

# IMPLEMENTING EFFECTIVE REGIONAL OCEAN GOVERNANCE: PERSPECTIVES FROM ECONOMICS

SUSAN STEELE HANNA†

## I. INTRODUCTION

The United States Commission on Ocean Policy (“USCOP”) made several important recommendations pertaining to ecosystem-based ocean governance.<sup>1</sup> The first is the establishment of a national ocean policy framework.<sup>2</sup> This framework would include national coordination among federal agencies, harmonized management of offshore ocean uses, strengthened and streamlined federal agencies, and the voluntary formation of regional ocean councils. Coordination and leadership at the federal level would be provided by a National Ocean Council (cabinet secretaries and federal agency directors) and a Presidential Council of Advisors on Ocean Policy within the Executive Office of the President. The second recommendation is to encourage the formation of voluntary regional ocean councils.<sup>3</sup> The regional ocean councils would have broader jurisdictional boundaries than traditional resource agencies and their functions would include

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1. U.S. COMM’N ON OCEAN POLICY, AN OCEAN BLUEPRINT FOR THE 21ST CENTURY: FINAL REPORT OF THE U.S. COMMISSION ON OCEAN POLICY (2004); [hereinafter USCOP REPORT], available at [http://www.oceancommission.gov/documents/full\\_color\\_rpt/000\\_ocean\\_full\\_report.pdf](http://www.oceancommission.gov/documents/full_color_rpt/000_ocean_full_report.pdf); J. Sanchirico & S. Hanna, *Navigating U.S. Fishery Management into the 21st Century*, 19 MARINE RESOURCE ECON. 395 (2004).

2. USCOP REPORT, *supra* note 1, at chs. 4-7.

3. *Id.* at ch. 5.

the coordination of state, territorial, tribal, and local governments, the collection and synthesis of regional ocean information, and the performance of ecosystem assessments.

To support these new national and regional governance structures, the USCOP recommended that Congress, working with the national and regional ocean councils, develop new laws, policies, and institutions for ecosystem-based management. It recommends the strengthening of international fishery agreements and of the National Oceanic and Atmospheric Association's ("NOAA") role as the lead ocean agency through consolidation of ocean and coastal programs and the implementation of interagency ecosystem-based management approaches.<sup>4</sup> The USCOP further recommends that ecosystem-scale management be implemented to promote innovation, learning, and adaptation.<sup>5</sup> It also stresses the importance of realizing the full economic potential of the ocean's resources and of considering people as part of the ecosystem.<sup>6</sup>

In making these recommendations, the USCOP clearly recognized that many of the problems facing ocean resources are institutional in their cause and are compounded by problems of the mismatch between private incentives and social goals. As the USCOP's recommendations for new ocean governance structures are carried forward to implementation, they will involve the construction of new or expanded organizations. To ensure that new structures are as effective as possible, Congress must be mindful of a fundamental institutional design principle: There are a number of incentive problems that beset complex organizations, and these can increase transaction costs and limit performance effectiveness. Anticipating these problems at the design stage can help in the construction of new governance structures that minimize or avoid them.

## II. INSTITUTIONAL INCENTIVE PROBLEMS

A number of important incentive problems limit resource manager effectiveness by complicating long-term views and adding to uncertainties.<sup>7</sup> Unless specifically anticipated and avoided at the design stage, these incentive problems will continue to be amplified in

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4. *Id.* at ch. 7.

5. *Id.* at 63-67.

6. *Id.* at 63.

7. S. Hanna, *Institutions for Marine Ecosystems: Economic Incentives and Fishery Management*, 8 *ECOLOGICAL APPLICATIONS* 170 (1998).

the new regional and national ocean governance structures. Literature on organizational economics offers insight into a number of important incentive problems afflicting organizations.

#### A. *Power Ambiguity*

Uncertainty about power distribution leads to power struggles and to the questioning and undermining of authorities.<sup>8</sup> Power ambiguity is a problem that has troubled the United States fishery management system as implemented under the Magnuson-Stevens Fishery Conservation and Management Act. Although the relative roles and responsibilities at different levels of management hierarchy are detailed in law and implementing regulations, confusion among management participants concerning the hierarchy of management—who has the authority to make which decisions, and when—is common.<sup>9</sup> Authority is accordingly challenged, and power struggles between entities persist. The intermittent intrusion of *ad hoc* managers such as Congress or the Courts adds further ambiguity about who is in charge.

#### B. *Failure to Make Credible Commitments*

Credible commitments exist when what is promised is reliably delivered.<sup>10</sup> The ability of a regional ocean council or its associated members to make credible commitments, or their inverse, credible threats, will rest on management's ability to enter into contracts with ocean interests. If property rights over ocean resources are absent, and if the management environment is uncertain or unstable, managers may be prevented from making either commitments or threats with credibility.

#### C. *Low-Intensive Incentives*

Low-intensive incentives exist when there are weak connections between a person's decisions and the consequences of those decisions<sup>11</sup> because accountability is absent. The lack of direct accountability for management outcomes has been commonly named

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8. K.J. ARROW, *THE LIMITS OF ORGANIZATION* 65 (1974).

9. J.P. WISE, *FEDERAL CONSERVATION AND MANAGEMENT OF MARINE FISHERIES IN THE UNITED STATES* 164-65 (1991); S. HANNA ET AL., *FISHING GROUNDS: DEFINING A NEW ERA FOR AMERICAN FISHERY MANAGEMENT* 82 (2000).

10. O.E. WILLIAMSON, *THE ECONOMIC INSTITUTIONS OF CAPITALISM* 167 (1985).

11. *Id.* at 140.

as a problem facing the regional fishery management councils.<sup>12</sup> Monitoring performance of management plans is not routinely done, and there is no institutional mechanism to tie the performance of managers to a system of professional or monetary rewards. In the past, regional council members have received almost no professional training to equip them for their positions.<sup>13</sup> Regional ocean councils, as voluntary coordinating mechanisms across multiple jurisdictions and agencies, may be particularly susceptible to problems created by low-intensive incentives.

#### D. *Moral Hazard*

Moral hazard exists when some actions are unobservable for some reason, such as costly observation. Such cases create the potential for shirking and can affect the enforcement of contracts. These contracts can include, for example, fishery regulations, staff performance, or agreements on decision processes.<sup>14</sup> As organizational complexity increases, the opportunity for unobservable actions also increases, and the transparency of processes decreases. Fishery management offers a good example of how this works. Although a number of elements of the “notice and comment” process of fishery management are designed to promote transparency in decisionmaking, complexities of a decision process and allocation rules designed to address needs of many different interests create many obstacles to transparency.<sup>15</sup> This same general tradeoff between complexity and transparency applies equally to other publicly regulated processes.

#### E. *Bounded Rationality*

Bounded rationality is behavior that intends to be rational but is limited by uncertainty and inconsistency. Combined with opportunism, it can lead to uncertain outcomes.<sup>16</sup> High levels of uncertainty in regional ocean management, if created by conflict over authorities, rights, or management philosophies, could limit the degree to which managers can be rationally foresighted and prevent the completion of actions that would simplify and stabilize

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12. HANNA ET AL., *supra* note 9, at 92-93.

13. *Id.* at 95-96.

14. T. EGGERTSSON, ECONOMIC BEHAVIOR AND INSTITUTIONS 44-45 (1990).

15. HANNA ET AL., *supra* note 9, at 88-90.

16. WILLIAMSON, *supra* note 10, at 30.

management. Under conditions of bounded rationality, continual bargaining is the norm, which sometimes adds costs that dissipate potential gains from bargaining.<sup>17</sup> An additional and negative effect of uncertainty for ocean resource sustainability is that it leads people to shorten the time horizon over which planning is done through discounting uncertain future benefits more heavily and placing relatively higher value on current benefits.<sup>18</sup>

#### F. *Truncated Learning*

Learning-by-doing can be a way for organizations to increase proficiency, adapt to changing circumstances, and reduce costs.<sup>19</sup> But opportunities for learning-by-doing and adaptation can be limited by decisionmaking environments that combine uncertainty, a tightly proscribed regulatory process, and strategic information shaping. If the flow of information tends to be vertical and hierarchical, rather than horizontal, opportunities for internal learning and flexible adaptation are further limited.<sup>20</sup> This problem can be directly addressed through program performance monitoring and evaluation that is built into the management system. Lack of routine monitoring and evaluation has created problems for adaptive learning in fishery management. For example, although regional fishery management councils are required to produce annual Stock Assessment and Fishery Evaluation documents that assess the status of stocks and the economics of the fishery,<sup>21</sup> they are not required to include strategic plans for experimentation or adaptation. Lack of flexibility can serve the purpose of public transparency and predictability, but it can also hinder rapid adaptation to changing conditions.<sup>22</sup>

Power ambiguity, low-intensive incentives, moral hazard, bounded rationality, a lack of credible commitment, and truncated learning: Each of these aspects of the incentive environment create problems for public resource management. All complicate the application of knowledge in management and keep the private incentives of decisionmakers and other management participants from being fully aligned with public objectives.

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17. NEGOTIATION ANALYSIS 88-90 (H.P. Young ed., 1991).

18. HANNA ET AL., *supra* note 9, at 115-17.

19. J. TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION 71-72 (1988).

20. *Id.* at 329-30.

21. See Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C § 1853 (2000).

22. HANNA ET AL., *supra* note 9, at 88-90.

### III. THE PACIFIC SALMON EXAMPLE

Pacific Salmon are a good example of the complex requirements of regional ocean governance and the institutional incentive problems that plague governance systems. Anadromous salmon traverse a wide range of ecosystems in the course of their life histories as they migrate from watersheds to rivers to oceans and then back to freshwater natal streams to spawn.<sup>23</sup> In ecological terms, they serve as integrators of riverine and coastal ecosystems. In larger economic and social terms, however, salmon are polarizers, creating economic and political conflict through actions taken for their protection and restoration. Problems of biodiversity protection in salmon illustrate complexities facing the realignment of rights and responsibilities in the coastal zone.<sup>24</sup>

Salmon management takes place over multiple jurisdictions using complex rules designed to protect wild stocks in an environment of controversy over wild-hatchery stock interactions and conflicts among various users. Salmon management is coordinated through interstate compacts, a U.S.-Canada treaty, state agencies, regional fishery management councils, the National Marine Fisheries Service, judicial authorities, and protective statutes that require extensive consultation on actions affecting protected species.<sup>25</sup>

#### A. *Harvest Management of Pacific Salmon*

A recent report of the Independent Science Advisory Board of the Northwest Power and Conservation Council details the complex structure and processes of harvest management for Pacific salmon.<sup>26</sup>

##### 1. Management Entities

In part, the complexity of management arises because migration of salmon takes them across many different jurisdictions that share authority over stock control. Harvest management decisions in ocean

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23. THOMAS P. QUINN, *THE BEHAVIOR AND ECOLOGY OF PACIFIC SALMON AND TROUT* 5 (2005).

24. NAT'L RESEARCH COUNCIL, *UPSTREAM: SALMON AND SOCIETY IN THE PACIFIC NORTHWEST* (1996).

25. Federal Caucus, *Conservation of Columbia Basin Fish: Building a Conceptual Recovery Plan* (Dec. 1999) (working paper), available at <http://www.salmonrecovery.gov/Conservation.pdf>.

26. INDEP. SCI. ADVISORY BD., *REPORT ON HARVEST MANAGEMENT OF COLUMBIA BASIN SALMON AND STEELHEAD* (2005) (Nw. Power & Conservation Council, Document No. ISAB 2005-4), available at <http://www.nwcouncil.org/library/isab/isab2005-4.htm> [hereinafter ISAB].

fisheries are made in state, tribal, regional, federal, and international jurisdictions. No single entity is responsible for ensuring that management objectives are met.<sup>27</sup> The following are the groups that take part in Pacific salmon management decisions:

*Pacific Salmon Commission:* The Commission was established by the 1985 Pacific Salmon Treaty between the United States and Canada and has no formal regulatory authority.<sup>28</sup> The Commission develops fishery agreements that will govern the regulation of fisheries by the domestic managers of the United States and Canada.<sup>29</sup>

*Regional Fishery Management Councils:* The Magnuson-Stevens Fishery Conservation and Management Act of 1976 established a system of eight regional fishery management councils.<sup>30</sup> Two of these, the Pacific Fishery Management Council (Washington, Oregon, California, and Idaho) and the North Pacific Fishery Management Council (Alaska) are responsible for managing ocean salmon fisheries.<sup>31</sup>

*United States Secretary of Commerce:* Final approval authority for management recommendations forwarded by regional fishery management councils lies with the U.S. Secretary of Commerce.<sup>32</sup>

*Department of Fisheries and Oceans Canada:* This Canadian department regulates Canadian ocean fisheries.<sup>33</sup>

*Tribal Managers:* These managers regulate Indian treaty troll fisheries under the umbrella ocean fishery regulations recommended by the Pacific Fishery Management Council and approved by the Secretary of Commerce.<sup>34</sup>

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27. *Id.*

28. 16 U.S.C. §§ 3631-3644 (2000).

29. Pacific Salmon Commission, [www.psc.org](http://www.psc.org) (last visited Feb. 8, 2005).

30. 16 U.S.C. §§ 1801-1883 (2000).

31. 16 U.S.C. §§ 1862-1863.

32. 16 U.S.C. § 1854(a)(3).

33. Further information on the Department of Fisheries and Oceans Canada is available at [http://www.dfo-mpo.gc.ca/home-accueil\\_e.htm](http://www.dfo-mpo.gc.ca/home-accueil_e.htm) (last visited Mar. 22, 2006).

34. Pacific Fishery Management Council, Fishery Management, [www.pccouncil.org/salmon](http://www.pccouncil.org/salmon) (last visited Feb. 8, 2005).

*State Agencies:* Oregon Department of Fish and Wildlife,<sup>35</sup> Washington Department of Fish and Wildlife,<sup>36</sup> and the Alaska Department of Fish & Game<sup>37</sup> manage fisheries in state territorial waters.

## 2. Legal Environment of Management

Managing the harvest of Pacific salmon throughout their life cycle requires extensive coordination among all the above entities, within the constraint of a suite of applicable legal requirements. These requirements include Indian treaties, obligations under the Pacific Salmon Treaty between the United States and Canada,<sup>38</sup> federal statutes such as the Magnuson-Stevens Fishery Conservation and Management Act,<sup>39</sup> the National Environmental Policy Act,<sup>40</sup> and Endangered Species Act,<sup>41</sup> domestic and state statutes, and applicable case law. Four areas of law have special significance to harvest management of Pacific salmon:<sup>42</sup>

*Indian Treaty Fishing Rights:* Through treaties with the United States, Indian tribes reserved the right to take fish at their usual and accustomed places. Courts have determined that treaties entitle tribes to 50% of the harvestable surplus of fish originating in or passing through their usual and accustomed fishing places.<sup>43</sup> Non-Indian governments are not authorized to regulate Indian fishing except when necessary for resource conservation.<sup>44</sup>

*Magnuson-Stevens Fishery Conservation and Management Act ("MSFCMA"):* In addition to the institutional structures

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35. Oregon Department of Fish and Wildlife, <http://www.dfw.state.or.us/> (last visited Mar. 22, 2006).

36. Washington Department of Fish and Wildlife, <http://wdfw.wa.gov/> (last visited Mar. 22, 2006).

37. Alaska Department of Fish and Game, <http://www.adfg.state.ak.us/> (last visited Mar. 22, 2006).

38. Pacific Salmon Treaty Act, 16 U.S.C. §§ 3631-3644 (2000).

39. Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§ 1801-1883 (2000).

40. National Environmental Policy Act, 83 Stat. 852 (codified as amended at 42 U.S.C. §§ 4321-4370 (2000)).

41. Endangered Species Act, 16 U.S.C. §§ 1531-1544 (2000).

42. ISAB, *supra* note 26.

43. *Sohappy v. Smith*, 529 F.2d 570, 573-74 (1976) (upholding district court decree defining Native American treaty rights).

44. *Sohappy v. Smith*, 302 F. Supp. 899, 908 (1969).

of regional councils, the MSFCMA sets forth a set of national standards that must be attained for ocean salmon fishery management.<sup>45</sup>

*The Endangered Species Act (“ESA”)*: Numerous salmon populations from the Columbia River have been listed as threatened or endangered under the ESA.<sup>46</sup> Harvest management actions that impact these populations are subject to consultations with NOAA Fisheries (for anadromous forms) and the U.S. Fishery and Wildlife Service (for resident forms).<sup>47</sup> Harvest management decisions affecting ESA-listed populations must meet a “no jeopardy” requirement of the legislation.<sup>48</sup> Assessment of whether a harvest action will cause “jeopardy” is documented in a “biological opinion” by the responsible agency and annual guidance letters that advise harvest managers how to comply in their implementation.<sup>49</sup> An assessment of the Pacific Fishery Management Council’s recommended fishery regulations with respect to these standards is provided to the Secretary of Commerce as part of the record of decision for proposed harvest management measures.<sup>50</sup>

*Columbia River Compact*: Established through Congressional mandate, the Columbia River Compact (“Compact”) is a collaboration between Oregon and Washington, in coordination with Treaty Indian tribes, that was instructed to manage the commercial fisheries in the Columbia River. The Compact must consider the effect of commercial fishing for salmon, steelhead, and sturgeon in the Columbia River on escapement, treaty rights, and sport fisheries, as well as the impact on species listed under the Endangered Species Act. Although the Compact has no authority to adopt sport fishing seasons or rules, it indirectly regulates these fisheries by making commercial-recreational allocation of allowable impacts on protected stocks.<sup>51</sup>

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45. 16 U.S.C. § 1851 (2000).

46. 16 U.S.C. § 1533.

47. *Id.* § 1536.

48. *Id.*

49. *Id.*

50. ISAB, *supra* note 26.

51. WASH. DEP’T OF FISH & WILDLIFE & OR. DEP’T OF FISH & WILDLIFE, JOINT STATE MANAGEMENT OF COLUMBIA RIVER SALMON AND STURGEON NON-INDIAN HARVEST ALLOCATIONS (2005).

### B. *Evolution of Institutional Arrangements*

The number of entities involved in the management of Pacific salmon and the number of overarching legal mandates require a high degree of coordination and cooperation among parties to control harvest impacts across jurisdictions. This coordination is evidenced in an extensive and detailed system of scientific advice and management decisionmaking.<sup>52</sup> Both formal and informal coordination of advisory and decisionmaking functions occur.

These systems have evolved in response to changing biological, oceanic, legal, social, and economic environments. Over time, the physical effect of river and coastal uses on salmon, estuaries, and the coastal zone, and laws enacted to protect salmon from extinction, have forced a greater connectivity to fishery issues achieved through increasingly complex consultations and coordination.<sup>53</sup> As such, these systems represent an adaptation to formal requirements, physical and natural environments, and human dynamics. They are regional institutional adaptations to ecosystem-level requirements.

Still, attainment of management objectives is problematic. Large scale variability and scientific uncertainty are significant limiting factors in the implementation of management objectives.<sup>54</sup> Additionally, historical interests form powerful “lords of yesterday” that create inertia in the institutional mix.<sup>55</sup> All six institutional incentive problems described above, power ambiguity, low-intensive incentives, moral hazard, bounded rationality, a lack of credible commitment, and truncated learning are present in Pacific salmon management.<sup>56</sup>

## IV. DESIGN QUESTIONS FOR REGIONAL OCEAN COUNCILS

The example of complexities and difficulties in Pacific salmon management is emblematic for regional ocean councils. It points the

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52. ISAB, *supra* note 26; PAC. FISHERY MGMT. COUNCIL, PRESEASON REPORT III, ANALYSIS OF COUNCIL-ADOPTED MANAGEMENT MEASURES FOR 2005 OCEAN SALMON FISHERIES (2005). This report was prepared by the Salmon Technical Team of the Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 200, Portland, OR 97220.

53. ISAB, *supra* note 26.

54. *Id.*

55. C.F. WILKINSON, CROSSING THE NEXT MERIDIAN: LAND, WATER AND THE FUTURE OF THE WEST ch. 1 (1992).

56. S. Hanna, *Designing Institutions for Columbia River Salmon: Identifying the Key Uncertainties*, in WHAT WE DON'T KNOW ABOUT PACIFIC NORTHWEST FISH RUNS: AN INQUIRY INTO DECISION-MAKING UNDER UNCERTAINTY 77-90 (P. Koss & M. Katz eds., 2000).

way to some key design questions facing development of new institutional structures:

- (1) How do we minimize incentive problems and transactions costs? Can we anticipate common sources of each and apply management tools to contain them?
- (2) Can we craft a unifying goal across political boundaries, multiple uses, and traditional and new interest groups?
- (3) How will we adapt to uncertainty? In recognition that it is ubiquitous, can we develop limited information and conservative management approaches that are less dependent on precision of estimates?
- (4) Are there limits to scale? Is it possible to integrate boundaries of governance and ecosystems in a cost effective way?
- (5) Are there limits to coordination? Is it possible to build effective coordination without overloading available time and fiscal resources?
- (6) What are appropriate policy instruments to coordinate across various ecosystem components, interest groups, and communities?

## V. CONCLUSION

Implementing the USCOP's recommended regional governance structures will require new laws, policies, and institutions for ecosystem-based management. It will involve consolidation of ocean and coastal programs and implementation of interagency ecosystem-based management approaches. The USCOP recommends that these structures be designed to promote innovation, learning, and adaptation as well as to realize full economic potential of the ocean's resources and accommodate ocean resource users.<sup>57</sup>

This paper has outlined some institutional design problems inherent in this recommendation. A number of well-established institutional incentive problems are described. Pacific salmon is presented as an example of a complex governance structure that embodies the full range of incentive problems.

When considering impacts of change it is always useful to compare it to impacts of not changing. It is possible to be stuck in an

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57. USCOP REPORT, *supra* note 1, at ch. 3.

institutional mix either because the benefits of inertia are great enough that people are willing to absorb large transactions costs or they are able to shift those costs externally. Without the ability to absorb or shift transactions costs, people will search for ways to bypass change obstacles to achieve better political outcomes and reduce costs.<sup>58</sup> This may be a key determinant in how people respond to the possibility of establishing regional ocean councils.

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58. A. Dixit, *Transaction Cost Politics and Economic Policy: A Framework and a Case Study*, in *INSTITUTIONS AND ECONOMIC ORGANIZATION IN THE ADVANCED ECONOMIES: THE GOVERNANCE PERSPECTIVE* 139-76 (M. Baldassarri et al. eds., 1998).