

IGCC Policy Brief

Maintaining Cooperation Under the Pacific Salmon Treaty

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The political agreement over management of transboundary pacific salmon reached in 1999 should be supplemented with economic incentives to help maintain cooperation between the U.S. and Canada.

Full Recommendations, p. 4

Summary: Bioeconomic analysis of the U.S./Canada conflict over management of transboundary pacific salmon suggests that implementing a package of economic incentives - harvest taxes coupled with environmental quality subsidies - will serve to encourage and maintain cooperation under the Pacific Salmon Treaty. The harvest taxes will deter overharvest within one's own country and reduce "interceptions" of salmon spawned in the other nation. The environmental quality subsidy will

encourage improvements of riparian, spawning, and rearing habitats critical to the enhancement of pacific salmon species; benefiting harvesters, consumers, and citizens on both sides of the border. The cooperative agreement suggested by such an economic policy is consistent with the goals and language of the 1985 Pacific Salmon Treaty, and will encourage larger economic gains, as well as enhanced salmon populations in both countries, than would be achieved in the absence of cooperation.

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Pacific Salmon Treaty History:

The Pacific Salmon Treaty was signed March 18, 1985 in a bilateral effort between the United States and Canada to cooperate in the management of salmon off the Pacific coast. After a few uneventful years, the 1990's were characterized by intense legal battles, boat seizures, high-level government negotiations, and declining fish stocks - all instigated by the defection of one or more of the parties from the Pacific Salmon Treaty cooperative arrangement. The presidential appointment of two special envoys, one from each country, resulted in a June, 1999 comprehensive agreement to conserve and manage Pacific salmon". The first instance of cooperation in over a decade, the agreement is seen as a possible resolution to the so-called salmon wars".

In addition to its obvious political drawbacks, non-cooperation in transboundary fishery management is economically undesirable because it reduces welfare, increases harvest, and lacks incentives to maintain own-country environmental quality (as compared with cooperative outcomes). Attempting to bargain towards resolution has proven costly for all interested parties, suggesting the need for policies which provide incentives to maintain cooperation in an environment with substantial incentives to defect.

Property rights constitute the primary issue of concern in this debate. Article III of the Pacific Salmon Treaty states that the United States and Canada should each "receive benefits equivalent to the production of salmon originating in its waters". Many salmon spawned in California, Oregon, Washington, British Columbia, and Alaska pass through waters regulated by the neighboring country prior to returning to their natal streams to spawn themselves. This biological fact, coupled with the reality that many salmon stocks are at or near historically low levels, has fostered a non-cooperative atmosphere between fishers and politicians alike in the United

States and Canada, where fish spawned in one country are "intercepted" by the other country. According to a strict reading of the Pacific Salmon Treaty, it is argued that an interception should be balanced by a reciprocal interception of equal value by the other country. Disagreement about the punishment for interceptions and appropriate valuation of interceptions, in addition to a fundamental difficulty in respecting property rights over a transboundary resource, have fueled the intense debate.

Towards a Cooperative Agreement:

Negotiators, David Strangway, former President and Chancellor of the University of British Columbia and William Ruckelshaus, former administrator for the Environmental Protection Agency, addressed a report in January, 1998 to the Prime Minister of Canada and the President of the United States on steps that may be taken to assist in cooperation between the two nations over pacific salmon management. Their recommendations lead to the establishment of a 10 year accord to conserve and manage pacific salmon, announced June 3, 1999 by Canadian Foreign Affairs Minister Lloyd Axworthy and U.S. Secretary of State Madeleine Albright. The agreement consists of four primary recommendations:

- Harvest decisions should be based on abundance, not historical levels
- Bilateral endowment funds must be established for improved habitat and resource rehabilitation and enhancement,
- Biologically important habitats in need of protection must be identified and scientifically acknowledged
- Institutional arrangements facilitating cooperation must be improved

This agreement addresses the major issues contributing to conflict: habitat quality and harvest interceptions. However the agreement does not

specifically recommend policies to discourage "defection" from the arrangement, an issue that has plagued negotiations over salmon management for most of the tenure of the Pacific Salmon Treaty.

Economic Incentives to Defect:

Defection from a cooperative arrangement has resulted in increased salmon harvest and reduced environmental quality. When viewed from any one country's perspective, defection appears optimal, even though the joint payoffs from cooperation are higher than the joint payoffs from both countries defecting. After all, if one country abides by the cooperative arrangement, the other country can increase its own profit by increasing harvest, not accounting for its impact on the abiding nation. Furthermore, if the abiding country also decides to defect, it is still optimal for the other country to defect. Thus, the free-market (i.e. unregulated) economic incentives lead to a situation where both countries defect from the agreement.

Economic Incentives to Cooperate:

Given the natural economic pressure to defect from bilateral agreements, politically viable incentives should be implemented to encourage and maintain cooperation. From a bioeconomic perspective non-cooperation has three primary negative consequences. First, each country overharvests its own fish stock in anticipation of the other nation increasing interceptions of their fish. Second, each country intercepts too many fish originating in the other nation because they can profit from harvest without bearing any of the cost of maintaining environmental quality in the other nation. Third, habitat quality within spawning streams suffers in both nations because non-cooperation leads to deterioration of property rights to fish spawned in each country, reducing the incentive to maintain environmental quality.

The three negative consequences of non-cooperation can be avoided by

implementing economic incentives in the form of:

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| <ul style="list-style-type: none">• A tax on harvest of fish spawned in one's own country• A tax on interceptions of fish spawned in the opposing country• A subsidy for improvements in spawning and rearing habitat |
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The focus of the political discussions and negotiations over salmon management has focused on interceptions, citing the Pacific Salmon Treaty as motivation. However, it is critical to recognize that the motivation behind the PST emphasis on interceptions is to establish appropriate property rights for salmon spawned in one's own country to encourage not only conservation of one's own salmon stocks, but also maintenance of spawning and rearing conditions -leading to enhanced salmon populations. Thus, despite the traditional focus on interceptions, the entire portfolio of incentives is required to encourage and maintain full cooperation between the two nations. The subsidy for environmental improvements could be used for projects such as increasing buffer zones around streams, restoring riparian habitat near spawning streams, or improving fish passage around dams.

The viability of implementing these policies must be addressed in a political context, since traditional economics has little to say about equity. The interceptions tax is likely to meet little resistance, since a strict reading of the PST suggests they have been illegal since 1985. Interceptions can be fairly accurately measured by extrapolating results from coded-wire tag population analyses conducted annually. The own harvest tax may meet political resistance. One way to increase the political viability of such a tax is to offer a lump sum rebate to each country at the end of the season of exactly the amount that country would pay in taxes given the cooperative (i.e. treaty) level of harvest. When the rebates are given as lump sums, they will not alter the harvest decisions. Under cooperation

the tax burden equals the rebate, leaving each nation financially unaffected. If a country "defects" and overharvests, their tax burden will exceed the rebate, causing them to revert to the cooperative outcome. The subsidy may be financed with the \$140 million endowment fund currently being set up as part of the 1999 agreement. Tax revenue from the harvest tax can also be used for the subsidy.

Conclusion:

The 1999 U.S./Canada agreement to jointly manage transboundary Pacific salmon stocks was extremely costly to achieve. History of the Pacific Salmon Treaty reveals substantial economic incentives to defect from cooperative arrangements, suggesting the need for incentives to maintain cooperation. If either nation attempts to deviate (defect) from the cooperative arrangement, the policies suggested here impose penalties on the countries sufficient to incite cooperative behavior. Although they are the most politically visible, excessive interceptions are not the only drawback to non-cooperation. Each country also expends excessive effort targeting its own stock, overharvesting domestic resources. Furthermore, the incentive to maintain environmental quality is reduced, leading to deteriorated spawning habitat. These three deleterious consequences of non-cooperation are mitigated through imposition of:

- A tax on harvest of a country's own salmon stock
- A tax on interceptions of salmon originating in the other country
- A subsidy for environmental quality

The result is not to completely eliminate all interceptions, but to bring them into a balance, where the joint benefits to both parties are maximized. In addition, domestic harvest is reduced and environmental quality is enhanced as a result of the policy.

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Maintaining Cooperation over Management of Transboundary Pacific Salmon:

- Recognize that cooperation does not imply zero "interceptions" of salmon,
- Recognize that non-cooperation results in overharvest of domestic fish stocks and deterioration of spawning habitat quality in addition to overharvest of foreign fish.
- Implement a the following economic incentives to encourage and maintain cooperation: (1) harvest tax, (2) interceptions tax, and (3) subsidy for environmental quality.

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