





Autumn 2024 Program on the Environment Capstone Symposium

All Abstracts, Compiled Alphabetical Order

**Tuesday, November 26th, 4:30 – 7:30 PM: Online Poster Session**

**Wednesday, December 4th, 4:30 – 8:00 PM: In-person Oral Presentations & Celebration**

The Capstone experience is a three-course series (ENVIR 490, 491, 492) centered on a quarter- long project-based internship with a community site partner. Capstone sites range from community-based nonprofits and government agencies to faculty research projects and private sector initiatives. With the mentorship of a faculty advisor and the support of the site supervisor, students gain valuable hands-on experience, explore career possibilities, and build a wide spectrum of professional communication skills.



**Reinventing Recycling: How Drop-off Sites Can Engage Consumers and Keep Recyclables Out of the Landfill.** Session B, Room 1

**Alec Baron**, Program on the Environment, Law, Societies & Justice, University of Washington

**Site Supervisor:** Hannah Scholes and Adrian Tan, King County Solid Waste Division

**Faculty Advisor:** Kristi Straus, Program on the Environment, University of Washington

Drop-off recycling in King County will help relieve the burden felt by the Cedar Hills Landfill, which is quickly racing towards maximum capacity. Using drop-off recycling, many landfilled materials including plastic film, paint, batteries, light bulbs, and medication can be recycled even if not accepted via traditional curbside recycling. The aim of this study was to determine the biggest challenges perceived by the public that make drop-off recycling less convenient, helping to better understand which improvements would effectively increase overall drop-off recycling engagement. I interned with the King County Solid Waste Division and surveyed employees at 150 drop-off sites throughout the county to collect data on recycling traffic, bin design and placement, and fill-up frequency. Additionally, I conducted a literature review and administered an online survey to 180 King County residents to learn about their drop-off recycling behaviors and how they would like it to work differently. Results indicated the biggest obstacles being the need to make a special trip just to recycle, difficulty identifying drop-off sites, and a lack of drop-off site information. Residents voiced their desire to have drop-off sites that collect more than one type of recyclable and to place these sites in commonly visited locations. Therefore, improving drop-off recycling includes increasing streamlined recycling legislation that enforces uniform recycling standards, the convenience of locations, range of accepted materials, and clarity of recycling information. A more effective drop-off recycling process extends the valuable life of our regional landfill and creates a well-informed society with confident recycling skills.

**Let's Map It Out: The Potential of Mapping in Raising Sustainability Awareness of UW Students.** Session B, Room 2

**Lea Bodmer**, Program on the Environment, University of Washington

**Site Supervisor:** Daimon Eklund, UW Sustainability

**Faculty Advisor:** Lubna Alzaroo, Program on the Environment, University of Washington

The Sustainable Development Goals established by the United Nations highlight the important role that universities play in educating and guiding the next generation in sustainable practices. While universities have made significant progress in integrating sustainability into their curricula and campus operations, many students remain unaware of sustainability features and initiatives on campus. This gap is problematic, as it reduces student engagement with sustainability efforts on campus. To address this issue, I interned at the UW Sustainability to redesign its campus sustainability map. My research aimed to identify the best methods for redesigning UW’s campus sustainability map to better communicate UW’s sustainability features and initiatives to students. To complete this research, I performed map audits of sustainability maps at other institutions, surveyed UW students, and conducted a literature review. The results revealed that UW students were unaware of several sustainability features on campus and had never previously used the sustainability map. Literature and map audits revealed that maps are effective tools in raising awareness and engaging communities in sustainability. These results indicate that the sustainability map should be redesigned to optimize its user engagement, highlight features that students may not know about, and be effectively promoted once completed. Through an effective sustainability map, students will have higher awareness of available sustainability features, increasing their likelihood to engage with them. By making sustainability information readily accessible, UW can cultivate a more informed campus community that considers both individual and institutional contributions to sustainability.

**Let's Glean: What is Gleaning and what Motivates People to do it?.** Session B, Room 3

**Tess Brobeck**, Program on the Environment, School of Public Health, University of Washington

**Site Supervisor:** Emily Penna, FareStart

**Faculty Advisor:** Tyler Watson, Health Systems and Population Health, University of Washington

Food insecurity and food waste are two closely intertwined and prominent issues in the United States. Millions of people struggle to have access to healthy food and about 40% of foods meant for human consumption end up going to waste. Not only are wasteful practices taking food away from those in need, but food waste also significantly contributes to greenhouse gas emissions. The solution lies in gleaning, or harvesting produce that otherwise would be wasted. I interned with FareStart as a member of their food security team and helped lead gleaning trips to support their mission. My research aimed to address what motivates farmers, food security operations, and volunteers to participate in gleaning practices. I conducted interviews with farmers and others involved in food security operations (FareStart and similar organizations) and also surveyed gleaning volunteers to address this essential question. While each group indicated several drivers that motivate participation, all had one factor in common: community. Farmers were focused on building community relationships, volunteers were most interested in community building practices and altruism, and food security operation members were intent on giving back to local communities facing food insecurity. These groups valued different outcomes associated with gleaning; their results help to identify the most successful means to motivate future participation. Gleaning is often overlooked for its effectiveness in addressing issues of food insecurity and food waste management. It is important for gleaning to be promoted in the most fruitful way possible so that it can become more widely implemented.

**The Guidance of Salmonberries: How we can Reclaim Mother Nature as her Children and not her Antithesis.** Session A, Room 1

**Ada Cashmere**, Program on the Environment, University of Washington

**Site Supervisor:** Kaylee Pingeon, Free The Green

**Faculty Advisor:** Eli Wheat, Program on the Environment, University of Washington

My research addresses the critical role traditional foods play in ecological restoration, focusing on cultural resilience and biodiversity. Pacific Northwest Ecosystems that sustain our species are struggling in the changing climate, and modern society limits itself in its ability to help them. Analyzing native plants such as Salmonberry, along with Fireweed, Wapato, Huckleberry, and more highlights how Indigenous stewardship practices foster reciprocal relationships with ecosystems. The aim of this work is to contribute to the ongoing conversation on the necessity of integrating Traditional Ecological Knowledge (TEK) into modern restoration efforts, specifically to confront both cultural and ecological degradation. To achieve this, I conducted fieldwork with Free the Green, focusing on invasive species removal and native plant reintroduction, alongside a thorough review on current scholarship and literature of paleoecology and Indigenous foodways. Combining hands-on restoration and scholarly inquiry provides a strong framework for understanding the lasting impact of our cultural relationship to ‘nature’ on ecosystem health. Findings show that the inclusion of TEK in restoration practices supports reciprocal stewardship practices, enhances ecosystem resilience, and helps mend the historical trauma of land dispossession. This work suggests that deconstruction of the settler-colonial paradigm of pristine wilderness and collaboration with Indigenous knowledge systems is vital for effective restoration and cultural healing. The research underscores the importance of adopting a holistic view of nature and advocates for the inclusion of Indigenous voices in policy, education, and restoration strategies. This integrative approach is essential for fostering long-term sustainability and addressing the climate crisis.

**Secondhand, First-Class: Identifying Target Communities for the ReUse Commons and Effective Marketing Strategies for Engagement.** Session B, Room 4

**Brianna Cateriano**, Program on the Environment, English Literature, University of Washington

**Site Supervisor:** Josh Epstein, Seattle REconomy

**Faculty Advisor:** Lubna Alzaroo, Program of the Environment, University of Washington

The unsustainable practices of mass production seen through the popularity of single-use plastics and fast fashion have become normalized, resulting in unsustainable consumption and conspicuous waste from consumers. Since the abundance of unsustainable consumption hurts the environment, it is essential to implement circular economies within American society. In a circular economy, all materials and products are reused or refurbished ensuring that waste is diminished. The first step in this process is to implement circular economy malls, like the ReUse Commons, in urban cities like Seattle. This project aimed to identify key communities for the ReUse Commons, understand their values, and assess the most effective marketing strategies to foster engagement. To accomplish this, I evaluated the most efficient ways to market towards and engage unique communities by interviewing experts in reuse and repair industries around Seattle. Through market research, I identified four key communities for the organization to target. I also supplemented these interviews with external research focused on consumer behaviors in relation to sustainability. My findings indicate that the key communities the ReUse Commons will want to prioritize include: low-income populations, refugees and immigrants, homeowners, and students. The key values for these communities are: affordability, community, education and sustainability. Future marketing and engagement strategies for the ReUse Commons should tailor their communication approaches to align with the values of the community they aim to reach.

**Thinking About Nature: How Forest Classrooms Foster Systems Thinking Skills in Preschoolers.** Session B, Room 5

**Hana Chollar**, Program on the Environment, Food Systems, Nutrition, and Health, University of Washington

**Site Supervisor:** Bri Castle, Fiddleheads Forest School, University of Washington Botanic Gardens

**Faculty Advisor:** Jamie Cho, College of Education, University of Washington

Environmental Education (EE) is an interdisciplinary field that increases our capability as a society to tackle the largest socio-ecological problems that we face today. Early childhood environmental education (ECEE), is especially important as it introduces children to environmental and social values during formative years of child development. Systems thinking (ST), a way of thinking holistically at interconnections within and between systems, is crucial in EE because environmental problems always affect and intersect complex socio-ecological systems. While the importance of ST in EE has been widely acknowledged, its role in ECEE has been understudied. This study attempts to answer the following questions: How is ST embedded into outdoor ECEE? What opportunities do outdoor preschool classrooms provide for fostering ST skills? Through a collection of anecdotes from my internship experience at Fiddleheads Forest School, paired with teacher interviews and literature review, I describe the ways in which ST naturally occurs within the forest classroom through play, exploration, and experience with nature. Outdoor learning environments provide opportunities for children to hone ST skills, including observing patterns and trends, recognizing interdependencies within systems, and changing perspectives. Importantly, teachers and caretakers play a vital role in encouraging ST by supporting children while ensuring that learning is inspired out of exploration and inquiry that sparks from wondering about the natural world. These findings illustrate the importance of increasing equitable accessibility to outdoor ECEE and the potential of incorporating ST into existing curricula. Through this, future environmental and climate justice leaders may become equipped with the skills and values necessary to maintain sustainable socio-ecological systems for generations to come.

**Bird Talk: Patch Cuts as a Means of Conservations.** Session A, Room 2

**Maya Clauson-Nehus**, Program of the Environment

**Site Supervisor:** Micaela Petrini, Great Peninsula Conservancy

**Faculty Advisor:** Tim Billo, Program of the Environment, University of Washington

Forest treatment is a constant and ever-changing practice, with varying conversations about the most ideal methods for different aspects of forest management. My research looks specifically at the creation of patch cuts and the consequences, both positive and negative, of them. I chose to look at the way Swainson's Thrush reacted to the difference in their habitat. The aim of this study was to examine the relationship between Swainson's Thrush and the understory creation in a patch cut. My internship itself aimed to collect data on previously girdled trees in Great Peninsula Conservancy preserves to ascertain if the trees were dying or not based on a set of factors observed from the tree. During my internship, I was provided data from AudioMoth that had been collected over the past three years that indicated the acoustic presence of different birds in the patch cuts. I use that information to see the change in presence from 2022-2024 of the Thrush. I found that there was more of a presence of Swainson’s Thrush in the patch cuts after the cut was created, versus before. However, I then wondered what the potential benefits and consequences of patch cuts were. These results are important because forest management will always be valued as long as forests are. This research provides a voice in a conversation that varies in strategies based on the different forest goals.

**Light Rail Heavy Impacts: How a Toxic Relationship Can Halt the Expansion of Seattle's Light Rail System.** Day 2

**Miles Crook**, Program on the Environment, University of Washington

**Site Supervisor:** Jamie Gruenberger, Seattle Subway Foundation

**Faculty Advisor:** Barry Erickson, Foster School of Business, University of Washington

Even though Seattle is perceived as one of the greenest cities in America, struggles to control Carbon emissions from automobiles still remain. In an effort to address its CO2 struggles, the City of Seattle has placed Light Rail Expansion at the forefront of environmental efforts. While there are expansive plans currently in place to expand the Link beyond the two current lines, a primary factor interfering with expansion projects is the clashing relationship between government and businesses. As a result, the aim of this study is to take a closer look into the environmental, social, and economic impacts of a potential Sand Point Link extension route, with a special focus on the interactions between public transportation efforts and businesses that could potentially be impacted. This study included 21 survey responses from businesses that line this potential route, 3 interviews with significant institutions, and further synthesis and projections from current literature present. After 10 weeks of partnering with the Seattle Subway Foundation, projections indicate that this future potential link route would be a more environmentally and socially beneficial alternative to individual car usage. But in order to surpass the current conflict between institutions and government, there needs to be an overall increase in understanding and communication. Currently, institutions feel left in the dark on future plans and forced to play behind. As a result, businesses have developed resentment towards future potential government transportation plans. Resolving this toxic relationship between the government and businesses would lead to another community supporting infrastructure development for Seattle’s future and in all, ensuring Seattle does its part to address our current climate crisis.

**Waves of Insight: A Methodology for Tracking Recreational Boating Patterns and Significance in the San Juan Archipelago.** Session A, Room 3

**Sara Da Silva**, Program on the Environment, University of Washington

**Site Supervisor:** Sandy Wyllie-Echeverria and Jason Hodin, Friday Harbor Laboratories, University of Washington

**Faculty Advisor:** Corey Garzas, School of Aquatic and Fisheries Science, University of Washington

Seagrass throughout San Juan Island is experiencing a critical decline largely attributed to anthropogenic influences. Recreational boating emerges as a potential factor that contributes to the decreasing abundance of seagrass habitats. To begin evaluating the impact of boating on seagrass health, we first need to understand boating patterns in the region. This study aimed to develop a methodology for analyzing recreational boating behavior in the San Juan Islands. During my internship with Friday Harbor Labs, I used Automatic Identification System (AIS) data to create a methodology that can systematically track vessel activity across seven key bays from 2018 to 2023, complemented by extensive literature reviews. The research focused on understanding patterns in boating traffic, including vessel size and AIS usage across different locations and periods. In addition to the quantitative analysis, the study integrated qualitative insights from a Lummi elder, emphasizing the cultural significance of these waters, along with perspectives from recreational boaters which emphasized their engagement with the marine environment. The results indicated a low correlation between boats present in the bays and those with AIS turned on. However, the study also identified valuable benefits of using AIS data, such as cost-effectiveness and the ability to perform spatiotemporal analysis over five years. Understanding the spatial distribution and intensity of recreational boating activities is crucial for developing strategies to mitigate their environmental impacts on seagrass in the Salish Sea.

**Capitalism and Sustainability: Understanding the Role and Implications of Corporate Greenwashing and Climate Misinformation.** Session A, Room 4

**Maeve Doolin**, Program on the Environment, Political Science, University of Washington

**Site Supervisor:** Lauren Hale, Raise Green Inc.

**Faculty Advisor:** Karen Litfin, Political Science, University of Washington

In the United States, the environmental finance industry works to support the flow of capital into environmentally conscious products and initiatives, to bolster the economy while assisting climate and sustainability efforts. And yet, it’s the American capitalist system itself that has given rise to dangerous issues within the environmental finance sector: corporate greenwashing and the dissemination of climate mis- and disinformation. Both corporate greenwashing and the dissemination of climate mis- and disinformation deceive stakeholders, divert time and resources from environmental advocacy, solutions, and policy, harm biodiversity, and contribute to environmental and public health risks. The purpose of this study was to understand the origins and development of corporate greenwashing and climate mis- and disinformation, their impacts, and how both of these issues expose a pressing need for amendments to the United States’ market system. To address these issues, I worked as a Marketing and Communications Intern with the investment firm Raise Green. In this role, I conducted independent literary review, interviews, and collected observational data to research corporate greenwashing behaviors and climate mis- and disinformation trends. My findings revealed that both corporations and lone actors use a variety of strategies to engage in greenwashing activities and climate mis- and disinformation spreading, due to financial incentives, competitive advantages, and regulatory avoidance benefits. In turn, these actions have profound negative impacts on consumers, the general public, and the environment, disclosing perilous flaws in American capitalism. These implications indicate a need for improvements and changes within the nation’s economic structure. These may be done so through SEC Amendments, legislative interventions, third-party reporting involvement, and proposing regulatory frameworks.

**How to Achieve Transit-Oriented Development in an Equitable and Just Way.** Session A, Room 5

**Sydney Elfstrom**, Program on the Environment, Public Health-Global Health, University of Washington

**Site Supervisor:** Richard Gelb, Environmental Health, Public Health Seattle and King County

**Faculty Advisor:** Alexandra Montaño, Health Systems and Population Health, University of Washington

Transit-oriented development is an important step in reducing highway pollution, making cities more walkable, and increasing accessibility. However, it will be a long process and it is important to ensure that harm is still reduced until the positive impacts are realized. Over the summer, I interned with Public Health Seattle and King County working on a policy briefing memo surrounding highway-adjacent land use. This included research on future development patterns in King County and how much of it will be closely adjacent to highways. Further, it involved researching relevant and practical zoning solutions aimed at protecting sensitive communities from highway pollution exposure. To accomplish this, I conducted a literature review, policy scan and utilized a GIS analysis. I also consulted with specialists in the fields of public health, environmental science, and policy. Lastly, I conducted a short survey that I distributed to residents living within 500 feet of high-volume highways in the University District and Roosevelt neighborhoods. Findings show that current and future transit-oriented development is closely adjacent to high-volume highways. Zoning solutions aimed at environmental justice and health equity can be an important way to reduce the harms of highway pollution, such as incentive-based zoning and overlay zones, which should still be accompanied by other non-zoning solutions. Utilizing these zoning solutions for future highway-adjacent development will assist in reducing harm to sensitive populations in King County and beyond while still allowing the process of transit-oriented development, which is an important step in reducing highway pollution overall, to continue.

**Shifting Thermal Windows: The Impact of Climate Change on Bull Kelp in the Salish Sea.** Session A, Room 6

**Kayla Engelhardt**, Program on the Environment, University of Washington

**Site Supervisor:** Christopher Krembs, Washington State Department of Ecology

**Faculty Advisor:** Marielle Kanjia and Stefano Mazzilli, Puget Sound Institute

Climate change significantly alters marine thermal environments, substantially impacting species like bull kelp (Nereocystis luetkeana). In the Salish Sea, bull kelp forests provide critical habitats for culturally and ecologically important species, such as salmon. This study examines changes in bull kelp’s thermal window of opportunity over the past two decades by analyzing long-term temperature monitoring data from Puget Sound, paired with temperature thresholds identified during my internship with the Washington State Department of Ecology and the Puget Sound Institute. Temperature niche windows are crucial for marine species, as they define the specific thermal conditions required to sustain populations. Warming waters due to climate change can either contract or expand these windows, affecting species resilience. Bull kelp typically thrives within a thermal range of 9°C to 15°C, with optimal blade growth at 15°C. However, findings reveal a narrowing of this thermal window over the last decade due to more frequent occurrences of marine temperatures exceeding 15°C. For example, Dana Passage has experienced a 0.26°C rise in mean water temperature from 2012 to 2024, compared to 1999 to 2011. From 2012 to 2024, temperatures exceeded 15°C in 17 months, whereas only five months exceeded this threshold in the preceding period. This contraction of suitable thermal conditions for bull kelp threatens the productivity and biodiversity of coastal ecosystems, emphasizing the need for effective conservation strategies. Understanding these dynamics is essential to safeguarding the ecological and economic resilience of the Salish Sea.

**Assessing Involvements of Farmer's Markets in Communities.** Session B, Room 6

**Genevieve Fend**, Program on the Environment, Food Systems/Nutrition/Health, University of Washington

**Site Supervisor:** Leah Nichelson, Camas Farmer's Market

**Faculty Advisor:** Yona Sipos, Food Systems/Nutrition/Health, Environmental and Occupational Health Sciences, University of Washington

There is an increasing rate of food disparities, food related illnesses including obesity, heart disease, diabetes and lack of access to healthy and affordable food in communities. Supermarkets tend to be filled with lower quality produce and lots of processed foods that are created unsustainably. Conventional agriculture accounts for a significant contribution to environmental degradation and climate change. Farmers markets are an enriching way for us to sustainably access food within our communities. Farmers markets supply sustainable, nutrient dense and wholesome foods that you cannot access at supermarkets. These markets are critical in increasing sustainable food access, decreasing the rate of food related health implications and finally providing the opportunity to strengthen communities. I researched how farmers markets could further increase their involvement in communities and what are the common barriers that prevent them from doing so? I interned for the Camas Farmers Market by working as an outreach assistant to promote the market on social media in an attempt to attract more customers and community support. Besides working on the site, I completed my own research of literature about common benefits and challenges farmers markets experience. In my project I found that markets do not receive enough local and government support to expand despite how beneficial they are. As they improve well-being and health to the customers they serve. Even though they are of smaller significance now, I see that farmers markets will become a key strategy to increase community resilience in the future.

**Emotion in Science: The Role of Emotion in Integrating Traditional Ecological Knowledge and Western Science Methods in Environmental Science.** Session B, Room 7

**Zachary Flagler**, Program on the Environment, University of Washington

**Site Supervisor:** Peter Donaldson, Sustainability Ambassadors

**Faculty Advisor:** Lubna Alzaroo, Program on the Environment and Comparative History of Ideas, University of Washington

This literature review examines the intersection of Traditional Ecological Knowledge (TEK) and Western science within environmental science, with a focus on how each framework views, applies, and relates to emotion. Historically, TEK has been marginalized by Western science, which prioritizes objectivity and rationality, often overlooking the relational and emotional connections central to TEK. However, recent environmental challenges have sparked renewed interest in TEK’s holistic, culturally embedded perspectives, recognizing their value for sustainability and conservation. This review examines recent studies on Traditional Ecological Knowledge (TEK) and Western science, emphasizing the historical exclusion of emotion in Western science, the role of emotion within TEK, and the limited exploration of these contrasting views on emotion in current literature discussing the interaction between TEK and Western science. By addressing these dynamics, this review deepens the understanding of how integrating TEK and Western science could bring forth a more inclusive and effective approach to environmental stewardship, with greater awareness of the role of emotion in scientific practice.

**Know Your Audience: Creating Better Transit Systems through Co-Design with Community Stakeholders.** Session A, Room 7

**Grace Georgitsis**, Program on the Environment, University of Washington

**Site Supervisor:** Arthur Bachus, The Seattle Subway Foundation

**Faculty Advisor:** Tim Billo, Program on the Environment, University of Washington

The looming threat of global climate change has intensified scrutiny of our nation’s transportation infrastructure, which is the largest contributor to carbon emissions. Expanding mass transit systems could be key to reducing these emissions, yet many individuals are distrustful of large transit agencies, fearing that their needs and the unique characteristics of their communities will be overlooked in the planning process. While transit agencies possess the technical expertise necessary for designing transit systems, grassroots organizations are better equipped to understand the social context of the communities they serve and can effectively build trust among local residents. By engaging in co-design with community stakeholders, transit planners can foster collaboration that addresses the distinct needs of these communities and create a more effective transit system in the process.

This study aims to explore the perspectives of South Park, Seattle residents around a Link light rail station in their neighborhood. I conducted three interviews with community organizers and distributed a survey that received nearly 90 responses in one month. The results revealed that a majority of participants supported the addition of a Link station in South Park, but many expressed concerns about potential gentrification, displacement, and changes in community character. My findings underscore the importance of proactive outreach to communities sited for future transit projects and collaboration with local grassroots organizations. By collaborating with these organizations, transit planners can create systems that serve the community’s needs and get people out of their cars and onto mass transit.

**Comparing Apples to Oranges... Fruit Preference & It's Implications.** Session B, Room 8

**Ella Gostisha**, Program on the Environment, University of Washington

**Site Supervisor:** Riley Wilmart, City Fruit

**Faculty Advisor:** Eli Wheat, Program on the Environment, University of Washington

Users of food assistance programs often feel unheard and underrepresented by the program that supports them. This is why it is vital that food assistance programs and organizations should consider gathering direct feedback from their users, to foster better relationships, and prioritize requested food that is more culturally and nutritionally relevant. The aim of this study was to gather the fruit preferences of City Fruit recipients, as well as gather recommendations for culturally significant fruits. I gathered data utilizing a survey which was distributed during weekly fruit giveaway events in Seattle. Furthermore, I compared my survey results to fruit giveaway event data containing information regarding how much fruit was brought to the event vs. how much was left after the event, to see if the survey preference results were supported. My project was able to compile rankings for each of the 12 fruits I included in the survey, ranked from most to least preferred. And based on my comparison, the survey rankings aligned with rates of distribution seen at the giveaway events. Furthermore, based on the results of my survey, I was able to provide recommendations for City Fruit regarding operations. Firstly, these results are important because they provide an outlet of direct feedback from fruit recipients to City Fruit, bridging a potential communication gap. Secondly, the results could be a starting point for City Fruit to tailor their harvesting request selection and subsequent harvesting routes and donations, to prioritize fruits that are most preferred.

**Nature’s Crucial Role in Child Development Through the Lens of a Pandemic.** Session B, Room 9

**Liam Griffith**, Program on the Environment, University of Washington

**Site Supervisor:** Tracy Harrison, True Nature Kids

**Faculty Advisor:** Gary Handwerk, Program on the Environment, University of Washington

**Awareness to Action: Fostering Empathy Through Immersive Learning in Climate Justice Education.** Session B, Room 10

**Caroline Hale**, Program on the Environment, Department of Sociology, University of Washington

**Site Supervisor:** Rishi Sugla and Zackery Thill, Climate Impacts Group, University of Washington

**Faculty Advisor:** Heather Price, Climate Justice Across the Curriculum, North Seattle College

We are moving into a world where our society and our planet have been deeply impacted by climate change. The consequences of our changing climate are not felt evenly, due to a variety of social factors. This prompts the need for a just transition into our new world, with a key part of this transition being through education and ensuring that education gives students the opportunity to learn about power and place as it relates to climate change. It is important for educators and students to empathize and consider the needs of others in order to enhance student motivation and connection to local climate impacts and contexts. The purpose of this study was to determine the most effective aspects of a justice centered climate curriculum. To accomplish this, I worked with the Climate Impacts Group (CIG) to evaluate the pilot year of their Science Justice Summer School program offered to graduate students interested in learning more about climate justice and how to integrate climate justice principles into their respective fields. Findings from my evaluation tools indicated high student appreciation for immersive learning activities, including discussions with guest speakers, field trips, and collaborative activities. By creating an interactive learning environment where participants had the opportunity to learn within a variety of different contexts, students were able to empathize and understand climate justice not only through their own personal lens, but also through the contexts of others.

**The Dangers of Weak Policy: Voluntary Corporate Participation in Standardized Date Labeling as an Enabler of Food Waste.** Session A, Room 8

**Olivia Hallas**, Program on the Environment, University of Washington

**Site Supervisor:** Heather Trim, Zero Waste Washington

**Faculty Advisor:** Kayla Morton, Political Science, University of Washington

An estimated 60% of food waste from consumer-based sectors ends up in landfills, contributing to methane production and food insecurity, while degrading valuable resources and costing the country billions of dollars. Consumer confusion around date labels on food products is a primary source of this excessive disposal, which can be reduced with broad efforts to streamline label language. This research attempts to determine how influential membership is on the level of product compliance with voluntarily-initiated standardized labeling of “best if used (or freeze) by” and “use (or freeze) by” phrasing. Under Zero Waste Washington, I assessed the status of over two thousand products in a multi-locational grocery survey. These results were compiled in an excel spreadsheet, which organized both member and non-member data, alongside three variables- company size (<10k-0, <50k-10k, <50k-100k, 100k+), location of their headquarters, and the type of product (breads/bakery, canned goods/shelf liquids, beverages, dry goods, dairy/eggs, fresh meat, frozen, and perishables). Coding software Rstudio was then used to generate linear regressions, testing the effect of membership while holding certain variables constant. As hypothesized, membership had a statistically insignificant effect on the level of compliance across all products, regardless of the accounted for potentially influential variables. Due to the threat of food waste on socio-ecological health, resources and efforts should not continue to be invested into voluntary regulation, of which relies on membership to deliver results. Instead other solutions, such as statewide legislation, should be pursued to properly control for unnecessary food waste accumulation at the source.

**Cultivating Well-Being: The Transformative Impact of Community-Based Environmental Learning.** Session B, Room 11

**Monica Hniang Dawt Chin**, Program on the Environment, University of Washington

**Site Supervisor:** Laura Swartley, Human-Centered Design & Engineering Department PhD Student

**Faculty Advisor:** Yen-Chu Weng, Professor of Environmental Studies, University of Washington

Community-based environmental learning (CEL) is a learning opportunity that encourages personal development and fosters a connection between students and their environment. However, little is known about the effects of CEL on students' wellbeing. This study explores how CEL programs impact students' emotional resilience and mental health, focusing on how time in nature reduces anxiety and strengthens community connections. In-depth interviews and surveys were carried out using a phenomenological research approach to examine students' lived experiences, including a case study of a participant in the Danny Woo Community Garden. A whole-part-whole method was used to analyze the interview data, and the results revealed three main themes: Personal growth through unexpected learning, reminder of connection to nature & emotional relief, and sense of belonging. To give a more comprehensive background, anonymous survey data of a cohort of the CEL participant's peers who also engaged in CEL were analyzed.

A key finding was the participant’s realization that focusing on the needs of others through community service helped reduce her anxiety and perfectionism. She described how engagement with the garden allowed her to decenter herself, shifting focus from self-centered concerns to the well-being of the community, which ultimately improved her mental health. Contributing to a larger cause helped her feel grounded and balanced, showing how CEL fosters mental well-being through connection and purpose. Survey results confirmed these qualitative insights, showing that CEL reduces stress and enhances emotional health while promoting a stronger sense of purpose.

**The Power of a Circular Economy to Meet Sustainable Development Goals.** Day 2

**William Hooper**, Program on the Environment, University of Washington

**Site Supervisor:** Josh Epstein, Seattle REconomy

**Faculty Advisor:** Ben Packard, EarthLab

Economic growth and environmental sustainability are often seen to be at ends with one another. However, the principles of sustainable development suggest that the environment and the economy can be lifted up together with the right care and effort. The intended purpose of this study was to ask how a tool sharing library can be used as an example of how circular economies can contribute to sustainable development. My internship was with Seattle REconomy where I worked at their NE Seattle and Shoreline Tool libraries and helped with budgeting for their planned REuse Commons sustainable mall. Through this internship and a thorough literature review, I looked at how circular economies work in practice and what broader structures prevent the model from being a larger piece of the economy. The key principle of a circular economy is improving natural resource efficiency by reusing and repairing rather than throwing away. This means that an item or product will cycle through the economy multiple times rather than just once and produce more economic value than it would in a purchase to landfill linear economy. While government funding is going into helping sustainable businesses to grow, public funding is limited and more private sector investment is required to make these businesses truly competitive. Businesses that support circular economies have the potential to uplift their local communities and environments, but a crucial disadvantage in funding compared to more short-term profitable ventures currently holds them back.

**We Can Manage: Examining Offal Waste Management Pathways For Washington State.** Session B, Room 12

**Andres Kappes**, Program on the Environment, University of Washington

**Site Supervisor:** Heather Trim, Zero Waste Washington

**Faculty Advisor:** Lawrence Watters, Program on the Environment, University of Washington

The accumulation of waste in landfills is one of the largest human-related sources of greenhouse gas emissions in the United States. A crucial element of this issue is the high quantity of organic waste and recyclable material that finds its way into landfills, when sustainable management options are available. The aim of this research was to identify current practices associated with offal (animal flesh, carcasses, or byproducts of meat processing), and the potential for the standardization of more sustainable strategies for managing this type of organic waste. Additionally, it seeks to identify the most common barriers associated with sustainable options of offal management and examine possible solutions. While working with Zero Waste Washington as a policy research intern, I focused on literature review, meeting with professionals from the Washington State Department of Agriculture and attended an educational session to produce data surrounding the potential for challenges and success in offal waste management for Washington State. The resulting information highlighted on-farm composting operations as one of the best possible solutions to dealing with this waste. I was then able to identify the barriers to its widespread implementation into three main categories of policy-related, educational, and financial. Considering these three categories, I utilized my data and research to explain potential routes to success in the face of these barriers. Finding success in offal waste management may allow for a precedent of sustainability to be set when dealing with organics, and even further into recyclables.

**Barriers Hindering the Minority and Women-Owned Businesses to Reuse and Recycle Construction and Demolition Debris.** Session A, Room 9

**Nha Khuc**, Nha Khuc\*, Program on the Environment, Community, Environment, and Planning, University of Washington

**Site Supervisor:** Nori Catabay, King County Solid Waste Division

**Faculty Advisor:** Lubna Alzaroo, Program on the Environment, University of Washington

In King County, Construction and Demolition (C&D) waste constitutes about 30% of total waste generation. Despite recycling potential, a significant amount still ends up in landfills. In 2023, companies in the designated C&D recycling facilities program disposed of 220,000 tons of C&D waste, largely due to mixed materials and ineffective sorting. The purpose of this study was to understand the challenges faced by minority- and women-owned business enterprises (MWBEs), which is crucial for improving C&D waste diversion rates and supporting King County's equity goals. To achieve this goal, I conducted interviews with MWBE construction firm owners and identified four main challenges: 1) High cost of recycling, 2) Tension between profit and environmental responsibility, 3) Inconsistent information from local authorities, 4) Undertrained staff in sorting and managing C&D waste. To address these issues and support MWBEs in improving their C&D waste management practices, King County should consider providing financial incentives to offset recycling cost, promoting clear guidelines on C&D waste management methods, fostering collaboration between various entities and businesses, and offering training resources for MWBE employees. By focusing on the challenges faced by MWBEs, King County can help these businesses overcome barriers to effective C&D waste management, ultimately contributing to increased recycling and reuse rates across the county's construction industry while also supporting the goal of providing equitable services and opportunities for all.

**Unhoused People as Park Users: Their Perspectives and Needs.** Session A, Room 17

**Michael Lu**, Program on the Environment, University of Washington

**Site Supervisor:** David Lee, King County Parks

**Faculty Advisor:** Amy Hagopian, School of Public Health, University of Washington

Unhoused people are intensive users of parks in King County, but their needs are rarely considered by parks departments as they are not seen as “legitimate” users. There are also few studies on unhoused people and parks that focus on the perspectives of unhoused people themselves. This study tries to reposition unhoused people as park users in order to understand how and why unhoused people use parks, as well as what parks can do to improve their experience. Through my internship at King County Parks, I learned that unhoused park visitors sometimes come into conflict with park employees and that some park managers feel ill-equipped to serve unhoused people who frequent their park. To include perspectives of unhoused people, I surveyed ten unhoused people in south King County and analyzed their responses for themes. I found that they use parks to aid in socialization and safety, and because of hostility elsewhere. However, they still feared judgement by housed park users and harassment from police. The surveyed unhoused people also desired open, well-maintained public restrooms, showers, lockers, and other public amenities in parks. Though parks cannot solve King County’s housing crisis, these findings show that unhoused people are already using parks for a variety of reasons, and thus parks are in a unique position to provide important amenities that can improve people’s lives, if park departments are willing to reach out to them.

**Storytelling as Co-design: Reframing Participatory Design Methodologies and Frameworks for Indigenous-led Climate Justice Work.** Day 2

**Kort Maeda**, Program on the Environment, Visual Communication Design

**Site Supervisor:** Martha Groom, Doris Duke Conservation Scholars Program, School of Interdisciplinary Arts & Sciences, University of Washington

**Faculty Advisor:** Elizabeth Umbanhowar, Landscape Architecture, University of Washington

To effectively address the threats posed to coastal tribal communities by climate change, actions must be Indigenous-led. Conventional methods such as participatory design or co-design—both of which rely on public involvement in planning and design processes—often fall short of their stated objectives to incorporate the lived experiences of affected communities. These shortcomings are often due to unconscious bias, extractive research processes, or implicit or explicit colonial discourse around ‘planning expertise.’ By contrast, centering Indigenous knowledge systems is critical in advancing climate justice and fostering mutually beneficial partnerships. During my internship with the Quinault Indian Nation (QIN) Department of Cultural Resources, I helped facilitate the community-led and co-designed process for the Quinault Interpretive Trails project, a proposal for a series of interpretive trails and associated educational signage for the tribal community. The Interpretive Trails proposal is part of the larger, tribal-led relocation plan that involves moving the village of Taholah to higher ground in response to sea level rise. My research included a comparative study of the applied interpretive trails process with literature on Indigenous-led projects, emphasizing the importance of centering Traditional Ecological Knowledge (TEK). TEK includes storytelling, relationality, and collective ownership of both process and decision-making. The findings highlight that using storytelling as a community engagement method, as well as ensuring community ownership of data, is key to fostering reciprocal relationships. These elements are crucial in guiding how non-Indigenous agencies, practitioners, and researchers can work effectively with Indigenous communities on climate justice efforts that honor Indigenous sovereignty and knowledge systems.

**From Coastlines to Classrooms: Marine Mammals as a Wake-up Call for Transformative Environmental Education.** Day 2

**Ainsleigh McKinlay**, Program on the Environment, University of Washington

**Site Supervisor:** Aeriel Wauhob, Highline College MaST Center Aquarium

**Faculty Advisor:** Aaron J. Wirsing, Environmental and Forest Sciences

Within the last fifty years, wildlife populations have plummeted by nearly 69%, with marine mammals among some of the most affected due to climate change and human disturbances. Species like California sea lions and harbor seals play essential roles in marine ecosystems by regulating environmental balance and acting as indicators of ecological health. Despite the implementation of policies like the Marine Mammal Protection Act (MMPA) of 1972, acute threats of problems like ocean acidification, pollution, and entanglement persist. To investigate the root cause of these issues, I conducted a survey dissecting the relationship between public environmental knowledge and beliefs regarding the severity of human-driven environmental threats. Survey responses displayed a consistent relationship between indifference to severe environmental threats and evidence of low-quality or nonexistent environmental education. This strongly suggests that inadequate and inaccessible environmental education is a central factor to the perpetuation of environmental degradation. This is especially significant in Western societies where detachment from nature often discourages environmental responsibility. Although educational reform has been frequently called for, actionable solutions remain elusive. My research suggests that integrating outdoor-based environmental education into standard curriculum to foster a connection with nature from an early age is an appropriate solution. This approach can combat nature deficit disorder and encourage environmental stewardship at the same time, ultimately leading to better human and ecological health. By cultivating meaningful relationships with nature, we can empower a generation more committed to preserving ecosystems and nurturing our planet’s vital resources

**Why Save Something You Don’t Care About? - The Importance Of Outdoor Environmental Education Programs For Kids.** Session B, Room 13

**Haley Nelson**, Program on the Environment, University of Washington

**Site Supervisor:** Kaelie Spencer, Sound Salmon Solutions, Hatchery and Education Program Manager

**Faculty Advisor:** Tim Billo, Program on the Environment, University of Washington

As the disconnect between children and nature grows, fostering a connection to the environment has never been more crucial. This project explores the significance of Outdoor Environmental Education Programs (OEEPs) in fostering environmental stewardship among children. As the urgency for environmental awareness escalates, OEEPs offer immersive experiences that have been shown to positively impact children's learning, emotional well-being, and connection to nature. Grounded in an internship with Sound Salmon Solutions, the study involved facilitating educational activities focused on Western Washington's ecology. Student surveys were conducted through self-assessment with the questions modeling the Likert scale, which asked them to indicate their learning level, enjoyment level, and recollection of a lesson for each day of camp. Observational data on student behavior and engagement was collected to better understand the most beneficial lessons for children. Data collected through student surveys and observational assessments indicate that OEEPs enhance engagement and environmental consciousness. The findings reveal that interactive lessons lead to higher levels of understanding and enjoyment, with students expressing a greater affinity for nature as a result. This connection is critical; children who feel a bond with the environment are more likely to take action toward its preservation. OEEPs not only provide immediate educational benefits but also contribute to long-term environmental stewardship. The study advocates for the integration of OEEPs into public school curricula to cultivate a generation of environmentally responsible citizens who are equipped to tackle climate challenges.

**How the Collective Impact Framework can Inspire Meaningful Partnership and Rapidly Advance a Sustainable Future.** Day 2

**Mia Nelson**, Program of the Environment, University of Washington

**Site Supervisor:** Peter Donaldson, Sustainability Ambassadors

**Faculty Advisor:** Keith Harris, Department of Urban Design and Planning, University of Washington

Based on the belief that no single organization can solve complex issues on its own, the Collective Impact Framework (CIF) provides a set of guidelines for collaborators of different specialities and backgrounds to come together and work to solve complex issues like climate change collaboratively, and more effectively. The Sustainability Ambassadors (SA), a local environmental organization utilizes this framework throughout their operations. During my internship with them, I recognized that some principles of the framework are easier to utilize whereas others are more challenging. The purpose of this research is to understand what aspects of the CIF are most beneficial to Environmental organizations like the SA when engaging in collaborative processes. Additionally, aiming to identify obstacles to implementing the CIF and to develop potential strategies for overcoming them. To answer these questions, I spoke with core members of the SA, referenced critiques of the framework, and cross-examined implementations of the CIF across social sectors. What I found was that the CIF allows for the creation of more meaningful partnership and a closer sense of community, especially when utilized locally through an organization like the SA. This study reveals the limitations of the CIF as well as the opportunities for growth within the SA as an organization aiming to rapidly advance us towards a sustainable future. The CIF by itself is not a one size fits all solution to the climate crisis but can encourage actors of various backgrounds to come together and guide us towards effective climate solutions.

**Nature's Wealth: Quantifying Benefits of Nature Exposure and Promoting Equitable Access through Policy.** Session A, Room 10

**Chikita Nigam**, Program on the Environment, Political Science, University of Washington

**Site Supervisor:** Alicia Keefe, Centre for Nature and Health, EarthLab

**Faculty Advisor:** Michelle Johnson-Jennings, School of Public Health, School of Social Work, University of Washington

Rapid urbanization has widened the gap between people and nature, leading to a surge in health, economic, and societal challenges– all of which are compounded by escalating monetary costs associated with these issues. Despite the known benefits of nature exposure, inequitable access and limited policy support prevent many communities, especially marginalized ones, from enjoying these advantages. Additionally, while qualitative research on nature's benefits is abundant, studies quantifying economic benefits remain scarce. The purpose of this study was to investigate the quantifiable economic benefits and cost savings associated with nature exposure and identify effective policy interventions that promote equitable access to nature. To explore these topics, I conducted a comprehensive literature review during my internship at Nature and Health, an EarthLab organization, to assess cost savings–specifically those related to healthcare–associated with nature exposure. I also conducted interviews with policy experts and professors who proposed targeted interventions to address access barriers faced by marginalized communities. Findings revealed that not only does nature exposure lead to significant reductions in healthcare expenditures through improvements in health, it is also linked to building social capital by enhancing social cohesion. The interviews highlighted policy interventions that could effectively promote equitable nature access, such as promoting nature-based education, investing in green infrastructure, and encouraging collaborative governance with BIPOC communities. This study highlights that promoting equitable access to nature can lead to meaningful health improvements, monetary cost savings, and stronger communities, reinforcing the need for targeted and inclusive policy action.

**Keeping our Communities Fed: A Local Approach to Food System Planning.** Day 2

**Katie Olsen**, Program on the Environment, University of Washington

**Site Supervisor:** Shannon Bly, Whidbey Island Grown Cooperative

**Faculty Advisor:** Eli Wheat, Program on the Environment, University of Washington

Within our existing Food Systems (FS), positive feedback loops between agriculture and climate change accumulate strains on our environment and limitations to agricultural productivity. This compounds with social inequities that result in food insecurity and a lack of support for farmers and farmworkers. Food systems are integral to our daily lives, and with something as complex as food, with its many sectors, life cycles, and human roles, we should approach them with something equally complex. In this study with Whidbey Island Grown Cooperative, I aimed to assess how a local FS planning approach can foster climate resiliency and food security. Agriculture is rooted in place, and communities face unique challenges, thus a systems-thinking approach is most comprehensive at a local scale. I conducted a perception survey of Island County (IC) residents, interviewed IC farmers and FS actors, and created a Recommended Action Plan using IC as a case study. From this study, I found that increasing social capital, community engagement, organized action, and responding to localized challenges were among the strengths of climate-resilient and food-secure FS plans. In a changing climate, community ties, emergency preparation, and long-term planning are integral to mitigating and adapting to these changes and making the impacts as equitable as possible. Local FS Planning is a rising framework within Washington, as three counties have created frameworks within the last four years. By engaging our communities, planning in the long-term, and integrating Local FS planning state and nationwide, we can holistically address complex changes in complex systems.

**Top Barriers to Multifamily Composting: Matters of Accessibility & Justice.** Day 2

**Evelyn Osburn**, Program on the Environment & Department of Political Science

**Site Supervisor:** Heather Trim, Zero Waste Washington

**Faculty Advisor:** Meagan Carmack, Sub-National Environmental Politics, Department of Political Science, University of Washington

The issue of waste has never been an equitable one. Through my work, I investigated the barriers that families living in multifamily (MF) residences face to accessing, understanding, utilizing, and affording composting services across Washington state. As populations continue growing, so does the amount of waste generated contributing to greenhouse gas (GHG) emissions from organic waste in landfills. The purpose of this study was to reveal what barriers MF residents face so that legislators will write policy and legislation that can remove the barriers discovered in this study. To discover what barriers exist, I worked with Zero Waste Washington, a non-profit working to eliminate waste and increase sustainability through systematic and policy change. I performed over 100 surveys asking MF residents about their experiences with composting, compiled an excel sheet collecting variance in composting services across counties in WA state, and performed a literature review exploring composting and its relevance to urban life in WA. This work revealed that the biggest barriers faced are education, contamination, MF buildings not subscribing to composting services, and equity issues. As the world continues to develop and populations rise, we must be mindful of GHGs and alter our waste systems to combat global climate change. Composting can reduce GHG emissions significantly, while increasing sustainability and contributing to a circular economy. In order to increase our rates of composting, we must mandate composting at a statewide level and address and resolve the inherent issues of injustice and accessibility in the system as it is today.

**Designing For Sustainability: The Role Of A Reuse Commons Mall In Reducing Landfill Impact Through Community Engagement & Education.** Session A, Room 11

**Dhanush Pamarthi**, Program on the Environment, University of Washington

**Site Supervisor:** Josh Epstein, Seattle REconomy

**Faculty Advisor:** Keith Harris, Department of Urban Design & Planning, University of Washington

The sheer volume of waste generated annually underscores the severity of environmental problems. In the United States alone, over 250 million tons of waste are produced each year, with a significant portion ending up in landfills. This not only leads to the loss of valuable resources but also contributes to extensive land use and environmental degradation. Landfills are major sources of methane emissions, significantly contributing to global warming. Addressing these issues necessitates a shift towards a circular economy, where resources are reused and recycled to minimize waste. The Reuse Commons Mall is designed to tackle this challenge by promoting sustainable reuse practices. During my internship at Seattle REconomy, I focused on researching and identifying the key physical and spatial requirements for the Reuse Commons Mall and creating a design for the Reuse Commons Mall. Extensive literature review and analysis of successful models like ReTuna in Sweden provided critical insights into best practices for reuse malls. The design includes primary reuse stores such as a furniture bank and lumber yard on the ground floor, ensuring these essential areas are easily accessible. Additionally, eco-friendly features like energy-efficient lighting, water-saving systems, and recycling stations emphasize the commitment to sustainability. Key findings demonstrate that well-designed spaces can significantly reduce waste and support sustainable practices. The Reuse Commons Mall serves as a model for other communities, showcasing the environmental, economic, and social benefits of reuse initiatives. The project not only provides affordable goods and skill-building opportunities but also raises awareness about sustainability through educational outreach.

**What does it Take to Improve Recycling Contamination in the Medical Field?.** Session A, Room 12

**Caroline Pavloff**, Program on the Environment, University of Washington

**Site Supervisor:** Gabriella Henkels, UW Medicine Harborview Medical Center

**Faculty Advisor:** Gary Handwerk, Director, Program on the Environment, University of Washington

In a society where the population continues to rise and therefore more resources are being used, recycling is a key tool to minimize waste and includes benefits for the environment, public health, and the economy. In order to eliminate waste effectively, proper recycling practices are critical. Within the medical field, waste management is often an afterthought because of the significance of healthcare work. Recycling contamination is unfortunately a common issue within the medical field due to the differentiated types of materials present that can be potentially hazardous. Another common cause of recycling contamination includes improper waste disposal and sorting habits. The purpose of this study was to find the best strategies to eliminate recycling contamination within the medical field in order to boost sustainable practices. To accomplish this task, I completed visual waste audits at UW Medicine Harborview Medical Center to understand the severity of recycling contamination present. From there, I conducted literature reviews and surveys of hospital staff in order to discover what would work best at Harborview to minimize recycling contamination as much as possible. Findings demonstrated that increased signage, proper bin placement education and training of employees, implementing additional informational signage, and creating a recycling tool kit were all effective strategies in minimizing recycling contamination. Through implementing these strategies, medical centers can increase cost savings, improve environmental practices, and create an overall good reputation for the medical center.

**What's In a Name? Themes for Addressing Racist Language in Natural History Collections.** Day 2

**Nile Peoples**, Program on the Environment, University of Washington

**Site Supervisor:** David Giblin, University of Washington Herbarium (Burke Museum of Natural History)

**Faculty Advisor:** Erin Gilbert, Department of English, University of Washington

The natural sciences are burdened with legacies of racism that persist today—these legacies can be especially prevalent in natural history collections (NHCs), collections of preserved biological specimens or cultural artifacts for research and educational use. As historical archives, NHCs may hold specimen data containing racist or pejorative language, particularly among location and taxonomic data. The purpose of this project is to develop a series of recommendations for handling racist language in NHCs informed by the needs and preferences of NHC stakeholders. To accomplish this, I carried out interviews with 5 NHC stakeholders among varying collections and reviewed relevant literature on decolonial collections and scientific practice. These recommendations guided my internship with the UW Herbarium, where I tracked and updated specimen data records containing racist language. Interviewees outlined 7 major guiding themes for how to best address pejorative language, and unanimously expressed desire to see such language addressed. This finding sharpy contrasts with related literature, in which biologists and archivists are not in agreement on whether or not racist language in collections and taxa should be addressed at all. The findings of this study reveal that ongoing discourse about anti-racist scientific and collections practice may not accurately represent the needs of NHC stakeholders. Furthermore, the themes outlined by participants highlight a need for interventions beyond accepted collections practice or those proposed in relevant literature.

**Building Green Cities: Native Plant Restoration in Urban Environments.**

**Tess Petrillo**, Program on the Environment, University of Washington

**Site Supervisor:** Grace Stiller, Weed Warriors

**Faculty Advisor:** Lubna Alzaroo, Program on the Environment, University of Washington

With this project I address the issues of ecological equity and habitat fragmentation. Ecological equity refers to green space accessibility and environmental health disparities while habitat fragmentation refers to the ways that industrialization has altered the landscape and made it less suitable for native flora and fauna. For a solution based around promoting native plant production in cities, I determined that restoration in urban spaces should be widespread and the responsibility of restoration should be shifted from government agencies or nonprofits to communities. In order to create a tool for community members to organize green space projects, I sought to answer the question: What are the best practices for native plant restoration and can they be applied in urban environments? For my internship I worked in a native plant garden and helped restore a wetland. I interned with Weed Warriors where I recorded best restoration practices from promoting native plant production and weeding invasive species. Additionally, I conducted my own personal research where I interviewed eight different professionals specializing in native plant reintroduction to create a green space project guide. I composed a 50 page manual detailing the processes necessitated by green space projects such as land acquisition, landscape design, considering ecological interactions, community collaboration, funding and volunteer recruitment. This manual can inform future planning of green space projects to promote community care and ecological resilience. They highlight the aspects of current green space creation and provide solutions for how green spaces can be produced more productively and successfully.

**Briding Divides: Holistic Approaches to Managing Salmon and Forest Ecosystems Amidst Increasing Wildfires.** Day 2

**Nina Pursai**, Program on the Environment, University of Washington

**Site Supervisor:** Ailene Ettinger and Michele Buonanduci, The Nature Conservancy

**Faculty Advisor:** Tim Billo, Program on the Environment, University of Washington

In Washington State, salmon have been declining due to various anthropogenic causes, including commercial fishing, dams, and habitat degradation. In tandem, wildfires have been increasing in severity, frequency, and intensity due to historical fire suppression, warmer temperatures, and shorter snowpack seasons. There is vast research on the biophysical effects of wildfires on salmon and riparian ecosystems (stream ecosystems), but not on the linkages between salmon, fire, and the socio-cultural landscape. In particular, there should be a greater consideration of Tribal fire management. The aim of this study was to analyze what management practices exist between forest and salmon managers, and find where there could be improvements to create more holistic management. To accomplish this task, I interned with The Nature Conservancy and read extensive literature on the effects of wildfires on salmon in WA state, interviewed eight experts in this field (i.e. salmon biologists, forest ecologists, Tribal watershed managers, and professors on geomorphology and forestry), and created a systems map that represents the interactions between different rights holders in this realm. I found that salmon are generally well-adapted to wildfires, as wildfires add complexity to watersheds in the long-term, as well as add in-stream wood which provides food and shelter for salmon. By educating others on the benefits of wildfire, opening dialogue between forest and salmon managers through councils and funding, and reintroducing cultural burns on a landscape scale, managers can control the intensity, frequency, and severity of fires, which will in turn help watersheds, salmon, and people.

**Seas of Change: How Baseline Data of Indicator Species Will Impact Future Marine Research.** Day 2

**Anika Remmers Jansen**, Program on the Environment, University of Washington

**Site Supervisor:** Paul McElhany, National Oceanic and Atmospheric Administration (NOAA)

**Faculty Advisor:** Jennifer Ruesink, Department of Biology, University of Washington

The state of the climate is declining at an exponential rate. One of the many consequences is change in ocean characteristics due to the absorption of carbon dioxide. In order to gain visibility into the future of the climate crisis and its consequences, indicator species can be examined for early notice of ecosystem health changes. Data about the baseline of indicator species is critical to providing a framework for further research. Shelled organisms are among the first to show signs of stress due to their bicarbonate composition of their shells, and therefore make a strong indicator species. This paper focuses on the data and implications from a Pacific oyster pilot study conducted at NOAA Northwest Fisheries Science Center as a significant example of baseline data playing a crucial role in research. It is crucial to understand size-specific physiology traits of juvenile oysters before predicting what may happen as a consequence of global climate change. Filling in these gaps of knowledge in research highlights the importance of assessing factors influencing climate situations in advance, and provide an important framework for research in climate science and climate mitigation.

**Is the Perspective Changing; Assessing the Relationship between Young Christians and the Environment.** Session B, Room 14

**Christina Rhoades**, Program on the Environment, University of Washington

**Site Supervisor:** Mark Kaptein, Malibu Club a Young Life Camp

**Faculty Advisor:** Sarah Hemmett, Academic Adviser, University of Washington

Historically, people with Christian morals have taken a dominating perspective towards nature which separated them from the connection between humanity and the environment. Although there have been shifts in western culture towards needing to care for and protect the natural world, many older Christians still hold conservative ideals. The purpose of this study is to engage in learning the accuracy of generalized statements regarding Christian perspectives of nature and to learn if the perspective of younger Christians is environmentally friendlier than older Christians. Through my role as landscaping intern at Malibu Club, a Young Life Camp, where I taught three groups of student volunteers about the environment through hands on work, I was able to survey 79 college-aged students, ages 17-24 years old who identify as Christian, about their passion, care, and perspective of the environment. When asked how concerned students were about the environment, 70% of people responded that they were either concerned or very concerned about the environment, and when asked about how passionate they were about the environment, 84% said they were either passionate or very passionate about nature. This recognizes that young Christians see the hurting environment and care about change. Broader than the perspectives of young Christians, the results also display the need for environmental education and awareness for all people, specifically all youth, no matter if they’re religious or not, and no matter the ideals held by their parental figures. There’s hope for conversations with young people and for overall change in environmental endeavors.

**Bark & Ambrosia Beetle Dynamics: A New Lens for Forest Management Practices.** Day 2

**Abigail Rocke**, Program on the Environment, University of Washington

**Site Supervisor:** Micaela Petrini, Great Peninsula Conservancy

**Faculty Advisor:** Patrick Tobin, School of Environmental and Forest Sciences, University of Washington

From 2021 to 2024, Great Peninsula Conservancy (GPC) girdled 800 trees on 8 preserves, aiming to improve wildlife habitat in the form of standing and downed dead wood. The goal of our study was to assess the efficacy of these forest management practices in order to provide a methodology to use in the future and to recommend to other organizations that may want to do similar work with habitat creation. In this study, we visited all 8 of these preserves with staff to collect data on the efficacy of their methods, such as girdle measurements and tree species. The research we did for our internship did not reap many significant conclusions for all our efforts, inconsistent with past and current literature. Our tedious measurements of tree girdles resulted in 2 out of 8 significant variables. Poor sample distributions, no control variable, and too many measurables contributed to statistically insignificant results. I did, however, do my own research on an additional variable. I researched a tiny insect in the families Scolytidae and Platypodidae known as bark and ambrosia beetles. Measuring for beetle presence in the trees we surveyed resulted in a few important, significant ideas, and more importantly, lead to more questions. I found statistical trends with DSH (Diameter at Standardized Height), time since girdle, and tree health correlated with beetle presence. Engaging with existing forest systems, interconnecting relationships, and interdisciplinary ideas, can result in more holistic, interesting, and useful, information than minute anthropogenic measurements alone.

**Oysters in Acidic Waters: Pioneering Research in Marine Carbon Dioxide Removal and Pacific Oysters (Crassostrea gigas).** Session A, Room 13

**Talia Russom**, Program on the Environment, University of Washington

**Site Supervisor:** Paul McElhany, National Oceanic and Atmospheric Administration (NOAA)

**Faculty Advisor:** Frankie Pavia, School of Oceanography, University of Washington

Marine carbon dioxide removal (mCDR) is a climate solution strategy with varying methods that aim to remove excess carbon dioxide from the atmosphere through marine removal. Much of the atmospheric carbon dioxide is stored in the ocean, creating issues such as ocean acidification. However, before mCDR can be implemented, more environmental impact research must be done. Pacific oysters are one of many species that would be impacted. The purpose of this research is to find impacts of variable pH on the survival and growth of Pacific oysters. To accomplish this task, I interned at NOAA’s ocean acidification lab. I reared Pacific oyster seeds in experimental trials that involved controlled laboratory environments with water at various pH levels to find impacts on juvenile oyster growth. I tracked the growth through microscope photography and photo analysis in software such as ImageJ and RStudio in order to create visuals and find results. These results can help find significant correlations between the growth rates of the juvenile oysters and varying levels of pH, linking the risks of mCDR’s effectiveness to the potential impacts. Usage of mCDR has the potential to be a very valuable method in combating climate change, especially in the local Puget Sound, where ocean acidification is a major concern. Results showing significant impact on the juvenile growth of Pacific oysters from our lab can provide more baseline understanding for future research in the field.

**Achieving a Sustainable Future Through Design & Planning.** Session A, Room 14

**Jack Ryan**, Program on the Environment, University of Washington

**Site Supervisor:** Shahrzad Tehrani, Sustainability, University of Washington-Bothell, Stephan Classen, Sustainability, Cascadia College

**Faculty Advisor:** Ken Yocom, Landscape Architecture, College of the Built Environments, University of Washington

Facing climate change and a myriad of other environmental issues, humans must find solutions to reduce their impact on the environment. Ecological design and planning attempts to achieve this in the realm of green spaces and built environments. This study sought to understand the best practices for applying ecological design & planning, and how it may be applied locally. In my internship with UW Bothell/Cascadia College sustainability, I was tasked with creating a sustainability podcast miniseries. I used podcast interviews with expert guests to gain more detailed information about ecological design and planning within a local context. To further my research, I reviewed the academic literature to gain a better understanding of the current state and history of the discipline. My findings were that designers and planners should utilize a holistic approach that not only uses scientific data to ensure ecological sustainability, but also considers the cultural and social impacts of their project. This means having a complete understanding of the ecological facts of a site as well as an understanding of the history of a site as it relates to the surrounding community and past use of a site. I found that the utilization of effective ecological design has the potential to provide a wide range of services and benefits to both the environment and the communities that use these spaces. The podcast was also intended to engage both the academic/university community and the greater public with an emerging discipline in sustainability.

**Citizen Science: Transforming Community Members into Environmental Educators.** Session B, Room 15

**Annie Schlanger**, Program on the Environment, Department of Political Science, University of Washington

**Site Supervisor:** Ally Galiotto, Pacific Northwest Crab Research Group (PCRG)

**Faculty Advisor:** Tim Billo, Program on the Environment, University of Washington

Citizen science fills data gaps by allowing community volunteers to conduct research. These volunteers inherently become experts in the field they participate in. Although these individuals benefit from being involved in citizen science, we need widespread awareness of environmental issues in communities. The majority of communities are under-informed on local environmental issues that will impact them directly as climate change worsens. The aim of this study was to analyze the potential of citizen science to train community members to become environmental educators, not just scientists. Can citizen scientists create a ripple effect of environmental awareness and stewardship in their communities? To answer this question, I surveyed my peers at the PCRG larval Dungeness crab monitoring project, and conducted eight interviews with outreach coordinators of local community science networks. I discovered the distinction between external and internal outreach: recruitment and campaigning versus participant communications. I concluded that internal outreach must be prioritized to meet the needs of volunteers. External outreach goals would inherently be supported by the work of volunteers if they are given the tools needed to be educators. Through my time at PCRG, I developed a rack card to be distributed to all sites within the program. This would better prepare volunteers for educational opportunities with the public. Not only can citizen science fill research gaps, but it also has the potential to fill gaps in education. If networks equip their members with tools to teach others, greater place-based environmental education would occur, fostering informed and passionate environmental stewards

**Fishing Gear Modifications to Reduce the Bycatch of Green Sturgeon (Acipenser medirostris).** Session A, Room 15

**Daniele Scroggins**, Program on the Environment, University of Washington

**Site Supervisor:** Susan Wang, U.S. National Oceanic and Atmospheric Administration Fisheries, West Coast Region

**Faculty Advisor:** Andre Punt, School of Aquatic and Fishery Sciences, University of Washington

The Southern Distinct Population of green sturgeon (Acipenser medirostris) is a species of fish listed as threatened under the U.S. Endangered Species Act. This population of green sturgeon resides off the coast of Half Moon Bay and San Francisco Bay, and they experience deaths due to fishing bycatch. Because of the green sturgeon's status under the U.S. Endangered Species Act, any death can affect the recovery status of the Southern Distinct Population. During my internship with NOAA Fisheries, I analyzed footage of green sturgeon, California halibut (Paralichthys californicus), and other flatfish. I noted their interactions with bottom trawl fishing nets, including their behavioral response to the fishing net, and body length.The purpose of this study was to find applicable fishing gear modifications that could exclude green sturgeon from nets while retaining fishermen’s target fish, flatfish species.To accomplish this task, I conducted literature reviews of scholarly articles regarding green sturgeon behavior and fishing gear modifications that focused on retaining flatfish while excluding non-target fish. Studies from my literature review suggest that a selective sorting grid can help retain target flatfish and reduce the bycatch of non-target fish. However, this selective sorting grid has not been specifically tested for reducing green sturgeon bycatch and would need further data to determine if it could reduce green sturgeon bycatch. For future research, I recommend that testing trials be conducted in green sturgeon habitats using a selective sorting grid to quantify if this fishing gear modification can reduce green sturgeon bycatch.

**Integrating Environmental Justice into NGOs: The Challenges and Opportunities.** Day 2

**Natasha Shafer**, Program on the Environment, University of Washington

**Site Supervisor:** Emilene Castillo, Partner In Employment

**Faculty Advisor:** Zackery Thill, Climate Impacts Group, University of Washington

Environmental degradation is a global challenge yet its impacts are disproportionately experienced particularly by the immigrant community as social inequality limits capacity to mitigate harms. These communities challenged by language barriers, access to stable jobs, and affordable housing and health care are more likely to be located in sacrifice zones and experience higher rates of associated health impacts. This compounds existing inequalities increasing the community's vulnerability to pollution and climate change, hindering efforts to build community resilience if unaddressed. Therefore, there is a need for organizations that work with marginalized populations to adopt an environmental justice (EJ) framework. Thus, this study evaluates the opportunities and challenges of integrating an EJ framework into organizations that work with marginalized communities to mitigate the particular environmental challenges faced. This line of inquiry was accomplished through the development, integration, and evaluation of an EJ curriculum into Partner In Employment (PIE) paired with a literature analysis on the adoption of EJ into social work practice. Findings show that an EJ approach strengthens community-organization relationships, improves environment and community health, and empowers communities, while limited knowledge and resources, poor communication, and unclear objectives hinder integration. Understanding the opportunities and challenges of EJ serves to inform the best practices and methods for integration which includes a recognition justice approach, community-based practices, and environmental education. These practices function as an incentive for organizations to adopt an EJ approach which allows organizations to fully meet the needs of the community in addressing environmental inequalities and building community self-resilience.

**Bridging the Gap to Nature: Finding Solutions to Green Space Access Inequality.** Session B, Room 16

**Chloe Stafford**, Program on the Environment, University of Washington

**Site Supervisor:** Jane Seibel, Director of Operations and Community Partnerships, The Nature Project

**Faculty Advisor:** Fred Pursell, Foster School of Business, University of Washington

The positive impact of time spent in nature on youth mental and physical health is well-documented, yet all communities do not have equitable access to natural areas. Furthermore, disparities in green space access are often correlated with demographic factors, creating barriers to access to nature, particularly in underserved communities. This study investigates the effectiveness of short-term immersive nature workshops in mitigating these disparities and enhancing youth development, and how these workshops can be improved. Thus, this study aims to establish the connection between green space exposure and youth health outcomes, explore green space access as an environmental justice issue, and evaluate the effectiveness of brief nature workshops, specifically those offered by The Nature Project (TNP). To accomplish this task, I completed a literature review and analyzed findings from TNP participant surveys. Participant survey results indicated improvements in positive identity, self-management, and social skills, though challenges remain in fostering a deeper connection to nature and environmental support. The results of this study highlight the potential of short-term interventions to provide significant benefits to youth despite ongoing barriers to access. However, the limited sample size and response rate suggest the need for further research to validate these findings and explore long-term impacts. Short-term workshops could be more effective if there is a greater focus on environmental education within short-term workshops, and more widespread collaboration with community centers to improve transportation to workshops, recognition of the organization’s mission, and community support.

**Social Sustainability - The Unmapped Pillar at the University of Washington.** Session B, Room 17

**Kellie Telis**, Program on the Environment, University of Washington

**Site Supervisor:** Daimon Eklund, UW Sustainability

**Faculty Advisor:** Dr. Kristi Straus, Program on the Environment, University of Washington

The sustainability map at the University of Washington has allowed students, faculty, staff, and visitors to learn about the sustainable resources available to them, as well as what our campus contributes to the overall narrative of sustainability throughout our communities. However, the sustainability map has not been updated in over a decade leaving users without an accurate and relevant list of sustainability resources that can be found across our sizable campus. The purpose of this research project was to collaborate with the Office of Sustainability at the UW to update the content on the map so its relevance increases for contemporary users. In order to achieve this, I engaged in several forms of research, including data mining and hosting a focus group, to maximize my results so they reflect the needs of a diverse student body. Findings show that the current sustainability map at the University of Washington inadequately reflects the needs of current users as it lacks social sustainability resources that exist for students, faculty, and staff across our campus. Social sustainability is also known as the “people” category in the three P’s of sustainability: people, planet, and profit. This means that displaying this content targets the needs of students with the goal of making happier, healthier, and sustainable lives more accessible than it once was. Sustainability is an ever-changing field that must adapt to contemporary generations; mapping is an excellent way to ensure sustainability remains accessible to everyone.

**Toxic Tech: Washington's Path to a Sustainable Electronics Recycling System.** Session A, Room 16

**Elena Vega de Soto**, Program on the Environment, Geography, University of Washington

**Site Supervisor:** Hannah Scholes and Adrian Tan, King County Solid Waste Division

**Faculty Advisor:** Megan Ybarra, Department of Communication, University of California San Diego

Over 44,000 tons of electronic waste were produced in Washington in 2021. E-waste contains materials that can be recycled, but the complexity and high cost of recycling processes often prevent electronic waste from being properly managed. The alternatives, like disposal in landfills or exportation abroad, although cheaper, are environmentally, economically and socially harmful. More environmentally sound solutions and systems must be implemented in Washington. The aim of this study was to analyze the challenges and opportunities to improve Washington’s electronic waste management systems. Through my internship with the King County Solid Waste Division, I assessed drop-off recycling sites for e-waste and identified areas for improvement to increase consumer usage. Additionally, I conducted a literature review and interviews with WA experts on waste management to learn how to improve in-state recycling systems and reduce export of waste abroad. Although the main environmental justice implications lie abroad on the communities importing these hazardous materials, this issue can be addressed domestically in two main ways. Firstly, improvement of the current Extended Producer Responsibility and Product Stewardship programs (E-Cycle WA) to increase recycling rates and divert as much electrical waste as possible from landfills. Secondly, a fostered second-hand market through regulation requiring new electronics to contain a percentage of recycled materials. Implementing these changes will have positive economic, environmental, and social implications by creating a more sustainable circular economy, reducing the harmful consequences of pollution in landfills and waste exportation, and supporting local recycling infrastructure.

**Localizing the Sustainable Development Goals: Opportunities and Challenges in the Arctic Region.** Session A, Room 18

**Amber Wang**, Program on the Environment, Jackson School of International Studies, University of Washington

**Site Supervisor:** Shahrzad Tehrani and Stephan Classen, UW Bothell/Cascadia College

**Faculty Advisor:** Jason Young, UW Jackson School of International Studies, University of Washington

As the Arctic changes at a rapid pace in both climate and developments, sustainability also became the unavoidable question that the region needed to consider. However, numerous research has highlighted the limited opportunities for Arctic Indigenous populations in communication, scientific research, and decision-making processes related to sustainable economic development and environmental preservation. Thus, this study aimed to explore the opportunities and challenges of applying the 17 Sustainable Development Goals (SDGs) as the guidelines to the Arctic context. The SDGs were established by the United Nations in 2016 to promote "peace and prosperity for people and the planet". With my internship experience hosting the podcast miniseries Aims on Ice - Achieving Sustainable Development Goals in the Arctic Ocean with UW Bothell and Cascadia College, I conducted several interviews with experts from Arctic Studies, including professionals from the Arctic Council and Polar Bear International. These discussions provided inspirations in a variety of categories, including Arctic landscapes, biodiversity, natural resource management and digital revolution on social media. As a result, contradictions are oftentimes found among the SDGs, referring to goals such as Economic Growth and Clean Energy, Quality Education and Gender Equality, especially when concerning the connections with nature. The podcast and research both highlight the necessity of designing effective environmental systems and policies that address the convergences and divergences within and beyond the Arctic region. Recognizing the importance of localization of the SDGs enhanced regional and international collaboration toward a more sustainable and achievable plan.

**Urban Agriculture: A Method for Reducing Food Insecurity in Seattle's Food Deserts.** Day 2

**Zoe Warren**, Program on the Environment, University of Washington

**Site Supervisor:** Riley Wilmart, City Fruit

**Faculty Advisor:** Jessie Seiler, Department of Epidemiology, University of Washington

Access to nutritious food is essential for survival. Yet, a significant portion of the global population, including over 10% of adults in Seattle and 26% of University of Washington students, struggle with food insecurity. This issue is particularly pronounced in minority communities and is exacerbated by the presence of food deserts – areas lacking local grocery stores. This study aimed to answer a critical question: could urban agriculture be a viable solution for alleviating food insecurity in Seattle’s food deserts? During my internship with City Fruit, I gathered observational data on the impact of food insecurity on Seattle residents and collected additional data independently. Using the USDA Food Research Atlas, I identified food deserts and analyzed their demographics. I also used GIS mapping and public data to assess the available open space for urban agriculture within these areas and calculated the necessary yields of fruits and vegetables to support food-insecure residents. My findings indicate that sufficient space exists to meet 75% of the fruit and vegetable needs of the approximately 103,000 residents in Seattle’s food deserts. While implementing such a project would present challenges, it could reduce grocery bills for food desert residents by 15%, foster community connections, create opportunities for technological innovation, improve air quality, and mitigate the urban heat island effect for the entire city. This research underscores the potential of urban agriculture to combat food insecurity and promote sustainability in urban environments, offering a promising solution to a pressing issue.

**Breaking Barriers and Building Bridges for Youth to Enter Natural Resource Careers.** Session B, Room 18

**Amy Whitham**, Program on the Environment, University of Washington

**Site Supervisor:** Clare Sobetski, Washington State Department of Natural Resources

**Faculty Advisor:** Tim Billo, Program on the Environment, University of Washington

The natural resource management (NRM) workforce has historically been dominated by White men. Today, natural resources is among the least diverse environmental sector, with ​​women and BIPOC individuals extremely underrepresented. The purpose of this study is to understand why underrepresented youth who have an interest in natural resources aren't pursuing it as a career. To accomplish this, I interned at the Washington State Department of Natural Resources where I surveyed and interviewed primarily middle-to-high school students in environmental education programs. I also conducted a literature review on barriers and diversity in natural resources. My findings indicate four primary barriers: (1) stereotypes and misconceptions as to what NRM jobs are; (2) unpaid or low wage internships and entry-level positions; (3) racial and gender discrimination; and (4) a lack of underrepresented individuals. To address the first barrier in my internship, I created career pathway graphics and career profile cards to educate youth on the variety of NRM jobs and dismantle the belief that NRM jobs are primarily outdoor jobs. For the second barrier, I encourage agencies and organizations to pay appropriately because opportunities such as unpaid internships discriminate against students of a lower socioeconomic status. To foster belonging, agencies and organizations must acknowledge and respect the voices of underrepresented members. Lastly, highlighting the work of said underrepresented NRM workers is crucial so youth can envision themselves in those positions.

**Are our Green Spaces Adequate? The Impact of Nature Immersion on Emotional Well-Being.** Session A, Room 19

**Jaelyn Yanni**, Program on the Environment, University of Washington

**Site Supervisor:** Lisa Hiruki-Raring, NOAA Fisheries, Alaska Fisheries Science Center

**Faculty Advisor:** Josh Lawler, School of Environmental and Forest Sciences, University of Washington, Tim Billo, Program on the Environment, University of Washington

Urban city populations around the world are growing while rates of depression and anxiety rise along with them. The purpose of this study was to build upon previous work done to determine if nature can cause positive well-being. Time spent immersed in naturalistic areas can create better emotional well-being outcomes for urbanites. I aim to increase access to green spaces for urban communities by understanding the complexity and importance of their impact (ie. systems thinking). To accomplish this, I used my internship with NOAA Fisheries and the Alaska Fisheries Science Center (AFSC) to gain experience on how to educate others on complex topics while assisting with NOAA Science Camp. I sent a series of four Positive And Negative Affect Scale (PANAS) surveys with 11 urbanite participants into the Cascades to see how nine days in the wilderness changed their emotional well-being positively or negatively over time, including journal responses after their return from the wilderness. Findings show that more time spent in nature can cause positive mental well-being outcomes, like feelings of peacefulness, fulfillment and a decrease in negative emotional outcomes. This means that communities living near vacant or underutilized spaces (ie. greyfields) who feel negative emotional outcomes are less likely to be able to use the Earth’s natural paths to overcome them. A lack of education and long-term access to green spaces creates a missed opportunity, especially to those living in urban areas. Adequate green spaces are a key to reducing negative mental well-being with the right application.