STAGES

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

Volume 36, Number 1 | Lee A. Fuiman, Editor | February 2015

39th Annual Larval Fish Conference to be held in Vienna, Austria

The 39th annual Larval Fish Conference is being held in the wonderful, cosmopolitan city of Vienna in July 2015 (*www.larvalfishcon.org*). This is a great opportunity to share your work on larval fishes with an international audience. The conference is hosted by the University of Vienna (*univie.ac.at*).

Anyone interested in the subject matter can attend the conference. We want to encourage students to present their work in the form of an oral or poster presentation (see Sally Richardson and John H. S. Blaxter Awards). Those who wish to participate without making a presentation are welcome as well.

The 39th annual conference is structured into eigth sessions. We welcome contributions from multidisciplinary fields of aquatic sciences and all environments concerned (marine, estuarine, and freshwater systems) related to early life history.

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Inside this issue

ELHS Back Then

10 years ago: New website established exclusively for the Larval Fish Conferences.

15 years ago: Jim Rice agrees to become the 2nd Webmaster of the ELHS, taking over from Darrel Snyder.

20 years ago: 29th LFC held in Sydney, the first LFC held abroad (excluding Canada & Mexico) and the longest reach.

25 years ago: First email address published in ELHS newsletter.

30 years ago: AFS Symposium Series established with the publication of LFC proceedings.

35 years ago: AFS Transactions editor, Bob Kendall begins to refuse single-species descriptions of larvae in order to encourage comparative studies.

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

May 1, 2015

President's Message

I am drinking coffee at 8:30 pm in preparation for Super Bowl XLIX which, in Hamburg, Germany, starts at 12:30 am…it will be a long night! My pre-game caffeine/warmup has given me a chance to reflect on some of the important events which have occurred since I wrote my welcome message to you in the October issue of STAGES. This second message will be relatively brief (not only because of the game, but also because a few people mentioned that it took about an hour to read my welcome message…).

First, at our business meeting in Quebec City, we voted to create Grace Klein-MacPhee Student Travel Grants. Our decision occurred about 1-month prior to Grace's passing. I would like to sincerely thank the section for unanimously agreeing to create these grants and the members who sent donations in her name to AFS. Our section had received nearly $2000 from 12 donors. If you would like to make a donation, you can still send one to our treasurer (Jeff Buckel) at North Carolina State University. Grace was remarkably committed to our section and its students. Thank you for helping to create a lasting legacy in her name.

Second, I have been exploring new options for our section's presence on the web. Besides our new Facebook page (*www.facebook.com/earlylifehistory*), we currently have two

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News from the Regions

Pacific Rim Region

Akinori Takasuka

Jeff Leis retired as Senior Principal Research Scientist at the Australian Museum, Sydney in February 2014 and has relocated to Hobart. Jeff plans to continue his larval-fish research from his new base in Tasmaina. He continues his association with the Australian Museum as a Senior Fellow (=emeritus), but his main association these days is as Honorary Research Professor at the University of Tasmania's Institute for Marine and Antarctic Studies (IMAS). The best way to contact Jeff is by his IMAS email (*jeffrey.leis@utas.edu.au*), and his web page is: *www.imas.utas.edu.au/people/profiles/current-staff/l/jeff-leis*. Recent publications are listed below (note that the paper in *Ichthyological Research* is open access). Plans for 2015 include attending the European Ichthyological Congress in Porto, Portugal in September as keynote speaker, and participating in a larval-fish workshop at the Virginia Institute of Marine Science in October, plus writing up part of a substantial backlog of research work. He hopes to see you at a conference or workshop sometime soon!

LEIS, J.M. 2014. Taxonomy and systematics of larval Indo-Pacific fishes: a review of progress since 1981. *Ichthyological Research* 62:9-28.

LEIS, J.M. 2015. Is dispersal of larval reef fishes passive?, p. 223-226. In: *Ecology of fishes on coral reefs*. C. Mora (ed.). Cambridge University Press, Cambridge, U.K.

LEIS, J.M., J.E. CASELLE, I.R. BRADBURY, T. KRISTIANSEN, J.K. LLOPIZ, M.J. MILLER, M.I. O'CONNOR, C.B. PARIS, A.L. SHANKS, S.M. SOGARD, S.E. SWEARER, E.A. TREML, R.D. VETTER, and R.R. WARNER. 2013. Does fish larval dispersal differ between high and low latitudes? *Proceedings of the Royal Society B Biological Sciences* 280:1-9 & Supplement

LEIS, J.M., O. MEYER, A.C. HAY, and M.R. GAITHER. in press. A coral-reef fish with large, fast, consipcuous larvae, and small, cryptic adults (Teleostei: Apogonidae). *Copeia* 103(1).

LEIS, J.M., C.B. PARIS, J.-O. IRISSON, M.N. YERMAN, and U.E. SIEBECK. 2014. Orientation of fish larvae in situ is consistent among locations, years and methods, but varies with time of day. *Marine Ecology Progress Series* 505:193-208.

LEIS, J.M., P. SASAL, A.C. HAY, A.S. HICKS, and R. GALZIN. 2013. Pelagic to demersal transition in a coral-reef fish, *Platax orbicularis*, the Orbicular Batfish (Teleostei: Ephippidae). *Journal of Fish Biology* 83:466-479.

SANTANA-GARCON, J., J.M. J.M. LEIS, S.J. NEWMAN, and E.S. HARVEY. 2013. Presettlement schooling behaviour of a priacanthid, the purplespotted bigeye *Priacanthus tayenus* (Priacanthidae: Teleostei). *Environmental Biology of Fishes* 97.

SIEBECK, U.E., J. O'CONNOR, C. BRAUN, and J.M. LEIS. 2015. Do human activities influence survival and orientation abilities of larval fishes in the ocean? *Integrative Zoology* 10:65-82.

WEN, C.K. C., G.R. ALMANY, D.H. WILLIAMSON, M.S. PRATCHETT, T.D. MANNERING, R.D. EVANS, J. M.LEIS, and G.P. JONES. 2013. Recruitment hotspots boost the effectiveness of no-take marine reserves. *Biological Conservation* 166:124-131.

A new paper from the eel project

Progress on the eel project have been a popular topic in the news from the Pacific Rim region (e.g. STAGES Vol. 35(1): 3, 5). Here is a major update of the eel project. Recently, a new paper on early life-history traits of freshwater eels has been published. Kuroki et al. (2014) examined early life-history traits of anguillid species and subspecies and

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Section Officers

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HELP KEEP STAGES INTERESTING...

Send us a report of your research activities.

Southern Region

Lee Fuiman

Research on the early life history of fishes is continuing in Lee Fuiman's lab at the University of Texas Marine Science Institute. Two graduate students at the institute's Fisheries and Mariculture Laboratory (*www.utmsi.utexas.edu/faml*) completed their degrees in August 2014.

Lisa Havel's (*lhavel@asmfc.org*) doctoral dissertation is entitled "Habitat Selection: How Sensory Systems Influence Settlement Patterns in Larval Red Drum (*Sciaenops ocellatus*)" and includes four research chapters: (1) Effects of acoustic noise on activity of larval and juvenile red drum (*Sciaenops ocellatus*), (2) Settlement-size larval red drum (*Sciaenops ocellatus*) respond to estuarine chemical cues, (3) Depth preference in settling red drum (*Sciaenops ocellatus*) larvae in relation to benthic habitat color and water column depth, and (4) Benthic habitat quality can delay settlement in a subtropical estuarine fish (*Sciaenops ocellatus*).

Dissertation abstract: "Settlement is arguably the last stage of high mortality in the life cycle of many marine fish species with a bipartite life cycle, making the number of larvae that settle successfully to a benthic habitat a reasonable determinant of future population size. Habitat selection during settlement is likely an active process, however, much of what we know about settlement behavior comes from studies in coral reef ecosystems. This collection of studies examined the ability of estuarine-dependent fish larvae (red drum, *Sciaenops ocellatus*) to locate settlement sites based on information received from their senses, with a focus on the different spatial scales over which larval sensory systems operate. During the pelagic phase, red drum are exposed to elevated sound levels in the tidal inlets. This noise caused larvae to reduce their activity in the form of fewer turns, less time spent swimming, and a lower overall mean speed compared with silent controls. As red drum approached settlement size, but not at earlier stages, they responded to olfactory cues associated within seagrass beds, their primary settlement habitat. Activity increased in the presence of lignin, a compound associated with the cell walls of vascular plants. Also, settlement-size larvae spent more time in water masses taken from seagrass beds compared to control sea water, implying a preference for olfactory cues associated with estuaries. While settlement and post-settlement-size larvae positioned themselves near the benthos regardless of water column height or substrate color, pre-settlement larvae moved away from yellow and green (associated with the estuary) but not black (associated with a deep water column) benthic colors. Additionally, red drum larvae settled to seagrass and sand at a smaller size than they did to oyster shells, and they delayed settlement when a suitable benthic habitat was not available. These findings can be interpreted as evidence for an estuarine-dependent species taking advantage of cues available to multiple sensory systems in order to actively locate settlement habitats."

Erik Oberg (*obergew@gmail.com*) worked on several projects while completing his master's degree. Only one of those projects was part of his thesis, which is entitled "Linking Fatty Acids in the Diet and Tissues to Quality of Larval Southern Flounder (*Paralichthys lethostigma*)."

Thesis abstract: "Essential fatty acids are necessary for growth, survival, and development of larval fishes, but there is limited information on the essential fatty acid requirements of larval southern flounder (*Paralichthys lethostigma*). The objectives of this study were to elucidate connections between dietary supply of docosahexaenoic acid (DHA) and arachidonic acid (ARA) and deposited fatty acids in the head or body, and then link diet and stored fatty acids in the head or body with larval quality traits. From 4-15 days posthatch (dph), southern flounder larvae were fed rotifers enriched with four different combinations of DHA-rich Algamac 3050 and ARA-rich Algamac ARA. Fatty acid concentrations in the head and body were measured at 15 dph, and relationships between fatty acids in head or body and in the diet were determined. Larval quality traits, including specific growth rate (SGR), survival, and eight behavioral performance variables were measured. Results showed that concentrations of DHA and ARA in the head and in the body were correlated with concentrations of DHA and ARA in the diet. Growth rate did not vary among the four diets, but survival was positively correlated with the amount of lipid in the diet. Responsiveness to a visual stimulus was positively correlated with the concentration of DHA in the diet, the ratio DHA:EPA in the head, and total energy content of the diet. Turning rate during routine swimming was correlated with body DHA. This study demonstrates the influence of DHA content, total lipid content, and energy levels in the diet of southern flounder and provides a foundation for future studies examining causal factors of recruitment variability or larviculture production success."

Erik also worked on a project to develop aquaculture techniques for pigfish (Sparidae: *Orthopristis chrysoptera*), which is a high-value baitfish for anglers on the Gulf Coast. The long-term goal is to commercialize pigfish aquaculture in order to increase the supply to the market while reducing harvest pressure on wild stocks. Erik also collaborated with former postdoctoral researcher, Kestrel Perez, on a project to evaluate the efficacy of carbon dioxide as an anesthetic for marine fishes. The method they explored is very effective for most species and convenient for use in the field (gas cylinders not required). We explored carbon dioxide as an anesthetic because of the restrictions on chemicals that are allowed to be used with game fishes that are being released after anesthesia.

Former postdoctoral fellow, Kestrel Perez (*kperez3@sjcny.edu*), is now Assistant Professor of Biology at St. Joseph's College New York. Her work at the Marine Science Institute examined the impact of variations in fatty acid supply to larvae, through their yolk (maternal supply) and through

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

compared the traits with the migration distances and the geographical ranges of the species. The paper discusses the larval characteristics of the eel species in the context of the evolution of migrations. I am sure that the paper will broadly appeal to early life biologists as well as eel biologists.

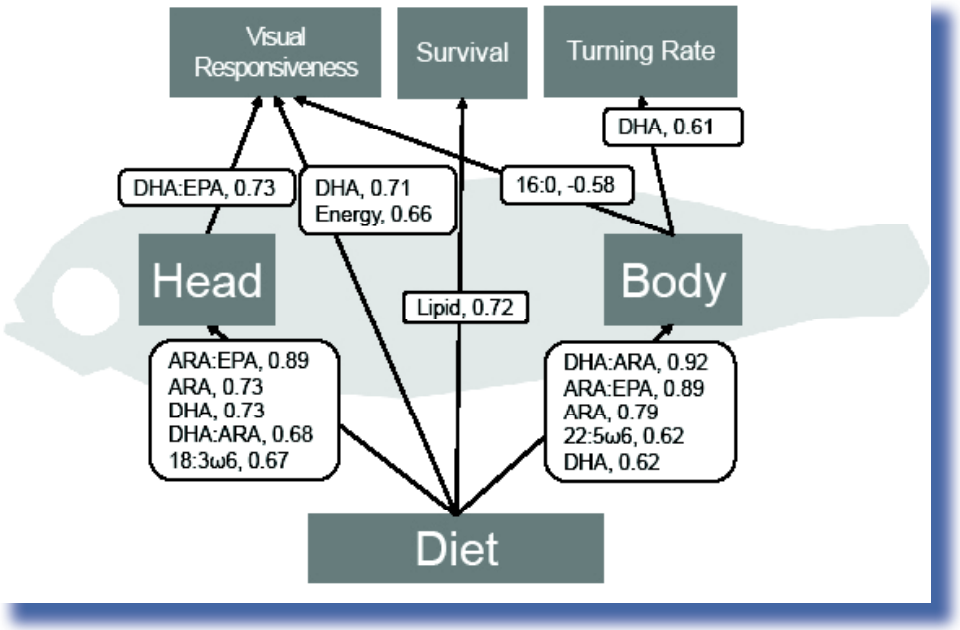
References

Kuroki, M., Miller, M. J., and Tsukamoto, K. (2014) Diversity of early life-history traits in freshwater eels and the evolution of their oceanic migrations. Canadian Journal of Zoology, 92: 749–770 (*dx.doi.org/10.1139/cjz-2013-0303*) §

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

their diet, on traits related to larval fitness. The following abstract is from a paper that is in press in the *Journal of Fish Biology*:

"Recent research has suggested that certain measures of ecological performance of fish larvae can be irreversibly affected by the fatty acid composition of the eggs from which larvae hatch. One objective of this study was to determine relationships between concentrations of essential fatty acids (EFAs) in eggs and subsequent larval performance when red drum Sciaenops ocellatus larvae were fed a diet that had relatively low levels of EFAs. Larval survival, turning rate, routine swimming speed, escape response latency, and escape response distance were significantly correlated with EFA concentrations in eggs. The second objective was to test whether these effects were reversible by providing diets containing higher concentrations of EFAs to larvae. Of the five traits that varied with egg EFA content, two (escape response latency and routine swimming speed) were significantly different when larvae were fed enriched diets compared to the low fatty acid diet, indicating that the larval diet can compensate for some imbalances in egg composition. Turning rate during routine swimming and escape response distance, however, did not change when larvae predicted to have low performance (based on egg composition) were fed an enriched diet, indicating that these effects of egg composition may be irreversible. Escape response distances and survival rates of larvae predicted to perform well (based on egg composition) and fed highly enriched diets were lower than expected, suggesting that high levels of EFA intake can be detrimental. Altogether, these results suggest that both maternal diet, which is responsible for egg EFA composition, and larval diet may play a role in larval survivorship and recruitment." The figure above summarizes the main relationships between fatty acid content of the larval diet, fatty acid content of larval tissues, and larval quality traits in southern flounder larvae.



Summary of linkages between diet, tissues, and larval quality traits in southern flounder. White boxes show correlations with fatty acids, crude lipid, and energy and their correlation coefficient (r). From Oberg (2014).

Finally, a think-tank, which included Lee Fuiman, Tara Connelly (University of Texas Marine Science Institute), Sue Barbieri (Florida Fish and Wildlife Conservation Commission), and Jim McClelland (University of Texas Marine Science Institute), used meta-analyses of planktonic egg composition, population fecundity, egg mortality rate, and egg predators to develop some interesting ideas about the contributions that fish eggs make to ecosystems, apart from the small fraction of eggs that survive to become recruited larvae or even adults. This was the subject of a presentation at the 38th annual Larval Fish Conference in Quebec, with the provocative and ambitious title: "Hjort's Forgotten 90 Percent: Early Life Mortality Research in the 21st Century." That paper will appear in the next issue of *Ecology*; the abstract is available at: *www.esajournals.org/doi/abs/10.1890/14-0571.1* but, really, the story boils down to the diagram shown on page 10 of this newsletter.

Recent and upcoming publications:

Fuiman, L.A., T.L. Connelly, S.K. Lowerre-Barbieri, and J.W. McClelland. in press. Egg boons: Central components of marine fatty acid food webs. *Ecology*.

Fuiman, L.A. and C.K. Faulk. 2014. Dynamics of arachidonic acid transfer from diet to eggs in red drum. *World Aquaculture* 45(2):59-61.

Havel, L.N. 2014. Habitat selection: How sensory systems influence settlement patterns in larval red drum (*Sciaenops ocellatus*). Ph.D. dissertation. University of Texas at Austin.

Oberg, E.W. 2014. Linking fatty acids in the diet and tissues to quality of larval southern flounder (*Paralichthys lethostigma*). Master's thesis. University of Texas at Austin.

Oberg, E.W., C.K. Faulk, and L.A. Fuiman. 2014. Optimal dietary ration for juvenile pigfish, *Orthopristis chrysoptera*, grow-out. *Aquaculture*

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Upcoming Events

39th Annual Larval Fish Conference — Vienna 2015

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Here is an outline of the sessions:

Session 1: Dispersal and Early Life History of Early Stages in Rivers, organized by Hubert Keckeis, Paul Humphries, Aaron Lechner.

Keynote: Dimitri Pavlov & Victor Mikheev. "Ecological patterns and behavioral mechanisms of downstream migrations in young fish."

Session 2: Particle Tracing, Hydrodynamic Models and Dispersal of Fish Larvae, organized by Michael Tritthart and Martin Glas.

Keynote: Edward Codling. "Mathematical and computational modelling of navigation in coral reef fish larvae: from random walks to collective motion."

Session 3: Larval dispersal and population connectivity - genetic approaches to ecological problems, organized by Lorenz Hauser.

Keynote: Serge Planes. "What have we learnt regarding connectivity from parentage analysis."

Session 4: "The secret life of larvae" - individual life history and fate from otolith studies, organized by Audrey Geffen and Arild Folkvord.

Keynote: Su Sponaugle (invited).

Session 5: Ecophysiology of early life stages: From measurements to models, organized by Myron Peck.

Keynote: Shaun Killen

Session 6: Natural mortality in the egg and larval stages of fishes, organized by Cindy van Damme and Maria Manuel Angelico.

Keynote: Richard Nash. "One fish, two fish, red fish, dead fish."

S***ession 7: Early Life History of Eels***, organized by Reinhold Hanel and Caroline Durif.

Keynote: Michael J. Miller.

S***ession 8: Biology and Ecology of Early Life Stages***, organized by Hubert Keckeis, Paul Humphries, and Aaron Lechner.

We hope to have a special issue of an international journal devoted to the topic of "Dispersal ecology of the early life history stages of fish." The final decision of the editors will depend on the number and quality of contributions. Please indicate if you are willing to submit a manuscript. The deadline for submission is September 30, 2015.

To make your trip more convenient, we have a special arrangement with Austrian Airlines. Book your flights to the "39th Annual Larval Fish Conference" online at *www.austrian.com* and save 15% on all applicable fares! There are also arrangements with a variety of hotels in the city center. More detailed information about the conference and registration is given at *www.larvalfishcon.org*. Registration opens on February 2, 2015. Please contact Hubert Keckeis if you have any questions (*Hubert.Keckeis@univie.ac.at*).

Hope to see you there, Welcome in Vienna! §

– Hubert Keckeis, Paul Humphries, Aaron Lechner.

Our ELHS members and supporters from the Early Life History department of NOAA Southeast Fisheries Science Center's Miami Laboratory, proudly wearing their ELHS t's. Pictured (l to r): Estrella Malca, Laura Rock, Elise Keister, and Dr. Trika Gerard. Wear it proudly ladies!

Support your Section: Buy an ELHS T-shirt!

Our new 'Early Life is Good' short-sleeve ELHS t-shirts are still available in either women's cut (sizes S, L, XL; color: blackberry – see photo) or men's/unisex cut (S, M, L, XL in navy) with a few men's long-sleeve still in stock (S only; charcoal – see photo in Oct 2014 STAGES, p. 7). Any one is yours for a $20 donation to the ELHS. Buy them for your students, friends, or yourself – it's also a great recruiting tool! Contact Chris Chambers for details (*chris.chambers@noaa.gov*). All proceeds beyond cost go to support ELHS Student Activities.

People

In Memoriam
Grace Klein-MacPhee

The Early Life History Section lost one of its most prominent members, Dr. Grace Klein-MacPhee, on September 20, 1914. ELHS members will remember her as a regular attendee at Larval Fish Conferences and especially as the coordinator of judging for the Sally Richardson Best Student Paper Award. The December 2014 issue of *Fisheries* contains an In Memoriam piece about Grace from Syma Ebbin and Carolyn Griswold of the AFS Southern New England Chapter, plus an obituary provided by Grace's family that comprehensively covers her career accomplishments, and I urge you to read them. Here, I will try to provide some memories of Grace as a colleague at the University of Rhode Island and the U.S. EPA lab in Narragansett, RI.

I first met Grace when we were grad students together at URI in the early 1970's. While most of us were young, single and carefree, Grace was married and in the process of raising four children. Oldest daughter Erica would occasionally sit in on graduate classes and try to take notes, aping what her mother was doing. Younger daughter Arwen, plus sons Peter and James, would often accompany Grace to "help" her with her duties as a Research Aquatic Biologist at the EPA lab. Grace was the senior member of a number of grad students from URI and the University of South Carolina who had been hired part-time at the EPA lab to develop rearing techniques for many species of marine organisms and to investigate their use in determining sublethal effects of toxicants. Grace's specialty was, of course, winter flounder (the subject of her master's thesis at Boston University) and summer flounder (the subject of her dissertation at URI). Her duties at EPA included production of larvae of both species and experiments on both, but her dissertation included aspects of rearing juvenile summer flounder to determine their potential for aquaculture. She actually converted part of the basement of her home into a wet lab (her house was on a waterfront lot) for the conduct of some of her dissertation experiments. Grace was especially motherly in raising winter flounder larvae and those of us sharing lab space with her would often hear exclamations of "Ohhh, they're so cuuute." Grace's work, showing high mortality of winter flounder larvae during metamorphosis when fed certain strains of brine shrimp nauplii, was instrumental to the International Study on Artemia's finding that omega-3 highly unsaturated fatty acids were the critical factor in brine shrimp nutritional quality.

After completing her dissertation and finishing her work with EPA, Grace moved across the street to URI's Graduate School of Oceanography, where she (like so many people) depended on soft money to maintain her research and employment. She therefore broadened her research horizons and conducted ichthyoplankton surveys of Narragansett Bay, research in the mesocosms of the Marine Ecosystem Research Lab (MERL), and assorted other projects, always trying to keep fish larvae front and center. During that time, she and Bruce Collette completed a decade (or so) long effort to revise Bigelow and Schroeder's book, *Fishes of the Gulf of Maine*; it's likely that that will be the thing for which she will be most known by scientists of the future.

Right: Grace Klein-MacPhee was regularly seen with the honorees of the Sally Richardson Award, here with Pascale LaFrance, who received honorable mention in 2006. Below: Grace is front and center for the group photo in 1994. Photos from the STAGES archives.

18th ANNUAL LARVAL FISH CONFERENCE

St. Andrews, N. B.
June 26-28, 1994

As far as I can recall, Grace's first Larval Fish Conference was the one in 1982 at Solomons, Maryland, after which she became a regular attendee. She was an active and valued member of the local committee that hosted the 16th LFC at URI in 1992. And, of course, once the Sally Richardson Award was established following the 1986 meeting in Miami, she became involved with judging student papers and coordinated the program of student awards for many years.

Grace appeared to have lots of talents and interests outside of science that few people knew about. She was enthusiastic about anything involving ice skating. Besides being a passionate fan of hockey (or "hawky", as it's pronounced in eastern Massachusetts), especially Boston

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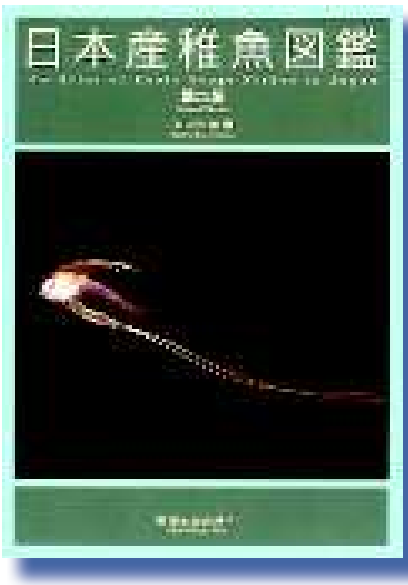
In Memoriam
Muneo Okiyama

Dr. Muneo Okiyama, a professor emeritus at the University of Tokyo, passed away at his home on 7 September 2013. It was a sudden death by cardiac decompensation. Born at Yubari, Hokkaido in 1937, he moved from his home town to Gunma Prefecture after a few years. He developed an interest in fisheries, even though there is no sea in the prefecture! Following his passion, he moved to Tokyo in 1957, and entered the Department of Fisheries Science, Faculty of Agriculture, the University of Tokyo. His science career started at the Japan Sea Regional Fisheries Research Laboratory, Niigata, in 1961, just after he graduated from the university. He energetically studied the early life histories of some edible fishes such as *Glyptocephalus stelleri*, *Branchiostegus japonicus*, and others from the Japan Sea. In 1976, he attained a doctoral degree from his alma mater, the University of Tokyo, and held the position of assistant professor at the Ocean Research Institute (now the Atmosphere and Ocean Research Institute) of the university. Although he completed a wide range of biological studies (including, ecology, morphology, taxonomy, biogeography, and even physiology), his main focus was the early life history of fishes, especially the relationship between developmental stages and phylogeny. His symbolic work is "An atlas of early stage fishes in Japan," which was published by Tokai University Press in 1988. This comprehensive atlas, with the descriptions of juveniles of 1100 species, contributed to the development of numerous other studies on juvenile fishes in Japan. On the other hand, he described four new species of fishes including two curious gobies, *Luciogobius adapel* and *Platygobiopsis tansei*, and one new squid, *Gonatopsis japonicum*. He was promoted to a professor in 1986, and continued to train numerous pupils in his laboratory until his retirement in 1998. After that, he started to work on the publication of the second edition of the above-mentioned atlas at his home. Unfortunately, he passed away before its completion. Proof sheets and drawings for the book were found on his desk, and the preface written in July 2013 was found on his computer. The second edition was written by 74 ichthyological contributors including Dr. Okiyama as the editor, and included 1544 species. This monumental work was finally published on 30 March 2014 by several volunteers... §



An Atlas of Early Stage Fishes in Japan. 2nd edition edited by Muno Okiyama.

Dr. Muneo Okiyama (1937-2013). Photo provided by Hiroshi Senou.

— Hiroshi Senou
Kanagawa Prefectural Museum of Natural History,
senou@nh.kanagawa-museum.jp

Editor's note: See the Publications section of this newsletter for information about purchasing Dr. Okiyama's book.

Grace Klein-MacPhee..cont'd from p. 6

University, the Providence Bruins and the Boston Bruins, she loved her ice dancing lessons. I eventually gave up being surprised at anything Grace did. When the film The Tin Drum came out in 1979, based on the Gunter Grass novel, I was fascinated by it and immediately read the novel in English translation – Grace casually mentioned that she had read it in the original German.

In conclusion, we have all lost a valued colleague, an enthusiastic connoisseur of all things related to larval fish, and a true friend to students. It is absolutely fitting that the Section has named its Student Travel Grant program after Grace....§

— David Bengtson , University of Rhode Island

Publications

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*).

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.

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 Cientificas. 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.

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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.

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...continued on p. 9

The Early Career Committee: Improving recruitment and retention while avoiding bottlenecks in participation for early career researchers

The Early Career Committee (ECC) is an ad-hoc committee stemming from the willingness to recruit, engage, and retain the next generation of larval fish scientists in the Early Life History Section (ELHS) of the American Fisheries Society (AFS). The ECC was created at last year's Larval Fish Conference for early career scientists (MSc, PhD students, postdoctoral researchers). The aim is to generate a combined strategy with the Executive Committee (ExCom) in order to increase participation and promote activities focused on early career researchers not only at the annual Larval Fish Conference, but also at the Section level. The ECC is now composed of Alison Deary (PhD student, Virginia Institute of Marine Science, USA), Matthias Paulsen (PhD student, GEOMAR, Germany), David Costalago (Postdoctoral Researcher, Nelson Mandela Metropolitan University, South Africa), and Marta Moyano (Postdoctoral Researcher, University of Hamburg, Germany).

One of the goals of the ECC is to develop activities to engage the next generation of scientists in the ELHS through mentoring and professional development events. To do this, we collected statistics regarding student attendance at past LFCs (2011-2014) and have constructed surveys to learn more about what our members are interested in and what skills they would like to obtain from our annual conferences. We ask that you take a couple of minutes to take this short survey that was emailed to you early in 2015 or which yo can access directly at the links below, to help us design events for future LFCs. There are three different versions of the survey, so please complete the version that is most appropriate to your career status.

Increased participation of early career researchers is also a priority of AFS as a whole. AFS has formed its own committee to investigate and understand the recruitment and retention of early career researchers in addition to designing activities to involve these young professionals. The surveys we developed for the ELHS will help us formulate a strategy to encourage participation of early career researchers not only within our section but across other sections of the AFS as well. We are happy to report that student attendance was 36-40% of the total attendance for the 2011, 2013 and 2014 Larval Fish Conferences conferences!

As a first step into the world of social media, the ELHS now has a Facebook page (*www.facebook.com/earlylifehistory*)! Please take a couple of minutes to add our page as one of your liked pages to keep up to date with your colleagues between editions of STAGES and post pictures of rare or just plain awesome larvae. The Facebook page is also open to non-members in order to solicit interest and potential membership in the future.

We greatly appreciate all of your help and support as we start the work of the ECC. We are looking forward to the 2015 meeting in Vienna hosted by Hubert Keckeis where we hope to introduce some new events to engage early career researchers! To help us design these events for the upcoming conference, please take a couple of minutes to complete the survey by March 16th, 2015. If you have any ideas or guidance in addition to the survey, please do not hesitate to email Matthias Paulsen (*mpaulsen@geomar.de*). §

Surveys are available at:

Graduate students -
www.smartsurvey.co.uk/s/141777EPBWK

Postdoctoral/Early Career Researchers
www.smartsurvey.co.uk/s/143970ORBEL

Senior Researchers (in the field >10 years)
www.smartsurvey.co.uk/s/143974MSBGI

Publications...cont'd from p. 8

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. §

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

websites. Our section's official website is hosted at NC State (thank you Jeff!) and a second site is hosted in Bergen, Norway (thank you Howard!). The two sites provide a wealth of information on our section – including a thorough summary of our upcoming and previous Larval Fish Conferences and helpful information to conference organizers. The Executive Committee (ExCom) is investigating a virtual facelift – and whether we should merge these two sites. The American Fisheries Society has provided a draft of a new website and ExCom is contemplating the various issues surrounding this change. Regardless of the decision, we are searching for an enthusiastic, computer savvy member who can serve as our webmaster. Please let ExCom (Fred, Jeff and I) know if you are interested in serving the section in this capacity.

Third, I am happy to report on the activities of The Early Career Committee (ECC) an ad-hoc committee created to help us understand how best to serve (and retain) early career scientists. Please read their article in this issue of STAGES. It contains important information on how to access the committee's survey. The ECC is not only interested in hearing from current members, but also people who have let their membership lapse. After reading this issue, I urge you to fill out the survey most appropriate to you (graduate student, postdoc, or senior researcher) and share the links with others – don't wait...the information will be very valuable to the ECC and will help us plan our section's activities in the years to come.

Fourth, nominations are still open for President-elect and Secretary-elect. There is also an opening for the ELHS Northcentral representative. Please consider nominating someone (self-nominations are welcome) for a position. Our ELHS does not have a complete ExCom until those folks are elected. As I mentioned in my welcome message, the ExCom is an important governing body that works for you! Please send your nominations to us.

Finally, I would like to draw your attention to the upcoming 2015 Larval Fish Conference. Unlike the Seattle Seahawks, who (I predict – 2 hours before the kickoff) will fail to repeat last year's victory, this year's LFC (the 39th annual!) is sure to be another smashing success! Huebert Keckeis and colleagues have created an exciting program, including an interesting mixture of freshwater, marine, and aquatic (cross-cutting) theme sessions. Besides the excellent science and camaraderie, you will want to attend this meeting to see Vienna. Not only does Vienna have the best Wiener Mélange and Sacher Torten (what I used to call coffee and donuts) on the planet, it is a great city to enjoy with colleagues, friends, and family. The meeting and local attractions - from classic to modern art galleries, St. Stephan Cathedral, the Palace and Gardens of Schönbrunn (etc.) – are sure to make lasting and very fond memories. I look forward to seeing you in Vienna this July!! §

— Myron Peck, President
(P.S. Go Patriots!)

Southern Region...cont'd from p. 4

433:335-339. (doi:10.1016/j.aquaculture.2014.06.035).

Oberg, E.W., K.O. Perez, and L.A. Fuiman. 2015. Carbon dioxide is an effective anesthetic for multiple marine fish species. *Fisheries Research* 165:22-27. (doi:10.1016/j.fishres.2014.12.019)

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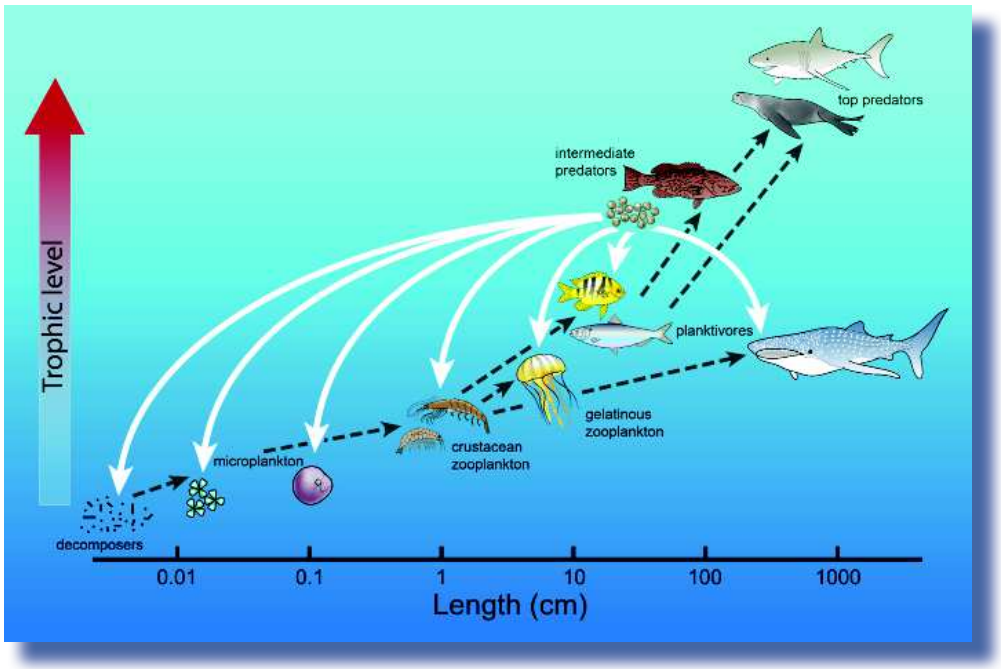

Figure 4. Hypothesized redistribution of trophic resources from adult fishes to consumers of smaller size and lower trophic level through egg boons. Dark, broken arrows show traditionally recognized trophic pathways. Solid white arrows show counter-gradient transfers from eggs. From Fuiman et al. (in press).

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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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."

Editor's Ramblings

Time Travel

This issue of *STAGES*, more than most, really takes me back. The *ELHS Back Then* column got me thinking... Was it really 35 years ago, when publishing descriptions of larvae was one of the most widespread activities in our field and a journal editor used restrictions to elevate our work? Admittedly, this may be a generous interpretation, but I was among those affected and this is how I see it now. Taxonomic studies were, and remain, critical work. Was it really 30 years ago that the annual request for space in *Transactions of the American Fisheries Society* for publishing papers from the Larval Fish Conferences became so onerous that the American Fisheries Society created a new serial (*AFS Symposium Series*) to accommodate us (and ultimately, other sections)?

The tributes to our two friends and colleagues, Grace and Muneo, was also a reminder of years gone by. I met Muneo either at the Corvallis Ichs and Herps meeting in 1981 or the Vancouver LFC in 1984. My memory of meeting Grace is equally fuzzy; it was either at the Solomons LFC in 1982 or one of the Ichs and Herps meetings from 1975 onward. I enjoyed nearly annual reunions with Grace at LFCs, whether it was climibing a Mayan pyramid (1989), fine dining overlooking Norway's Bjørnefjord (2002), or grabbing a drink at the social. Thank you, Hiroshi Senou and Dave Bengtson, for reminding us of the fine people we have lost. We will miss them both...§