

UW

UNIVERSITY of WASHINGTON | TACOMA
OFFICE OF RESEARCH

2018-19
ANNUAL REPORT



W OFFICE OF RESEARCH

UNIVERSITY of WASHINGTON | TACOMA

The Office of Research provides support to faculty in all aspects of developing and nurturing individual and collaborative interests in specific research areas and scholarships. Under the leadership of Dr. Jill Purdy, Executive Vice Chancellor for Academic Affairs, our office offers a flexible and effective infrastructure staffed with an experienced team to meet campus research needs.

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TURAN KAYAOĞLU ■ Associate Vice Chancellor for Research (2016-2019)

Kayaoğlu is a Professor of International Relations in the School of Interdisciplinary Arts and Sciences. Trained as a political scientist, Kayaoğlu has published two books and about two dozen peer-reviewed articles on international relations theory, human rights, and religion and world politics.



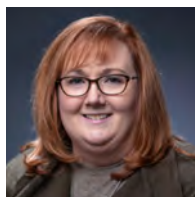
LISA ISOZAKI ■ Director and Research Administrator

Isozaki has been at UW Tacoma since May 2014. She was previously the Program Administrator for the Polar Science Center in the UW Applied Physics Laboratory managing over \$15M in annual grant funding and was a Project Manager at the Fred Hutchinson Cancer Research Center managing several large NCI funded program/project grants focusing on the early detection of ovarian and breast cancer. At UW Tacoma, Isozaki is responsible for directing all pre-award and post-award grant management activities within the Office of Research. She is the primary point of contact for UW Seattle offices including the Seattle Office of Research, Office of Sponsored Programs, and Grant and Contract Accounting. Isozaki also manages internal UW Tacoma funding opportunities and develops faculty workshops in collaboration with other campus units.



JOANN KOCHA ■ Program Coordinator

Kocha has been at UW Tacoma since January 2015. Prior to her position in the UW Tacoma Office of Research, Kocha worked as an Administrative Assistant at the UW Foster School of Business and UW School of Medicine. She is a former educator who taught in the Puyallup School District. Kocha provides primary administrative support and grant management for Center for Urban Waters Principal Investigators, coordinates Office of Research Faculty Development workshops and maintains the Office of Research website.



ANDREA GALLAGHER ■ Fiscal Specialist

Gallagher joined the UW Tacoma in September 2019. She has an extensive background in IT Project Management supporting many IT marketing projects for Microsoft. She has also worked for Amazon.com, the State of Alaska and many other organizations. At UW Tacoma, Gallagher's primary responsibility is to support post-award grants management activities centralized within the Office of Research. She works closely with individual PIs and academic units to complete monthly budget reconciliations, invoicing processes, and budget projections, initiates sub awards, and supports the effort certification process and close out procedures.



KARA LUCKEY ■ Research Development Consultant

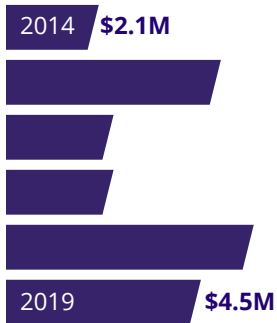
Luckey provides research development support including technical editing on high priority research proposals. She also leads faculty workshops on finding funding, proposal writing, and specific internal funding opportunities such as the UW Royalty Research Fund (RRF).



INTRODUCTION



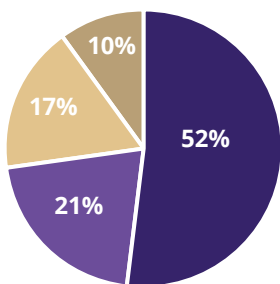
SPONSORED RESEARCH AWARDED 2014-19



Research at the University of Washington Tacoma serves many purposes: it pushes the frontiers of knowledge, fosters student success, generates understandings to address the problems of our time and place, and contributes to the economic development of our region.

This report aims to capture these intellectual and social contributions made by UW Tacoma faculty through their diverse forms of research and scholarship. Along with promoting publicly-engaged scholarship at UW Tacoma, the purpose of this report is to highlight sponsored research successes achieved by faculty members and the Office of Research from July 2018 through June 2019.

SPONSOR TYPE (FY19)



The Office of Research looks forward to continuing our work of advancing research, scholarship and creative activities at UW Tacoma, work that matters deeply to the success of our students, development of our faculty, and the health and well-being of our South Sound community.

- Federal
- State
- Public Institution, College, University
- Non-profit, Foundations

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tacoma.uw.edu/research



PUBLICLY ENGAGED SCHOLARSHIP

The Collaborative Publicly Engaged Scholarship (CPES) program is an internal funding mechanism that awards small seed grants of up to \$5,000 to UW Tacoma faculty who are conducting or are planning to conduct publicly engaged scholarship. This program is funded through the University's Strategic Initiative Fund (SIF). Proposed projects are required to have active involvement with an identified community partner. Projects could include aspects of teaching (ex. service learning), research (ex. community based participatory research), or service (ex. outreach, advocacy). Faculty are strongly encouraged to include active student involvement in all aspects of their proposed project. The impact of this program can be felt throughout the South Sound region and beyond as highlighted by these brief project summaries.

CHANGING COMMUNITY FOOD ENVIRONMENTS THROUGH AN ACADEMIC-PUBLIC HEALTH PRACTICE PARTNERSHIP

DAVID REYES, SCHOOL OF NURSING & HEALTHCARE LEADERSHIP (SNHL)
 Assistant Professor David Reyes partnered with the Tacoma-Pierce County Health Department. This project's initial aim was to educate nursing students enrolled in Health, Communities and Populations clinical practicum course about the principles and practices of community engagement, community-based participatory research, and community-led policy, systems and environmental change strategies. Seventeen students participated and through their work four recommendations for building a quality food environment were formulated. In addition, students identified five recommendations to develop and support community leadership toward achieving their vision for a healthy food system in East Tacoma. ■

DISPLACEMENT, DETENTION, AND INTEGRATION OF IMMIGRANTS AND REFUGEES IN THE SOUTH SOUND—PHASE TWO

RACHEL HERSHBERG and VANESSA DE VERITCH WOODSIDE, SCHOOL OF INTERDISCIPLINARY ARTS & SCIENCES (SIAS)
 For this project, Assistant Professor Rachel Hershberg and Associate Professor Vanessa de Veritch Woodside partnered with Tacoma Community House (TCH) and Advocates for Immigrants in Detention Northwest (AIDNW). Hershberg and de Veritch Woodside worked side by side with TCH and AIDNW staff to recruit participants, conduct interviews, and analyze data to better understand the financial and psychosocial challenges associated with detention and deportation on immigrants in the South Sound. Future plans include investigating the impact of attaining legal status on migrants' professional and personal experiences in the South Sound, asking what constitutes or prevents a "welcoming" city, and gaining a better understanding of the physical and psychological health issues en route and during detention in the Northwest Detention Center. ■

LIGHTS, CAMERAS, ACTION: USING WILDLIFE CAMERAS TO ASSESS HOW ARTIFICIAL LIGHT AT NIGHT INFLUENCES MAMMALIAN COMMUNITIES

CHRIS SCHELL (SIAS)

Assistant Professor Chris Schell's project uncovered trends in species richness as a function of urbanization and tree canopy cover in our local community, corroborating results from other literature in other U.S. cities. Schell and his student researchers also measured the variance in decibel levels across camera trap sites and found a negative relationship between sound and species occurrences (i.e., noisier sites had fewer species). Schell will next explore whether the principal driver of the proposed study, artificial light at night (ALAN), had any influence in how species navigated Tacoma and the surrounding communities.

This project has acted as a springboard for additional projects with community partners including Point Defiance Zoo & Aquarium, Vashon Nature Center, Tacoma Community College and the University of Puget Sound. ■

COLLABORATIVE DESIGN OF CYBERSECURITY CURRICULA FOR K-12 CLASSROOMS

YAN BAI and DC GRANT, SCHOOL OF ENGINEERING & TECHNOLOGY (SET)

This project allowed UW Tacoma School of Engineering and Technology (SET) faculty to further grow their collaborative project in cybersecurity education and training by involving seven teachers from three local middle and high schools as well as four SET students. Working together, the project team developed cybersecurity teaching modules in four major areas of cybersecurity, including: security in programming, networking, human computer interaction and databases. These areas give students a foundational understanding of computing security issues. ■

SELF-TRANSFORMATION THROUGH HUMANITIES IN PRISON

CHRIS BEASLEY (SIAS)

Beasley will collaborate with the Education Justice Project to co-develop, with incarcerated students and a UW Tacoma research assistant, a model of self-transformation through humanities education. The project provides a rare opportunity for incarcerated individuals to engage directly with scholarly production by integrating their lived experiences into the model. ■

THE P'URHÉPECHA LANGUAGE WORKSHOP

ITZIRI MORENO VILLAMAR, SIAS

Full-time lecturer Itziri Moreno Villamar received funding to develop and deliver a nine-week P'urhépecha Language Workshop on the UW Tacoma campus. The language is spoken by the P'urhépecha who live in the highlands of Michoacán, Mexico. Participants met once a week for a two-hour language class. The workshop was led by a language instructor and was observed by Villamar and a P'urhépecha language consultant.

Villamar states that project funding and support enabled her to create a foundation of trust required to establish partnerships with the P'urhépecha and other local indigenous groups. ■

AN ECONOMIC IMPACT ANALYSIS OF PRIVATE BUSINESSES IN THE TACOMA TIDEFLATS: A COLLABORATIVE INITIATIVE

MARGO BERGMAN, MILGARD SCHOOL OF BUSINESS

Senior Lecturer Margo Bergman was awarded funds to survey businesses in the Tacoma Tideflats region and to develop a database of businesses located in this area, along with key economic indicators such as number of employees, wages, revenues, supply chain details, charitable giving, taxes paid, and skills needed. The project team, including UW Tacoma students, is in the process of conducting an economic impact analysis that will be included in a final report distributed to community partners on the economic impact of the businesses in this area. ■

TACOMA WHOLE CHILD INITIATIVE

LAURA FEUERBORN, SCHOOL OF EDUCATION (SOE)

Tacoma Whole Child transforms schools by creating safe, positive, engaging, and equitable learning environments through a mutually-beneficial partnership between UW Tacoma and Tacoma Public Schools. This engaged work with district leaders, school teams, and educators draws from research-based frameworks such as social emotional learning (SEL) and positive behavior supports (PBIS) to fit each school community's unique cultural and contextual needs. Project administration is currently supported by the Office of Community Partnerships. ■





UW MEMASUJA (END FROM LEFT) AND STUDENTS AT CENTER FOR URBAN WATERS MATH SCIENCE LEADERSHIP PROGRAM

SPONSORED RESEARCH HIGHLIGHTS

CENTER FOR URBAN WATERS



The Center for Urban Waters (CUW) is highly collaborative, university-led applied science program dedicated to finding solutions to urban water quality problems in the South Puget Sound region and beyond. Led by SIAS Professor and Port of Tacoma Endowed Chair Joel Baker, the Center is a driving force behind the growing research enterprise on UW Tacoma campus with over \$1.5 million in current sponsored grant and contract funding from federal, state, and local sponsors. ■

STRENGTHENING PATHWAYS FOR MIDDLE SCHOOL STUDENTS – AN INTRODUCTION TO CYBERSECURITY



YAN BAI and D.C. GRANT, SET with AMANDA FIGEROA, STUDENT TRANSITIONS & SUCCESS

The National Security Agency and the National Science Foundation awarded UW Tacoma funding to be the site of a 2019 GenCyber Camp. The University offered the program in collaboration with its Math-Science Leadership Program.

About 30 kids in grades 8-10 completed hands-on projects, case studies and cyber challenges. Organizers were particularly interested in engaging local urban youth who are historically underrepresented in STEM fields. NSA and NSF developed the GenCyber concept as a way to address a shortfall of skilled cybersecurity professionals. The hope is that kids who get energized by the camps will maintain their interest through high school and college and into a career in the field. Amanda Figueroa, the director of student transitions at UW Tacoma, is one of three organizers of the UW Tacoma camp, the others being Yan Bai, associate professor, and D.C. Grant, lecturer, both faculty in the School of Engineering & Technology. Although funded by NSF and NSA, the camp wouldn't be possible without community partners like Microsoft, the City of Tacoma, Franklin Pierce School District, and the Department of Homeland Security. ■

DIVING FOR DATA: SOLVING THE ARSENIC RIDDLE



JIM GAWEL, SIAS

In March 2019, divers from the U.S. Environmental Protection Agency's Scientific Diving program helped UW Tacoma students, alumni and faculty researchers place metering devices and collect samples. Arsenic was carried to the lake, and many other lakes throughout the region, through the air from the tall smokestack at the ASARCO copper smelter. The smelter operated on the shores of Commencement Bay



in Ruston, Wash., from 1888-1985. The research aims to explain what is happening to the arsenic in these lakes: how it moves through the aquatic environment, whether it enters the food web, and whether it poses a toxic threat to humans.

Associate Professor Jim Gawel co-directs the arsenic research along with Rebecca Neumann, associate professor of civil and environmental engineering at UW in Seattle. The team includes UW Tacoma alumni Erin Hull, '16, and Marco Barajas, '18, current student Ken Burkart, and Alex Horner-Devine and Samantha Fung, professor and graduate student of civil and environmental engineering at UW in Seattle, respectively. The research is funded by the National Institute of Environmental Health Sciences Superfund Basic Research Program. **WATCH ONLINE:** <https://vimeo.com/332566800> ■

SOCIAL RESEARCH IN ACTION

MARIAN HARRIS, SCHOOL OF SOCIAL WORK & CRIMINAL JUSTICE (SSWC)

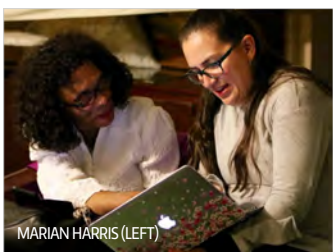
UW Tacoma Professor Marian Harris has spent most of her professional life helping the most vulnerable both in the United States and elsewhere. Harris' research focuses on child welfare including the children of incarcerated parents. She's a licensed social worker and former chair of the Public Policy Council, Children's Alliance of Washington. In 2018, the National Association of Social Workers, Washington Chapter named Harris its Social Worker of the Year. Harris is grateful for the honors, but that's not why she does what she does.

Recently, the University of Washington School of Social Work and Criminal Justice and the Department of Social Welfare at the UCLA Luskin School of Public Affairs organized a service trip to the South Texas Family Residential Center in Dilley, Texas through CARA. The facility is the largest family detention center in the United States.

Harris and UW Tacoma graduate student Zea Mendoza spent a week in Dilley helping asylum seekers prepare for their credible fear interviews. In these interviews, asylum seekers appear before a judge and argue why they either face a "credible fear of persecution" or "credible fear of torture" if they are returned to their home countries.

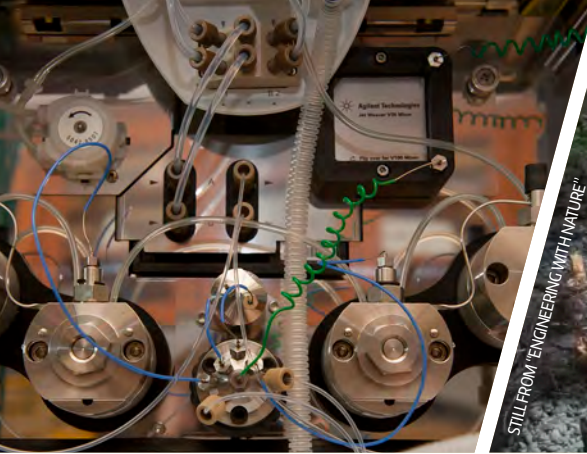
Mendoza said, "Our job was to help them to prepare for this interview by listening to their stories and highlighting the areas that might be important for the court to hear. This project processes around 500 women a week. So, basically our job is to prepare one client every two hours on average, which is kind of a challenge because their stories are so long and so complex. "

Harris prepared a psychological evaluation for one woman in particular that had twice been denied asylum. Not able to attend the hearing in person, Harris asked the attorney representing the client to please let her know the decision of the judge reading her evaluation. Sitting at her desk in her office on campus the Monday after she had returned from Dilley, Professor Harris turned on her computer and received an email stating, "Thank you. The judge read the first narrative page of your psychological evaluation and stated that he did not need to read any more and he gave a positive ruling." ■



"OUR JOB WAS TO HELP THEM (ASYLUM SEEKERS) TO PREPARE FOR THIS INTERVIEW BY LISTENING TO THEIR STORIES AND HIGHLIGHTING THE AREAS THAT MIGHT BE IMPORTANT FOR THE COURT TO HEAR."

MARIAN HARRIS



STILL FROM "ENGINEERING WITH NATURE"



PUGET SOUND NEEDS OUR HELP

ED KOLODZIEJ, SIAS

Streams, rivers, bays, the quality of life in the Puget Sound is directly impacted by its water resources. Here at UW Tacoma, many faculty work to understand and restore healthy ecosystems throughout the Salish Sea. SIAS Associate Professor Ed Kolodziej leads research efforts that focus on protecting the health of water resources by monitoring chemicals in water, especially in Puget Sound waterways adversely impacted by urbanization and chemical contamination.

Kolodziej's research team at the Center for Urban Waters is currently coordinating water quality projects with agencies as near as Seattle Public Utilities and as far-reaching as the National Science Foundation. Much of their research uses advances analytical techniques to measure and identify chemicals in urban stormwater, especially investigating watersheds where toxic stormwater runoff is killing salmon. Recently, they have linked water quality degradation to roadway runoff, and in collaboration with researchers at Washington State University-Puyallup are now trying to understand what chemicals are most toxic to salmon and how to remove them from the water.

The Seattle Public Utility (SPU) project was recently featured in a Seattle International Film Festival documentary "Engineering with Nature" that described the multi-year effort by SPU to restore Thornton Creek, Seattle's largest and most urbanized stream. According to the filmmakers, "this visionary project successfully demonstrates a fresh new approach to urban land use planning, storm water treatment, water quality management, and stream restoration, all of which have 'real-life' implications for coping with the increasing effects of climate change and urbanization." Kolodziej's team worked to measure the performance of an innovative surface water treatment system that uses natural streambed filtration to remove chemicals and lower stream temperatures.

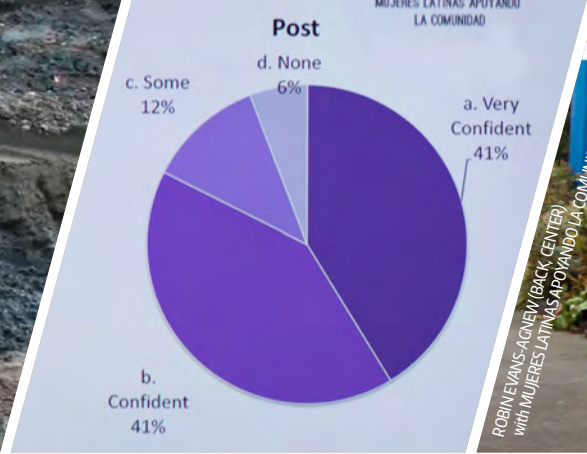
Another project focuses on understanding the impact of wildfires on water quality. UW Tacoma is part of a consortium of universities, led by Dr. Jackson Webster at California State University Chico and funded by NSF, that is helping to monitor water quality changes in the wake of the most destructive wildfire in California's history.

In November of 2018, more than 18,000 structures were destroyed by wildfire in and around the town of Paradise. Kolodziej is leading efforts to analyze the stormwater runoff from this site to understand its risks to people and wildlife. "We do not have a good idea about how these catastrophic wildfires impact water quality," said Kolodziej. "Some of these watersheds are important drinking water sources, and we need to understand what hazardous substances might migrate into drinking water supplies, or affect the health of first responders or returning community members."

UW Tacoma's Center for Urban Waters is participating in the study because it can provide specialized equipment and expertise that enables the detection and identification of unknown contaminants in water. Instead of testing for the presence of one pollutant at a time, the Center's equipment can simultaneously detect and identify hundreds or thousands of chemicals in the water. Researchers can then identify the most toxic or hazardous chemicals for special management. "One of the outcomes we hope to see from this work is improvement of our knowledge of what kinds of chemicals and toxicants are emitted from communities in a catastrophic wildfire, and what happens to those substances as they travel through the environment," said Kolodziej. ■

"ONE OF THE OUTCOMES WE HOPE TO SEE FROM THIS WORK, IS TO IMPROVE OUR KNOWLEDGE OF WHAT KINDS OF CHEMICALS AND TOXICANTS ARE EMITTED FROM COMMUNITIES IN A CATASTROPHIC WILDFIRE, AND WHAT HAPPENS TO THOSE SUBSTANCES AS THEY TRAVEL THROUGH THE ENVIRONMENT,"

ED KOLODZIEJ



ENGAGING LOCAL POPULATIONS IN PUBLIC HEALTH NURSING AND ENVIRONMENTAL JUSTICE RESEARCH

ROBIN EVANS-AGNEW, SNHL

Associate Professor Robin Evans-Agnew's interest in asthma began while working as a school nurse. This interest led him back to college. For his dissertation, Evans-Agnew recruited a group of high school students in Southeast Seattle. "I had these two great sets of boys and girls, all with asthma, all claiming African American as their identity," he said. Evans-Agnew employed Photovoice for the project. The technique involves participants in documentary photography with personal reflection and action planning for change. Evans-Agnew gave the group prompts including, "What is it like to manage your asthma" and "What might make it harder for you to manage your asthma compared to other people?"

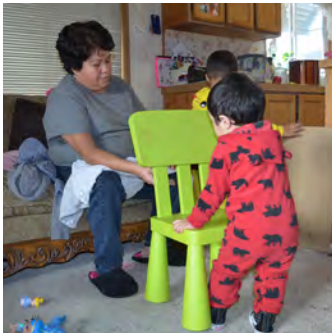
The material students brought back to Evans-Agnew was troubling. "Kids would talk about healthcare bias," he said. "If you're Black, healthcare providers don't recognize that you have pain or think you should just stick it out." Participants also discussed how inadequate housing contributed to their asthma and even seemingly innocuous structures – stairs in a public school – made life with the disease more difficult for youth living in less wealthy areas of Seattle.

More recently, Evans-Agnew helped establish a community-based participatory research group with Mujeres Latinas Apoyando la Comunidad (Latina Women Supporting the Community). The group is made up of Latina mothers from Tacoma whose children have asthma.

Mujeres Latinas and Evans-Agnew have worked together on a couple of projects. The first involved developing a culturally appropriate survey for analyzing local daycares for asthma triggers. The women walked through the facilities looking for things like proper ventilation and whether or not harsh chemicals were used for cleaning. Afterwards, the group took their findings and created a community education plan geared toward immigrant families. "They really launched this on their own," said Evans-Agnew. "One of them created a lesson plan, one organized the space and did the logistics and one of them got extra training so they could deliver the material."

Evans-Agnew also involves the women in writing up and publishing their findings. "We have published three articles and have a fourth undergoing a second review with a leading journal in the field," said Evans-Agnew. Meanwhile, Mujeres Latinas and Evans-Agnew have partnered with the Asia Pacific Cultural Center in Tacoma on a new study. "We have kids collecting air samples and using Photovoice to document the indoor air quality at their homes," said Evans-Agnew. "They're specifically looking for volatile organic chemicals like acetone and formaldehyde."

Access and equity are at the heart of the work being done by Evans-Agnew and Mujeres Latinas. "Addressing environmental triggers is easier if you're middle class," said Evans-Agnew. "For instance, you can afford to remove the carpet in your home and replace it with hardwood floors but this may not be an option if you're low-income." ■



KUOW-Ellis O'Neill



MUJERES LATINAS APOYANDO LA COMUNIDAD

"WE HAVE KIDS COLLECTING SAMPLES AND USING PHOTOVOICE TO DOCUMENT THE INDOOR AIR QUALITY AT THEIR HOMES ... THEY'RE SPECIFICALLY LOOKING FOR VOLATILE ORGANIC CHEMICALS LIKE ACETONE AND FORMALDEHYDE."

ROBIN EVANS-AGNEW



“SINCE REDISTRICTING ONLY HAPPENS ONCE EVERY 10 YEARS, THERE ARE MANY ADVANCES IN GEOGRAPHIC INFORMATION SCIENCE AND DATA ANALYTICS THAT SIMPLY DIDN’T EXIST DURING THE LAST CYCLE.”

JIM THATCHER

NSF FUNDS STUDENT RESEARCH ON ELECTORAL DISTRICTS AND GERRYMANDERING

JIM THATCHER, SCHOOL OF URBAN STUDIES (SUS)

A National Science Foundation grant will support undergraduate student research on electoral redistricting.

The grant, \$343,000 over three years from the National Science Foundation, funds a collaborative project between UW Tacoma and the University of Puget Sound. Jim Thatcher, assistant professor of urban studies at UW Tacoma, is the principal investigator on “Spatial Models and Electoral Districting,” funded through NSF’s Research Experience for Undergraduates (REU) program. Courtney Thatcher, an assistant professor in math and computer science at Puget Sound (they are married), is co-investigator.

“We’ll be focusing on the social impacts of algorithmic redistricting methods — especially related to the impact of individual experience and movement through space — on perceptions of gerrymandering,” said Jim Thatcher.

Gerrymandering is the intentional manipulation of electoral district boundaries meant to create an advantage for one political party over another. The word refers to Elbridge Gerry, governor of Massachusetts, who authorized the remapping of a district outside Boston, Mass., in 1812, meant to favor his re-election.

Redistricting and gerrymandering have a rich history in the U.S. Although redistricting occurs every 10 years, on the heels of the U.S. population census, controversies flare up continually. Most recently, courts ordered Michigan and Pennsylvania to revisit their 2010 redistricting; and courts are in the process of deciding about Ohio, North Carolina, Virginia and Wisconsin, among others.

The three-year UW Tacoma/UPS project will fund 12 students each summer from those two institutions and others around the country. They will blend cutting-edge computational and mathematical research analysis with social theoretical knowledge from geography and other social sciences.

“The pace of technological change these days is fast.” said Jim Thatcher, “Since redistricting only happens once every 10 years, there are many advances in geographic information science and data analytics that simply didn’t exist during the last cycle.” ■



THE SCIENCE AND STUDY OF WILDFIRES

MAUREEN KENNEDY, SIAS

The American West is burning. In summer 2018, there were more than 100 active wildfires in the United States. All but one of those fires were in the West with 10 in Washington. The total number of fires in the Western U.S. varies from year to year. However, the total number of acres burned has steadily increased over the past 30 years. “Our fire season is getting longer and more destructive,” said SIAS Assistant Professor Maureen Kennedy.

Kennedy has spent the past decade researching fire ecology and forest management practices. She currently works with the Fire and Environmental Research Applications Team (FERA) as part of the Pacific Wildland Fire Sciences Laboratory. “I use quantitative methods to develop computer models that show the effect of a given fuel reduction treatment,” said Kennedy.



The trees and other plant life that make up a forest can be seen another way. In the hot summer months, after the moisture from the snow and rain has either evaporated or been absorbed, these trees and plants become fuel. It has become standard practice to remove vegetation to mitigate the damage done by wildfires. “There are different ways to do it,” said Kennedy. “One technique is to thin from below, take out the small trees that serve as ladder fuels and follow up with a prescribed fire to get rid of the surface fuels.”

Kennedy says the scientific consensus is that removing fuels has been shown to reduce a wildfire’s severity within a treated area. Kennedy is now investigating non-standard fuel treatments through her work with FERA. The idea is to strike a balance between preserving habitat and reducing the spread of a wildfire. “We’re trying to understand what happens when more fuels are left on the ground,” she said.

Kennedy and her team use case studies to conduct their analysis. “We look at crown scorch or how black or brown a tree crown is as a result of the fire,” she said. For this research Kennedy and others run transects in the direction of a fire spread. “What we’re finding in early results is that you can still affect change in how a fire behaves but you need a wider treatment area,” said Kennedy. “This is helpful because it allows for flexibility in planning.”

Forest managers are left to balance differing needs. Removing more fuels could lead to habitat loss and could anger residents. “Lots of people settle near the forest because of the beautiful views,” said Kennedy. “Removing trees changes the view they have gotten used to.” However, failing to remove potential hazards could result in the loss of both life and property.

Kennedy is also working with a group of scholars at the University of California, Santa Barbara as part of a National Science Foundation grant. “We’re looking into ‘salience,’ which is this idea that decisions are disproportionately influenced by the most recent event,” she said. “What we’re seeing is the probability that a fuel treatment actually happens increases if a high-profile wildfire happened close by. This signal diminishes a few years after the fire.” The researchers published their findings in the journal *Nature Climate Change*.

Kennedy has built fire models for the project. “We want to know the consequences of disaster driven decision making,” she said. “What does fire look like in the future under different climate change scenarios? We’re just starting to make progress to answer this question.”

The future may seem bleak, but Kennedy retains her optimism. “I have hope, otherwise I wouldn’t be doing this research,” she said. “We are building the knowledge base to implement scientifically informed management actions that can balance these seemingly competing objectives, and to mitigate climate change. What we need is for this knowledge to be used, with the common citizen making good fire-wise and climate-wise decisions and compelling action from their government. The knowledge is being built, we need the resources and the will to use it.” ■



“WHAT DOES FIRE LOOK LIKE IN THE FUTURE UNDER DIFFERENT CLIMATE CHANGE SCENARIOS? WE’RE JUST STARTING TO MAKE PROGRESS TO ANSWER THIS QUESTION.”

MAUREEN KENNEDY

FOR MORE INFORMATION ABOUT UW TACOMA’S OFFICE OF RESEARCH:

tacoma.uw.edu/research

SPONSORED RESEARCH PROPOSALS



| PROPOSED TITLE | PI | UNIT | SPONSOR | SPONSOR TYPE | ORIGINATING SPONSOR | REQUESTED |
|---|-----------------------|---------------------|--|--|--|--------------|
| UW-ECY Benthic Index of Biotic Indicators Implementation Strategies | Baker, Joel | CUW | Washington State Department of Ecology | State of Washington | Environmental Protection Agency (EPA) | \$136,720.00 |
| PSP and UWT PSEMP_2018 | James, C. Andrew | CUW | Puget Sound Partnership | State of Washington | Puget Sound Partnership | \$8,496.00 |
| PSP and UWT PSEMP_2020-21 | James, C. Andrew | CUW | Puget Sound Partnership | State of Washington | Environmental Protection Agency (EPA) | \$79,985.00 |
| Marine and Nearshore Grant Program: Analyze and Synthesize Grant Program Results, Phase 2 | Francis, Tessa B. | CUW | Washington Department of Fish and Wildlife (WDFW) | State of Washington | Environmental Protection Agency (EPA) | \$49,211.00 |
| Residential Shoreline Loan Program Feasibility Study | Francis, Tessa B. | CUW | Washington Department of Fish and Wildlife (WDFW) | State of Washington | Environmental Protection Agency (EPA) | \$140,010.00 |
| Development of Chemical Indicators to Detect, Track and Assess Pollutants | Kolodziej, Edward | CUW | Washington State Department of Ecology | State of Washington | Environmental Protection Agency (EPA) | \$241,937.00 |
| Performance Evaluation of Engineered Hyporheic Zones in Urban Creeks | Kolodziej, Edward | CUW | Washington State Department of Ecology | State of Washington | Environmental Protection Agency (EPA) | \$243,387.00 |
| RAPID Collaborative Proposal: Characterization of upland watershed contamination from wildland-urban burning | Kolodziej, Edward | CUW | National Science Foundation (NSF) | National Science Foundation | National Science Foundation (NSF) | \$13,958.00 |
| Tacoma Social and Emotional Learning Initiative | Purdy, Jill M. | Chancellor's Office | Greater Tacoma Community Foundation | Foundation | Wallace Foundation | \$46,750.00 |
| Evidence-based optimization of vaccine allocation for emerging and re-emerging infectious diseases under fractional dosing | Eaton, Julia R. | SIAS | Fred Hutchinson Cancer Research Center (FHCR) | Association & Non-Profits | National Institutes of Health (NIH) | \$58,235.00 |
| Glycan-mediated allosteric structure between Fab and Fc domains | Finke, John | SIAS | National Institutes of Health (NIH) | DHHS-National Institutes of Health (NIH) | National Institutes of Health (NIH) | \$47,609.00 |
| Optimization of antibody brain penetration through Fab sialylation in a human blood-brain barrier model. | Finke, John | SIAS | National Institutes of Health (NIH) | DHHS-National Institutes of Health (NIH) | National Institutes of Health (NIH) | \$423,383.00 |
| Greenhouse for UWT Giving Garden | Gawel, James | SIAS | Pierce Conservation District | State of Washington | Pierce Conservation District | \$25,000.00 |
| Washington Community Allied Lake Monitoring (WA CALM): A Collaborative Pilot Program | Gawel, James | SIAS | Keta Legacy Foundation | Foundation | Keta Legacy Foundation | \$39,913.00 |
| MERHAB19: Application of a quantitative molecular method to characterize abundance and distribution of Alexandrium Cysts for NOAA's HAB Forecasting | Greengrove, Cheryl L. | SIAS | National Oceanic and Atmospheric Administration (NOAA) | Department of Commerce | National Oceanic and Atmospheric Administration (NOAA) | \$562,209.00 |
| An Intersectional Perspective on the Nature and Development of Critical Reflection among Adolescents and Young Adults | Hershberg, Rachel | SIAS | Tufts University | Private School, College, University | Spencer Foundation | \$5,346.00 |
| Shifting Ontologies and Spacialities of LBGQT Life | Knopp, Lawrence M. | SIAS | National Science Foundation (NSF) | National Science Foundation | National Science Foundation (NSF) | \$398,452.00 |
| WISTEM ² D Johnson & Johnson Scholars: Track: Design: Rose | Rose, Emma J. | SIAS | Johnson and Johnson Corporation | Private Industry | Johnson and Johnson Corporation | \$149,971.00 |
| Interlinked glacier dynamics, lakes, mountain hazards, and critical vulnerabilities in the Himalaya | Shugar, Dan | SIAS | Planetary Science Institute (PSI) | Association & Non-Profits | National Aeronautics and Space Administration (NASA) | \$29,640.00 |
| SCH:INT: Collaborative Research: Supporting Aging Women through Social Tracking | Backonja, Uba | SNHL | National Science Foundation (NSF) | National Science Foundation | National Science Foundation (NSF) | \$220,318.00 |
| The Association Between Sleep Deficiency and Early Psychosis Symptoms_NDA NIMH | Cheng, Chieh | SNHL | National Institute of Mental Health (NIMH) | DHHS-National Institutes of Health (NIH) | National Institute of Mental Health (NIMH) | \$0.00 |
| Developing A Multi-Component Virtual Community Mobile Healthcare Platform for Behavioral Interventions to Promote Healthy Eating and Physical Activity Engagement among a Rural Community of Overweight Women | Laing, Sharon Steele | SNHL | National Institutes of Health (NIH) | DHHS-National Institutes of Health (NIH) | National Institutes of Health (NIH) | \$418,719.00 |

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|--|-----------------------|------|---|--|--|----------------|
| Childhood Obesity and Breast Cancer Outcomes for African American Girls | Laing, Sharon Steele | SNHL | Benton Technologies, Inc. | Private Industry | Benton Technologies, Inc. | \$0.00 |
| Building Capacity to Improve Livability in East Tacoma through Community Based Participatory Research Partnerships | Reyes, David J. | SNHL | University of Michigan, Ann Arbor | Public School, College, University | National Institute of General Medical Sciences (NIGMS) | \$12,040.00 |
| Shifting Financial Power to Students: Does It Affect Health Equity? | Reyes, David J. | SNHL | Robert Wood Johnson Foundation | Foundation | Robert Wood Johnson Foundation | \$441,822.00 |
| Access is not equity: Expanding cultural food resources of UWT and Community food banks | Stevens, Christine A. | SNHL | The Coalition of Urban Serving Universities | Association & Non-Profits | Kresge Foundation | \$49,962.00 |
| Collaborative Research: Colorado-Washington Security Scholars Program | Bai, Yan | SET | National Science Foundation (NSF) | National Science Foundation | National Science Foundation (NSF) | \$884,283.00 |
| GenCyber Tacoma: University of Washington Tacoma 2019 GenCyber Camp for Middle School Students | Bai, Yan | SET | National Security Agency (NSA) | Department of Defense | National Security Agency (NSA) | \$51,364.00 |
| BIGDATA: F: Collaborative Research: Acquisition, Collection and Computation of Dynamic Big Sensory Data in Smart Cities | Cheng, Wei | SET | National Science Foundation (NSF) | National Science Foundation | National Science Foundation (NSF) | \$194,293.00 |
| CIF: Small: Collaborative Research: A Framework for Dynamic Resource Sharing in Multi-Tier Heterogeneous Wireless Networks | Cheng, Wei | SET | National Science Foundation (NSF) | National Science Foundation | National Science Foundation (NSF) | \$200,000.00 |
| CyberTraining: CIP: Collaborative Research: Enhancing Mobile Security Education by Creating Eureka Experience | Cheng, Wei | SET | National Science Foundation (NSF) | National Science Foundation | National Science Foundation (NSF) | \$99,998.00 |
| Chip-based ADS-B for High Density, Low Altitude UAV Operations | Dawn, Debasis | SET | KalScott Engineering Inc. | Private Industry | National Aeronautics and Space Administration (NASA) | \$40,000.00 |
| Micro Identification Friend or Foe (IFF) Transponder | Dawn, Debasis | SET | KalScott Engineering Inc. | Private Industry | US Department of Defense (DOD) | \$34,594.00 |
| System on Chip ADS-B Module for Unmanned Air Vehicles | Dawn, Debasis | SET | KalScott Engineering Inc. | Private Industry | National Science Foundation (NSF) | \$107,043.00 |
| NSF Student Travel Grant for the 2019 ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2019) | Hu, Juhua | SET | National Science Foundation (NSF) | National Science Foundation | National Science Foundation (NSF) | \$20,000.00 |
| CRII: OAC: RUI: Improving Software Deployments to Serverless Computing Environments | Lloyd, Wesley | SET | National Science Foundation (NSF) | National Science Foundation | National Science Foundation (NSF) | \$175,000.00 |
| 2018 DOD Ovarian Cancer Research Program Pilot Award | Yeung, Ka Yee | SET | Madigan Army Medical Center | Department of Defense | US Department of Defense (DOD) | \$75,550.00 |
| Intelligent deployment of containerized bioinformatics workflows on the cloud - Diversity Supplement | Yeung, Ka Yee | SET | National Institutes of Health (NIH) | DHHS-National Institutes of Health (NIH) | National Institutes of Health (NIH) | \$43,405.00 |
| Intelligent deployment of containerized bioinformatics workflows on the cloud - Diversity Supplement | Yeung, Ka Yee | SET | National Institutes of Health (NIH) | DHHS-National Institutes of Health (NIH) | National Institutes of Health (NIH) | \$43,405.00 |
| Optimizing Reproducibility, Performance and Deployment of Big Data Workflows | Yeung, Ka Yee | SET | National Institutes of Health (NIH) | DHHS-National Institutes of Health (NIH) | National Institutes of Health (NIH) | \$1,985,627.00 |
| A serverless platform to optimize cloud computing costs for cancer workflows | Yeung, Ka Yee | SET | National Institutes of Health (NIH) | DHHS-National Institutes of Health (NIH) | National Institutes of Health (NIH) | \$1,359,676.00 |
| REU Site: Research Experiences for Undergraduates in Bioinformatics | Yeung, Ka Yee | SET | National Science Foundation (NSF) | National Science Foundation | National Science Foundation (NSF) | \$359,368.00 |
| Improving Safety Conditions for All Special Education Personnel through Collaborative Safety Protocol Training | Beaudoin, Kathleen | SOE | Capital Region Educational Service 113 | State of Washington | Washington State Department of Labor and Industries | \$2,408.00 |
| NRI: INT: COLLAB: Cultural Diversity in Educational Robots (CoDER): Exploration and Redesign of Educational Robot Companions | Louie, Belinda Y. | SOE | National Science Foundation (NSF) | National Science Foundation | National Science Foundation (NSF) | \$978,538.00 |
| REU Site: Spatial Models and Electoral Districting | Thatcher, James | SUS | National Science Foundation (NSF) | National Science Foundation | National Science Foundation (NSF) | \$349,296.00 |

TOTAL REQUESTED \$10,846,921.00

SPONSORED RESEARCH AWARDS

| PROPOSED TITLE | PI | UNIT | SPONSOR | SPONSOR TYPE | AWARDED |
|---|--------------------|---------------------|---|-------------------------------------|----------------|
| Puget Sound Action Agenda – Implementation Strategic, Science, Monitoring and Adaptive Management Analysis and Activities | Baker, Joel | CUW | Puget Sound Partnership | State of Washington | \$1,187,888.00 |
| TAPE Application Fees Renewal | Baker, Joel | CUW | Washington State Department of Ecology | State of Washington | \$30,000.00 |
| UW-ECY Benthic Index of Biotic Indicators Implementation Strategies | Baker, Joel | CUW | Washington State Department of Ecology | State of Washington | \$136,721.00 |
| Marine and Nearshore Grant Program: Analyze and Synthesize Grant Program Results, Phase 2 | Francis, Tessa | CUW | Washington Department of Fish and Wildlife (WDFW) | State of Washington | \$49,211.00 |
| PSP and UWT PSEMP_2018 | James, C. Andrew | CUW | Puget Sound Partnership | State of Washington | \$8,495.00 |
| WA State Parks Wastewater Discharge Chemical Tracer | James, C. Andrew | CUW | Washington State Parks and Recreation Commission | State of Washington | \$43,265.00 |
| Diagnosing Urban Stream Syndrome: Identifying Novel Contaminants and Toxicants in Our Stormwater | Kolodziej, Edward | CUW | National Science Foundation (NSF) | National Science Foundation | \$329,577.00 |
| RAPID Collaborative Proposal: Characterization of upland watershed contamination from wildland-urban burning | Kolodziej, Edward | CUW | National Science Foundation (NSF) | National Science Foundation | \$13,982.00 |
| Treatment Media for Control of Persistent Organic Pollutants and Metals in Stormwater | Kolodziej, Edward | CUW | University of Maryland, College Park | Public School, College, University | \$49,323.00 |
| A Behavioral Intervention to Prevent Late College Departure | Carmean, Colleen | Chancellor's Office | University of Virginia (UVA) | Public School, College, University | \$23,944.00 |
| Tacoma Social and Emotional Learning Initiative | Purdy, Jill M. | Chancellor's Office | Greater Tacoma Community Foundation | Foundation | \$46,750.00 |
| UWT Sustainable Waste Management 2018 | Gawel, James | SIAS | City of Tacoma | Other Local Government | \$3,926.00 |
| Land Management Strategies for Confronting Risks and Consequences of Wildfire | Kennedy, Maureen | SIAS | University of California, Santa Barbara | Public School, College, University | \$32,661.00 |
| Access is not equity: Expanding cultural food resources of UWT and Community food banks | Stevens, Christine | SNHL | The Coalition of Urban Serving Universities | Association & Non-Profits | \$55,400.00 |
| Collaborative Research: Colorado-Washington Security Scholars Program | Bai, Yan | SET | National Science Foundation (NSF) | National Science Foundation | \$497,256.00 |
| GenCyber Tacoma: University of Washington Tacoma 2019 GenCyber Camp for Middle School Students | Bai, Yan | SET | National Security Agency (NSA) | Department of Defense | \$49,007.66 |
| BIGDATA: F: Collaborative Research: Acquisition, Collection and Computation of Dynamic Big Sensory Data in Smart Cities | Cheng, Wei | SET | National Science Foundation (NSF) | National Science Foundation | \$194,293.00 |
| CyberTraining: CIP: Collaborative Research: Enhancing Mobile Security Education by Creating Eureka Experience | Cheng, Wei | SET | National Science Foundation (NSF) | National Science Foundation | \$100,000.00 |
| NIST Coverage, Capacity, and Resilience Enhancement in Limited Public Safety Networks | Cheng, Wei | SET | George Washington University | Private School, College, University | \$40,514.00 |
| NSF Student Travel Grant for the 2019 ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2019) | Hu, Juhua | SET | National Science Foundation (NSF) | National Science Foundation | \$20,000.00 |

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| CRII: OAC: RUI: Improving Software Deployments to Serverless Computing Environments | Lloyd, Wes | SET | National Science Foundation (NSF) | National Science Foundation | \$175,000.00 |
| Intelligent deployment of containerized bioinformatics workflows on the cloud | Yeung, Ka Yee | SET | National Institutes of Health (NIH) | DHHS-National Institutes of Health (NIH) | \$343,157.00 |
| Intelligent deployment of containerized bioinformatics workflows on the cloud - Diversity Supplement | Yeung, Ka Yee | SET | National Institutes of Health (NIH) | DHHS-National Institutes of Health (NIH) | \$36,510.00 |
| Intelligent deployment of containerized bioinformatics workflows on the cloud - Diversity Supplement | Yeung, Ka Yee | SET | National Institutes of Health (NIH) | DHHS-National Institutes of Health (NIH) | \$33,190.00 |
| Improving Safety Conditions for All Special Education Personnel through Collaborative Safety Protocol Training | Beaudoin, Kathleen | SOE | Capital Region Educational Service 113 | State of Washington | \$50,449.00 |
| Improving Safety Conditions for All Special Education Personnel through Collaborative Safety Protocol Training | Beaudoin, Kathleen | SOE | Capital Region Educational Service 113 | State of Washington | \$2,408.00 |
| Teaching English Language Learners - Professional Development | Louie, Belinda | SOE | US Department of Education (DOEd) | Department of Education | \$550,000.00 |
| The Next Generation of STEM Teacher Preparation in Washington State (NextGen-WA) | Rios, Jose | SOE | Western Washington University (WWU) | Washington School, College, University | \$8,886.00 |
| REU Site: Spatial Models and Electoral Districting | Thatcher, James | SUS | National Science Foundation (NSF) | National Science Foundation | \$343,047.00 |
| TOTAL AWARDED | | | | | \$4,454,860.66 |



UW TACOMA DISTINGUISHED RESEARCH AWARD 2019

KA YEE YEUNG, SET

Yeung's research is on containerized cloud-enabled software tools and methods that support reproducible analyses of big biomedical data. Her work is externally funded and widely cited, and three of her papers have been acknowledged for pushing the boundaries of the field. We recognize her impact on students both through the bioinformatics summer institute she conducts in partnership with Madigan Army Medical Center and her mentoring of undergraduate and graduate students.





OFFICE OF RESEARCH

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2018-19
ANNUAL REPORT