STAGES

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

Volume 40, Number 1, February 2019

Audrey J. Geffen & Cindy J.G. van Damme, Editors

Inside This Issue. . .

ELHS Back Then

5 years ago: ELHS Early Career Committee established
10 years ago: Dr. William J. Richards (Bill Richards) was the second recipient of the Early Life History Section Elbert H. Ahlstrom Career Achievement Award at the 2009 LFC
15 years ago: Celebrating STAGES 25th anniversary! STAGES gets a facelift under the editor Lee Fuiman
25 years ago: Annual dues for newsletter subscribers increases to 10 US dollars!
35 years ago: Term of Section President extended from 1 year to 2 years. Bob Hoyt is first 2-year President

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

May 15, 2019

Headline News

The 2019 Larval Fish Conference is happening soon!!.The 43rd Annual Larval Fish Conference will take place in Palma, Balearic Islands (Spain), from May 21st-24th. Palma is a lively Mediterranean city (pop. 400 000) in the Island of Mallorca. The island is known for its beautiful beaches with transparent waters, just a short distance from the Serra de Tramuntana, declared a World Heritage Site by UNESCO under the Cultural Landscape category. Besides tourism and landscape we host the highest density of Marine Protected Areas in Spain and happen to have two National research centers, IMEDEA (CSIC-UIB) and COB-IEO which co-host the Conference. The 2019 LFC local team of Ignacio Catalán (IMEDEA), Patricia Reglero (IEO) and Itziar Álvarez (IEO), will surely make this event a scientific and social success.

– Ignacio Catalán (IMEDEA), Patricia Reglero (IEO) and Itziar Álvarez (IEO)

President's Message

Dear friends and colleagues,

As the New Year rolls around, some important topics have come to my attention. The first is the impact of the partial shutdown of US government departments and agencies that directly affected many of our colleagues involved with research on early life stages. Whether affiliated or not with the Section, I feel it is imperative to we as a group demonstrate our support for the situation faced by our fellow researchers and note the impact that political gamesmanship can have on their work and livelihoods. *...continued next page*

President's Message cont... While the matter is now resolved, the closure affected our colleagues' ability to plan for their involvement in LFC 2019 which may have an important impact on the meeting. It is also time for our members and affiliates to put together their abstracts and their plans for the conference. Ignacio Catalán, Patricia Reglero and Itziar Álvarez, along with their Scientific Steering Committee have put together an impressive list of 15 diverse sessions under six major topical areas. The overall perspective for the meeting is attractive because their goal is to embrace broad processes or concepts rather than techniques or taxonomic groups. Sessions were proposed by leading scientists in various fields of research and my sense from the description of each session provided by the organizers and conveners is that there are opportunities for such of broad range of subjects dealing with early life stages that almost everyone should be able to find a place for their contributions. Registration opened in early February and the deadline for submission of abstracts was extended to the 15th of February to deal with the impact of the partial shutdown of US government departments. I urge you not to leave things to the last minute. I know as the organizer of a previous LFC that delays can be unnerving for those who give their time and resources freely to make our annual gathering happen. LFCs may be small meetings but they are definitely first rate opportunities to get together and discuss an area of aquatic science that never ceases to amaze me. A section like ours runs on the generosity of its volunteer. Every facet that makes being part of the Early Life History Section depends on the time people like the Editors of this Newsletter, webmasters, conference organizers and location committee, individuals who contribute to special sessions and elements of the LFC, as well as members of the Executive Committee, with some taking on multiple roles in the activities of the Section.In the October Newsletter I indicated that the coordinators of the early Career Scientists activities at the LFC, Marta Moyano and Alison Deary, are stepping down after many years of organizing events geared to benefit of students, post-doctoral fellows, and those starting new jobs in academia, government or industry. ***My request for contact from those who might be interested in taking on the role within the Section has been met with resounding silence!*** Working with early career scientists is an important aspect that makes the LFC a place they feel comfortable meeting with their peers, no matter what the differences in experiences or interests are. I urge members to come forward to take over from Marta and Alison so that we can develop some initiatives for LFC 2019. My responsibilities as a scientist and focal areas of research and management with Fisheries and Oceans Canada are changing and leave me with considerably less time to work on early life stages than I would like. As with many of you, I have numerous projects that I would like to complete but for which I find it difficult find the time needed to do so. I make an effort to continue work on some conceptual aspects of our field and keeping track of research dealing with Early Life Stages remains the first and most lasting love of my scientific career, and nothing will cause me to put that area of knowledge and thought aside.

— Pierre Pepin

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The story of the STAGES logo


EARLY LIFE HISTORY SECTION
AMERICAN FISHERIES SOCIETY

Have you ever wondered what kind of fish is depicted on the masthead of the AFS Early Life History Section newsletter, STAGES? Rather than provide the simple answer, here's a brief history of the evolution of our newsletter. The Section's first newsletter was created by Fred Binkowski in 1980. Fred served as newsletter editor for 10 years. Even in those days of yore, the newsletter was more than a collection of typewritten pages stapled together in the upper left corner. It was printed in booklet form (folded), had a two-column layout, justified text, and three images of salmonid larvae and parr on the masthead. The typeface was the Courier font that was common on the typewriters (remember those?) of the day, and the only color aside from the black text was in Fred's choice of paper stock on which the newsletter was printed.

Tom Simon took over the reins of editing the newsletter from Fred in 1989. Tom took the opportunity to freshen the layout with a redesign of the masthead, framing the front page with a footer, and designing the last page so that the newsletter could be mailed using a bulk rate postage permit. He also added a text box on page 2 that listed all of the Section's officers and their contact information. Tom served as editor for 5 years, handing it off to Tom Miller in 1995.

Tom Miller used the transition and the recent advent of desktop publishing software as an opportunity to put a fresh face on the newsletter and to give it a name: STAGES. Tom redesigned the masthead, incorporating a line drawing of an early stage larva. He also added a table of contents to the front page, banners for section headings, and shaded text boxes to feature certain items. Moving to a proportional font, for the first time, gave the newsletter a more professional look, although it was still printed in one color (blue ink on grayish stock). By 1999, after 5 years of editing, Tom handed STAGES over to Perce Powles, who tweaked the masthead a bit. Perce retained many of the design features that his predecessor instituted, and the greater print resolution (dpi) that became readily available at that time allowed him to make better use of photographs, although they remained grayscale images.

I took over from Perce in 2004 and, like my predecessors, I redesigned the newsletter. At the time, the Section's fiscal accounts were very healthy and I received permission from the Section's President to make improvements to the newsletter that would significantly increase production and distribution costs. Specifically, STAGES became a 2-color product printed on glossy stock at a commercial print shop, which drastically increased print resolution, supporting liberal and effective use of photographs. As years passed, I was able to produce electronic versions of each issue, which were posted on the ELHS website with a 1-issue lag. Ultimately, we eliminated the print version entirely.

Here's where we come to the masthead. Having seen a redesign of the newsletter, and particularly the masthead, with every change in editor, I felt we needed to establish consistent branding. We needed a recognizable and consistent logo. And, I felt that a logo should represent the essential characteristic of fish early life history (development) and that it should pay homage to the roots of the Early Life History Section, which were in taxonomy and distribution of North American freshwater fish larvae. I did not, however, want to get involved in copyright issues. So, I reached into my own files and selected line drawings of four stages in the development of a North American freshwater fish, and contorted those images into poses that seemed more life-like than the originals. The arrangement of those images in an arc emphasizes the transitions that embody development.

When I took on the role of local host for the 41st annual Larval Fish Conference in Austin, Texas, I adapted the imagery from the STAGES masthead for use at the conference to provide attendees with something familiar and recognizable that told them they were in the right place. It is heartening to see that when I stepped down as editor of STAGES after 12 years in that post, our new editors, Cindy and Audrey, decided to retain the masthead and that the local hosts of the 43rd Larval Fish Conference extended life of the logo at the conferences. Time will tell whether this logo becomes established, but it has already served as a recognizable identifier of ELHS for 15 years.

To answer the original question, *what kind of fish is depicted on the masthead of STAGES?* It is the northern hogsucker *(Hypentelium nigricans)*, originally illustrated by Cathy Komar for my master's thesis and the ensuing publication. Fittingly, that publication appeared in our parent society's flagship journal, Transactions of the American Fisheries Society (volume 108:560-603), in the year that AFS authorized establishment of the Early Life History Section.

— Lee A. Fuiman
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People

Lee Fuiman named Mote Eminent Scholar

Lee Fuiman has been named the William R. and Lenore Mote Eminent Scholar in Fisheries Ecology and Enhancement for 2019 by Florida State University and Mote Marine Laboratory. He will be relocating from Texas to Mote Marine Laboratory in Sarasota, Florida for a few months, where he will be collaborating with Dr. Ken Leber and Dr. Kevan Main and their research teams.

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

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LFC flag travels

The guardians of the LFC flag (complete with the ELHS logo) have revived the travelling tradition, taking the flag to as many workplaces as possible - including the North Sea. Auctioning the flag at the conference each year raises money to support the JHS Blaxter Fund, which funds the best student poster award

— Bastian Huwer (DTU), Arild Folkvord (UiB), Richard Nash (IMR)

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News from the Regions

Pacific Region

Akinori Takasuka

A database of Marine Larval Fish Assemblages in Australian temperate and subtropical waters

Long-term ichthyoplankton surveys provide valuable information on diversity of fish community including non-fishery target species, species-specific phenology, ecological responses to climate variability, etc. Smith *et al*. (2018), published in "Scientific Data", is the description of a larval fish database from temperate and subtropical Australian waters. The database was produced from the collation of 3,178 samples of larval fishes, from 12 research projects from 1983 to November 2016, and includes recent monitoring of larval fishes at the Integrated Marine Observing Systems' (IMOS) coastal national reference stations. All samples were collected by plankton nets, towed from a variety of vessels.

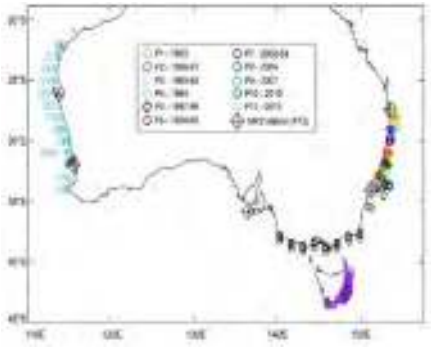

Fig. 1. Locations of data for each project (Smith *et al*. 2018). By courtesy of Dr. Iain Suthers.

The data behind this data paper (and the Master Species List) can be accessed here. The database is being managed by CSIRO Oceans and Atmosphere staff, and an ongoing version of this will be freely available in the near future through the Australian Ocean Data Network Portal (AODN; http://portal.aodn.org.au/) and will serve as a data repository for surveys in the region.

The data can also be accessed through its DOI: doi:10.4225/69/5ab33c62f9c52

Fig. 2. Larval fish collected from the surveys (from Dr. Julian Uribe-Palomino).

Reference

Smith, J. A., Miskiewicz, A. G., Beckley, L. E., Everett, J. D., Garcia, V., Gray, C. A., Holliday, D., Jordan, A. R., Keane, J., Lara-Lopez, A., Leis, J. M., Matis, P. A., Muhling, B. A., Neira, F. J., Richardson, A. J., Smith, K. A., Swadling, K. M., Syahailatua, A., Taylor, M. D., van Ruth, P. D., Ward, T. M., and Suthers, I. M. (2018) A database of marine larval fish assemblages in Australian temperate and subtropical waters. Scientific Data, 5: 180207. doi:10.1038/sdata.2018.207

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Western Region

Dan Margulies

Grass Carp reproducing - new publication Here is the title and abstract for a recent publication from Brandenburg *et al*. 2019, which was highlighted in AFS News (e-mail list serve, 1/23/19). It is being published as a Management Brief in an upcoming issue of NAJFM (presumably Feb. 2019 Vol 39, No. 1), and is currently available online via AFS Early View for NAJFM (online version of record 1/15/19) at https://doi.org/10.1002/nafm.10258.

Discovery of Grass Carp Larvae in the Colorado River Arm of Lake Powell By: W. Howard Brandenburg, Travis A. Francis, Darrel E. Snyder, Kevin R. Bestgen, Brian A. Hines, Wade D. Wilson, Sandra Bohn, Alexis S. Harrison, Stephani L. Clark Barkalow

Abstract

Grass Carp *Ctenopharyngodon idella* stocking in the upper Colorado River basin is statutorily limited to triploid, i.e. functionally sterile, individuals. Systematic fish sampling in the upper Colorado River basin indicates adult Grass Carp remain rare but have been increasing in abundance since 2007. Grass Carp larvae collected in the Colorado River arm of Lake Powell, about 26 km downstream from the inflow, in 2015 and 2016, are evidence of the presence of a spawning population. These larvae were the first documentation of Grass Carp spawning in a river basin of the western United States. While Grass Carp reproductive biology suggests spawning occurred in the Colorado River or its tributaries upstream from Lake Powell, the sample location, age, and number of larvae collected pose the possibility of reservoir spawning. Addition of another, reproductively viable, nonnative, fish species to the already heavily invaded upper Colorado River basin could further impact conservation of the federally endangered native fishes.

North American Journal of Fisheries Management Volume 39, Number 1,

— Darryl Snyder (on behalf of all authors)

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North Central Region

Ed Roseman

A changing stock dynamic of Lake Whitefish in Green Bay, Lake Michigan.

Lake Whitefish (*Coregonus clupeaformis*) are an economically and socially important fish native to the Laurentian Great Lakes. Widespread shifts in the Great Lakes food web is thought to be generating corresponding changes in Lake Whitefish population levels and growth patterns, creating considerable concern among managers. Recently, a historic resurgence of spawning populations have been observed in major tributaries to Green Bay, a large embayment in the northwestern region of Lake Michigan. While Lake Whitefish within Lake Michigan proper have been declining, populations in Green Bay have shown the opposite trend. It is currently unknown how much these re-established ecotypes are contributing to the overall metapopulation.

To investigate this, we sampled for Lake Whitefish during the pelagic drifting larval stage in four major tributaries (Fox, Oconto, Peshtigo, and Menominee Rivers) suspected of producing fish. 1372 Lake Whitefish larvae were captured during the two year sample period (spring of 2017 and 2018) immediately downstream of spawning locations, and successful recruitment to the larval stage was confirmed in each tributary.

The collection of these larvae represent the first ever documentation of Lake Whitefish reproduction in tributaries to Green Bay, and only the second occurrence in a tributary throughout the species' range. Larvae were also captured in downstream reaches of the Fox and Menominee Rivers, suggesting fish outmigrate and contribute to the population residing in Green Bay. Total production by each tributary was variable by year, but 479,753 to 1,987,497 larvae are estimated to have been produced during the two sample years. Traditional stock delineation using genetic microsatellites has proven ineffective within the small geographical area of Green Bay, and otolith microchemistry is a potential tool to assess contribution by tributaries to the metapopulation.

Lake Whitefish are an ideal candidate for this technique at the larval stage due to a unique 4-5 month long incubation period and relatively large otolith size at hatch. Preliminary Linear Discriminant Function (LDF) results suggest this technique is able to successfully differentiate between riverine and open water (collected from both Green Bay and Lake Michigan) larvae, and had an overall reclassification rate of 76.8%. Specifically, this model had a successful open water reclassification rate of 71.4%, whereas the pooled Fox, Menominee, and Peshtigo River larvae were correctly reclassified 80.9% of the time. This LDF model can be modified to address different stock delineation objectives, and it is our hope that further development of this tool will aid managers in improving our understanding of the overall Lake Whitefish metapopulation structure within Green Bay and Lake Michigan proper.

— Andrew Ransom and Lydia Doerr, M.S. Candidates (PI Dr. Patrick S. Forsythe and Dr. Chris Houghton) University of Wisconsin-Green Bay, Aquatic Ecology and Fisheries Laboratory

Age-0 Lake Sturgeon Respirometry

Taaja Tucker, a contract scientist with University of Toledo, is measuring respiration rates of age-0 lake sturgeon with collaborators at the U.S. Geological Survey's Great Lakes Science Center in Ann Arbor, Michigan. Lake sturgeon eggs collected from the St. Clair River in spring 2018 and reared at the Great Lakes Science Center were used to determine respiration rates of larvae and juveniles using a PreSens Fibox 3 fiber optic oxygen meter in a closed respirometer.

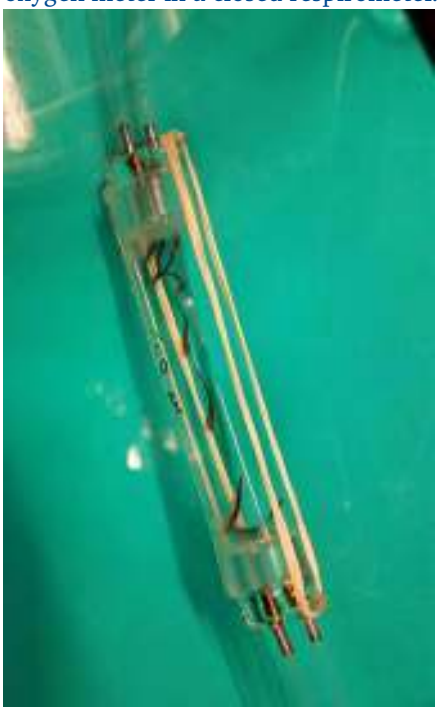

Photo caption: Larval lake sturgeon in respirometry chamber, approximately 2-3 days post-hatch (Taaja Tucker photo credit).

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North Central cont.... So far, we have measured respiration rates for fish 11 mm TL through 154 mm TL at approximately weekly intervals. Measurement of respiration rates is integral to the generation of bioenergetics models which allow for the creation of energy budgets for individual fish and can be extrapolated to fish populations. In general, bioenergetics models developed for adult fish cannot be extended to early life stage fish that exhibit much higher mass-specific respiration rates than adults. While bioenergetics models exist for several sturgeon species and life stages, this is the first step to developing one for young lake sturgeon.

— Taaja Tucker
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University of Toledo, Ohio

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Northeast Region

Katey Marencik

Bringing natural history collections back to life

Natural history collections, including larval fish specimens, are unique repositories of life on Earth. These invaluable collections document characteristics in time and space, and can offer insight into baseline conditions and evolutionary processes that shaped today's populations. As a result, archived specimens provide a unique opportunity to 'travel back in time' and understand how the ecology and evolution of important species have changed over time. As part of a collaborative project, researchers at Rutgers University (Malin Pinsky, Jennifer Hoey and Mike DiLorenzo), the Rutgers University Marine Field Station (RUMFS; Ken Able) and the University of North Carolina at Chapel Hill (Joel Fodrie), have assembled a collection of over 400 larval summer flounder (*Paralichthys dentatus*) from existing collections spanning estuaries from New Jersey to South Carolina over several decades. The bulk of the specimens were collected between 1989-2012 from long-term ichthyoplankton surveys occurring at RUMFS (New Jersey) and the NOAA Beaufort Laboratory (North Carolina). In addition, access to smaller collections from Delaware, Virginia and South Carolina were graciously granted. We are using a variety of tools, including genomic sequencing, otolith microchemistry, and image analysis to understand 1) the stability of summer flounder population structure, 2) population connectivity and dispersal across time and space, and 3) how regional larval development and size at ingress has changed over time.

Figure 1.A Larval summer flounder being prepared for otolith extraction.

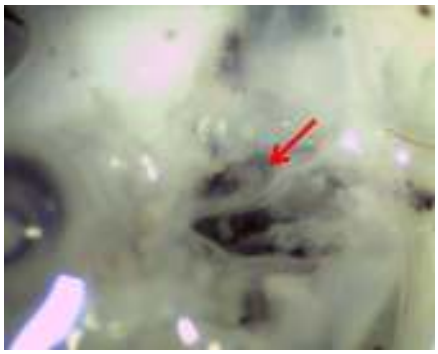

Figure 1.B, Inset showing an otolith.

Deciding how to use archived larval specimens is a little bit like an organ donation; different parts of the specimen can be used for different functions, allowing a single individual to contribute to multiple analyses to answer different questions. Photographs of the collection allow us to take length measurements and monitor the development of individuals based on the location of their eyes. The otoliths (Figure 1c; mind you, they are miniscule!) can be ablated with a laser to understand the environmental microchemistry that each individual experienced. When an otolith is ablated, trace elements are vaporized and then quantified. This can tell us if individuals are coming from a water body with a similar elemental signature, or not, allowing insight into population connectivity. Finally, we can extract DNA from the tissue of individuals and identify places in the genome where there are single base pair differences, called single nucleotide polymorphisms (SNPs).

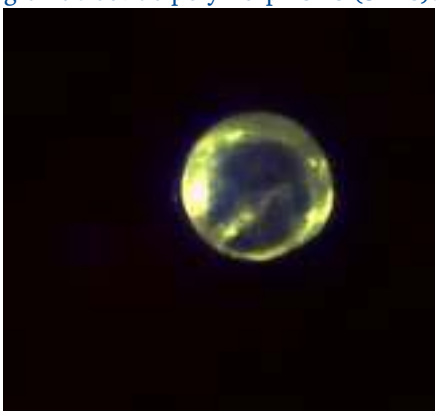

Figure 1.C Extracted otolith.

With hundreds to thousands of these variable sites, we can start to understand population structure, and if it has remained stable over time. Based on how common these SNPs are, we can also get an idea of how much dispersal has been going on between different parts of the species' range. By using a variety of tools and techniques on archived summer flounder collections, we are working to understand how summer flounder have changed in the recent past to better aid in effective management strategies and the continued conservation of this important species.

— Malin Pinsky, Jennifer Hoey and Mike DiLorenzo (Rutgers University), Ken Able (Rutgers University Marine Field Station), Joel Fodrie (University of North Carolina-Chapel Hill)

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European Region

Catriona Clemmesen

Artificial upwelling and fish larvae - a story about a great challenge (full of frustrations) for three larval fish ecologists

When you talk about artificial upwelling, you will sooner than later talk about fish production. The idea is to bring nutrient-rich deep water to oligotrophic surface waters and thus boost primary production, which in turn may be transferred to higher trophic levels. As we all know, the critical bottleneck for fish production is the survival and growth of the fish larvae. Thus, artificial upwelling may be beneficial if it increases the amount of food especially in the first weeks after hatch. The idea was to test under which artificial upwelling scenario the most efficient transfer from phytoplankton via the zooplankton up to the fish larvae could occur. To test this, we wanted to introduce fish larvae to the "artUp"-mesocosms (KOSMOS, pelagic community, 40m^3 volume), which were placed in Gando Bay, Gran Canaria. Most fish around the Canary Islands have their spawning times in the rather windy season in January-February. Unfortunately, that's exactly the time when you don't want to have mesocosms in the open ocean. Therefore, the study was planned for October to December 2018. So, how to introduce larvae when spawning times are not matching the study period? Luckily, we have great colleagues (Laura Ribeiro, Susana Garrido & Pedro Pousão et al.) at EPPO in Olhão - Portugal, who are experts in the aquaculture of sparid fishes, such as the white seabream (*Diplodus sargus*), and are able to produce fish larvae even "off-season" Unfortunately, 2018 had a crazy summer and far too warm autumn temperatures in Portugal - the fish didn't feel like spawning. In the middle of November, the mesocosms were already up and running for 2 weeks. Phytoplankton, protozoan and zooplankton production were picking up and still no good news from Olhão. It was quite a nerve-wracking experience. Everything was good to go, but no fish larvae were available. Then at the end of November, the email arrived from Olhão: "*We have eggs!*". Suddenly, very quickly, the next steps had to be taken: Contacting the transport company "Flying sharks" and preparing all the paper work necessary to get fish larvae to Gran Canaria.

Arrival of the larvae at Las Palmas

Unfortunately, the Canaries are not regarded to be Europe in relation to transport and import rules (rumours say that even Amazon refuses to ship to the Canaries, as import regulations are so difficult!). At the same time in Portugal: "Flying sharks" picks up our babies in Olhão and drives them to Lisbon airport, where they were put on the plane the next morning to arrive at Las Palmas at 13:30. We were getting nervous, how will these tiny creatures manage the long trip. Will the temperature be o.k.? Will we get them in good shape to introduce them to the mesocosms? Then the next problems arose: The customs in Las Palmas were missing some paper work; we could not get the larvae without certain signatures. Luckily, we had the support of Patricia Lopez and Marta Moyano who spent all of Friday on the phone and email and solved these problems. At 19:00 after 24 hours on the go, we received the box! The first inspection, back in the host institute PLOCAN looked good, but the water was too cold for a direct introduction into the mesocosms. We needed to keep them until Saturday afternoon in the lab to slowly acclimate them to 21°C, the same temperature as the Atlantic and mesocosms at that moment.

Diplodus sargus larvae shortly before introduction into the mesocosms

The next morning, they were ready to be distributed to transport containers, one for each mesocosm and one to take back and later count as a reference. We placed the containers on our working boat Wassermann and released them to the mesocosms in Gando Bay. From reference counts we estimated a total if 250 larvae per mesocosm.

To increase our chances of getting more survivors, we decided to go for a second introduction and we introduced another 1250 larvae per mesocosm. So, after two additions, a total of 1500 live larvae of the white seabream, *Diplodus sargus*, were swimming in each mesocosm. Originally we had hoped to introduce around 10.000 larvae per mesocosm, but the adult fish from which we received the offspring had different plans in terms of mating and spawning and thus we had to take what we got. Luckily, in the first days after introduction, we caught several larvae with our zooplankton nets. But unfortunately, catch rates decreased and went to zero in one mesocosm after the other until only in one last mesocosm were larvae left, the highest upwelling mesocosm. The final fishing of the mesocosms is done with a net which has the same diameter as the mesocosm. It is folded when lowered to the bottom of the mesocosms, where it is unfolded and pulled upwards through the entire water column, thus catching all organisms larger than the 0.5 mm mesh size. When rinsing the net samples into the buckets we could see immediately that the nine mesocosms differed a lot in terms of how many and which organisms were caught.

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Europe cont...
Later in the lab, we thoroughly examined all the samples in detail and saw our biggest fear becoming reality. Until early morning we checked every bit of the samples under the microscope, but despite many helping eyes we could not find any fish larvae - not in any of the mesocosms.

Staying focused during the introduction of the fish larvae

Possible reasons why no larvae survived during the first weeks of their life are either they died due to low food conditions and/or they were preyed upon by other predators in the mesocosms, such as jellyfish; we have to wait for the counting of zooplankton abundances to get an idea about possible impacts.

Final fishing with a net, which has the same diameter of the mesocosms

So, what do we learn from this?
First of all, nature is going its own way, despite the biggest efforts in planning for all circumstances in detail beforehand.
Secondly, a lot of good factors have to come together to get fish larvae survive in the ocean - from thousands of eggs and larvae only a minority survives. It's all about eating or be eaten.
Third, be happy with what you get.

We still caught some larvae during the course of the study and these we may use to get a better understanding of what they eat, if they benefit from artificial upwelling, and under which scenario the trophic transfer is most efficient. All of this will be analyzed back at GEOMAR in Kiel. Until then, the larvae stay frozen in minus 80°C, while we will try to raise our spirits again. For detailed information on the artUp project see: www.ocean-artup.eu

— Michael Sswat, Nicolăs Smith Sanchez, Catriona Clemmesen

Citizen Science Project to Sample Larval Fishes

Since 2014 the Marine Station in Concarneau, France, which is part of the Muséum National d'Histoire Naturelle (MNHN) in Paris, conducts a citizen science project called "Objectif Plancton". "Objectif Plancton" was originally launched by the Aquarium Oceanopolis in Brest and is since taking place in Concarneau, Lorient and Brest (ideally on the same day and at the same time) with the goal to collect long-term series of data on plankton and to inform non-scientists about coastal ecosystems. We, at the Marine Station in Concarneau, organize four sampling dates per year and invite sailors to participate with their boats. But basically anybody who is interested can sign up and will get distributed on the usually 5-10 participating sailing boats that day. As money to set up a project like this is as usual limited, we decided to sew our own quite sophisticated Bongo and phytoplankton nets.
So, how does it work? We meet at 10 am with everybody who signed up in advance at the Marine Station. Each boat will be assigned a sampling location in the bay "Baie de la Forêt" and we distribute and explain the sampling gear. The sailors take off to hopefully spend a nice day out at sea and at 2 pm it is time for everybody to put the nets into the water and sample for 15 minutes at the assigned location. The samples are put on ice until the boat returns to the lab. There we meet at 4 pm in order to identify and process the plankton samples, together with the participants. With our three non-academic partners "Explore", "Cap vers la nature", and "Les Glénans" we give presentations on plankton and answer questions while looking through the scopes.
What's in it for us? Well, our participation in the project provided us so far with about 400 larval fish specimens from the Bay of Biscay representing about 20 species and 17 teleost families. This is especially interesting as the larval fish collection at the MNHN represents specimens from the Indo-Pacific and Antarctica but surprisingly contained no larval fish samples from the Eastern-North Atlantic. Thus, the larval fish samples collected during "Objectif plancton" are a welcome addition to the ichthyological collection at the MNHN. We further include some of these specimens in our larval fish-teaching collection in order to provide training in larval fish identification during our larval fish course. In addition to our morphological identification of the larvae we also identify some specimens genetically by barcoding a fragment of mitochondrial DNA (COI) at the molecular lab in Concarneau and compare it to the extensive collection of adult fishes collected in the same area and identified and barcoded by Samuel Iglésias (DOI: 10.13140/2.1.1835.3449). To our knowledge, the last comprehensive assessment of teleost larvae in the northern part of the Bay of Biscay is from the late 60's (Arbault & Lacroix-Boutin 1969). With the help of the project "Objectif Plancton" we started a long-term monitoring project of fish larval diversity in the Bay of Biscay.

...continued next page

Europe cont...

Figure legend: A. Sampling locations in the 'Baie de la Forêt'; B. A participating sailing boat, the 'Marche-Avec'; C. Participants towing a phytoplankton net; D-E. Impressions of our net sewing workshops; F. Sampling with our self-made Bongo nets; G. In the harbour; H. At the Marine Station, sorting and identifying samples with participants; I. Some larvae we found in the samples.

— Nalani Schnell and Cyril Gallut

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Section Business

Don't forget to pay your dues for 2019, or you will miss out on the next issue of STAGES!

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Larval Fish Conference

43rd Annual Larval Fish Conference - Mallorca

The 2019 Larval Fish Conference is happening soon!! The 43rd Annual Larval Fish conference will take place in Palma, Balearic Islands (Spain), during May 21st-24th. Palma is a lively city of 400 000 people, on the Island of Mallorca. The island is known for its beautiful beaches with transparent waters, which are only a short distance from the Serra de Tramuntana, a UNESCO Cultural Landscape World Heritage Site.

Besides tourism and landscape we host the highest density of Marine Protected Areas in Spain and happen to have two National research centers, IMEDEA (CSIC-UIB) and COB-IEO which co-host the Conference. The 2019 LFC local organizers are Ignacio Catalán (IMEDEA), Patricia Reglero (IEO) and Itziar Álvarez (IEO), who are working to make this event a scientific and social success.

The conference venue and logistics: Mallorca is well connected to European hubs, so flights would not be too expensive. Further, the weather at the end of May in Palma tends to be nice (av. min T of 12 °C, av. max T of 25 °C). However, hotels are expensive. The Conference will take place at hotel Melia Palma Marina, a four star hotel recently refurbished conveniently located at a walking distance from the old neighborhood. We have negotiated special rates with the hotel (see our web: https://imedea.uib-csic.es/sites/lfc-2019/), but some more options are given. Lunch (buffet), and gala dinner will be included in the registration fee. Other activities such as running by the sea or guided visits in the old city will be further detailed once we have more info on the participants.

The science: the organization involved a consultation process with ELHS members in order to get a hint about the potential interests of attendees. The survey conducted by Alison Deary and Marta Moyano (Thanks!) also helped defining these interests, which resulted in the definition of the topics and theme sessions highlighted in the table (see next column).

The registration is now open, with further details available on web page. The Larval Identification Workshop will take place on Monday (May 20th) at the IEO facilities, and a workshop on Scientific Writing and Ethics in Science will take place on Wednesday (May 22nd) afternoon.

TOPIC 1. SETTLEMENT: QUANTIFICATION OF PROCESSES AND HABITATS

S1 - Settlement in natural habitats. P. Puerta & C.Orejas (Spain)

S2 - Settlement and Artificial seascapes. P. Lenfant (France)

TOPIC 2. ENVIRONMENTAL AND ANTHROPOGENIC EFFECTS ON EARLY LIFE STAGES

S3 - Non-anthropogenic drivers of ELHS traits: from genes to communities. C.Chambers & E.Rutherford (USA)

S4 - Anthropogenic impacts on ELHS. G.B. Nanninga (UK)

S5 - Parental effects on ELHS. L. A. Fuiman (USA)

TOPIC 3. ELHS AND PREDATION: FROM MORTALITY TO FOOD WEB EFFECTS

S6 - Getting a handle on predation. P. Pepin & H. Murphy (Canada)

S7 - ELHS within food webs. M. Peck (Germany)

TOPIC 4. THE BEHAVIORAL SIDE OF ELHS: FROM INDIVIDUALS TO ECOSYSTEMS

S8 - Advances in ELHS behavior and its relevance to dispersal. R. Faillettaz (USA)

S9 - Early-life experiences shaping individual differences in behaviour within fish populations. J. Alós (Spain)

TOPIC 5. IMPROVING ASESSMENT AND MANAGEMENT MODELS: CONTRIBUTION OF ELHS RESEARCH

S10 - Ecological and evolutionary processes affecting fish ELHS distribution and survival. L. Cianelli & A. Neuheimer (USA)

S11 - ELH and reproductive resilience. S. Lowerre-Barbieri (USA)

S12 - Advances in modelling the pelagic-settling-recruiting ELHS. C. B. Paris (USA)

S13 - Linking ELH to assessment. D. Álvarez-Berastegui & M. Hidalgo (Spain)

TOPIC 6. ONTOGENY, SYSTEMATICS AND NEW TECHNOLOGIES

S14 - Larval fish ontogeny and taxonomy. P. Konstantinidis & J Webb (USA)

S15 - New technologies: from imaging to the omics era.

OTHER CONTRIBUTED PAPERS

...continued next page

LFC cont...

As usual, students can compete for best oral presentations and posters (tick the appropriate box on the abstract submission page), and the winners will be revealed at some point during the final dinner, together with the LFC raffle. We encourage you to bring interesting objects for the raffle; this is essential to raise funds for student grants! Additional information including social events will be announced soon, so keep an eye on our web!!! For more information on the students grants and the general structure of the larval fish conferences, please visit the ELHS webpage. We will keep using our extended ELHS email list, twitter (@LarvalFC2019) and facebook (www.facebook.com/LarvalFC2019/) for further announcements.

Finally, we want to thank Dominique Robert, John Dower, Klaus B. Huebert, Frank Hernandez, Daniel Ottmann, Alison Deary, Marta Moyano, Chris Chamber, Pierre Pepin, and some more (forgotten, sorry!) people for their help in the clarification of doubts. Hope to see many of you there!!

The 43rd Annual LFC organizing committee: Itziar Álvarez (IEO), Patricia Reglero (IEO) and Ignacio Catalán (CSIC).

— Ignacio Catalán (CSIC), Patricia Reglero (IEO) and Itziar Álvarez (IEO).

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Early Career Committee

Alison Deary and Marta Moyano

What are we up to for the 43rd Larval Fish Conference?

The Early Career Committee is growing! We would like to first welcome the new members of our Committee: Hannah Murphy (DFO Canada), Carolin Müller (ZMT Bremen), Kelsey Swieca (Oregon State University), Michael Sswat (GEOMAR Kiel), Lysel Garavelli (NOAA PMEL), and Jessica Randall (Memorial University of Newfoundland). Thanks to this critical mass we are dreaming big this year! We have embarked into organizing not only one, but TWO Early Career events during the next Larval Fish Conference in Palma.

First, we will host a workshop on Ethics in Scientific Writing. Scientific writing always scores as a top priority in our post-conference survey, and this year we are aiming to combine it with another controversial topic that is ethics in science. During this workshop the attendees will first get some tips on paper writing, followed by some specific do's and don'ts on ethics-related issues such as co-authorship, plagiarism, and reviewing. Feel free to drop a line to Marta Moyano (marta.moyano@uni-hamburg.de) if you have specific issues/questions you may want to see discussed at the workshop. Second, we are organizing a lighting session on Scientific Communication. This session will be led by Carolin Müller and Lysel Garavelli. Speakers will share their success stories (or not so successful ones) about how they have approached the task of communicating science to different audiences (e.g. stakeholders, school age children, indigenous people, etc.). Keep an eye on your email as you will soon receive some more information about this event and how you can participate. We hope you participate in both our events at the 43rd Annual Larval Fish Conference! They will be free of charge and open to all interested participants. We are currently planning the specifics of both events so stay tuned to the EHLS social media channels (facebook, twitter) and the conference webpage (https://imedea.uib-csic.es/sites/lfc-2019/) for updates. The ECC would also like to thank the conference organizers, Drs. Ignacio Catálan, Patricia Reglero, and Itziar Álvarez, for their support for making these ECC events happen. See you in Palma!

— The Early Career Committee

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Upcoming Events

Larval Fish Conferences

Early Life History Section - American Fisheries Society

Register Now!



Larval Fish Identification Workshop


May 20th, 2019

At 43rd Annual Larval Fish Conference



Questions? Contact Peter Konstantinidis (peter.konstantinidis@oregonstate.edu)

OSU Oregon State University

43rd Annual LARVAL FISH Conference

MAY 2019, PALMA DE MALLORCA

NOAA FISHERIES

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Stages is published in February, June, and October each year. It is assembled by the Newsletter Editors 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 Editors

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Editor's Ramblings

Time flies, and already the first two months of 2019 have passed, with unexpected and interesting things happening. Here in Europe, we haven't experienced anything as major as the impact of the partial shutdown of US government departments and agencies - as long as we avoid the "B"-word. While February is supposed to be the coldest period of the year in this part of the world, we have had summer temperatures this month, reaching 20°C for almost a week. While we are preparing for our regular ichthyoplankton surveys, we wonder what the effect will be of this early summer.

As for STAGES we are still trying to improve the newsletter. In that respect it is interesting to read in Lee's contribution that all editors up to now have tried to create their own look for STAGES. We have tried incorporate many (but not all yet) of the comments we received from you readers (thanks Dan!). A major complaint was the placement of the STAGES banner in the last issue, and we have increased it again to its proper size. Enjoy reading this issue and keep sending us your stories and comments and thoughts on the formatting of the newsletter.

There are also changes to our newsletter team: We welcome Catriona Clemmesen as European Region representative - with a hearty thanks to Hubert Keckeis for channeling European larval fish news to the newsletter. It's great to have Catriona back in action for the section. There are more openings for members to get involved: for social media, and as stated in the President's Message, for the Early Career Committee. Thank you to all those that are leaving - you'll be hard acts to follow, but hopefully an inspiration to new members to get involved.

Don't forget the early bird registration deadline for the LFC in Palma (end of March)!

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