A Conservation Market for Whales: Institutional Analysis

Part I: Static Analysis - Collective Action

This case study coincides with a master's thesis project conducted by Melanie Sturm in 2013-2014. It is an analysis of the relevance for wildlife markets to meet conservation objectives. Specifically, it addresses the question: What would be the result of broadening the economic paradigm of wildlife markets employed solely in fisheries to a policy that incorporates protectionist interests? Catch shares are a resource management mechanism whereby portions of the total allowable catch (TAC) of a fishery are allocated to resource users. Markets stand to be instrumental as more natural resources face the risk of overexploitation and/ or under-provision of proper control mechanisms and supporting infrastructure. Granted, market solutions are not a panacea, but there are settings and species for which rights-based management is appropriate, and this warrants investigation.

Using whales as an illustrative example, this analysis explores the potential for catch shares to be a socially acceptable, economically efficient, and sustainable solution for certain wildlife plagued by a commons dilemma, and in doing so, will identify the key considerations for rights-based management of threatened species.

1.1 The Commons Dilemma

Marine resources are a critical asset to commercial and subsistence interests worldwide for nutrition and income, yet they are inadequately managed relative to their demand and importance. The problem of overexploitation arises from constraints inherent to marine resources and common aspects of marine megafauna biology (e.g. low reproductive rates, long-ranging migrations, unique histories and relationships with humans that evoke strong preferences). Most notably, there is no authorized jurisdiction on the open ocean, stakeholders are very heterogeneous, and there is limited available knowledge on marine wildlife. In addition, this collection of species is susceptible to a variety of indirect, deleterious human impacts. Because of these factors, solutions to effectively govern marine species, to which whales are no exception, have, for the most part, evaded policy makers. Any institutional arrangement for marine megafauna must acknowledge the limitations of governing marine resources and compliment the highly variable attributes of the community.

1.2 Biophysical Context

Natural Infrastructure: Whale management is marked by a host of challenges because of cetacean biology and behavior. Firstly, they inhabit the open ocean, making them common-pool resources that are non-excludable and subtractive. Like other large marine species, whales are highly migratory, which dampens the capacity for institutions to effectively uphold proper incentive structures when enforcing compliance to the rules. Similarly, extirpation of a few individual whales has large implications for the population; the magnitude of killing a few is greater for species with long life spans and births of a few offspring interspersed over time (Lewison et al., 2004). Yet whales are an integral link in marine trophic systems (Roman & McCarthy, 2010).

Human-made Infrastructure: The rules and platform for trade are part of the soft infrastructure of the system. Along with these public infrastructure pieces are alliances between nation-states and/

or NGOs and IGOs; domestic laws; IWC (International Whaling Commission) meetings for discourse and decision-making; and rules and regulations for commercial markets within countries maintaining the industry. Knowledge of cetacean ecology and strategies to hunt whales are esoteric types of knowledge and, therefore, qualify as private infrastructure. Indigenous networks and exchanges are, for the purposes of a wildlife market, a separate circle as they would remain a concession in IWC law, subject to an independent set of quotas. In terms of hard infrastructure, boats, gear, technology and processing equipment, whether for studying, observing or harvesting whales, are privately owned.

1.3 Attributes of the Community

Due to diverse attitudes towards and interests in wildlife, including consumptive and non-consumptive values, there are generally distinct camps of actors, those who seek to preserve whales and those that would elect to harvest them. Within each of these designations is a spectrum of viewpoints regarding the use of non-human animals, spanning from animal welfare advocates and conservation scientists to subsistence and commercial harvesters. Stakeholders also include recreational shareholders, local advocates, and conservation NGOs. IWC meetings are very inclusive of whale stakeholders (supporting Ostrom design principle (DP) #3). Paradoxically, species that are most taxing to manage often pique human sentiment and the desire to protect them.

Because the US is the *de facto* leader of the IWC, its inclination towards whale preservation colors the landscape, controlling policies that are ultimately enacted. Animal rights activists agree with this notion that whales are superior entities worthy of moral respect. On the other hand, whales are heavily sought after among select groups globally for their economic or cultural value. Some indigenous communities regard whales with reverence but continue the tradition of killing them for nutrition. In subsistence settings, whales and the ceremonious hunt are cultural centerpieces. Unrest remains over the moratorium mostly because of commercial whaling industries in Iceland and Norway and controversial whaling by scientific permit that continues in Japan.

1.4 Rules in Use (for a whale market)

Boundary rules:

Consumptive users: Commercial whaling countries (Iceland, Norway); Recognized subsistence groups in Denmark, Russia, St. Vincent and the Grenadines, USA; Special permit for scientific whaling (Japan); Member countries of the IWC would distribute shares to individuals or groups
Non-consumptive users: Some scientists; Countries with preservation preferences; NGOs
*Users are limited by access to ocean and infrastructure

Position rules: Participants in IWC meetings (member and non-member nations; whalers; non-whalers; NGOs); the Public; Shareholders; Some policymakers participate in the IWC while others that object to the Commission's statutes craft autonomous guidelines for whaling

Scope rules: Must not take more than assigned share; For scientific whaling, you must not take more than the quota and meet defined scientific standards; For subsistence whaling, you must not take more than quota and defend that whaling is a continuous tradition and dietary component;

Must not whale in marine protected areas/ sanctuaries; Must take record of your catch; Must use permissible methods to hunt

Choice rules: May preserve or harvest a share; May implement federal laws regarding whales separate from international rules; May take part in IWC meetings as a representative from an indigenous community, scientific community, NGO, or politically recognized country; May do what you want with whale products/ derivatives; May trade shares with other shareholders.

Aggregation rules: IWC meetings that lead to policy decisions, including setting the TAC and allocating shares; Trade agreements between shareholders

Payoff rules: Cultural and/or tradition maintained; Subsistence/ dietary needs; Income for selling whale products; Scientific insight (this hasn't been substantiated by Japan); Existence value; Tourism

Information rules: IWC sets value of a share; Individual countries or independent groups decide if their needs warrant whaling and how much; Scientific committee advises the TAC based on stock assessments; Sanctions for noncompliance?

1.5 Summary

The IWC has not been successful at resolving conflict (violating DP #6). An improved whaling regime will rectify divisive political views not by developing a single, uniform policy but by adopting a mixed-management system. Commercial whaling is enmeshed in broader social, economic, and ecological issues and processes, and must be dealt with sensitively. Even so, conscious objectors to the moratorium are in the minority of a global populace holding fast to all-out whale preservation. Reinstitution of whaling quotas is unlikely.

Part II. Dynamic Analysis – Robustness

2.1 Shocks, Capacities, Vulnerabilities

…to and of the Resource (disturbance #7)

The exogenous shocks of the resource system include bycatch, vessel strikes, pollution, climate change, plastic ingestion, disease, prey depletion, entanglement, and acoustic disturbances (Notarbartolo-di-sciara, 2013), all of which are exacerbated by growing human populations, especially in coastal regions. Species stationed at the top of the food chain accumulate high contaminant loads (Roman et al., 2013). However, one possible strength of the resource system is that commercial interest in whale meat is declining. The resource is in a constant state of uncertainty because accurate population data is limited. Additionally, physical characteristics of whales strongly influence human perceptions (link #1). Attributes of 'charismatic megafauna' like size and intelligence garner public attention and capture human emotion for a variety of evolutionary, social, cultural, and historical reasons (Lorimer, 2009; Metrick and Weitzman, 1996). At the same time, because larger, long-lived species are more likely to be hunted, they are more vulnerable to extinction . This vulnerability is particularly salient for marine megafauna because marine species are more threatened and less studied than their terrestrial counterparts (Schipper et al., 2008). They also lack well-defined property boundaries beyond exclusive economic zones, violating DP #1.

…to and of the Resource Users (disturbance #8)

By allowing transactions between actors, a market can arrive at the socially optimal distribution of shares based on preferences for a given time period. Heterogeneity among stakeholders allows acknowledgement of legitimate needs and alternative interests for whales. However, some resource users object to markets and would not participate while others may free ride on the contribution of like-minded stakeholders and also opt out of a market, leading to sub-optimal outcomes (Gerber et al., *in press*[A, B]). Link #6 between resource users and public infrastructure is weak because monitoring and sanctioning are time and resource-intensive (prohibitory costs associated with DP #4). The IWC has restricted enforcement power, an insufficiency to which it is fully aware and regularly convenes to address (iwc.int/rmp). The Commission can only make policy recommendations for countries to autonomously craft internal legislation, an attempt at nesting enterprises to form parallel policies at multiple scales (DP #7, 8). Given the provision that nations can defect from the treaty, enforcement is restricted in its capacity to effectively police the oceans despite low social tolerance of infraction. Dissent is underreported and violators are not penalized sufficiently to deter infringement (i.e. they lack graduated sanctions and proportional costs and benefits, DP #5, 2).

…to and of the Public Infrastructure (disturbance #7)

The shocks are the political climate and unrelated international or domestic events; supply and demand of other food/ protein sources; scientific interest and funding in cetaceans. To this last point, depending on research priorities at the time, funding may not be funneled to whale research if it's not of interest or concern, which could affect certainty in setting the TAC. There is a feedback between setting the TAC and the stock levels (link #4). Scientific knowledge is based on changing resource conditions, and will affect the level of the TAC. The TAC will, in turn, influence whale stocks. Anticipated disagreement over the appropriate price of a whale is a volatile concern (Babcock, 2013).

…to and of the Public Infrastructure Providers (disturbance #8)

The shocks are the political, cultural, economic, and biophysical disturbances that shake domestic and international processes and may divert attention from marine mammal conservation.

2.3 Robustness Summary

Considering the costs and benefits of rights-based whale management, a market for whales does not appear advisable. A market for whales is robust because declining commercial interest would allow more preservation of whale shares and further the recovery of stocks afforded by the moratorium. Plus, the international agreement can be reinforced by federal laws. However, a market is fragile because the IWC is weak as a policing force and the biophysical context is a poignant vulnerability, as it impairs critical monitoring and sanctioning. Reports of recovering whales stocks over recent decades are encouraging, and if demand for whale meat is both isolated and declining naturally, the impetus for a rights-based strategy to conservation is too weak for further action. In addition, a market for whales raises a host of ethical and socio-economic questions that are not worth stoking for the gains a whale market may reap. Rather, no-take zones coupled with quota-based systems where whaling persists, is worth continuing, seeing as it echoes the majority of both preservationist and harvest-minded stakeholders.

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