



Sustainable Action Fund Grant Program

MEDIUM GRANT APPLICATION

2018-19

This application is for requests from \$5,001 up to \$35,000. For detailed application instructions and further information about the program, please refer the *Medium Grant Application Toolkit* located on our website at www.wvu.edu/sustain/programs/sejf/apply/.

Submit completed application by delivering a hard copy and emailing a scanned version (including signatures) to the SEJF Grant Program Manager Johnathan Riopelle at Viking Commons Room 24. Applications must be provided in both forms in order to be reviewed. Email: johnathan.riopelle@wwu.edu.

SECTION 1: Project Concept.

a. **Project Title:** Science Positions for Change: Diversity and Undergraduate Research Positions Hosted by the Coastal Communities and Ecology Lab, Huxley College of the Environment.

b. **Describe your proposed project:**

The Coastal Communities and Ecology Lab is proud to host the creation of several undergraduate research positions, with an emphasis on **providing high impact research based experiences for undergraduates from underrepresented groups within STEM fields.**

We at the Coastal Communities and Ecology Lab (PI Hatch) are proposing the creation of one undergraduate internship-style position for summer 2019 and three undergraduate laboratory

positions for undergraduate students which self-identify as an underrepresented group within STEM (Sciences, Technology, Engineering, and Math) fields. Selected undergraduates can be from any STEM discipline given they have a familiarity with biology, ecology, marine science, and/or chemistry. The undergraduate positions will involve introductory assignments within a largely interdisciplinary field project, hosted by the Coastal Communities and Ecology lab, which include ecological, oceanographic, and chemical components.

The project involves working on traditional First Nations mariculture food systems within the Gulf Islands in Canada. Field-based scientific research creates financial barriers in the form of travel and field equipment which disproportionately affects underrepresented peoples. We will aim to cover both of those, through a field stipend and a travel allowance, for the summer portion of the project. The samples and data collected from the summer position will be analyzed by quarterly students in the created positions, and will involve chemical, oceanographical, and biological methodologies. The project involves the analysis of clam garden networks along Quadra Island, B.C., Canada and potential to work alongside coastal First Nations, professors, and graduate students, whom will guide the students to improve methods and learn directly in a field-based project.

Ethics Statement: This project will involve live collection and dissection of bivalves, specifically littleneck clam (*Leukoma staminea*). We will be collecting a total of 200 littleneck clams, which will be promptly frozen. Bivalves are not required to be anesthetized prior to euthanasia, under the Institutional Animal Care and Use Committee guidelines, and fall under the guidelines for invertebrates. Our methodology uses each portion of the animal for our analysis, including shell, entirety of tissues, and limits the need to over-collect as would be required for traditional dietary analysis involving stomach dissections.

Any concerns can be addressed directly to: CruzO@wwu.edu.

c. Who is the intended audience?

This project intends to provide supportive inclusive and equitable narratives to all students in STEM, showcasing how increasing opportunities for underrepresented groups benefits both sciences and communities directly. It directly showcases how creating opportunities for marginalized groups leads to positive research outcomes, opportunities for learning, and supports progress within communities as a whole. Undergraduate students will have the opportunity to hear about lessons learned by hired

students, hear presentations about the importance of breaking systematic barriers in sciences such as monetary barriers in field ecology, and have access to student experiences through presentations in Scholar's week.

d. How many students will be affected?

Undergraduate students that self-identify as a marginalized group in sciences, and that are brought into the project, will gain valuable interdisciplinary skills within a marine-based project on First Nations food systems along the Pacific Northwest Coast. The project will be working on clam gardens, a modified beach habitat built intentionally to produce incredibly productive clam beaches for harvest and cultural practices by various First Nations from Alaska to Washington. Students will gain intertidal identification skills, oceanography skills, analytical chemistry skills, and field ecology skills which will be directly beneficial to career paths after completion of their undergraduate programs.

The student body of Western Washington University will benefit, since this project will aim to leave a model that can be applied to create undergraduate research opportunities anywhere throughout Western, by both faculty and graduate students who wish to increase undergraduate involvement with research in the university. The model will be showcased in Scholar's week, by Octavio Cruz, and will discuss how to monitor student progress, how to increase diversity in hiring, and how to manage an inclusive laboratory/field environment throughout sciences, and the interplay between inclusivity and creativity in sciences.

Undergraduate employees in this project will get to create a research report at the end of their term, about experiences and skills learned, and will be expected to showcase results to both Huxley College of the Environment and Western Washington University during Scholar's week. There are additional opportunities to showcase the research completed by undergraduate students in this project through the 2019 Society for the Advancement of Chicanos and Native Americans in Science conference in Honolulu to a global audience of scientists from diverse and underrepresented backgrounds.

Approximate reach will be 200-1000 students through presentations and poster sessions at conferences. Online reports will be made available to the entire student population of Western Washington University, as well as undergraduate resource model resources will be made available

online through the Coastal Communities and Ecology lab website (<https://wp.wvu.edu/hatchlab/>). Associated club presentations will increase outreach from hired students discussing presentations and workterm experiences, with an approximate 30-50 students being reached through club presentations.

e. How long will the project last?

The project will last for an estimated 1-year period. There will be 4 sections, with a summer work section of 3.5 months, and quarterly sections throughout the 2019/2020 school period.

SECTION 2: Project Goals.

a. What are the goals and desired outcomes of your project?

Sustainability benefits directly from the inclusion of all groups, and increasing diversity directly increases creativity, ingenuity, and perspectives which are vital for responsible growth within STEM fields. This project will create opportunities for diversity, inclusion, and growth within Huxley College of the Environment, as well as include a wide variety of experiences through interdisciplinary scientific work.

The purpose of this project is to include undergraduate students from underrepresented demographics in STEM within a field-based ecological project. Underrepresented demographics will be defined here as historically marginalized members in STEM due to Age, Disability, Ethnicity/National Origin, Family status, Gender, Gender Identity or expression, Generation, Language, Finances, Organization/Societal origin and status, Race, Religion, Sexual Orientation, Thinking/Learning Styles, Veteran Status, Citizenship, and Culture. The main purposes of this project are **(1) to facilitate undergraduate research students from underrepresented groups to participate and contribute to active research projects in STEM, and (2) utilize a mentorship-based approach by graduate students and faculty from underrepresented groups to enhance the experience of the research experiences of undergraduate students who participate.**

b. How will your project positively impact sustainability at Western?

This project aims to positively impact sustainability by:

- Increasing **inclusivity, diversity, and equity** within Huxley College of the Environment, in accordance with the Huxley College Diversity Inclusion Plan
- **Creating a nested-model internship program** that furthers the education and retention of underrepresented students within STEM at Huxley College of the Environment
- Presenting **progress data within Huxley College of the Environment for students using self-monitoring check-in questionnaires for students** selected for the created internship positions.
- **Exemplifying strong diversity, equity, and inclusion standards** within an interdisciplinary scientific setting, and **establish a model which can be applied to future diversity initiatives within higher education**
- Creating opportunities for undergraduate students to learn valuable skills working on an inclusive, community-based scientific research project
- Increasing connections for undergraduates within Western Washington University, and create experiences within field ecology, scientific research, and environmental sciences as a whole.

c. How does your project tie into broader campus sustainability goals or initiatives, including Western's Sustainable Action Plan?

Within Huxley, this project directly falls into Section 7.3 of the Huxley College Diversity Inclusion Plan (Student, Staff, and Faculty Recruitment, Retention, and Excellence) which states the need to develop pathway programs for underrepresented minorities, and provide adequate funding opportunities for underrepresented groups in order to increase retention, recruitment and excellence. It supports the plan's future development (7.3.2 Years 2-3) which states the need for evaluation of progress on actions occurring in this section for inclusivity and retention efforts for students.

Within the Sustainable Action Plan, this project directly addresses two pillars of sustainability, which are environmental stewardship and social progress. By creating work positions for underrepresented minorities in sciences, we can increase diversity, equal opportunities in STEM, promote stronger identities for different cultures in STEM, and encourage development of socio-environmental projects. Stewarding students within environmental management and research creates a sense of connection to the environment which we live, and our community-based marine ecology project

provides a strong scientific base to a socio-environmental project which has the potential to inform various underprivileged communities on interacting effects within their sovereign food systems.

SECTION 3: Project Participants.

a. Team Information: A team should consist of two to five individuals, including the advisor.

Team Advisor Information (Faculty or Staff) Student proposals must include a staff or faculty advisor. The role of the advisor is to provide assistance and guidance to the team during the development, implementation, and post-implementation stages of the proposal process.

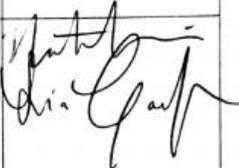
Team Lead: There must be at least one team lead designated for the project. This individual is expected to serve as the communication liaison for the project.

Name	Department/School Students provide major/minor	Position: Faculty/staff/student Students provide expected graduation quarter/year	Western email address
<i>Team Advisor:</i> Marco Hatch	Huxley College of the Environment	Faculty	Marco.Hatch@wwu.edu
<i>Team Lead:</i> Octavio Cruz	Huxley College of the Environment- ESCI(MESP) Graduate Program	Graduate Student (2021)	CruzO@wwu.edu
<i>Team Member:</i> Amy Cline	Huxley College of the Environment-	Graduate Student (2020)	IronsA3@wwu.edu

	ESCI(MESP) Graduate Program		
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b. Project Stakeholders[OC1]

Does your project involve labor, include involvement, or require permission from organizations, departments, or individuals on campus or in the community? These project partners are your stakeholders; list them below. Each stakeholder must provide a signature of approval for this project. Insert additional rows as necessary. For more information, please refer to the Medium Grant Toolkit.

Name	University Department and Position	Involvement in Project	Stakeholder signature of approval
CCEL (Coastal Communities and Ecology Lab - Huxley College of the Environment)	Huxley College of the Environment	Host Laboratory	
SACNAS Club	Western Washington University Club - AS	Assisting with hiring pool and questions for survey	
Biology Club	NWU Club-AS	Attend Grant defense in Spring cert. Promote job positions Support!	
Nina-Tuyen Tran	AS C&E Student Senator	Outreach/ promotion/ etc.	
Eliana Bravo	Native American Student Union	Outreach & promotion	

If your project team is proposing a temporary or permanent facility or property modification, then a Project Owner Form must be submitted with the application. Form can be found on SEJF website: www.wvu.edu/sustain/programs/sejf/apply

c. Will any Associated Students [OC2] clubs be involved?

Club	Involvement in Project	Club representative signature
SACNAS	Inputs welcome on research positions and application promotion; Host for Final Student Presentations	See Stakeholder Section

d. Each SEJF Project team is required to meet with their project coordinator on a regular basis. This individual will provide support and advisement on your project. Communication with your project advisor is necessary for your project to proceed. Initial below to acknowledge this agreement.

SEJF Project Coordinator	Initials	Date
Team Lead	Initials	Date

SECTION 4: Project Timeline.

a. Describe your project’s progress and promotional activity. Outline all tasks that are required to complete the projects, and all means in which you will promote the project to the campus, in the table below. Insert additional rows as necessary.

Action	Purpose	Initiation	Completion
Recruit students	Begin active recruitment across WWU	W + SP 19	W 20

	Campus		
Hire and Train students	Complete field and laboratory training for students.	Sp 19	
Support summer student	Assist student in learning objectives, and in competency completion	Summer 19	
Complete lab research	Teach and complete procedures for benthic oceanography, sediment analysis, and biology methods to students.	F-W 19-20	
Present at Scholar's week	Outreach on campus, from both students and team lead, to promote project to Western students.	Sp 20	
Present at SACNAS	Showcase Western Washington University student research to an international audience, and allow students to experience inclusive scientific conference.	F 19	
Student assessment baseline	Determine current status and impressions of STEM within Western Washington University.	Start of position	
Student assessment check in	Determine how goals are progressing, and current objectives development for students.	Mid-quarter	
Student assessment completion	Complete final assessment of skills learned, experience, and exit interviews of students.	End of quarter	

b. Where will the project be located?

The project will take place in both field locations in Canada, as well as in the Coastal Communities and Ecology lab at Huxley College of the Environment. Student positions will vary experiences as mostly lab-based work experience throughout the year to field-based survey experience in the summer.

c. Planned project completion date:

The project is proposed to be completed by May 2019.

d. Project final report due date:

Project coordinator initials:

SECTION 5: Project Budget.

a. Provide an itemized list of the budget items required for this project. Include equipment, construction costs, publicity, labor, and any other costs. Include funding amounts from other sources that will impact project cost (see 5b.). Insert additional rows as necessary.

Item	Cost per Item	Quantity	Cost	Funding Source
Summer Student Employment per Hour	\$14.00	600	\$8,400.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
AY student (3) per Hour	\$14.00	750	\$10,500.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
Field stipend	\$500.00	1	\$500.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
Per Diem (per day)	\$111.00	20	\$2,220.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
Ferry (per trip)	\$900.00	2	\$1,800.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
RTIC 65	\$209.99	1	\$209.99	Sustainability, Equity and Justice Fund Grant Program (Pending)
Chest Freezer	\$339.00	1	\$339.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
Boat Inverter	\$100.00	1	\$100.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
Glass Fiber Filters	\$24.71	2	\$49.42	Sustainability, Equity and Justice Fund Grant Program (Pending)
Vacuum Hand Crank Pump	\$101.25	1	\$101.25	Sustainability, Equity and Justice Fund Grant Program (Pending)
Service on Hydrolab	\$500.00	1	\$500.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
Mileage / Van Use	\$0.53	452	\$239.56	Sustainability, Equity and Justice Fund Grant Program (Pending)
Van rental (daily)	\$90	14	\$1,260.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
Student Presentation at Conference	\$1,500.00	2	\$3,000.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
Report Out Community Meeting	\$1,000.00	1	\$1,000.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
Bus (WA to OR)	\$250.00	1	\$250.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
Oregon State University Accomodations	\$1,500.00	1	\$1,500.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
Oregon State University Food Budget	\$1,000.00	1	\$1,000.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
PC workstation in CCEL	\$1,500.00	1	\$1,500.00	Sustainability, Equity and Justice Fund Grant Program (Pending)
Fisherbrand™ Class B Clear Glass Threaded Vials With Closures Packaged	\$0.54	144	\$77.76	Fund for the Enhancement of Graduate Research (Received)
5 ml Plastic Syringe (20 pack)	\$9.99	1	\$9.99	Fund for the Enhancement of Graduate Research (Received)
Stable Isotope Analysis	\$8.50	225	\$1,912.50	Fund for the Enhancement of Graduate Research (Received)
Sample Prep-Pack (Stable Isotope)	\$47.00	2	\$94.00	Huxley Small Grant (Received)
Filter holder with Receiver NALGENE 300-4000	189.99	1	\$189.99	Huxley Small Grant (Received)
Whirl-Pak Sample Bag (250 pack)	115	1	\$115.00	Huxley Small Grant (Received)
Fatty Acid Analysis	\$1.00	250	\$250.00	Huxley Small Grant (Received)
Boat Moorage			\$163.80	Huxley Small Grant (Received)
Boat Fuel			\$839.44	Great Minds in STEM Scholarship (Pending)
Total Project Budget			\$38,121.70	
Total of all other funding sources, listed below			\$2,812.79	
Total requested funds from SEIF			34469.22.4	

Budget Justification (:

Travel: (per diem, ferry, mileage, van rental etc) a total of \$7,022.80 is requested for field work travel.

Per diem funding (\$2,220) is calculated based 20 person-days at the government rate of \$111 per day for Canada other. While we will spend more time in the field, students will receive 2-3 days of per diem per trip, given that we will be camping and cooking our own meals. The per diem funding will offset the cost of other small person field items they need and or additional expenses that come from working in Canada, ie. increased cost of cell phone coverage.

Ferry costs are estimated at \$1,800, based on the cost of bringing a van and boat round trip across two ferries to Quadra Island.

Mileage is based on a mileage recharge rate of \$0.53/mile and 226 miles round trip for each of two trips to Quadra Island.

Van rental is based on the WWU rate to rent a departmental van of \$90 per day for 14 days (seven days for two trips).

A **field stipend** of \$500 is requested to allow the internship student to buy necessary field equipment such as boots, outdoor clothing, and camping equipment.

Boat moorage is budgeted at \$163.80 based on a daily rate of \$13.65 for 12 days.

Boat fuel is based on a projected use of 175 gallons of fuel at \$4.79 a gallon.

Field Equipment and Analysis: A total of \$3,648.01 is requested to support field equipment and analysis for this project.

To keep clam samples frozen in the field and **RTIC 65** ice chest (\$200), **chest freezer** (\$200) and **inverter** (\$100) are requested.

To take water samples a **Vacuum pump** (101.15) and **GFF filters** (\$49.42) are requested.

Oceanographic conditions will be monitored using a **Hydrolab** D5, which requires a \$500 service for calibration.

A **data analysis PC** (\$1,500) is requested to run analytical modeling. Students in the quarterly positions will be trained in data analysis and entry, for various sample types, with introductory lessons in R and excel.

Lastly, collected samples will be processed and set out for **fatty acid analysis** (\$150) and **stable isotope analysis** (\$247.71). Analysis and preparation of these samples will be completed by quarterly students.

Octavio Cruz has received an **RSP award to offset \$2000, and a Huxley Small Grant of \$812.79** of the cost for analysis and supplies need, which is deducted from the total costs at the end of the budget.

Conference Travel: Funds are requested to send the internship student and Octavio Cruz to the 2019 SACNAS conference. SACNAS, is the largest single STEM conference for Chicano, Latino, and Native American students. Both the summer student and Octavio will present their research at this amazing venue.

Community Report Out: Funding (\$1,000) is requested to host community meeting within the We Wai Kai and Laich-Kwil-Tach First Nations whose land and waters we will be working. These funds will go to support local organizers and provide food and gifts.

Oregon State University Travel Portion: Summer student will travel with supervisor to Oregon State University (Corvallis) via Greyhound, to work with Dr. Andrew Thurber as a collaborator to analyze biological sample. **Trip will last approximately 2 to 3 weeks**, and will involve working in an analytical processing laboratory for processing of fatty acid samples. This will be an excellent opportunity for the summer student to learn in a separate university laboratory setting outside of WWU, to network with professional researchers, and learn valuable analytical techniques for fatty acid samples. To make this more accessible, we aim to **cover travel (\$250), food (\$500), and housing (~\$500-\$750/person)** during this portion of the work program to support the student. **We will aim for the lowest possible costs for accommodations and will most likely be under-budget for this portion.**

Student Support: The foundation of this project is engaging students in a transformative STEM experience and measuring that impact. As such, it is important that this opportunity is not only available to those that can afford to not work and engage in research. To address this issue we are requesting \$18,900 for direct student wages. For the **summer student** (\$8,400), we budget for one student at 600 hours for summer at \$14.00/hr. To continue the work during the **academic year**, we are requesting \$10,500, which would support 1 student each quarter, for a total of 250 hours each quarter totalling 750 hours for the project.

a. **Additional funding sources:** The SEJF Committee encourages the identification of additional funding sources to augment SEJF funds, and failure to secure such support may prevent approval of

an application. List pending, approved, and denied applications for funding from other sources, along with amounts requested from those sources.

Funding Source	Status	Amount
Fund for Enhancement of Graduate Research Award	Accepted	\$2000.00
Huxley Small Grant	Accepted	\$812.79

Budget Calculation

b. If the project is implemented, will there be any ongoing replacement, operational, maintenance or renewal costs? If yes, has a source of funds been identified to cover those costs? This must be communicated to the appropriate stakeholder.

There are no ongoing replacement, operational, maintenance, or renewal costs for this project.

Ongoing cost	Amount	Responsible Stakeholder	Signature

c. How will the success of the project be measured? Describe the quantitative and/or qualitative sustainability metrics you will use to measure the success of your project. A data collection plan is required for all projects.

Metric <i>(qualitative or quantitative)</i>	Description	Impact
Initial and Exit Survey	Surveys will be distributed to examine student experiences,	This method is designed to give feedback to both the student and employers feedback

<p>(Quantitative and Qualitative)</p> <p>See Appendix II for sample survey methodology</p>	<p>skill levels, and competencies within STEM. Surveys will track initial skills, and final reviews of the work experience positions, involving inclusivity and support in the workplace.</p>	<p>and an opportunity to comment on experiences as they complete work terms through the project. These surveys can be used to examine the model used in preparing and creating inclusive STEM positions at WWU, and can be referenced for improvements and opportunities for growth within the project.</p>
<p>Student Presentation(s) Outreach Success (Quantitative)</p>	<p>Student presentations and discussions at conferences, meetings, and scholar's week will be tracked to estimate outreach per event. An estimate of people reached (both in discussion and presentations) will be taken, to examine reach of the project within the campus and outside of campus.</p>	<p>These counts are a metric of reach for the project, and will be done to estimate the amount of people seeing the work completed by these students, and give a quantitative estimate for project reach at the end of the work periods, which can be totalled and examined at the project end.</p>
<p>Final Report (per student) (Qualitative)</p>	<p>Students employed in this project will be expected to complete a final report, of a style format of their choosing, to discuss the project, what was learned, and give their opinions and perspective of the benefits, areas of improvement, and commentary on work experiences gained.</p>	<p>Student reports will be a qualitative written document where students can voice areas of improvement, successes, and learned experiences which they enjoyed, in order to measure the success of the project and improve for future work experiences projects of a similar nature.</p>

d. Is there any additional information about the project that you would like to share?

Hiring Procedure

All Western Washington University students are open to apply to this position.

The CCEL lab will be presenting this proposal and project outline to club leadership on campus, open to all clubs who wish to participate, and encourage interested parties to add their signature as stakeholders showing support for the project. As stakeholders, clubs will assist in forwarding job postings to their list serves, in order to increase position awareness and reach on campus.

Hiring procedure will occur according to the outlined procedures from the Student Employment Center, with the position posted through the center. Additionally, clubs across campus working on increasing diversity in STEM, and the AS Student Representatives office will be approached to post the available job positions on their websites, and available job boards, if applicable.

Jobs will be open to any student with an interest in learning both laboratory skills for Quarterly positions, and field skills for the summer positions available.

For sample hiring postings, please see Appendix 1 in this document.

Appendix I. Sample Hiring Descriptions for Quarterly and Summer Positions



Phone (360) 650-3765

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Coastal Communities and Ecology Lab, ES0403
516 High Street
Bellingham, WA 98225-9049

Undergraduate Lab Assistant (XXXX-XXX)

Reports To:	XXXXX XXXXX	State Reimbursement Rate: X
State Job Classification Code:	390 - Other Professional, Paraprofessional, and Technical	
Position Requirements:	Must be eligible for WWU student employment. Additional qualifications listed below.	
Wage:	Student employee wage classification 3, at \$14.00 per hour.	
Period of Employment:	3 Positions Available; 1 per quarter, for Fall 2019, Winter 2020, and Spring 2020.	
Work Schedule:	15 – 19 hours a week, maximum of 300 hours/quarter.	

Description of Duties

Assist in laboratory analysis of sample materials for a multi-disciplinary scientific project.

- Learn methods for preparation of biological samples for stable isotope and fatty acid analysis.
- Organize data sheets, with an high attention to detail
- Complete sections of sampling procedures independently
- Wash, prepare, and calibrate laboratory equipment
- Complete sample preparation and processing for marine sediments
- Input scientific data collected from analysis, and prepare preliminary results from raw data
- Complete and summarize a scientific report on related research topic

Educational and Other Benefits of Employment

- Practice applicable laboratory skills related to various marine-related scientific fields
- Communicate and collaborate with faculty and students
- Hone skills related to attention to details, planning and scheduling assistance, sample collection, and scientific methodologies

Minimum Qualifications

- Ability to work independently and as part of a collaborative research team
- Computer literacy, including experience in excel and word
- Previously related (academic or external) experience in scientific report writing
- Must be able to lift 40-50 lbs.
- Be willing to present research report to students for final stages of work term

Preferred Qualifications

- Applicants with a combination of the following skills may be given preferential consideration:
- Have history of participation with clubs on campus assisting historically marginalized students in sciences
 - Self-identify as a member of historically marginalized groups within sciences
 - Completion of BIOL 204, CHEM 121 or ESCI 340, and 300-400 level ESCI courses considered an asset.

Application Process:

E-mail your résumé detailing qualifications to marcohatch@wwu.edu and cruzo@wwu.edu with "Undergraduate Marine Research Assistant" in the subject line.



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Phone (360) 650-3765

Coastal Communities and Ecology Lab, ES0403
516 High Street
Bellingham, WA 98225-9049

Undergraduate Marine Research Assistant (XXXX-XXX)

Reports To:	XXXXX XXXXX	State Reimbursement Rate: X
State Job Classification Code:	390 - Other Professional, Paraprofessional, and Technical	
Position Requirements:	Must be eligible for WWU student employment. Additional qualifications listed below.	
Wage:	Student employee wage classification 3, at \$14.00 per hour.	
Period of Employment:	Begins Summer Quarter - May 2019; until Summer Quarter - August 2019. Pending availability/performance could be employed for subsequent quarters.	
Work Schedule:	35-40 hours per week, maximum of 600 hours/quarter. May 15 th , 2019 to August 31 st 2019	

Description of Duties

Assist in extensive field analysis of intertidal areas on First Nations territory, on Quadra Island, British Columbia.

- > Prepare materials for sample collection, and manage samples for future processing.
- > Organize and maintain field data journals, data sheets, with an high attention to detail
- > Complete sections of sampling procedures independently
- > Wash, prepare, and calibrate sampling equipment for travel, use, and storage
- > Complete sample collection, preparation, transport and storage
- > Input scientific data collected from analysis
- > Complete and summarize a scientific report on related research topic

Educational and Other Benefits of Employment

- > Practice active field skills applicable to various marine-related scientific fields
- > Communicate and collaborate with faculty and students
- > Hone skills related to attention to details, planning and scheduling assistance, sample collection, and scientific field methodologies

Minimum Qualifications

- > Ability to work independently and as part of a collaborative research team
- > Computer literacy, including experience in excel and word
- > Previously related (academic or external) experience in scientific report writing
- > Must be able to lift 40-50 lbs.
- > Must have a valid passport, and ability to travel to Canada
- > Experience working on boats is considered an asset

Preferred Qualifications

Applicants with a combination of the following skills may be given preferential consideration:

- > Have history of participation with clubs on campus assisting historically marginalized students in sciences
- > Self-identify as a member of historically marginalized groups within sciences
- > Completion of BIOL 204, CHEM 121 or BIOL 325, and 300-400 level marine-based courses considered an asset.

Application Process:

E-mail your résumé detailing qualifications to marcohatch@wwu.edu and cruzo@wwu.edu with "Undergraduate Marine Research Assistant" in the subject line.

Appendix II. Sample Initial and Final Survey Model Questions

Supplemental Files 1-2 for “Enhancement of scientific experiences within underrepresented student population through place-based STEM research courses”

Octavio Cruz, Marco B.A. Hatch

²Western Washington University

Corresponding Author: Octavio Cruz

Supplement 1: Student surveys mechanism used at the beginning, middle and end of this project. This evaluation was designed to assess change in scientific experience.

Student Survey – Field Study Methods for Ecology

Please circle the year that best describes you as you start spring quarter this year.

- Freshman
- Sophomore
- Junior
- Senior

Please circle your Major

- Environmental Science option
- Chemistry Science Option
- Biology Science Option
- Do not yet have a concentration
- Not a Sciences Student

On a scale of 1 to 5, with 1 being “not at all able”, and 5 being “exceptionally well able” please select the value that best describes your current abilities.

	Not at all able				Exceptionally well able
Understand experiments and reasoning	1	2	3	4	5
Understand scientific facts and their meaning	1	2	3	4	5
Describe, explain and predict natural phenomena	1	2	3	4	5
Ask, find, or determine answers to questions you are curious about	1	2	3	4	5
Read and understand scientific papers	1	2	3	4	5
Engage in conversations about the validity of conclusions	1	2	3	4	5
Identify scientific issues underlying decisions	1	2	3	4	5
Evaluate the quality of scientific information on the basis of its source and the methods used	1	2	3	4	5
Pose and evaluate arguments based on evidence	1	2	3	4	5

How would you rate your current scientific experience, described as, *your knowledge and understanding of scientific concepts and processes required for STEM project management, participation in cultural scientific works, and sample collection/processing experience?*

- Extremely high scientific experience
- Very high scientific experience
- Moderate scientific experience
- Poor scientific experience
- No scientific experience

On a scale of 1 to 5, with 1 being “not at all interested” and 5 being “extremely interested” please indicate your **current** level of interest in:

	Not at all interested				Extremely interested
Doing scientific research	1	2	3	4	5
Learning more about Marine Sciences	1	2	3	4	5
Seeking professional experience in Field/Lab STEM work	1	2	3	4	5
Learning more about other STEM fields	1	2	3	4	5
Working in a STEM field	1	2	3	4	5
Pursuing a career in an STEM field	1	2	3	4	5

Please add any additional comments you may have:

Post Course Student Survey – CCEL Lab XXXXXX Experience and Environment Evaluation

In general, how successful was this project in meeting your expectations?

- Extremely successful
- Very successful
- Moderately successful
- Not too successful
- Not at all successful

On a scale of 1 to 5, with 1 being “not at all able”, and 5 being “exceptionally well able” please select the value (by circling) that best describes your current abilities.

	Not at all able				Exceptionally well able
Understand experiments and reasoning	1	2	3	4	5
Understand scientific facts and their meaning	1	2	3	4	5
Describe, explain and predict natural phenomena	1	2	3	4	5
Ask, find, or determine answers to questions you are curious about	1	2	3	4	5
Read and understand scientific papers	1	2	3	4	5
Engage in conversations about the validity of conclusions	1	2	3	4	5
Identify scientific issues underlying decisions	1	2	3	4	5
Evaluate the quality of scientific information on the basis of its source and the methods used	1	2	3	4	5
Pose and evaluate arguments based on evidence	1	2	3	4	5

How would you rate your current scientific literacy, described as, *your knowledge and understanding of scientific concepts and processes required for STEM project management, participation in cultural scientific works, and sample collection/processing experience?*

- Extremely high scientific literacy
- Very high scientific literacy
- Moderate scientific literacy
- Poor scientific literacy
- No scientific literacy

Now that you have completed this project, do you think that it increased your scientific experience?

- Yes, increased my scientific experience substantially
- Yes, increased my scientific experience moderately
- Yes, increased my scientific experience slightly
- No, my scientific experience did not change
- No, my scientific experience declined

Please explain,

On a scale of 1 to 5, with 1 being “not at all interested” and 5 being “extremely interested” please indicate by circling the number that corresponds with your **current** level of interest in:

	Not at all interested				Extremely interested
Doing scientific research	1	2	3	4	5
Learning more about culturally inclusive scientific projects	1	2	3	4	5
Seeking professional experiences in cultural science projects	1	2	3	4	5
Learning more about other STEM fields	1	2	3	4	5
Working in a STEM field	1	2	3	4	5
Pursuing a career in an STEM field	1	2	3	4	5

Now that you have completed the project, do you think that it increased your interest in any of the above areas? Please explain:

On a scale of 1 to 5, with 1 being “not at all helpful” and 5 being “extremely helpful”, please pick the value that best describes your course experience.

	Not at all helpful	2	3	4	Extremely helpful	
Teaching me knowledge about environmental science	1	2	3	4	5	N/A
Teaching me knowledge about environmental management	1	2	3	4	5	N/A
Engaging me in doing relevant research in my field of study	1	2	3	4	5	N/A
Teaching me new skills (e.g. computer software, GIS, use of field technology such as measuring equipment)	1	2	3	4	5	N/A
Teaching me areas of science outside of environmental science	1	2	3	4	5	N/A
Helping me understand Indigenous views of science or traditional ecological knowledge	1	2	3	4	5	N/A
Providing valuable work experience in the field of environmental science or management	1	2	3	4	5	N/A
Providing valuable work experience in another field of science	1	2	3	4	5	N/A
Helping me with my academic work at WWU	1	2	3	4	5	N/A
Preparing me for graduate school	1	2	3	4	5	N/A
Preparing me for employment as soon as I graduate from WWU	1	2	3	4	5	N/A

Please provide any additional comments about the course that you would like to share:

Welcome!

I am inviting you to participate in an evaluation of this Sustainability, Equity, Justice fund project at meeting its goals. This class has been funded by the Sustainability, Equity, and Justice Fund that supports student research and learning opportunities. Part of this grant requires an evaluation its success. To complete this evaluation will require your participation. It will be completed in 4 parts.

1. **Pre and post course student surveys.** The first you will complete today, and the second you will complete on the last day of class.
2. **Instructor observations.** Instructors will make brief notes about the class at two different times in the quarter.
3. **Photos.** Photos will be taken during field work and labs, with your consent, for future student presentations and discussions.
4. **Interviews.** Short interviews will be conducted with each student at the end of the course.

The results of this evaluation will be compiled in a report that will be submitted to the granting agency as well as College administration.

By signing this consent form you are indicating that you understand and agree to the following:

- Your participation is voluntary and you are free to withdraw at any time.
- To have your answers to this survey and the post survey included in the evaluation
- To have your photo taken and used for the purposes of the evaluation
- To be observed by instructors
- To have a short interview recorded and included in the evaluation
- Understand that basic identifying information will be required to match pre and post surveys, but will be removed after both surveys have been completed.

Participant Signature:

Supplement 2: Instructor evaluation used the end of the employment period by Hatch and Cruz to assess student growth in scientific literacy. Due to small sample crews, supervisor inputs for student growth will be considered additionally.

Instructor Perception Survey - Field Study Methods for Ecology

Instructor: _____

Student: _____

1. Based on your observations throughout the course, please select the number that best describes the level of improvement you witnessed for each student

	No change		Moderate improvement		Exceptional improvement
Understand experiments and reasoning	1	2	3	4	5
Understand scientific facts and their meaning	1	2	3	4	5
Describe, explain and predict natural phenomena	1	2	3	4	5
Ask, find, or determine answers to questions you are curious about	1	2	3	4	5
Read and understand scientific papers	1	2	3	4	5
Engage in conversations about the validity of conclusions	1	2	3	4	5
Identify scientific issues underlying decisions	1	2	3	4	5
Evaluate the quality of scientific information on the basis of its source and the methods used	1	2	3	4	5
Pose and evaluate arguments based on evidence	1	2	3	4	5

Provide any explanation, details, or examples of your scores here:

Please describe the degree to which you have observed change in students' abilities, interests or comfort in the following areas throughout the course. Please use examples wherever possible.

2. Conducting additional science research:

3. Interest in marine resource management:

4. Interest in STEM fields as a career:

Any additional comments?

Sustainable Action Fund Grant Program

MEDIUM GRANT - APPLICATION PROPOSAL REVIEW

Once your project proposal is complete, you must print and receive handwritten signatures from the individuals listed below. After signatures are received, applications can be delivered as a hard copy to the SEJF Grant Program Manager, Johnathan Riopelle at Viking Commons Room 24 or by scanning the application and emailing it to johnathan.riopelle@wwu.edu.

Please set an appointment with the Sustainable Action Fund Grant Program Coordinator to review your draft proposal before submitting your application.

Sustainable Action Fund Grant Program Coordinator, Johnathan Riopelle

Viking Commons, Room 24

Available by appointment

Email: johnathan.riopelle@wwu.edu

Phone: (360) 650-4501

Signature: _____ **Date:** _____

This signature confirms that the application has been accepted for SEJF committee review; it does not indicate funding approval.

Comments:

Seth Vidaña, Director of Sustainability, Western Washington University

Viking Commons, Room 25

Phone: (360) 650-2491

Signature: _____ **Date:** _____

This signature confirms that the application has been accepted for SEJF committee review; it does not indicate funding approval.

Comments:
