From the Director

Dear Friends,

The last six months have been a blur for SAFS, with one completed faculty hire and two hires currently in progress. We hired Sarah Converse as the new unit leader for the Washington Cooperative Fish and Wildlife Unit (Coop) during the end-of-the-year “break” and before the 20 January deadline. Sarah comes from the US Geological Survey Patuxent Wildlife Center in Maryland and started here on 16 March, with a joint appointment in SAFS and the School of Environmental and Forest Sciences. Read about Sarah and her research interests and plans in the interview on pages 6–7.

Two of our faculty members, Vince Gallucci and Glenn VanBlaricom retired this quarter, having been members of the School since 1977 and 1993, respectively. Vince and Glenn have contributed to the School through their teaching, mentoring, and many research projects. Glenn was honored in June by a retirement plaque from the US Geological Survey (see page 12).

SAFS had its annual spring picnic on 19 May. Each year as part of the picnic, the graduate students find a way to generate funds to support travel scholarships. Previous years have involved dunking students, staff, and faculty in a tank of ice-filled water; this year, the fundraising involved bidding for students and faculty from SAFS and the Quantitative Ecology and Research Management program to contribute to the day’s entertainment through a karaoke extravaganza. Apparently, there were backroom deals, in which certain faculty were willing to bid for non-nomination as the day’s lead singers! The final “winners” included Tim (“the Russian Crooner”) Essington and Steven (“OOPs. I did it again. broke your heart”) Roberts. While none

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of those who performed should give up his/her academic career, it was a very entertaining (and profitable) afternoon. Thanks again to all those who helped organize this year’s picnic.

SAFS aims to mentor our graduate students to become leaders in their academic fields and to go on to careers in academia, government agencies, and the private sector. However, our students do a lot more than study (and sing) during their time at SAFS. On pages 3–5, read about activities our graduate students and research staff do to give back to the community, assist each other to further their careers, and conduct independent research.

John Horne recently returned from his sabbatical, during which he visited Antarctica to study what drives the density of krill, and then the University of Aberdeen to work on acoustic projects. John also spent time learning more about how the United Kingdom conducts environmental monitoring, which is an increasing component of his research. Learn more about what John did during his six-month sabbatical (pages 8–9).

As the academic year draws to a close, I want to thank all of our donors and friends who have given so generously to the program over the year. The long list of names you see in the fall-winter edition of the newsletter does not do justice to the impact your gifts have. Your support for the program allows us to examine new avenues of research through “start-up” grants, fund travel for graduate and undergraduate students, and, of course, cover some of the stipend and tuition cost that makes studying at the UW challenging for so many students.

Have a great summer!

—André Punt, Director

SAFS SPRING PICNIC
Photos: Lindsay Alma & Yaamini Venkataraman
Helping Students Apply for NSF Graduate Research Fellowships

Applications for the National Science Foundation’s (NSF) Graduate Research Fellowship Program (GRFP) come from students in the fields of science, technology, engineering, and mathematics. With an approximately 13–15% funding rate, an application that requires both a research proposal and a personal statement can seem like a daunting task.

To help students with the application process, senior GRFP fellows in SAFS have hosted a workshop every fall since 2012. Participants learn essential grant-writing skills, with a focus on the GRFP application. Over the five years the workshop has been offered, participation has expanded to also include undergraduate seniors and research technicians at SAFS, as well as students from other departments, including the School of Environmental and Forest Sciences and the departments of Biology and Radiology. Eleven participants have received awards and at least fourteen have received “Honorable Mention.”

The workshop provides directed feedback on GRFP applications, facilitates discussion on research ideas, and gives structured feedback on proposals and essays, which all lead to stronger proposals and writing skills. Workshops are organized in a small-group format intended to foster mentorship between applicants and mentors. Groups consist of two applicants and two-to-three mentors, who are senior graduate students or postdoctoral researchers. Over a five-week period, students are introduced to the format of the application and undergo three rounds of edits on their applications. In turn, mentors build their leadership and mentoring skills.

A recent paper published by the workshop organizers (Mims et al. Ideas in Ecology and Evolution. 9: 124–39) includes a participant survey. Former participants reported that the workshop helped them learn to write research statements (82%) and personal statements (85%) and that they gained the most from the close mentoring relationship (97% said that their mentors improved their application “a great deal” or “a lot”). The GRFP workshop will be offered in future fall quarters to support upcoming generations of NSF applicants.

Gaming the Sustainability System

Some ideas wait for the right time. Years ago, SAFS alumna Lauren Kuehne (MS 2012), currently a research scientist in Julian Olden’s lab, thought about creating a game focused on environmental sustainability, but the pieces to move ahead didn’t seem to be quite there. Lauren was motivated to figure out how to encourage individuals to make more sustainable choices, but envisioned bypassing the usual route of offering more information and instead tap into the psychology of motivation to engender lasting changes to behavior. The concept remained firmly theoretical until last year, when Lauren realized that labmate William Chen and another friend Rachel Lee (MC student, Communication Leadership Program) would be perfect collaborators to tackle this challenge. William and Rachel were also very interested in pushing boundaries in science communication, specifically in using new media—including web and app-based games—to promote awareness of environmental issues. All three were part of UW’s
EarthGames, and William and Rachel were part of the team that created the game AdaptNation, which placed third in the National Climate Game Jam.

Lauren, William, and Rachel applied for and were recently awarded a grant from the Campus Sustainability Fund to conduct a feasibility and design study for an environmental gaming app that encourages students to adopt sustainable practices during their tenure at UW (and beyond). The feasibility study will include research fundamentals, such as a literature review and student survey; it also features a “Game Jam,” where teams will competitively create game prototypes in the fall that could be implemented on campus. Ultimately, the team hopes that the study will lead to a campus-wide challenge as an innovative tool to promote environmental sustainability.

**Enhancing Science Communication**

Science communication fuels discovery and broadens scientific literacy. Developing outreach activities provides an outlet for young scientists to hone their communication skills. A group of volunteers in SAFS led by Isadora Jimenez and Bob Oxborrow (SAFS staff members) is developing “Students Explore Aquatic Sciences,” or SEAS. This program is an effort among SAFS research staff and graduate students to engage the public with researchers at UW, with a focus on middle school students within the greater Seattle area.

SEAS aims to increase the visibility of SAFS within the local community and promote the School to students from diverse backgrounds. SEAS will provide an opportunity to foster connections among academia, local communities, and their natural resources.

SEAS will consist of four main components: in-school mini-lessons, SAFS open houses, lab visits, and a summer program. Graduate students and research staff will visit public schools, present information, and lead hands-on activities related to SAFS research. Monthly meetings will provide an opportunity for volunteers to develop and enhance their lesson plans and share resources among peers.

The first SEAS volunteers acted as STEM activity leads for the 2017 MESA Day on 26 March. Activities focused on genetic research and its application to fisheries. After learning about DNA structure and genetic barcoding, students worked on a “CSI” style project, where they determined prey of Chinook salmon in the Bering Sea by matching DNA sequences of unidentifiable stomach contents to a key.

Starting in fall 2017, SEAS will launch its open house program with an all-day event. Participating labs will showcase their research and facilitate relevant activities and games for visiting students and their families. The SAFS curriculum will also be highlighted, and visitors will have the opportunity to interact with students and faculty. Ultimately, SEAS hopes to incorporate a three-day summer program in which middle school students will explore one subject through the lens of various labs’ expertise. This will allow students to discover how subjects interconnect and relate to local issues in Puget Sound. Graduate students and research staff will lead the lessons and facilitate career path conversations and discussions through personal experiences in the world of science.
Research Derby

SAFS graduate students conduct most of their research in collaboration with their faculty mentors and the members of their supervisor committees. However, we also encourage our students to initiate their own research, independent of their mentors, and ideally across multiple labs in the School. The SAFS Research Derby, which took place in March 2017, is an example of one way we facilitate such research.

Originally modeled after an event at Simon Fraser University, the Derby is a speed research competition meant to spark collaboration and creative thinking among students of different backgrounds. Over two days, students identify a question, brainstorm an approach, collect data, perform analyses, and create a presentation outlining their methods and results. The presentations are given in the SAFS auditorium to a group of faculty who judge the work using a rubric that addresses the originality of the question, the work conducted during the two days, and the quality of the presentation. This year, the judges were Terrie Klinger (director of the School of Marine and Environmental Affairs), Usha Varanasi (SAFS affiliate professor and supporter of the Derby through the Usha and S. Rao Varanasi Endowed Fellowship in Environmental and Marine Stewardship), and André Punt (SAFS director).

This year, three teams, each comprising four graduate students, competed for the top award. SAFS provided breakfast, sandwiches, pizza, and coffee so participants could focus solely on their research. The event was coordinated by Peter Kuriyama (PhD, Branch), who recruited the teams, clarified how the Derby operated, and ensured that the teams were well fed and on time with their presentations.

This year, students across four units (SAFS, QERM [Quantitative Ecology and Resource Management], SMEA [School of Marine and Environmental Affairs], and SEFS [School of Environmental and Forest Sciences]) participated. The teams evaluated the socioeconomic costs of an earthquake event in the Pacific Northwest, investigated the sustainability of seafood options in restaurants around the United States, and quantified changes in Ocean Health Index metrics in response to climate change. This involved running models to quantify the impacts of a large earthquake on the agriculture, dairy, and shellfish industries; looking and grading about 200 menus; and writing code to bootstrap data.

The judges were impressed with the questions identified, the analyses conducted, and the quality of the presentations, in particular, the interdisciplinary nature of the research. There had to be a winner, and this year it was the “earthquake team” of John Best (QERM, PhD, Punt), Melanie Davis (SAFS, PhD, Olden), Bryan Pelach (SMEA, MS, Marc Miller), and Kristin Privitera-Johnson (SAFS, MS, Punt).

The research conducted during the Research Derby is of publishable quality. One project from the first Derby in 2013 has been published in Conservation Letters. This paper, led by Christine Stawitz (PhD, Essington), Margaret Siple (PhD, Essington), Stuart Munsch (PhD 2016, Simenstad) and Qi Lee (MS, Punt), focused on the ecological and financial impacts of seafood mislabeling and garnered media coverage from outlets such as Vice and NPR.
Introducing New Faculty

Sarah Converse, PhD

In March, Sarah Converse joined the School as unit leader for the Washington Cooperative Fish and Wildlife Research Unit (Coop). She has a joint appointment with SAFS and the School of Environmental and Forestry Sciences (SEFS). Before coming here, Sarah was a research ecologist at the USGS Patuxent Wildlife Research Center in Maryland. Sarah is replacing Dave Beauchamp, former Coop acting unit leader, who took a new position as chief of the Ecology Section at the USGS Western Fisheries Research Center in Seattle.

I caught up with Sarah to learn more about her and her research interests.

AP: Please tell us a little about your background.
SC: I became a biologist by accident. When I started university, I wanted to be a lawyer. But I read Al Gore's book, "Earth in the Balance," and decided I should study environmental law. The more science courses I took, the more I wanted, and I finally finished with a degree in Fisheries and Wildlife. After that, it was law school or grad school in wildlife biology. Grad school won out, and I never looked back.

For my PhD, I worked on understanding the effects of fuel reduction on wildlife, primarily small mammals. I had field sites in northern Arizona and northern New Mexico and ran large trapping grids as part of a landscape-scale experiment. I also thought a lot about how to model abundance across space and time, while also accounting for imperfect and variable detection.

After finishing my PhD, I obtained a postdoc at Patuxent Wildlife Research Center, which has always had a stellar reputation for work in quantitative population ecology. A permanent position then came up and I grabbed it—that was 10 years ago.

AP: Which research areas are you currently pursuing?
SC: I am working on several projects. I am trying to understand why reintroduced whooping cranes have poor reproductive output, while also working to help managers make decisions about how to manage in the face of uncertainty about the cause of reproductive failure. I am also focusing on polar bears. They are incredibly hard to study—they have huge ranges, live in remote and forbidding places, and have complex life histories—but we have identified several methods that could improve estimates of their demographic parameters. We're collaborating with a number of polar bear researchers (including UW's Eric Regehr and Kristin Laidre).

AP: What are your plans as a newcomer to the Pacific Northwest?
SC: I'm excited to learn more about Washington state and its incredible diversity of ecosystems, and I'm really looking forward to working with state agencies to gain a better understanding of their research needs. I want to understand where managers are challenged due to uncertainty about how populations function, and to help both reduce that uncertainty and plan in the face of it. In addition, I'll continue some ongoing projects, including studies on reintroduced populations and polar bears.

Sarah with a waved albatross at Espanola, Galapagos

Photo: Kate Huyvaert
AP: *What do you see as the priorities for the Coop going forward?*

SC: I want the Coop to be a hub for applied science. I'd like us to continue to work closely with our cooperators in state and federal agencies to identify research needs and strive to meet those needs. Part of doing applied research is understanding that a report or journal article isn't enough. We need to collaborate with managers to really understand the decisions they face and work to help them ensure that those decisions are made with the best available information. The research needs of our cooperators span a variety of aquatic and terrestrial systems, and it is key that the Coop connects researchers in both SAFS and SEFS to our cooperators. I'd also like to make sure that graduate students working through the Coop incorporate applied research into their training.

AP: *What drew you to the UW?*

SC: I visited Seattle for the first time when I was about 20. I remember at the time deciding I would live here someday. It is a few years later now, and my understanding of the benefits of being here is broader than just this beautiful, progressive city and the amazing wild places of Washington. At the most basic level, I've realized over the past few years that I wanted to be in a university setting. I love the energy, the different ideas, and debates swirling around, and the opportunity to work more with students. And what better place than UW, with such a large number of excellent faculty working on interesting things. I also believe strongly in the mission of the Coop, and the Cooperative Research Units system generally, and I'm excited to work with the cooperators we have here, who are very supportive and switched on to the benefits of working with the Coop Unit.

AP: *What is the “next big thing” for you / in the field?*

SC: For me, “the field” includes two general areas: methods in quantitative population ecology and decision science. In the first area, integrated modeling is the future. We're thinking harder about how to integrate many different data types and sources. We're increasingly integrating spatial data into data collection and analysis of animal populations. I think we've only started to scratch the surface in integrated and spatial modeling. In management science, there is also a sense of integration, but in that context, I think we're working to integrate more diverse perspectives into decision making. In particular, I think analysts, managers, biologists, and human dimensions specialists will increasingly be working together to integrate more diverse perspectives on natural resource management issues within formal decision frameworks.

AP: *Tell us something about you that we would not learn from your CV?*

SC: My husband (a lawyer, now working at a downtown Seattle firm) and I really like birding, but we don't have great West Coast birding chops yet, so we hope to get invites from some seasoned pros out here. We're also excited about our new house near Green Lake and getting in some Seattle running time around the lake. Last year I ran in a 5K race every month, and this year I'd like to continue to chip away at my time.

Sarah building whooping crane release pens in Wisconsin  Photo: Glenn Olsen
What has John Horne been up to?

In 2001, John Horne joined SAFS as a research assistant professor after postdoctoral and research positions at the Great Lakes Center, the NOAA Great Lakes Environmental Research Laboratory, and the Alaska Fisheries Science Center. When he joined SAFS, John's research projects were focused on predator-prey interactions and application of acoustics methods to aquatic ecology and resource management. John's skill as a mentor and teacher were quickly recognized, and he was offered a tenure-track position in 2007. He was promoted to professor in 2011.

As is the case for many of SAFS faculty, John's research program has changed focus over the years. Much of his recent research pertains to marine renewable energy. His lab is developing tools and techniques for environmental monitoring programs at MRE (Marine Renewable Energy) sites. Currently, there are no regulatory standards in North America or Europe for environmental monitoring, yet each operating license must have a monitoring plan as a condition of the license.

For biological monitoring, the industry focus has largely been on animal–device interactions, but evidence to date shows that this is not a common occurrence. John said, “Our research spans device-to-domain monitoring solutions by tackling instrumentation and sampling designs and objectively defining what constitutes change and impact, comparing biological characteristics at sites in the US and UK, and how to detect, model, and forecast change during baseline characterization and operational monitoring.”

Three graduate students (Dale Jacques, Lauren Wiesebron, and Hannah Linder) have completed MS projects in this area, and Silvana Gonzalez started her PhD program last year. According to John, the ultimate goal is to create an industry standard, best-practices package for the design and operation of a monitoring program. John said, “Our focus has been on MRE, but results from this research are applicable to any aquatic monitoring application, including climate change, ocean observatories, offshore oil and gas, aquaculture, and hydro/nuclear power plants.”
John thinks that the future of MRE in North America is a little cloudy right now. There are different philosophies on how to move forward in North America compared to Europe: in Europe the strategy is to get steel in the water and determine the effects; in North America regulatory agencies want to understand and get regulations in place first.

According to John, a large proportion of the engineering technology challenges have been addressed, but environmental impacts and associated monitoring regulations focus on environmental factors with uncertain impacts. The uncertainty of environmental impacts has resulted in high monitoring requirements, and these requirements may be a financial viability tipping point for many MRE developers. Project siting and environmental monitoring are dominant issues due to environmental baseline and spatial planning costs. Limited sampling and the absence of demonstration or commercial scale operating MRE projects have constrained the understanding of MRE impacts on biological communities and local economies. Ultimately, appropriate monitoring will be required to ensure that MRE operations do not cause detrimental environmental impacts, and there may be added constraints in some areas on use of ocean spaces.

Recently, John was on sabbatical, conducting research in the cold waters of the Antarctic and at the University of Aberdeen in Scotland. During the first half of his sabbatical, he participated in a five-week joint UK-Norwegian research Antarctic survey in the South Orkney Islands to determine factors influencing density distributions of Antarctic krill. Using an autonomous echosounder that was attached to a CTD rosette and deployed on a mooring mounted on the RV James Clark Ross, a 325-foot research ice breaker, researchers profiled animals within aggregations and gained a sense of movements around canyons. The largest aggregation the research team saw was more than 2 km long, 1 km wide, and 50 m deep.

John said that the cruise was a great way to see how other countries conduct research at sea, to see a part of the world he had not visited before, and to sample an ecosystem whose food chain is based on zooplankton. He said, “There were always lots of whales, penguins, and seals around the vessel during the entire cruise. Newly calved icebergs drifted past rugged volcanic islands that jutted out of the water. I got to visit different islands when picking up other scientists, and we only had one storm where the winds got above 130 miles an hour for 24 hours!”

He spent most of fall quarter at the University of Aberdeen, where he had the opportunity to work on fisheries acoustics projects and become much more familiar with the UK approach to environmental monitoring at MRE sites.

Chinstrap penguins (*Pygoscelis antartica*) observed from the RV *James Clark Ross* (during a rare calm moment)
Awards & Honors

Students

Degree track and faculty advisers in parenthesis

Lindsay Alma (MS, Padilla-Gamiño) was awarded a scholarship from the International Woman’s Fishing Association.

Abigail Ames (BS) netted a Mary Gates Research Scholarship.

Jeremy Axworthy (BS), Martini Arostegui (MS, Quinn), Merrill Rudd (PhD, Branch/Hilborn), and Margaret Siple (PhD, Essington) were given SAFS Faculty Merit Awards for 2017. This award annually recognizes outstanding efforts by students who have achieved high scholastic standing in the program.

David French (MS, Schindler) received a National Science Foundation Graduate Research Fellowship.

Daniel Hernandez (PhD, Friedman), Griffin Hoins (BS), and Jonathan Grindall (BS) were included in the Husky 100, which recognizes 100 UW undergraduate and graduate students who are making the most of their time at the UW.

Heather Lopes (BS) won a Public Health Award for her paper, "Battle of the filter feeders: bacterial transmission in the presence of ascidians," from the UW Libraries.

Samual May (MS, Naish) was awarded a Graduate Student Research Award from the North Pacific Research Board.

Andrea Odell (BS) and Alanna Greene (BS) obtained Del Rio Endowed Environmental Studies Scholarships; Jonathan McLean (BS) and Eric Anderson (incoming freshman, BS) got Nancy Wilcox Endowed Scholarships; Kyla Bivens (BS) and Jennifer Gardner (MS, Tornabene) were awarded Clarence H. Campbell Endowed Lauren Donaldson Scholarships; and Hiromi Katagiri (BS) obtained a College of the Environment Scholarship.

Eleni Petrou (PhD, Hauser) received an award from the Puget Sound Anglers, Fidalgo – San Juan Islands Chapter.

Erika Rubenson (PhD, Olden) won the Robert L. Kendall Award for Best Paper in the journal Transactions of the American Fisheries Society.

Margeret (Megsie) Siple (PhD, Essington) obtained a Best Presentation Award during the March 2017 PICES/ICES International Symposium on Drivers of Dynamics of Small Pelagic Fish Resources, which was held in Victoria, British Columbia.

Laura Spencer (MS, Roberts) received a Hall Conservation Award from the College of the Environment, the Libbie H. Hyman Memorial Scholarship from the Society for Integrative and Comparative Biology, and the Melbourne R. Carriker Student Research Grant from the National Shellfish Association.

Jenny Stern (MS, Laidre) won a National Defense Science and Engineering Graduate Fellowship and a Mortar Board Fellowship.

John Trochta (MS, Branch) obtained a Bonderman Travel Fellowship that will enable him to embark on a solo journey that is at least eight months long and take him to at least two regions and six countries of the world.

Michael Vlah (MS, Holtgrieve) received a Data Science for Social Good Fellowship from the UW Washington Research Foundation Data Science Studio.
Staff, Postdocs, and Faculty

**Sean Anderson** (Postdoc, Branch) received a 2017 Early Career Award from the Canadian Society for Ecology and Evolution.

**Charlotte Boyd** (Postdoc, Punt) was appointed as the chair of the Key Biodiversity Areas Standards and Appeals Committee by the International Union for the Conservation of Nature.

**Kenneth (Ken) Chew** (professor emeritus) won the American Institute of Fishery Research Biologists 2015 Individual Outstanding Achievement Award for his exemplary body of work that nurtured and facilitated excellence in fishery science.

**Kristin Laidre** is the recipient of a 2017 Pew Marine Fellowship.

**Kerry Naish** obtained an Outstanding Teaching Award from the College of the Environment for her contribution to teaching through her involvement in reviewing and finalizing the curriculum for the proposed marine biology major.

**Kathryn (Kate) Stout** obtained a Special Recognition for Service Award from the College of the Environment for her exemplary role as one of the primary liaisons with Tent City 3, which included facilitating food and clothing drives and coming to campus on Saturdays so residents could use the building for dental services.

**Chelsea Wood** obtained an Ecological Society of America Early Career Fellowship Award.
Glenn VanBlaricom (right) accepts his retirement plaque from Chris Grue at the 2017 Washington Cooperative Fish and Wildlife Research Unit (WACFWRU) spring Cooperators Meeting. Glenn retired 1 June after 40 years of federal service.