Fisheries Governance and How It Fits Within the Broader Arctic Governance

Adam Soliman[*]

I. INTRODUCTION

Climate change is causing the Arctic ice to melt and fish stocks to change their migration patterns.[1] These changes are increasing access to Arctic fisheries, as well as moving other fish stocks to the north.[2] To prevent the depletion of fish stocks and to protect the Arctic environment, proper fisheries governance requires collaboration between nation-states and specific populations—such as the aboriginals, who are uniquely affected by changes in fish stocks—in designing and implementing fisheries management. Governing fisheries presents unique management issues. Fish stocks, unlike other natural resources, do not stay in the same place—fish are constantly moving and may even travel thousands of miles to mate or lay eggs. The non-stationary nature of fish stocks, along with shared sovereignty over the oceans, make coordination between stakeholders the most difficult as well as the most important component of any fisheries governance structure.

Different approaches have been employed to manage and protect fisheries, to varying degrees of success: privatization, sector-based management, and ecosystem-based management. At the same time, different governance structures have been established to effectuate these management approaches: Regional Fisheries Management Organizations

[*] Adam Soliman is the Director of the Fisheries Law Centre. Adam conducts research on legal and economic issues in fisheries. He holds a B.Sc. in Agricultural Economics from the University of Alexandra (Egypt), a M.Sc. in Agricultural Economics from the University of British Columbia, a JD from the University of Hong Kong, and a L.L.M in Agriculture and Food Law from the University of Arkansas. Adam's research focuses on the effect of fisheries policies on small-scale fisheries. He strongly believes that trans-disciplinary research is much needed in fisheries law where research is scarce. If you wish to inquire about the seminar before registering, Adam can be reached at adam@fishlaw.org or 778-838-5505. For more information, please visit http://fishlaw.org/about/adam-soliman/.

1. Heather Goldstone, *Climate Change Forcing Fish Stocks to Migrate North*, WGBH (Aug. 23, 2013, 5:00 AM), http://wgbhnews.org/post/climate-changes-forcing-fish-stocks-migrate-north.

2. *Id.*

(RFMOs), hierarchical structures, and co-governance. Based on the need to protect aboriginals' economic and social interests in effective fisheries management, an Arctic-RFMO must be created and work with countries to co-govern the fisheries located within the Arctic.

This paper will explore three frameworks for fisheries governance: (1) the Interactive Governance Approach (IGA); (2) the Ecosystems Approach to Fisheries (EAF); and (3) the Regional Fisheries Management Organization (RFMO). Any governance structure must respect the existing rights of remote aboriginal communities in Alaska's Arctic as well as protect their livelihood. This paper argues that an RFMO for the Arctic is necessary to provide a forum in which Arctic nations can coordinate their policies and collectively address the challenges that face the region. An effective Arctic-RFMO will bring about compliance with international treaties (e.g., the United Nations Convention on the Law of the Sea and the U.N. Fish Stocks Agreement) and encourage a co-governance approach to Arctic fisheries management. Such a governance structure will ensure that fisheries are properly protected and that the interests of peoples whose livelihood depends on fisheries will be adequately represented.

II. THE ARCTIC AND FISHERIES GOVERNANCE

Until recently, the Arctic remained one of the least travelled to areas of our environment.[3] While the Arctic is one of the world's most fragile ecosystems, it lacks a robust system of governance to manage the region. Climate change has triggered drastic changes in the Arctic, including a reduction in the surface area of ice and a change in fish migratory patterns. Presently, the international community is ill prepared to manage and adapt.[4] The current system of governance is insufficient to handle the effects climate change has had upon the Arctic. Therefore, to effectively manage Arctic fisheries in light of climate change, an Arctic-focused Regional Fisheries Management Organization (RFMO) must be created.

The Arctic presents a unique opportunity to improve the model for fisheries management. As a result of global warming and pollution, 40% of formerly frozen water in the Arctic Ocean is now open sea.[5] Furthermore, global climate change has drastically affected the migratory pat-

3. Benjamin S. Halpern et al., *A Global Map of Human Impact on Marine Ecosystems*, 319 SCI. 948, 948 (2008), *available at* http://www.sciencemag.org/content/319/5865/948.full.pdf.

4. *See* Gian-Reto Walther et al., *Ecological Responses to Recent Climate Change*, 416 NATURE 389 (2002), *available at* http://www.nature.com/nature/journal/v416/n6879/pdf/416389a.pdf.

5. *Three Lessons from the Arctic "Slushie"*, OCEANS NORTH CANADA (Sept. 18, 2012, 11:50 AM), https://www.facebook.com/notes/oceans-north-canada/three-lessons-from-the-arctic-slushie/431578826878204.

terns of fish. Many fish stocks have migrated much further north, changing the make-up of local fish stocks.[6] Scientists have been able to use the migration of fish to track ocean change.[7] At least one recent study has statistically confirmed that the most likely cause of many of the mass migrations taking place in the oceans is climate change, rather than ocean pollution or overfishing.[8] By better understanding changing fish migration patterns, we can improve market-based approaches to include considerations of the geographical location of fish in addition to managing the amount of fish caught.

As fish migrate further north, fishers are likely to follow. When individual fishers do push north, they will likely argue they have a right to access these fish, and may even have valid claims under the doctrine of legitimate expectation.[9] International commercial fishing interests will also be incentivized to push north in order to protect their industry. The net effect of more vessels pushing north is an increased strain upon the Arctic environment as a result of their presence. The effects global warming and pollution are having upon the Arctic suggest major shortcomings with the current approach to Arctic management.[10]

Fisheries management requires a solution beyond the borders of any individual nation-states—fisheries must be managed at the international level.[11] There are several international legal instruments and voluntary, proto-regulatory bodies that cover states and individuals acting in the Arctic.[12] However, there is no model that effectively and cohesively manages the Arctic fisheries. Market-based approaches in the form of catch shares or individual transfer quotas (ITQ)[13] have proven to be

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6. Goldstone, *supra* note 1.

7. Tim Radford, *Fish Migration Charts Climate Change in the Oceans*, RESPONDING TO CLIMATE CHANGE (May 21, 2013, 8:48 AM), http://www.rtcc.org/2013/05/21/fish-migration-charts-climate-change-in-the-oceans/.

8. B. Knights, *A Review of the Possible Impacts of Long-Term Oceanic and Climate Changes and Fishing Mortality on Recruitment of Anguillid Eels of the Northern Hemisphere*, 310 SCI. OF THE TOTAL ENV'T 237, 240 (2003).

9. *See, e.g.*, John Hlophe, *Legitimate Expectation and Natural Justice: English, Australian and South African Law*, 104 S. AFRICAN L. J. 165 (1987); Francisco Orrego Vicuña, *Regulatory Authority and Legitimate Expectations: Balancing the Rights of the State and the Individual Under International Law in a Global Society*, 5 INT'L L. F. DU DROIT INT'L 188 (2003).

10. *See, e.g.*, Daniel Pauly et al., *The Future for Fisheries*, 302 SCI. 1359 (2003), *available at* http://www.sciencemag.org/content/302/5649/1359.full.pdf.

11. Goldstone, *supra* note 1.

12. Paul Arthur Berkman & Oran R. Young, *Governance and Environmental Change in the Arctic Ocean*, 324 SCI. 339, 339–40 (2009), *available at* http://www.sciencemag.org/content/324/5925/339.full.pdf.

13. ITQs are a management system based in market-based economic theory. The conceptual idea is that each individual fisher who holds an ITQ receives a set share of the total amount of catch (Total Allowable Catch or TAC). The theory is that the ITQ system provides an opportunity for each

largely reactive given that these shares and quotas are determined based on what has already happened.[14] Implementing regulations and analyzing collected data have proven to be a protracted processes, which means there is a significant lag time between the identification of a problem and the development and implementation of a solution. A new system of fisheries management can avoid depletion of Arctic stocks by preventing the destruction of the delicate ecosystems and social systems of aboriginal peoples in the Arctic.[15] With the well-being of society, economic stability, and food security on the line, it is imperative that we properly manage the Arctic.

A. Interactive Governance Approach

The Interactive Governance Approach (IGA) addresses the challenges facing fisheries by facilitating collaboration between participants. Fisheries managers battle competing interests in an effort to protect ecosystem health, social justice, livelihoods, and food security.[16]

The complexity and dynamic nature of the system must be met with an equally complex and dynamic approach.[17] Thus, the IGA seeks to address diversity through inclusiveness; complexity through rational, holistic, integrative approaches; and dynamics through an interactive and adaptive framework. The IGA emphasizes interactive, evolving partnership building as the solution to fishery management. This leads to co-governance, but requires governing bodies to move away from historically hierarchical management of fisheries.

"Governability" is a key criterion of IGA. This quality is situated partly in the *system to be governed* (SG), the *small-scale fisheries* (SSF) chain, and in the fisheries community; partly in the *governing system* (GS)—the institutions and organizations that have a leadership role in SSF; and partly in the *governing interactions* (GI)—how the GS and the SG are linked and communicate.[18] The inherent traits and constructed capabilities of all three systems are what make a fishery more or less

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individual to realize the future value of the fishery stock through a perceived guarantee of future earnings. This helps to ensure compliance with government regulations.

14. *See generally* Jason Konefal, *Environmental Movements, Market-Based Approaches, and Neoliberalization: A Case Study of the Sustainable Seafood Movement*, 26 ORG. & ENV'T 336 (2012).

15. J. F. Caddy, *Fisheries Management in the Twenty-First Century: Will New Paradigms Apply?*, 9 REVIEWS IN FISH BIOLOGY & FISHERIES 1, 38 (1999).

16. Svein Jentoft, *Limits of Governability: Institutional Implications for Fisheries and Coastal Governance*, 31 MARINE POL'Y 360, 362–67 (2007).

17. *Id.*

18. MAARTEN BAVINCK ET AL., CTR. FOR MAR. RES., INTERACTIVE FISHERIES GOVERNANCE: A GUIDE TO BETTER PRACTICE 45–46 (2005), *available at* http://www.marecentre.nl/fishgovfood/documents/bavinck_interactive.pdf.

governable. The more capable the governing system, the more agreeable the system to be governed, and the more effective the tools by which the governing system uses to steer, the higher the overall quality of governance—i.e., the higher the governability.

Fisheries management is shifting from a largely hierarchical model to a system of co-governance.[19] A complete shift to a system of co-governance will provide many opportunities for affected countries to be fully engaged and interactive in fisheries management. The IGA identifies three distinct governance models: (1) self-governance; (2) co-governance; and (3) hierarchical governance.[20] These three models offer different levels of governability.

B. Ecosystem Approach to Fisheries Management

The function of an ecosystem approach to fisheries (EAF) is to plan, develop, and manage fisheries in a manner that addresses the multiple needs and desires of societies without jeopardizing the options for future generations to benefit from the full range of goods and services provided by the same marine ecosystems.[21] A key criterion of the EAF is the precautionary approach; the underlying assumption is that the systems involved are inherently complex and difficult to understand.[22] The EAF relies on the need for sound science, adaptation to changing conditions, partnerships with diverse stakeholders and organizations, and a long-term commitment to the welfare of both the ecosystem and human societies. Fishing activities affect the ecosystem beyond the fisheries by catching non-targeted species, damaging habitats, interrupting the food chain, and reducing biodiversity.[23] Responsible fisheries management must consider the impact of fisheries on the ecosystem as a whole. The objective of the EAF is to guarantee the sustainable use of the whole system, as opposed to effectuate measures with narrow purposes and effect.

The EAF is based on a number of principles that have been expressed in international instruments and conventions, particularly the

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19. *Id*.

20. Jan Kooiman, *Exploring the Concept of Governability*, 10 J. OF COMP. POL'Y ANALYSIS: RES. & PRAC. 171, 171–90 (2008).

21. FOOD & AGRIC. ORG. OF THE UNITED NATIONS, FISHERIES MANAGEMENT: SUPP. 2 THE ECOSYSTEM APPROACH TO FISHERIES 11 (2003), *available at* ftp://ftp.fao.org/docrep/fao/005/y4470e/y4470e00.pdf.

22. Tim Lauck et al., *Implementing the Precautionary Principle in Fisheries Management Through Marine Reserves* at S72–S78, ECOLOGICAL APPLICATIONS (1998), *available at* http://www.esajournals.org/doi/pdf/10.1890/1051-0761%281998%298%5BS72%3AITPPIF%5D2.0.CO%3B2.

23. *Id.*

Code of Conduct for Responsible Fisheries (CCRF).[24] These principles support the high-level policy goals of fishery management at a national or regional scale. The main principles associated with the CCRF are:

1. fisheries should be managed to limit their impact on the ecosystem to the extent possible;[25]
2. ecological relationships between harvested, dependent, and associated species should be maintained;[26]
3. management measures should be compatible across the entire distribution of the resource (across jurisdictions and management plans);[27]
4. the precautionary approach should be applied because knowledge on ecosystems is incomplete;[28] and
5. governance should ensure both human and ecosystem well-being and equity.[29]

Ultimately, the EAF endeavors to create long-term sustainable fisheries within the larger ecosystem. The EAF is a new approach to fisheries management that brings together a broad range of disciplines to achieve the goal of continued ecosystem health. The principles set forth in the CCRF provide direction that can help preserve the tenuous balance between fishery efficiency and ecosystem health.

The EAF advocates operation of SSFs, instead of large-scale industrial fisheries, in order to best protect delicate Arctic ecosystems. SSFs are incentivized to fish in such a way that will preserve their local fish stocks because they are smaller, more disparate, and more identifiable. Total catch quotas, along with individual fishing quotas (IFQs), can also help to maintain healthy fish stocks while ensuring that fishers can run productive businesses. Because SSFs incentivize the protection of local fish stocks, aboriginals' livelihoods would be better protected.

Fisheries are more than just a source of food and income; they form a way of life that can be traced back centuries. The loss of fisheries would have a devastating effect on aboriginal and coastal communities

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24. *See generally* FOOD & AGRIC. ORG. OF THE UNITED NATIONS, FAO TECHNICAL GUIDELINES FOR RESPONSIBLE FISHERIES 2: PRECAUTIONARY APPROACH TO CAPTURE FISHERIES AND SPECIES INTRODUCTIONS (1996) [hereinafter FAO PRECAUTIONARY APPROACH], *available at* ftp://ftp.fao.org/docrep/fao/003/W3592e/W3592e00.pdf.

25. *Id*. at 10, 21.

26. *Id*. at 34.

27. *Id*. at 6, 9.

28. *Id*. at 8.

29. *Id*. at 9.

whose way of life is tied to fisheries.[30] The industrialization of fishing has marginalized SSFs. SSFs cannot compete with large-scale fisheries and are disadvantaged by their failure to comply with fisheries regulations.

1. Small-Scale Fisheries (SSF) Guidelines

Encouraging the operation of SSFs would compliment aboriginals' lifestyles and deep connection to fisheries. SSFs are those fisheries where the fishers who utilize them are either individuals or small operations.[31] The Food and Agriculture Organization (FAO) defines SSFs as those fisheries that are either artisanal or very limited in their scale.[32] The FAO includes in their operating definition the difference between small-scale fisheries in different regions around the world.[33] Members of an SSF are often either self-employed or employed by a close family member, engage in fishing seasonally, and have their activities aimed at providing direct food for their family or an income for their immediate family.[34]

The FAO recently adopted a series of voluntary guidelines for SSFs.[35] These guidelines were written to foster the development and enhancement of SSFs and artisanal fisheries, and to address the confluence of food security, societal and economic well-being, and cultural identity.[36] These guidelines aim to protect human rights and set forth best practices for fishery development that secure the environment.

SSFs are located at the peripheries of society, marginalized through their physical, socioeconomic, political, and cultural remoteness from urban centers.[37] While SSFs could be the mechanism by which commu-

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30. GORDON R. MUNRO ET AL., ECONOMIC & ANALYSIS BRANCH (CAN.), IMPACTS OF HARVESTING RIGHTS IN CANADIAN PACIFIC FISHERIES 6–13 (2009), *available at* http://fisheries.ubc.ca/sites/fisheries.ubc.ca/files/uploads/m.bailey/pubs/Reports/Munro_etal_HarvestingRightsN01-3.pdf. *See also* Dietmar Grimm et al., *Assessing Catch Shares' Effects: Evidence from Federal United States and Associated British Columbian Fisheries*, 36 MARINE POL'Y 644, 654–57 (2012).

31. *See generally* FOOD AND AGRIC. ORG. OF THE UNITED NATIONS, INTERNATIONAL GUIDELINES FOR SECURING SUSTAINABLE SMALL-SCALE FISHERIES (2012), *available at* ftp://ftp.fao.org/Fi/DOCUMENT/ssf/SSF_guidelines/ZeroDraftSSFGuidelines_MAY2012.pdf.

32. *Id.* at 27.

33. *Id*.

34. *Id*.

35. *See id*.

36. *Id.*

37. *See generally* Daniel Pauly, *Small-Scale Fisheries in the Tropics: Marginality, Marginalization, and Some Implications for Fisheries Management*, *in* GLOBAL TRENDS: FISHERIES MANAGEMENT 40 (E. K. Pikitch et al. eds., 1997), *available at* http://www.seaaroundus.org/researcher/dpauly/PDF/1997/Books&Chapters/SmallScaleFisheriesTropicsMarginalityMarginalizationSome%20Imp.pdf.

nities overcome poverty, these fishers are typically plagued by poverty.[38] The FAO guiding principles intend to protect cultural diversity and empower SSFs to be successful, and not at the expense of the environment. The aboriginal communities throughout the Arctic stand to benefit from implementing these guidelines. The EAF and FAO small-scale fisheries guidelines are written to protect human rights and ensure responsible fishing.

2. Sectoral Fisheries Management

The sectoral approach to fisheries management insufficiently protects the ecosystem.[39] Sectoral management divides the fishery into sectors based on, for example, species of fish.[40] This approach does not allow for the consideration of ecological characteristics. Some experts go so far as to suggest that the system of "[s]ectoral (fisheries) management is antithetical to ecosystem-based management."[41] This system generates an expectation among fishers that they have rights to the fishery, even though a sectoral management regime does not allocate rights to fishers.[42]

Additionally, sectoral management makes it relatively simple for commercial interests to resist management.[43] This also creates a situation where commercial interests can obfuscate the situation as a result of the limitations of the approach through lobbying efforts. There has not been significant research done on this dilemma, but it remains a potential issue that may exist given the pervasiveness of lobbying efforts.[44] A sectoral management approach fails to include an analysis of processing facilities and their effect upon the ecosystem as a whole.[45] This results in an in-

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38. Christophe Béné & Richard M. Friend, *Poverty in Small-Scale Fisheries: Old Issue, New Analysis*, 11 PROGRESS DEV. STUD. 119, 120, 129 (2011).

39. *See generally* A. David McGuire et al., *Sensitivity of the Carbon Cycle in the Arctic to Climate Change*, 79 ECOLOGICAL MONOGRAPHS 523 (2009).

40. *See, e.g.*, *Northeast Multispecies*, NAT'L OCEANIC AND ATMOSPHERIC ADMIN., https://www.nero.noaa.gov/sfd/sfdmultisector.html (last visited Apr. 22, 2014).

41. Lori Ridgeway, Dir. Gen., Int'l Policy and Integration for Fisheries & Oceans (Can.), Presentation, *Issues in Arctic Fisheries Governance: Some Canadian Perspectives*, *available at* http://www.virginia.edu/colp/pdf/Ridgeway-arctic-fisheries.pdf (last visited Apr. 22, 2014).

42. *See generally* Adam Soliman, *Do Private Property Rights Promote Sustainability? Examining Individual Transferable Quotas in Fisheries*, 4 SEATTLE J. OF ENVTL. L. (forthcoming May 2014).

43. M. Estellie Smith, *Chaos in Fisheries Management*, 3 MAR. ANTHROPOLOGICAL STUD. 1, 9 (1990).

44. *See, e.g.*, Hui Chen, David Parsley & Ya-wen Yang, *Corporate Lobbying and Financial Performance* (Working Paper, 2010), *available at* http://ssrn.com/abstract=1014264.

45. *See* Scott Matulich et al., *Toward a More Complete Model of Individual Transferable Fishing Quotas: Implications of Incorporating the Processing Sector*, 31 J. OF ENVTL. ECON. & MGMT. 112 (1996).

complete model of the effects of utilizing sectoral management, which research has further suggested undermines the attempt at accomplishing the end goals of fisheries management.

In comparison to the ecosystem-based approach, the sectoral approach has significant flaws. First, it fails to account for fishing's impact on other species or the entire system by managing the fishery on a species-by-species basis. Addressing fishery management on a species-by-species basis can lead to drastic imbalances between predator and prey species, causing significant harm to the ecosystem. The ecosystem operates as a whole to create an environment that will sustain fish. Species-by-species fisheries management is oversimplified, and as a result fails to adequately protect the ecosystem as a whole.

Second, decisions are made based on an economic-focused definition of "efficiency" with little consideration of other benefits for properly managing fisheries. The sectoral approach's economically focused definition of efficiency fails to account for the needs of aboriginal communities. Economic efficiency should not be the only goal of fisheries management. Fisheries can provide entire communities with a source of income. Therefore, employing fewer people to deliver the same output in order to achieve lean, economic efficiency may be equally as damaging to developing communities as industrial overfishing and the consequences of poor fishery management. People displaced from fishing jobs will have tremendous difficulty finding new employment, thrusting developing countries in particular into greater hardship. In such a situation, the economic efficiency that sectoral management usually delivers may be, on balance, a negative rather than positive outcome.

These communities are also negatively affected by the marginalization of small-scale fisheries. Sectoral management has the effect of concentrating control and fish availability (i.e. quotas) in the hands of a few firms. As a result, small-scale fisheries are pushed out, further concentrating ownership in larger industries as the sectoral licenses are bought up by these industrial fishing operations.[46] Reducing the likelihood that small-scale fisheries can survive or promoting economic efficiency in fishery management could have significant social and political effects. Fishers who are deemed "inefficient" may not have the skills to find other employment. Without jobs, these fishers are then unable to care for themselves and their families, potentially drawing them to less savory employment (e.g., drug trade, human trafficking, etc.). Some perceive a moral duty to enable certain types of individuals or entities to continue to

46. Dietmar Grimm et al., *Assessing Catch Shares' Effects: Evidence from Federal United States and Associated British Columbian Fisheries*, 36 MARINE POL'Y 644, 654–57 (2012).

work as independent fishers, regardless of any economic inefficiency. The justification for this position is often hidden within an argument that explicitly claims to be based on social costs. Bromley, for example, asks: "Are individual fishing firms—many of them family firms—nothing but pieces of capital to be used or banished as government fisheries managers seek to 'maximize profit for the fleet'?"[47] The moral implication is that "family" firms deserve the opportunity to fish more than others do. This moral reasoning is based upon the concept that while industrial fishing aims to maximize profit and efficiency, it often does so at the expense of entire communities of fishers who rely on fishing as a way of life. Therefore, while allocating fish and requiring fishers to obtain permits in part protects fish species, it does not protect communities which exist for the purpose of employing and feeding their people; rather, it protects the interests of profit-maximizing commercial fishermen.

Other theorists hold that monopolistic or oligopolistic industry structures should *per se* not be allowed. These arguments are usually based on one of two reasons: (1) monopolists and oligopolists wield so much power that they can force other market participants to accept prices or other terms that those other participants would not voluntarily agree to; and, (2) a market that contains several small firms is inherently better. The latter point is the position of one of the major schools of antitrust theory in the United States, which holds that "[t]hroughout the history of [antitrust] statutes it has been constantly assumed that one of their purposes was to perpetuate and preserve, for its own sake and in spite of possible cost, an organization of industry in small units which can effectively compete with each other."[48]

In addition to being more focused on profit maximization, sectoral management clashes with the precautionary approach in two ways. The FAO defines the precautionary principle as follows: "Management according to the precautionary approach exercises prudent foresight to avoid unacceptable or undesirable situations, taking into account that changes in fisheries systems are only slowly reversible, difficult to control, not well understood, and subject to change in the environment and human values."[49] This regime can facilitate the rapid adoption of fishing techniques which are highly efficient for catching one or a few species, but which may have serious and long-lasting impacts on the ecosystem as a whole. Bottom trawling, especially in sensitive environments such as coral reefs, is an example of such a technique. Regimes that allow for

47. Daniel Bromley, *Abdicating Responsibility: The Deceits of Fisheries Policy*, 34 FISHERIES 280, 286 (2009), *available at* http://www.aae.wisc.edu/dbromley/pdfs/fisheriesifq.pdf.

48. United States v. Aluminum Co. of Am., 148 F.2d 416, 429 (2d Cir. 1945).

49. FAO PRECAUTIONARY APPROACH, *supra* note 24, at 8.

fishing on a species-by-species basis may be ill-equipped to consider the impact on other species or the ecosystem because they are looking at fisheries management through the lens of one fish species rather than through the lens of the ecosystem as a whole.

Judicial decisions upholding the sectoral management approach have had the effect of creating strong property rights for license holders and preventing regulators from taking necessary precautionary actions. For example, when the New Zealand government attempted to reduce the total catch for the northern red snapper (*Centroberyx affinis*) to allow the stock to rebuild, fishers filed injunctions to either prevent the reductions or force the government to provide compensation.[50] Furthermore, countries with access to the Arctic have provided limited legal protection to aboriginal communities' rights to fish.[51] For example, the Canadian Constitution protects the rights of aboriginals to fish in the Arctic based on fishing claims made prior to the European settlement of Canada.[52] Unfortunately, while their fishing rights are protected, their knowledge and wisdom of fisheries management goes untapped.[53] Similarly, Norway recognizes the rights of the Saami as an aboriginal group to continue fishing as a part of their tradition, but has placed restrictions on their right via regulations.[54] The United States also has a program that protects the rights of aboriginal groups, but does not fully consult them regarding fishery management.[55]

The EAF approach is the most compatible management approach to the RFMO framework; together they best address the challenges currently facing fisheries. Given the wide range of regions within each RFMO, the ecosystem approach best addresses the complex system spanning the ocean. The challenge will be in practically applying these systems at the

50. *See generally* Catherine Wallace, *Tradeable Quota in Practice: Decision Making, Institutions and Outcomes—the New Zealand Experience Over 11 Years*, *in* PROCEEDINGS OF THE NINTH INT'L CONFERENCE OF THE INT'L INST. OF FISHERIES ECON. & TRADE 639 (A. Eide & Terje Vassdal eds., 1998).

51. Including the United States, Canada, Norway, and arguably Russia. *See, e.g.*, Constitution Act, 1867, 30 & 31 Vict., c. 3 (U.K).

52. *Id. See also* R. v. Marshall (No. 1), [1999] 3 S.C.R. 456 (Can.); R. v. Van der Peet, [1996] 2 S.C.R. 507 (Can.); R. v. Sparrow, [1990] 1 S.C.R. 1075 (Can.).

53. Martin S. Weinstein, *Pieces of the Puzzle: Solutions for Community-Based Fisheries Management from Native Canadians, Japanese Cooperatives, and Common Property Researchers*, 12 GEO. INT'L ENVTL. L. REV. 375, 407 (1998).

54. *See generally* United Nations Econ. & Soc. Council [ECOSOC], *Report on Indigenous Fishing Rights in the Seas with Case Studies from Australia and Norway*, U.N. Doc. E/C.19/2010/2 (Jan. 8, 2010).

55. *See generally* Elizabeth Barrett Ristroph, *Alaska Tribes' Melting Subsistence Rights*, 1 ARIZ. J. OF ENVTL. L. & POL'Y 47 (2010).

same time. Many RFMOs face challenges with coordinating nations' opinions.[56]

3. Current Arctic Resource Regulation

The current legal regime in the Arctic consists of U.N. treaties. The treaties bind parties to certain standards applicable to the entire sea, including setting a maximum level of allowable pollution per vessel.[57] The RFMO has also successfully enacted and enforced non-binding, voluntary standards.[58]

The Arctic fishery is, despite the fears that some groups hold, not commercially exploited at this time.[59] Instead, aboriginal people from the five coastal states that border the Arctic—Norway, the Russian Federation, the United States of America, Greenland, and Canada—largely utilize them.[60] Current governance approaches are geared toward managing the use by these aboriginal tribes, and not commercial fishing vessels. Without a cohesive, enforceable international treaty, fishing by commercial vessels will be insufficiently regulated when commercial fishing begins.[61]

Norway, Russia, the United States, Greenland, and Canada are members of a variety of international organizations aimed at protecting the Arctic, yet an Arctic RFMO has not been established.[62] These states seem to agree that some sort of international agreement is necessary, but disagree as to the terms.[63] Their inability to collaborate has resulted in inaction.[64]

As a result of the impasse, these five states have agreed that the North-East Atlantic Fisheries Commission's (NEAFC) mandate will pro-

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56. *See generally* Robin Allen, *International Management of Tuna Fisheries: Arrangements, Challenges, and a Way Forward* (FAO Fisheries and Aquaculture Technical Paper No. 536, 2010), *available at* http://www.fao.org/docrep/012/i1453e/i1453e00.pdf.

57. Berkman & Young, *supra* note 12, at 340.

58. *Id*.

59. *See, e.g.*, Russell Sticklor & Brendan McGovern, *Eyes on Yet Another Prize in the Arctic Ocean: Fisheries at the Top of the World*, STIMSON (Apr. 2, 2013), http://www.stimson.org/spotlight/eyes-on-yet-another-prize-in-the-arctic-ocean-fisheries-at-the-top-of-the-world; Ben Shingler, *Arctic Fishing: Scientists Call for Moratorium On Commercial Fishing in Arctic Waters*, HUFFINGTON POST, (Apr. 22, 2012, 3:13 PM), http://www.huffingtonpost.ca/2012/04/22/arctic-fishing-scientists_n_1444313.html.

60. OCEANS NORTH CANADA, *supra* note 5.

61. *Id*.

62. Including the Arctic Council, the relevant U.N. treaties, and others. *See* ARCTIC COUNCIL, http://www.arctic-council.org/index.php/en/ (last visited Apr. 22, 2014).

63. *See* INSTITUTIONAL DIMENSIONS OF GLOBAL ENVTL. CHANGE, MANAGING INSTITUTIONAL COMPLEXITY: REGIME INTERPLAY & GLOBAL ENVIRONMENTAL CHANGE 143 (Sebastian Oberthür & Olav Schram Stokke eds., 2007).

64. *Id*.

tect the Arctic fisheries when commercial fishing begins, and that no other RFMO is necessary at this time.[65] This paper contends that the NEAFC is insufficient to manage the Arctic, and that developing controlling measures after commercial fishing has started will endanger fisheries.

Some countries have made independent efforts to manage fishing in the Arctic. Though the United States has not ratified UNCLOS,[66] the United States has established fisheries management groups aimed at ensuring sustainable use of the Northern resources under the Magnuson–Stevens Act.[67] This includes the "Arctic Fishery Management Plan," which proposes closing the Bering Strait to commercial fishing until the viability of fishing in the Strait can be scientifically supported.[68] Norway, by contrast, has taken the view that the existing body of international law, including UNCLOS, provides a sufficient framework for managing fisheries.[69]

Russia's compliance with international laws controlling fishing is inconsistent at best. Many laws appear to be largely ignored. For instance, two thirds of the Russian fishing fleet does not meet Russian safety standards,[70] and a variety of unpermitted fishers illegally fish and export their catch to other nations.[71] Whether this is a result of apathy, or an unwillingness to be subjected to international principles, Russia does not properly manage their fishing activities.

III. REGIONAL FISHERIES MANAGEMENT ORGANIZATION

RFMOs are comprehensive international bodies designed to coordinate nations' management of fisheries and address the migratory nature of fish stocks.[72] RFMOs provide states a forum to discuss individual

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65. *See generally* Press Release, U.S. Dep't of State, Chairman's Statement at Meeting on Future Arctic Fisheries (May 1, 2013), *available at* http://www.state.gov/e/oes/rls/pr/2013/209176.htm.

66. *United Nations Convention on the Law of the Sea*, Dec. 10, 1982, 1833 U.N.T.S. 397 [hereinafter UNCLOS].

67. *See* 16 U.S.C. §§ 1801–1884 (2007).

68. *See generally Arctic Fishery Management Plan*, PEW CHARITABLE TRUSTS, http://www.oceansnorth.org/arctic-fishery-management-plan (last visited Apr. 22, 2014).

69. *See generally* Erik Lahnstein, *Managing the Arctic—Norway's Views*, ARCTIC FORUM FOUNDATION, http://eu-arctic-forum.org/publications/managing-the-arctic-%E2%80%93-norway%E2%80%99s-views/ (last visited Apr. 22, 2014).

70. V. Zilanov, *Fish Under Law?*, 22 RUSSIA TODAY 54, 54–55 (Adam Soliman trans., 2001) (on file with author).

71. FOOD & AGRIC. ORG. OF THE UNITED NATIONS, NATIONAL FISHERY SECTOR OVERVIEW: THE RUSSIAN FEDERATION (2007), *available at* ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI_CP_RU.pdf.

72. MICHAEL W. LODGE ET AL., CHATHAM HOUSE, RECOMMENDED BEST PRACTICES FOR REGIONAL FISHERIES MANAGEMENT ORGANIZATIONS 1 (2007), *available at* http://www.chatham

management of fisheries and coordinate joint efforts.[73] RFMOs, as creatures of voluntary international agreements, cannot issue binding regulations.[74] They have successfully served as a system by which to discuss the best methodology for managing regional fish stocks, but have not been able to coordinate a response to migrating stocks.[75]

There are three issues that arise due to the voluntary nature of RFMO membership.[76] First, not all actors with interests in the governed fisheries become members of an RFMO.[77] As a result, the fishery is shared between both members and non-members of the RFMO.[78] Second, members can pick and choose the terms of the RFMO agreement with which they will comply.[79] Third, in order to improve the chances that members will comply with the agreement terms, quotas are set at levels much higher than those advised by scientists.[80]

A. Failure to Realize Collaborative Governance

To effectuate proper fishery management, coastal nation-states must collaborate in their efforts to design and implement rules regarding fisheries' operations. Recent studies illustrate that devolving fishery management from state governments to local communities is beneficial.[81] Local communities are better positioned to review previous and current fisheries operations and design better-suited regulations. They are also incentivized to take action that protects fisheries, rather than action that simply maximizes profit, because their livelihoods are so dependent on fishing.

Fisheries are a fundamental and traditional way of life for many communities. State-imposed governance models can generate tension because while the governance model may have certain positive effects on fisheries operations, it often ignores the cultural and social importance that fishing plays in these coastal communities. For example, governance models often fail to take tradition into account. Fishing is a skill passed from generation to generation. As a result, habits are informed by experi-

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house.org/publications/papers/view/108602.

73. *Id*. at 18.

74. *Id*. at ix.

75. *See, e.g.*, Sarika Cullis-Suzuki & Daniel Pauly, *Failing the High Seas: A Global Evaluation of Regional Fisheries Management Organizations*, 34 MARINE POL'Y 1036 (2010).

76. Pedro Pintassilgo et al., *Stability and Success of Regional Fisheries Management Organizations*, 46 ENVTL. & RESOURCE ECON. 377, 378 (2010).

77. *Id*. at 386.

78. *Id*. at 378.

79. *Id*.

80. *Id* at 379.

81. *See generally* Caddy, *supra* note 15.

ence and tradition rather than scientific studies.[82] Governance structures should encourage the development of management approaches that utilize *both* science and tradition to preserve fishing resources.

Aboriginal societies have a tremendous amount of knowledge that should be drawn on. For aboriginal societies, the fishery is not merely a source of economic value, but also a source of identity and a body of cultural knowledge.[83] Many of the fishers in the Arctic are subsistence-based and aboriginal.[84] Studies suggest that aboriginal knowledge is robust, and can offer better adaptive solutions to migratory patterns than solutions based simply on scientific data.[85] Aboriginals tend to be more conservative than scientific models, which have consistently not erred on the side of caution and have consequently led to overfishing.[86] Scientific models are imperfect because they fail to comprehensively understand the interconnected nature of fisheries.[87] Consequently, any error in scientific conclusions upon which fisheries regulations are based can lead to overfishing.

The Arctic aboriginal societies and coastal waters span the jurisdiction of the United States, Canada, the Russian Federation, Denmark (on behalf of the Faroe Islands and Greenland), Iceland, Norway, and Sweden. The NEAFC has great potential to improve the management of Arctic waters, but key Arctic nations are not parties to the NEAFC, including the United States and Canada. As non-parties, they are not required to participate in the development of measures nor implement the recommended measures. Therefore, it is unclear the impact that the NEAFC RFMO is having on fishery protection.

Each country has its own structure by which to manage fisheries and each vary widely in the frequency by which they report fisheries-related data. Zeller et al. conducted a comprehensive overview of the FAO area, reviewing eighteen catches between 1950 and 2006.[88] The

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82. *See generally* JAN KOOIMAN ET AL., FISH FOR LIFE: INTERACTIVE GOVERNANCE FOR FISHERIES (Jan Kooiman et al. eds., 2005).

83. GLENN SIGURDSON, BARRY STUART & JESSICA BRATTY, A PRACTICAL GUIDE TO COLLABORATIVE FISHERIES GOVERNANCE 3 (2011), *available at* http://www.glennsigurdson.com/wp-content/uploads/2011/04/guidebook_FNL.pdf.

84. Ridgeway, *supra* note 41.

85. *See* R.E. Johannes, M.M.R. Freeman, & R.J. Hamilton, *Ignore Fishers' Knowledge and Miss the Boat*, 1 FISH & FISHERIES 257 (2000).

86. *See generally* Konefal, *supra* note 14.

87. *See, e.g.*, Jeremy B. C. Jackson et al., *Historical Overfishing and the Recent Collapse of Coastal Ecosystems*, 293 SCI. 629 (2001), *available at* http://www.sciencemag.org/content/293/5530/629.full.pdf; *Overfishing*, Presentation to Fisheries Science Class at Iowa State University, http://www.nrem.iastate.edu/class/assets/aecl520/PowerPoint%20Presentations/Overfishing.pdf (last visited Apr. 28, 2014);.

88. *See generally* D. Zeller et al., *Arctic Fisheries Catches in Russia, USA, and Canada: Baselines For Neglected Ecosystems*, 34 POLAR BIOL. 955 (2011), *available at*

FAO area includes shores and seas in the Arctic associated with the United States, Canada, and Russia. Among other things, the Zeller overview indicates that most reports of Arctic catches to the FAO come only from Russia, and in general the total amount of fish caught is massively underreported to the FAO.[89]

Russia has the largest Arctic coastal territory, spanning four seas—the Kara Sea, the Laptev Sea, the East Siberian Sea, and part of the Chukchi Sea. The Zeller study reports on catch data from the Russian authorities such as the State Institute of Lake and River Fisheries (GOSNIORKH), which manages SSFs, and the National Administration for Fishery Enforcement, Resource Restoration, and Fishing Regulation (GLAVRYBVOD), which manages commercial and industrial fishing.[90]

The U.S. National Marine Fisheries Service, a federal agency branched in Alaska, oversees implementation of federal regulation of commercial and subsistence fisheries, while the Alaska Department of Fish and Game (ADF&G) oversees programs of subsistence fishing, which is the usual form SSFs take in Alaska's Arctic communities.[91] ADF&G also oversees commercial fishing, and the Zeller study reported Kotzebue Sound to be the hub of marine commercial fishing for chum salmon.[92]

In Canada, Fisheries and Oceans Canada—a federal agency controlling both commercial and small-scale fishing—oversees the fisheries.[93] The Zeller study reports on fifty-one fishery communities that subsist from the vast coastal Arctic waters belonging to the country.[94]

Countries' individual efforts to manage their fisheries have been unsuccessful. Establishing an Arctic-dedicated RFMO is imperative to protecting the Arctic fisheries. Countries with a greater capacity to exploit fisheries, such as the United States and Russia, resist management structures that will limit their catch limits and the area in which they can fish. Furthermore, these countries have poor track records with respect to reporting. If countries were parties to an Arctic-dedicated RFMO, they would be obligated to report fisheries data as well as be active members

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http://scholar.google.com/scholar_url?hl=en&q=http://www.researchgate.net/publication/225478647_Arctic_fisheries_catches_in_Russia_USA_and_Canada_baselines_for_neglected_ecosystems/file/9c96051646fb96a21a.pdf&sa=X&scisig=AAGBfm0Rk2QkD59RB6KV-SHbusi5uus_qw&oi=scholarr.

89. *Id.* at 955.

90. *Id*. at 958.

91. *Id*. at 963.

92. *Id*.

93. *Id*. at 959.

94. *Id*. These communities are inhabited by a majority of Inuit people, with some Algonquian, Athapaskan, Métis people, as well as non-indigenous people in the coastal areas of Hudson Bay. *Id.*

in the design and implementation of an effective fishery management approach.

B. The Hierarchical Model

Under the hierarchical model, states act as regulators by setting and enforcing rules. For example, Canada and the United States have recently adopted the specific Halibut catch limits set forth by the International Pacific Halibut Commission (IPHC).[95] Specific catch shares subject fishers to a high degree of monitoring, including onboard or dockside cameras, and oblige countries to report their fishing activities.

Associations have improved the governance of fisheries by enhancing co-governance. Fishers have voluntarily self-organized into associations dedicated to maximizing fishers' advocacy power and increasing their influence over countries' regulatory decision-making. These associations make formal and informal representations to the regulators on behalf of the fishers. These associations may also rally the fishers to support the regulators' initiatives. The influence exerted by these associations adds an element of co-governance to a catch share regime, greatly improving the governability of the overall system.

In a catch share regime, the regulator is the governing system, the fishers are the governed, and the administrative structures within the management scheme are the governing interactions. These administrative structures include: the quotas, the required licenses, the qualifications to apply for a quota, the markets on which quotas are traded, and the enforcement mechanisms in place to ensure compliance with these regulations. The fishers' association may also be a significant component of the GI. The regulatory requirements and enforcement mechanisms constrain day-to-day fishing activities. While intrusive, they are a marked improvement to the former system.

Many of the catch share regimes today operate in developed countries where fisheries have been governed hierarchically, often with strict input controls, licensing limitations, or both. Before the introduction of ITQs, fishers were regulated by licensing requirements, limited fishing seasons, and gear restrictions. These fishers accept regulations as part of the fishing industry. They know how to comply and dispute regulatory decisions. Therefore, when ITQs were implemented, it was merely a change in approach to fishery management, not the introduction of regulation where none had existed previously.

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95. *See* Pacific Halibut Fisheries; Catch Sharing Plan, 78 Fed. Reg. 16,423 (Mar. 15, 2013) (to be codified at 50 C.F.R. 300), *available at* https://federalregister.gov/a/2013-06034.

Where there has been little to no regulation of fisheries, it will be difficult to impose controls on fishing. Chuenpagdee and Jentoft, both experts in the area of fisheries management, suggest that the success of co-management, co-governance structures is determined by the stakeholders' relationships before the shift in approach.[96] In small-scale or traditional fisheries with little or no experience with regulation, ITQs will be very difficult to implement, because fishing regulations are new and complex, and fishers who have not been subjected to extensive regulation may have difficulty understanding how to comply. While all countries could benefit from a more inclusive process when designing fishing regulations, countries where no regulation has existed before would benefit the most. Including fishers in the regulation design process will minimize implementation and enforcement issues.

Implementing ITQs in regions where SSFs make up the majority of the operating fisheries could cause these fisheries to fail. ITQs reward economic efficiency—the larger the catch, the greater the profit. Small-scale fisheries do not have the capacity or resources to operate like large-scale fisheries. Therefore, SSFs cannot compete with commercial fishers. Consequently, SSFs typically find it more profitable to sell their quotas to large fishers than to continue fishing because the cost for SSFs to fish the same quantity as commercial fishers is much higher.

This type of "efficiency" poses a problem for countries where most fishers depend on small-scale fishing for their livelihood. The estimated number of people in the world who work in, or depend on, fisheries ranges from 30 million to 250 million people.[97] ITQs could potentially displace enormous numbers of people who depend on those fisheries when small fishers are pressured or forced by the increased competition in the market to sell their ITQs to larger industrial interests.

ITQs benefit large-scale, industrial fishing operators who enjoy lower administrative costs and greater profits. ITQs have been regarded as effective in developed countries, in part, because allocation based on ability to pay is an accepted distribution principle; in essence, the ability to pay has been accepted as sufficient justification for determining the distribution of ITQs.[98] The needs are different in developing countries. These issues regularly lead scholars to argue that ITQs are not an appropriate form of management for traditional and small-scale fisheries, and

96. Ratana Chuenpagdee & Svein Jentoft, *Step Zero For Fisheries Co-Management: What Precedes Implementation*, 31 MAR. POL'Y 657, 657–68 (2007).

97. Ratana Chuenpagdee et al., *Challenges and Concerns in Capture Fisheries and Aquaculture*, *in* FISH FOR LIFE: INTERACTIVE GOVERNANCE FOR FISHERIES 25, 26 (J. Kooiman et al. eds., 2005).

98. *Id*.

are therefore not suitable for most developing countries in the southern hemisphere. Given that the ITQ system fails to address a variety of situations where it has been applied around the world, it is unlikely that it will prove viable in the Arctic. In addition, given the vastly different challenges that face many of the states involved, an Arctic RFMO will be required for the states involved to coordinate properly to address these challenges.

IV. APPLICATION

In order to ensure sustainable long-term availability of Arctic fish resources and engage the aboriginal communities, it is imperative that the interaction between governing systems and the governed be carefully studied.

A. Hierarchical Governance and Governing Systems: What Resources are Available When Implementing Policies Affecting Small-Scale Fisheries?

Intergovernmental organizations actively promote the interests of the Arctic people. The most prominent organization in managing Arctic fishing is the Arctic Council.[99] Created by a multilateral agreement signed by Canada, Denmark (including Greenland and the Faroe Islands), Finland, Iceland, Norway, the Russian Federation, Sweden, and the United States of America, the Council grants full consultative status to six "Permanent Participants" representing groups of aboriginal people of the Arctic environment.[100] These participants are organized as either national or cross-border associations of native peoples sharing a common cultural heritage and are further supported by an Indigenous Peoples Secretariat.[101] The Secretariat normally provides administrative support to the Permanent Participants, and acts as a medium, conveying information to

99. Jennifer Jeffers, *Climate Change and the Arctic: Adapting to Changes in Fisheries Stocks and Governance Regimes*, 37 ECOLOGY L. Q. 917, 919 (2010).

100. *See* ARCTIC COUNCIL, DECLARATION ON THE ESTABLISHMENT OF THE ARCTIC COUNCIL (1996), *available at* http://www.arctic-council.org/index.php/en/about-us/arctic-council/history/107-resources/about/history. The Arctic Council is chaired by each of its members in a rotating manner and new declarations capturing pressing issues and future directions are adopted every two years. *Id.*

101. *See Permanent Participants*, ARCTIC COUNCIL (Apr. 27, 2011), http://www.arctic-council.org/index.php/en/about-us/permanent-participants. The current six Permanent Participants are: Arctic Athabaskan Council (AAC) (http://www.arcticathabaskancouncil.com/aac/); Aleut International Association (http://www.aleut-international.org/Page1.html); Gwich'in Council International (http://www.gwichin.org); Inuit Circumpolar Council (http://www.inuit.org); Russian Association of Indigenous Peoples of the North (RAIPON) (http://www.raipon.info/novosti-sajta/); and the Saami Council (http://www.saamicouncil.net/?deptid=1116).

and from the communities.[102] The Council remains open to add further Permanent Participants not exceeding the number of member states.

The Permanent Participants are active at the Council's regular and special meetings as well as in activities and programs run by the six working groups of the Council.[103] Most notable, the Sustainable Development Working Group (SDWG) conducts extensive assessments of local socio-economic situations, traditional practices in the various communities, and surveys of various community members. The SDWG also maintains a database to inform policy direction.[104] In addition, the Participants engage in ad hoc expert groups and task forces as mandated by the Council. While reports to the Council are welcomed, they do not become binding international law until they are signed by the member states.[105] For example, the Council recently reviewed a report detailing the importance of the ecosystem-based management; however, it has not been adopted as binding.[106]

The governing systems are as varied as the members of the Council. Each Arctic nation has its own history that heavily informs their method of fisheries management. In the United States, Arctic fisheries are managed by the federal and state governments. For example, the National Marine Fishing Services, an office of the National Oceanic and Atmospheric Administration (NOAA) approved the Fishery Management Plan for the Fish Resources of the Arctic Management Area, written under the authority of the Magnuson–Stevens Fishery Conservation and Management Act.[107] The Plan sets forth the scope of the U.S. Arctic waters and prohibits commercial fishing pending a future informed decision under the auspices of the North Pacific Fishery Management Council.[108]

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102. For further information, see ARCTIC COUNCIL INDIGENOUS PEOPLES' SECRETARIAT, http://www.arcticpeoples.org/ (last visited Apr. 22, 2014).

103. *See Working Groups*, ARCTIC COUNCIL (Apr. 15, 2011), http://www.arctic-council.org/index.php/en/about-us/working-groups/sustainable-development-working-group-sdwg/114-resources/about/working-groups.

104. SUSTAINABLE DEV. WORKING GRP., ADAPTATION ACTIONS FOR A CHANGING ARCTIC (A) (2013) [hereinafter SDWG ADAPTION ACTIONS], *available at* http://www.sdwg.org/media.php?mid=1694; *see also* STATISTICS NORWAY, THE ECONOMY OF THE NORTH 2008 (Solveig Glomsrød & Iulie Aslaksen eds., 2009), *available at* http://www.ssb.no/a/english/publikasjoner/pdf/sa112_en/sa112_en.pdf. For further information and SDWG reports, see *SDWG Project Reports*, SUSTAINABLE DEV. WORKING GRP., http://www.sdwg.org/content.php?doc=23 (last visited Apr. 22, 2014).

105. *See* SDWG ADAPTION ACTIONS, *supra* note 104.

106. *See generally* EXPERT GRP. ON ECOSYSTEM-BASED MGMT., ECOSYSTEM-BASED MANAGEMENT IN THE ARCTIC (2013), *available at* http://www.arctic-council.org/index.php/en/document-archive/category/449-ebm.

107. N. PAC. FISHERY MGMT. COUNCIL, FISHERY MANAGEMENT PLAN FOR FISH RESOURCES OF THE ARCTIC MANAGEMENT AREA (2009), *available at* http://www.npfmc.org/wp-content/PDFdocuments/fmp/Arctic/ArcticFMP.pdf.

108. 16 U.S.C. § 1852(h) (2007).

NOAA maintains a comprehensive online database of publications from various governmental and non-governmental organizations, including those from Canada and other Arctic states.[109] While NOAA has issued a number of reports on the effect of climate change in the Arctic, the effect of climate change specifically on Arctic indigenous people has yet to be studied.[110]

At the state level, the Alaska Department of Fish and Game (ADF&G) manages commercial and private fishing. The Board of Fisheries is the governing body composed of seven politically appointed members who meet several times per year in the local communities to survey their opinions on future changes in regulation.[111] In addition, the Board of Fisheries is authorized to set limits and issue fishing permits.[112] The Board has taken a sectoral approach to fisheries management, allocating resources by species of fish and areas.[113]

The Board is required to give subsistence fishing priority over all other uses of fish.[114] Most communities dependent on Arctic fisheries qualify for subsistence permits. Subsistence fishing is defined as the "taking of, fishing for, or possession of fish, shellfish, or other fisheries resources by a resident of the state for subsistence uses with gillnet, seine, fish wheel, long line, or other means defined by the Board of Fisheries."[115] While state law requires the provision of subsistence fishing, the Division of Subsistence, a division of the Alaskan government that reports to the Board of Game and the Board of Fisheries, can conduct research and inquiries into the application and impact of subsistence regulations as well as make recommendations based on findings in partnership with Alaskan communities.[116] Lastly, the ADF&G maintains and

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109. *See, e.g.*, *Arctic Report Card 2012*, NAT'L OCEANIC AND ATMOSPHERIC ADMIN., http://www.arctic.noaa.gov/reportcard (last visited Apr. 22, 2014).

110. Full printable reports are available at *Previous Editions of the Arctic Report Card*, NAT'L OCEANIC AND ATMOSPHERIC ADMIN., http://www.arctic.noaa.gov/reportcard_previous.html (last visited Apr. 22, 2014).

111. *See Board of Fisheries*, ALASKA DEP'T OF FISH AND GAME, http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.main (last visited Apr. 22, 2014).

112. *Id.*

113. *See, e.g.*, ALASKA DEP'T OF FISH AND GAME, 2013–2016 ALASKA PENINSULA, ATKA-AMLIA ISLANDS, AND ALEUTIAN ISLAND AREAS COMMERCIAL SALMON FISHING REGULATIONS 47 (2013), *available at* http://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/akpen-2013-2016.pdf.

114. ALASKA STAT. § 16.05.258 (1998) (stating "[i]f a portion of a stock or population can be harvested consistent with sustained yield, the board shall determine the amount of the harvestable portion that is reasonably necessary for subsistence uses").

115. Memorandum from Alpheus Bullard on Legislative Affairs Agency of the State of Alaska to Representative Tammie Wilson (Mar. 28, 2013), *available at* http://www.adfg.alaska.gov/static/regulations/regprocess/pdfs/jbmeetings/2013-10-12/rcs/rc035_AOC_Cleaner_Copy_of_partial_PC13.pdf.

116. ALASKA STAT. § 16.05.094 (1978).

makes available a comprehensive database of socio-economic information on local communities, including even the smallest and most remote communities in the Arctic.[117]

While Alaska has acted to protect subsistence fishing, the federal government has also had a hand in protecting subsistence needs in Alaska. In 1980, Congress passed the Alaska National Interest Lands Conservation Act (ANILCA) giving rural Alaskan residents a priority for subsistence fishing. To manage subsistence farming, the Secretaries of the Interior and Agriculture established the Federal Subsistence Management program to enforce subsistence farming priorities on federally owned lands.[118]

Current federal regulations also take a sectoral management approach, dividing the regulated areas by zone of interest. The U.S. Department of the Interior publishes an informative guide on these regulations available to any interested person.[119] Like the ADG&F, the federal agency partners with scientists, local communities, or private contractors to collect subsistence harvest information and local trends, along with knowledge of resource preservation.[120] Additionally, the U.S. Department of the Interior provides its community partners with funding to conduct these projects.[121]

117. The database consists of a Community Subsistence Harvest Information System (CSIS) and a Technical Papers and Special Publication Series. *See Subsistence in Alaska*, ALASKA DEP'T OF FISH AND GAME, http://www.adfg.alaska.gov/index.cfm?ADFG=subsistence.harvest (last visited Apr. 22, 2014).

118. Alaska National Interest Lands Conservation Act, Pub. L. No. 96-487, 94 Stat. 2371 (1980) (codified in part at 16 U.S.C. §§ 3101–3133 (1988 & Supp. IV 1992) and in scattered sections of Titles 15, 16, 26, 30, 42, and 43). For a historic review of enactment, see Richard J. Fink, *The National Wildlife Refuges: Theory, Practice, and Prospect*, 18 HARV. ENVTL. L. REV. 1 (1994).

119. *See* OFFICE OF SUBSISTENCE MGMT., SUBSISTENCE MANAGEMENT REGULATIONS FOR THE HARVEST OF FISH AND SHELLFISH ON FEDERAL PUBLIC LANDS AND WATERS IN ALASKA (2013), *available at* http://www.doi.gov/subsistence/regulation/fish_shell/upload/entireFishRegbook.pdf.

120. *See generally Fisheries Monitoring Reports*, U.S. DEP'T OF THE INTERIOR, *available at* http://www.doi.gov/subsistence/library/monitor_fish/index.cfm (last visited Apr. 22, 2014).

121. *See*, *Partners of Fisheries Monitoring*, U.S. DEP'T OF THE INTERIOR, *available at* http://www.doi.gov/subsistence/monitor/partners/index.cfm (last visited Apr. 22, 2014).

B. Hierarchical Governance and Governing Interactions

What are the various forms, frequencies, and instruments used to interact with small-scale fisheries? What is the legitimacy associated with the normative orders? Besides imposing different forms of regulation and collecting data on subsistence, what other instruments are there? Are community development quotas such an instrument?

Before interest in subsistence fishing surged, most Arctic populations were rarely surveyed. Such surveys have improved researchers' understanding of various populations' involvement with the creation of fisheries regulations and response to the enforcement of such regulations. A survey sponsored by the Arctic Council, in collaboration with several of its Permanent Participants, found that Alaskan aboriginal populations are reporting the highest possible satisfaction with the system governing local food sources.[122] While fishing was reportedly the most often employed mode of subsistence, only Alaskan Inupiat and Greenland populations reported ability to influence the management of their fish and game, as well as reduce environmental degradation.[123] The survey has been lauded as a first initiative to truly measure the subsistence "incomes" of aboriginal people.[124] The surveys were designed to measure well-being through factors such as GDP, employment income, and census data.[125] Although aboriginal populations gain part of their income from seasonal employment, their main income is derived from harvesting the food resources of the lands and waters they inhabit. Cash earned through their employment is then invested in acquisition or improvement of the harvesting equipment. This reinvestment of capital in the ability to harvest is the foundation of a subsistence economy.

In fact, some have argued that in the aboriginal North, the subsistence economy is a system that is intertwined with a cash economy and serves as a "sponge, absorbing labor when other opportunities decline,

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122. For a detailed overview of results, see generally *Survey of Living Conditions in the Arctic: Inuit, Saami, and the Indigenous Peoples of Chukotka*, SURVEY OF LIVING CONDITIONS IN THE ARCTIC, http://www.arcticlivingconditions.org (last visited Apr. 22, 2014).

123. SURVEY OF LIVING CONDITIONS IN THE ARCTIC, LESSONS LEARNED (Birger Poppel ed., 2011), *available at* http://www.sdwg.org/media.php?mid=1203.

124. BIRGER POPPEL & JACK KRUSE, THE IMPORTANCE OF A MIXED CASH- AND HARVEST HERDING BASED ECONOMY TO LIVING IN THE ARCTIC (2009), *reprinted in* QUALITY OF LIFE AND THE MILLENIUM CHALLENGE: ADVANCES IN QUALITY-OF-LIFE STUDIES, THEORY AND RESEARCH 27 (Valerie Møller & Dennis Huscka eds., 2009), *available at* http://link.springer.com/chapter/10.1007%2F978-1-4020-8569-7_4.

125. *Id*.

and releasing it when they arise."[126] This relationship places the household at the center of the subsistence economy. Income entering the household takes the form of *cash* from employment (i.e., seasonal or permanent), sales of commodities (e.g., fur, fish, etc.), and transfer payments (i.e., government assured payments).[127] On the other hand, there is also *in-kind* income from subsistence production obtained through harvesting land and water, employing the household labor skills, and utilizing the household capital.[128] In the end, the entire unit is focused on survival and the well-being of the community.[129] A household engages in extensive sharing rather than acting simply for its own benefit.[130]

C. Co-Governance and Governing Systems

Are government institutions open to cooperation and sharing of power and responsibility? How has experience informed interactions and relationships?

The governing approach to food resources in Alaska is one of imposition, like the system in the Arctic. The government uses scientific data to inform policy and laws which are then imposed onto the local communities via enforcement mechanisms. This type of governance is typical according to a recent interim report published by the Arctic Council, though it is identified as "scientific management."[131] The report also emphasizes the hierarchical character of this governance method.[132] Although Alaska's hierarchical governance system ensures adequate resources for aboriginal populations, it fails to take into account numerous community-specific norms, practices, and local knowledge.[133]

Although Alaska's governance mechanisms inform themselves from the community level (e.g., through state and federal funding of researchers and interested organizations, and community meetings with the state Board of Fisheries), it is not clear whether these interactions amount to co-governance. Various scholars have characterized the concept of "co-governance" differently. Co-governance has been defined as incor-

126. Peter J. Usher et al., *The Household as an Economic Unit in Arctic Aboriginal Communities, and Its Measurement by Means of a Comprehensive Survey*, 61 SOC. INDICATORS RES. 175, 178 (2003), *available at* http://link.springer.com/article/10.1023%2FA%3A1021344707027.

127. *Id*. at 180.

128. *Id*. at 181.

129. *Id*. at 184.

130. *Id*.

131. ARCTIC COUNCIL ET AL., ARCTIC RESILIENCE INTERIM REPORT 2013 85 (2013), *available at* http://www.sei-international.org/mediamanager/documents/Publications/ArcticResilienceInterimReport2013-HighRes.pdf .

132. *Id*.

133. *Id*.

porating the socio-cultural values of the community, perhaps even resulting in a decentralization of management.[134] In other instances, co-governance has been distinguished from "consultative management," a form of management of fisheries where the population is consulted—their opinion is ostensibly sought—but the population is ultimately unable to exercise any real power in the decision-making process.[135] In North America, co-governance revolves around the cooperation between the government and indigenous groups—for example, to manage a species of fish.[136] This cooperation includes formal and informal decision-making, and occurs through collection of data and analysis, allocation of resources, and issuance of regulation.[137] Yet, as mentioned above, co-governance fails to incorporate the local aboriginal experience and social values.

D. Co-Governance and Governing Interactions

Has collaboration resulted in trustful interactions, mutual understanding, and high compliance? Has there been any co-production knowledge informing decision-making?

It remains unclear the extent to which collaboration between government and aboriginal communities has resulted in co-determined decisions. At least one Alaskan study reported the existence of co-ops that monitor and collect data on particular species.[138] Note, however, that these efforts produce knowledge on a single species. For example, the Arctic Borderlands Ecological Knowledge Co-op monitors changes in the range of the Porcupine Caribou Herd and adjacent coastal and marine areas.[139] The co-op is partly funded by both United States and Canadian agencies, but the co-op does not report whether the data is used by the funding agencies in their decision-making.[140] The trend to produce spe-

134. *See* Anthony Davis, *Social Research and Alternative Approaches to Fisheries Management: An Introductory Comment*, 9 SOC'Y & NAT. RESOURCES 233, 233–36 (1996).

135. Bonnie J. McCay & Svein Jentoft, *From the Bottom Up: Participatory Issues in Fisheries Management*, 9 SOC'Y & NAT. RESOURCES 237, 239 (1996).

136. Bruce C. Forbes & Florian Stammler, *Arctic Climate Change Discourse: The Contrasting Politics of Research Agendas in the West and Russia*, 28 POLAR RES. 28, 32 (2009).

137. *Id*.

138. Gary Kofinas et al., *Community Contributions to Ecological Monitoring: Knowledge Co-production in the U.S.–Canada Arctic Borderlands*, *in* THE EARTH IS FASTER NOW: INDIGENOUS OBSERVATIONS OF ARCTIC ENVIRONMENTAL CHANGE 55–91, 63 (Igor Krupnik & Dyanna Jolly eds., 2002).

139. *Id*. For more information, see *About the Co-op*, ARCTIC BORDERLANDS ECOLOGICAL KNOWLEDGE SOC'Y, http://www.taiga.net/coop/about.html (last visited Apr. 22, 2014).

140. *See id*.

cies-specific knowledge is predominant in North American governing systems.[141]

University-established organizations are another source of research and data collection. For example, the Alaska Native Knowledge Network (ANKN) serves as a platform to compile and exchange information between interested actors regarding a diverse range of topics relevant to indigenous life, including the subsistence lifestyle.[142] In fact, its subsistence-relevant resources contain a reference to a Subsistence Management Information program of United Fishermen of Alaska.[143] These tools help to inform fishermen about the differences between federal and state management systems. One tool is a list of opportunities to get involved in decision-making, such as submitting management proposals, comments, and testimony for consideration in Regional Advisory Council meetings or to the Federal Subsistence Board; the list also includes information about running for a seat on the Regional Advisory Council, which reserves 70% of its seats for subsistence interests.[144] Nevertheless, it is apparent that decision-making is not accessible to the regular indigenous citizen. Opportunities to participate are constrained by a hierarchical, bureaucratic governance system that is a scientifically informed institution. While it is questionable to what extent the ANKN effectuates co-governance, it hosts an impressive collection of resources and has engaged in community education through traditional knowledge and culture.

Co-governance with an RFMO has not yet been attempted, but the systems that currently exist and the research discussed immediately above suggest that it could provide a drastic improvement over the current system. By involving the local populations in Arctic management, greater compliance may be achieved. Co-governing with an RFMO will help to coordinate the visions and policy initiatives pursued by the various Arctic states. Such coordination will improve the level of communication between states and the extent of data and information sharing, and will hopefully result in a coordinated effort to manage the natural resources in the Arctic. As discussed above, individual efforts to regulate Arctic fisheries can only achieve so much. An Arctic-dedicated RFMO would provide the necessary forum to bring stakeholders together, including smaller communities, such as the aboriginals, that have typically been excluded from the regulatory creation and implementation process.

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141. *See* Forbes & Stammler, *supra* note 136.

142. For more information, see *Indigenous Knowledge Systems*, ALASKA NATIVE KNOWLEDGE NETWORK (May 23, 2012, 3:03 PM), http://ankn.uaf.edu/IKS/Iceberg.html.

143. *See generally Informing Alaskans*, SUBSISTENCE MGMT. INFO., http://www.subsistmgtinfo.org/index.htm (last visited Apr. 22, 2014).

144. *To Participate*, SUBSISTENCE MGMT. INFO., http://www.subsistmgtinfo.org/part.htm#6 (last updated Jan. 30, 2007).

V. MOVING TOWARDS CO-GOVERNANCE

This paper advocates the transition of the Regional Fisheries Management Organization (RFMO) from its classic form into a more interactive and collaborative mechanism. While the North Atlantic RFMO has achieved collaboration between countries, these collaborations have failed to include important communities, such as the aboriginals, who are greatly affected by decisions regarding the management of fisheries.[145] In order to ensure that all important stakeholders are engaged in fisheries management, it is imperative that an Arctic-dedicated RFMO be established that not only brings about collaboration between Arctic countries, but engages and involves the aboriginals.

The Arctic-dedicated RFMO should incorporate principles from the Interactive Governance Approach (IGA) and the Ecosystem Approach to Fisheries (EAF) models. Specifically, an RFMO can be created using an interactive governance model, thereby addressing the shortcomings of the RFMO model.[146] Arctic countries would be member-states to the RFMO and would be required to engage with coastal communities—arguably the communities most affected by decisions regarding fisheries management. The governance structure would ensure that the unique insights of aboriginal communities would be gathered and that their interests and concerns would be responded to. Furthermore, Arctic fisheries would be managed on the basis of ecosystems, taking into account that catch quotas should be used to prevent overfishing of sought-after fish stocks. This model would better protect fish stocks and facilitate more constructive coordination between fishing nations. Because all the stakeholders would be engaged in the regulatory development and implementation process, there would be greater compliance with fishing regulations because they would be responsive to everyone's needs while ensuring the sustainability of fish stocks, and the rules would actually be understood by the regulated parties. Rather than being an imposed, hierarchical system, this model would seek out and utilize the knowledge of aboriginals and encourage the operation of small-scale fisheries (SSFs), which are invested in the protection of fisheries for future generations rather than mere profit-maximization.

Applying an RFMO to the European nations will be a difficult task. Collaboration between European states has been non-existent to weak at best.[147] To change this, European leaders will need to use RFMOs to en-

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145. *See 11th North Atlantic Fisheries Ministers' Conference*, FISHERIES AND OCEANS CAN., http://www.dfo-mpo.gc.ca/international/media/nr_nafmc-eng.htm (last updated June 8, 2012).

146. Cullis-Suzuki & Pauly, *supra* note 75, at 1042.

147. HARRY V. STREHLOW & CHRISTIAN VON DORRIEN, STRENGTHS AND DEFICIENCIES OF INTERNATIONAL, EUROPEAN AND REGIONAL COLLABORATION AND COORDINATION OF MARIFISH

gage countries and facilitate coordination between stakeholders.[148] RFMOs can be used to effectively bring about legitimate and substantial change if the states involved have the political will and economic capital to do so.[149] Canada and the United States, by contrast, historically have close working ties that could translate well into the establishment of a new RFMO. However, given the United States' history of ratification of fisheries-related international treaties, the United States may resist becoming a non-voluntary member of an RFMO with Canada. Hopefully, all countries will see the benefit to being an engaged member in the RFMO development process.

To encourage collaboration, co-governance should become the model for fisheries management. Nevertheless, in bringing more stakeholders into the conversation, the structure must ensure that the decision-making process does not become burdened by the greater number of parties involved. The co-governance model consolidated with an RFMO is the ideal scenario for addressing the challenges the Arctic faces. Even if a co-governance approach is not adopted, the establishment of an Arctic RFMO is critical to better developing the regime as needed to address the Arctic challenges. The challenges facing the Arctic are unique, and an RFMO dedicated to the Arctic is necessary to bring about collaboration between affected states and to effectuate the necessary management changes.

V. CONCLUSION

What we can see from these comparisons is that the RFMO system is likely to be much more effective when coupled with interactive and ecosystem-sensitive fisheries management approaches. Rights-based schemes are unlikely to be an improvement over the current RFMO system.[150] Though RFMOs have shortcomings, they represent a drastic improvement from the current void of an international regulatory body. The alternative systems proposed here could be much more effective at dealing with the social and sustainability issues facing these fisheries.

PARTNER COMMUNITIES 4 (2006), *available at* http://www.cofasp.eu/marifish/publications/D3.1-Report-on-international-and-European-collaboration.pdf.

148. See, for example, the Nordic Joint Committee for Agriculture and Food Research, whose work is discussed in *Niels Gøtke, Chairman, Nordic Joint Committee for Agricultural and Food Research*, RES. MEDIA LTD. (May 3, 2013, 9:24 AM), http://www.research-europe.com/index.php/2013/05/niels-gotke-chairman-nordic-joint-committee-for-agricultural-and-food-research/.

149. *See, e.g.*, CLEO SMALL, REGIONAL FISHERIES MANAGEMENT ORGANIZATIONS: THEIR DUTIES AND PERFORMANCE IN REDUCING BYCATCH OF ALBATROSS AND OTHER SPECIES (2005), *available at* https://www.rspb.org.uk/Images/RFMO_report_tcm9-303683.pdf.

150. *See generally* ALLEN, *supra* note 56.

States must collaborate with other states; they must exchange science and data and work together to create enforcement mechanisms. The more consistency there is across systems of fisheries management, the greater the chance such regulations will be understood and complied with worldwide.

Fisheries management approaches must recognize the human dimension to fishing, and both the effect that the health and well-being of the ecosystem as a whole has on fishing, and the effect fishing has on the health and well-being of the ecosystem. The Food and Agricultural Organization's SSFs guidelines demonstrate how fishing regulations can protect the interests and livelihood of fishers with fewer resources and treat the fishery as part of a greater, complex ecosystem. Furthermore, fisheries management must include elements of co-governance, and respect communities as well as SSFs. Certain communities, such as those of the aboriginals, view fishing as a way of life, and management structures must capture that. Lastly, RFMOs must be responsive to the needs of fishers and protect fisheries as a present and future source of livelihood.