

STATEMENT OF PURPOSE

Spencer Edwards
edward63@wwu.edu

Introduction

The past four years at Western Washington University have had a massive impact on my career and research goals. When I came into WWU I knew I wanted to study "the oceans", but not much else. Each year at Western, and each class I took helped me narrow down my interests and create a solid career plan. Specifically, I'm interested in using methods in evolutionary biology and genetics to understand organismal adaptations and applying that understanding to ecological problems. The new field of ecological evolutionary developmental biology (eco-evo-devo) allows us to apply principles from late 20th and early 21st century evolutionary developmental biology to current ecology. For instance, by analyzing the role that genetics and developmental plasticity combined play in evolution, we can predict the response of organisms/communities to global environmental change. In particular, I want to understand how polar organisms can potentially adapt to cope with the effects of climate change, as well as how we can predict which species will thrive in arctic and antarctic climates, and which will lose out. The poles are of particular interest as not only the epicenter for global climate change, but as they have emerged relatively recently, adaptations to these ecosystems are newer and potentially more resilient to change. Conversely, the relative lack of diversity could be a detriment to any adaptations that might arise due to poor gene flow. Understanding these contrasting forces, as well as the adaptations of organisms that have risen in the past (and currently), and predicting their response to climate change will allow for intelligent methods for conservation and policy recommendations.

Research Experience

Project #1 In my freshman year, I assisted Geoffrey Mayhew with his thesis in the Miner lab, examining phenotypic plasticity in the hatch timing of Eastern Pacific Nudibranchs. Work was performed both in-lab and in the field, where specimens were collected. The project involved obtaining the eggs (laid in bundles called egg masses) from the nudibranchs, placing them in specifically designed tanks, and testing their hatching time when exposed to chemical or physical queues. While working in the lab I learned techniques for distilling and filtering seawater, collecting egg masses quickly and delicately, as well as obtaining specimens in the field. While this research did involve looking at plasticity, it wasn't until later that I realized I could connect this concept to my own interests.

Project #2 In my Sophomore year of college, I became interested in performing research on climate change. Of course, I had known climate change was an important issue, however until then I had not considered explicitly studying biology with an emphasis on climatic change. It was also in this year that, while watching seminars given by researchers presented

by Western's biology department, that I became interested in ecology and genetics. Specifically, a talk by Dr. Emily Grason on the genetics and ecology of the invasive green crab,. Her work with Washington Sea Grant showed that the crab had formed genetically distinct metapopulations in Washington State. This made me interested in the ecology of invasive species, and how climate change could facilitate the process. Furthermore, I learned about

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Education

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Teaching Experience

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Concluding Remarks

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