

COMMONS FORUM *RESPONSE*

Response to: Knowledge for Commons Management: A Commons for the Commons, by Doug Wilson

A Need for Historical Knowledge for Using Current Knowledge

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I come to this discussion of the challenges associated with generating agreement among scientists and others on what is happening to the fish from more than a decade of research on fish harvesters' knowledge and science in Newfoundland and Labrador, Canada. Unlike Doug, my work is less rooted in experiences with participatory management (which are few and far between in this part of the world) than in seeking to understand stock collapses in state-managed fisheries. In the beginning, I worked by myself, talking to harvesters, exploring why some disagreed with stock assessment science for northern cod in the 1980s. Since then I have worked in interdisciplinary teams involving social and natural scientists and we have gone on to compare and contrast fish harvesters' ecological knowledge and science in multiple fisheries.

Consistent with a background in historical sociology, I take the view that understanding what is happening with the fish now and might happen in the future require understanding the past and how we got here. Thus, much of the work we have done has sought to use fishers' knowledge and science to reconstruct the interactive history of fish, fisheries and fisheries knowledge. In contrast to Doug, we have relied primarily on textual and statistical sources when interpreting fisheries science although we have had opportunities to participate in some scientific meetings and to discuss our work with government scientists. We have used taxonomic and career history interviews with fish harvesters to build an understanding of their primarily oral knowledge about the history and dynamics of their fish and fisheries. In our most recent work, we have sought to use these historical reconstructions to start a conversation with fish harvesters about the ways and means to achieve recovery.

From our work with harvesters' knowledge and fisheries science, I have come to see all knowledge (scientific, harvesters', my own and that of others) as social-ecological in that it is mediated not only by the social-cultural location of the knowledge producer but also by where, when and how they interact with biophysical environments. I emphasize this here because I think most social scientists are still not sufficiently aware of the ways ecology interacts with social processes to inform knowledge production. For example, harvesters who fish with large mesh nets will probably know little about the location of juvenile fish and scientists who begin studying an ecosystem after it has been heavily fished may have a different sense of abundance trends than fish harvesters whose careers began before fishing intensity escalated.

Reconstructing the interactive history of fish, fisheries, science and fish harvesters' knowledge (ideally in conversation with these groups) can help us see the complexity of knowledge production and change and their relationships to changes in both fish and fisheries. In this sense, historical work can contribute to the transparency and accountability that Doug argues, correctly in my view, are essential to effective management. It can do this by bringing into the spotlight similarities between science and other forms of knowledge, contributing to our understanding of the basis for knowledge claims, and by helping to counter such problems as Pauly's shifting baseline syndrome which can lead us to underestimate the

productive capacity of oceans and hence, often, the degree of degradation and potential for recovery in the sea and in our communities.

Let me illustrate. Hutchings (a fisheries biologist) and Paul Ripley and I (sociologists) wrote a paper entitled the “Nature of Cod” based on historical archival work in which we tracked underlying assumptions about the nature of cod from the late 19th century up to the 1980s among harvesters and scientists. We found that in the 19th century (based on media debates), there were two views about cod: that they were wandering vagrants and that they were local homebodies. The dominant view at the time appears to have been that they were local homebodies. By the 1980s, cod management was premised more on the treatment of cod as wandering vagrants with multiple stocks and populations managed in a single unit. Since then, work on bay stocks (often drawing on harvesters’ knowledge), cod homing and Ted Ames work on the extinction of cod and haddock spawning grounds through trawling activity (based on interviews with harvesters) has shifted the dominant frame back towards the view of cod as homebodies some of which migrate considerable distances but even those returning on a regular basis to particular areas to spawn. Needless to say, wandering vagrants need to be managed differently from local homebodies.

Doing work on the history of science and fishers’ knowledge has helped me see that the stock assessment science of the 1980s tended to marginalize not only fishers’ knowledge but also substantial areas of fisheries science. Older inshore fish harvesters tended to talk critically about technologies like gillnets that “fished out” the “mother fish.” Reading stock assessment science through the eyes of these fish harvesters, I found little information about such impacts and nothing in local fisheries management that sought to protect these large, older, known-to-be more fecund fish. I then looked elsewhere within fisheries science including to the work of Ed Trippel on cod reproductive biology that began to appear in the early 1990s. Since that time several scientists have documented the complexity of cod spawning behaviours (male and female) and evidence of differential spawning success and duration between inexperienced and experienced spawners.

In the 1980s there was little parallel science to match harvesters’ concerns about the effects of dragging on benthic environments and thus on fish habitat and stocks. A scientist I interviewed in the early 1990s commented that at that time, within the Department of Fisheries and Oceans, the bottom of the ocean was there to “hold the fish in.” He was one of the first to begin studying potential impacts of dragging. Harvesters’ observations and concerns about the effects of dragging on the “trees” on the bottom and their knowledge of where those “trees” are located preceded and have informed recent research on deepwater corals in the northwest Atlantic.

In the 1990s, my biologist colleagues Schneider and Ings were funded to re-introduce juvenile cod sampling in inshore areas along the northeast Newfoundland coast that had been carried out in the 1950s. This research helped them compare contemporary juvenile abundance with that from this earlier period and added a new index of abundance to stock assessment science. This work and their involvement with our research on fish harvesters’ ecological knowledge led to research on the location of eelgrass (important habitat for juvenile cod and other species). To date, we have no comprehensive database documenting eelgrass locations and juvenile or nursery areas in the waters off Newfoundland and Labrador and thus no way of monitoring changes in that habitat or to systematically protect it from degradation.

This discussion brings us back to the central question in this forum: the relationship between knowledge, interests and what is happening with the fish. Our historical, comparative work on fish harvesters’ knowledge and science reminds us that when we seek to understand what is happening with the fish, we need to be clear about what we are looking for. What fish are we talking about? Should we be talking about? To know this, we need to know more about stock structure. Do we simply mean the fish we are

targeting – what about the bait? What about the juveniles and juvenile habitat – the dominance of stock assessment science and management based on counting fish and setting quotas in recent decades means we know far too little about many things that influence what is happening to the fish.

Understanding what is happening with the fish is both challenging and essential not only for successful participatory management but for any form of management. The need and challenge are particularly great when, as is too often the case, we are dealing with over-harvested stocks, degraded ecosystems and highly conflicted fisheries. Depletion and habitat degradation both narrow the margin of error and heighten uncertainty: critical and often unknown thresholds can be easily crossed and we know too little about how species respond to these forces. Unfortunately, as our research with harvesters has shown, depletion is commonly associated with accelerating fishing efficiency, mobility, and shifting effort across species contributing to uncertainty and to the need to get it right. Fishing mortality data required for stock assessments are often fouled by unrecorded by catch and discarding which can threaten the accuracy of the stock assessments, their credibility among harvesters, and the willingness of scientists to trust harvesters' information. As fisheries move from more traditional to new target species and as they become more mobile and dynamic, the quality and depth of available science changes, as does the knowledge of fish harvesters.

Working on fishers' knowledge and science can open the door for discussions about management for recovery and ways to achieve that which are not limited to reducing fishing effort and thus harvester incomes. However, as indicated by Doug, both types of knowledge are highly complex and dynamic. Neither can be expected to answer questions for which the data don't exist (a legacy of yesterday's scientific preoccupations and of the ways technologies and industrial dynamism can mediate the shape and transfer of harvesters' knowledge) or to compensate fully for dwindling research and monitoring capacity which, too often, have accompanied stock decline. Agreement between harvesters and scientists can be comforting but must not lead to complacency. Points of disagreement can provide clues for ways to strengthen and improve our understanding of what is happening in the ocean but, in some circumstances and certainly some contexts, may have more to do with politics and agenda setting than with marine ecosystems.

One final point. I was struck by Doug's failure to assert a place for fisheries social science in the struggle to know what is happening with the fish. Part of the value of the work we do as social scientists is to bring attention to the ways knowledge is mediated by power, technologies and other processes. Our work can help these groups see what transparency might entail and working with them can inform our social science research. More importantly, we will ask questions that natural scientists will not. As a social scientist, my response to a recent report on cod recovery was to pose the question "Recovery for who?" This question had received no attention in the report but is central to differentiating between recovery strategies and to interpreting scientists', managers' and harvesters' attitudes towards those strategies. Harvesters who are struggling to survive financially and who feel government is trying to force them out of the industry are likely to respond differently to calls for conservation and restraint from those who are doing well (often because they have access to other lucrative, limited-entry fisheries) and who expect to survive. For the former, conservation becomes yet another means to force them out; the support of the latter may have less to do with commitment to conservation than with economic flexibility and the view that strict conservation might reduce future competition for the resource.