**Can catch shares improve livelihoods of fishermen and fishing communities?**

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Introduction

Managing resources sustainably is both a social and ecological problem and when ecosystems are managed unsustainably, there is both social and ecological costs. The ecological examples are familiar to anyone acquainted with the conservation movement. Bush meat harvest is extremely high and likely to cause extirpations of variety of fauna, harvesting timber leads to water shortages in some areas (southern Africa..somewhere?), and extirpations of non-target species (spotted owl) in others.

These natural system collapses also have social costs. Often these systems are extremely specialized, thus predisposing them to collapse when harvest is inevitably curtailed. This was true of timber communities in Washington and Oregon state, and appears likely true in Alaska where the government has supported itself almost exclusively with oil revenues. Diversifying natural assets, just as financial traders do in stocks or farmers diversify crops, may help avoid such collapses and make a social-ecological system more resilient. Recent work in commercial fisheries suggests this may be the case, where fishermen with more diverse participation across fisheries had less variable incomes year to year.

Commercial fisheries are a textbook example of sustainability challenges. In the US between 19XX and 20XX we’ve seen the collapses of XX% of all ground fish species targeted for commercial harvest. These collapses are not only economically damaging and costly to recover, but these collapses can shatter regional economies (cod). The current thinking is that better aligning incentives of harvesters will result in better management.

One such method of this is catch shares. Catch shares guarantees a percentage of the total allowable catch to each vessel, and, depending on the particular setup, to lease/sell quota to other vessels (hence catch shares sometimes referred to as individual transferable quotas, ITQs). This guarantee of catch lets a vessel fish at the most profitable time, when the weather is best and market prices are good. This setup should improve flexibility to participate in other fisheries. [Lots of analyses] Costello et al. Science, Essington PNAS suggest that itqs improve ecological and economic outcomes. These broad (global?) reviews and meta-analyses have been important for inspiring changes toward catch shares. However, because the past is not always a reliable guide to the future given climate variability and change, market shocks (eg, the great recession), etc, it is not clear how well prescriptions for catch shares will perform moving forward on the scale at which they are operationalized.