

ANNUAL REPORT

Washington Cooperative Fish and Wildlife Research Unit

July 1, 2025–June 30, 2026





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MESSAGE FROM THE UNIT LEADER

Sarah Converse

Despite ongoing uncertainties at the state and federal level, things are going as smoothly as they can be at the WACFWRU.

From a unit sustainability standpoint, we are now operating pretty comfortably under our new cooperative agreement. We seem to have hit a sweet spot at which our state cooperators know what to expect when getting projects underway with us, and PIs know what to expect in terms of indirect rates and the project approval process. There has been greater uncertainty with our federal projects under the Research Work Order model that is unique to the Cooperative Research Units. We have had new administrative procedures and longer delays for review. We are hoping for improvements in the coming year.

Our connections with agency cooperators continue to be rich, with each of us working closely with state and federal partners on a variety of projects. One project we're getting started in my lab is focused on helping the Washington Department of Fish and Wildlife (WDFW) with strategic decisions regarding American bullfrog management. American bullfrogs are a highly invasive and detrimental species in Washington. In late October, we'll be convening a workshop with experts to begin the development of a management strategy evaluation for bullfrog control. We're also continuing longer-term processes to inform the management of Cascade red foxes and northwestern pond turtles.

One of the ways we serve the Washington fish and wildlife community is through the monthly Washington Fish and Wildlife Ecology seminar series. It is now entering its ninth year. Alex's management has seen tremendous growth in attendance and a diversity of excellent speakers. Go here to join the mailing list and stay on top of upcoming seminars and opportunities to sign up as a speaker: <https://depts.washington.edu/wacfwru/category/seminar-series>.

My lab is running along quite well. We didn't have any graduates this year, but we did have two additions. The lab now consists of Matt Farr (postdoc - various projects); Amelia DuVall (postdoc - various projects), Caroline Blommel (PhD student - seaduck population analysis), Tim Chen (PhD student - northwestern pond turtle conservation biology), Nate Redon (PhD student - Cascade red fox conservation biology). Joining the lab this year were Ryan Luvera (MS student - bullfrog management) and Heather Rolph (MS student - Cascade red fox conservation biology).

This year, we said goodbye to one Cooperator's Committee Member. Ken Warheit started serving on the WACFWRU Cooperator's Committee in 2009. His contributions to the WACFWRU cannot be overstated, given his nearly 20 years of helping to guide our work. I have relied on Ken as the memory of the Cooperator's Committee, as a huge supporter of the Unit, and as a valued collaborator. He will be greatly missed. However, we are excited to welcome Mara Zimmerman, Chief Scientist for Fisheries at WDFW, to the Committee this year.

—Sarah Converse, *Seattle, September 30, 2026*



MESSAGE FROM ASSISTANT UNIT LEADER—FISHERIES

Mark Scheuerell

This past year was a series of ups and downs, but we all managed quite well.

Late summer found me working with colleagues on our NSF-sponsored project to use genomic methods and time series models to identify leading indicators for nearshore algal blooms with an eye on aiding prediction of harmful blooms that potentially impact shellfish harvesters and growers. The Lake Sammamish Kokanee Work Group (KWG) also held its annual meeting to plan its supplementation strategies for increasing the depressed population. I also began discussions with USFWS scientists in Yakima about studying bull trout movements and habitat usage.

Fall was rather abbreviated because of the federal government shutdown, but we all managed to carry on despite the challenges it presented. In November, five of my graduate students presented research papers at the Western Society of Naturalists meetings in San Diego; Markus Min received an honorable mention for his presentation. Regrettably, I was unable to present my own research because of the furlough. In mid-November, grad student Nicole Doran passed her PhD candidacy exam. Later that month I began serving on a UW-wide task force at the request of Joy Williamson-Lott, Dean of the Graduate School; our charge was to identify strategies that all three UW campuses could use to better attract, support, and retain talented graduate students. The calendar year wrapped up with final preparations for the Lake Washington Science Summit, which subsequently brought together folks from USGS, WDFW, King County, the Muckleshoot Indian Tribe, and UW in early 2026.

The new year kicked off with a flurry of graduate student milestones and Tessa Code from my lab passed her PhD candidacy exam after passing her qualifying exam earlier in September. In early February I led a webinar on behalf of the College to help postdocs identify and apply for government jobs. In late February Nicole Doran began our participatory modeling in partnership with the KWG to evaluate the efficacy of food web and habitat manipulation in Lake Sammamish. In March we began a set of experiments at the USGS Marrowstone Marine Field Station, led by grad student Amirah Casey, to assess the effects of ocean alkalinity enhancement on the development of herring eggs and the behavior of salmon smolts.

Our annual graduate student symposium, typically held in October, was postponed until late April because of the shutdown. Angela Dillon and Amirah Casey, both students in my lab, shared the honor of best student presentation. Markus Min from my lab received the John Pierce Award. We also found out in April that Markus was awarded a prestigious Smith Postdoctoral Conservation Research Fellowship. In May we celebrated presentations by two undergraduates, Callie Murakami and Jaycee Williford, at the university-wide research symposium. In June I began assisting the “Crab Team” from Washington Sea Grant, WDFW, and UW to model the effects of invasive European Green Crabs on important native species like Dungeness Crabs. The year closed out with a fun interview with grad student Brian McGreal and science journalist Ben Goldfarb about our work on pink salmon in Sitka National Historical Park.

—Mark Scheuerell, *Seattle, September 23, 2026*



MESSAGE FROM ASSISTANT UNIT LEADER—WILDLIFE

Alex McInturff

I'll start this year by celebrating the students in the
People and Wildlife Lab.

Nikol Damato was this year's winner of the College of the Environment's Presidential Dissertation Fellowship, recognizing her innovative work on the science-policy interface for Southern Resident Killer Whale conservation. Nate Denke received a Christine Stevens Wildlife Award for his interdisciplinary study on bird and human responses to co-produced recreation signage in the Middle Fork Snoqualmie, and his project was the centerpiece of a successful Royalty Research Fellowship grant. Vivian Hawkinson's research on cattle-wolf interactions garnered significant interest from WDFW, leading to a major award of support and a successful application for funding from Conservation Research and Education Opportunities. Danny Kosiba's industriousness in studying public comments about grizzly bear reintroduction and interviewing practitioners in eastern Washington was rewarded with multiple grants from the US Forest Service. Lara Volski was selected as part of the Husky 100, honoring the most inspiring students on the whole campus, won the College of the Environment Dean's Medal honoring the most outstanding graduate student in the college, and was one of four finalists for the University Dean's medal, the most prestigious award UW offers to graduate students. I am daily inspired by the brilliance, commitment, and care of these students, and grateful I get the chance to mentor this stellar group.

For my own part, I have split my time this year on two opposite ends of the scientific spectrum. On one end of the spectrum, I have worked on technical reports on applied conservation. Led by postdoc Meggie Callahan, we have completed two reports for WDFW-funded projects this year. The first details our efforts to coordinate and support multi-state Chronic Wasting Disease efforts through a survey instrument and decision tool we developed with nine states and provinces in the West. The second is a social and economic evaluation of the potential for salmon habitat restoration in the Stillaguamish watershed, soon to be followed by a parallel project in the Nooksack. Opportunities to contribute to applied, technical projects like these are a big part of the reason I love this job. On the other end of the spectrum, I have been exploring new theoretical territory. This year, I've been focused on the role of culture, and especially narrative, in shaping public perspectives on wildlife. In one paper, I laid out the role of storytelling and storylistening for conservation and in the other, used the lens of "monster theory" to help understand carnivore conflicts. With my lab group, I've also been exploring new methods for integrating the social dimensions of conservation with ecological habitat suitability, with case studies on coyotes in Seattle, wolves in four western states, and grizzly bear reintroductions.

In service of our unit mission of connection, I've looked for new opportunities for service. Our Fish and Wildlife Seminar series continues to grow, with over 250 members now on the email list. Likewise, thanks to intrepid leadership of UW undergrads, our student chapter of The Wildlife Society is thriving. I've taken on a board president position with a Seattle non-profit focused on human-coyote conflicts in the city. And with cooperators at WDFW, I've had the opportunity to provide technical assistance in the form of expert reviews of reports, surveys, and connecting agency scientists with university tools like Qualtrics.

I enter the new year with pride and gratitude for the students and collaborators I work with every day. I'm looking forward to deepening and strengthening relationships with cooperators as current projects mature and new projects emerge and grow.

—Alex McInturff, Seattle, September 24, 2026

Unit Award Recipients



Amirah Casey



Angela Dillon



Markus Min

The Gilbert B. Pauley Award

Awarded annually for best student presentation at the Annual Student Symposium.

Note: the annual student symposium was held in April 2026, delayed from October 2025, due to the federal government shutdown.

2025 Award Winners (tie)

Amirah Casey

School of Aquatic and Fishery Sciences, University of Washington; advised by Dr. Mark Scheuerell

Angela Dillon

School of Aquatic and Fishery Sciences, University of Washington; advised by Dr. Mark Scheuerell

The John Pierce Outstanding Graduate Student Award

Awarded annually to the graduate student who best embodies the spirit and mission of the WACFWRU.

2025 Winner

Markus Min

School of Aquatic and Fishery Sciences, University of Washington; advised by Dr. Mark Scheuerell

Annual Student Symposium

The 2025 WACFWRU Annual Student Symposium was held both virtually and in person at the University of Washington on April 29, 2026, delayed from October 2025 due to the federal government shutdown.



WASHINGTON COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT



Annual Student Symposium

Wednesday, April 29, 2026, 3:30–5:30 pm

Zoom: <https://washington.zoom.us/j/92885236100>

depts.washington.edu/wacfwru/category/symposium/

Location: 203 Fishery Sciences Building, UW

AGENDA

3:30 pm	Welcome and overview Mark Scheuerell , Assistant Unit Leader, US Geological Survey, WA Cooperative Fish and Wildlife Research Unit	4:28 pm	Understanding inherent precision and bias in Pacific salmon abundance survey methods Brian McGreal , Quantitative Ecology and Resource Management, UW
3:33 pm	Livestock as drivers of bottom-up effects across ecosystems: a review and mechanistic framework Vivian Hawkinson , School of Environmental and Forest Sciences, University of Washington (UW)	4:39 pm	Advancing understanding of nonnative fish predators in the Chehalis River, Washington John Winkowski , School of Aquatic and Fishery Sciences, UW
3:44 pm	Participatory modeling framework for invasive piscivore management in Lake Sammamish Nicole Doran , School of Aquatic and Fishery Sciences, UW	4:50 pm	Share the soundscape: a mixed-methods study on birds and outdoor recreation Nate Denke , School of Environmental and Forest Sciences, UW
3:55pm	Assessing habitat selection in Northwestern pond turtles using GPS tracking Tim Chen , School of Environmental and Forest Sciences, UW	5:01 pm	A sweet surprise: Polar bear glucose reveals new insights into their reproduction Sarah Teman , School of Aquatic and Fishery Sciences, UW
4:06 pm	Is climate change good? How increasing stream temperatures interact with tire-wear chemical 6PPD-Q to affect juvenile coho salmon Amirah Casey , School of Aquatic and Fishery Sciences, UW	5:12 pm	Environmental drivers of long-term at-sea population change in marbled murrelets and their conservation implications Sierra Gilman , School of Environmental and Forest Sciences, UW
4:17 pm	Seasonal movement and habitat use in the Cascade red fox Nate Redon , School of Environmental and Forest Sciences, UW	5:23 pm	Restoration of riparian vegetation shapes prey timing and quality for juvenile salmon Angela Dillon , School of Aquatic and Fishery Sciences, UW

Disability Accommodations: Accommodation requests related to a disability or health condition should be made before the event by contacting Jon Wittouck, Assistant Director, Facilities for SAFS: 206-616-8552/wittouck@uw.edu.

Photo: iStockphoto.com—July7th



Research Projects

During state fiscal year 2026, the WACFWRU Cooperative Agreement facilitated \$11,383,313 in project funding at UW, including \$2,136,978 in new dollars, and \$3,159,728 in project funds at WSU, including \$156,677 in new dollars. The WACFWRU Unit staff and cooperating faculty worked with 2 federal agencies in addition to our 3 state cooperating agencies. All funded projects led by WACFWRU staff are listed by funder, including project title, with student and postdoctoral scientist support listed below the project title. For cooperating faculty, projects are listed by university and funder, including project title, principal investigator, department, along with student and 5 postdoctoral scientist support.

Sarah Converse, WACFWRU Unit Leader

National Oceanic and Atmospheric Administration (Washington Sea Grant)

- **Integrating community science data with long-term aerial surveys to understand seasonal and long-term shifts in marine bird use of Puget Sound**
Matthew Farr, postdoctoral scientist

National Park Service

- **Advancing efficient seabird colony monitoring across the Pacific with aerial imagery and artificial intelligence**

National Park Service and U.S. Geological Survey

- **Assessing anthropogenic threats and predation/competition from coyotes on Cascade red fox combining spatial capture–recapture methods and historical Indigenous knowledge**

U.S. Fish and Wildlife Service and U.S. Geological Survey

- **Understanding threats to Pigeon Guillemot and Rhinoceros Auklet foraging habitat in the Salish Sea**
Matthew Farr, postdoctoral scientist

U.S. Geological Survey

- **Effects of habitat and predation on subalpine endemic mammals in Olympic National Park**
Matthew Farr, postdoctoral scientist
- **Evaluating climate-related threats and conservation strategies for the Cascade red fox in Washington**
Nathan Redon, PhD student

Photos: l to r: iStockphoto.com: Brett Barclay, Steven Pollard, kwantse, arren A Metcalf





Photos, l to r: iStockphoto.com: IliasStrachinis, MichelleMealing, Pascale Gueret; below: iStockphoto.com: Francesca Leslie

Washington Department of Fish and Wildlife

- **Assessing bullfrog invasion in Washington using management strategy evaluation**
Ryan Luvera, *MS student*
- **Multiple monitoring strategies for sea duck management through population monitoring via aerial surveys and individual monitoring via Motus tags**
Caroline Blommel, *PhD Student*
Matthew Farr, *postdoctoral scientist*

Other

- **Harvest assessments for sustainable management of surf scoters (*Melanitta perspicillata*) wintering in Washington State** (*supported by Ducks Unlimited*)
- **Northwestern pond turtle conservation in Washington** (*supported by the National Science Foundation*)
Tim Chen, *PhD student*
- **Olympics biodiversity monitoring and biodiversity credits** (*supported by the Washington Chapter of The Nature Conservancy*)
Mia Ferrero-Lampron, *BS student*
Jiaying Wu, *BS student*
- **Seabird ecology and conservation at Tetiaroa, French Polynesia** (*supported by private donors to the University of Washington*)
Co-investigator: Beth Gardner, *School of Environmental and Forest Sciences*
Amelia DuVall, *postdoctoral scientist*





PROJECT IN THE SPOTLIGHT

Multiple monitoring strategies for sea duck management through population monitoring via aerial surveys and individual monitoring via Motus tags

Principal Investigator: Sarah Converse, *USGS Washington Cooperative Fish and Wildlife Research Unit, University of Washington*

Graduate Students: Caroline Blommel, *PhD student, School of Aquatic and Fishery Sciences, University of Washington*
Matthew Farr, *postdoctoral research scientist, School of Aquatic and Fishery Sciences, University of Washington*

Funder: Washington Department of Fish and Wildlife

Waterfowl management in North America has long applied regulations informed by long-term monitoring of populations via aerial surveys and band-recovery data. However, sea ducks, a subset of waterfowl, tend to be managed based on more limited information due to life history differences compared to most North American waterfowl. In Washington State, the Washington Department of Fish and Wildlife (WDFW) has conducted a mid-winter aerial surveys for over 30 years to inform sea duck population management, including harvest. However, substantial information gaps related to suspected sea duck declines have created a need for updated monitoring protocols. This project is focused on assisting WDFW in updating their sea duck monitoring and management. First, we are conducting an analysis of WDFW's aerial survey program to optimize the tradeoff between accurate population estimates and survey cost under a new photo-based monitoring program. We are using long-term data in conjunction with a simulation study to optimize monitoring for detecting population change. However, even with improved aerial surveys, determining the cause of sea duck declines will not be possible. Therefore, we are evaluating the feasibility of using the autonomous radio tracking system, Motus, to track individual sea ducks and estimate sea duck survival. We are evaluating potential effects of Motus tags on individual sea ducks and developing an integrated model to combine long-term band-recovery data with resight data from Motus tags. By optimizing aerial surveys and developing a novel approach for estimating survival, we will greatly improve our ability to understand the dynamics of sea duck populations overwintering in Washington.

Mark Scheuerell, WACFWRU Assistant Unit Leader—Fisheries National Park Service

- **Estimating the natural range of abundance of pink salmon in the Indian River, Sitka National Historical Park**

Brian McGreal, *PhD student*

U.S. Geological Survey

- **Investigating the influence of Artificial Light at Night (ALAN) on juvenile sockeye salmon behavior and predation risk in an urban lake**

Tessa Code, *PhD student (co-advised by Dave Beauchamp, USGS)*

Washington Department of Fish and Wildlife

- **Evaluation of survey designs and spatial distributions of rockfish in Puget Sound**

Andrea Hennings, *MS student*

Other

- **Evaluating the relative effects of top-down and bottom-up factors on declines in Lake Sammamish kokanee salmon** (*supported by the University of Washington H. Mason Keeler Endowed Professorship in Sports Fisheries Management; King County Department of Natural Resources and Parks, Trout Unlimited*)
Nicole Doran, *PhD student*
- **Identifying priority areas for mitigating contaminant and thermal stress on salmon** (*supported by UW Future Rivers via the National Science Foundation*)
Amirah Casey, *MS student*
- **Quantitative analyses to support the recovery and management of West Coast fishes** (*supported by the National Science Foundation Graduate Research Fellowship Program*)
Markus Min, *PhD student*
- **Restoration of riparian vegetation to improve prey timing and complementarity for juvenile salmon** (*supported by The Puyallup Tribe of Indians*)
Co-investigator: Daniel Schindler, *UW School of Aquatic and Fishery Sciences*
Angela Dillon, *PhD student*
- **Rhythm and blooms: deciphering metabolic, functional and taxonomic interactions over the life cycle of a phytoplankton bloom** (*supported by National Science Foundation*)
Co-investigators: Brook Dunn, *UW Department of Genome Sciences*; Julia Kubanek, *Georgia Institute of Technology*; Tatiana Rynearson, *University of Rhode Island*

Photos, l to r: iStockphoto.com: GarysFRP, NNehring, mlharing





PROJECT IN THE SPOTLIGHT

Estimating the natural range of abundance of pink salmon in Indian River, Sitka National Historical Park

Principal Investigator:

Mark Scheuerell, USGS *Washington Cooperative Fish and Wildlife Research Unit, School of Aquatic and Fishery Sciences, University of Washington*

Thomas Quinn, *School of Aquatic and Fishery Sciences, University of Washington*

Scott Gende, *National Park Service, Juneau, Alaska*

Graduate Student:

Brian McGreal, *PhD student, Quantitative Ecology and Resource Management, University of Washington*

Funder:

National Park Service

In recent decades, managers at Sitka National Historical Park have observed what may be unnaturally high abundances of pink salmon (*Oncorhynchus gorbuscha*) arriving to spawn in late summer. These high abundances of pink salmon may be driven in part or in whole by the presence of a nearby salmon hatchery, which rears and releases three million fish each year. Alternatively, their numbers could be the result of shifting climate and habitat trends impacting pink salmon in the broader region. Our research seeks to build a picture of pink salmon populations in the vicinity of Sitka against which the numbers observed at the stream of interest may be compared, as well as to determine the impact of local hatchery releases on the annual abundance of spawning pink salmon in this stream. Using tagging and adult-return data from the Alaska Department of Fish and Game, the National Park Service, and the Sitka Sound Science Center, we applied time-series models to evaluate 1) whether adult returns to the Indian River reflect larger patterns across southeast Alaska or are unique to the river; and 2) the degree to which the hatchery may have a disproportionate effect on returns to the river. While the expansion of hatchery releases in 2010 coincided with an increase in the numbers of spawning pink salmon at Indian River, the effect of hatchery returns on even-year pink salmon abundances are much lower than the effect of fish moving in the other direction. It appears that even-year runs at Indian River are well within the natural range of variation for the wider region. However, odd-year runs differ substantially from the wider region, such that changes in hatchery operations coincided with increases in the numbers of pink salmon at Indian River, above and beyond what was happening elsewhere in the region.

Alex McInturff, WACFWRU Assistant Unit Leader—Wildlife

Washington Department of Fish and Wildlife

- **Evaluating private land owner salmon habitat restoration in Washington**
Eitan Gerstle, *MS student*
Erica MacKenzie, *MS student*
Molly Rambeau, *MS student*
Elise Wilson-Leedy, *MS student*
Alec Solemslie, *PhD student*
Meggie Callahan, *postdoctoral scientist*
- **Proactive development of chronic wasting disease outreach, education, and policy to guide disease management in Washington**
Gracie Rogers, *PhD student*
Meggie Callahan, *postdoctoral scientist*

Other

- **Interdisciplinary evaluation of grizzly bear reintroduction to California** (*supported by Re:Wild*)
Ellen Pero, *postdoctoral scientist*
- **Linking deer behavior to forest health on Tribal lands** (*supported by McIntire-Stennis Cooperative Forestry Research Program*)
Molly Rambeau, *MS student*
- **Linking soundscapes, recreation, and Tribal sovereignty in the Middle Fork Snoqualmie corridor** (*supported by the Animal Welfare Institute*)
Nate Denke, *MS student*
- **Measuring values, attitudes, beliefs, and behaviors of Washington residents toward contentious wildlife species** (*supported by National Science Foundation*)
Vivian Hawkinson, *PhD student*
Lara Volski, *PhD student*
- **Resilience of subsistence harvest portfolios, institutional arrangements, and pathways of public participation in the world's largest temperate rainforest** (*supported by UW CoE Innovation Grant*)
Josh Hymes, *MS Student*
Marisa Scott, *MS student*
Miriam Stearns, *MS student*
- **Understanding protocols for wildlife translocation** (*supported by SEFS fellowship*)
Danny Kosiba, *PhD student*

Photos, l to r: iStockphoto.com: Daniel Mertes, Zocha_K, milehightraveler





PROJECT IN THE SPOTLIGHT

Evaluating private land owner salmon habitat restoration in Washington

Principal Investigator: Alex McIntuff, *USGS Washington Cooperative Fish and Wildlife Research Unit, School of Environmental and Forest Sciences, University of Washington*

Graduate Students: Meggie Callahan, *Postdoc*; Alec Solemslie, *PhD student*; Molly Rambeau, *MS student*; Eitan Gerstle, *MS student*; Elise Wilson-Leedy, *MS student*; Erica MacKenzie, *MS student*; *School of Environmental and Forest Sciences, University of Washington*

Funder: Washington Department of Fish and Wildlife

The Stillaguamish Watershed sits at the leading edge of salmon decline and habitat conservation concern along the U.S. West Coast. Converging here are ESA-listed wild Chinook and steelhead, a century of habitat loss, and changing landscapes, making salmon recovery a critical conservation issue. Much of the watershed is privately owned, so landowner willingness to restore habitat must play a significant role in recovery. We sought to identify landowners' perceptions, knowledge, and motivations regarding restoration. We interviewed key knowledge holders and managing agencies, surveyed a large landowner sample, and ran a discrete choice experiment to evaluate economic barriers and incentives to private restoration.

We found that interest in salmon recovery across the watershed was strong, but interest in restoring one's own land was weaker. Most respondents had not restored their land, though many were open to future efforts. The largest deterrent was the belief that their land was ineligible, especially for salmon habitat, often attributed to small lot size or distance from water. Respondents knew the salmon life cycle well but were less familiar with treaties such as the Pacific Salmon Treaty and the Boldt Decision. Landowners would support a hypothetical tax for salmon restoration and water quality far more readily than one for recreation, and a majority would pay at least \$18.62 per acre, on average, for salmon habitat enhancement.

This project sets the stage for education and outreach, which must be tailored to location, demographics, and environmental identity, and delivered by the messengers best positioned to be heard. These topics are the focus of FY2027 research in the Nooksack Watershed.

Cooperating Faculty, University of Washington

National Oceanic and Atmospheric Administration

- **Refining statistical tools and analyses of ecological indicators for fisheries management**
PI: Tim Essington, *School of Aquatic and Fishery Sciences*

U.S. Geological Survey

- **Characterizing Chinook salmon genomic diversity in support of conservation and management**
PI: Kerry Naish, *School of Aquatic and Fishery Sciences*
Hayden Davis, *postdoctoral scientist*
- **Modeling the potential effects of cumulative stressors on polar bear population dynamics**
PIs: Kristin Laidre and Eric Regehr, *Applied Physics Laboratory*

Washington Department of Fish and Wildlife

- **Application of the Shoreline Monitoring Database to address restoration effectiveness and protection evaluation**
PI: Jason Toft, *School of Aquatic and Fishery Sciences*
Morgan Arrington, *PhD student*
- **Coastal habitat protection through European green crab early detection, management support and monitoring**
PI: Kate Litle, *Washington Sea Grant*
Christopher Patrick Harris-Adams, *undergraduate student*
Hannah Brown, *MS student*
- **Ecological effects of Graveyard Spit cobble beach revetment**
PI: Jason Toft, *School of Aquatic and Fishery Sciences*
- **Ecology of non-native fish**
PI: Julian Olden, *School of Aquatic and Fishery Sciences*
- **Evaluating eelgrass stressors to enhance conservation and management in Puget Sound**
PI: Megan Dethier, *Friday Harbor Labs*
Sage Enright, *MS student*
- **Impacts of small overwater structures on beach processes important for salmon and kelp restoration**
PI: Jason Toft, *School of Aquatic and Fishery Sciences*
- **Marine bird and mammal hot and cold spots in Washington's marine waters**
PI: Beth Gardner, *School of Environmental and Forest Sciences*
Sierra Gilman, *PhD student*
- **Washington Sea Grant green crab management**
PI: Kate Litle, *Washington Sea Grant*
Christopher Patrick Harris-Adams, *undergraduate student*
Hannah Brown, *MS student*

Photos, l to r: iStockphoto.com: JeffGoulden, Rixipix, bririemoments



Washington Department of Natural Resources

- **Evaluation of recreation impacts on ecological integrity of DNR-managed state lands**
PI: Spencer Woods, *Earth Lab*
- **Fire severity mapping across Washington state: Application of best practices to assess impacts on wildlife habitat and adaptive management**
PI: Susan Prichard, *School of Environmental and Forest Sciences*
- **Long-term monitoring and focus studies in shoreline biota: 2023–24 data analysis and 2024–25 data collection**
PI: Megan Dethier, *Friday Harbor Labs*
- **Long-term monitoring and focus studies in shoreline biota: 2025–26 data analysis and 2026–27 data collection**
PI: Megan Dethier, *Friday Harbor Labs*
- **Quantifying trajectories of postfire vegetation, fuels, and habitat in eastern Washington**
PI: Brian Harvey, *School of Environmental and Forest Sciences*
Angie Liotta, *PhD student*
- **Roads prescription scale effectiveness monitoring project**
PI: Erkan Istanbuluoglu, *Department of Civil and Environmental Engineering*
Olivia Carroll, *undergraduate student*
Selina Kimball, *MS student*
Amanda Alvis, *postdoctoral scientist*

Cooperating Faculty, Washington State University

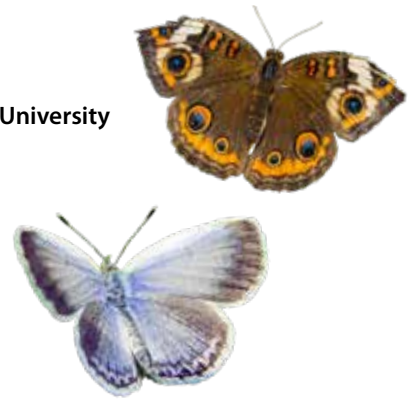
Washington Department of Ecology

- **2026 Columbia River water supply and demand forecast**
PI: Sasha McLarty, *Department of Civil and Environmental Engineering*
Matthew Yourek, *postdoctoral scientist*
Tanvir Ahmed, *PhD student*
Sawsan Shatanawi, *PhD student*
- **Characterization of toxicity of 6PPD and alternatives to aquatic organisms**
PI: Jen McIntyre, *School of the Environment*
Anastasia McConachie, *PhD student*

Washington Department of Fish and Wildlife

- **Assessment of American badger (*Taxidea taxus*) habitat suitability and occupancy in Washington**
PI: Dan Thornton, *School of the Environment*
Lucy Perera, *postdoctoral scientist*
Leo Haule, *PhD student*
- **Developing projections of future changes in stream hydrology due to climate change to enable design of fish-passable, climate-adapted culverts**
PI: Ming-Liang Liu, *Department of Civil and Environmental Engineering*
- **Discovery of the brush-footed butterflies (*Nymphalidae*) of the Washington State University Collection (WSUC) through digitization**
PI: Elizabeth Murray, *Department of Entomology*
Melanie Mitchenll, *undergraduate student*
Maia Ottenberg, *undergraduate student*
Maria Stepan, *undergraduate student*
Aidan Hersh, *MS student*

- **Discovery of the gossamer-winged butterflies (*Lycaenidae*) of the Washington State University Collection (WSUC) through digitization**
 PI: Elizabeth Murray, *Department of Entomology*
 Jamie Puett, *undergraduate student*
 Ana Cristina Garcia Cordon, *MS student*
 Nathaniel Green, *PhD student*
- **Ecology and impacts of coyotes from shrub-steppe to alpine environments**
 PI: Dan Thornton, *School of the Environment*
 Miles Hopkins, *PhD student*
- **Effects of the nutritional landscape on population performance in Blue Mountain elk**
 PI: Lisa Shipley, *School of the Environment*
 Hannah Duncan, *MS student*
- **Estimating population status, size, and limiting factors of Mountain Quail in eastern Washington state and surrounding interior Columbia River basin area to inform translocation and habitat restoration efforts**
 PI: Jennifer Phillips, *School of the Environment*
 Georgia Isted, *PhD student*
- **Movements and habitat selection of black-tailed and white-tailed jackrabbits in Washington State**
 PI: Lisa Shipley, *School of the Environment*
 Claire Kurlycheck, *MS student*

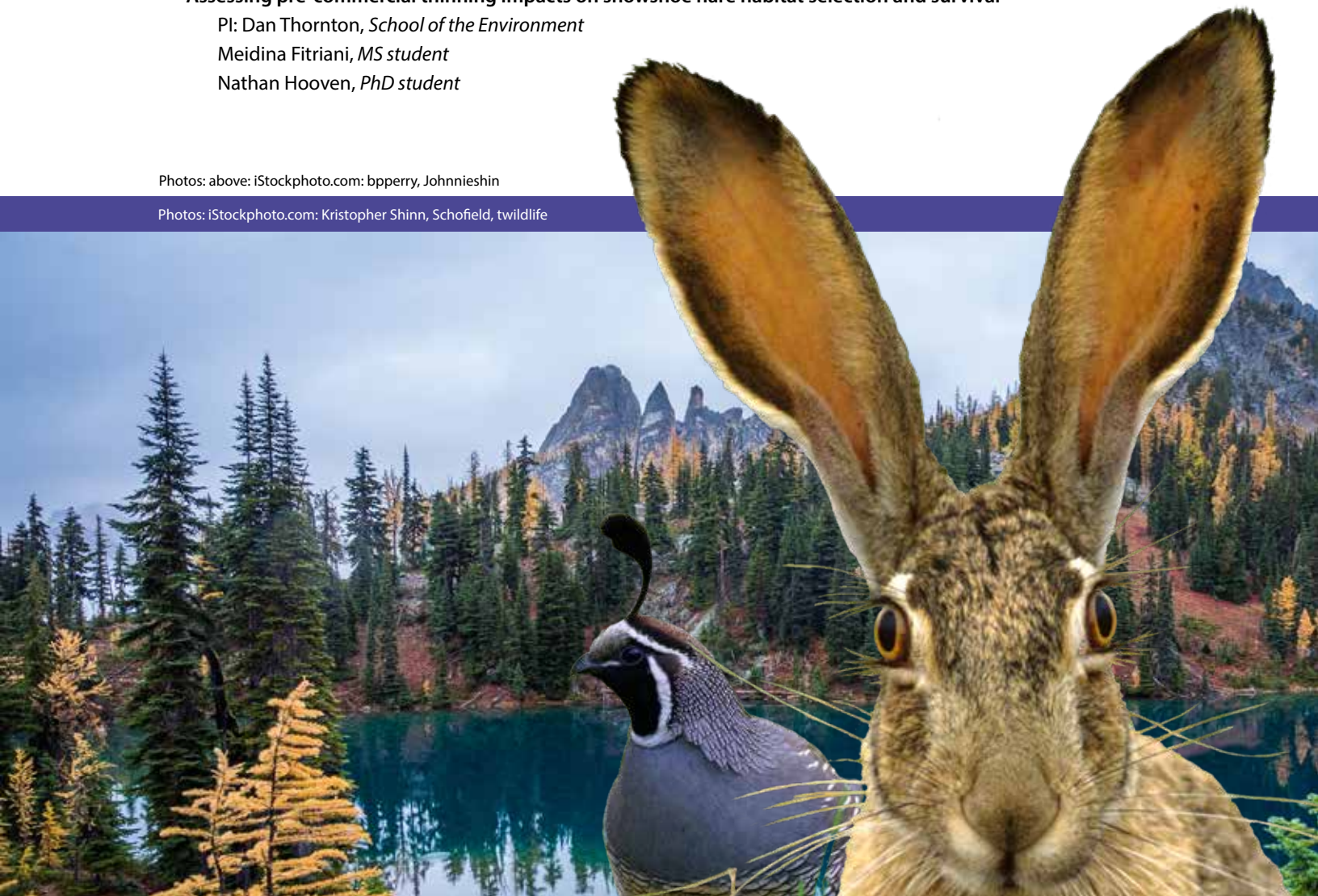


Washington Department of Natural Resources

- **Assessing pre-commercial thinning impacts on snowshoe hare habitat selection and survival**
 PI: Dan Thornton, *School of the Environment*
 Meidina Fitriani, *MS student*
 Nathan Hooven, *PhD student*

Photos: above: iStockphoto.com: bpperry, Johnnieshin

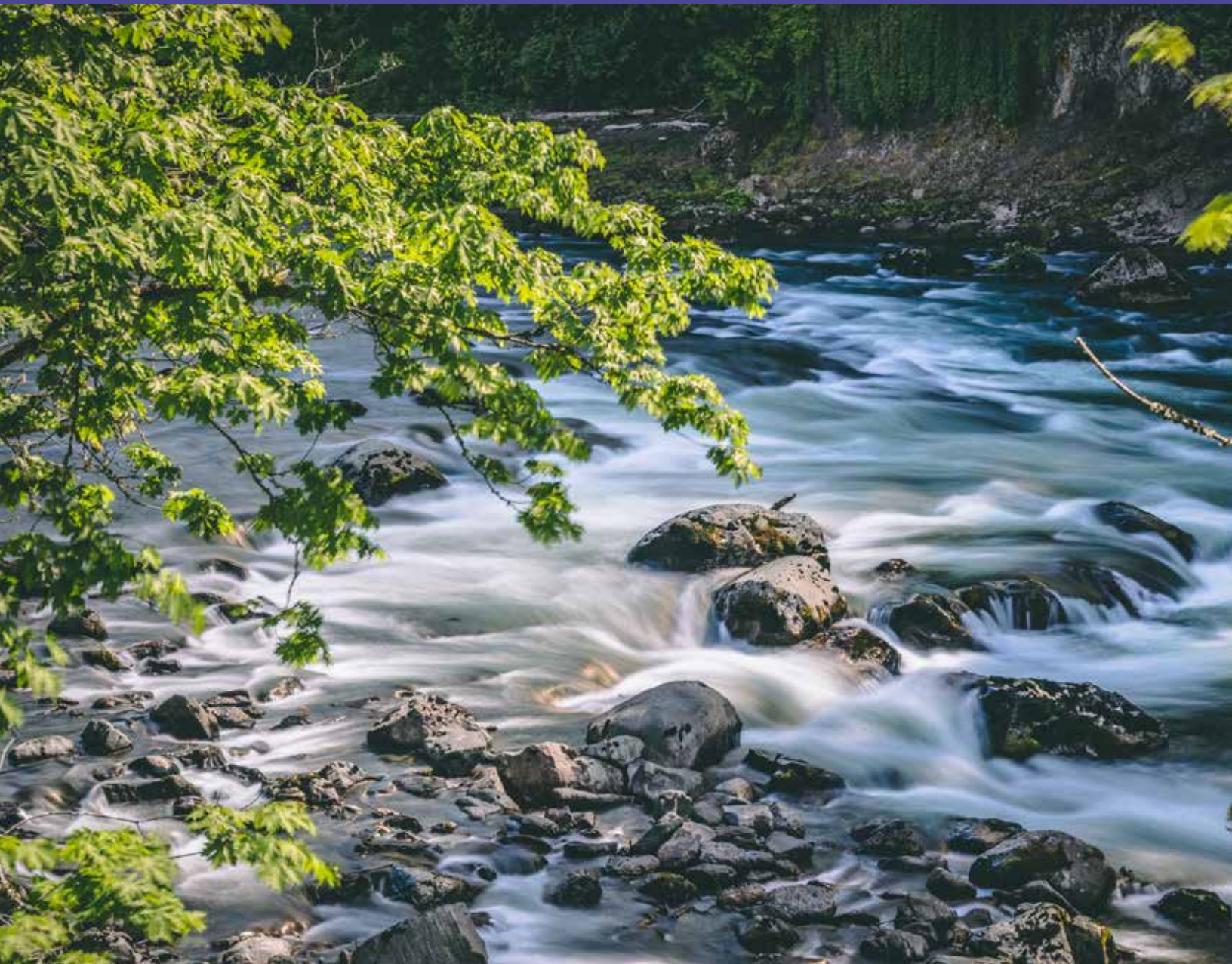
Photos: iStockphoto.com: Kristopher Shinn, Schofield, twildlife



Unit Staff & Contact Information

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