



AQUATIC & FISHERY SCIENCES NEWS

SCHOOL OF AQUATIC & FISHERY SCIENCES COLLEGE OF THE ENVIRONMENT UNIVERSITY OF WASHINGTON

fish.washington.edu/newsletter

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Photos (left to right):
Jackie Carter, Jeremy Monroe,
Amanda Phillips, Jonathan Moore

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Autumn 2014/
Winter 2015

From the Director Ups and Downs at SAFS

Dear alumni and many friends:

The last six months have been a period of extreme highs and lows for the SAFS family.

On the high front, our faculty and students continue to excel in many ways. For example, 25% of our undergraduate majors were on the Dean's list in fall 2014—as far as I know, the highest SAFS percentage ever. Professor Julian Olden recently followed faculty members Trevor Branch and Julia Parrish in being inducted into the exclusive Aldo Leopold Leadership Fellowship program; Professor Daniel Schindler joins his father as a recipient of the Frank Rigler Award, the highest honor bestowed by the Society of Canadian Limnologists. Finally, four faculty members—Ray Hilborn, Ted Pietsch, Tom Quinn, and most recently myself—are now in the Washington State Academy of Sciences.

Our signature seminar series, the Bevan Series on Sustainable Fisheries (depts.washington.edu/donbevan), is currently underway under Daniel Schindler's leadership. This year it is focusing on five topical areas, including management of marine mammals, recreational fisheries, and seafood certification. For those of you who missed any of the lectures, they can be downloaded via the website and watched at your leisure. Thanks to Tanya Bevan, the Alaska and Northwest Fisheries Science Centers, and Washington Sea Grant for their continued support of the series.

SAFS faculty, students, and staff remain at the forefront of research addressing issues critical to Washington State and the nation. In this issue, we highlight SAFS research on small pelagic fishes and their fisheries. These fisheries provide some of the largest catches in many regions of the world, yet the fishes themselves are a source of forage for many species that have high commercial and recreational value and are threatened or endangered. Our research is helping to understand the dynamics of these species and how they can be managed, given their many uses.

The strength of the SAFS program is, in part, due to the diversity of our community, evident in the international make-up of our students and alumni. We caught up with four alumni who came to SAFS from Argentina, Nigeria, and Iceland. Three of them continued on to careers in academia and research, while the fourth has moved into the policy and management arena.

This newsletter includes memoria for two of our emeritus faculty, Al Erickson and George Pigott. They both served the School for decades, mentoring numerous students and advancing the state of science in their respective fields.

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Small Pelagic Fish Research at SAFS

—André Punt, Director

Photo: Hoatzinexp/iStock/Thinkstock

Small pelagic fishes, which include sardines, herring, and anchovies, are a key resource for commercially important species, such as tunas, as well as for pinnipeds, cetaceans, and seabirds, some of which are threatened or recovering from overexploitation. Whether and how fisheries for small pelagic fishes should be assessed and managed is becoming critical for fishery and conservation managers. For decades, SAFS has conducted research in support of small pelagic fisheries; current investigations are being conducted by several SAFS faculty—Trevor Branch (TB), Tim Essington (TE), Lorenz Hauser (LH) and myself (AP)—and three students—Felipe Hurtado (PhD, Punt advising professor), Melissa Muradian (MM; MS, Branch advising professor), and Eleni Petrou (PhD, Hauser advising professor).

AP: What is the focus of your research?

TE: Members of my lab and I are interested in understanding how to better manage fisheries for small pelagic fishes (SPF) to protect their ecological role in food webs. We are using various tools, including simulation modeling and data synthesis, to explore trade-offs generated by fishing forage fish and to reveal the “footprint” of fishing on small pelagic fishes.

AP: Felipe Hurtado and I are involved in the re-evaluation of the harvest control rules used by the Pacific Fishery Management Council to manage the fishery for Pacific sardine. Felipe has developed a framework to evaluate the trade-offs between the size of catches and the risk of the population dropping to undesirably low levels. He has applied this framework to the SPF fishery off southern Australia.

LH: Herring are structured into easily identifiable spawning assemblages, but their genetic structure is in

dispute. With funding from Washington Sea Grant, Eleni Petrou and I are using genetic markers to identify isolated populations among these spawning assemblages. We are also developing genetic markers that can be used on herring bones dating back several thousand years and will integrate this research with traditional ecological knowledge of tribal elders in Washington State and British Columbia.

TB: The Pacific herring population in Prince William Sound, Alaska, crashed shortly after the *Exxon Valdez* oil spill and has yet to recover. As a result, commercial fishing on herring in the Sound has been closed for more than 20 years, resulting in approximately \$230 million in lost income for Alaskan communities. Many questions persist regarding the extent of the spill’s influence on the crash and continued low abundance of herring. The research being conducted in my lab focuses on improving the assessment model that the Alaska Department of Fish and Game (ADFG) uses.

AP: What have you learned?

TE: That is complicated! There are a lot of pathways in food webs, so it is remarkably difficult to predict exactly how a change in fishing policy can affect ecosystems. That said, we have identified some fairly simple rules that, if followed, would avoid the worst ecological outcomes at very little cost to fisheries. Also, we find that you often don’t need to know all of the specifics of ecological interactions to derive sensible fishing policies. In addition, there are some easy ways to spot which small pelagic fish is a “key” species in food webs.

AP: There are strong trade-offs among the management objectives, as expected. While prohibiting directed fishing below a certain level of biomass can lead to much lower risk without major losses in expected catch, setting this level too high can lead to frequent closures of the fishery, which is a bad outcome.

LH: Some spawning assemblages are more isolated from each other than is commonly assumed, especially if they are isolated by geography or spawn at different times. For example, at least three genetically differentiated herring populations exist in Puget Sound.

MM: The model estimates a 55% probability that the biomass of age-3 and older herring was below the management threshold of 22,000 short tons in 2013.

AP: How does your research help us manage small pelagic species sustainably?

TE: The key question is whether SPFs are more valuable in the ocean, feeding other highly valuable predators, or as a commodity to be fished. Our work is developing tools to answer this question. In addition, we have identified a common pattern in the collapse of small pelagic fisheries that can easily be avoided by adopting a more precautionary approach.

AP: Our work is feeding directly into the management processes for fisheries off the US west coast and Australia. For example, recently the Scientific and Statistical Committee of the Pacific Fishery Management Council changed how it sets overfishing levels for Pacific sardine based on the results of our research.

LH: The extent of population structure is important for management because weaker populations have to be managed independently to protect them from over-exploitation. The conservation of population diversity is important for management because it increases the resilience of the species as a whole to environmental perturbation. Estimating past abundance of genetically divergent populations from archaeological bones will provide important clues about population diversity before commercial fishing began.

MM: We can estimate the risk associated with different management decisions for Prince William Sound herring and test alternative hypotheses for the herring decline.

MD: Who are you working with on this project?

TE: An army of colleagues: Steve Munch (NOAA Fisheries), Eva Plaganyi (Commonwealth Scientific and Industrial Research Organisation, CSIRO), Bill Sydeman and Julie Thayer (Farallon Institute), and my entire lab group.

AP: Like Tim's research, our work is highly collaborative. In relation to Pacific sardine, we constructed our models using fishery data from Kevin Hill (NOAA Fisheries) and environmental data from the California Cooperative Ocean and Fisheries Investigations. We have had feedback on our work from the Pacific Fishery Management Council's advisory bodies. They have advised us on which strategies to test and how to present results in a way that is useful for decision making. The work in Australia is in collaboration with scientists at CSIRO.

left: Melissa Muradian (at 2AM) on the RV *Solstice*, which is used by ADFG to collect herring data.

right, l to r: Richard Reid (Heiltsuk Integrated Resource Management Department), Eleni Petrou (SAFS), and Kira Krumhansl (Simon Fraser University) collecting fin samples from Pacific herring along the Central Coast of British Columbia. Photos, l to r: Richard Brenner, Mark Wunsch



LH: I am working closely with managers at the Washington Department of Fish and Wildlife and increasingly with local Tribes, especially the Suquamish. We also collaborate closely with the Herring School (a coast-wide group of academics), Canadian First Nations, and resource managers. And, we are collaborating with the Department of Archaeology at Simon Fraser University and participating in a project funded by the Canadian government to investigate the importance of stock structure for stock assessment and ecosystem-based management.

MM: Our work is part of a larger research and monitoring effort—which combines a group of approximately 15 experts in the fields of oceanography, disease pathology, fish and marine mammal ecology, and population modeling—to better understand what is happening to Prince William Sound herring.

AP: What is next?

TE: We need some testing of possible fishing strategies with realistic population dynamics. Existing modeling assumes that small pelagic fishes behave like other stocks. We know that this isn't the case; they are highly sensitive to environmental conditions

and undergo long-term population cycles. I want to test some management strategies to determine which are robust to population cycles and predator characteristics while also ensuring fishing opportunities.

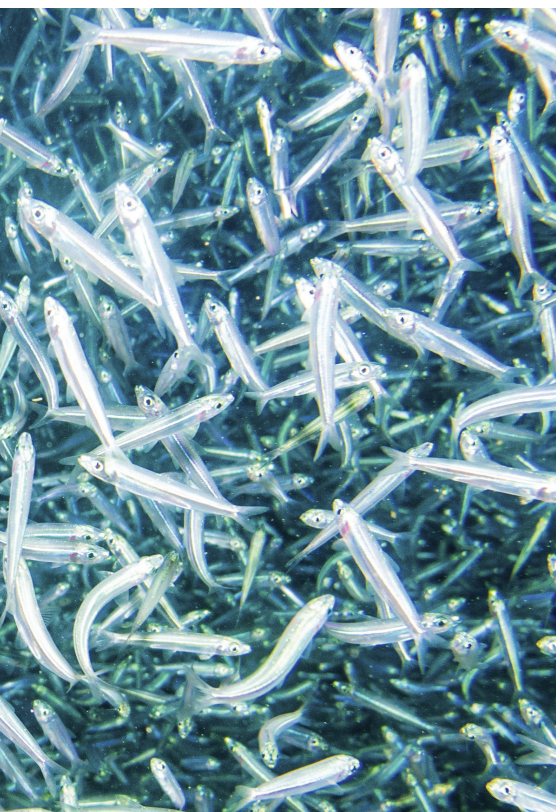
AP: Our work on Pacific sardine on the US west coast and the small pelagic fisheries off Australia has focused on direct impacts of fishing. Like Tim, we are interested in the ecosystem impacts of fisheries for small pelagic species. We are working to link our population models with ecosystem models to better understand those indirect effects as part of the Ocean Modeling Forum.

LH: Eleni Petrou already had a successful sampling trip to the British Columbia coast. We will now develop a way to increase the number of suitable genetic markers. We are also developing protocols for interviewing tribal elders that will be used to collate traditional ecological knowledge and information on the cultural significance of herring.

MM: We will determine the relative value of each input data type supplied to the assessment, which has practical implications for guiding managers and scientists in their data collection efforts. ■

left: Silverside herring Photo: Hoatzinexp/iStock/Thinkstock

right: Sardine run Photo: liveoostockimages



In Memoriam

Albert W. Erickson, 1929–2013

Sources: *Wildlife Professional* 8(3):79
and the Erickson family

Al Erickson was known for his expertise in bear biology and wildlife management, which frequently led him to extreme latitudes to conduct research on marine mammals.

Born in Chicago and raised in Michigan, Al received his BS and PhD degrees from Michigan State University. Before coming to the UW, he held several wildlife-related positions, including associate professor at the University of Idaho, curator of mammals at the University of Minnesota's Bell Museum, and regional director of the Alaska Department of Fish and Game, Anchorage.

In 1975, Al came to SAFS (then UW Fisheries), where he remained until retiring in 1993. At Fisheries, he conducted seven research tours to Antarctica to study killer whales, seals, and other marine mammals. In honor of his efforts, the Advisory Committee on Antarctic Names designated a series of bluffs in Antarctica the "Erickson Bluffs." Al also pursued black bear studies in Alaska.

Al was a very colorful and direct person, and a great story teller, which is no surprise given the wealth of material he accrued from his adventures in the field. When he returned from field seasons in Alaska or elsewhere, his colleagues would gather in the lunch room for the latest installment of the "Tales of Erickson." Whether with research colleagues or family and friends, he gained a reputation for frequently coining new words on the spot ("Al-isms").

He was absolutely fearless in the wild, whether chasing a bear cub into the woods to tag it, or taking a harrowing ride down a long hill in his suddenly brakeless truck—while hauling a trailer—all of which he handled with his typical aplomb.

Retirement just meant a new phase in a busy life for Al. After he left Fisheries in 1993, he became a farmer, rancher, and hunting club owner in Monroe, Washington. At the age of 74, he took up track and field, distinguishing himself several times as Washington State, US, and World Decathlon Champion for his age group. ■

George Pigott, 1929–2014

Sources: *The Seattle Times*,
*Journal of Aquatic Food Product
Technology*, and Barbee
Tucker-Pigott



Photo: Courtesy of Barbee Tucker-Pigott

George Pigott grew up in Seattle, attending Roosevelt High School, where he began his life-long love of Big Band music (he played trombone). As an officer in the Army Chemical Corps, George served in Korea and participated in the Nevada A-bomb tests.

At the University of Washington, George earned BS, MS, and PhD degrees in Chemical Engineering. He took a faculty position in 1963 at the then UW College of Fisheries. He taught numerous courses and mentored many graduate students through the College's Institute of Food Science during his 37 years at UW, and served as the Institute's director for 10 years. He especially valued ongoing friendships with his graduate students, delighting in their successes.

George was well known for attracting students from around the world. One of his students, Om Agarwala, said: "On the first day of lectures, Dr Pigott [introduced] all his graduate students: 'Om from India, Soliman from Egypt, Tarky from Chile, Sutton from South Africa, Gunnar and Per from Norway, Sophia and Chu from Taiwan...and we do have one from USA, Patty Stevens!'"

George's wife, Barbee Tucker-Pigott, described George's research: "He is best known for emphasizing 'total utilization' of seafood. He often said that there is no such thing as waste, only secondary by-products." For example, he developed a hydrolyzed fish fertilizer using fish carcasses.

With his students, George investigated diverse aquatic food science issues such as improving surimi quality and using soybean meal in salmon diets. And he was among the first scientists to promote the health benefits of omega-3 fatty acids. After he retired, he continued his interest in total utilization: Using post-processing fish carcasses, George developed commercially viable smoked salmon snack products.

George authored more than 200 published technical papers and several book chapters, and was founding editor of the *Journal of Aquatic Food Product Technology* (JAFPT). (Barbee served as associate editor.) He traveled worldwide

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Alumni Features

Paulinus Chigbu

PhD, UW School of Fisheries, 1993

Trophic role of longfin smelt in Lake Washington
(Tom Sibley, faculty adviser)

<http://www.umes.edu/LMRCSC/Default.aspx?id=16496>



Photo: Judy Rose

Paulinus is a native of Mbaise, Nigeria. He attended the University of Benin (UNIBEN), Nigeria, for his undergraduate studies. Working with Professor Austin Egborge, he studied rotifers in a reservoir, which sparked his interest in aquatic biology. He then enrolled in a master's program at UNIBEN, during which time he received a Fulbright scholarship to pursue a PhD at UW Fisheries.

After completing his MS, he came to the UW to work with Professor Tom Sibley. Paulinus noted, "Dr. Sibley supported my studies and enabled me to attend and present my research at major professional conferences almost every year I was at UW. That helped me to interact with scientists and students from various institutions."

Paulinus described his PhD study: "I was investigating population and trophic ecology of longfin smelt in Lake Washington. Smelt population abundance seemed to have increased following improvements in the environmental quality of Lake Washington and its major tributary, the Cedar River." His research helped document the responses of smelt to the changes, as well as address concern that longfin smelt were competing with juvenile sockeye salmon for food.

Paulinus said many of his most memorable interactions were with his fellow graduate students. He recalled, "They volunteered to help me with nighttime sampling to collect fish, conduct zooplankton tows, and trap smelt using fyke nets." And in turn, Paulinus assisted them with surveying stream fishes; transporting, stocking, and feeding salmon in net pens; and recording telemetry of piscivorous fish in Lake Washington.

After earning his PhD, Paulinus served as an assistant professor of Biology and director of the Marine Science Program at Jackson State University (JSU), Mississippi. At JSU, one of his projects focused on the influence of

interannual variations in climatic factors on water quality dynamics and shellfish management. He noted, "This resulted in developing a decision support tool for managing shellfish in Mississippi Sound." He ultimately went to the University of Maryland Eastern Shore (UMES), where he serves as professor of Marine and Fisheries Science and director of the NOAA Living Marine Resources Cooperative Science Center.

At UMES, Paulinus teaches and mentors undergraduates and graduate students in the Marine Estuarine and Environmental Science program. He talked about some of his current research with these students:

"We are trying to understand the influence of climate variability and human activities on water quality, fishes (for example, summer flounder, bay anchovy), and invertebrates in the coastal bays of Maryland and the coastal ocean of the mid-Atlantic." He also had the pleasure of establishing and coordinating a Research Experience for Undergraduates program in marine and estuarine science at UMES.

Paulinus credits his education at SAFS for preparing him for his career as a faculty member, research administrator, and student mentor. He is also grateful for the financial support he received from SAFS endowments, including the Cobb Scholarship, the Chapman Scholarship, and the Mason Keeler Endowment for Excellence: "These awards enabled me to complete my research work."

Paulinus considers it important to strike a healthy balance between work and "life." He qualified this: "Some academics are so interested in their work that it becomes their 'life' and they are happy doing that." As far as his own extracurricular activities go, he said "I enjoy any opportunity I get to play soccer, tennis, and chess." ■



Photo: Ragna Gudbrands

Geir Oddsson

MS, UW School of Fisheries, 1995

Physiological stress and survival in trawl caught and discarded Pacific halibut (Hippoglossus stenolepis Schmidt 1904)
(Ellen Pikitch, faculty adviser)

Geir was born in Reykjavik, Iceland. Early on, he developed an interest in the ocean: He said, “The sea has been an integral part of people’s everyday life—a means of income and survival—through the centuries on that little rock in the North Atlantic.” The close relationship Icelanders have had with the ocean has instilled a healthy respect for the sea and an interest in the sustainability of its resources.

Like others of his generation, Geir was influenced by Jacques-Yves Cousteau. He read Cousteau’s “The Silent World” at a young age, which motivated him to become a fisheries scientist.

As an undergraduate, Geir studied biology at the University of Iceland (UI). At that time, he also had a part-time job at the Icelandic Marine Research Institute (MRI). With encouragement from the MRI director, upon graduation, he took a position as the head of MRI’s laboratory on the west coast of Iceland.

Most Icelandic fishery scientists looked to Norway for their graduate studies, but Geir instead decided to check out universities on the US west coast. He visited the UW School of Fisheries, noting “It was one of the top fisheries programs, and I made a good enough impression to be admitted.”

At UW Fisheries, Geir was affiliated with the School’s Fisheries Research Institute (FRI). He described his advising professor, Ellen Pikitch, who was FRI director at that time: “She was a whirlwind of ambition and energy, which rubbed off on her students and staff.”

Coming from the North Atlantic, Geir jumped at the chance to do field research in the North Pacific. For his MS research, Geir investigated the physical and physiological parameters that could predict the survival of Pacific halibut as bycatch in the Alaskan trawl fisheries.

After completing his MS, Geir’s career really took off. Pikitch had just accepted a new job in New York, and she brought Geir and another Fisheries student, Beth Babcock, with her. Together they launched the Marine Protection

Program at the Wildlife Conservation Society: “I was a research fellow and it was an invaluable experience,” Geir noted.

In 1998, Geir took a position at the UI, Reykjavik, as the director of the new Environmental Research Institute, which included overseeing an interdisciplinary MS program on environment and natural resources. He said, “My time at UW Fisheries gave me the background to be able to build a successful multidisciplinary program at the UI.”

While at UI, Geir also consulted for the FAO and the World Bank, built a successful IT start-up business focusing on location-based technology solutions for the mobile industry and, between 1999 and 2001, served as the secretary of the Icelandic Parliament’s Committee on Natural Resources. In 2006, he was recruited to the Icelandic International Development Agency, where he served as head of several departments and programs that focused on missions in Central America and Uganda.

Currently, Geir lives in Copenhagen, where he is senior policy advisor at the Nordic Council of Ministers, comprising Denmark, Finland, Iceland, Norway, and Sweden, as well as Åland, Greenland, and the Faroe Islands. He elaborated: “I am responsible for Nordic cooperation, regional policy, and strategy development on marine resources, fisheries, and aquaculture as well as the biobased economy.”

Geir’s job entails supporting political processes at a regional level based on national and international policies and strategies. He added, “Fisheries and aquaculture are prominent industries in the Nordic countries and profiling sustainable Nordic solutions to the European Union and to international institutions is a big part of my job.”

Looking back at his time at UW Fisheries, Geir said: “It was an invaluable part of my development as a scientist and a person. I was lucky to work with a fantastic group of students and staff. There is no doubt that having the luck to study at Fisheries shaped my future in a positive way.” ■

Alumni Features continued

Ana Parma

PhD, UW School of Fisheries, 1989
*Contributions to stochastic models for the
management of exploited fish populations*
(Doug Chapman, faculty adviser)



Photo: Courtesy of Ana Parma

Ana was born and raised in La Plata, Argentina. She attended the University of La Plata in Buenos Aires, where she earned a biology degree in 1977, during a “very difficult period in Argentina, when political persecutions under the military dictatorship took a heavy toll on academic institutions.”

In 1979, Ana participated in an international marine training program held at the Duke University Marine Lab, which included a trip to other US marine research centers. As part of this program, she visited the UW School of Fisheries (now SAFS) and decided she wanted to return as a graduate student some day. For the next few years, Ana worked as a marine fisheries biologist in a small coastal lab in Patagonia. In 1983, she was awarded a scholarship from the Organization of the American States to pursue graduate studies at the UW.

At UW Fisheries, Ana sought to study population modeling and management strategy evaluation, but her quantitative background was “close to nonexistent” when she arrived. Fortunately, the Fisheries program was very flexible and allowed Ana to tailor her studies to her needs and interests. This included having Rick Deriso—affiliate faculty and stock assessment scientist with the International Pacific Halibut Commission (IPHC)—as her effective thesis supervisor.

Ana’s PhD research was focused on optimal harvest-in the face of uncertainty, motivated by classical debates about factors driving productivity trends in Pacific halibut. She noted that, while her project was all “desk work,” she participated in field research at the IPHC. Ana also served as a teaching assistant.

After earning her PhD at Fisheries, Ana continued her work with the IPHC, first as a post-doc and then as a researcher in charge of the harvest policy evaluation. She participated in UW activities during her 10 years at the IPHC.

When Ana returned to Argentina, she took a job with the Centro Nacional Patagónico (CENPAT) in Puerto Madryn. While this organization is not an academic institution, its staff works with university students, both on CENPAT projects and on student research at other institutions. Ana has worked with students to investigate aspects of population dynamics of scallops, mussels, and clams; monitor reef fish populations and recreational fisheries; and analyze fleet behavior in shellfish fisheries.

Like her late husband, Lobo, Ana has maintained close contact with SAFS over the years: “I’ve participated in research projects led by SAFS faculty and have interacted with faculty and post-doctoral students in projects conducted in other centers such as the National Center for Ecological Analysis and Synthesis in California. Also, I have served on PhD committees for several SAFS students.”

She reflected on her time at Fisheries: “It was one of the most fulfilling times in my life: years of learning and discovery, of growing personally and academically. My entire career was shaped through my interactions within the School and I still have intact the same sense of belonging I had when I was a student there.” Like so many students, Ana benefitted from several Fisheries endowments, including the Faculty Merit Award. ■

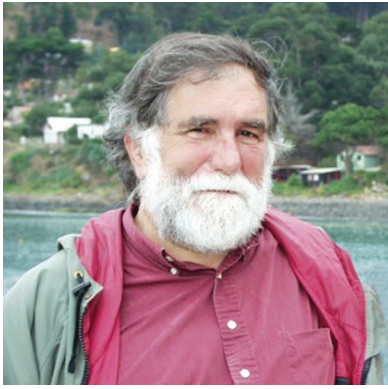


Photo: Billy Ernst

José M. “Lobo” Orensanz, 1945–2015

PhD, UW School of Fisheries, 1989

Studies on growth and population dynamics of a stable native littleneck clam (Proto staminea) population (Garrison Bay), North Puget Sound, and its cancrid crab predators (Cancer spp.)
(Vince Gallucci, faculty adviser)

José M. “Lobo” Orensanz passed away suddenly on January 5. In honor of Lobo, we have established the Lobo Orensanz Endowed Fund for Student Support. Please see From the Director for more about Lobo and how you can contribute to his endowment.

Lobo was born in Mar del Plata, Argentina. In 1977, he moved to Ensenada, Mexico, during the days of his country’s last military dictatorship. Originally trained as a zoologist—he earned his licenciatura (“permission to teach”) degree in zoology from the National University of La Plata, Argentina—Lobo said, “I was motivated to pursue a degree in Fisheries because of my involvement with research and management of shellfisheries in Patagonia.”

In 1979, Lobo moved to Seattle to pursue a graduate degree at SAFS, with Vince Gallucci as his advising professor. At SAFS, Lobo’s PhD research was focused on the biology and management of shellfish resources. This entailed a lot of time in the San Juan Islands: field work at Garrison Bay and lab work at the Friday Harbor Laboratories. He also served as a teaching assistant for undergraduate courses on population dynamics and collaborated with SAFS Professor David Armstrong on projects dealing with Dungeness crab ecology and population dynamics.

While working towards his SAFS degree, Lobo also pursued graduate studies in zoology at the University of La Plata in Buenos Aires. With funding from the National Science Foundation, he investigated polychaete worms in the Antarctic and Subantarctic seas, and he earned his first PhD in 1987.

Lobo returned to Argentina in 1989, but he noted, “The country spiraled into a deep economic crisis, so I returned to SAFS, where I held research associate and professional staff positions.” He worked with Armstrong, co-teaching the invertebrate fisheries course and collaborating on research

including the impact of the *Exxon Valdez* oil spill in Prince William Sound, snow crab in the eastern Bering Sea, and other crab-related projects. He then returned again to Argentina, where he and his wife, Ana Parma (also a SAFS graduate; see opposite page), worked at the Centro Nacional Patagónico (CENPAT).

His CENPAT work notwithstanding, Lobo continued to maintain close ties with SAFS: “I worked with David on studies of snow crab from the eastern Bering Sea, and co-authored several papers with Professor Ray Hilborn that focused on fisheries management. I also served on graduate student committees.”

When asked about the value of his time at SAFS, Lobo said, “Beyond the obvious—academics and training—SAFS and UW in general provided an ambit where I was able to enjoy the best things in life, and a place to recover, affectively and intellectually, from the inevitable wounds left by life in the Argentina of the 1970s.” Lobo benefitted from financial support during his PhD studies at SAFS, including the Faculty Merit Award.

Lobo had a deep interest in the natural history of southern South America that goes beyond the strictly academic. He said, “My interactions with artisanal fishers has been a major source of social and epicurean motivation.”

Editor’s note: Since Lobo and Ana lived and worked together, we couldn’t resist asking how their relationship came about. Lobo obliged: “Ana and I met in the ‘70s in Puerto Madryn, where we work now. I was working on a scallop project in Patagonia, and Ana showed up with a class taking a course field trip on marine botany. During the next year or so, she returned several times. Almost a decade after I met her, we reconnected when we were both at SAFS.” They married in the mid-90s and have one daughter, Mora. ■

Degrees Awarded, Autumn 2013–Summer 2014

Our student research encompasses numerous and diverse disciplines, including biology, ecology, fisheries management, disease, genetics, physiology, and statistics—as well as interdisciplinary subjects—in pursuit of improving our understanding of the interactions between humans, our environment, and the resources upon which we rely.

BS Degrees

Joshua Abel
Daniel Auerbach
Sydni Baumgart
Jessica Blanchette
David Boehm
Sonia Brugger
Charles Dueber,
Magna Cum Laude
Ahmad Durrani

Paul Ehlen
Stacey Feeken
Sarah Friedman
Jennifer Gardner,
Summa Cum Laude
Heather Carleen Gibbons
Annie Gower
Matthew Aron Grodzins
Eric Harris

Lindsay Marie Hart
Charles Heller
Jenna Marie Keeton
Garrett Max Knoll,
Cum Laude
Marina A. Krasnovid
Jennefer Lopez
Veronica McLaughlin
Ashley Nichole Peterson

Brandon Martin Ringstad
Kaitlyn Michelle Robbins
Dana Roberson
Meghan Rosewood
Jennifer Shaffer
Rebekah Stiling
Adrian McFarland Tuohy
Hannah Wear

SAFS class of 2014

Photo: Rachel Faircloth



MS Degrees (advising professors in parentheses)

- Kale Bentley (Schindler) Ecology of stream-dwelling fishes in response to inter-annual variation in the abundance of spawning sockeye
- Aaron Thomas David (Simenstad) The effects of wetland loss and restoration on juvenile salmon foraging and growth potential in Pacific Northwest estuaries
- Polly Gibson (Olden) The ecological role of beavers in dryland streams and their influence in structuring native and nonnative fish communities
- Pascale Goertler (Simenstad) Juvenile Chinook salmon (*Oncorhynchus tshawytscha*) life history diversity and growth variability in a large freshwater tidal estuary
- Douglas Immerman (Roberts) Sablefish (*Anoplopoma fimbria*) sperm: the physiology of activation and the development of cryopreservation protocol
- Marissa Jones (Seeb L) Hatcheries, phenology, and families: juvenile steelhead ecology in Forks Creek, Washington

PhD Degrees (advising professors in parentheses)

- Brian J. Burke (Anderson J) Yearling Chinook salmon ecology and behavior during early-ocean migration
- John Frew (Grue) Development of a new method for the determination of residues of the neonicotinoid insecticide Imidacoprid in juvenile Chinook using ELISA detection
- Mackenzie Gaverty (Roberts) Regulation of environmental responses in the Pacific oyster, *Crassostrea gigas*
- Adam Hansen (Beauchamp) Persisting in the pelagic: environmental, behavioral, and morphological controls on predator-prey interactions
- Sarah Heerhartz (Simenstad) Evaluating the ecological performance of nearshore fish habitat enhancements in an urbanized estuarine bay in Puget Sound, WA

- Iris M. Kemp (Beauchamp) Spatial-temporal patterns in distribution and feeding of juvenile salmon and herring in Puget Sound, WA
- Rachel Lange (Horner-Devine) Patterns of bacterial communities in aquatic ecosystems
- Kalyn MacIntyre (Laidre) Spacio-temporal distribution and behavior of the bearded seal (*Erignathus barbatus*) in the Bering, Chukchi, and Beaufort Seas relative to changing environmental conditions using passive acoustics
- Kathleen C. McPeck (VanBlaricom) Food web impacts of geoduck clam aquaculture practices in Puget Sound, Washington
- Emily S. Runnells (Hunt) Decadal change in seabird foraging activity, forage fish, and plankton in Cattle Pass, San Juan Islands, WA
- Lisa Triggs (VanBlaricom) Establishing endocrine and behavioral parameters of reproduction in Pacific walrus (*Odobenus rosmarus divergens*)

- Stan Kotwicki (Punt/Horne) Combining bottom trawl and acoustic data to improve survey derived abundance estimates of semipelagic species
- Peter Lisi (Schindler) Watershed controls on stream thermal regimes: effects on salmon spawn timing and species interactions
- Andrew Scheld (Anderson C) The economic effects of multispecies catch share management
- Cody Szuwalski (Punt) Reaching management objective under uncertainty: a management strategy evaluation for the eastern Bering Sea snow crab fishery
- Emma Timmins-Schiffman (Roberts) The effects of ocean acidification on multiple life history stages of the Pacific oyster, *Crassostrea gigas*: implications for physiological trade-offs

Gifts, Autumn 2013–Summer 2014

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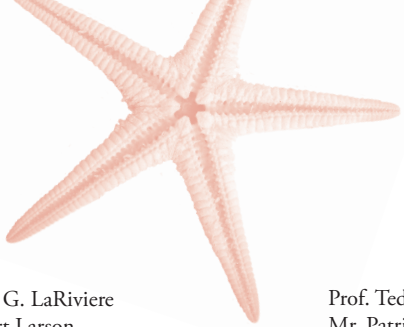
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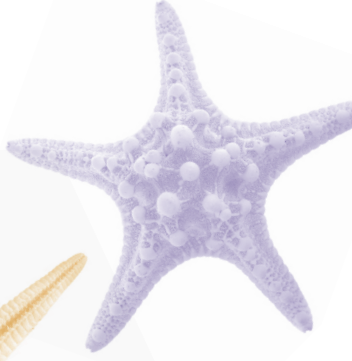
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Awards & Honors

Students

Degree track and faculty advisers in parentheses

Emily Davis (MS, Schindler) was runner-up for the Best Student Oral Presentation at the Joint Aquatic Sciences Meeting for her talk, “Wildfire impacts on stream metabolism across gradients of space, time, and fire severity in an Idaho wilderness watershed.”

Susie Dobkins (BS) was awarded a Mary Gates Leadership Scholarship, which encourages undergraduate students to develop their leadership abilities through practical experience, personal reflection, and in community with mentors and peers. She also obtained a Jackson Munro Public Service Fellowship/Scholarship for her involvement in public service.

Ava Fuller (MS, VanBlaricom) received an NSF Graduate Research Fellowship.

Jessica Hale (MS, Laidre) obtained a Dr. Nancy Foster Scholarship from NOAA and won the best poster award for “How will sea otter diet change as population size and range increase?” at the 18th Annual Meeting of the Northwest Student Chapter of the Society for Marine Mammalogy.

Peter Kuriyama (MS, Branch) won a NMFS/Sea Grant Population and Ecosystem Dynamics Fellowship.

Meryl Mims (PhD, Olden) and Charlie Waters (MS, Naish) each received a College of the Environment Hall Conservation Genetics Research Award.

Nirupam Nigam (BS) netted The Ellie Dorsey Award through the Friday Harbor Laboratory.

Mark Sorel (MS, Beauchamp) was awarded the David Lamb Memorial Scholarship from the Washington State Lake Protection Association for his work on food-web implications

of reintroducing Chinook and coho salmon, and steelhead trout above three hydroelectric dams on the North Fork Lewis River.

Erika Sutherland (MS, Olden) received an Anchor QEA Scholarship as well as a Northwest Climate Science Center Fellowship.

Carolyn Tarpey (MS, Seeb L) and Ryan Waples (MS, Seeb L) were awarded scholarships from the Summer Institute of Statistical Genetics.

Ryan Waples (MS, Seeb L) won the James E. Wright Graduate Award from the American Fisheries Society.

Chantel Wetzel (PhD, Punt) was a member of a NOAA research group that was awarded a Department of Commerce Gold Medal for developing an innovative method that triples the number of high-quality stock assessments and increases allowable catch limits for fishermen.

Faculty

Julian Olden was awarded an Aldo Leopold Leadership Fellowship. He is one of only 20 researchers worldwide to receive this unique opportunity to enhance his leadership skills in translating science into action.

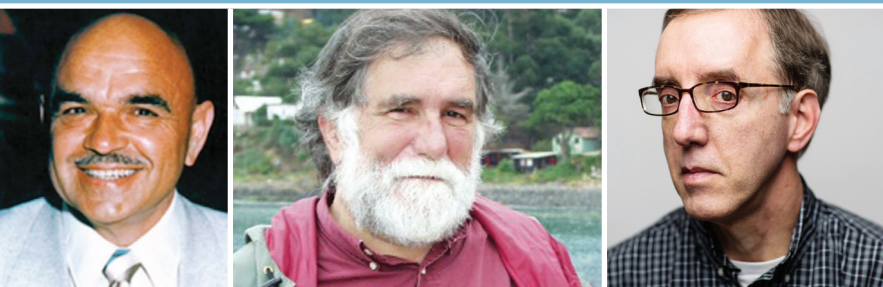
André Punt was elected to Washington State Academy of Sciences. André joins SAFS faculty members Ray Hilborn, Ted Pietsch, and Tom Quinn as members of the Academy.

Daniel Schindler was the 2015 recipient of the Frank Rigler Award, which is the highest honor bestowed by the Society of Canadian Limnologists. ■



l to r: Meryl Mims, Peter Kuriyama, Daniel Schindler, Jessica Hale, Erika Sutherland, Carolyn Tarpey

Graduate student photos: Rachel Faircloth; Faculty photo: Courtesy of the College of the Environment



l to r: George Pigott, José "Lobo" Orensanz, Russell Herwig

Photos, l to r: Photo: Courtesy of Barbee Tucker-Pigott, Billy Ernst, Courtesy of College of the Environment

—*From the Director, continued from page 1*

Sadly, as we were preparing this newsletter, one of the alumni featured in this issue passed away. José "Lobo" Orensanz was a brilliant scientist in many aspects of natural history, an insightful and passionate conservationist, a committed friend to fishing communities in support of their industries and livelihood, a mentor of generations of undergraduate and graduate students, and a kind and generous friend. Lobo's friends and colleagues have established a SAFS fund to reflect his legacy and commitment to learning. I am delighted that we have already received sufficient gifts to make the Lobo Orensanz Endowed Fund for Student Support a permanent fund and that we will be able to make the first award in Spring 2015. You may contribute to the fund by going online (<http://uw.edu/giving/orensanz>) or sending a check made out to the "University of Washington Foundation" with "Lobo Orensanz Fund" written on the memo line to:

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In other sad news, SAFS Research Associate Professor Emeritus Russell Herwig (fish.washington.edu/herwig/) passed away suddenly on January 28, 2015. Russ obtained his PhD from the School in 1989 (John Liston, adviser) and became a faculty member in 1995. Russ was known across campus through his involvement in the Department of Microbiology and at Washington Sea Grant. The research conducted by Russ and his graduate students and collaborators was extensive, and we plan to have a full article on Russ in the next issue of the newsletter.

Finally, a huge "thank you" to all of those who contributed to the school in the last year. Your gifts give us the opportunity to continue to support undergraduate and graduate students, build the program, and explore new ideas. As always, I look forward to seeing you over the next few months.

—*André Punt, Director*

Alumni Update

Update your record and sign up for the newsletter by email.

Our spring–summer issues are distributed online only (email, website), but the fall–winter issues continue to be published in print and online.

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Left to right: Sean Luis, Amanda Phillips

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—*In Memoriam, George Pigott, continued from page 5*

on behalf of numerous industrial companies, the World Bank, and the United Nations. He was a Fellow of The Institute of Food Technologists.

In his tribute to George in the JAFPT, longstanding colleague Michael Morrissey noted, “George was a long-term member of the Pacific Fisheries Technologists (PFT). [At the UW], he helped the PFT grow and become an important bridge between academic institutions, the National Marine Fisheries Service, and the seafood industry.” On a lighter note, he added, “George...always seemed a bit larger than life, with a booming voice and bald head that seemed to glow from all the thinking that was going on inside it!” ■

AQUATIC & FISHERY SCIENCES NEWS

The *Aquatic & Fishery Sciences Newsletter* provides current information on teaching, research, and service.

Director	<i>André Punt</i>
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