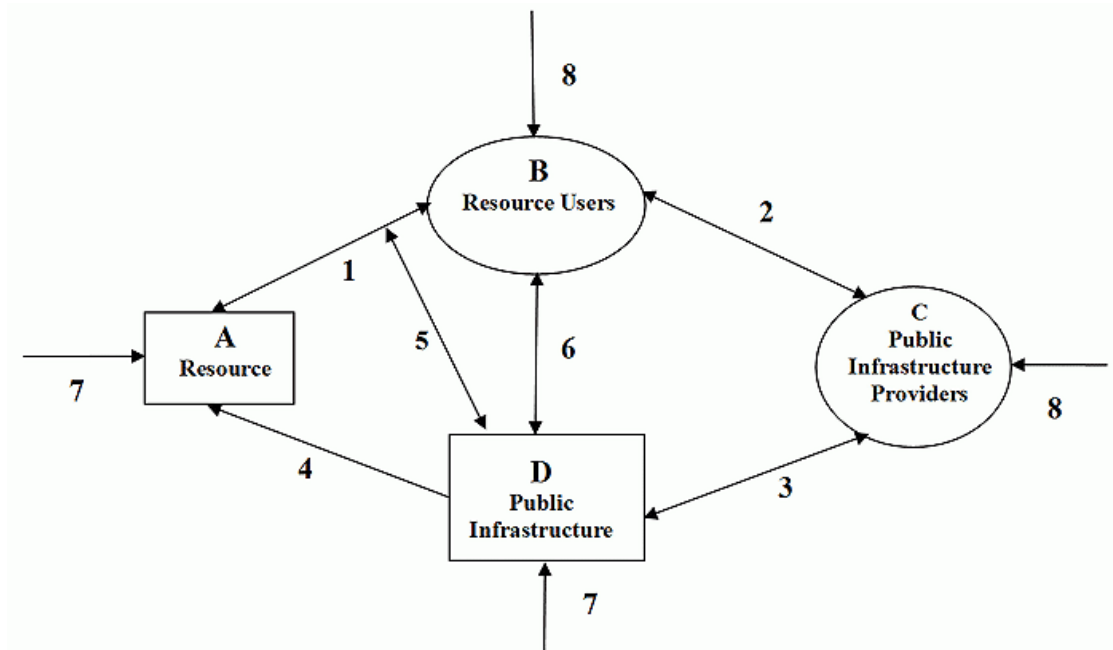


Cross-Case Analysis Codebook

Case Name: Alaskan Pollock Fishery

Summary of Events in Case: During the 1960s, the fishery was heavily exploited by distant-water foreign fleets in the early 1960s. The fishery was later enclosed as an American area with joint ventures as the resource was transitioned for domestic production. Today Pollock is harvested by inshore and offshore sectors. Each sector is allocated ITQs.



<p>Resource Users (U)</p>	<p>1) Inshore Sector: employs catching-only vessels using mid-water trawls and transfer to onshore processing facilities, with Japan-based processors. Inshore sector processing dominated by two large Japanese seafood conglomerates and one large vertically integrated seafood company</p> <p>2) Offshore Sector: Integrated catching and processing vessels (70-110m) and three floating processing “motherships”. Further subdivided into catcher vessels delivering to catcher processors (CP CV, 3.4%), catcher/processors (CP 36.6%), and motherships and catcher vessels(MSCV, 10%)</p>
<p>Public Infrastructure Providers</p>	<p>Department of Justice, Secretary of Commerce, North</p>

	Pacific Fisheries Management Council, National Oceanic and Atmospheric Administration, University of Alaska (UAF), Alaska Department of Fish and Game, Congress
Public Infrastructure	Sideboard regulations, Pollock Conservation Cooperative, Limited Access Programs, Magnuson-Stevenson Fisheries Conservation and Management Act (MSFCMA), Alaska Constitution (Article VIII), High Seas Catchers' Cooperative
Resource	<p>Pollock</p> <ul style="list-style-type: none"> • Dominant semi-demersal species • Flexible feeding and breeding habits, and adaptation to environmental change • The Fishery is newly developed and the ecosystem has not fully adjusted to harvested <p>Pelagic and epipelagic as eggs and larvae, and late juveniles and adults live in middle portion of the water column</p>
Resource Users and Resource (1)	<p>1.5 Million tons harvest</p> <p>A Season – Highly valued roe-bearing Pollock</p> <p>B Season – Dispersed stock</p> <ul style="list-style-type: none"> • Highly reduced fishing effort • Reduced by-catch after rationalization
Resource users and public infrastructure providers (2)	<ul style="list-style-type: none"> • High-stakes allocation disputes over sectorial allocations of the total Pollock TAC • Monitoring and reviewing of Limited Access Programs to ensure they comply with National Standards for Fishery Conservation and Management • Cooperatives permitted under the MSFCMA • Catcher processor fleet lobbying for Congressional resolution to disagreements regarding allocation in the NPFMC • Nine companies that control 20 CP vessels formed the Pollock Conservation Cooperative • Setting of TACs based on recommendations from the NPFMC to the Secretary of Commerce, and based on Stock Assessments and Fisheries Evaluations
Public Infrastructure Providers and Public Infrastructure (3)	<ul style="list-style-type: none"> • Initial TAC allocations (65% offshore/35% Onshore with 7.5% CDQ and 4-6% by-catch allowance) and further adjustments (50/50 offshore/onshore with 10% CDQ) • Americanization of the fleet forcing Norwegian firms to divest of 9 vessels • US State Department, US Fish and Wildlife service, and US Coast Guard are non-voting members of the NPFMC, • 37% of Federal fisheries agencies are voting members of NPFMC • Scientific and Statistical Committees play a role in determining limits for acceptable biological catches (ABCs). TACs must be lower than ABCs • National Standards for Fishery Conservation and Management (ten commandments)
Public infrastructure and resource (4)	
Between public infrastructure and resource dynamics (5)	<ul style="list-style-type: none"> • Monitoring done by privately contracted observers • Sanctioning according to contracts within coops

Between resource users and public infrastructure (6)	<ul style="list-style-type: none"> Stakeholders representing commercial and recreational interests, and conservation and civic organizations form advisory panels to NPFMC
External forces on resource (7)	<ul style="list-style-type: none"> Warmer late summer sea surface temperatures due to climate change are expected to reduce recruitment (by 32%-58% by 2040-2050)
External forces on public infrastructure and resource (7)	<p>PI Involving Non-target Resource: Sideboard regulations to protect non-Pollock groundfish harvesters from excess effort due to rationalization</p> <p>Regulation must be consistent with requirements of other regulations, including the Marine Mammal Protection act, the Endangered Species Act, the Migratory Bird Treaty act, and several other Federal laws (PI) (NPFMC 2011)</p>
External forces on Public infrastructure providers (8)	
External forces on social actors (8)	<p>Economic Value (RUs): Surimi is an intermediate commodity product that is not highly valuable. Value in fishery is due to large economy of scale. Fillet and mince products sold to international whitefish markets, competing with cod, hake, and haddock. Value of fish is also a product of landing market prices in Japan, U.S imports of groundfish, domestic demand for groundfish, exchange rates, and quantity of cold stored groundfish.</p> <p>Legal Framework (PIPs): Department of Justice agrees that cooperatives do not violate anti-trust regulations</p>

The co-production of public infrastructure by resource users and by government seems vital to the functioning of this SES. The resource users have developed innovative and flexible policies to reduce and coordinate effort, and increase the value produced per unit of fish caught. Government agencies have played an important role in setting limits on targeted species catch, by-catch, and ecosystem catch. NOAA has also limited catch for other important species. Finally the use of Community Development Quota has given Alaskan Natives the opportunity to benefit from the resource, something that has previously not been possible due to the capital-intensive nature of the Pollock fishery.

Resource and Location Report

Resource Info	See Robustness Diagram
Location	The Bering Sea and Aleutian Islands
Collective Choice Arrangements (GS6) (Individual's actions taken that directly affect the rules that affect operational rules)	NPRMC council prepares a Fisheries Management Plan for review by the Secretary of Commerce, and conducts public hearings to all interested persons to be heard, and then the NPFMC makes revisions.
Constitutional Choice Arrangements (GS7) (Individuals actions taken that directly affect the rules that affect collective choice situations)	Magnuson-Stevens Fisheries Conservation and Management Act establishes the North Pacific Fisheries Management Council. Voting members include state agency representatives, public members chosen

	<p>by Secretary of Commerce and nominated by the governor, and a representative of the National Marine Fisheries Service, and in the Pacific FMC has a tribal representative. Other FMCs, interstate fisheries commissions, and the US coast guard and Fish and Wildlife Service and State Department are non-voting members. FMC membership is 37% state or federal fisheries agency representatives, 30% commercial sector, 24% recreational sector, and 9% other. National Standards for Fishery Conservation and Management. Within the COOP, vessels that elect not to enter a cooperative may fish a limited access fishery, without the benefit of exclusive allocation. A very important constitutional arrangement is the National Standards for Fishery Conservation and Management, which lays out important goals of preventing overfishing, science-based management, management of a target species along its full range, non-discrimination between states, efficiency, taking into account variation, minimizing costs, minimizing adverse economic effects, minimizing by-catch, and promoting safety.</p>
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Constitutional choice arrangements provide a framework by which the formation of coops, the use of CDQs, and collaboration between scientists, government officials and industry representatives has been possible.

Operational Level and Subgroup Report

Type of Situation (Problems described related to appropriation, distribution, and production)	Derby fishery with excess capacity	
Events Marking the Beginning of Action Situation	Derby fishery with excess capacity	
Conditions at the Beginning and End of Period Covered by this Form (Change in the levels of rent dissipation, pollution, maintenance of the resource, externalities, property rights, and economic value of the	Beginning	End
	Extreme Shortage	Extreme Shortage
	Moderate Shortage	Moderate Shortage

resource)	<table border="1" data-bbox="857 191 1443 384"> <tr> <td>Apparently Balanced</td> <td>Apparently Balanced</td> </tr> <tr> <td>Moderately Abundant</td> <td>Moderately Abundant</td> </tr> <tr> <td>Quite Abundant</td> <td>Quite Abundant</td> </tr> </table> <p data-bbox="792 390 1443 499">Fish stocks have stabilized, except in international waters (the donut hole) where fish stocks remain very low.</p> <table border="1" data-bbox="857 520 1443 827"> <tr> <td>Beginning</td> <td>End</td> </tr> <tr> <td>Clearly Overharvested</td> <td>Clearly Overharvested</td> </tr> <tr> <td>Potentially overharvested</td> <td>Potentially overharvested*</td> </tr> <tr> <td>Balanced harvest</td> <td>Balanced Harvest</td> </tr> <tr> <td>Underharvested</td> <td>Underharvested</td> </tr> <tr> <td>Unharvested</td> <td>Unharvested</td> </tr> </table>	Apparently Balanced	Apparently Balanced	Moderately Abundant	Moderately Abundant	Quite Abundant	Quite Abundant	Beginning	End	Clearly Overharvested	Clearly Overharvested	Potentially overharvested	Potentially overharvested*	Balanced harvest	Balanced Harvest	Underharvested	Underharvested	Unharvested	Unharvested
Apparently Balanced	Apparently Balanced																		
Moderately Abundant	Moderately Abundant																		
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Beginning	End																		
Clearly Overharvested	Clearly Overharvested																		
Potentially overharvested	Potentially overharvested*																		
Balanced harvest	Balanced Harvest																		
Underharvested	Underharvested																		
Unharvested	Unharvested																		
Information Levels (I2) (Information sharing and availability to appropriators, producers, and distributors)	<p data-bbox="792 833 1443 1052">Vessel Days Data: Landings Data: Scientific Data: Survey Data: Coop members rapidly share information to avoid by-catch and coordinate fishing effort.</p>																		
Potential Actions and Levels of Control (Questions regarding problems of pollution from other activities, previous appropriators, insurance available to appropriators, and actions available to maintain the resource)																			
Patterns of Interactions (Nature of relationships, monitoring and sanctioning, and cooperation among appropriators)	<p data-bbox="792 1283 1443 1612">Monitoring: (GS8): 100% Monitoring Government Monitoring (GS8): Sanctioning (GS8): Cooperatives distribute allocations among member vessels and oversee individual vessel harvests with contractually defined and privately administered penalties for violations of the cooperative agreement. (Fina 2011).</p>																		
Positions and Participants (Number and change in number of monitors, appropriators, non-appropriators)	<p data-bbox="792 1619 1443 1801">Number of Appropriators: ~100 (need exact number and sources)</p>																		
Number and Relationships Among Subgroups	<p data-bbox="792 1808 1443 1875">Subgroups: (U2) 3) Inshore Sector: employs catching-only</p>																		

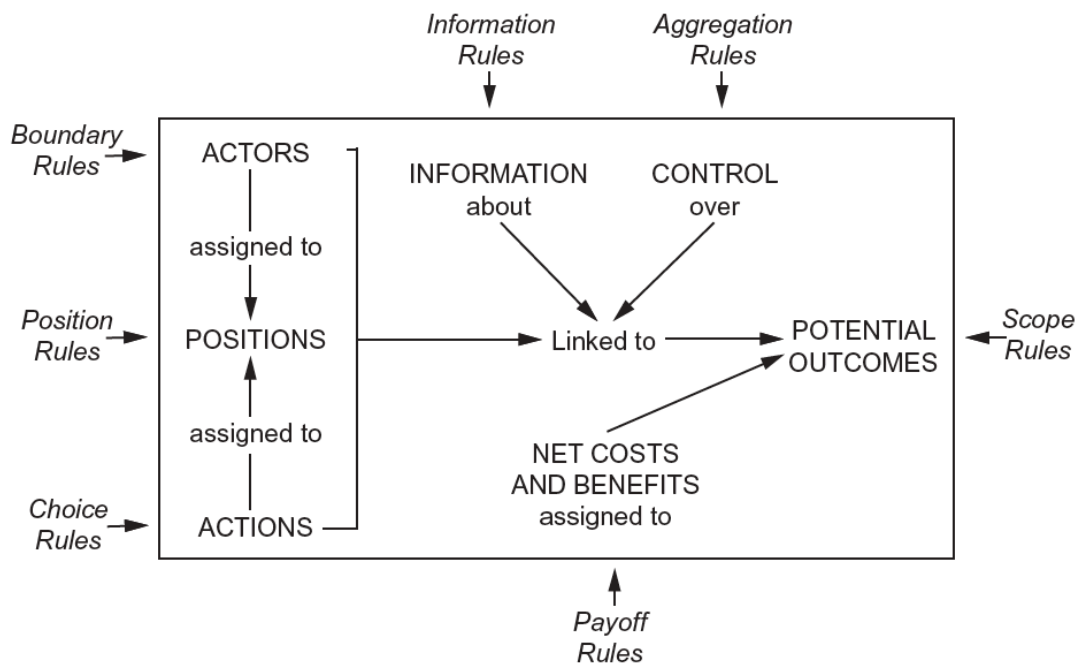
<p>(Groups of participants with asymmetry in rights, appropriation, exposure, dependency, and use)</p>	<p>vessels using mid-water trawls and transfer to onshore processing facilities 4) Offshore Sector: Integrated catching and processing vessels (70-110m) and three floating processing “motherships” Dependency: The majority of the fishers do not live adjacent to the management areas. Many come from Washington state</p>
<p>Evaluation of Results (Harm, reduction in benefits, and distributional equity resulting) (O1)</p>	<p>Participation in decisions: Coop members seem to have high participation, though it is not clear what say Alaskan communities had in the decisions. Decisions seem to have been skewed by those sectors of the industry with the most power (i.e. highly capital-intense catcher processors and offshore vessels). Recognition of subgroups: High Capabilities: It is implied that the CDQ has given Alaskan Communities the capabilities to improve well-being by investing in the Pollock fishery, and increasing employment, and using CDQ funds for local development projects, though I have not seen data to suggest this has happened. Distribution: Matulich et al. (2001) suggest that new coop formation has been disadvantageous to the processing sector due to sunken costs. A larger proportion of the increased value of Pollock production may be given to the fishers rather than processors (50% to 10%) (Herrmann and Criddle 2006). Americanization of the fishery shifted benefits from fishery from Japan to Washington, but little benefits flowed to Alaskan communities. (Mansfield 2007). CDQ provides opportunities for Native Alaskan Communities giving them the ability to participate in the fishery (Mansfield 2007).</p>
<p>Author’s Evaluation and Causal Assumptions (Author’s evaluation of efficiency, transaction costs, and withdrawal per unit effort) (O1)</p>	<p>Efficiency (O1): Originally low efficiency in the processing sector due to variable supply and variable quality of supply Highly increased product recovery rate (18% to 30% after rationalization) Increased production of if higher value fish products Compliance: High compliance is implied</p>

	based on the 100% coverage. There is no data on the accuracy of these reports
<i>Participants (U2)</i> (Description of different types of appropriators)	Variation in skipper skill? Capital Intensive Fishery, difficult for Alaskan communities to get involved.
<i>Legal Rights</i> (Rights of access, withdrawal, decision-making, and transferring of rights each group exercises)	Coop Members: (GS4) <ol style="list-style-type: none"> 1. Access 2. Withdrawal 3. Management 4. Exclusion 5. Alienation Quota Rules: No single person can obtain more than 30% of the TAC, and no single vessel can fish more than 20% of the TAC CDQ Property Rights <ol style="list-style-type: none"> 1. Access 2. Withdrawal 3. Management 4. Exclusion 5. Alienation CDQ holders must apply for funding by submitting community development plans
<i>Stakes and Resources</i> (Level of income, dependency, and other assets for subgroup)	Alternative employment (U8): Not mentioned
<i>Technology (U9)</i> (Changes in technology and their potential to affect resource appropriation)	Boat type: Boat Min Size: Boat Max Size: Technology consists of large boats tied to processors. Technology is highly capital intensive.
<i>Strategies Adopted</i> (Production of others goods, changes in rate of appropriation, investments into public infrastructure or resource improvement, and level of compliance with rules)	Level of Compliance (O1):

The fishery was initially overfished leading to fishery collapse in the international waters (the donut hole). This area now is fished for Jellyfish. Derby fishing has stopped since the allocation of total allowable catches to onshore and offshore vessels, and CDQ communities. Coop members

coordinate effort effectively through an ITQ program, which as reduced overall effort and increased information sharing. The CDQ program has also allowed Native Alaskan communities to benefit from the fishery off their shores through investments into the offshore and onshore industries, and community development plans. There is no discussion of how Alaskan communities got involved in the decision-making process, but it is clear that the resulting management program has recognized their needs to some degree.

Operational Rules (GS5)



<p>Boundary Rules (Requirements that must be met before individuals are eligible to harvest or withdraw units, including shares and ownership, and membership)</p>	<p>Entry Rules: CDQ communities are adjacent to the Bering Sea, have been designated as native communities, have limited commercial fisheries development, and depend primarily on the Bering Sea for existing activities (Mansfield 2007). CDQ holders must have community development plans. Other offshore and onshore fishers are given the right to fish through TACs based on historical catch. Basis for Access: Historical catch Change: Exit Rules :</p>
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	Succession Rules:
Position Rules (Rules regarding how someone move from member to other tasks)	
Scope Rules (The potential outcomes that are mandated, allowed, or forbidden, such as no-take zones)	Seasons: Initially a season defined by TAC, later replaced. Currently a Season for roe-bearing and regular season. Area closures from NOAA. Rolling hot-spot closures which rely on real-time bycatch, as an alternative to a less flexible, regimented system of area closures that had an unacceptable effect on Chinook salmon by-catch rates (NPFMC 2005b), implemented by industry (NPFMC) Catcher/processor vessels are prohibited from engaging in directed fishing for Pollock in Catcher Vessel operational Area during the non-roe (B) season unless they are participating in a community development quota fishery
Information Rules (Rules allowing or requiring the sharing of information e.g. landings data)	Data necessary to determine catch, production, effort, and price as well as information regarding conservation Information sharing has increased among Coop members
Payoff Rules (Assigned costs and benefits to actions and outcomes)	Incentives to Race? No more incentives Fees: Levies are charged to catch to pay for some costs. Cost of fishing
Choice Rules (Existing understandings regarding mandatory authorized, or forbidden harvesting technologies and actions)	Effort Distribution Rules: Decided on within the Coop At Sea Processing Rules: Quota allocated to processors TAC: 40% in Season A 60% in Season B There is also a cap on the BSAI groundfish complex at 85% of historical estimate of MSY (1.4 to 2 million mt) 15% of TAC is reserved for correcting operational problems of the fleets, adjusting species TACs for conservation,

	<p>or apportionments</p> <p>Handling Rules: Roe-stripping prohibited</p> <p>Allocations:</p> <p>50% to inshore processors</p> <p>40% to catcher/processors</p> <p>10% for mothership processing (this is after taking 10% for CDQ, and 4-6% for bycatch)</p> <p>An additional percentage is allocated to the Aleutian Islands fishery if the sum of all groundfish TACs is lower than the 2 million mt optimal yield cap.</p> <p>Inseason Adjustments: Regional Administrator of NMFS can make adjustments through gear modifications, closures, fishing area/quota restrictions, for conservation reasons, to protect identified habitat problems or to increase vessel safety</p> <p>Discard Rules: Discarding of caught Pollock is prohibited</p>
Technology Restrictions	<p>Species selection rules: By-catch limits</p> <p>By-catch of salmon and halibut is retained and distributed to economically disadvantages individuals</p> <p>Vessel Replacement Rules:</p> <p>Gear Restrictions: Nonpelagic trawl gear prohibited</p>
<p>Aggregation Rules (GS6) (*Collective Choice Rule*) (Level of control that a participant in a position exercises in the selection of an action)</p>	
Lack of Agreement Rules	

Operational rules within the coop are not well discussed in the literature. These rules are contractually agreed upon among coop members. Federal rules combine zoning rules, fishing seasons for roe and normal seasons, mandates 100% monitoring coverage, and requires that the fisheries do not go beyond a Total Allowable Catch which also considers maintaining habitat for Stellar Sea Lions (not simply MSY or MSE). The combination of limitations and responsibilities attached to a property rights based system here seems to have resulted in social, economic, and ecological improvements based on the data from current literature.

Status: Completed

Citations

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