoa Muñoz (Mexico)

DISTRIBUTION AND FEEDING STRATEGY OF *AUXIS* SPP. LARVAE AND ITS RELATION WITH EDDIES IN THE GULF OF CALIFORNIA. - María José Ochoa Muñoz (Mexico)

STUDY ON THE GROWTH OF JUVENILE KUTUM (*RUILUS FRISII* KUTUM) FED BY VITAMIN C. - Hadi Fadavi (Iran)

EFFECT OF STOCKING DENSITY ON WATER QUALITY AND GROWTH PERFORMANCE OF RAINBOW TROUT (*ONCORHYNCHUS MYKISS*) FINGERLING. - Mohammad Reza Ghomi (Iran)

CHANGES IN ENVIRONMENTAL CONDITIONS OF SEAGRASS BEDS AS HABITATS FOR LARVAL AND JUVENILE FISHES FROM 2009 TO 2014, THE PERIOD BEFORE AND AFTER THE TSUNAMI FOLLOWING THE 2011 OFF THE PACIFIC COAST OF TOHOKU EARTHQUAKE. - Jun Shoji (Japan) §

39th LFC...cont'd from p. 1

Oral presentations: Keynote talks will be 40 minutes plus 5 minutes for questions. Standard talks will be 15 minutes (including questions, please try to leave 3 minutes for questions and discussions). This duration of talks offers everyone the opportunity to listen to all of the talks - there will be no parallel sessions.

Posters will be spread out in separate rooms and there will be socials (snacks and drinks) on Monday and Tuesday evening to encourage people to talk with poster presenters and with each other. Please note that the poster format will be up to A0, portrait style.

Program: We will distribute the final program - as a PDF file - by end of June. You will receive a printed program when you register at the registration desk.

Professional development: There will be a workshop on grant writing organized by Alison L. Deary.

Please note that registration is open. Information about registration, conference fee, venue, travel, hotels etc. is available at the conference website: www.larvalfishcon.org/Conf_home.asp?ConferenceCode=39th

If you have any questions or queries regarding registration, hotel booking do not hesitate to get in touch with us: congress@univie.ac.at.

If you have any questions or concerns regarding other issues of the conference please contact the organizer,

...continued on p. 15

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

hear talks and discuss topics such as the mechanisms of dispersal and connectivity and (other) processes contributing to mortality of fishes in a variety of habitats. We will also be provided updates on the state-of-the-art tools (from measurements of genetics to biophysical models) used to answer key questions. I am confident that the meeting will be another great opportunity for limnologists and marine biologist to mingle and migrate together. On behalf of our section, I am grateful to Hubert and his crew for organizing the upcoming event!!

In my opinion, one of the most important missions/functions that our section has/serves is to provide training and opportunities to early career researchers. Last autumn, our section created a new opportunity to help students attend our annual LFCs in the form of Grace Klein-MacPhee Travel Grants. Grace was an ardent supporter of students and she organized the judging of our prestigious Sally Richardson award for many years. This spring, we were able to provide travel grants to 12 students! Individuals sponsored on travel grants included both MSc and PhD students coming to Vienna from a total of eight countries from Chile to China. Grace Klein-MacPhee Travel Grants along with ongoing activities stemming from the newly formed "Early Career Committee" (you filled out your survey, right?) will help ensure that we continue to enhance education and training activities. For those of you who made a donation in the memory of Grace Klein MacPhee, and/or those who have donated their time to mentoring

activities, I thank you on behalf of our section. I am particularly proud that we unanimously voted to establish the Grace Klein-MacPhee Travel Grants and that we were able to provide support to a dozen students this year. I do not need to remind folks reading this newsletter about the importance of early life – we are taking actions which will help promote "recruitment success" and "strong year-classes" of ELHS researchers in the future.

To the younger members of our section, I would like to share a few thoughts. First, a sure sign of getting older is when you start to write more and more review articles and when you start to spend a lot of time reflecting on the past. I started to do these things a few years ago (a very scary realization for me). When one looks back, you see that every few years or so, scientists meet to discuss processes determining recruitment success. After a meeting in Canada in 1994, Chris Chambers and Ed Trippel edited a book on the subject (Chambers & Trippel 1997). In September 1997, a large group met in Baltimore, Maryland for a few days to discuss Recruitment Dynamics of Exploited Marine Populations: Physical Biological Interactions. About 10 years later, a large meeting on Reproductive and Recruitment Processes of Exploited Marine Fish Stocks was held in Lisbon, Portugal. Most recently, (October 2014), a recruitment dynamics symposium was held in Bergen, Norway in celebration of 100 years since Johan Hjort published his 1914 paper on "Fluctuations in the Great Fisheries of Northern Europe." When one reads the reports, articles and books stemming from these meetings,

it is clear how important our section's members have been in synthesizing and advancing the field of recruitment dynamics. The LFC provides a unique opportunity for you to engage with these and other older/wiser folks (if needed, I will happily introduce you to some of them...). It is an exciting time and I am filled with anticipation – for you to share your ideas with them – to question established paradigms – to establish new collaborations – to build on past successes. My message to you is simple. Whether you attend this upcoming meeting in Vienna, Austria or next year's (2016) meeting when we head back to Maryland - early career scientists – take advantage of our section, get involved and stay involved! Helping to solve the "Recruitment Problem" is only one of many topics ready for you to tackle.

With those ramblings behind me, I can also proudly report that our section is doing very well. We are fiscally strong (please thank our treasurer Jeff Buckel for doing such a great job managing our accounts), we are well organized (please thank our secretary Fred Scharf for his tireless efforts), and elections are proceeding to fill our open leadership positions (Secretary-Elect and President-Elect). Our website will soon have a facelift with help from AFS – and I can even report (my hope) that the LFC flag will find its way to Vienna in for its next auction. I look forward to seeing you there – and bidding against you!

Chambers RC, Trippel EA (1997) Early Life History and Recruitment in Fish Populations. Chapman and Hall. §

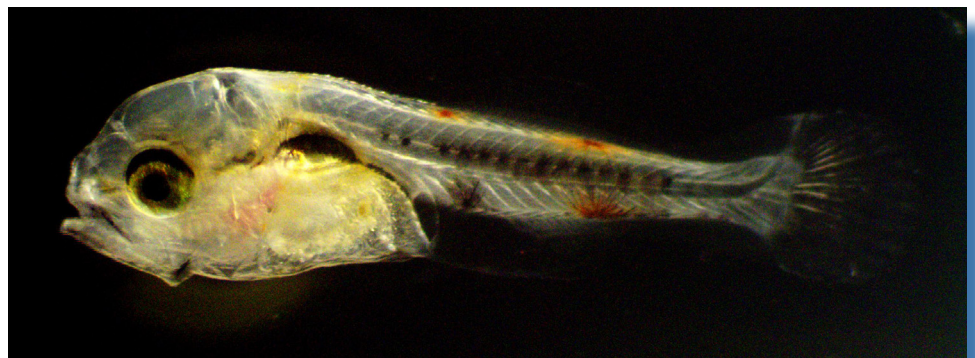
— Myron Peck,
ELHS President

39th LFC...cont'd from p. 14

Hubert Keckeis at: Hubert.Keckeis@univie.ac.at.

We look forward to seeing you in Vienna! §

— Hubert Keckeis and the local organizing committee



Red drum (Sciaenops ocellatus) larva, 11 days posthatching. (Photo by Cypress Hansen, University of Texas Marine Science Institute.)

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.

Newsletter Editor

Lee A. Fuiman
Marine Science Institute
University of Texas at Austin
lee.fuiman@utexas.edu

Northeast Region

David Richardson
NMFS, Northeast Fisheries Science Center
Narragansett, Rhode Island
David.Richardson@noaa.gov

Southern Region

vacant

North Central Region

vacant

Western Region

Daniel Margulies
Inter-American Tropical Tuna Commission
LaJolla, California
dmargulies@iattc.ucsd.edu

European Region

Hubert Keckeis
Department of Limnology
University of Vienna
Vienna, Austria
hubert.keckeis@univie.ac.at

Pacific Rim Region

Akinori Takasuka
National Research Institute of
Fisheries Science
Yokohama, Japan
takasuka@affrc.go.jp

Editor's Ramblings

Join ELHS

Membership in ELHS is open to all persons or organizations interested in furthering ELHS objectives, regardless of membership in the American Fisheries Society (AFS). If you are an AFS member, simply add ELHS membership when you pay your Society dues.

Affiliate membership is open to persons or organizations who are not members of AFS. Affiliate members are encouraged to participate in Section meetings, committee work, and other activities, but they cannot vote on official Section matters, run for or hold an elected office, or chair standing committees. All members receive **STAGES**.

ELHS has a PayPal account to receive affiliate membership dues. To join ELHS as an affiliate or to renew affiliate status online, go to: cmast.ncsu.edu/elhs/how-to-join or mail your name, institutional affiliation (if appropriate), mailing address, telephone and fax numbers, e-mail address, and dues (US \$15 per year) for the current and/or upcoming year(s) to the ELHS Treasurer (see page 2).

Please specify the membership year(s) for which you are paying dues. Make checks or money orders payable to "AFS-ELHS."



Fond Farewells

I can sympathise with the reflections on aging that Myron wrote in his President's Message. It does not seem all that long ago when I met Joanne Lyczkowski-Shultz at the Ichs and Herps meeting in Williamsburg, Virginia. Okay, it was 1975, but it does not SEEM long ago. Joanne was responsible for my first publication, which was a descriptive note on the early larvae of the sea raven. At the time, I was rearing these larvae from an egg mass collected on the beach, but I had no idea which species it was. Joanne's doctoral work on sculpins (mentioned in Jeff Govoni's tribute to Joanne on p. 5 of this issue of STAGES) was in progress and she sent me specimens of later stages which confirmed the identification. Thanks, Joanne, for getting me started, and congratulations on your impressive career. Best wishes for a long and enjoyable retirement. We will miss you.

Few ELHS members will recall one of our founders, Ronnie J. Kernehan. Ron, together with Darrel Snyder, worked hard to get the Early Life History Section established within the American Fisheries Society. Ron was elected as our first President-Elect 35 years ago but decided on a career change before taking office. To my great surprise, he reappeared at the 35th annual Larval Fish Conference (see photo on p. 14 of STAGES 32(2/3)) and claimed that he actually recognized me (I was not able to say the same about him). I am deeply sorry to report that Ron passed away earlier this month. Darrel is preparing a more complete remembrance of Ron for the next issue of STAGES. §