Can catch shares improve livelihoods of fishermen and fishing communities?

Introduction

1. Tragedy of the commons is a persistent outcome in when it comes to harvesting natural resources.
   1. Commercial fisheries are a textbook example.
   2. In the US between 19XX and 20XX we’ve seen the collapses of XX% of all groundfish species targeted for commercial harvest.
   3. These collapses are not only ecologically damaging and costly to recover, but these collapses can shatter regional economies (i.e. cod).
   4. Many solutions have been put forward to these problems over the years with varied success.
   5. The current thinking is that better aligning incentives of harvesters will result in better management. One such method of this is catch shares.
   6. 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.
   7. Lots of analyses suggest that itqs improve ecological and economic outcomes
2. On the basis of analyses, catch shares are increasingly being implemented in US fisheries
   1. NOAA has a national catch share policy
   2. Recently put in catch shares on US west coast
   3. While existing catch share analyses are good, they are limited in the impacts they measure. Existing analyses only look at stay-ins, not what happens to exit-ers and tend to focus on revenue and biomass in target fishery. This is problematic because we know vessels participate in many fisheries (Kasperski & Holland, something on Maine fisheries) and if vessels are more flexible, we might see changes in how effort is distributed across a vessel’s fishing portfolio.
   4. Existing analyses also tend to focus only on the scale of a vessel. This is a good start, but MSFA requires analyses of impacts to ‘fishing communities’ or communities of place. Currently no analyses cover this.
   5. Fishing participation is particularly appropriate as it’s been found to reduce exposure to income volatility, and is therefore considered a metric of human well-being. Understanding how management change affects such a metric is in line with new priorities on evaluating management efficacy.
3. Here we examine the change in vessel participation after the implementation of catch shares in the federal groundfish fishery on the US west coast.
   1. We examine the changes in fishery participation diversity at boht the vessel and community scale
   2. At the vessel scale we capture the impacts to both vessels that stay in ITQs after implementation and those that exit the groundfish fishery, but continue to fish commercially
   3. At the community scale we derive novel measures of fishery diversity and examine how they change given a change in management.

Discussion

1. MSRA and EBM require considering how individuals and fishing communities are affected by management change.
   1. Here we examine participation diversity and show that vessels which continue in catch shares are associated with an increase in participation diversity.
   2. This is significant because participation diversity is associated with reduced revenue volitality.
   3. While catch shares are not implemented with this in mind, it’s neat that it’s an added benefit.
2. However the increased diversity effect is not constant.
   1. Vessels that exited groundfish after management change were associated with decreased participation diversity.
   2. Thus the management change is not an unmitigated success.
   3. This highlights the importance of explicitly articulating which group of people the management needs to benefit. Is it all people ever involved? The vessels which continue to be involved?
   4. Another important point, these vessels don’t typically stop commercial fishing altogether, instead continuing in (and sometimes adding) other fisheries. This underscores the impotance of understanding dynamics of vessel participation across fisheries and suggests the possibility of leakage (like in REDD).
   5. the bulk of existing analyses focus on the level of the individual and typically only those individuals that continue in the fishery after the management change.
3. Finally we analyze these effects at a community scale, one mandated by MSFA
   1. We find no statistically significant change associated with change in management, however the direction of effect is the same as individual level. Likely limited by small sample size.
   2. Highlights the importance of scale in these analyses, as the answers may differ.
4. In conclusion
   1. We find that change in management was associated with non random changes in patterns of participation.
   2. In the same way that EBM’s strength is explicitly considering indirect effects through species interactions, we suggest that management needs to consider how changes in one fishery may affect another one unrelated except for vessel participation.