AQUATIC & FISHERY SCIENCES

NEWSLETTER OF THE SCHOOL OF AQUATIC & FISHERY SCIENCES ▪ UNIVERSITY OF WASHINGTON

SPRING-SUMMER '06



# Getting Their Feet Wet

## EXPERIENTIAL LEARNING THE SAFS WAY

In the mid-1990s, there was a movement across institutions of higher learning to reemphasize undergraduate research. The idea was to help students gain knowledge and skills through direct experience, which became known as "experiential" learning. At SAFS, we have a suite of opportunities for students to integrate content with experience, giving them a valuable and unforgettable education by "getting their feet wet."

In numerous ways–whether in the classroom, lab, or field–our faculty connect students to the natural world. Even in our large classes, faculty strive to dispel the myth that students can't have personal interactions and a transformative learning experience. And when students see our faculty's enthusiasm–in lectures, labs, or on field trips–they soak it up. While our faculty clearly make an impression on undergraduates, they all emphasize the critical roles their teaching assistants play in providing the students with memorable experiences.

In this issue, we highlight several classes from among many that offer students hands-on experience in ever-deeper and richer ways as they progress from freshmen to seniors and from large to small classes. Students start with basic introductions to diverse marine environments and issues. Then, they gradually work through more focused curricula, from studying specific fish species across the breadth of their habitat and life history, to conducting toxicology experiments that directly relate to resource management agencies and policies, to immersing themselves in summer-long courses like the Friday Harbor Labs Apprenticeship program and the Alaska course, which is embedded in a long-term, historical research program. And, to complete their experience, students apply what they've learned to an independent research study, known as the Capstone Project (see pages 6–9).

Classes like those described on the following pages, coupled with the Capstone Project, enable students to build skills incrementally and in such a relevant context that they often don't realize how much they've grown from freshmen to seniors until they're ready to graduate. Isn't that what education is all about?

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M Hunsicker

SAFS students have numerous and diverse opportunities to connect with their aquatic environment.

## A taste of the marine world

### Marine Biology (Fish 250)

How do you bring quality, hands-on learning to a class of 150 students? The answer can be found in our Marine Biology course. This 200-level class is geared for freshmen and sophomores with a broad interest in biology or marine science. The class attracts aquatic science students and other science majors as well as non-science majors.

Instructor Julia Parrish noted, "The rationale is that students will be more excited and involved, and retain a higher level of information, if you challenge them in myriad ways and you get them out there." The challenge includes lectures and labs where students participate in activities such as studying algal photosynthesis, oyster feeding, and fish anatomy. To get "out there," students pick from one of five field trips with foci ranging from invasive species in Puget Sound to patterns of seabird beaching on the outer Washington coast.

Julia participates in each trip, typically leading about 25 students with the help of graduate teaching assistants and laboratory coordinator Thomas Pool. Each student collects and interprets data, and writes an independent report. Such coursework is often relegated to seniors, but as Julia notes, "Because we don't tell them they are inexperienced, they plunge right in, becoming really jazzed about science and the marine environment."

The course immerses students in all aspects of science: defining the issue, formulating a hypothesis, designing a field study, interpreting the data, and writing for a scientific audience. The field trips are key, Julia emphasized: "Wherever we go and whatever we do–on a beach with big waves or knee-deep in mud–we have fun! But more important, this course connects students to the environment."

## Following the fish

### Salmonid Behavior and Life History (Fish 450)

In Tom Quinn's course, students work in teams to explore issues in salmon ecology and conservation. Each fall, they embark on an adventure that takes them from the Cedar River watershed in east King County to Lake Washington, Puget Sound, and British Columbia. Through four field trips, students follow the life history and study the behavior of juvenile and adult salmon.

Every four years, the students get a bonus: a field trip to follow the huge run of sockeye that migrates up the Fraser River to the Thompson and Adams rivers. Tom said, "There is such a rich history to this population, beautiful scenery, and a lot of camaraderie during the trip. Students get to connect not only with the salmon, but with local and regional environments."

On the field trips, students organize into groups that focus on different issues that help to foster critical thinking: each student writes an individual report on the group's topic, and then the group gives an oral presentation. Tom summarized, "Through data collection, lab and data analysis, writing and speaking, and team dynamics, students get to hone their research skills."

The students also contribute to a long-term dataset for Rock Creek. Blocked off to anadromous salmon since 1900 by the Landsburg Dam, this river was modified in 2003. Since then, coho salmon have been recolonizing. Data the students collect will help document long-term changes in the fish community. Tom noted, "I think students appreciate contributing to salmon ecology and conservation."

Tom echoed the view that students like seeing their instructors join them in the field: "They want us to be more than just lecturers. I think this is one reason why our school has such a good reputation for undergraduate teaching."

T Pool

Students in the marine biology class examine their beach seine catch as part of an intertidal survey at Padilla Bay.

T Quinn

Students collect data on courtship and aggression behavior of spawning salmon in Weaver Creek.

## What the students say

"Marine Biology [Fish 250] was the best class I've taken at the UW. I loved going home and explaining to my mom, who has three huge aquaria, about fish behavior and anatomy."

"Even if I weren't at all interested in salmon, Fish 450 would be valuable in terms of learning to think about science and to formulate and test hypotheses."

"The complexities presented [in Fish 450] constantly reminded me of the need to look further, dig deeper, and ask more questions."

"[The instructor of Fish 455 is] very respectful of different backgrounds and areas of strengths and weaknesses, and allows both 'hard science' people and 'concept' people to succeed."

## Where students & agencies meet

### Fish and Wildlife Toxicology (Fish 455/ESRM 457)

In Fish 455, which Chris Grue has been teaching since 2002, students zoom in on intensive research that applies to real-world issues. A very popular component of this course is the lab, where students work with resource management agencies, conducting hands-on research.

Chris, who is the leader of the Washington Cooperative Fish and Wildlife Research Unit, gives students diverse topics each year. Past projects have compared the toxicity of common aquatic-related products like herbicides on juvenile rainbow trout; determined the efficacy of the pesticide carbaryl for controlling burrowing shrimp in Willapa Bay; and examined the toxicity of pesticide mixtures–"cocktails"–in western Washington urban streams.

Chris spoke to the appeal of the class: "The students get to work on relevant, real-world topics, providing information that can immediately impact agency decision making about issues such as pesticide regulation in our state and elsewhere." Students also collaborate on and submit publications to scientific journals–several have been published. And they present their results at the annual meeting of the Society of Environmental Toxicology and Chemistry. Some students also incorporate their class experience into their Capstone Projects (see pages 6–9).

Because of this strong link between student science and agency needs, many state agencies have provided financial support for the course, including the Washington State Commission on Pesticide Registration, and the departments of Ecology, Fish and Wildlife, and Natural Resources.

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JM Grassley

As part of Fish 455/ESRM 457, students get the opportunity to conduct toxicology studies, such as determining the effects of pesticides on juvenile salmonids.

# Diving in deep

## Aquatic Ecological Research in Alaska (Fish 491)

To round off their undergraduate experience, students can immerse themselves in intensive field studies. In the Alaska summer course, students travel to remote, pristine settings to study the spectacular Bristol Bay salmon runs. Many of them describe this as a "transformative experience."

Since 1946, SAFS' Alaska Salmon Program (ASP, formerly Fisheries Research Institute) has been studying salmon runs in our largest state. In the late 1990s, SAFS faculty Ray Hilborn, Daniel Schindler, and Tom Quinn were seeking ways to improve the undergraduate research experience. The result was a course in aquatic ecology based at our Alaska field camps.

Each summer, six students spend six weeks at Lake Aleknagik and Iliamna Lake. They pursue three projects–one for each faculty member–in which they collect and analyze data, and write a paper on their findings.

In Ray's class, students learn about population dynamics and fisheries management, examining how the fishery is managed and how salmon biology influences that management. With Daniel, they study ecosystem process and function by observing how returning adult salmon impact the watershed through mechanisms such as marine-nutrient deposition. In Tom's class, students focus on individual salmon, investigating spawning behavior and patterns of natural and sexual selection.

Each student also does an independent project, and all students present talks at the annual ASP research symposium in late November. Some students also jumpstart their Capstone Projects with their Alaska research experience.

Daniel, who is the 2006 recipient of the College of Ocean and Fishery Sciences' Distinguished Research Award, noted, "Many students find great value in being immersed in the entire research process–from developing ideas through presenting results, as well as directly observing ecology in action. Some of them also publish papers in scientific journals based on their coursework." He added that students "greatly appreciate being embedded in a long-term, historical research program where they can contribute to valuable datasets."

S Hines

AERA class and faculty of 2001: Mariah Meek, Kristi Overberg, back row, Tom Quinn, Ray Hilborn, standing.

# How I spent my summer vacation

*The Aquatic Ecological Research in Alaska (AERA) course attracts students from across disciplines and across campus. Regardless of major, they all gain valuable skills and experience from their study in Alaska.*

## Harry "Richie" Rich

Despite 10 years as a youth drug and alcohol counselor, Richie had reservations about attending a graduate program in social work. He wondered, "What else could I do?" When he read an article on the SAFS Alaska summer field class in the UW alumni magazine, *Columns*, Richie–who had worked on fishing vessels in Alaska–found the answer to his question.

In fall 2001, Richie enrolled at SAFS as a post-baccalaureate student. He charted his course, taking the appropriate classes, working on a research project–as Richie observed, "I kept on the radar screen." He enrolled in the 2002 field class and wasn't disappointed at all: "While each professor has his own style, what they taught overlapped, and the synthesis of what you learned was very powerful."

Richie summed up his impressions: "AERA is the most authentic experience undergraduates could have if they are serious about a science career. The opportunity to do real-world research, in a team and independently, prepares you for graduate school or a job in aquatic sciences better than any other class I've taken."

## Mariah Meek

Mariah is currently a PhD student at the University of California, Davis, where she is pursuing marine ecology research, studying the biology of an invasive jellyfish. She has also worked as an environmental consultant, and she credits the Alaskan immersion course for skills that she has applied on the job and as a student. Besides the value of conducting aquatic ecological research, Mariah said, "I interacted with and learned from faculty and other researchers in a one-on-one setting. The breadth of experience in techniques was incredible– I learned to conduct tagging and mark-and-recapture studies, zooplankton sampling, and much more."

Like all the students, Mariah carries fond memories of learning in such a remote, beautiful setting: "Hiking streams every day and watching the thousands of sockeye salmon make their journeys upstream," was a highlight, but she stressed the value of "contributing to a great research program and learning from excellent scientists in aquatic ecology."

## Jeff Jorgensen

After Jeff Jorgensen graduated from the UW, he studied at the University of Wisconsin's Center for Limnology, earning a Master's degree. He then took a job with NOAA's Northwest Fisheries Science Center, where he works on endangered Pacific salmon recovery efforts.

Jeff credits the AERA course with giving him excellent preparation for the challenges of graduate school and a job in the natural sciences. He said, "This class was intense and required hard work. It encouraged independent thought, innovative and improvisational approaches to problem solving, and teamwork."

A Jones

Richie samples sockeye salmon on Hansen Creek to determine how much bear predation affects reproductive opportunity.

T Quinn

Porcupine Island field camp on Lake Iliamna.

The pristine ecosystems, miles of remote streams teaming with sockeye, and legendary Alaska sunsets were memorable, but more important to Jeff was "the rare kind of interaction with faculty members." He emphasized the opportunities to develop problem-solving skills: "We were confronted with unforeseen obstacles that forced me to improvise. I learned how to do a lot of different things with zip-ties and re-bar!"

## Kristi Overberg

Kristi Overberg describes the AERA class as transformative. After getting her MS from Indiana University's School of Public and Environmental Affairs, Kristi took a job with a consulting firm in Missoula, Montana, where she conducts ecological research relating to fishes and hydroelectric power. Her work entails writing biological assessments and evaluations, and she credits the Alaska course with giving her good training for this: "I learned to produce reports promptly after being in the field or receiving data; I've applied that skill in graduate school and on the job. I learned about the art of communication and teamwork."

Living with a small group of people, Kristi learned how to be flexible and patient with the weather, and to be creative when needing a quick fix for gear that breaks in the field. She said, "The best thing about this class was that it was entirely hands-on. I learned to drive a boat, snorkel, set beach seines, bonk a sockeye on the head, and collect otoliths. It was a class in paradise and I will never forget it."

# Capstone Projects

To graduate, all SAFS majors must complete a Capstone Project. A culmination of the undergraduate experience, Capstones enable students to put into practice what they've learned about the research process in SAFS courses. Each student is paired with a faculty member, who provides advice throughout the project. An unusual feature of the project is that, thanks to our generous donors, students can obtain up to $1,200 in funding for project-related expenses.

## Pick a path

Capstones can take three different paths: a study involving one-to-one interactions between the student and a mentor, who can be a professor or other scientist; research embedded in courses where students work in groups; and a "hybrid" where two to three students collaborate on an independent project. Regardless of the path, each student must deliver an oral presentation and paper, and honors students must present a poster.

The topics students choose for their Capstone Projects underscore the diversity of research within SAFS (see sidebar, page 9). However, "not all paths fit the research mold," observed student adviser, Lin Murdock: "One student, a mother of two, was interested in environmental education, so she designed a curriculum for 4th graders on wetland ecology."

Students are assisted by faculty Capstone coordinator Kerry Naish, who uses her knowledge of current research to help find projects. She also works with faculty advisers to define what is expected of students. With Lin, Kerry ensures students are on-track, meeting with them on a quarterly basis.

M Hunsicker

A number of SAFS courses provide students with practical experience in fish sampling methods, including beach seining.

## A win–win situation

Through opportunities such as internships, Capstone students work with management agencies such as NOAA Fisheries and the state Department of Ecology. This yields win–win situations: The students gain by learning what it's like to conduct research in a government agency setting, and agencies gain by having students work for them–usually as volunteers, but some are paid or offered jobs later.

Kerry summed up Capstone: "Other courses teach essential skills like proposal writing, data collection and analysis, and interpretation. But through Capstone, students direct the entire process themselves; often, this is when the passion for science or research is fully ignited."

We invited several students to relate their Capstone experiences. Given their stories, it's easy to see why this program has been so successful.

### Identification of archaeological sockeye salmon remains as a proxy for detecting the initiation of reef-net fishing

***Marco Hatch*** *(Kerry Naish, adviser)*

For his project, Marco applied three interests–archaeology, genetics, and historical ecology–to answer the question, "When did the reef-net fisheries of the Straits Salish begin?"

Reef-net fishing is unique to the Straits Salish people, whose tribal lands range from northern Puget Sound to southern British Columbia. This fishery exclusively harvests sockeye salmon from the Fraser River. Marco, who is a member of the Samish Indian Nation, elaborated: "Imagine the importance of reef-net fishing, allowing for thousands of sockeye to be caught by people living on small islands that lack major salmon-bearing streams."

T Essington

Alex Lowe takes a break from assisting with benthic sampling trawls in Puget Sound to pose with a local denizen.

To answer the question, Marco used molecular techniques to identify a sharp increase in sockeye salmon remains, compared with other salmon species, in a shell midden (a refuse deposit that indicates human settlement) at a Native American archaeological site on Lopez Island. He noted, "Prior to molecular technologies, it was impossible to differentiate between chum, pink, coho, chinook, sockeye, or steelhead remains."

Marco conducted his molecular work at the joint SAFS/Oceanography Marine Molecular Biotechnology Laboratory under Kerry Naish's supervision. He described his experience as "invaluable in helping me define my mission as a scientist." Equally important to Marco "was learning to get science done with many cooperative organizations, including the Bureau of Land Management, Samish Indian Nation, Burke Museum, and the UW. Marco also had to do fund raising, which was "one of the most difficult aspects of science." He raised more than $10,000 from sources including the Mary Gates Research Fellowship, Bureau of Land Management, Samish Indian Nation, and SAFS.

Working as a peer with professors and graduate students at SAFS was critical for Marco. He explained: "Science must be an open, creative process and, for universities to succeed, they need to produce free-thinking colleagues, not apprentices. By fostering an open environment, SAFS is doing that–ensuring that creativity and optimism result in good science."

Now enrolled in a graduate program at the Scripps Institution of Oceanography, Marco said, "Without a doubt, Capstone research was instrumental in my being accepted to Scripps and receiving seven fellowships, including the NSF Graduate Research Fellowship."

M Donner for the Burke Museum © 2004

Marco Hatch (right), with Laura Phillips (center, UW Burke Museum) and Russel Barsh (left, Samish Indian Nation), investigate a Native American archaeological site on Lopez Island, Washington.

## Spatial variation in the stable isotope signature of the benthos in Puget Sound

***Alex Lowe** (Tim Essington, adviser)*

Alex echoed other Capstone students when he said, "It's hard to beat playing in mud and fish slime!" To the uninitiated, this may not sound that appealing, but there's more to this than meets the eye.

Alex's project was part of the Puget Sound food-web model research by SAFS graduate student Jonathan Reum. Reum has been using stable isotope techniques to analyze trophic links. Alex said, "I used benthic invertebrates to find out whether anything in Puget Sound was altering the

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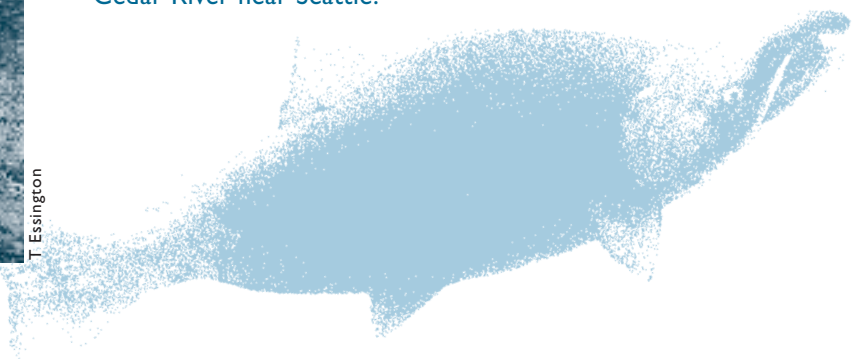
T Essington

SAFS students conducting behavioral observations on spawning salmon in the Cedar River near Seattle.



stable isotope signatures." Invertebrate chemical composition provides information about these animals' position in the food chain, but if that composition is being affected by human activities, such as sewage inputs, at the base of the food chain, Alex noted, "It would need to be incorporated into the food-web model to compare results between sewage-affected and non-affected areas."

Learning a wide variety of sampling techniques, including bottom trawling, was a highlight of the project for Alex. He identified numerous invertebrate and other species, observing that "this was a good introduction to the benthic community."

Besides learning about stable isotopes, Alex appreciated the opportunities his Capstone gave him to explore many areas of fishery sciences and expand his skill set. He noted that while perhaps identifying *Pectinaria* species wasn't "a skill I use everyday, I did gain valuable experience in completing a project from start to finish, including preparing and presenting results." He believes the work was that much more fulfilling because "it was *my* project."

The real world doesn't wait around to be observed; it just keeps going.

### The effect of restoration on native bird use of an urban industrial river: A 10-year followup to the Duwamish Restoration Project

***Teresa Jewell** (Julia Parrish, adviser)*

Last year, Teresa spent a lot of time standing in the pouring rain and mud. Working at two sites along the Duwamish Waterway, she identified and counted birds, and categorized their behavior. Her goal was to determine whether a native plant restoration and sediment remediation project in the mid-1990s had improved the sites' value for native birds.

Teresa talked about her experience: "This was the first time I'd conducted fieldwork without a supervisor present–the most independent project I've done in general. I had to use my judgment more than in a lab situation, and set my own timeline. I enjoyed building on work done in the past, with the knowledge that my contribution will be part of the dataset used by future researchers on this project."

She also learned how to deal with the unexpected: "I discovered the study area didn't exactly match when comparing the 2000 and 2005 surveys." But she determined that field sites change in ways that are beyond the control of the researcher: "The real world doesn't wait around to be observed; it just keeps going." Besides dealing with surprises, including losing and re-entering all her data, Teresa said her Capstone experience taught her to "go beyond the instructions and discover for myself if important details are missing."

### Spatial distribution of hermit crab symbionts

***Sharon VillageCenter** (Greg Jensen, adviser)*

For Sharon's project, she found herself far afield–on a NOAA Fisheries survey vessel in the middle of the Bering Sea. There she spent three

weeks collecting hermit crab samples. The goal was to determine whether species-specific relationships exist between the various types of hermit crab and their symbionts–a basic study designed to further our understanding of hermit crab ecology.

After finishing her field work, Sharon continued her study at the Alaska Fisheries Science Center lab in Seattle. She described her approach: "I was interested in what was living with the hermit crabs and started by examining the snail shells inhabited by the crabs and dissecting the crabs to look for internal parasites." She made some interesting discoveries in her research:

Sharon examined the crabs for small crustaceans called amphipods and found that–contrary to previous documentation–several species and many individuals could be found living with just one host crab. However, they apparently can't co-exist with another common hermit symbiont, a large scale-worm that may prey on the amphipods.

Sharon presented the results of her Capstone study at the Undergraduate Research Symposium in March. She reflected on her experience: "I learned how to conduct an original experiment, improve the experiment, and present the results. I know the skills I learned will help me in the future."

T Pool

Faculty and students alike share their enthusiasm for exploring our aquatic world.

## Capstone projects

The following titles were selected from presentations given during recent years (*faculty advisers in parentheses*). Using subjects including fishes, amphibians, crabs, marine mammals, and birds in the context of disciplines ranging from biology to ecology, conservation, disease, genetics, systematics, behavior, and more, our students address diverse topics and issues of interest to aquatic scientists, resource managers, and the general public.

Sarah Isabel Peterson (*Gallucci*): Conservation efforts to protect Olive Ridley sea turtles in Hawaii, Guatemala

Ben Riedesel (*Simenstad*): Microinvertebrate abundances, distributions, and diversity within San Francisco Bay estuaries

Dylan Galloway (*Quinn*): A look into the peamouth chub

Aaron Booy (*Wissmar*): Adjacent land use and buffer zone as factors influencing water temperature in western Washington lowland streams

Christie Shavey (*Essington*): Spatial and temporal variation in diet selectivity of the starry flounder, *Platichthys stellatus*, in the Duwamish River

William Holden (*Beauchamp*): Effects of cattle grazing on invertebrate input into streams and impacts on fish diets

Allison Reagan (*Friedman*): Examination of susceptibility in four abalone species to Withering Syndrome

Ellie Ziegler (*Hauser*): Evidence for adaptive divergence despite high levels of gene flow between three populations of sockeye salmon

Ben Nelson (*Gunderson*): Abundance and distribution of juvenile salmon in the lower Chehalis River

Danny Badger (*Gallucci*): Contributions to the dynamics of sixgill sharks in Puget Sound

Alecia Van Atta (*VanBlaricom*): Grooming behavior in a rehabilitated sea otter pup

Lisa DeForest (*Pietsch*): The larval development of *Apodichthys flavidus*: A member of the family Pholidae

Jackie Carter (*Schindler, Palen*): Relating watershed characteristics to optical properties of sub-alpine ponds in the Olympic National Park

# New Faculty
## George L. Hunt


Courtesy G Hunt

Research Professor
PhD (1971), Harvard
The reproductive success of herring gulls (*Larus argentatus*) in relation to man's activities

George Hunt was born in Boston, but spent most of his youth living in Camden, Maine. He earned his BA and PhD at Harvard University. He credits his camping and camp counselor experiences as a teenager for influencing his interest in nature and, ultimately seabirds. He said, "At 13, I wanted to be an Audubon field trip leader. In my teens, I paid fishermen to take me out to see what seabirds were doing off the coast of Maine." In his freshman year, he was already conducting field research and by his sophomore year, he had published a journal article. As a newly minted BA, he spent two months collecting ants for EO Wilson in the South Pacific.

Seabirds became a lifelong focus for George. For his graduate work, he studied seabirds off the Maine coast by investigating gull reproductive and foraging ecology. An unexpected result of marking gulls in different colors to follow them as they foraged for food was several reports of golden eagle and flamingo sightings!

In 1970, George joined the faculty at UC Irvine's Ecology and Evolutionary Biology department, where he remained until 2005. Throughout his graduate and Irvine studies, his fundamental question was "Why do some colonies and individuals fare better than others?" At Irvine, he initially studied seabirds off the Channel Islands of California and on Mandarte Island, just east of Sydney, British Columbia.

In the late 1970s, George pursued research off California and Alaska arising from offshore oil development, looking at how seabirds use the interaction of physics and prey behavior to take advantage of feeding "hot spots." This was important because of seabirds' vulnerability to oil on the water. George explained, "If foraging birds were concentrated in a few isolated hot spots, then you could wipe out half a colony with one small spill, but, if birds dispersed widely over the ocean, they would be much less vulnerable to a spill. We found some of each, depending on the species."

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# Giving at SAFS
## THE LEGACY OF DON AND TANYA BEVAN

For the past five years, SAFS has hosted the Bevan Series in Sustainable Fisheries during winter quarter (*http://depts.washington.edu/susfish*). These seminars honor the late Donald E. Bevan, an alumnus, past faculty member, and director of our school.

Don was renowned for his ability to assemble government, industry, and academia to address issues of sustainability for West Coast fisheries. A pioneer in bringing science and management together, Don believed that "good science is always good politics in the long run."

Don's legacy of salmon biology, science-based fisheries management, and international interaction, along with his interdisciplinary vision, is the impetus behind the Bevan Series. This popular seminar program, open to the public, invites distinguished speakers from around the world–and from academic, agency, and nongovernmental backgrounds–to examine important fisheries management and conservation issues. The speakers tackle sustainability from diverse disciplines including ecology, fisheries management, conservation biology, law, economics, and anthropology. We know that Don, were he alive today, would be at the forefront of these efforts on behalf of SAFS, the UW, and the fisheries he loved.

Don made many trips to Russia to promote cooperation between US and Russian fisheries. At Moscow State University, he met graduate student Tanya Potapova, also a fisheries scientist, who became his translator, guide, and friend.

Tanya, who was born in a small town near Moscow, obtained a BS in Zoology and Fisheries at Moscow State University. She then worked in the University's Ichthyology Department and conducted research ranging from the Baltic Sea to the Amur River estuary. She was a science editor for the Biological Science Journal in the late 1960s, and a senior scientist at the Fisheries Institute of Information and Technology until 1971, when she married Don and moved to the USA.

While Tanya didn't collaborate with Don, she did stay involved in the field: "I helped by interpreting at fisheries meetings with Russian scientists or doing

SAFS Archives, M Duke

Don and Tanya Bevan

translations." She also traveled to Kamchatka in 1995 as an interpreter for the Wild Salmon Center.

Tanya learned to raise sheep on their farm and took up weaving and spinning; she is a member of the Seattle Weavers Guild and Washington Potters Association.

Tanya recalled a time of overwhelming commitments: "I had Russian visitors, lambs needed my attention, a translation needed finishing…and Don quietly said 'What is the priority now'?" She continues to apply Don's method: "Every day we can ask, 'What is the priority and for whom: for me, for us, for fish, for the economy?' The Bevan Series is a forum where we can learn and discuss solutions for controversial issues and, I hope, answer this question. I think Don would be pleased to know that my priority is The Bevan Series!"

The Bevan Series was made possible through the Donald E. Bevan Endowed Fund in Fisheries, which was established in his memory through the generosity of Tanya, and enhanced by contributions from Don's niece, Susan Bevan. In addition, we acknowledge NOAA Fisheries' Alaska Fisheries Science Center and Northwest Fisheries Science Center, the Washington Sea Grant Program, and the UW Program on the Environment, which also have provided direct funding.

Long-term goals for the Bevan Fund include securing funding to underwrite the full cost of each series; hosting visiting scholars from industry, environmental organizations, and academia so they can interact with students more intensively; and hosting more symposia. We invite our friends and alumni to consider contributing to the Bevan Fund so that we can perpetuate and improve this outstanding series.

Tanya is a long-term supporter of the SAFS program. We are very grateful for her commitment, which has been essential in our efforts to make the Bevan Series an inspirational forum for ideas and diverse points of view, and a vehicle that so aptly encapsulates the school's mission. Contributions may be made online or by check (see below).

## Featured Funds

For this issue, we highlight two funds in particular, but welcome donations to your fund of choice. All gifts may be made either online or by mail.

To pay by check, please include the appeal code (shown below) on the envelope or the check and mail to:

School of Aquatic & Fishery Sciences
University of Washington
Box 355020, Seattle, WA 98195-5020

If you wish to give online, please go to the UW Foundation website and select the appropriate fund: *http://fish.washington.edu/fund*

Information on additional funds is available via the "View priority funds for this department" link at the page bottom. For further information on SAFS giving, please see *http://fish.washington.edu/alumni/giving.html*

### Donald E. Bevan Endowed Fund in Fisheries

(Appeal code: BEVAN)

### Fisheries Memorial Endowment Fund—In Memory of Helen Salo (Appeal code: SALOM)

Helen Salo passed away at the age of 83 on June 14, 2006. She was a loyal supporter and friend of the school and the UW, where she worked as a data control supervisor—at the Fisheries Research Institute (FRI)—for over 20 years. At FRI, Helen met Fisheries professor Ernie Salo, whom she married in 1979 and remained with until his death in 1989. For those of you who wish to make a donation in her memory, we invite you to do so through the Fisheries Memorial Endowment Fund.

–continued from page 10

Most recently, George has focused on how climate variability influences productivity and energy flow in the Bering Sea, which has ramifications for commercial and subsistence fisheries. This led him to a role in the NSF-funded Bering Ecosystem Study.

He reflected on how the scope of seabird research has changed: "Seabirds were something that only bird people were interested in, but now they are used to forecast salmon returns or estimate rockfish abundance based on bird diets–in effect, they can be calibrated indicators of the ecosystem.

When asked why he chose to come to SAFS, George explained, "If you stay within your comfort zone, eventually the intellectual challenge goes away. In a new field, you may stumble onto new ways of thinking." His ongoing work with NOAA Fisheries's Alaska Fisheries Science Center and in the Bering Sea also motivated him to be closer to his colleagues.

He concluded, "I interact with students, staff, and faculty here, and attend interesting seminars relating to the ocean. I recently presented a seminar and got great feedback. This is challenging and fun. I feel that 'I've come home'!"

AQUATIC & FISHERY SCIENCES

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

Comments are welcome.

Writer & Production Editor *Marcus Duke*

Design, Illustration *Cathy Schwartz*

Please call Marcus Duke at 206-543-4678
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