



Apr 21st, 9:00 AM - Apr 22nd, 4:45 PM

Engaging High School Juniors and Seniors at the Ocean Research College Academy as Researchers in a two year study of an estuary in the Salish Sea

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Undergraduate Research at the Ocean Research College Academy: Using the Local Region to Engage Student-Driven Projects Over Two Years

Ardi Kveven, Founder and Executive Director
Ocean Research College Academy,
Everett Community College

Introduction

Connecting students to the places they live has been a cornerstone of the curriculum at the Ocean Research College Academy (ORCA) since inception 16 years ago. By engaging students in a locally based research project in the Salish Sea, ORCA has graduated over 500 students that have direct, hands-on experiences in the Snohomish River estuary. Through incorporating active learning strategies such as undergraduate research, students have engaged deeply in the biogeochemical processes of a salt wedge estuary. Over the course of an entire year, students collect oceanographic metrics and utilize their emerging mathematical and communication skills to analyze and interpret the longitudinal data set that includes temperature, salinity, dissolved oxygen, pH, chlorophyll concentration, turbidity, nutrient levels, fecal coliform levels and plankton biodiversity and abundance. Additional monitoring of seabird and marine mammal populations and distribution round out the expansive data set.

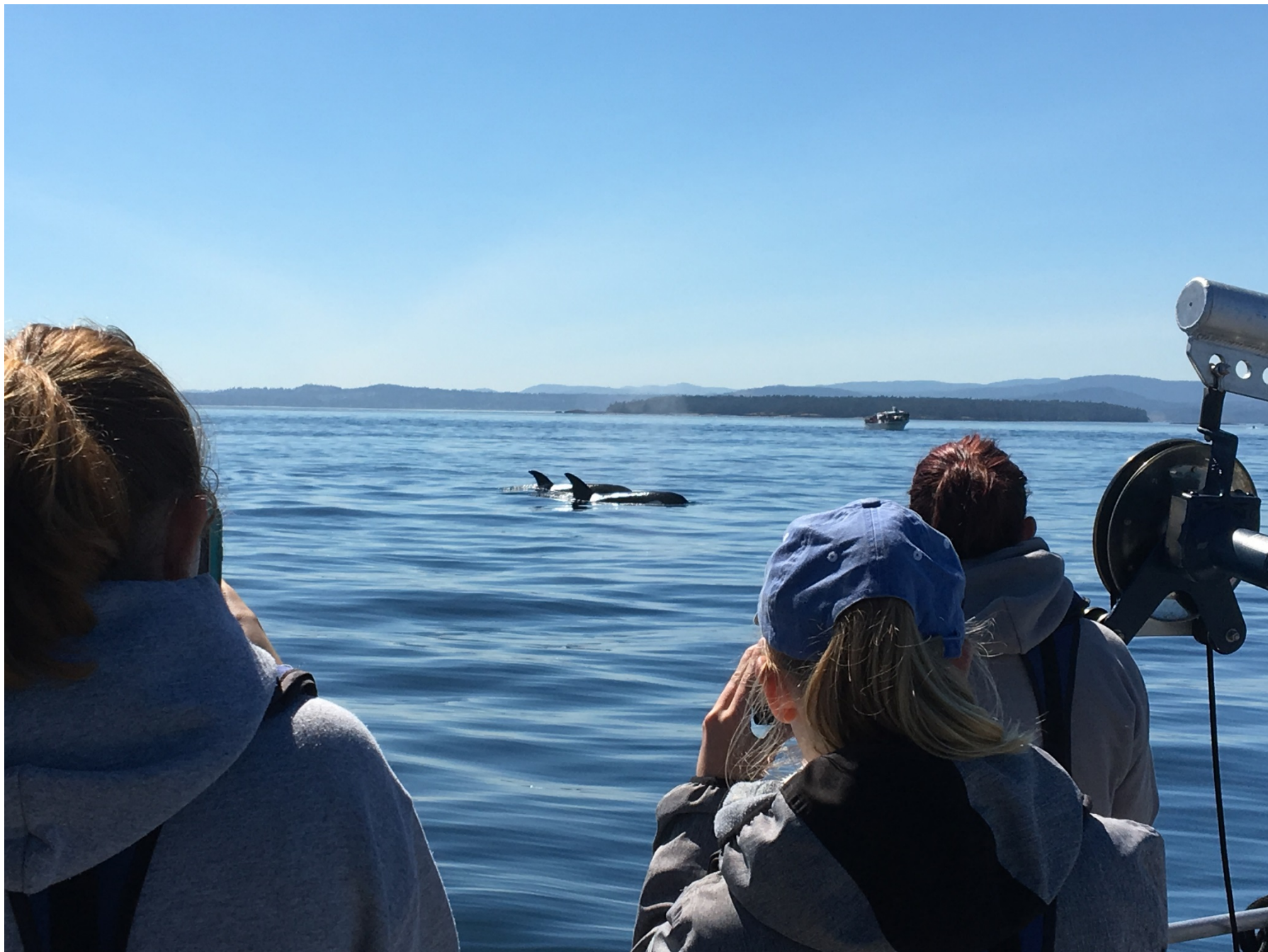
Salish Sea



This location drove the development of a longitudinal project adapted from actual research by local agencies. Students ask original questions, use data and present their findings to the local community.

Research Goals

- Blend research with coursework
- Create overlap within disciplines
- Apply conceptual understanding
- Develop community connections
- Present research at conferences
- Advance collaborative skills



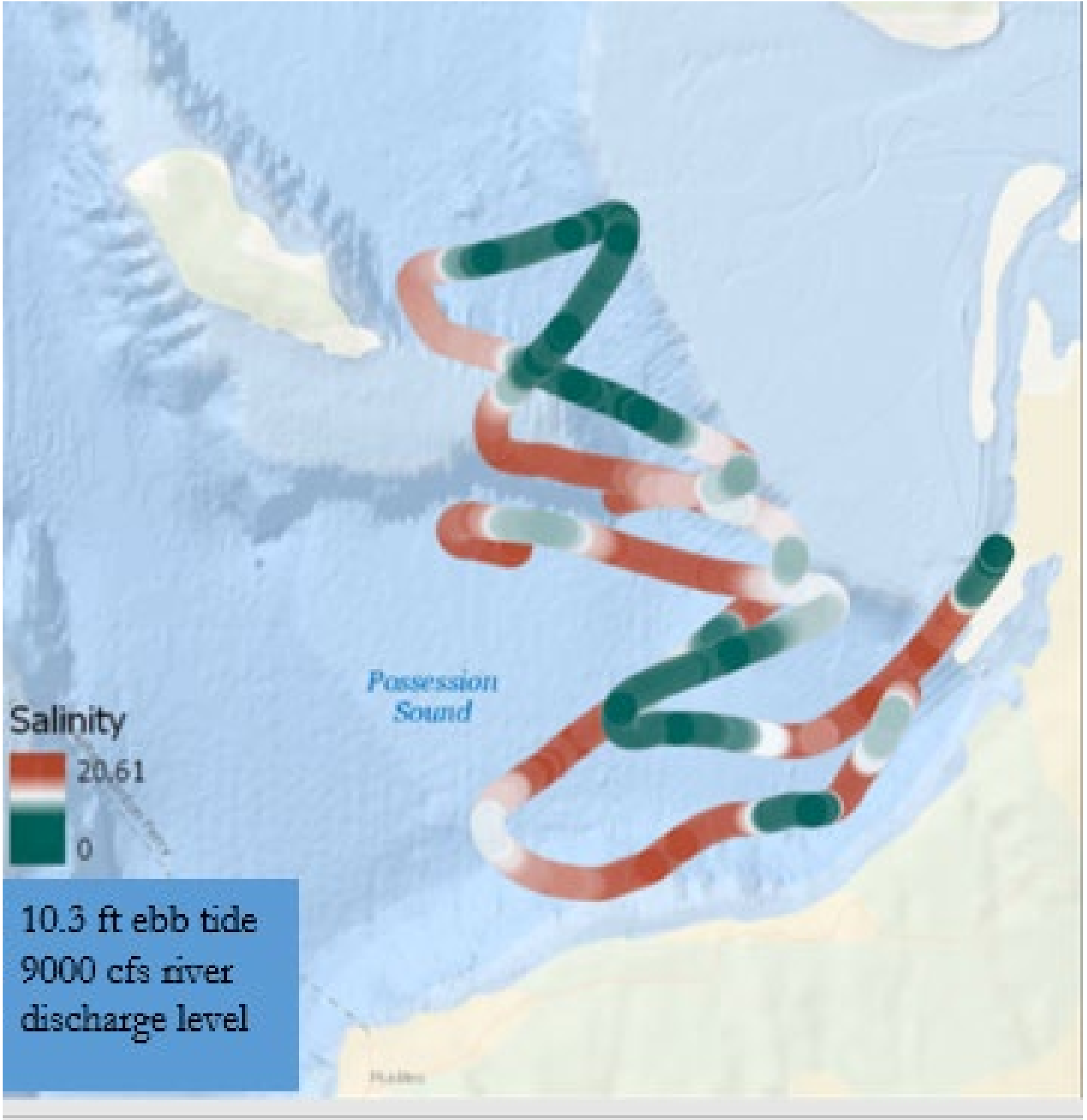
CCURI Conference Support

- 24 students funded to travel to Colloquiums
- 15 have earned STEM B.S Degrees (rest still enrolled)
- 3 STEM Master's Degrees
- 1 enrolled in Medical School
- 1 enrolled in Veterinary School
- Developed our own conference where 298 students have presented
- Supported 42 students to present at professional international and national conferences

Catalytic Funding

Year	Grant
2003	Bill and Melinda Gates Foundation
2010	NSF ARI-R2 0963104
2012	NSF: IUSE CCURI Partner Institution 1118679 & 1524353
2013	NSF IUSE:FSML 1318552
2018	NSF: IUSE GEOPATHS Grant 1801658

Student Data



Graduation/Matriculation

- With over 500 graduates, longitudinal research on graduates supports the efficacy of the methods.
- Nearly 90% of enrolled students earn the AA degree in two years, compared to a state-wide average of 23% in three years.
- 95% of graduates transfer directly to university (and seek out further research)

"I can easily say that attending ORCA was the best decision of my life thus far. You, Ardi, and the faculty believed in me much more than I believed in myself. In January of my senior year, when you asked me if I wanted to go to DC for a conference, I realized that my dreams were not limited to Seattle or Washington State. ORCA allowed me to have much grander dreams, even ones that seemed far reaching. While ORCA is immensely challenging compared to more traditional high school options, the support system of the faculty, staff, and students allowed me to not only accomplish great things while at ORCA but continue doing great things in college and beyond."

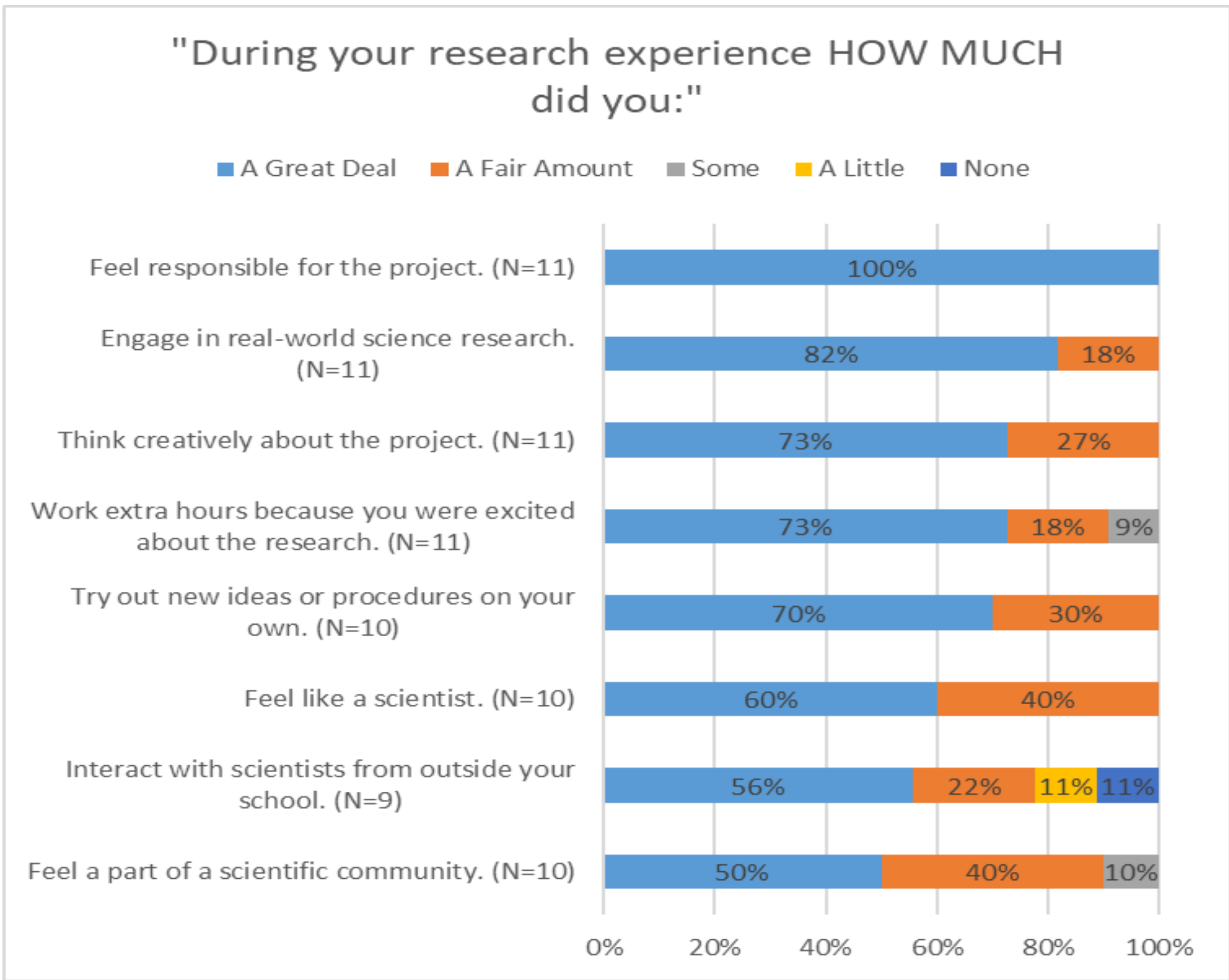


Research Vessel custom built for student projects. Funded through NSF: Field Stations and Marine Labs.

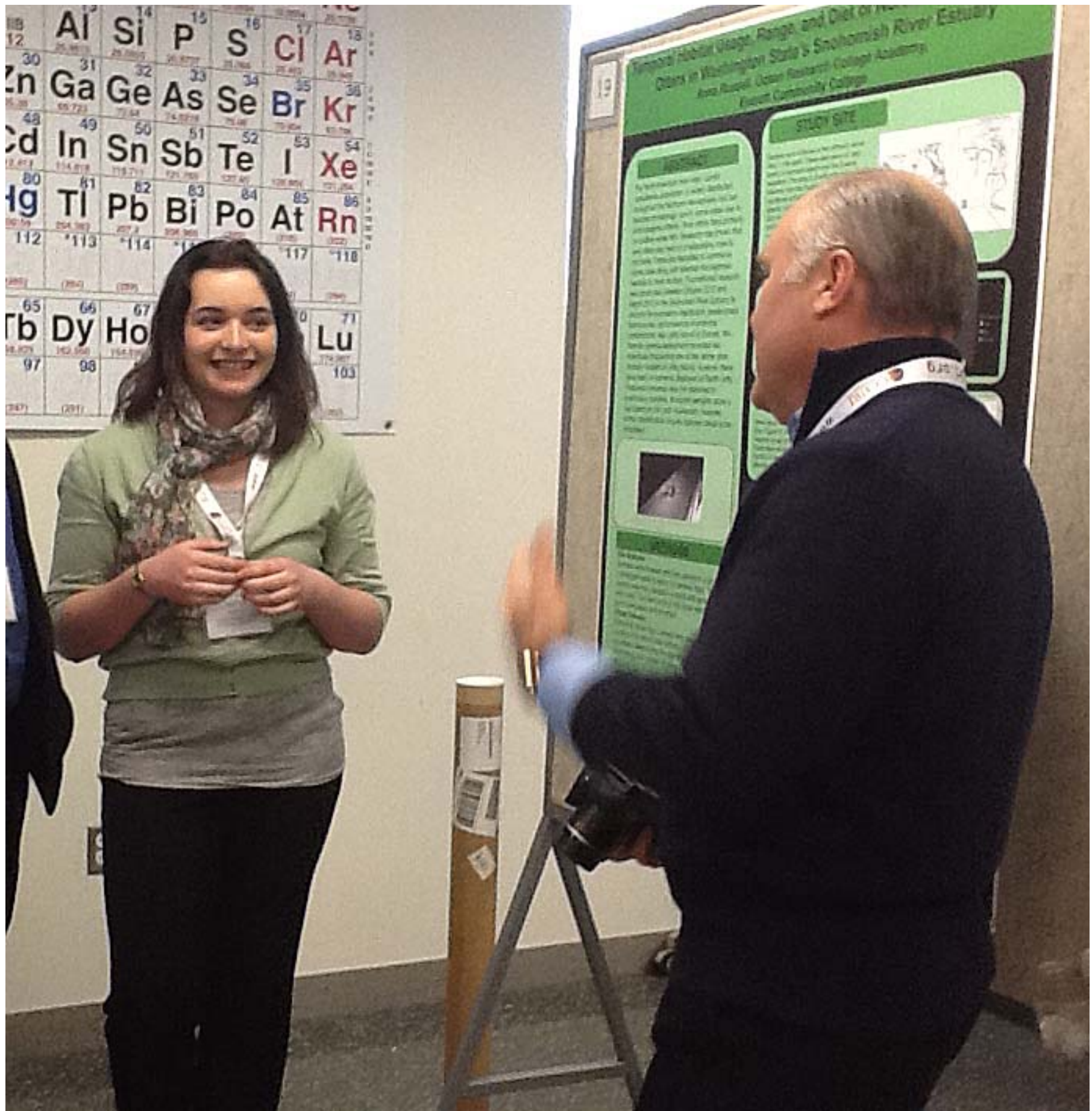
Recommendations

- Send students to conferences
- Network with local agencies
- Connect to foundation office for funds
- Enhance risk tolerance (staff & students)

Evaluation



Undergraduate Research Student Self-Assessment (URSSA) responses from 2019.



Quote from First CCURI student with PI Jim Hewlett. This student earned a B.S and M.S in Public Health and now works for the Center for Disease Control.