Statement of Grant Purpose

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How international fishing affects small scale fisheries in Indonesia

Marine fisheries feed billions of people around the globe. They are integral to the health, culture, and nutrition of about a tenth of the world’s population whose livelihoods who depend on the fishery economy. Small-scale fishing constitutes about 90-95% of the annual global fish output, yet they are some of the least studied and understood fisheries in the world. Indonesia plays a unique role in this industry as they are the second highest fish producer in the world, their marine resources boast the greatest marine biodiversity on the planet, while the vast majority of the fishing that occurs is actually from these small-scale subsistence fisheries. Like other local fishing efforts around the globe, there have been local reports of declining stocks but little data exists to understand the severity of resource degradation and inform decision making. Filling this gap in data is essential to preserving not only the valuable resource but also protecting the income and nutrition source of the people most connected with the ocean.For this reason, I am applying for a Fulbright Grant to Indonesia in order to conduct stock assessments in the local fisheries there as well as learn from the local community about their relationship with the natural world.

As the world’s largest archipelagic country, Indonesia has over 50,000 km of coastline, with about 95% of the fishing that occurs here being small scale. On top of that, the Indonesian government recognizes that small scale fishing is the main source of nutrition and income for its fishers and therefore institutes little regulation on their catch or permitting. This allows fishers the agency to support their families yet creates challenges when trying to quantify the amount of fishing that occurs in Indonesia, and identify if fish stocks are healthy. Further, the Indonesian government decentralized in the 1990’s, meaning that fishing regulation and enforcement is managed at a regional level, maintaining the incredibly diverse culture of the country as over 700 languages are spoken by about 300 distinct ethnic groups. However, this also means that there is not a standardized method for managing fisheries in the country**.**

I will be conducting research on Selayar Island, an island off South Sulawesi consisting predominantly small-scale fishers and industry. The island’s ecosystem consists of not only bedrock, but also seagrass, mangrove, and coral reef biomes. Because of this, the marine life there is incredibly diverse and local fishers employ a wide range of fishing methods, but there is little existing research on the frequency with which method is employed. Further, as we are starting to feel the effects of climate change, fishers have had fewer fishable days due to an increase of extreme weather events. The fish caught here are primarily artisanal, meaning it’s mostly caught for local consumption. Catch consists of grouper, snapper, and seabass, among other species, but little is known about the status of these stocks in Selayar Island. I plan to address these knowledge gaps in my research and use field data to conduct a stock assessment through statistical modeling.

For the fieldwork component of the project, I will likely collect data through local mobile fish vendors who typically drive from port to port to buy from small scale fishers in the region. I hope to collect time at sea, location of fishing activity, number of fishers and total catch (i.e. species, number, and weights) in order to quantify how much is being harvested from these regions. My ultimate goal with the project is to create statistical models of how well fish populations in these regions are faring, and what factors (i.e. fishing method, extreme weather) are most effecting population health.

In order to complete this project, I will partner with Dr. Rohani Ambo-Rappe from the Universitas Hasanuddin in Makassar. She is a seagrass ecologist but works closely with both fisheries researchers and the local community in South Sulawesi as she has published several papers on both the fishery and the fishing culture of the people who live there. She can provide expertise in the area, connect me with fish vendors, and has students who are willing to help me conduct the fieldwork component and communicate with local community members. Dr. Ambo-Rappe has also helped me identify ways I can help support the local community. In order to engage with the students at Makassar, I plan on teaching courses in the statistical programming language R, a common analysis tool in ecology. I have run similar workshops during my master’s program and am familiar with the challenges new students face when learning to code. I would gain so much from a Fulbright Grant in Indonesia, and I hope to use this course to foster a mutualistic exchange of experience and knowledge.

I have chosen this project and location because it plays to my strengths as a researcher and my lifelong interests. My experiences in jobs, school, and internships have all prepared me for conducting a research project like this. I have conducted fisheries research both in the field and through data analysis. In 2017, I interned for the National Oceanic and Atmospheric Administration where I aided in a research project updating population models of Pacific fishes. Further, I participated in their bottom trawl survey, learning how to identify species in the Eastern Pacific and how fisheries are managed and regulated. Currently, I am getting my master’s degree UNH’s Quantitative Marine Ecology lab where I study mathematical applications in biology. My thesis is in studying small-scale fisheries in Madagascar and I hope to continue this line of research into the Fulbright Fellowship.

Further, in order to understand small-scale fisheries, having an understanding of their culture is key which is why I will also be applying for the Critical Language Enhancement Award in order to be able to communicate effectively with my peers and colleagues. Before leaving for the country, I also plan on mastering the basics of Bahasa Indonesia through independent study using resources such as Duolingo. On top of that, I am already pursuing a formal Bahasa Indonesia course through the language course website Babel.

My interests and experiences in small scale fisheries have all prepared me for conducting this project. After my master’s, I hope to work for an NGO or government agency to better understand and quantify the status of our world’s small-scale fisheries. This project will aid me in that goal as it will help me gain a better understanding of how diverse subsistence fishing can be and how to incorporate ecological needs with the culture of the people fishing it.