

Commercial Fisherpersion

**Environmental attitudes and its influence on
decisions and behaviors related to fisheries
management**

NRES 428

Group 3

(Jacob, Suresh & Victor)

Presentation Outline

- Introduction:
Methods of data / Information collection
- Characteristics of commercial fishers, fishing gears used & fish catch statistics
- Results
 - Main concerns and interests of commercial fisherman
 - Conflicts over fishery resource management (with other stakeholder groups)
 - Environmental attitudes of commercial fisherman
- Solutions to successfully manage a common pool resource
- Conclusion

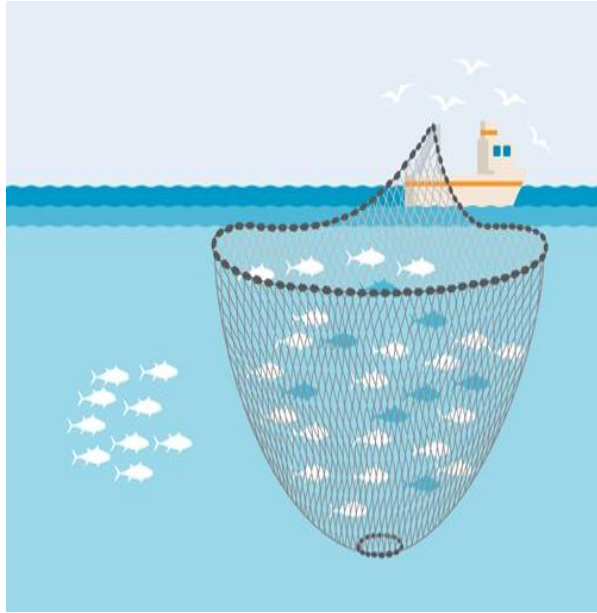
Methods of Data / Information collection

- Synthesis of findings from peer-reviewed journals/research papers
- Interviews about fishery management with key informants
- Secondary data (videos, news clips from newspapers, organizations and/or institutions devoted to fishery management, dissertation papers)

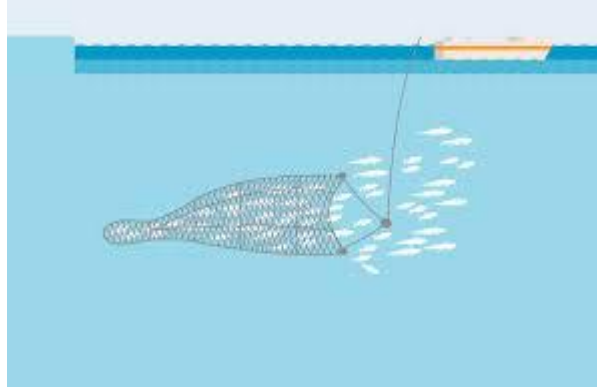
Common characteristics of commercial fisherperson (fisherfolks)

- Depend on fishing for their livelihood support
- Live or dwell near the shoreline in traditionally built houses
- Educational level is relatively low among family members (compared to the national average)
- Multigenerational and traditional-oriented: family history of fishing & fishing tradition passed from earlier generations (Acheson, 1981; Miller & Van Maanen, 1979)
- Possess relatively large family size
- Regard or cherish their fishing occupation as a way of life
- Most live in socially attached and interdependent neighborhood

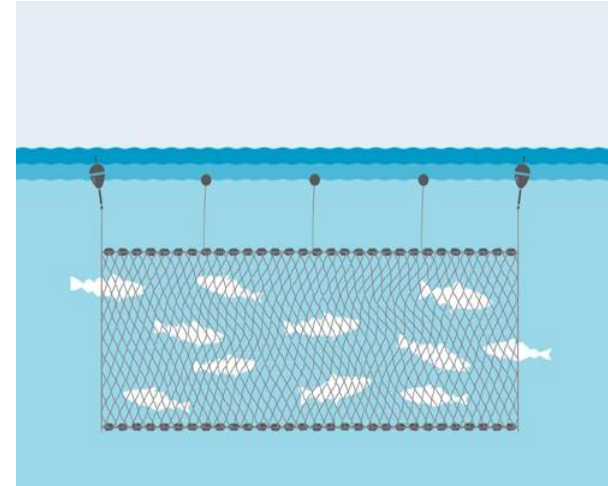
Commercial Fishing Gears used by Fishers



Seine

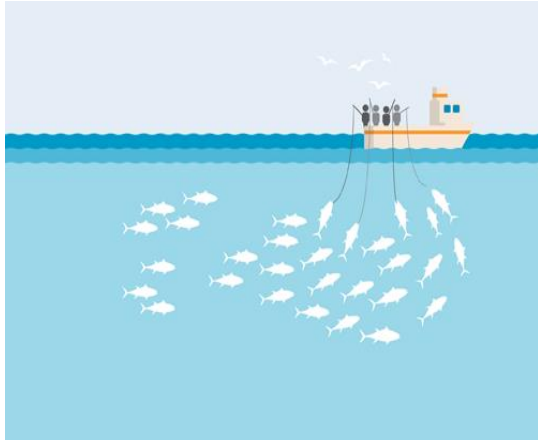


Midwater Trawl

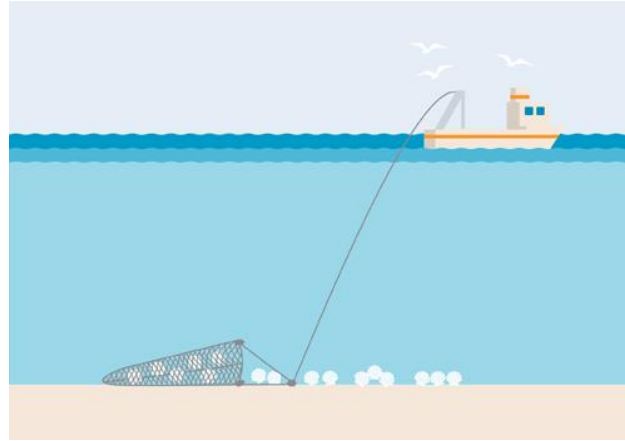


Gillnet

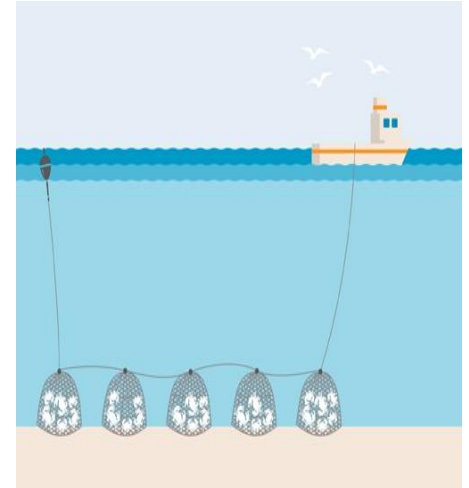
Commercial Fishing Practices (cont.)



Hook and Line

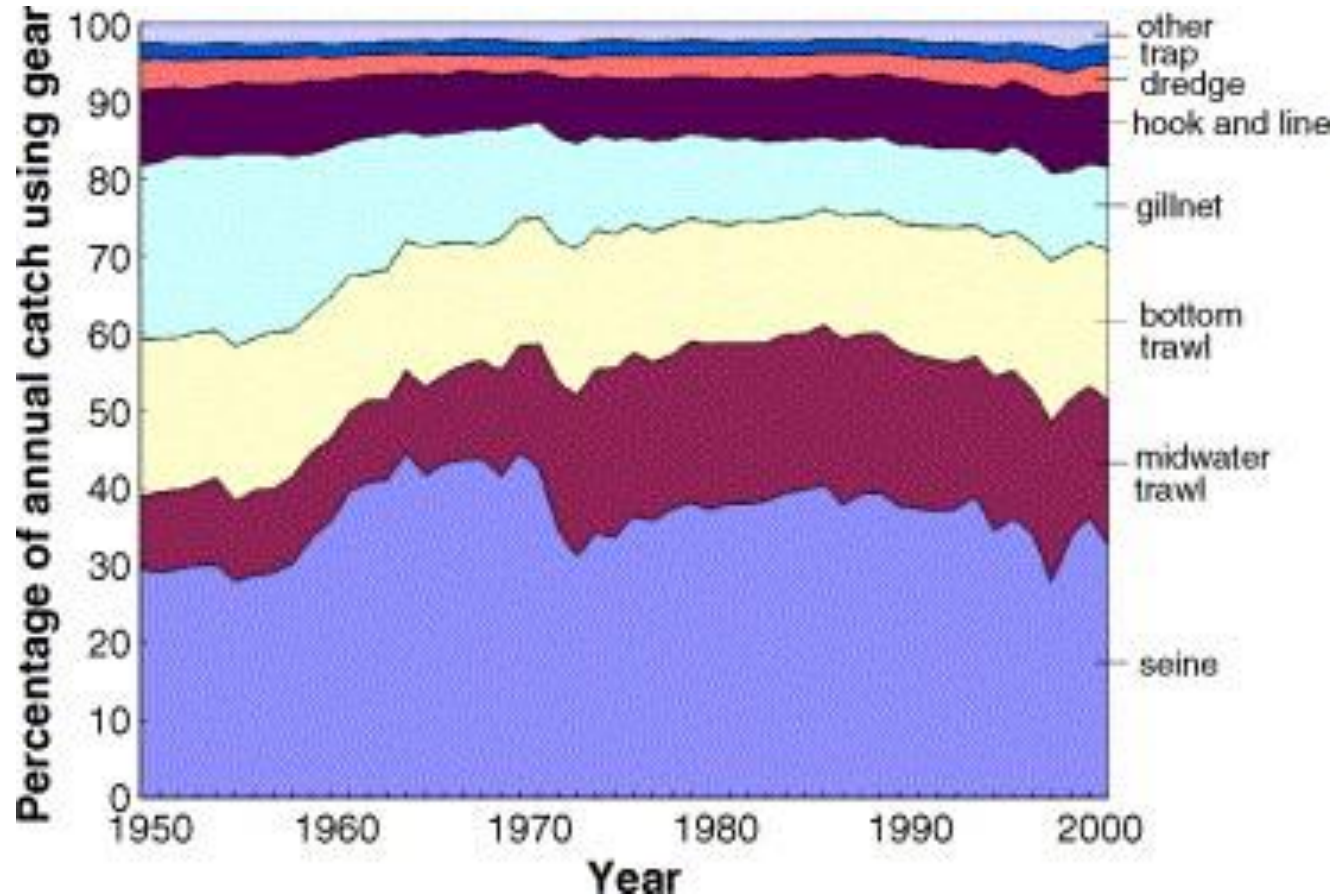


Dredge/Bottom Trawl



Traps

Catch Methods of Commercial Fisherman



Video

Final Presentation Video:

<https://drive.google.com/file/d/1bUlkhZinD-Krj3x9lQJWUybMj-TZPKrr/view?usp=sharing>

Sources:

<https://www.youtube.com/watch?v=tLM6NhMiVKs>

<https://www.youtube.com/watch?v=8LNteLA0u7w>

<https://www.youtube.com/watch?v=N130-QVbvgI>

Ocean Life Population Statistics

All Marine Species

- Trends in 5,829 populations of 1,234 species
 - 49% decline in marine species populations between 1970 and 2012.

Fish species

- Trends in 930 species & 1463 populations
 - 50% reduction in population numbers globally between 1970 and 2010.
 - 29% of commercial fish stocks are now classed as overexploited and 61% as fully exploited.

Main concerns / interest of commercial fishers

- Lower fish catch in recent times
- Competition of fishing among other fisherfolks
- Fetch higher fish price in the local or distant market
- Want to fish during all seasons of the year (sustainability of fishery)
- Dwindling fish population and low fish stocks
- Water boundary conflict with other fishing communities
- Restrictions on fishing practice and fish extraction by regulating authorities
- Illegal fishing practices that kill large fish populations
- Infringement on their fishing water body by outsiders
- Diversify income source from non-fishing activities to improve livelihood and quality of life

Conflicts over fishery resource management

Typologies of Fisheries Conflict (Source: Bennett et al, 2001; Harrison and Loring, 2014)

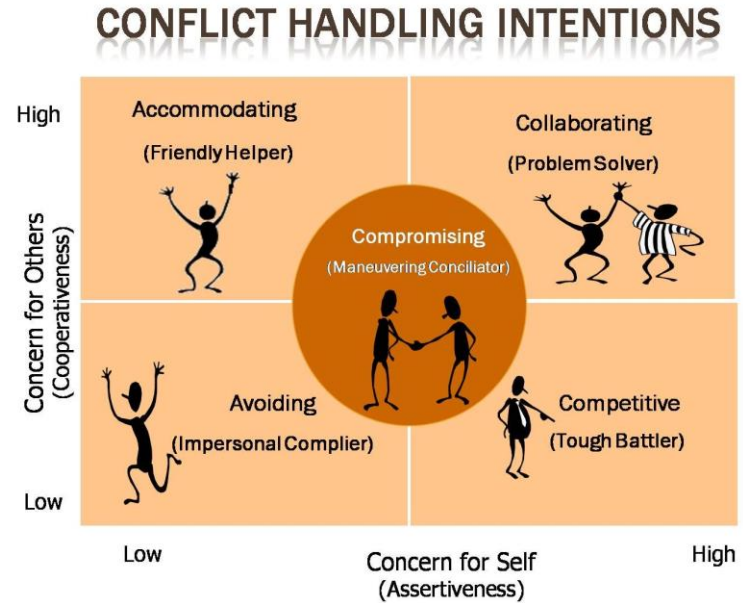
Type 1: Who controls the fishery? [Is there property rights regime, How is power distributed?]

Type 2: How is the fishery controlled? [What management technologies and frameworks are used?]

Type 3: What is the relation among users and user groups? [Are there ethnic conflicts?]

Type 4: What is the relation among fishers and other users of the environment? [Are there conflicts with other ecosystem services, e.g., hospitality industry?]

Type 5: What is the relationship between fishers and non-fishery issues? [Are there conflicts over issues such as climate change, economic and political change?]



Thomas-Kilmann's Conflict Resolution Model

Exploring Environmental Attitudes of Commercial fishermen

Case Study 1

[J Ethnobiol Ethnomed](#). 2017; 13: 25.

PMCID: PMC5420086

Published online 2017 May 5. doi: [10.1186/s13002-017-0154-y](https://doi.org/10.1186/s13002-017-0154-y).

PMID: [28476167](https://pubmed.ncbi.nlm.nih.gov/28476167/)

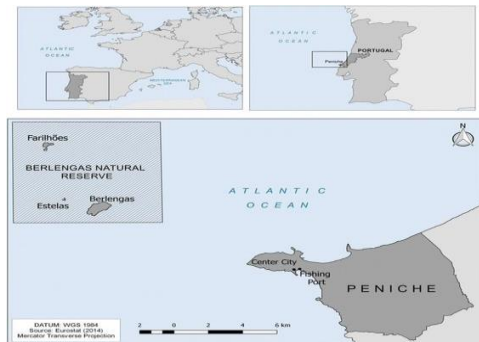
Evaluating fishermen's conservation attitudes and local ecological knowledge of the European sardine (*Sardina pilchardus*), Peniche, Portugal

Abstract

[Heitor O. Braga](#),^{1,2} [Ulisses M. Azeiteiro](#),³ [Henrique M. F. Oliveira](#),⁴ and [Miguel A. Pardal](#)¹

European sardines are an important fishing resource in the North Atlantic. Recognized for its great commercial and economic value in southern Europe, this resource currently has low stock indices. From this perspective, fishers' local ecological knowledge (LEK) is appreciated as an auxiliary tool in the management of sardines in this region. Our goal is to evaluate the LEK and attitudes towards the conservation of *Sardina pilchardus* in the typical fishing village of Peniche, Portugal.

The fishermen of Peniche in Portugal present moderate informal knowledge about the biology and ecology of sardines. Attitudes towards conservation were predominantly positive. Fishermen with greater LEK, with a higher educational level and at a younger age presented more positive attitudes in relation to environmental conservation issues in the present case of the sardine population. The LEK is not necessarily related to the educational level of the fishermen. We suggest environmental education programs for the communities that depend on this resource. The use of LEK and fishermen's perceptions can help in the management of the European sardine fishery in Portugal.



Case Study 2

Attitudes and opinions of commercial fishermen on whitefish management in the Gulf of Bothnia, Finland

Article in [Fisheries Management and Ecology](#) 6(3):221 - 232 · December 2001 with 14 Reads ⓘ

DOI: [10.1046/j.1365-2400.1999.00156.x](#)

[↓](#) [Cite this publication](#)



Alpo Huhmarniemi

il 12 · Finnish Game and Fisheries Research Institute



J. SALMI

Abstract

Abstract Catches of anadromous whitefish in the Gulf of Bothnia have declined since the early 1990s. It is generally assumed that the cause is overfishing. The professional fishermen interviewed in the present study were united in the opinion that it is necessary to set limits on the fishing of whitefish, but had differing views about the means of achieving this. These different arguments involved separate whitefish stocks, various types of gear and different motives for fishing. Most of the professional fishermen accepted a minimum mesh size for gill nets. Other means proposed included setting limits on non-professional fishing and sales of catches. There were conflicting attitudes about seasonal restrictions because their experiences with fishing restrictions for salmon had been negative. On the whole, decision-making requires more regional information on whitefish stocks and fishing, but also on the social and economic flexibility of fishermen.

Larger Than Life: The Emergent Nature of Conflict in Alaska's Upper Cook Inlet Salmon Fisheries

SAGE Open
October-December 2014: 1–14
© The Author(s) 2014
DOI: 10.1177/2158244014555112
sagepub.com


Hannah L. Harrison¹ and Philip A. Loring²

Abstract

Conflicts over natural resources are often misunderstood as being driven primarily by economic concerns or failings of human nature. However, human dimensions research has shown that conflicts are more often driven by problems and shortcomings in institutions for governance and management. In this article, we explore long-standing conflicts over the salmon fisheries of the Kenai River and Upper Cook Inlet region of Southcentral Alaska, fisheries that are embroiled in a long-standing conflict and controversy. We engaged in ethnographic research with participants from commercial, sport, and personal use fisheries in the region to understand their perceptions of these local “salmon wars.” We find that these disputes are more nuanced than is captured by existing typologies of natural resource conflicts, and argue that conflicts can take on a life of their own wherein people stop responding to each other and start responding to the conflict itself, or at least the conflict as they understand it. This perspective is helpful for understanding how conflict in the region has escalated to a point of apparent dysfunction via a process known as schismogenesis. We conclude with a discussion that considers this conflict as an indicator of institutional failure from a social justice perspective, and argue that attempts for conflict management and/or resolution in cases such as these must focus first on protecting the human rights of all participants.

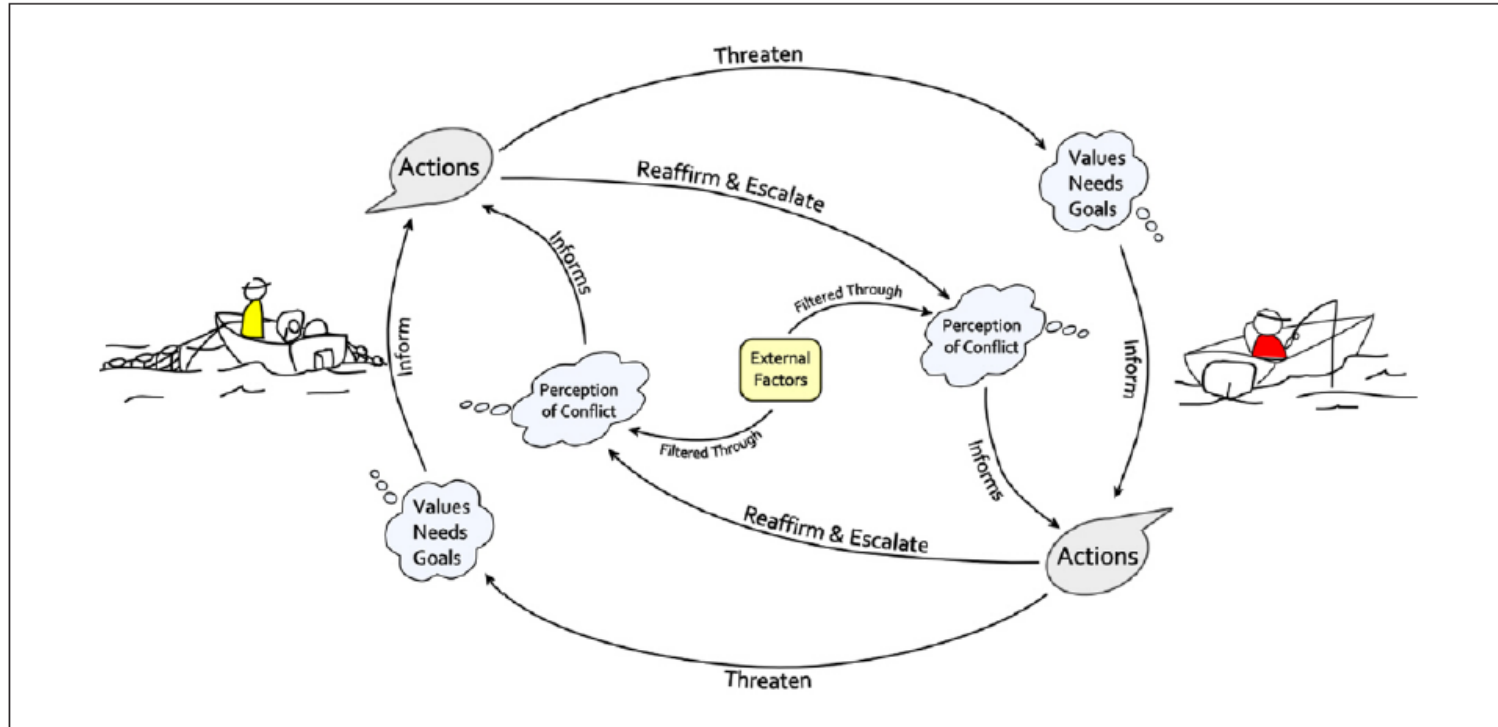


Figure 4. Conflict escalation (schismogenesis) in Cook Inlet salmon fisheries.

Note. When their values, needs, and goals are threatened, people respond. Each person develops a perception of the conflict that informs how he or she interprets the actions of others and also how that person thinks about external factors such as environmental change (see Loring, Harrison, & Gerlach, 2014).

Some concepts related to attitudes and conflict over resources

“schismogenesis”—a process by which opposing positions become more polarized over time (Bateson, 1935).

As Ostrom (1990) argues, conflicts are to be expected as waypoints along the road as societies design and refine institutions to sustainably govern resources.

We argue that a more accurate way to describe the salmon wars in the Kenai Peninsula is, in the language of cybernetics, as an emergent phenomenon.

Systems theory posits that complex emergent phenomena are the result of more simple patterns or behaviors that interact synergistically. One such pattern we encountered involves the role of social imaginaries, a concept that describes how people come to understand the world and issues around them through a socially constructed frame of reference that may or may not accurately represent the true nature of the issues being faced or the values and intentions of others (McLaughlin, 2011; Stephenson, 2011).

Interview of Dane Chauvel - co-founder the sustainable seafood supply company Organic Ocean

- The commercial fishing industry in BC is supporting a move to shut down the Chinook salmon fishery in parts of the Strait of Juan de Fuca and the Gulf Islands as well as partial closures in the mouth of the Fraser River to increase the amount of salmon for the endangered southern resident killer whale population.
- “We really deal with five species of wild salmon. If you don’t have Chinook, then coho, chum, sockeye, pink are good alternatives.”
- The type of gear they use allows them to harvest specific species of salmon
- If Chinook are accidentally taken in, they are easily returned to the water
- “All three commercial salmon-harvest methods – hook and line, gillnet, and seine – have methods for releasing non-targeted by-catch.”
- “There are plenty of other species of salmon to satisfy restaurant menus and supermarkets.”



**Solutions to
Overfishing
or
Unsustainable Fishing Practice**

Some Fixes to Manage Fishery Resources

Structural:

- **Develop and implement user rights** by bringing together all stakeholders (commercial fishers, recreational fishers, fishery managers and scientists/ policy makers)
- **Establish social norms** (Descriptive and Injunctive) **and regulations**
- **Implement Quota system** (e.g. setting maximum allowable fish volume and number of times per week to practice fishing activities in common pool resource; Total Allowable Catch)
- **Implement time-of-use pricing** i.e., by charging higher user fees for fishers to fish during the peak fishing season when competition for fishing is high and when chances of overexploitation of fishery resources is maximum
- **Fix the size and type of fishing gear** that is allowed or permissible by fishers

Structural Fixes (continued)

Stocking

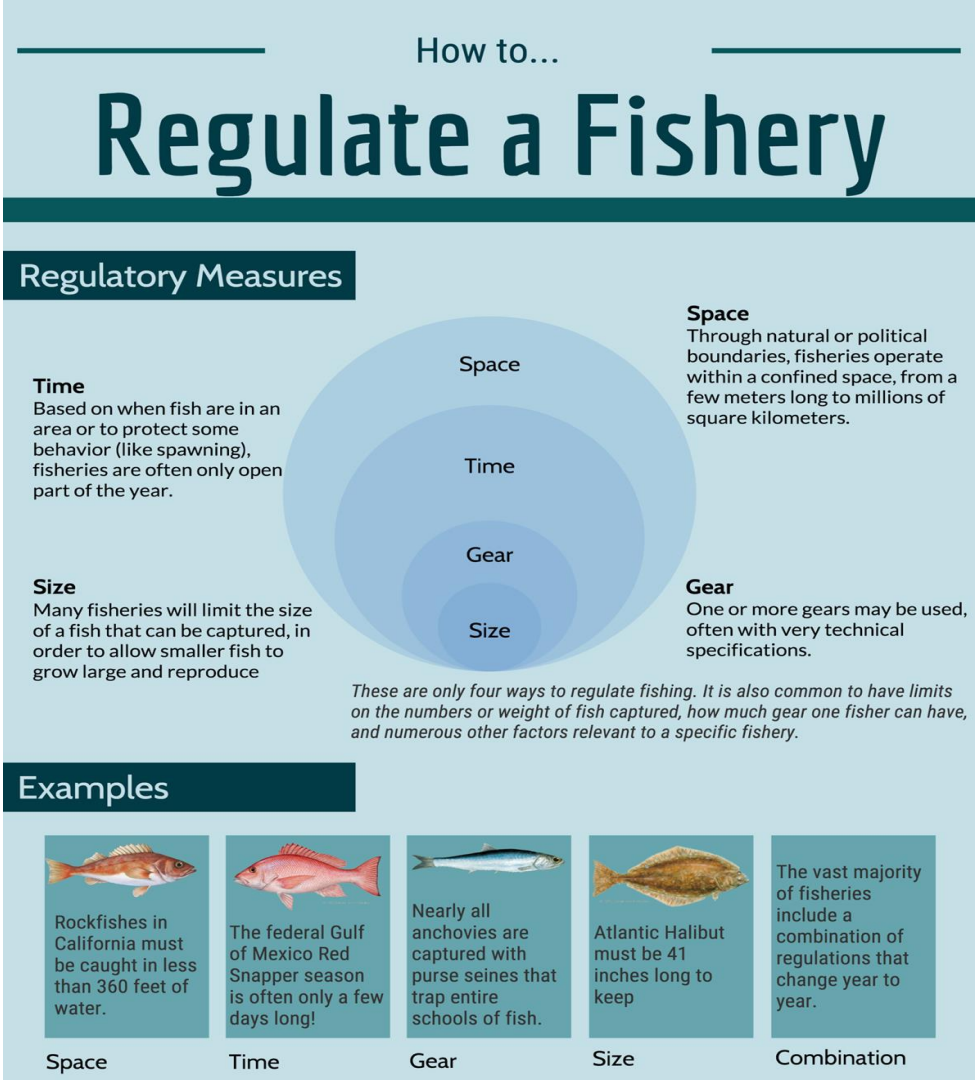
- Tens of millions of fish are raised for stocking each year and released as fingerlings into public lakes
- Stocking has helped restore the native lake trout population on Lake Superior and has helped to maintain sustainable fish populations in thousands of lakes

Price

- Promote market-based improvements to the way fish was sourced by leveraging the purchasing power of big businesses
- Promote lower supply to yield higher demand and higher prices



Structural:(Example)



Some Fixes to Manage Fishery Resources

Technological:

- Use of fish enclosures, fish cages and protected hatcheries in fish reservoirs and water bodies
- Surveillance/ monitoring using cameras for illegal fishing activities
- Application of fish genetics, advanced breeding programs and research for managing fish diseases and associated environmental risks or water pollution issues that could harm fish population.

Some Fixes to Manage Fishery Resources

Cognitive:

- Impart learning and education to fishers on common pool resource management
- Involve the fisherperson community in intellectual enrichment e.g., in talk programs, local seminars and workshops related to fishery management, fish breeding and fish nursery
- Set-up different Fishers' User Groups based on their location and impart training and exposure visits to group members to other places to foster a learning and sharing environment.
- Avoid the cognitive-fix keeper hole (design sustainable solutions with fisherfolks attitudes rather than trying to change them) For e.g., Train and support fisher groups to set-up and manage their fish hatcheries where fish species are bred and reared for re-stocking in main water bodies

Environmental Attitudes (Summary)

- Environmental attitudes of fisher communities **varies across temporal and spatial context depending on cultures, country and location and size of fishery resource** they depend on (e.g., marine vs inland fishery)

Value-based approach (Stern & Dietz, 1994, Stern, 2000)

Egoistic - (self-centered) wants to have more fish catch all the time

Altruistic - (concern for other people) e.g., consider rights of other fishers

Biospheric - (cares for sustainability of fish resources) e.g., forgo immediate needs for attaining long term resource management and conservation goals

- **Individual self-identity** - the extent to which the fishers believe that he or she is part of nature, the more positive his/her attitude towards the fishery sustainability
- **Significant life experiences** - the more closely the fishers direct experience is related to sustainable resource use, the more stronger or positive is their attitude to resource management to ensure long term goals

Conclusion:

- There is no universal one-pill solution for common pool resource management (e.g. fisheries) that can apply to all situations and context
- Viable long term solutions may sometimes need all three fixes: structural, technological and cognitive to work in tandem
- Fisherperson / fisherfolk community are a significantly important stakeholder. Their willingness and involvement is indispensable for solving resource management and/or environmental issues that can have long-term consequences for sustainability.

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- <https://www.youtube.com/watch?v=8LNteLA0u7w>
- <https://www.youtube.com/watch?v=N130-QVbvgl>

Thank You

