

AQUATIC & FISHERY

SCIENCES

NEWSLETTER OF THE SCHOOL OF AQUATIC & FISHERY SCIENCES UNIVERSITY OF WASHINGTON SPRING 2001

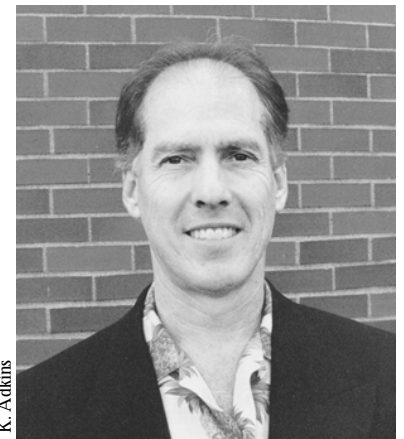
S P R I N G

From the Director

FRIENDS, COLLEAGUES, AND ALUMNI—
When we last said hello to you the School was on the verge of many changes: a new building, new faculty, new student programs. As you will read throughout this newsletter, those changes have occurred or are in progress—all we believe to the betterment of our School and its mission of teaching and research in Aquatic & Fishery Sciences.

That phrase itself is our new departmental name, which more accurately represents the spectrum of faculty roles and student interest not only in traditional arenas of fishery sciences and management but increasingly across a wide array of conservation issues. After so much change, renovation, and reorganization, you might expect a period of stasis, a time to savor a new status quo. But that is not the nature of an academic department. Like the processes and animals we study—tides, currents, migrations, adaptations, rise and fall of stocks—our department is dynamic, its people and programs, visions and priorities moving down different paths in response to creative inclination and external realities and opportunities.

One of the pioneers of invertebrate aquaculture, Dr. Ken Chew, has retired, prompting faculty to consider the future of our aquaculture program. Presently, we are interviewing candidates for two tenure-track positions that relate explicitly to aquaculture sciences. We have embarked on a campaign to seek contributions for an endowed professorship in Ken's honor as a long-term resource for aquaculture research. His legacy will be remembered as the incoming generation of faculty tackle new challenges and make new discoveries within this discipline.



The new faculty highlighted in this newsletter have joined strategic planning committees to add their vision for changes to our curriculum—changes that will enhance students' skills in critical thinking, experiential learning, analyzing and interpreting information, understanding of integrated physical and biological systems, and appreciation of societal realities that will be required in their careers.

Some of these new faculty represent bridges between federal resource agencies and our School that will expand research and teaching in critical areas such as endangered species conservation, marine protected areas, and fisheries assessment and management. One holds a joint appointment between our School and Zoology to deepen the context of teaching and promote research synergies across scientific disciplines on campus.

Some of our faculty will routinely teach general courses that serve a large undergraduate interest in biology, and they are joining a new integrated Marine Biology sequence that also involves faculty of Oceanography and Marine Affairs within the

continued on page 2

Inside

3 Our Name Changes

4 SAFS Curriculum

5 Kenneth K. Chew

6 Salmon Release Day

7 New Faculty

12 Gifts

<http://www.fish.washington.edu>



G. Jensen

Undergraduate and graduate students from across campus conduct individual research projects at the School's Marine Molecular Biotechnology Lab.

continued from page 1

College of Ocean and Fishery Sciences.

A profound aspect of our department's dynamic character and programmatic creativity is the incredible underpinning of support provided by you, our alumni and friends. Despite current uncertainties in State and University funding of academic programs, Aquatic & Fishery Sciences has the tremendous good fortune of still being able to support those inspired faculty and students who envision new research, or seek to enhance teaching that would otherwise be beyond our financial means. I can not state too strongly that, through a host of endowments, you have given us the gift of programmatic flexibility and opportunity in ways I couldn't imagine before becoming Director.

We can attract the best of graduate applicants through endowed recruitment fellowships. We can strengthen successful faculty programs through the Keeler and Worthington Endowed Professorships. We can strategically and incrementally upgrade equipment and facilities for key research and teaching installations like Big Beef Creek, the Alaska field camps, the Marine Molecular Biotechnology Lab, and the campus hatchery and freshwater research facility that benefit faculty and students. We can provide many more undergraduate scholarships and research subsidies now than ever before.

We can use our combined endowed support to leverage other University and external grant and contract pools by pro-

viding meaningful matching funds when our faculty submit proposals. We can say "yes" to good ideas and initiatives, and we can take some risks that culminate in large rewards to students. Your contributions are all important to the ongoing vitality of the School. Thank you so much for your interest in and generosity to our School!

We are engaged more than ever before in a holistic perspective of aquatic systems: the profoundly intricate matrices of physics, chemistry, and biology that interact to make a stream, a lake, an estuary all healthy and productive but which are sometimes perturbed by human activities. As a result, we have become far more sophisticated in our appreciation that harvest is only one aspect of fisheries ecology. ■

Our name & acronym change

S A F S

SCHOOL OF AQUATIC & FISHERY SCIENCES

What's in a name?

The short answer is, "Much more than is immediately apparent." Indeed, in the recent past, our faculty, staff, and students came to see that the longstanding name of our school—"Fisheries," with its rich legacy spanning over 80 years—no longer reflected the breadth and scope of our teaching, research, and outreach programs.

In the long view, institutions typically evolve continuously. This does not necessarily justify a name change, else we might be altering our moniker every few years. But here at our school, things were happening that demanded a good, hard look at our name in the light of perception and reality.

What's changed?

Most visible, especially to the casual observer, is the new building we occupied in summer 1999, with its state-of-the-art teaching and research facilities. Less visible, but perhaps more significant, were substantive changes in our faculty, core program areas, curriculum, and outreach.

In the last few years, there have been many faculty retirements. These retirements presented the opportunity to bring in people with new ideas and directions. Since the end of 1998, we have hired five faculty, and hope to soon hire three more. This large influx of talent has already started to alter and expand the nature of our programs, and gives us further strategic leverage to face the challenges of the new century.

Core program areas have undergone changes by our faculty to reflect the evolution of aquatic and fishery sciences as a whole. Along with our historical focus on harvest-based management of exploited

stocks and fish propagation for aquaculture and mitigation, we have broadened our scope to include conservation, habitat protection and restoration, biodiversity, user conflicts, and restoration.

Our many foci have been consolidated under three critical program areas: Aquatic Biodiversity; Aquatic Organismal Biology; and Aquatic Conservation Biology, Aquaculture, and Management. (A list of foci and associated faculty is available at www.fish.washington.edu/profile/facprofiletoc.html#keyword). Commensurate with our expanding scope is our increasing interdisciplinary collaborations with other UW departments such as Forest Resources, Marine Affairs, Oceanography, and Zoology.

A highlight of our changing curriculum is the renewed emphasis on undergraduate education (see page 4). As our enrollment numbers suggest, we are meeting the mandate of increasing undergraduate enrollment while maintaining our instructional quality and highly personalized atmosphere.

Through our outreach programs such as Salmon in the Classroom and the Nature-Mapping Program, school children continue to learn about salmon and other Pacific Northwest fauna, but with more emphasis on their context within water quality and conservation issues relating to our changing environment (see <http://www.fish.washington.edu/outreach.html>).

Reality & perception

The *reality* of our changing programs justified a name change, but equally important was the *perception* of our school—for example, how potential undergraduate recruits perceived us based on our name. When we asked students, staff, and faculty



K. Sauber

in SAFS and other campus departments, all felt that "fisheries" implied a focus on harvest and management at the expense of the broader aquatic sciences we pursue.

Students also suggested a name that better represents our academic diversity would attract students who otherwise might declare as Biology or Zoology majors despite their interest in aquatic sciences. Perception also matters to the many constituents we serve, from the fishery-based industries to government and private sector agencies and groups who look to us for help through conservation and restoration and ecosystem-wide approaches that address natural and human influences.

These retirements presented the opportunity to bring in people with new ideas and directions

What *is* in a name, then? For us, the long answer is "The ability to realistically and perceptually convey the sum and substance of our programs to our constituents." We believe the "School of Aquatic & Fishery Sciences" is that answer. ■

SAFS curriculum

UNDERGRADUATE CHANGES

Reminiscent of the movie “Groundhog Day,” the School’s undergraduate curriculum has been under renovation again. Can we design a curriculum that attracts the best undergraduates, represents the amazing diversity of disciplines we offer, and does not require us to throw out the baby with the bath water?

This time, we have two powerful motivating factors:

- A goal in our Strategic Plan of 85 to 100 majors by the end of the coming academic year (2001–2002)—together with the “new math” of student credit hours we’ve been hearing about, this means we must increase our visibility.
- A rapid influx of junior faculty (five in less than two years), bringing renewed enthusiasm for undergraduate teaching and new fields of expertise.

This stick-and-carrot duo is added to the many excellent teachers we already possess—the SAFS faculty boasts three recipients of the University of Washington Distinguished Teaching Award, who are constantly innovating their own courses and creating new ones. Here’s a sampling of where we’re going and what the undergraduate response is.

This year, we approved the creation of “Focus Areas” that divide the existing curriculum into three overlapping sets: Aquatic Ecology, Conservation and Management, and Aquaculture. Each area is headed by a required “Flagship” course, formerly in the core. Our 400-level courses are apportioned across the focus areas, with some courses offered in two, or even all three areas. We also approved a two-quarter, six-credit minimum senior thesis for all SAFS majors.

Thanks to our generous donors, many students will be eligible for independent research funding through our competitively awarded Aquatic & Fishery Research Opportunities for Undergraduates.

Our new faculty members have added both twists to existing courses and new courses. Students can now study Conservation Genetics (Kerry Naish), Bioenergetic Modeling (David Beauchamp), Hydroacoustics (John Horne), and Marine Conservation and Sustainable Fisheries (Julia Parrish). Miles Logsdon (joint SAFS/Oceanography faculty) is also offering a range of GIS/spatial analysis courses. Which is not to say our existing faculty members have been slouches: several new approaches to teaching have emerged from senior faculty members—including emersion science/experiential learning, cross-disciplinary initiatives, and case study learning.

With help from the UW Tools for Transformation program, Tom Quinn and Ray Hilborn as well as Dan Schindler (UW

Zoology) put together the popular “Aquatic Ecological Research in Alaska” summer field course in which students dive into all aspects of salmon aquatic field science. Bob Naiman, Tom Quinn, and Frieda Taub, as well as Dan Schindler and Michael Brett (UW Civil Engineering) formed the Freshwater Initiative, which offers students linked courses, across three Colleges, that explore freshwater ecosystems. Bob Francis enthusiastically volunteered to teach FISH 101, revamping the course using case studies on Atlantic bluefin tuna, Pacific Northwest salmon, and reef fish in Indonesia and the Philippines.

Are these changes making a difference? As of Winter Quarter 2000, SAFS had 53 majors, an improvement from the recent past but a far cry from our goal. This spring the number of majors increased to 76. Lin Murdock, our Student Services Coordinator, credits many of our recent innovations as a large part of this increase, and we credit Lin for her hard work and dedication to recruitment and student services.

The curriculum continues to evolve. In Autumn Quarter 2001, the new course, “Marine Biology,” FISH/OCEAN 250 will be offered. This course is part of a new Honors Program three-course sequence in marine biology, with which we plan to recruit the top undergraduate students at the UW to major in SAFS or Oceanography. Stay tuned!

—Ted Pietsch
Associate Director



A. Hendry

Our students learn field research theory and techniques through sampling, collecting, and interpreting data in local waters.

Kenneth K. Chew

CAREER APPRECIATION

Professor

Director, Western Regional Aquaculture Center

Associate Director, College of Ocean & Fishery Sciences



C. Rathbone

New endowment

We are pleased to announce the establishment of the Ken Chew Endowed Professorship in Aquaculture, which honors Ken's legacy and will enable us to continue attracting and retaining outstanding faculty.

For further information, please contact Linda Maxson, lmaxson@u.washington.edu, 206-221-6808

In essence, Ken is a lifetime member of the school, as the following account demonstrates.

Ken was born in Red Bluff, California in 1933. After earning his BA from Chico State College (1955), he attended the UW School of Fisheries, initially studying trout and salmon. But after spending a summer at the state Department of Fisheries shellfish lab in Brinnon, he was hooked on molluscs. He then went on to earn his graduate degrees in this area—a Master's on the food preference of the Japanese oyster drill (1958) and a PhD on Pacific oysters transplanted to Washington State (1962).

On completing his graduate studies, Ken took a job with the school and has been here ever since. He has held various positions, including Interim Director (1996–98), and continues to serve as Director for the Western Regional Aquaculture Center, a nationwide USDA-funded program that provides research opportunities for many of our students.

During his tenure here, Ken has become a well-known authority on molluscan biology, contributing extensively to invertebrate research and helping develop the shellfish industry in the Pacific Northwest. He and many of his students sought to solve problems in support of that industry, and many of its members credit Ken's programs in large measure for shellfisheries' current state of well being. Ken's influence extends well beyond the Northwest, including Australia, Canada, China, Chile, Japan, Thailand, Taiwan, and the Philippines.

His broad research interests include shellfish biology and aquaculture, paralytic shellfish poisoning, and ecological studies of benthic intertidal and subtidal invertebrate communities. He has published over 90 papers in scientific journals, reports, proceedings, book chapters, and trade publications. His academic career has seen the graduation of about 100 students he supervised.

In 1993, he received the Distinguished Undergraduate Teaching Award from the College of Ocean & Fisheries Sciences. He also has been awarded and recognized by organizations including the National Shellfisheries Association—the first David H. Wallace Award in 1982—and the World Aquaculture Society, which made him an Honorary Life Member in 1995.

It is no surprise to those of us who know him personally that, while now retired, Ken continues to remain active within the school, pursuing collaborations with the aquaculture industry and local, state, and national government agencies.

Then there's Ken Chew, the "everyman," husband and father of four, master chef, sportsman, wicked handball player (the cause of more than one delayed meeting!), and true friend to the people of SAFS. Ken has always made time to hear us out and support us through good and bad times, and always has tried to take a positive approach to help us with the issues at hand.

Thank you, Ken! We wish you well in your future endeavors within the school and elsewhere.

—(Partially derived from N. Bourne. 2000. *J. Shellfish Research* 19:13-14.)

Salmon release day

SALMON IN THE CLASSROOM



Each spring since 1991, the UW School of Aquatic & Fishery Sciences (SAFS) and Seattle Public Utilities have cosponsored the K–12 education fair, *Salmon Release Day*—the culmination of the Salmon in the Classroom program. On this day, school children release salmon fry they have been rearing since the preceding fall.

This year's event was bigger than ever—620 children attended. Besides releasing their fry, students participated in numerous activities (see Highlights). Salmon Release Day would not have been possible without the contributions of numerous volunteers: 14 from SAFS, including students, staff, and faculty, and several from UW Oceanography. Of course, there was considerable help and funding provided by Seattle Public Utilities; and in attendance, once again, was Seattle Mayor Paul Schell.

Salmon Release Day is a terrific event where students learn about salmon life history, challenges salmon encounter in their migrations, and how we can have a positive impact on the environment.

Highlights

UW Fish Collection

Undergraduate Margarita Reimer and graduate student Katie Dodd introduced students, through a hands-on demonstration of Collection samples, to interesting and unusual fishes in our area and around the world.

Water Cycle, Watershed, & Fish Habitat

UW Forest Resources contributed a model to teach about the water cycle from evaporation through precipitation. Seattle Public Utilities demonstrated the impacts of human activities such as washing cars on watersheds.

Recycling

Patterned after “Who Wants to Be a Millionaire,” a multiple-choice game about what should and shouldn't be recycled.

Anatomy

SAFS graduate student Ken Liu used a dissected salmon to teach students about fish anatomy firsthand.

Fish Painting

SAFS graduate student Bobette Dickerson hosted this ever-popular activity. Kids got to do fish prints with contributions from the Pike Place Market.

Hatchery

The hatchery booth demonstrated how fish see with electricity and showed fish tagging methods.

Hooks & Ladders

A game about the obstacles salmon face in migration. This game is available at our Salmon in the Classroom website: www.fish.washington.edu/sic/resources/hooks_ladders.html.



D. Parcells



Focus on our new faculty



B. Johnson

Dave Beauchamp

Assistant Professor and Assistant Unit Leader,
Washington Cooperative Fish & Wildlife Research Unit

Degrees: MS 1982, behavioral ecology of Arctic grayling; PhD 1987, predator-prey relationships relating to hatchery rainbow trout in Lake Washington, School of Aquatic & Fishery Sciences, University of Washington

Specialties: aquatic community ecology, food web modeling, native-nonnative interactions, behavior, population assessment, bioenergetics modeling, hydroacoustics

Dave concentrates on food web research. As a post-doc and faculty at the University of Utah, he cultivated this focus through work on large lakes, including Tahoe, Yellowstone, and Flathead. In 1994, he became Assistant Leader-Fisheries for the Coop Unit, the same position he holds here. A consistent theme underlies his lake research: quantifying linkages among different species to look for bottlenecks and other factors, such as climate, that limit species production or otherwise affect food web integrity.

His program includes developing foraging models of predators to see how individual behavior affects the overall community, or “Under what conditions and how often do predators encounter smaller fish and how does this translate into growth and foraging success?” Such information is critical for resource managers to determine how systems will respond to change. For example, in the Pacific Northwest, we want to know if large inputs of hatchery salmon result in increased predation on or competition with the wild stocks.

Dave has been studying the Lake Washington drainage since the mid-1980s. To help stakeholders determine how to manage water and endangered salmon, he and collaborators at UW Civil Engineering and Zoology, Seattle, King County, and the

state are developing a comprehensive food web model—filling in the gaps with new field sampling—to examine whether species interactions or environmental conditions limit production or inhibit recovery of certain species (e.g. juvenile salmon).

Dave teaches a course in bioenergetics modeling—looking at the energy balance of an organism between growth, consumption, and other processes: “We can quantify how much food is consumed daily by populations of competitors or predators to see how ecological bottlenecks may emerge over time as well as between life stages or among species.” He is applying this approach to hatchery and wild salmon in Puget Sound with the Washington Department of Fish & Wildlife.

Kate Myers (principal investigator, SAFS High Seas Salmon Research Program), Lew Haldorson (University of Alaska Juneau) and Dave will be using such models to see if huge inputs of hatchery pink salmon in the Gulf of Alaska are causing growth rates of Pacific salmon to decline by exceeding carrying capacity.

Returning to SAFS was a “no-brainer” for Dave, who cited a litany of reasons: a premiere institution with talented people, extensive resources for research and teaching, a broad diversity of issues, all levels of government, and Indian tribes actively

involved in fisheries programs. He added, “There’s easy access to diverse ecosystems including high mountain systems, lowland lakes, marine systems, reservoirs, and estuaries. With all the supporting faculty, it’s easy to engage in collaborations that would not be possible at smaller institutions.”

Dave would like to see SAFS take more of a leadership role in issues such as coherent and comprehensive management of hatchery and wild salmon: “We can help develop approaches that acknowledge the need for both harvest and conservation on a sustainable basis. It takes patience, tolerance, and skill to stick with a question long enough to get groups to identify

We can help develop approaches that acknowledge the need for both harvest and conservation

common ground and employ reliable tools to achieve long-term solutions to these complex issues.”

Dave is also a musician; at Utah State he played sax in a blues band that included several faculty members. Despite his full schedule, he still plays on the weekend, as he put it, “to keep my chops up.”



R. Towler

John Horne

Research Assistant Professor

Degrees: MSc 1988, larval groundfish habitat preferences, Dalhousie University, Bedford Institution of Oceanography; PhD 1995, spatial interactions and predator-prey relationships between cod and capelin off the coast of Newfoundland, Memorial University, St. John's

Specialties: fisheries acoustics, aquatic organism distributions, spatial bioenergetics

Website: <http://www.acoustics.washington.edu/>

Like most faculty, John wears many hats, but he may be best known for his fisheries acoustics work. He observed, "Acoustics is an integrative tool including at least six subdisciplines: the physics of sound in water, survey assessment, statistics, and animal behavior, physiology, and anatomy." This integrative nature makes acoustics applicable to ecological and behavioral studies, and abundance estimates.

After completing his PhD, John worked at the SUNY Great Lakes Center with Steve Brandt on spatially explicit bioenergetic modeling. This led to applying bioenergetics in ecological studies such as predator foraging, habitat quality, and carrying capacity.

Following a move to the NOAA Great Lakes Environmental Research Lab, John focused on how biology interacts with physics to influence fisheries acoustic data. More broadly, he was addressing how acoustics might influence abundance and population estimates. He and his colleagues used echosounders, sector-scanning sonar and other methods to measure echoes at different angles and frequencies.

Why does angle matter? John explains, "Two components influence echo amplitudes: angle- and frequency-dependent reflection ('backscattering')." The amount

of reflected sound depends on the fish and swimbladder angles, relative to the transducer. He notes, "It's analogous to bouncing a ball off a flat wall versus a tilted wall." Then there is frequency: "If you shine a light on a painting, your perception varies depending on whether the light is red or green because of the different wavelengths." The information that can be collected on a target has greatly improved by broadening the frequency range as well as the number of perspective angles.

John collaborates with SAFS and NOAA Fisheries' Resource Assessment and Conservation Engineering division (Alaska Fisheries Science Center [AFSC]). "I'll be focusing on the distributional ecology and acoustics of walleye pollock, Pacific hake (whiting), but also salmon through the riverine assessment people in Alaska." This doesn't preclude freshwater species, as inquiries from around the world continue to arrive.

As ecosystem management evolves, the demand will grow for non-invasive, continuous sampling. The number of people trained in fisheries acoustics does not meet current demand. John said, "Despite this, an academic fisheries acoustics program has been unavailable in this area."

John sees SAFS as having a strong role

in training undergraduates and graduate students through the curriculum and collaborative research with AFSC: "NMFS is very good at doing surveys, but they don't have the time to pursue the research they would like to. My joint affiliation gives me the best of both worlds: for example, results here can be implemented immediately in current AFSC surveys for assessing Alaska stocks."

John is enthusiastic about several initiatives starting at the school: "This summer, there's a joint UW-AFSC summer internship program for SAFS undergraduates." Further, the Pacific Whiting Conservation Cooperative is funding graduate student training and research starting next fall, and a post-doc will have a joint SAFS-AFSC position.

Summing up, John emphasized the nontraditional nature of his position, which is essentially a split appointment between SAFS and AFSC, with support from industry: "It's like an unofficial 'chair' position and that's how I'm treating it. I am very excited about my position and the numerous opportunities for collaboration. A lot of people are very interested in what we are doing."

John and his wife are relative newcomers to Seattle, and spend their free time exploring the Pacific Northwest.



K. Adkins

Kerry Naish

Assistant Professor

Degrees: MS 1989, stock identification and stock assessment in Cape horse mackerel, University of Rhodes, Grahamstown, South Africa; PhD 1993, Biological Science, fishery genetics–kin selection in shoaling fish, University of Wales, Swansea, UK

Specialties: quantitative genetics, focusing on conservation and aquaculture

Kerry grew up in the Zimbabwean bush. Her parents' various jobs kept her in close proximity to wild animals, which she credits partly for her career choice. After earning her PhD, she worked on fish genetics in West Africa and the Philippines for a British aid organization, but soon decided to move back to academia: "I was more interested in finding answers to the questions than in policy decisions."

Most recently, Kerry held a post-doc position at NMFS' Montlake lab, working within the Conservation Biology group with Linda Park and Jeff Hard on quantitative genetics—which examines the interaction between an organism's genes and its environment—and molecular genetics to address issues arising in conservation: Until the mid-1900s, scientists focused on quantitative approaches, acquiring statistics and developing theories. Kerry notes, "With molecular genetics, we can test these theories and try to better define what it is we are trying to conserve." Scientists have been trying to conserve taxa, species, assemblages, lineages—'looking back'—but now, "We're poised to try to conserve life history strategies, concentrating on diversity that allows the animal to evolve with a changing environment—'looking forward'."

The Endangered Species Act was the impetus for Kerry's focus on chinook and

coho salmon but also, coho are the "ideal Pacific salmon—simple life history strategy combined with a short life span." Practical applications of her work include determining whether hatcheries change fitness characters in hatchery salmon, and examining the consequences of interbreeding between hatchery and wild salmon. She is also developing a program in shellfish aquaculture: "The questions are the same; you are still trying to preserve genetic variability, but in this case, you're selecting for the most fit organism."

Kerry came to SAFS because of its well-established research programs in salmonids, conservation, and genetics, which offer a great opportunity for collaborative efforts. For example, she hopes to work with Tom Quinn on the genetic basis of salmon life history traits—essentially "fitness traits"—and Walt Dickhoff on the environmental component of fitness traits. She is also exploring shellfish aquaculture research with Joth Davis at Taylor Shellfish Farms.

She was attracted to SAFS' emphasis on conservation management in its teaching program. Next fall, she will teach Fish 444, Conservation Genetics, incorporating a long-term hatchery project that measures the effects of inbreeding on salmon populations: "I hope to attract students from Forestry, Botany, and Zoology as well as

SAFS because the class content is relevant across many different disciplines." And she taught Biology 102 in Spring Quarter, which she saw as an excellent opportunity to recruit undergraduates to SAFS.

Kerry notes, "We are moving more towards conservation, in part as a response to regional issues. I think we will look at basic scientific questions that can be applied to conservation in industry."

She considers SAFS' integration a real plus: "People know where we are and how we serve the community. I get the impression that, as a department, we have a very strong and highly visible commitment to community service, as in outreach programs like Salmon in the Classroom and in our liaisons with community colleges."

Her goal is to answer the question, "What are we trying to conserve?"

Kerry has traveled a lot in Africa, Europe, and Central America and plans to go to South America and Asia. She is very interested in world music and jazz, and in politics and social issues: "It's a reflection of where I come from."



S. Newman

Julia Parrish

Assistant Professor

Degree: PhD 1988, Zoology, costs and benefits of schooling in fish, Duke University

Specialties: animal aggregation, predator-prey interactions, marine conservation

Website: <http://depts.washington.edu/birdfish/>

Julia is intrigued with gregarious animals: “From insects to fish to birds, animal groups rule.” She is also very interested in conservation biology, which she describes as breaking down the wall between basic and applied research: “It acknowledges the impacts humans have on ecosystems; once that happens, how can you say it’s not applied?”

Several years after graduate school, Julia accepted a post-doc at SAFS where her work on seabirds started. She then joined the UW Institute for Environmental Studies, working with Dee Boersma. Julia notes, “Dee helped me define my career path in terms of research, grantsmanship, and teaching.” In 1995, she went to UW Zoology as a research assistant professor.

Whether it’s birds or fishes, Julia has studied animal groups since graduate school. She currently is collaborating with Danny Grunbaum (UW Oceanography), with whom she’s established an interactive fish film studio to explore “traffic rules for fish schools.”

Julia described why studying schooling behavior is important: “Many of the world’s commercially harvested finfish species school. Fisheries managers need to understand schooling dynamics to estimate sustainable harvest levels.”

The other application is much broader. By determining how individual group

members—who have no sense of the whole—communicate with each other and contribute to group-level behavior, Julia and her colleagues hope to develop a model for sending a networked robotic system—one with no central “brain”—on search and rescue missions in hostile environments, like the deep ocean.

Julia also studies seabird biology, principally Common Murres, a colonial seabird with real pluses compared with schooling fish: “They’re active during the day and sleep at night—always nice for us; they’re easy to see because they nest on the ground; and they’re long-lived so you can study them year to year.”

Initially she sought to explore the effects of group size, or as she put it, “Does size matter? The literature suggests it does, but obviously the murres had not read the literature: they didn’t behave according to the predictions, so I set out to discover why.”

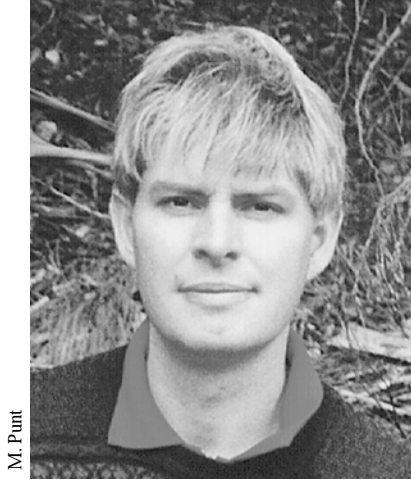
The murre studies have been ongoing for ten years at sites such as Tatoosh Island, Washington, yielding data on seabird ecology, and demography, which Julia described as “How many birds are at the party and how well do they do reproductively?” She notes that, besides contributing basic information on the benefits of groupiness, Common Murres are a good “canary in the coal mine” in nearshore environments because of their

disproportionate mortality from oil spills and gillnet bycatch compared with other seabirds. This sensitivity was the impetus for a gradual shift to more applied studies in marine conservation.

Julia’s pursuit of marine conservation is why she has faculty appointments with SAFS, Zoology, and the Program on the Environment—her way of furthering collaboration between the big players in this arena. As important as conservation research is, she objects to notions that it is replacing SAFS’ historical emphasis on resource extraction: “Contrasting extraction and conservation as opposing elements is both simplistic and harmful.” She considers SAFS to have a key role in the science and in presenting the complexity of resource use and management issues to the public: “We have the ability to move the dialog in a positive direction.”

Julia is adamant about acknowledging the students and staff in her lab: “I could not have the kind of programs I do—from basic and applied science problems to citizen science, education, and outreach—without them. I just pay the bills; they make it happen.”

When asked what she does when not involved in outreach, teaching, and research, Julia quipped, “I try to cook a good meal with my also overly Type-A husband and try to get some sleep!”



M. Punt

André Punt

Research Associate Professor

Degrees: MS 1988, Applied Mathematics, stock assessment methods for cape hake; PhD 1991, Applied Mathematics, Cape hake and baleen whale management, University of Capetown, South Africa

Specialties: biomathematics, harvest theory, multispecies modeling, population dynamics, stock assessment

André applies mathematical models to determine the impact, in quantitative terms, of management approaches for renewable marine resources. His focus has been methods for fisheries stock assessment and decision analysis.

As part of his PhD, he modeled the biological interaction between shallow-water and deep-water Cape hake to identify decision rules that avoided stock collapse but also achieved reasonable levels of sustainable catch. He noted “The rule that came from my PhD work was used for ten years,” but wryly added, “they’re just rubbishing it at the moment!” This work expanded to address the impact of increasing numbers of seals on hake and the impact of seal culls on fishery yields.

André did his post-doc at SAFS, working on stock assessment for the orange roughy and hoki fisheries off New Zealand with Ellen Pikitch and Ray Hilborn. His work was “full of conflict,” largely due to the contested nature of the Bayesian assessments. André elaborated, “For most stock assessments, data are too few to draw firm conclusions. Bayesian methods address this by combining data for the species of interest with data/information for other species.” He considers SAFS to be the leader in Bayesian fishery stock assessment applications.

Most recently, André was a Principal

Research Scientist for CSIRO in Australia, where he conducted research on sharks, demersal fish species, and coral trout on the Great Barrier Reef. The latter work entailed evaluating experimental management regimes: “We designed an experiment in which some marine park reefs were opened to intensive fishing to quantify impacts and estimate biomass” he said.

At SAFS, André is studying West Coast groundfish; in particular, testing stock assessment techniques. Also, he is investigating how the sedentary nature of rockfish relates to stock structure uncertainty: “Managing a stock as one big population when there are multiple populations could be catastrophic,” he said.

He also conducts whale research and has participated in the Scientific Committee of the International Whaling Commission since 1990. Currently, he is focusing on management of aboriginal whaling—developing rules to determine the limits on the number of whales an aboriginal community can harvest without impacting the recovery rates for overexploited populations. He contributed to the International Whaling Commission’s assessment of the biological implications of the Makah Indians’ resumed whaling.

While not required of him, André does plan to teach, and he will be getting SAFS graduate students involved in his research:

“SAFS has always excelled in quantitative stock assessment and has graduated several of the top people in this area.” He had other motivations to join an academic institution as well: “I’ve mostly worked at the agency level. SAFS appealed to me because I want to work for an organization that has people who are sincerely committed to making a difference.”

Regarding SAFS’ future, André said, “I’d like to see our quantitative faculty, of which I’m a member, build a more comprehensive curriculum and promote it. The school has a very good reputation in this area, but we’ve lost some faculty recently. We need to make ourselves more visible and more cohesive.” This is where he hopes to make a difference; he’s seen, in the agency sense, that many students educated in fisheries often don’t have strong quantitative skills, and wants to help ensure that SAFS provides these skills.

SAFS has always excelled in quantitative stock assessment

André is married with one child. Like other newcomers, his family is getting to know Seattle and the general area. ■

Gifts

The School of Aquatic & Fishery Sciences is very fortunate to be the recipient of many generous donations from alumni and friends. This is especially important because State funding constitutes only 16% of the total support necessary to maintain the high scholarship of the University. We wish to thank all our supporters for the integral role they play in helping us maintain the excellent quality of our programs.

We are very pleased to announce the continuation of support from the Ingeborg Short Foundation for the Jensen Fellowship. Mrs. Short established this fellowship to honor her father, Roy Jensen, who founded Ocean Beauty Seafoods and played a key role in establishing Seattle's strong presence in the Pacific Northwest fishing industry.

The SAFS Scholarship Committee is delighted to announce that PhD graduate student Brent Vadopalas has been selected to receive this honor. Brent is completing his research on the potential genetic risks of aquaculture activities on naturally occurring populations of geoducks in Puget Sound. The results of his research will have important implications for managing the commercial fishery for geoducks and possibly other benthic invertebrates. How appropriate that the fellowship—honoring a man who supported commercial fisheries in our area—is going to a student who will contribute to the well being and perpetuation of such a fishery.

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

Writer & Production Editor: MARCUS DUKE

Design, Illustration, & Editing:

CATHY SCHWARTZ

Please call Marcus Duke at (206) 543-4678 or e-mail mduke@u.washington.edu

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