This thesis seeks to develop quantitative tools to operationalize conservation’s goal of valuing human well-being alongside ecological integrity.

Another goal is to seek to quantitatively understand social-ecological systems, and develop intuition on how human dynamics are affected by, and affect, ecological processes.

Commercial Fisheries system are a useful case study of human-environment interactions. Fishing has been identified as a major predator for many industrial stocks and fish provide biomass, converted into revenue, as an ecosystem service. The linkages between people and fish populations are direct, unlike many other ecosystem services (i.e. water filtration, carbon sequestration).

In this thesis I am interested in understanding of how fish population dynamics, human dynamics, fishing pressure and ecosystem service flows all vary as ecological, economic and/or management conditions of the system change.

Conceptualized in this way, we can imagine the commercial fishing system

This thesis explores three different ways things can change and people end up mediating resulting ecological outcomes.

1. Ecology drives change in fish, mediated by people: Changes in ecology due to climate change, outcome depends on fishing effort reallocated over space
2. Management change drives ecological change: Changes in management end up changing patterns of participation across unaffected fisheries
3. Social conditions drive ecological change: Differences in socio-economic conditions drive differences in fishing strategy and harvesting pressure.