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# Ocean Iron Fertilization and Indigenous Peoples' Right to Food: Leveraging International and Domestic Law Protections to Enhance Access to Salmon in the Pacific Northwest

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# OCEAN IRON FERTILIZATION AND INDIGENOUS PEOPLES' RIGHT TO FOOD: LEVERAGING INTERNATIONAL AND DOMESTIC LAW PROTECTIONS TO ENHANCE ACCESS TO SALMON IN THE PACIFIC NORTHWEST

*Randall S. Abate\**

## ABSTRACT

*Ocean iron fertilization (OIF) is a new and controversial climate change mitigation strategy that seeks to increase the carbon-absorbing capacity of ocean waters by depositing significant quantities of iron dust into the marine environment to stimulate the growth of phytoplankton blooms. The photosynthetic processes of these blooms absorb carbon from the atmosphere and sequester it to the ocean floor. OIF has been criticized on several grounds, including the foreseeable and unforeseeable adverse consequences it may cause to the marine environment, as well as the daunting challenge of reconciling several potentially overlapping sources of international and domestic environmental law, which may lead to difficulties in regulating OIF effectively. Notwithstanding these challenges, OIF recently has produced a valuable benefit unrelated to its carbon sequestration purpose. In 2012, the Haida indigenous community in Canada conducted an OIF experiment that sought to restore its decimated supply of Pacific Northwest salmon stocks, upon which the Haida community relies*

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for subsistence and self-determination. The experiment significantly increased salmon stocks within the span of one year.

This Article addresses whether indigenous communities like the Haida in the U.S. Pacific Northwest region could assert a legal right to employ such a strategy in the future to help restore and maintain a cultural food source that has been depleted in part due to climate change impacts. The Article confirms that international environmental law, international human rights law, and federal Indian Law in the United States provide a firm foundation for enshrining a legal right to food for federally recognized U.S. tribes in this region. It proposes a potential exception to a future international environmental law treaty framework governing OIF experiments that would protect indigenous communities' rights to enhanced access to salmon as a subsistence and cultural food resource that is essential to self-determination.

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## INTRODUCTION

[T]he Right to Food of Indigenous Peoples is a collective right based on our special spiritual relationship with Mother Earth, our lands and territories, environment, and natural resources that provide our traditional nutrition; underscoring that the means of subsistence of Indigenous Peoples nourishes our cultures, languages, social life, worldview, and . . . relationship with Mother Earth; emphasizing that the denial of the Right to Food . . . denies us our physical survival, . . . social organization, . . . cultures, traditions, languages, spirituality, sovereignty, and total identity; it is a denial of our collective indigenous existence[.]<sup>1</sup>

Climate geoengineering is defined as “the deliberate large-scale manipulation of the planetary environment to counteract anthropogenic climate change.”<sup>2</sup> There are two types of climate geoengineering: solar radiation management, which seeks to limit the amount of the sun’s rays that reach earth or increase the earth’s reflectivity, and carbon sequestration, which seeks to take carbon out of the atmosphere and store it.<sup>3</sup> Ocean iron fertilization (OIF) is a technique in the latter category.<sup>4</sup> Since its introduction approximately one decade ago, OIF has been a magnet for controversy<sup>5</sup> and has generated significant media scrutiny and debate in

<sup>1</sup> Indigenous Peoples’ Consultation on the Right to Food: A Global Consultation, Apr. 17-19, 2002, *Declaration of Atitlan, Guatemala*, [http://cdn5.iitc.org/wp-content/uploads/2013/07/FINAL\\_Atitlan-Declaration-Food-Security\\_Apr25\\_ENGL.pdf](http://cdn5.iitc.org/wp-content/uploads/2013/07/FINAL_Atitlan-Declaration-Food-Security_Apr25_ENGL.pdf).

<sup>2</sup> THE ROYAL SOCIETY, *GEOENGINEERING THE CLIMATE: SCIENCE, GOVERNANCE AND UNCERTAINTY* 1 (2009), [https://royalsociety.org/~media/Royal\\_Society\\_Content/policy/publications/2009/8693.pdf](https://royalsociety.org/~media/Royal_Society_Content/policy/publications/2009/8693.pdf).

<sup>3</sup> *Id.*

<sup>4</sup> Within the carbon sequestration category of climate geoengineering strategies, ocean iron fertilization (OIF) is one method of using the oceans to enhance carbon sequestration to mitigate climate change. See Meinhard Doelle, *Climate Geoengineering and Dispute Settlement under UNCLOS and the UNFCCC: Stormy Seas Ahead?*, in *CLIMATE CHANGE IMPACTS ON OCEAN AND COASTAL LAW: U.S. AND INTERNATIONAL PERSPECTIVES* 345, 349-51 (Randall S. Abate ed., 2015).

<sup>5</sup> For background on the controversy surrounding ocean iron fertilization, see Randall S. Abate & Andrew B. Greenlee, *Sowing Seeds Uncertain: Ocean Iron Fertilization, Climate Change, and the International Environmental Law Framework*, 27 *PACE ENVTL. L. REV.* 555, 555-59 (2010).

scientific and legal communities.<sup>6</sup>

The OIF process, pioneered by California entrepreneur Russ George,<sup>7</sup> involves discharging large quantities of iron dust into ocean waters to stimulate the growth of phytoplankton.<sup>8</sup> The photosynthetic process of the plankton absorbs carbon from the atmosphere. The absorbed carbon ultimately sinks to the ocean floor in a process known as the biological pump.<sup>9</sup> Despite OIF's promise as a climate change mitigation strategy, critics have raised concerns about the reliability of the process and its impacts.<sup>10</sup>

<sup>6</sup> For a discussion of the scientific dimensions of OIF, see generally Sallie W. Chisholm, Paul G. Falkowski & John J. Cullen, *Dis-crediting Ocean Fertilization*, 294 SCI. 309, 309-10 (2001); Hugh Powell, *Will Ocean Iron Fertilization Work? Getting Carbon into the Ocean Is One Thing, Keeping It There Is Another*, 46 OCEANUS 10 (2008), [http://www.whoi.edu/cms/files/OceanusIron\\_Will\\_It\\_Work\\_30747.pdf](http://www.whoi.edu/cms/files/OceanusIron_Will_It_Work_30747.pdf). For a discussion of legal dimensions of the OIF debate, see generally Grant Wilson, *Murky Waters: Ambiguous International Law for Ocean Fertilization and Other Geoengineering*, 49 TEX. INT'L L.J. 507 (2014); Harold Ginzky & Robyn Frost, *Marine Geo-Engineering: Legally Binding Regulation Under the London Protocol*, 8 CARBON & CLIMATE L. REV. 82 (2014); Jennie Dean, *Iron Fertilization: A Scientific Review with International Policy Recommendations*, 32 ENVIRONS ENVTL. L. & POL'Y J. 321 (2009); Kerstin Gussow et al., *Ocean Iron Fertilization: Time to Lift the Research Taboo*, in CLIMATE CHANGE GEOENGINEERING: PHILOSOPHICAL PERSPECTIVES, LEGAL ISSUES, AND GOVERNANCE FRAMEWORKS 242 (Will C. G. Burns & Andrew L. Strauss eds., 2013).

<sup>7</sup> Russ George founded Planktos Inc., a San Francisco-based ocean fertilization firm that attempted and failed to dump iron into the seas off the Galapagos and the Canary Islands. Bryan Hood, *Canadian Indigenous Peoples Fertilize Ocean with 100 Tons of Iron Dust*, N.Y. POST (Aug. 30, 2013), <http://nypost.com/2013/08/30/canadian-indigenous-peoples-fertilize-ocean-with-100-tons-of-iron-dust-2/>. For a summary of Russ George's controversial role in the Haida experiment and the domestic and international legal response to it, see Michael C. Branson, *A Green Herring: How Current Ocean Fertilization Regulation Distracts from Geoengineering Research*, 54 SANTA CLARA L. REV. 163, 181-85 (2014).

<sup>8</sup> Joshua Learn, *Geoengineering: Legal Mess Hampers Understanding of a Major CO2 Sequestration Test*, E&E PUBL'G, LLC (Nov. 13, 2014), <http://www.eenews.net/stories/1060008800>.

<sup>9</sup> John Martin is credited with being the first to suggest that OIF could be used to sequester significant quantities of carbon dioxide from the atmosphere by "stimulating the biological pump with iron." Margaret Leinen et al., *Why Ocean Iron Fertilization?*, CLIMOS (Mar. 12, 2009), [http://www.climos.com/pubs/2009/Climos\\_Why\\_OIF-2009-03-12.pdf](http://www.climos.com/pubs/2009/Climos_Why_OIF-2009-03-12.pdf).

<sup>10</sup> See Randall S. Abate, *Ocean Iron Fertilization: Science, Law, and Uncertainty*, in CLIMATE CHANGE GEOENGINEERING: PHILOSOPHICAL PERSPECTIVES, LEGAL ISSUES, AND GOVERNANCE FRAMEWORKS 221, 224-30 (Will C. G. Burns & Andrew L. Strauss eds., 2013) (discussing concerns regarding the effectiveness of the OIF process, potential adverse environmental consequences, and monitoring challenges); see also Abate & Greenlee, *supra* note 5, at 562-71 (discussing the promise and perils of ocean iron fertilization as a climate

Notwithstanding the debate concerning its effectiveness as a climate geoengineering strategy, OIF provides benefits beyond carbon sequestration. Just as increased atmospheric carbon dioxide levels have accelerated plant growth rate on land, increased levels of carbon dioxide in the ocean can promote flourishing marine resources.<sup>11</sup> For this reason, an unlikely connection between OIF and indigenous peoples' right to food has emerged. The Haida Tribe of British Columbia embraces OIF because of a highly successful OIF experiment in 2012 that helped restore its salmon stocks. In the course of OIF experiments, "[p]lankton take up carbon in surface waters during photosynthesis, creating a bloom that others feed upon."<sup>12</sup> As such, the phytoplankton bloom from the 2012 Haida experiment prompted a feeding frenzy by the juvenile fish heading into the ocean.<sup>13</sup> Ultimately, this led to a significant improvement in fishing results when the fish returned to the island streams to spawn.<sup>14</sup>

Despite its apparent success, the Haida experiment caused a firestorm of controversy. The experiment was challenged as a violation of Canadian and international law.<sup>15</sup> This Article does not explore the merits of those challenges, but proceeds from the premise that the Haida experiment yielded positive results that enhanced access to a cultural marine food resource that is essential to self-determination in an indigenous community. The Article addresses whether international law and U.S. law can support the legality of similar experiments in the future in Pacific Northwest indigenous communities and, if so, under what conditions such experiments would be permissible.

Part I of this Article examines the complex foundations of OIF regulation and then describes the Haida community's experiment, which deployed OIF not as a carbon sequestration tactic but as a method to help restore salmon runs in the community. Part II describes the legal framework governing indigenous peoples' right to food, drawing on international

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mitigation strategy).

<sup>11</sup> Robert Zubrin, *The Pacific's Salmon Are Back – Thank Human Ingenuity: Geoengineering Could Turn Our Long-Barren Oceans into a Bounty*, NAT'L REV. (Apr. 22, 2014), <http://www.nationalreview.com/article/376258/pacific-salmon-are-back-thank-human-ingenuity-robert-zubrin>.

<sup>12</sup> Shelly Dawicki, *Effects of Ocean Fertilization with Iron to Remove Carbon Dioxide from Atmosphere Reported*, WOODS HOLE OCEANOGRAPHIC INST. (Apr. 16, 2004), <http://www.whoi.edu/page.do?cid=886&ct=162&pid=9779&tid=282&print=this>.

<sup>13</sup> Learn, *supra* note 8.

<sup>14</sup> *Id.*

<sup>15</sup> See *infra* notes 67-74 and accompanying text.

environmental treaty protections, international human rights treaty protections, U.S. treaty-based rights to hunt and fish, and the Federal Indian Trust Responsibility Doctrine found in U.S. common law. Part III proposes an exception for indigenous peoples' right to food within an OIF regulatory regime under international environmental law.

## I. A CONTROVERSIAL OPPORTUNITY: OIF AND THE RESTORATION OF PACIFIC SALMON

### A. *Legal Foundations of OIF*

While the effectiveness of OIF and its potential environmental benefits are subjects of controversy within the scientific community, the governance of OIF is even more controversial. The notion of discharging a massive quantity of any substance into the ocean makes many environmentalists uncomfortable. Those who advocate for prohibition or regulation of OIF point first to the sheer volume of iron dust (at least 100 tons) that is required even for small-scale OIF experiments. Such a significant introduction of foreign material into the marine environment could be prohibited by multiple international environmental law treaty regimes: as "pollution" under the United Nations Convention on the Law of the Sea (UNCLOS),<sup>16</sup> as "ocean dumping" under the London Convention and Protocol,<sup>17</sup> as a threat to biological diversity under the Convention on Biological Diversity (CBD),<sup>18</sup> or as a potential violation of multiple provisions of the Antarctic Treaty System (ATS) regime.<sup>19</sup>

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<sup>16</sup> United Nations Convention on the Law of the Sea, *open for signature* Dec. 10, 1982, 21 I.L.M. 1261 (entered into force Nov. 16, 1994) [hereinafter UNCLOS].

<sup>17</sup> See Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, *open for signature* Dec. 29, 1972, 11 I.L.M. 1294 (entered into force Aug. 30, 1975) [hereinafter London Convention]; Protocol to the Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter, Nov. 7, 1996, 36 I.L.M. 1 (entered into force Mar. 24, 2006) [hereinafter London Protocol].

<sup>18</sup> Convention on Biological Diversity, *open for signature* June 5, 1992, 31 I.L.M. 818 (entered into force Dec. 29, 1993) [hereinafter CBD].

<sup>19</sup> The Antarctic Treaty System (ATS) consists of several treaties relating to the governance of Antarctic natural resources. The potentially applicable treaties for OIF regulation are: the Antarctic Treaty, *open for signature* Dec. 1, 1959, 19 I.L.M. 860 (entered into force June 23, 1961); the Convention for the Conservation of Antarctic Seals, *open for signature* June 1, 1972, 11 I.L.M. 251 (entered into force Mar. 11, 1978); the Convention on the Conservation of Antarctic Marine Living Resources, May 20, 1980, 19 I.L.M. 841 (entered into force Apr. 7, 1982); and the Protocol on Environmental Protection to the Antarctic Treaty, Oct. 4, 1991, 30 I.L.M. 1455 (entered into force Jan. 14, 1998).

In response to Planktos, Inc.'s imminent plans to conduct a large-scale OIF experiment in 2007, the international community first convened to discuss an international regulatory strategy for OIF.<sup>20</sup> The parties to the London Convention and the CBD subsequently adopted decisions related to OIF.<sup>21</sup> Parties to the London Convention adopted a resolution in 2008 expressing concern about OIF and asserting that the London Convention governed such activity.<sup>22</sup> The resolution also provided for "legitimate scientific research" in OIF, subject to assessment of its environmental risks.<sup>23</sup> More recently, the parties have developed an "assessment framework," but are still developing legal options to implement this framework in order to exercise legal control over OIF research.<sup>24</sup> While parties to the CBD have adopted two decisions discouraging OIF,<sup>25</sup> these decisions are purely advisory.<sup>26</sup>

Another challenge concerning potential governance of OIF experiments is the uncertainty in scale boundaries.<sup>27</sup> Because an OIF experiment is referred to as "geoengineering," it acquires a specific legal status.<sup>28</sup> Opponents of large-scale geoengineering projects believe it is important to stop even small-scale projects that could fall into the category of geoengineering experiments.<sup>29</sup> Nevertheless, countries are likely to argue that small-scale environmental interventions are within their sovereign

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<sup>20</sup> See Int'l Maritime Org. (IMO), *Report of the 30<sup>th</sup> Meeting of the Scientific Group of the London Convention and the First Meeting of the Scientific Group of the London Protocol*, IMO Doc. LC/SG 30/14 (July 25, 2007).

<sup>21</sup> Ted Parson, *Canada's Ocean Fertilization Flap, and Its Significance*, LEGAL PLANET BLOG (Oct. 18, 2012), <http://legal-planet.org/2012/10/18/canadas-ocean-fertilization-flap-and-its-significance/>.

<sup>22</sup> *Id.*

<sup>23</sup> *Id.*

<sup>24</sup> *Id.* For a full discussion of the regulatory analysis and decisions on OIF under the London and CBD treaty regimes, see Bettina Boschen, *The Regulation of Ocean Fertilization and Marine Geoengineering Under the London Protocol*, in *CLIMATE CHANGE IMPACTS ON OCEAN AND COASTAL LAW: U.S. AND INTERNATIONAL PERSPECTIVES* (Randall S. Abate ed., 2015).

<sup>25</sup> See, e.g., Conference of the Parties to the CBD at Its Ninth Meeting, *Decision IX/16 on Biodiversity and Climate Change*, §C, Ocean Fertilization, UNEP/CBD/COP/IX/16 (Oct. 9, 2008).

<sup>26</sup> See Karen N. Scott, *International Law in the Anthropocene: Responding to the Geoengineering Challenge*, 34 MICH. J. INT'L L. 309, 332-33 (2013).

<sup>27</sup> Parson, *supra* note 21.

<sup>28</sup> *Id.*

<sup>29</sup> *Id.*



authority.<sup>30</sup> However, as the scale of proposed interventions increases, nations will find it significantly more difficult to claim that the projects are exclusively within their domestic control, as the environmental consequences transcend geopolitical boundaries.<sup>31</sup>

Current OIF regulation is prohibitively over-cautious. While a structured regulatory system for a potentially dangerous process is reasonable, and there is a long history of such systems in environmental regulation, the current regulation of OIF is tantamount to a moratorium. Regulation of an activity must reflect a balance between the benefits and risks of engaging in an activity. For example, developing nuclear energy sources involves significant dangers, yet it still has a useful role in the global energy mix. Consequently, nuclear energy is subject to regulations that reflect a balance of the risks and benefits associated with this activity. The same can be said about the perceived need to proceed with caution in researching and developing genetically modified sources of food. By contrast, placing a moratorium on an activity like OIF, which has produced positive results outside of its carbon sequestration focus, reflects an unbalanced approach to the risks and benefits associated with the activity. The impropriety of such a moratorium is further evidenced by the fact that OIF experiments are conducted on a small scale, and offer a partial solution to protecting indigenous communities' right to food. Simply because a process presents some potential dangers does not require that it be prohibited.

#### B. *The Haida Community: A Risky and Successful OIF Experiment*

Salmon is the mainstay of the local economy in the Haida village of Old Massett on Graham Island on Canada's west coast.<sup>32</sup> Over the past century, the Haida community has helplessly watched the progressive decline of the salmon runs that serve as its main food source.<sup>33</sup> Both the quality and quantity of its members' salmon catch have declined.<sup>34</sup> The salmon population in western Canada has been declining since the 1990s.<sup>35</sup> A study

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<sup>30</sup> *Id.*

<sup>31</sup> *Id.* See *infra* Part III for a discussion of the scope dimensions of this proposal, which will enable only small-scale OIF experiments like the Haida experiment to be eligible for an exception from international environmental law regulation of OIF.

<sup>32</sup> Hood, *supra* note 7.

<sup>33</sup> Learn, *supra* note 8.

<sup>34</sup> *Id.*

<sup>35</sup> Hood, *supra* note 7.

determined that the decline was due to overfishing, pesticides, and climate change.<sup>36</sup> Only 1.4 million sockeye salmon returned to the Fraser River in 2009,<sup>37</sup> which was the lowest population since the 1940s and down from over 10 million in some years in the 1990s.<sup>38</sup>

In the late 1990s and early 2000s, the Tribe responded to the problem by building a hatchery and sending more fish into the ocean for their multi-year migrations.<sup>39</sup> When the larger influx of fish that went out did not return, an OIF experiment was undertaken to artificially stimulate the return of the salmon.<sup>40</sup> In 2010, the Old Massett village council established the Haida Salmon Restoration Corporation (HSRC), hoping to use technology to restore fish stocks.<sup>41</sup> Bolstered by \$2.5 million in savings, HSRC approached Russ George to execute the plan.<sup>42</sup>

OIF experiments are designed to replicate the natural effects of increased iron in the marine environment.<sup>43</sup> In 2008, a volcanic eruption in Alaska's Aleutian Islands left iron in the northern Pacific Ocean.<sup>44</sup> In 2010, the year in which the young salmon from 2008 were to return, the salmon run in British Columbia was record-breaking.<sup>45</sup> While only one million fish were expected to return to their spawning grounds that year, an estimated 40 million returned instead.<sup>46</sup>

Seeking to emulate the results of this natural iron enrichment windfall, the Haida Tribe launched its July 2012 effort to restore the salmon fishery that had provided much of its livelihood for centuries.<sup>47</sup> George used a large fishing vessel to discharge 100 tons of iron sulfate-rich dust into the Northeast Pacific off the west coast of Canada's Queen Charlotte Islands,<sup>48</sup>

<sup>36</sup> *Id.*

<sup>37</sup> *Id.*

<sup>38</sup> *Id.*

<sup>39</sup> Learn, *supra* note 8.

<sup>40</sup> *Id.*; Parson, *supra* note 21.

<sup>41</sup> Hood, *supra* note 7.

<sup>42</sup> *Id.*

<sup>43</sup> See Ron Johnson, *Ocean Fertilization Could Be a Boon to Fish Stocks*, EARTH ISLAND J. (Oct. 31, 2012), [http://www.earthisland.org/journal/index.php/elist/eListRead/ocean\\_fertilization\\_could\\_be\\_a\\_boon\\_to\\_fish\\_stocks/](http://www.earthisland.org/journal/index.php/elist/eListRead/ocean_fertilization_could_be_a_boon_to_fish_stocks/).

<sup>44</sup> *Id.*

<sup>45</sup> *Id.*

<sup>46</sup> *Id.*

<sup>47</sup> *Id.*

<sup>48</sup> Ken Whitehead, *Ocean Fertilization: A Dangerous Experiment Gone Right*, PLANET SAVE BLOG (July 2, 2014), <http://planetsave.com/2014/07/02/ocean-fertilization-dangerous->

an archipelago also known as the Haida Gwaii.<sup>49</sup> The experiment generated a plankton bloom of roughly 10,000 square kilometers.<sup>50</sup>

This controversial experiment was a success.<sup>51</sup> In 2014, the number of salmon caught in the Northeast Pacific more than quadrupled, increasing from 50 million to 226 million.<sup>52</sup> In the Fraser River, which only once prior had a salmon run greater than 25 million fish (roughly 45 million in 2010), the number of salmon increased to 72 million.<sup>53</sup>

In addition to yielding salmon, the experiment also produced a significant amount of data.<sup>54</sup> Within a few months of the ocean-fertilizing operation, NASA satellite images revealed a powerful growth of phytoplankton in the waters that received the iron.<sup>55</sup> From this data, it became clear that the phytoplankton successfully serve as a food source for zooplankton, which in turn provides nourishment for many young salmon, thereby restoring the depleted fishery and providing abundant food for larger fish and marine mammals.<sup>56</sup>

Although the 2012 Haida experiment was unscientific in its design and implementation, there is strong evidence suggesting that it was very successful in boosting salmon survival rates.<sup>57</sup> Despite this success, many environmentalists and scientists still advocate an overly cautious approach to OIF that imposes a substantial obstacle to conducting further experiments on the same scale as the Haida experiment.<sup>58</sup> As a result, those carrying out OIF experiments have only been able to do so on a small scale and have been unable to draw definitive conclusions regarding potential benefits.<sup>59</sup> Despite the potential dangers identified by the scientific community of conducting large-scale OIF experiments, there is currently no evidence to suggest that the Haida phytoplankton blooms have had any adverse effects

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experiment-gone-right/; Zubrin, *supra* note 11.

<sup>49</sup> Martin Lukacs, *World's Biggest Geoengineering Experiment 'Violates' UN Rules*, THE GUARDIAN (Oct. 15, 2012), <http://www.theguardian.com/environment/2012/oct/15/pacific-iron-fertilisation-geoengineering>.

<sup>50</sup> *Id.*; Parson, *supra* note 21.

<sup>51</sup> Zubrin, *supra* note 11.

<sup>52</sup> *Id.*

<sup>53</sup> *Id.*

<sup>54</sup> *Id.*

<sup>55</sup> *Id.*

<sup>56</sup> *Id.*

<sup>57</sup> Whitehead, *supra* note 48.

<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

on the area.<sup>60</sup> Nevertheless, if the experiment were to be repeated, effective scientific monitoring would be critically important to include in the project design.<sup>61</sup> Moreover, although the Haida experiment has had a significant local impact on the ocean environment,<sup>62</sup> the experiment was not large enough to have consequences at the continental and global scales.<sup>63</sup>

The Haida experiment, which occurred 180-320 nautical miles off the coast of the Haida Gwaii and affected both Canadian and international waters,<sup>64</sup> prompted a variety of international and domestic legal concerns and challenges. First, the International Oceanographic Commission of UNESCO (IOC) issued a statement that criticized the project as a violation of several international environmental treaty regimes.<sup>65</sup> Second, Environment Canada, the nation's environment ministry, asserted that the experiment violated the United Nations Convention on Biological Diversity (CBD)<sup>66</sup> and the London Convention on Ocean Dumping.<sup>67</sup> Third, the experiment may have violated several of the mandatory and voluntary international moratoria that address ocean dumping and OIF to which Canada is a signatory.<sup>68</sup> Fourth, the experiment was also challenged as an alleged violation of Canadian Law.<sup>69</sup>

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<sup>60</sup> *Id.*

<sup>61</sup> *Id.*

<sup>62</sup> Parson, *supra* note 21.

<sup>63</sup> *Id.* For a more detailed discussion of what transpired during the Haida experiment, see generally Zoe McKnight, *BC Company at Centre of Iron Dumping Scandal Stands by Its Convictions*, VANCOUVER SUN (Sept. 4, 2013), <http://www.vancouversun.com/technology/company+centre+iron+dumping+scandal+stands+convictions/8860731/story.html>.

<sup>64</sup> Learn, *supra* note 8.

<sup>65</sup> Statement by the Intergovernmental Oceanographic Commission of UNESCO Regarding Ocean Fertilization (Oct. 19, 2012), [http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/IOC\\_statement\\_Ocean\\_fertilization.pdf](http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/IOC_statement_Ocean_fertilization.pdf).

<sup>66</sup> See CBD *supra* note 18.

<sup>67</sup> See London Convention *supra* note 17; see also Jeff Tollefson, *Ocean-Fertilization Project Off Canada Sparks Furore*, NATURE (Oct. 23, 2012), <http://www.nature.com/news/ocean-fertilization-project-off-canada-sparks-furore-1.11631>.

<sup>68</sup> Dene Moore, *Ocean Fertilizers Lose B.C. Court Bid*, THE GLOBE AND MAIL (Feb. 3, 2014, 8:00 PM), <http://www.theglobeandmail.com/news/british-columbia/ocean-fertilization-experiment-loses-in-bc-court-charges-now-likely/article16672031/>.

<sup>69</sup> Prior to the execution of the Haida's OIF experiment, officials from Environment Canada had warned project leaders in May 2012 that the initiative would require a permit. See Tollefson, *supra* note 67. After the OIF experiment was conducted in July 2012, Environment Canada issued a search warrant for the Haida Salmon Restoration Council

Concerns over the legality of the experiment generated multiple lawsuits in British Columbia's Supreme Court.<sup>70</sup> After authorities and the media heard about the experiment and scientists and environmental groups had voiced multiple objections, Russ George was fired from his director position at the Haida Salmon Restoration Corporation.<sup>71</sup>

The Haida community expressed its willingness to share data and ocean samples from the experiment with other researchers and institutions to further evaluate the experiment's results.<sup>72</sup> Despite the apparent success of the experiment, further study is needed to establish a clear cause and effect relationship between the experiment and an increase in the salmon species that the Haida Tribe values for its subsistence and self-determination. The manager of a fish processing plant near the Haida community stated that Chinook salmon and other species have shown a bigger return than normal; however, it is not clear that the Haida experiment was the cause of this outcome.<sup>73</sup> Because Chinook salmon have a longer migration cycle, there is a significant chance that the 2014 catch may not have been affected by the experiment.<sup>74</sup> Additionally, pink salmon may have been positively affected as well; however, pink salmon are not as beneficial or valuable to Massett

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seeking to investigate the results of the experiment. *See* Learn, *supra* note 8. Other sources refer to the organization as the Haida Salmon Restoration Corporation and Joshua Learn is likely referring to the same entity. In March 2013, Environment Canada agents searched computers and files, making copies of any potential data needed to support a lawsuit against the corporation for a potential breach of Canadian and international law. *Id.* Environment Canada also sought information concerning whether the ocean disposal violated Canada's Environmental Protection Act. *Id.*

This Article addresses international law and federal Indian Law protections to support the validity of small-scale OIF experiments to promote U.S. indigenous peoples' right to salmon in the Pacific Northwest region of the United States. Federal and state environmental laws in the United States may also be relevant in assessing the viable scope of the right to food claim proposed in this Article, but such analysis is beyond the scope of this Article. For a discussion of the potential application of U.S. environmental laws to geoengineering experiments, see Tracy Hester, *Remaking the World to Save It: Applying U.S. Environmental Laws to Climate Engineering Projects*, 34 *ECOLOGY L.Q.* 851 (2011).

<sup>70</sup> Learn, *supra* note 8.

<sup>71</sup> Learn, *supra* note 8; *see also* Ron Johnson, *Impact of Last Year's Rogue Ocean Fertilization Experiment Still Unclear*, *EARTH ISLAND J.* (Dec. 31, 2013), [http://www.earthisland.org/journal/index.php/elist/eListRead/impact\\_of\\_last\\_years\\_rouge\\_ocean\\_fertilization\\_experiment\\_still\\_unclear/](http://www.earthisland.org/journal/index.php/elist/eListRead/impact_of_last_years_rouge_ocean_fertilization_experiment_still_unclear/) (noting that although Russ George no longer serves as director of the Haida Salmon Restoration Corporation, he remains a shareholder).

<sup>72</sup> Learn, *supra* note 8.

<sup>73</sup> *Id.*

<sup>74</sup> *Id.*

villagers as sockeye, Chinook, or other varieties of salmon.<sup>75</sup> While the Fraser River and surrounding areas show a thriving sockeye population, the sockeye population overall is unstable, as it was a poor year for returns of sockeye on the northern island of the Haida Gwaii.<sup>76</sup>

The Haida's experiment underscores two important themes in moving forward with OIF experimentation and research. First, there must be a clear legal framework in place with respect to whether, and under what circumstances, OIF experiments may be conducted. This Article proposes one aspect of how that future framework should work with respect to indigenous communities' right to access salmon. Second, the science underlying OIF is still unclear, which limits support for both sides' positions—regulators cannot justify a ban on these small-scale experiments without conclusive evidence of harm and OIF proponents cannot claim that these experiments are a panacea for indigenous communities' reduced access to salmon. The challenge lies in how to respond to these obstacles in the face of scientific uncertainty. This Article proposes that existing international law and U.S. domestic law support a cautious exploration of the potential benefits of these experiments while being mindful of the potential for abuse and the potential for harm to the marine environment.

## II. INTERNATIONAL AND DOMESTIC DIMENSIONS OF INDIGENOUS PEOPLES' RIGHT TO ACCESS SUBSISTENCE AND CULTURAL MARINE RESOURCES

International environmental law and U.S. domestic law recognize the special situation of indigenous peoples and their dependence on subsistence and cultural marine resources for self-determination. This Part of the Article addresses sources of law that recognize indigenous peoples' right to food from the marine environment, which supports Pacific Northwest tribes' right to access salmon. The four sources of law that will be explored are: (1) international environmental law (namely, the aboriginal subsistence exception in the International Convention for the Regulation of Whaling); (2) binding and non-binding international human rights law instruments that support indigenous peoples' right to food; (3) treaty-based fishing rights established between the U.S. government and the Pacific Northwest tribes; and (4) the Federal Indian Trust Responsibility Doctrine as a form of common law protection of federally recognized tribes' right to access marine food resources.

<sup>75</sup> *Id.*

<sup>76</sup> *Id.*

## A. International

### 1. The Makah and the Aboriginal Subsistence Whaling Exception

Located in Cape Flattery in Washington State, the Makah Tribe has resided in the Pacific Northwest region of the United States for thousands of years.<sup>77</sup> The Makah's reservation is bordered by the Pacific Ocean and the Strait of Juan de Fuca.<sup>78</sup> The Makah have long depended on the resources of the Pacific Ocean surrounding its reservation to support its economic and cultural welfare.<sup>79</sup> The Makah's whaling culture existed long before European and American colonization in the 1700s,<sup>80</sup> as the Makah were involved in a trade route that ran from the Columbia River to Puget Sound.<sup>81</sup> Prior to the industrial era, whales provided the Makah with food, raw materials, spiritual and cultural strength, and valuable trade goods.<sup>82</sup> Oil was extracted from the whale's blubber and any unspoiled meat was consumed.<sup>83</sup>

As a result of modernization, the Makah are no longer solely dependent on fish and hunting for subsistence needs; however, the Tribe continues to rely on fish and marine animals for ceremonies and everyday living.<sup>84</sup> Whaling is one of the Makah's most important and valued traditions, and whalers are the most respected members of the Tribe.<sup>85</sup> Moreover, Makah elders would pass down hunting skills to children, and the children would learn and practice whaling.<sup>86</sup> However, due to non-tribal commercial whaling, the California gray whale became critically endangered, and a moratorium was placed on all whaling in the 1920s.<sup>87</sup>

For the next seventy years, the Makah preserved its whaling traditions

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<sup>77</sup> Russell D'Costa, *Reparations as a Basis for the Makah's Right to Whale*, 12 ANIMAL L. 71, 77 (2005).

<sup>78</sup> Robert J. Miller, *Exercising Cultural Self-Determination: The Makah Indian Cultural Tribe Goes Whaling*, 25 AM. INDIAN L. REV. 165, 170 (2002).

<sup>79</sup> D'Costa, *supra* note 77, at 78.

<sup>80</sup> Miller, *supra* note 78, at 171.

<sup>81</sup> *Id.* at 173.

<sup>82</sup> See Ann M. Renker, *The Makah Tribe: People of the Sea and the Forest*, U. OF WASH., <https://content.lib.washington.edu/aipnw/renker.html> (last visited Jan. 23, 2016).

<sup>83</sup> *Id.*

<sup>84</sup> Rob Roy Smith, *At a Complex Crossroads: Animal Law in Indian Country*, 14 ANIMAL L. 109, 111 (2007).

<sup>85</sup> Miller, *supra* note 78, at 180.

<sup>86</sup> *Id.* at 182.

<sup>87</sup> *Id.* at 250.

and rights.<sup>88</sup> During this prohibition period, the Tribe prepared for the opportunity to resume its whaling, and continued to uphold this aspect of Makah culture.<sup>89</sup> The California gray whale population ultimately rebounded and was removed from the federal endangered species list in 1994.<sup>90</sup> One year later, the Makah Tribe announced its plans to resume its cultural whaling practices.<sup>91</sup>

Under the Treaty of Neah Bay of 1855, the Makah Tribe has a recognized right to conduct its traditional whaling practices.<sup>92</sup> In return for this right, the United States obtained the Tribe's land under the treaty.<sup>93</sup> The goal of the treaty was to be mutually beneficial for both the Tribe and the United States, and to compensate the Tribe for its land. The International Whaling Commission (IWC), however, was created predominantly in response to the dwindling whale population<sup>94</sup> within international waters and focuses on protecting these marine animals through a moratorium on whaling.<sup>95</sup>

The International Convention for the Regulation of Whaling (ICRW)<sup>96</sup> contains two exceptions to the moratorium on whaling: (1) scientific research, and (2) aboriginal subsistence whaling (ASW).<sup>97</sup> The latter exception allows indigenous communities, such as the Makah, to fulfill their cultural and nutritional needs by hunting certain whale species "exclusively

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<sup>88</sup> *Id.* at 247.

<sup>89</sup> *Id.* at 248.

<sup>90</sup> Lawrence Watters & Connie Duggar, *United States: Whaling*, in *INDIGENOUS PEOPLES, THE ENVIRONMENT AND LAW* 385, 385 (Lawrence Watters ed., 2004).

<sup>91</sup> *Id.* at 385.

<sup>92</sup> KRISTINA ALEXANDER, CONG. RES. SERV., *THE INTERNATIONAL WHALING CONVENTION (IWC) AND LEGAL ISSUES RELATED TO ABORIGINAL RIGHTS* 11 (2013), [www.fas.org/sgp/crs/row/R40571.pdf](http://www.fas.org/sgp/crs/row/R40571.pdf).

<sup>93</sup> David L. Roghair, *Anderson v. Evans: Will Makah Whaling Under the Treaty of Neah Bay Survive the Ninth Circuit's Application of the MMPA?*, 20 J. ENVTL. L. & LITIG. 189, 190 (2005).

<sup>94</sup> D'Costa, *supra* note 77, at 79.

<sup>95</sup> See Watters & Duggar, *supra* note 90, at 400 (discussing how it is possible to harmonize the apparently contradictory purposes of the Treaty of Neah Bay with the IWC moratorium on whaling under the International Convention for the Regulation of Whaling); *but see* Sidney Holt, *Aboriginal Subsistence Whaling Needs Complete Review by IWC*, *ECO* (July 3, 2012), <http://earthisland.org/imm/ECO/2012/2012no2.pdf> (arguing that the aboriginal subsistence exception undermines the IWC's conservationist goals).

<sup>96</sup> International Convention for the Regulation of Whaling, Dec. 2, 1946, 161 U.N.T.S. 72 (entered into force Nov. 10, 1948) [hereinafter ICRW].

<sup>97</sup> D'Costa, *supra* note 77, at 79.



for local consumption."<sup>98</sup>

The ICRW "sets quotas on relevant stocks from which indigenous groups, [including the Makah], whose needs have been recognized . . . can take whales."<sup>99</sup> The ASW quotas are set for five-year periods and the most recent period expired in 2012.<sup>100</sup> The process to secure approval of the 1999 Makah whale hunt took three years and started in 1996 when the National Oceanic and Atmospheric Administration (NOAA) agreed to draft a statement of need for the hunt with a quota restriction proposed by the United States IWC Commissioner.<sup>101</sup> The controversy only deepened from that point, as international and domestic sources of whaling regulation clashed in evaluating the scope and nature of the Makah's asserted right to whale.

The debate lies in the subsequent amendment to the International Convention on the Regulation of Whaling (ICRW), which regulated the global takings of whales between 1998 and 2002.<sup>102</sup> The ICRW provides that the "only aboriginal subsistence people authorized to take gray whales are those 'whose traditional aboriginal subsistence and cultural needs have been recognized.'"<sup>103</sup> The amendment specified the number of gray whales that can be taken, but did not divide the quota amongst specific countries or groups of people, resulting in conflicting interpretations.<sup>104</sup> In news releases, the United States stated that the IWC set an ASW quota allowing aboriginal whaling for the Makah Tribe, thus suggesting that the IWC had formally granted ASW status to the Makah.<sup>105</sup> However, other countries asserted that this was an erroneous interpretation of the amendment<sup>106</sup> because the majority of countries did not expressly recognize, on the record, an "aboriginal subsistence need of the Makah tribe, but did expressly support

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<sup>98</sup> *Subsistence Whaling*, ANIMAL WELFARE INSTITUTE, <https://awionline.org/content/subsistence-whaling> (last visited Nov. 13, 2015) [hereinafter Animal Welfare Institute].

<sup>99</sup> *Aboriginal Subsistence Whaling*, WHALE AND DOLPHIN CONSERVATION, <http://us.whales.org/issues/aboriginal-subsistence-whaling> (last visited Nov. 13, 2015).

<sup>100</sup> *Id.*

<sup>101</sup> Miller, *supra* note 78, at 255.

<sup>102</sup> Leesteffy Jenkins & Cara Romanzo, *Makah Whaling: Aboriginal Subsistence or a Stepping Stone to Undermining the Commercial Whaling Moratorium?*, 9 COLO. J. INT'L ENVTL. L. & POL'Y 71, 113 (1998).

<sup>103</sup> *Id.*

<sup>104</sup> *Id.*

<sup>105</sup> *Id.*

<sup>106</sup> *Id.*

continued aboriginal whaling by the Chukotka natives of the Russian Federation, [which] indicates that the amended schedule did not specifically authorize Makah Whaling."<sup>107</sup>

After the Makah received their approved whaling quota, they proceeded to kill a gray whale. This activity prompted a lawsuit, *Anderson v. Evans*,<sup>108</sup> against the U.S. Department of Commerce, alleging that the government's approval of the whaling action did not comply with the National Environmental Policy Act (NEPA).<sup>109</sup> The *Anderson* court held that the federal government's failure to prepare an Environmental Impact Statement (EIS) under NEPA precluded implementation of the Makah's whaling plan.<sup>110</sup> The court reasoned that an EIS was required because the impact of the Makah's whaling on the local whale population was uncertain.<sup>111</sup>

The Marine Mammal Protection Act (MMPA) presented another hurdle for the Makah. The MMPA prohibits the taking of marine mammals without a permit or waiver.<sup>112</sup> The Makah Tribe did not apply for a permit or waiver under the MMPA.<sup>113</sup> NOAA and the Makah provided two reasons as to why the MMPA did not apply. The U.S. Court of Appeals for the Ninth Circuit rejected both arguments.

NOAA and the Makah first argued that the MMPA did not apply because an international treaty had expressly provided for the Tribe's whaling quota.<sup>114</sup> Section 1372(a)(2) of the MMPA provides an exception to the MMPA's blanket moratorium on whaling when takes are "expressly provided for by an international treaty, convention, or agreement to which the U.S. is a party."<sup>115</sup>

The Ninth Circuit rejected this argument based on three factors: the timing of the IWC agreement, the specificity of the IWC quota, and the uncertainty as to who must recognize the tribe's "subsistence and cultural needs" for the IWC quota to be valid.<sup>116</sup> Regarding the third factor, the

<sup>107</sup> *Id.* at 114.

<sup>108</sup> *Anderson v. Evans*, 314 F.3d 1006 (9th Cir. 2002).

<sup>109</sup> *Id.* at 1012.

<sup>110</sup> *Id.* at 1021.

<sup>111</sup> *Id.* at 1022.

<sup>112</sup> *Id.* at 1023.

<sup>113</sup> *Id.*

<sup>114</sup> *Id.*

<sup>115</sup> *Id.*

<sup>116</sup> Emily Brand, *The Struggle to Exercise a Treaty Right: An Analysis of the Makah Tribe's Path to Whale*, 32 ENVIRONS ENVTL. L. & POL'Y J. 287, 300 (2009).

court was uncertain as to whether such recognition must come from the IWC or the United States.<sup>117</sup> More importantly, the Ninth Circuit noted that this recognition must depend on the Tribe's ability to satisfy the definition of aboriginal subsistence whaling.<sup>118</sup> This definition requires "continuing traditional dependence" on whaling, yet the Tribe had not engaged in whaling since 1927.<sup>119</sup>

NOAA and the Makah argued in the alternative that the Tribe's treaty rights were not affected by the MMPA.<sup>120</sup> Courts utilize the *Fryberg* test to determine when reasonable conservation statutes affect Indian treaty rights.<sup>121</sup> The three-part test provides that a conservation statute may regulate any pre-existing treaty right if: (1) the U.S. has jurisdiction where the activity occurs, (2) the statute applies in a non-discriminatory manner to treaty and non-treaty persons alike, and (3) the application of the statute to regulate treaty rights is necessary to achieve its conservation purpose.<sup>122</sup> Applying this test, the court determined that the MMPA's application to treaty rights is necessary to achieve the conservation purpose of the statute.<sup>123</sup>

The Ninth Circuit also concluded that the MMPA's application to the Tribe was complementary to the principles provided in the Treaty of Neah Bay.<sup>124</sup> The Treaty of Neah Bay granted the Tribe a right to fish and hunt whales "in common with all citizens of the United States."<sup>125</sup> The court reasoned that the application of the MMPA to the Tribe was necessary to achieve the conservation purpose of the MMPA. Further, the court reasoned that application of the MMPA to the Tribe was consistent with the "in common with" language of the Treaty of Neah Bay because the MMPA allows the taking of marine mammals only when it will not diminish the

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<sup>117</sup> Some IWC delegates expressed concern regarding whether the Makah Tribe qualified for the aboriginal subsistence quota. See *Anderson*, 314 F.3d at 1025.

<sup>118</sup> When the United States presented its quota request for the Makah Tribe to the IWC, the United States relied on the following definition of aboriginal subsistence whaling: "whaling for purposes of local aboriginal consumption carried out by or on behalf of aboriginal, indigenous, or native people who share strong community, familial, social, and cultural ties related to a *continuing traditional dependence* on whaling and on the use of whales." *Id.*

<sup>119</sup> *Id.*

<sup>120</sup> *Id.* at 1023.

<sup>121</sup> *Id.* at 1026.

<sup>122</sup> Brand, *supra* note 116, at 301.

<sup>123</sup> *Anderson*, 314 F.3d at 1029.

<sup>124</sup> *Id.* at 1028.

<sup>125</sup> *Id.*

sustainability and optimum level of the resource for all citizens.<sup>126</sup> Therefore, the Ninth Circuit held that the Makah must apply for a MMPA waiver to whale because the "Tribe ha[d] no unrestricted treaty right to pursue whaling in the face of the MMPA."<sup>127</sup>

After the *Anderson v. Evans* decision, the Makah killed another gray whale in 2007 pursuant to an MMPA waiver request.<sup>128</sup> Because the killing occurred before the MMPA waiver was approved, the killing was deemed illegal, exposing the Makah whale hunters to criminal penalties.<sup>129</sup> The U.S. Department of Commerce's National Marine Fisheries Service prepared a Draft Environmental Impact Assessment (DEIS) in 2008 as required under NEPA and considered allowing up to four kills per year.<sup>130</sup> This DEIS generated significant opposition from conservationists, and in particular from the Animal Welfare Institute, which expressed concerns regarding animal cruelty and put forth arguments that the Makah do not have a subsistence need.<sup>131</sup>

A new DEIS was issued in March 2015 and was originally open for comment until June 2015.<sup>132</sup> The current whale population is estimated to be about 20,000,<sup>133</sup> but conservationists are concerned that if the Makah are permitted to hunt whales, the whale population will decline as it did many years ago. Therefore, whether the next quota is approved for the Makah Tribe remains to be determined, pending input received during the comment period for the new DEIS.<sup>134</sup>

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<sup>126</sup> *Id.* at 1029.

<sup>127</sup> *Id.*

<sup>128</sup> Animal Welfare Institute, *supra* note 98.

<sup>129</sup> *Id.*

<sup>130</sup> *Id.*

<sup>131</sup> *Id.*

<sup>132</sup> National Oceanic and Atmospheric Administration, *Information on Makah Tribal Whale Hunt*, NOAA FISHERIES, WEST COAST REGION, [http://www.westcoast.fisheries.noaa.gov/protected\\_species/marine\\_mammals/cetaceans/whale\\_hunt.html](http://www.westcoast.fisheries.noaa.gov/protected_species/marine_mammals/cetaceans/whale_hunt.html) (last visited Nov. 13, 2015).

<sup>133</sup> Luis Georg, *Makah Tribe Seeks to Resume Gray Whale Hunting for Subsistence and Ceremonial Purposes*, PERFECT SCI. (Mar. 7, 2015), <http://perfectscience.com/content/2141401-makah-tribe-seeks-resume-gray-whale-hunting-subsistence-and-ceremonial-purposes>.

<sup>134</sup> As of this writing, the final EIS has not been issued. The opportunity to comment on the DEIS was originally scheduled to close on June 11, 2015, but the comment period was extended to July 31, 2015. James Casey, *Public Comment Period for Makah Whaling Request Is Extended to July 31*, PENINSULA DAILY NEWS (June 3, 2015), <http://www.peninsuladailynews.com/apps/pbcs.dll/article?AID=/20150603/NEWS/306039976>.

The new DEIS, titled "Draft Environmental Impact Statement on the Makah Tribe Request to Hunt Gray Whales," is a 1,230-page document outlining the environmental effects of whaling and six alternatives.<sup>135</sup> The first alternative calls for no action, which means that the Makah would not be allowed to hunt whales.<sup>136</sup> The second would allow harvesting up to four whales per year on average and up to 24 in any six-year period.<sup>137</sup> The remaining alternatives (third through sixth) would involve the same quota restrictions as the second alternative, but with several variations on the type of whale that could be killed, at what time of the year, and other restrictions.<sup>138</sup>

Since the initial legal 1999 killing, two decades of uncertainty have followed as to whether the law permits the Makah to participate in its whaling tradition. The IWC has allowed the Makah to assert its whaling right established by the Treaty of Neah Bay, but as history has shown, even when the Tribe legally participates in its long-established whaling tradition, it is likely to face resistance from nongovernmental organizations such as the Animal Welfare Institute. Government regulators recognize the Tribe's right to conduct limited whaling, but such practices remain controversial due to assertions by conservation and animal welfare communities that such practices are unnecessary for subsistence needs and thus constitute unnecessary marine resource depletion and animal cruelty.<sup>139</sup>

The Makah's experience with the aboriginal subsistence exception is relevant to this Article for three reasons. First, there is an established

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<sup>135</sup> NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DRAFT ENVIRONMENTAL IMPACT STATEMENT ON THE MAKAH TRIBE REQUEST TO HUNT GRAY WHALES (Feb. 2015), [http://www.westcoast.fisheries.noaa.gov/publications/protected\\_species/marine\\_mammals/cetaceans/gray\\_whales/makah\\_deis\\_feb\\_2015.pdf](http://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/cetaceans/gray_whales/makah_deis_feb_2015.pdf) [hereinafter DEIS].

<sup>136</sup> *Id.* at ES-1.

<sup>137</sup> *Id.* at ES-1-2.

<sup>138</sup> *Id.* at ES-2-3.

<sup>139</sup> Despite objections from environmental and animal welfare communities, exemptions have been granted to indigenous peoples for the limited harvesting of species that are otherwise strictly regulated in order to promote both conservation and the avoidance of cruel harvesting methods. *See, e.g.*, Regulation (EC) No 107/2009 of the European Parliament and of the Council of 16 Sept. 2009 on Trade in Seal Products, 2009 O.J. (L 286/36) 14, <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009R1007&from=EN> (addressing the Inuit's and other indigenous communities' exemption from the EU seal hunting ban); *see also* Sophie Theriault et al., *The Legal Protection of Subsistence: A Prerequisite of Food Security for the Inuit of Alaska*, 22 ALASKA L. REV. 35 (2005) (arguing that subsistence harvesting of renewable natural resources is essential to ensure Inuit food security).

international environmental law framework that recognizes an exception to a regulated activity to promote the cultural and subsistence needs of federally recognized tribes in the United States. The logic of this framework can support a similar exception for such tribes to pursue small-scale OIF experiments as a means to help restore subsistence and/or culturally significant marine resources. Second, as discussed in Part II.b.2 below, the Federal Indian Trust Responsibility Doctrine creates a common law duty for the federal government to uphold treaty-based rights of federally recognized tribes regarding use of and access to natural resources. Third, the concept of the Makah's right to resume whaling as reparations plays an important role in the argument that OIF experimentation should not be prohibited. Climate change is a leading cause in the decline of Pacific Northwest indigenous peoples' access to salmon. Therefore, the proposed exception to a regulatory regime that restricts OIF activity is an essential component of an overall regulatory strategy to protect these tribes' access to their cultural marine food resources.

## 2. Indigenous Peoples' Human Right to Food

Several international human rights law instruments support indigenous peoples' right to food. This section first discusses the foundation for the protection of indigenous peoples' right to self-determination, as established in the Universal Declaration of Human Rights; the International Covenant on Economic, Social, and Cultural Rights; and the International Covenant on Civil and Political Rights. It then addresses how the more specific protections in the Indigenous and Tribal Peoples Convention of 1989 and the UN Declaration on the Rights of Indigenous Peoples extend these basic protections to encompass the more specific right to food, which is grounded in, and is a fundamental component of, the right to self-determination.<sup>140</sup>

The Universal Declaration of Human Rights (UDHR)<sup>141</sup> is an international declaration adopted by the United Nations in 1948 as a common standard for all people and nations. The human rights abuses that

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<sup>140</sup> For a discussion of international law instruments that protect indigenous peoples' human rights to self-determination and cultural integrity, see Lillian Aponte Miranda, *Introduction to Indigenous Peoples' Status and Rights Under International Human Rights Law*, in *CLIMATE CHANGE AND INDIGENOUS PEOPLES: THE SEARCH FOR LEGAL REMEDIES* 48-56 (Randall S. Abate & Elizabeth Ann Kronk Warner eds., 2013).

<sup>141</sup> G.A. Res. 217 A (III), Universal Declaration of Human Rights, U.N. Doc. A/RES/217(111) (Dec. 10, 1948) [hereinafter UDHR].

occurred during the Holocaust were the driving force for this declaration.<sup>142</sup> It addresses a comprehensive list of civil, political, economic, social, and cultural rights to which all human beings are entitled, such as the right to life<sup>143</sup> and the right to an adequate standard of living.<sup>144</sup> Although this international law instrument is not legally binding, it laid the foundation for two subsequent treaties on human rights that are relevant to indigenous peoples' rights: the International Covenant on Economic, Social, and Cultural Rights<sup>145</sup> and the International Covenant on Civil and Political Rights.<sup>146</sup> Collectively, these three instruments are known as "the International Bill of Human Rights."<sup>147</sup> They recognize minimum core rights such as the right to food, water, culture, and others, which some scholars argue deserve protection under customary law.<sup>148</sup>

The International Covenant on Economic, Social, and Cultural Rights (ICESCR) was adopted in 1966 by the UN General Assembly.<sup>149</sup> Relevant provisions of the ICESCR include the preamble, which provides that "in accordance with the Universal Declaration of Human Rights, the ideal of free human beings enjoying freedom from fear and want can only be achieved if conditions are created whereby everyone may enjoy his economic, social and cultural rights, as well as his civil and political rights."<sup>150</sup> Additionally, Articles 6-15 address protection of the right to food, clothing, shelter, and the right to culture.<sup>151</sup> In particular, Article 11 directly addresses the right to food and the responsibility of member states to

<sup>142</sup> Introduction to the *Universal Declaration of Human Rights*, FACING HISTORY AND OURSELVES,

<https://www.facinghistory.org/for-educators/educator-resources/readings/introduction-universal-declaration-human-rights> (last visited Nov. 13, 2015).

<sup>143</sup> UDHR, *supra* note 141, art. 3.

<sup>144</sup> *Id.* art. 25.

<sup>145</sup> International Covenant on Economic, Social, and Cultural Rights, Dec. 16, 1966, 6 I.L.M. 360 (entered into force Jan. 3, 1976) [hereinafter ICESCR].

<sup>146</sup> International Covenant on Civil and Political Rights, Dec. 16, 1966, 6 I.L.M. 368 (entered into force Mar. 23, 1976) [hereinafter ICCPR].

<sup>147</sup> U.N. Office of the High Comm'r for Human Rights, *Fact Sheet No. 2 (Rev. 1), The International Bill of Human Rights* (June 1996), <http://www.ohchr.org/Documents/Publications/FactSheet2Rev.1en.pdf>.

<sup>148</sup> See Megan M. Herzog, *Coastal Climate Change Adaptation and International Human Rights*, in CLIMATE CHANGE IMPACTS ON OCEAN AND COASTAL LAW: U.S. AND INTERNATIONAL PERSPECTIVES 601-03 (Randall S. Abate ed., 2015).

<sup>149</sup> ICESCR, *supra* note 145.

<sup>150</sup> *Id.* pmb1.

<sup>151</sup> *Id.* arts. 6-15.

keep all people free from hunger through equitable distribution of food supplies.<sup>152</sup> However, the ICESCR's protections are expressed through broad language that does not identify any specific group that may need special protection.<sup>153</sup>

Complementing the protections in the ICESCR, the International Covenant on Civil and Political Rights (ICCPR) of 1966 is an international human rights treaty that compels governments to take administrative, judicial, and legislative measures to uphold basic human rights such as an individual's right to life,<sup>154</sup> a people's collective right to self-determination,<sup>155</sup> and equality before courts and tribunals.<sup>156</sup> This treaty provides additional safeguards for the civil and political rights articulated in the UDHR.

Two international law instruments extend these general human rights protections to the special circumstances faced by indigenous peoples. First, the International Labour Organization (ILO) established the Indigenous and Tribal Peoples Convention of 1989, also known as ILO Convention No. 169 (ILO 169).<sup>157</sup> The main objective of ILO 169 was to protect indigenous and tribal peoples, with a focus on respect for their cultures, traditions, and customs.<sup>158</sup> In particular, Article 14 provides that "measures shall be taken in appropriate cases to safeguard the right of the peoples concerned to use lands not exclusively occupied by them, but to which they have traditionally had access for their subsistence and traditional activities."<sup>159</sup> Article 23 further states that "rural and community-based industries, and subsistence economy and traditional activities of the peoples concerned, such as hunting, fishing, trapping and gathering, shall be recognized as important factors in the maintenance of their cultures and in their economic self-reliance and development."<sup>160</sup> Therefore, in addition to protecting indigenous peoples'

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<sup>152</sup> *Id.* art.11; see also FAO, Right to Food Unit, *The Right to Food and Indigenous Peoples*, JOINT BRIEF (2008), [http://www.un.org/esa/socdev/unpfii/documents/Right\\_to\\_food](http://www.un.org/esa/socdev/unpfii/documents/Right_to_food).

<sup>153</sup> ICESCR, *supra* note 145; see also Lidija Knuth, *The Right to Adequate Food and Indigenous Peoples: How Can the Right to Food Benefit Indigenous People?*, FOOD AND AGRIC. ORG. OF THE U.N., 12 (2009), <http://www.fao.org/docrep/016/ap552e/ap552e.pdf>.

<sup>154</sup> ICCPR, *supra* note 146, art. 6.

<sup>155</sup> *Id.* art. , para. 1.

<sup>156</sup> *Id.* art. 14.

<sup>157</sup> Convention Concerning Indigenous and Tribal Peoples in Independent Countries, June 27, 1989, 28 I.L.M. 1382 (entered into force Sept. 5, 1991).

<sup>158</sup> *Id.* pmb1.

<sup>159</sup> *Id.* art. 14.

<sup>160</sup> *Id.* art. 23.



cultures, languages, and religions, ILO 169 also provides a foundation of support for their right to food as an extension of tribal self-determination.<sup>161</sup>

Second, and more expansive in its coverage of indigenous peoples' rights to self-determination and food, is the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).<sup>162</sup> UNDRIP reflects international expectations and aspirations regarding the basic rights of indigenous peoples.<sup>163</sup> This instrument "represents more than two decades of work by indigenous peoples, governments, non-governmental organizations and intergovernmental organizations in crafting a comprehensive transnational bill of rights applicable to indigenous peoples."<sup>164</sup> Adopted in 2007, UNDRIP contains several provisions that support indigenous peoples' rights to food. For example, the declaration identifies rights to self-determination,<sup>165</sup> self-governance,<sup>166</sup> and cultural integrity,<sup>167</sup> all of which are connected to the right to food. It also ensures indigenous peoples' right to remain distinct and to pursue their own priorities in economic, social and cultural development.<sup>168</sup> The declaration explicitly encourages "harmonious and cooperative relations between States and indigenous peoples."<sup>169</sup> Therefore, UNDRIP confirms that indigenous peoples have rights related to and supporting the right to food, which give rise to concomitant obligations on states to respect and promote these rights.

## B. Domestic

### 1. Treaty-Based Rights to Fishing

Indigenous peoples of the Pacific Northwest have long relied on salmon and other cultural marine food resources to promote their self-determination. The definition of "cultural marine food resources" varies depending on the

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<sup>161</sup> See also FAO, Right to Food Unit, *supra* note 152 (noting that international law recognizes indigenous peoples' right to food and that this collective right requires states to respect indigenous peoples' traditional ways of living, strengthen traditional food systems, and protect subsistence activities such as hunting, fishing, and gathering).

<sup>162</sup> G.A. Res. 61/295, Annex, Declaration on the Rights of Indigenous Peoples, U.N. GAOR, 61st Sess., U.N. Doc. A/RES/61/295 (Sept. 13, 2007) [hereinafter UNDRIP].

<sup>163</sup> *Id.*

<sup>164</sup> Miranda, *supra* note 140, at 51.

<sup>165</sup> UNDRIP, *supra* note 162, art. 3.

<sup>166</sup> *Id.* art. 4.

<sup>167</sup> *Id.* art. 11.

<sup>168</sup> *Id.* art. 5.

<sup>169</sup> *Id.* pmb1.

tribe. For example, this term refers to whales for the Makah,<sup>170</sup> shellfish for the Tulalip,<sup>171</sup> and salmon for the Jamestown S'Klallam and Swinomish tribes.<sup>172</sup> In the case of salmon, factors outside the indigenous peoples' interaction with these cultural marine resources, such as commercial overharvesting and mercury contamination,<sup>173</sup> have severely impacted the viability of salmon stocks in the Pacific Northwest. These challenges have been compounded by the impacts of climate change, which have further decimated salmon stocks for these indigenous communities.<sup>174</sup>

Treaties between the United States and these Pacific Northwest tribes reflect the importance of ensuring the tribes' access to these cultural marine food resources. In the early 1850s, Isaac Stevens, Washington State's first governor, negotiated and executed treaties with the Native American tribes of the Pacific Northwest.<sup>175</sup> These tribes were known as "fish-eaters" because their diets, customs, and religious practices focused on the taking of fish.<sup>176</sup> To the Pacific Northwest tribes, the right of taking fish was the most important provision in the treaty.<sup>177</sup> Consequently, every treaty between the United States and the Pacific Northwest tribes contained a provision guaranteeing off-reservation fishing rights.<sup>178</sup> In exchange for relinquishing millions of acres of their land to the United States, the tribes agreed to move

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<sup>170</sup> See *supra* Part II.a.1.

<sup>171</sup> The Tulalip Tribes, *Shellfish*, THE TULALIP TRIBES NATURAL RESOURCES DEP'T (last updated July 16, 2002), <http://www.tulalip.nsn.us/htmldocs/shellfish.htm>.

<sup>172</sup> For a discussion of the Jamestown S'Klallam and Swinomish Tribes as case studies to implement the proposal in this Article, see *infra* Part III.b.

<sup>173</sup> See generally Catherine A. O'Neill, *Environmental Justice in the Tribal Context: A Madness to EPA's Method*, 38 ENVTL. L. 495 (2008) (arguing that the EPA's environmental justice analysis of mercury contamination of salmon failed to consider that indigenous communities' treaty-based rights to fish were severely impacted and failed to adequately address the disproportionate impact of mercury on tribal fishing-dependent communities).

<sup>174</sup> See generally Kyle Dittmer, *Changing Streamflow on Columbia Basin Tribal Lands—Climate Change and Salmon*, in CLIMATE CHANGE AND INDIGENOUS PEOPLES IN THE UNITED STATES: IMPACTS, EXPERIENCES AND ACTIONS 119 (Julie Koppel Maldonado, Benedict Colombi & Rajul Pandya eds., 2014) (discussing climatic and hydrological trends that threaten salmon, their critical habitats, and the salmon-dependent indigenous peoples in the Columbia River Basin).

<sup>175</sup> *United States v. Washington*, 520 F.2d 676, 682 (9th Cir. 1975).

<sup>176</sup> *Id.*

<sup>177</sup> *Id.*

<sup>178</sup> For example, the Treaty of Medicine Creek provided that "[t]he right of taking fish, at all usual and accustomed grounds and stations, is further secured to said Indians, in common with all citizens of the Territory." See *id.* at 683.

to reservations but reserved the right to fish at their traditional fishing places off the reservation.<sup>179</sup>

Federal courts have upheld the promise of off-reservation fishing rights even against state resistance. In the landmark case on this issue, *United States v. Washington*,<sup>180</sup> the federal government sued the State of Washington to enforce compliance with the treaties between the federal government and the Pacific Northwest tribes.<sup>181</sup> In 1974, Judge George H. Boldt of the United States District Court for the Western District of Washington drafted the opinion that has become known, famously, as the "Boldt Decision." The court held that the state could not apply its existing fishing regulations to members of the treaty tribes without violating their federal treaty rights.<sup>182</sup> The State of Washington's fishing regulations at the time did not differentiate between a treaty-protected Native American fisherman and other citizens of the state.<sup>183</sup> However, the treaties guaranteed those tribes a right to fish that was distinct from the rights enjoyed by other citizens.<sup>184</sup>

At the time the treaties were signed, the United States considered the Native American tribes independent and sovereign nations.<sup>185</sup> A treaty guaranteeing certain rights to the subjects of a signatory nation is self-executing and preempts state law.<sup>186</sup> The Supremacy Clause of the U.S. Constitution supports this interpretation of treaty rights.<sup>187</sup> Therefore, the treaties preempted the state's regulation of Indian fishing at the treaty-protected fishing sites.<sup>188</sup>

In the Boldt Decision, the court held that the state could only enforce

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<sup>179</sup> *Id.* at 685.

<sup>180</sup> *Id.* at 682.

<sup>181</sup> *Id.*

<sup>182</sup> *Id.*

<sup>183</sup> *Id.* at 685.

<sup>184</sup> *Id.* In the state of Washington, approximately 1.4 million people fish and 3.8 million people consume fish; however, only 104,000 are Native American Indians and Alaskan natives. Kelly Nokes, *An Opportunity to Protect—Analyzing Fish Consumption, Environmental Justice, and Water Quality Standards Rulemaking in Washington State*, 16 VT. J. ENVTL. L. 323, 326 (2014). By treating the outnumbered treaty Indians the same as other citizens, the state was effectively allotting them a decreasing share of the resource. *Washington* 520 F.2d, *supra* note 175 at 687.

<sup>185</sup> *Washington* 520 F.2d at 684.

<sup>186</sup> *Id.*

<sup>187</sup> *United States v. Washington*, 645 F.2d 749, 756 (9th Cir. 1981).

<sup>188</sup> *Washington* 520 F.2d at 685.

regulations necessary for the conservation of fish.<sup>189</sup> Moreover, the court held that the state must show that its conservation purposes cannot first be satisfied by a restriction of non-Indian fishing.<sup>190</sup> The federal district court retained continuing jurisdiction to provide judicial scrutiny of all future state regulations affecting American Indian treaty fishing rights.<sup>191</sup> The Ninth Circuit affirmed the Boldt Decision.<sup>192</sup> After the U.S. Supreme Court denied the state's petition for a writ of certiorari, the federal district court ordered the State of Washington to adopt regulations to implement the Boldt Decision.<sup>193</sup>

The Boldt Decision guarantees to the Native American tribes in the Pacific Northwest a permanent, enforceable right to take fish throughout their fishing areas for ceremonial and subsistence purposes.<sup>194</sup> A significant limitation on this right, however, is that the U.S. government only protects this right for tribes that are federally recognized.<sup>195</sup> Without federal recognition, a tribe is unable to exercise the "inherent sovereignty" that the federal government has expressly acknowledged as belonging to American Indians.<sup>196</sup>

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<sup>189</sup> *Id.* at 686.

<sup>190</sup> *Id.*

<sup>191</sup> *Id.* at 683.

<sup>192</sup> *Id.*

<sup>193</sup> Reid Peyton Chambers, *Reflection on the Conditions in Indian Law, Federal Indian Policies, and Conditions on Indian Reservations*, 46 ARIZ. ST. L.J. 729, 775 (2014). Washington failed to comply with the federal court's order, however. In 1975, the State of Washington adopted a buy-back program in an effort to limit commercial fishing. *Washington*, 645 F.2d at 751. The buy-back program allowed the state to purchase and resell commercial fishing vessels but forbade the use of the resold vessels in any commercial fishing in Washington, by both Indians and non-Indians. *Id.* at 750. The program failed to recognize the special status of treaty rights. The federal district court enjoined the State of Washington from enforcing the buy-back program against Indians, holding that it violated the tribes' treaty-protected rights. *Id.* The enforcement of the program had the effect of impairing Indians' exercise of fishing rights granted under the Indian treaties. Moreover, the program was not sufficiently tailored to conservation purposes to justify its application to Indians who were exercising their treaty rights. *Id.* at 754. The federal district court then assumed direct supervision of the fisheries to protect the treaty rights, which the Ninth Circuit subsequently affirmed. Chambers, *supra* note 193, at 775.

<sup>194</sup> See Nokes, *supra* note 184.

<sup>195</sup> Rebecca M. Mitchell, *People of the Outside: The Environmental Impact of Federal Recognition of American Indian Nations*, 42 B.C. ENVTL. AFF. L. REV. 507, 527 (2015).

<sup>196</sup> *Id.*

## 2. Federal Indian Trust Responsibility Doctrine

In addition to treaties and agreements between the federal government and the Pacific Northwest tribes, the federal government, state governments, and the judiciary have established legal commitments recognizing the rights of tribes. One doctrine that has emerged is the Federal Indian Trust Responsibility Doctrine, which imposes increased standards of protection on the federal government, as a trustee, when making decisions that may affect the rights and resources of federally recognized tribes.<sup>197</sup>

The trust relationship between the federal government and indigenous nations arose from the unique history of cession of land and external sovereignty of indigenous nations to the federal government.<sup>198</sup> The doctrine contributes to an important aspect of protecting Indian rights when “tribal lands and resources are directly at stake and damage can be thwarted through judicial intervention.”<sup>199</sup> It allows tribes to challenge federal action that adversely affects their fundamental way of life.<sup>200</sup> The federal duties under this doctrine include protection of a “vast range of tribal property interests reserved by treaty, including natural resources such as water and wildlife.”<sup>201</sup> The doctrine “transcends specific treaty promises and embodies a clear duty to protect the native land base and the ability of tribes to continue their ways of life.”<sup>202</sup> In fact, the U.S. Supreme Court has noted that “federal officials are ‘bound by every moral and equitable consideration to discharge the federal government’s trust with good faith and fairness’

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<sup>197</sup> See Department of the Interior Order 3335: *Reaffirmation of the Federal Trust Responsibility to Federally Recognized Indian Tribes and Individual Indian Beneficiaries*, COUNCIL ON FOREIGN REL. (Aug. 20, 2014), <http://www.cfr.org/ethnicity-minorities-and-national-identity/departement-interior-order-3335-reaffirmation-federal-trust-responsibility-federally-recognized-indian-tribes-individual-indian-beneficiaries/p33909>.

<sup>198</sup> Mary Christina Wood & Zachary Welcker, *Tribes as Trustees Again (Part I): The Emerging Tribal Role in the Conservation Trust Movement*, 32 HARV. ENVTL. L. REV. 373, 387-88 (2008).

<sup>199</sup> Mary Christina Wood, *Indian Land and the Promise of Native Sovereignty: The Trust Doctrine Revisited*, 1994 UTAH L. REV. 1471, 1523 (1994). Federal trust responsibility was also recognized in messages to Congress from President Richard Nixon and President Ronald Reagan. See Elizabeth Ann Kronk Warner & Randall S. Abate, *International and Domestic Law Dimensions of Climate Justice for Arctic Indigenous Peoples*, 43 REVUE GÉNÉRALE DU DROIT 113, 129 n. 59, 60 (2013).

<sup>200</sup> Wood, *supra* note 199, at 1568.

<sup>201</sup> Mary Christina Wood, *The Tribal Property Right to Wildlife Capital (Part I): Applying Principles of Sovereignty to Protect Imperiled Wildlife Populations*, 37 IDAHO L. REV. 1, 76 (2000).

<sup>202</sup> Wood, *supra* note 199, at 1506.

when dealing with tribes."<sup>203</sup>

Application of this doctrine has included contexts involving salmon depletion. For example, in *Hoopa Valley Indian Tribe v. Ryan*, the Hoopa Valley Indian Tribe requested additional funding for the restoration of the Trinity River.<sup>204</sup> Historically, the Trinity River produced an abundance of salmon and steelhead. However an increase in the number of dams built along the river caused a tremendous loss of fish.<sup>205</sup> "These fisheries played a central role in the livelihood and culture of the Hoopa Valley and Yurok Indian tribes, as well as in the region's economy and way of life as a whole."<sup>206</sup> As a result of the congressionally authorized dams, the species' "suitable habitat was all but eliminated from the river, and salmon and steelhead populations had plummeted by as much as eighty percent."<sup>207</sup>

Based on the federal government's responsibility as trustee to the Hoopa and Yurok tribes, Congress took steps to mitigate the damage through congressional mandates.<sup>208</sup> These mandates were aimed at restoring the Trinity River salmon and steelhead populations to levels that pre-dated the dams.<sup>209</sup> In fact, in order to comply with federal trust responsibilities to protect the fishery resources of the Hoopa Valley Tribe, "Congress directed the Secretary [of Interior] to provide a minimum instream release of water into the Trinity River and to consult with the Hoopa Valley Tribe in completing a 'Trinity River Flow Evaluation Study' that could lead to further increases in the minimum flow," in order to help increase the fish population.<sup>210</sup> The Trinity River restoration mandates were not limited to benefiting the Hoopa Valley Tribe, as the effects would have a collective benefit for "Indians as a part of the broader population."<sup>211</sup> By implementing these programs to counteract the detrimental effects of the dams, the federal government satisfied a range of statutory responsibilities, while honoring its trust agreement with the tribes.<sup>212</sup>

The federal trust responsibility also has been extended to uphold treaty-

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<sup>203</sup> Nokes, *supra* note 184, at 351.

<sup>204</sup> *Hoopa Valley Indian Tribe v. Ryan*, 415 F.3d 986, 987 (9th Cir. 2005).

<sup>205</sup> *Id.*

<sup>206</sup> *Id.*

<sup>207</sup> *Id.* at 987-88.

<sup>208</sup> *Id.* at 989.

<sup>209</sup> *Id.*

<sup>210</sup> *Id.* at 988.

<sup>211</sup> *Id.* at 992.

<sup>212</sup> *Id.* at 993.

protected rights to catch and consume fish.<sup>213</sup> For example, in *Parravano v. Babbitt*, the Ninth Circuit upheld a federal regulation under the Magnuson-Stevens Act (regulating fishery resources) “to protect tribal rights to fish and fish resources based upon the government’s trust responsibility to protect tribal treaty rights.”<sup>214</sup> Moreover, government agencies, such as the U.S. Environmental Protection Agency (EPA), have “a strong obligation to ensure tribal treaty rights to fish—and to eat fish without being subjected to unsafe levels of contaminants—as the agency itself must uphold the due federal trust responsibility on behalf of the United States to protect these tribal rights.”<sup>215</sup> Aligned with the trust responsibility, the EPA is required to protect the environmental interests of Indian tribes when, in the process of carrying out its responsibilities, the EPA may affect the reservations.<sup>216</sup> Nevertheless, agencies like the EPA, which have an expressly recognized duty to protect tribal fisheries, “destroy the capital of the salmon asset, eliminating the corpus of the trust in violation of their trust responsibility.”<sup>217</sup> In this scenario, the tribes, “as beneficiaries of the trust responsibility, are entitled to a cause of action against the federal government for plundering the corpus of their trust, and in scores of other cases, tribes have successfully sued the government for failure to protect their property.”<sup>218</sup>

<sup>213</sup> Nokes, *supra* note 184, at 353.

<sup>214</sup> *Parravano v. Masten*, 70 F.3d 539, 547 (9th Cir. 1995) (“Tribes’ federally reserved fishing rights are accompanied by a corresponding duty on the part of the government to preserve those rights”).

<sup>215</sup> Nokes, *supra* note 184, at 354.

<sup>216</sup> Wood, *supra* note 199, at 1533-34.

<sup>217</sup> Wood, *supra* note 201, at 95.

<sup>218</sup> *Id.* See also Catherine A. O’Neill, *Variable Justice: Environmental Standards, Contaminated Fish, and “Acceptable” Risk to Native Peoples*, 19 STAN. ENVTL. L.J. 3 (2000) (arguing that environmental agencies should recognize their obligations under the federal trust responsibility doctrine when making decisions and take into account the cultural significance of fish in indigenous communities); Kronk Warner & Abate, *supra* note 199 (arguing that the federal trust responsibility doctrine should apply to support possible remedies for indigenous communities disproportionately affected by climate change impacts).

Other decisions have limited the scope of the Federal Indian Trust Responsibility Doctrine by requiring a statute or another source of express law to support a trust claim for environmental protection. See, e.g., *North Slope Borough v. Andrus*, 642 F.2d 589, 611 (D.C. Cir. 1980) (holding that “[a] trust responsibility can only arise from a statute, treaty, or executive order . . . [and] that the United States bore no fiduciary responsibility to Native Americans under a statute which contained no specific provisions in the terms of the statute”) (quoting *North Slope Borough v. Andrus*, 486 F. Supp. 326, 344 (D.D.C. 1979)); *Morongo Band of Mission Indians v. FAA*, 161 F.3d 569, 574 (9th Cir. 1998) (“unless there is a

### III. PROPOSAL FOR INDIGENOUS PEOPLES' USE OF OIF TO PROMOTE ACCESS TO SUBSISTENCE AND CULTURAL MARINE RESOURCES

Many indigenous communities in the Pacific Northwest have a subsistence and/or cultural reliance on marine resources, particularly salmon. This reliance has been acknowledged and protected through various international and domestic legal mechanisms: international environmental law, international human rights law protections of the rights to food and self-determination, treaties between the U.S. government and the tribes protecting the tribes' access to fish and other food sources, and the Federal Indian Trust Responsibility Doctrine.

OIF is a climate change mitigation technique that has also been determined to produce increases in salmon yields. The technique has been criticized on both legal and scientific grounds as potentially risky and in need of strict international coordination and regulation. Regardless of the risks and the need for a strict regulatory regime to manage OIF experiments, this Article proposes that a limited exception to a future regulatory regime governing OIF should be established to support the use of OIF as a strategy to promote the return of salmon runs in indigenous communities in the Pacific Northwest.

The aboriginal subsistence exception under the ICRW is based on two principles: (1) indigenous peoples' right to access cultural food resources that are essential to self-determination and (2) the recognition that such harvesting would have a *de minimis* effect on the protected resource. The same can be said for OIF experiments like the one undertaken by the Haida community. The experiment promoted access to a depleted cultural food resource, and the process by which this resource was restored likely had a *de minimis* effect on the ocean waters. Such experiments should be considered mere "village science,"<sup>219</sup> rather than an activity that is subject to prohibitive

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specific duty that has been placed on the government with respect to the Indians, [the trust] responsibility is discharged by the agency's compliance with general regulations and statutes not specifically aimed at protecting Indian tribes"); *Miccosukee Tribe of Indians of Fla. v. United States*, 430 F. Supp. 2d 1328, 1336 (S.D. Fla. 2006) ("despite the general trust obligation of the United States to Native Americans, the government assumes no specific duties to Indian tribes beyond those found in applicable statutes, regulations, treaties, or other agreements" (quoting *Miccosukee Tribe of Indians v. United States*, 980 F. Supp. 448, 461 (S.D. Fla. 1997)).

<sup>219</sup> Holly Jean Buck, *Village Science Meets Global Discourse: The Haida Salmon Restoration Corporation's Ocean Iron Fertilization Experiment*, GEOENGINEERING OUR CLIMATE (Feb. 14, 2014), <http://geoengineeringourclimate.com/2014/01/14/village-science-meets-global-discourse-case-study/>.



domestic and international regulation. Moreover, these experiments could also be approved on a periodic basis, as part of an indigenous community's climate change adaptation plan.

The next Part of this Article has two components. First, it outlines a set of proposed criteria that an indigenous community would need to meet to be eligible for this narrow exception to international law's regulation of OIF deployment. Second, assuming that an indigenous community is eligible to pursue a small-scale OIF experiment to restore salmon stocks, two case study communities are presented as candidates for how such a strategy could be implemented.

*A. Criteria for Proposed Indigenous Peoples' Exception to OIF Regulation*

There are six parameters that an indigenous community must satisfy to be eligible for the proposed exception, which can be labeled with the following headings: (1) who, (2) what, (3) where, (4) when, (5) how, and (6) why. This proposal draws on the logic of the legal tradition of the aboriginal subsistence exception to the ICRW moratorium on whaling. It presents an even stronger case for an exception than the Makah Tribe's asserted right to pursue its cultural whaling practices for two reasons. First, salmon is a subsistence-based right *and* acts as a cultural tradition connected to self-determination. In stark contrast, the Makah's whaling is almost exclusively cultural. Second, unlike the Makah's cultural whaling practices, OIF presents the opportunity for an ancillary benefit to the environment: carbon sequestration.

*Who:* The most important threshold for the proposed exception is to determine what indigenous communities are eligible to assert the exception. In the interest of both fairness and precision, this proposal would apply only to federally recognized tribes. This limitation does not suggest that tribes that are not federally recognized are undeserving of this protection. Rather, it is merely a recognition of the fact that the foundation of many tribal protections, as reflected in this Article, are premised on treaty-based agreements that ensure access to tribal food and other resources, which in turn triggers the applicability of the Federal Indian Trust Responsibility Doctrine. In time, this proposal could expand to include tribes that are not federally recognized; however, in the interests of viability and feasibility, the starting point should be to limit the proposal to federally recognized tribes.

*What:* Only small-scale OIF experiments would be eligible under the proposed exception. This exception is not meant to provide a means of jeopardizing the marine environment of the host nation or the international

community. The Haida experiment utilized approximately 100 tons of iron dust, and the results were sufficiently significant. Thus, other experiments should be of a comparable scale, allowing them to achieve the desired outcomes in boosting salmon stocks, while protecting the integrity of the marine environment. The appropriate scope of these small-scale experiments would be dictated by the developing science behind the OIF process.

*Where:* To the extent possible, the proposed exception would encourage, if not mandate, that these small-scale experiments occur within the host nation's exclusive economic zone (EEZ). The Haida experiment took place at the edge of Canada's EEZ and in the high seas. Science may have driven the need for this location to ensure the desired impact for the restoration of salmon stocks. However, future experiments should be conducted within the EEZ to diminish the risk of triggering complex international law regimes governing the high seas.

*When:* A tribe asserting the need for an OIF experiment would need to establish a limited time frame within which to pursue the increased return of salmon. Requiring a limited time frame provides an additional dimension of environmental protection and ensures effective assessment and monitoring of the results of the experiment. Experiments would only be able to proceed one at a time, and the next experiment would not be permitted until adequate monitoring and assessment of the first experiment has been completed.

*How:* A tribe asserting the need for an OIF experiment would be required to prepare an assessment of the environmental impact of the experiment. Part of what made the Haida experiment controversial was that it was conducted "under the radar" and was not appropriately transparent. Thus, to avoid such controversy, applicants for the proposed exception should prepare an environmental assessment. If a project is the target of public scrutiny and concern, it is likely to be revised to be more environmentally protective or withdrawn altogether. As such, the environmental assessment requirement promotes transparency by providing full disclosure of potential environmental impacts to the public.

*Why:* The tribe asserting its eligibility for the exception would need to establish its cultural and/or subsistence-based need for salmon. Like the Makah's demonstrated need for a limited take of whales, tribes would need to show a similar need for salmon. However, a higher threshold should be utilized for subsequent requests to undertake small-scale OIF experiments. Once an eligible indigenous community receives the benefit of enhanced salmon stocks from an initial experiment, the burden of establishing a need for continuing experiments should be increased. Increasing the threshold for

subsequent experiment requests will ensure that the exception is granted only when *necessary*, while mitigating any potential environmental impacts of large-scale experimentation. The best available science on OIF and fish stock assessments would drive the evaluation of the need, and the degree to which that need has been met, in assessing a tribe's eligibility for initial and subsequent OIF experiments.

These criteria provide some limiting parameters to apply to indigenous communities that are potentially eligible for small-scale OIF experiments. Ultimately, the goal of authorizing such a proposed exception is, in part, to compensate these tribes for the harm that climate change has caused to their cultural and subsistence marine resources. Therefore, as discussed in the next section, eligible tribes can implement this proposed strategy and use OIF to combat salmon loss as one of many proposed responses in their climate change adaptation plans.

### *B. Implementation in Salmon-Dependent Indigenous Communities in the Pacific Northwest*

The importance of salmon to Pacific Northwest indigenous communities cannot be overstated. As Professor Catherine O'Neill has noted: "[s]almon, functionally, *are* the ecosystems of the Pacific Northwest. They are supported by and themselves support the watersheds that comprise this region."<sup>220</sup> In 1854 and 1855, the federal government and Pacific Northwest tribes such as the Jamestown S'Klallam and Swinomish tribes entered into a series of treaties in the state of Washington.<sup>221</sup> Under these treaties, the tribes surrendered their interest in aboriginal lands in exchange for the exclusive use of small parcels of land and monetary payment.<sup>222</sup> Additionally, the treaties reserved the tribes' "right of taking fish, at all usual and accustomed grounds and stations . . . . In common with all citizens of the Territory."<sup>223</sup>

Almost two centuries later, those rights to take fish are threatened by a variety of factors, the most significant of which are pollution and the impacts of climate change. This Article has focused on 1) the challenge of climate change impacts and how using OIF to stimulate increased salmon populations for these tribes is supported by the protections and principles of international environmental and human rights law, and 2) how OIF can serve

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<sup>220</sup> Catherine A. O'Neill, *Fishable Waters*, 1 AM. INDIAN L.J. 181, 187 (2013).

<sup>221</sup> See *supra* Part II.b.1 (discussing treaty-based rights to fish in Pacific Northwest tribes).

<sup>222</sup> See *supra* Part II.b.1.

<sup>223</sup> See *supra* Part II.b.1.

as reparations for the climate change impacts that have contributed to the decline in salmon stocks. This Part of the Article addresses two tribes in the Pacific Northwest—the Jamestown S'Klallam and the Swinomish—and illustrates how the proposal in the preceding section of this Article can be implemented as part of these tribes' climate change adaptation plans to help regain viable populations of salmon in their communities.

### 1. Jamestown S'Klallam

The Jamestown S'Klallam Tribe is located in the Olympic Peninsula in the state of Washington.<sup>224</sup> The Tribe has prepared for climate change by forming a Climate Vulnerability Assessment and Adaptation Plan, recognizing key tribal resources as well as the expected impacts of climate change, and by creating adaptation strategies for each key resource.<sup>225</sup> Salmon was set as a very high priority during the Tribal Climate Change Workshop.<sup>226</sup> Culturally, salmon allow the members of the Tribe to engage in and maintain ties with traditions. Salmon fishing not only promotes cultural health, but is also a primary source of physical activity.<sup>227</sup> Thus, salmon are of cultural, dietary, and economic importance to the Jamestown S'Klallam Tribe.<sup>228</sup>

Climate change threatens the Tribe's right to access salmon because of changing precipitation patterns that lead to early snowmelt and less snowpack.<sup>229</sup> In turn, this prompts higher river flows earlier in the year and

<sup>224</sup> *History & Culture*, JAMESTOWN S'KLALLAM TRIBE, [http://www.jamestowntribe.org/programs/nrs/nrs\\_climchg.htm](http://www.jamestowntribe.org/programs/nrs/nrs_climchg.htm) (last visited Nov. 13, 2015).

<sup>225</sup> *Id.*

<sup>226</sup> Alexander "Sascha" Peterson et al., *Climate Change and the Jamestown S'Klallam Tribe: A Customized Approach to Climate Vulnerability and Adaptation Planning*, 2 MICH. J. SUSTAINABILITY 9 (2014), <http://quod.lib.umich.edu/cgi/t/text/idx/m/mjs/12333712.0002.003/—climate-change-and-the-jamestown-sklallam-tribe-a-customized?rgn=main;view=fulltext>.

<sup>227</sup> *Id.*

<sup>228</sup> Adaptation International, *Key Areas of Concern: Salmon*, in JAMESTOWN S'KLALLAM TRIBE: CLIMATE ADAPTATION PLAN 2013 (Oct. 2013), [http://www.jamestowntribe.org/programs/nrs/JKT\\_Key\\_Area\\_of\\_Concern\\_All\\_Oct\\_2013%20v2.pdf](http://www.jamestowntribe.org/programs/nrs/JKT_Key_Area_of_Concern_All_Oct_2013%20v2.pdf) [hereinafter CLIMATE ADAPTATION PLAN 2013]; see also Kathy Lynn et al., *The Impacts of Climate Change on Tribal Traditional Foods*, in CLIMATE CHANGE AND INDIGENOUS PEOPLES IN THE UNITED STATES: IMPACTS, EXPERIENCES AND ACTIONS 119 (Julie Koppel Maldonado, Benedict Colombi & Rajul Pandya eds., 2014) (discussing the importance of tribal participation in local, regional, and national climate change adaptation strategies to address climate change impacts, including impacts to food-based resources).

<sup>229</sup> Peterson et al., *supra* note 226.

lower flows in the summer, affecting the ecology of rivers amid crucial salmon migration periods and thus affecting salmon spawning habitats.<sup>230</sup> Increased air temperatures likely increase heat stress on the salmon. Thus, climate change will not only lead to a rise in temperatures, but it will also lead to disease and excess mortality in salmon, causing economic losses for the Tribe and implicating their health and wellness.<sup>231</sup>

The Jamestown S'Klallam Tribe resides in northwestern Washington on the northeastern portion of the Olympic Peninsula.<sup>232</sup> Historically, the Tribe has adapted to cultural changes precipitated by colonization, as well as climatic changes.<sup>233</sup> Recently, the Tribe has become very concerned with the impact that climate change may have on its community, and has prepared a Climate Vulnerability Assessment and Adaptation Plan to promote its continued resiliency.<sup>234</sup> This plan identifies expected climate change impacts, key tribal resources, and creates adaptation strategies for each resource.<sup>235</sup>

Salmon are a critical cultural, economic, and subsistence resource for the Jamestown S'Klallam Tribe.<sup>236</sup> Traditionally, salmon provided the foundation for nearly all aspects of cultural life for the Tribe and, recently, provide a valuable nutritional and economic resource.<sup>237</sup> Climate change is changing the Dungeness River and other similar rivers in the region to become more "transient" watersheds.<sup>238</sup> With less snow, winter rains will affect salmon through disturbed river flow timing and also through winter flood events with streambed scouring.<sup>239</sup> Salmon returning to spawn will be

<sup>230</sup> *Id.*

<sup>231</sup> CLIMATE ADAPTATION PLAN 2013, *supra* note 228.

<sup>232</sup> Adaptation International, *Climate Vulnerability Assessment and Adaptation Plan*, TRIBAL CLIMATE CHANGE PROFILE: JAMESTOWN S'KLALLAM TRIBE 1 (Nov. 2013), [http://tribalclimate.uoregon.edu/files/2010/11/Jamestown\\_SKlallam\\_Adaptation\\_Plan\\_Profile\\_FINAL-1qqgd7e.pdf](http://tribalclimate.uoregon.edu/files/2010/11/Jamestown_SKlallam_Adaptation_Plan_Profile_FINAL-1qqgd7e.pdf) [hereinafter TRIBAL CLIMATE CHANGE PROFILE].

<sup>233</sup> *Id.*

<sup>234</sup> *Id.*

<sup>235</sup> JAMESTOWN S'KLALLAM TRIBE, CLIMATE VULNERABILITY ASSESSMENT AND ADAPTATION - APPENDICES 9 (Sacha Petersen & Jacob Bell, eds., Apr. 2013), [http://www.jamestowntribe.org/programs/nrs/climchg/JSK\\_Climate\\_Change\\_Adaptation\\_Report\\_Appendices.pdf](http://www.jamestowntribe.org/programs/nrs/climchg/JSK_Climate_Change_Adaptation_Report_Appendices.pdf) [hereinafter APPENDICES].

<sup>236</sup> TRIBAL CLIMATE CHANGE PROFILE, *supra* note 232, at 3.

<sup>237</sup> CLIMATE ADAPTATION PLAN 2013, *supra* note 228.

<sup>238</sup> *Id.*

<sup>239</sup> *Id.*

met with smaller summer flows with less snowpack.<sup>240</sup> Rising air temperatures will increase heat stress on salmon in the rivers.<sup>241</sup>

The Jamestown S'Klallam climate adaptation plan determined that impacts to salmon were a chief adaptation concern.<sup>242</sup> The plan also identified a series of adaptation strategies to mitigate these impacts, such as reducing stressors to salmon stream habitat, ensuring sustainable harvesting of salmon, and addressing obstructions to salmon migratory routes.<sup>243</sup> The proposed exception, discussed in this Article, to authorize small-scale OIF experiments could be included as one of these identified adaptation strategies for federally recognized Pacific Northwest tribes as a means of responding to the loss of salmon caused in part by climate change.

## 2. Swinomish

The Swinomish Tribe, referred to as the People of the Salmon,<sup>244</sup> have always been, and will continue to be, a fishing tribe.<sup>245</sup> Salmon is a vital contributor to the cultural, spiritual, and social life of the Tribe.<sup>246</sup> For instance, the Tribe holds a "First Salmon" ceremony at the beginning of the fishing season.<sup>247</sup> Salmon also is a primary staple food of the Tribe and a "cultural keystone."<sup>248</sup> The fishing rights of the Swinomish Tribe have been protected by the Treaty of Point Elliott, signed in 1855.

Climate change threatens the Tribe's right to access this cultural food.

<sup>240</sup> *Id.*

<sup>241</sup> *Id.*

<sup>242</sup> See APPENDICES, *supra* note 235, at 15-16.

<sup>243</sup> *Id.* at 17.

<sup>244</sup> SWINOMISH INDIAN TRIBAL COMMUNITY, <http://www.swinomish-nsn.gov/> (last visited Nov. 13, 2015) ("We are the People of the Salmon and our way of life is sustained by our connection to the water and to the lands where we have fished, gathered and hunted since time immemorial.").

<sup>245</sup> See Swinomish Indian Tribal Community, *Chairman's Statement*, SWINOMISH INDIAN TRIBAL COMMUNITY, <http://www.swinomish-nsn.gov/who-we-are/chairman's-statement.aspx> (last visited Nov. 13, 2015).

<sup>246</sup> SWINOMISH INDIAN TRIBAL COMMUNITY, SWINOMISH CLIMATE CHANGE INITIATIVE: IMPACT ASSESSMENT TECHNICAL REPORT 9 (Oct. 2009), [http://www.swinomish-nsn.gov/climate\\_change/Docs/SITC\\_CC\\_ImpactAssessmentTechnicalReport\\_complete.pdf](http://www.swinomish-nsn.gov/climate_change/Docs/SITC_CC_ImpactAssessmentTechnicalReport_complete.pdf) [hereinafter IMPACT ASSESSMENT TECHNICAL REPORT].

<sup>247</sup> SWINOMISH INDIAN TRIBAL COMMUNITY, SWINOMISH CLIMATE CHANGE INITIATIVE: CLIMATE ADAPTATION ACTION PLAN 21 (Oct. 2010), [http://www.swinomish.org/climate\\_change/Docs/SITC\\_CC\\_AdaptationActionPlan\\_complete.pdf](http://www.swinomish.org/climate_change/Docs/SITC_CC_AdaptationActionPlan_complete.pdf) [hereinafter SWINOMISH CLIMATE ADAPTATION ACTION PLAN].

<sup>248</sup> *Id.* at 10.

Some of the impacts of climate change include increased water temperature, a reduction in summer stream flow that will result in loss of salmon spawning and rearing habitats, and increased sedimentation and/or scouring.<sup>249</sup> Climate change will also affect salmon habitats,<sup>250</sup> including areas that provide food for salmon, such as estuarine beaches.<sup>251</sup> The Tribe's climate adaptation action plan notes that the Salish Sea has lost 95 percent of its Chinook salmon.<sup>252</sup>

The traditional foods that North American indigenous peoples have historically depended on are known as "first foods" in native communities.<sup>253</sup> In addition to feeding native peoples, first foods also "formed the backbone of many indigenous societies by virtue of their cultural, religious, economic, and medicinal importance . . . nourish[ing] indigenous societies in every aspect, [and] helping to create vibrant, healthy native communities."<sup>254</sup> According to the Swinomish Climate Change Adaptation Plan (2010), salmon and shellfish were not only integral to maintaining the physical health of the community, but were also central to the cultural health and development of the Tribe.<sup>255</sup>

Indigenous peoples and first foods have a mutually beneficial relationship in which "[f]irst foods serve the people by providing cultural and physical health, and the indigenous communities reciprocate by maintaining the health of first foods."<sup>256</sup> As of now, both the people and the food "provide and are provided for;" however, climate change could potentially compromise the ability of native peoples to protect their foods and the ability of first foods to nourish the people.<sup>257</sup>

Changes in the environment threaten species like the Pacific salmon with the possibility of extinction.<sup>258</sup> Salmon depend on the glacier-fed

<sup>249</sup> IMPACT ASSESSMENT TECHNICAL REPORT, *supra* note 246 at 33.

<sup>250</sup> *Id.*

<sup>251</sup> *Id.*

<sup>252</sup> SWINOMISH CLIMATE ADAPTATION ACTION PLAN, *supra* note 247, at 14-15.

<sup>253</sup> Carson Viles, *Traditional Knowledge: First Foods and Climate Change*, NORTHERN ARIZONA UNIVERSITY (Dec. 2011),

[http://www4.nau.edu/tribalclimatechange/tribes/tdk\\_firstfoods.asp](http://www4.nau.edu/tribalclimatechange/tribes/tdk_firstfoods.asp).

<sup>254</sup> *Id.*

<sup>255</sup> *Id.*

<sup>256</sup> *Id.*

<sup>257</sup> *Id.*

<sup>258</sup> Katie Campbell & Saskia de Melker, *Northwest 'Salmon People' Face Future with Less Fish*, PBS NEWS HOUR (July 18, 2012), [http://www.pbs.org/newshour/updates/climate-change-july-dec12-swinomish\\_07-18/](http://www.pbs.org/newshour/updates/climate-change-july-dec12-swinomish_07-18/).

streams of the Northwest for survival, but the glaciers of the South Cascades are shrinking due to a rise in average annual regional temperature by 1.5 degrees Fahrenheit.<sup>259</sup> Without glaciers, which keep rivers cool throughout the year, stream temperatures rise.<sup>260</sup> Studies conducted by the University of Washington's Climate Impacts Group indicate that "by 2080, nearly half of the streams they monitor throughout the state will average weekly temperatures of at least 70 degrees," which would be deadly to adult salmon.<sup>261</sup>

Climate change has resulted in fundamental changes in the habitats of many first foods species, affecting the composition and distribution of these culturally important species.<sup>262</sup> These changes will further limit indigenous gathering rights, which are already subject to restrictions imposed by treaties and other agreements.<sup>263</sup> Climate change may alter the migration patterns and distribution of some first food species.<sup>264</sup> For instance, researchers predict that rising water temperatures will lead to a decline in the salmon populations that inhabit the rivers and streams of Puget Sound.<sup>265</sup> If these predictions are correct, these changes will have a devastating impact on the indigenous people for whom salmon is a traditional source of food.<sup>266</sup>

Indigenous tribes, such as the Swinomish Tribe, have more at stake when it comes to climate change.<sup>267</sup> For example, the Natural Resources Department of the Tulalip, another fish-dependent Pacific Northwest tribe, conveyed the following assessment of climate change impacts on the tribe's cultural integrity:

For the tribes, range shifts in native species will threaten their cultural existence. The treaty-protected rights of tribes to hunt, fish, and gather traditional resources are based on reservation locations and usual and accustomed areas on public lands. These locations are chosen to ensure access to culturally significant resources, whose locations were thought to be fixed. If the traditionally significant

<sup>259</sup> *Id.*

<sup>260</sup> *Id.*

<sup>261</sup> *Id.*

<sup>262</sup> Viles, *supra* note 253.

<sup>263</sup> *Id.*

<sup>264</sup> *Id.*

<sup>265</sup> *Id.*

<sup>266</sup> *Id.*

<sup>267</sup> NORTHWEST INDIAN APPLIED RESEARCH INSTITUTE, NORTHWEST TRIBES: MEETING THE CHALLENGE OF CLIMATE CHANGE 7 (Debra McNutt ed., 2009), <http://academic.evergreen.edu/g/grossmaz/climatechangebooklet.pdf>.



plants, animals, and aquatic species shift out of these areas, tribes will no longer have the same legal rights to them . . . . Even if rights to these species could be secured . . . use of these species will be virtually impossible . . . . Few tribes can afford to purchase large territories of new land, and federal laws prohibit the transfer or expansion of tribal jurisdiction.<sup>268</sup>

In addition, because the Native Americans of the Pacific Northwest have built their culture around salmon, rising water temperatures threaten their ability to sustain their traditional way of life.<sup>269</sup> The Swinomish reservation is located near the mouth of the Skagit River, “a waterway fed by nearly 400 glaciers and one of the last remaining homes to all five species of Pacific salmon.”<sup>270</sup> The Swinomish Tribe has been able to harvest for shellfish for centuries in shoreline areas because “fifteen percent of the reservation is at or just slightly above sea level.” However, these environmentally sensitive areas are expected to shrink because of an anticipated one-meter rise in sea level.<sup>271</sup> Unfortunately, the Swinomish cannot simply relocate, as that would be “antithetical to who they are.”<sup>272</sup> The chairman of the Swinomish Indian Tribal Community states, “[w]e are a place-based society . . . [t]his is our homeland. The Swinomish have lived here for 10,000 years. We don’t go anywhere—ever.”<sup>273</sup> In response to the experiences of other tribes that have lost their traditional food sources and homelands, the chairman led the Swinomish to become the first tribe to organize a group of scientists, the Skagit Climate Science Consortium, to devise a comprehensive climate adaptation plan.<sup>274</sup> The group’s primary goal is “strong science that focuses directly on the communities at risk and that can be used for future tribal planning.”<sup>275</sup>

The Swinomish Tribe has also expressed its concerns through various instruments regarding climate change impacts and the need to adapt to these impacts to promote the viability of the tribe’s access to salmon. Among other initiatives, the Swinomish Tribe has drafted a Swinomish Climate Change Initiative Proclamation to identify potential response strategies to

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<sup>268</sup> *Id.* at 8.

<sup>269</sup> Campbell & de Melker, *supra* note 258.

<sup>270</sup> *Id.*

<sup>271</sup> *Id.*

<sup>272</sup> *Id.*

<sup>273</sup> *Id.*

<sup>274</sup> *Id.*

<sup>275</sup> *Id.*

climate change impacts, including impacts to fish and wildlife.<sup>276</sup> Like the Jamestown S'Klallam Tribe, small-scale OIF experiments, conducted pursuant to the criteria outlined in the preceding section, could be included among the Swinomish Tribe's climate adaptation strategies to help restore its decimated salmon population.

### CONCLUSION

In its traditional form as a climate geoengineering technique, OIF represents a balance between the potential benefits of carbon sequestration as a means of mitigating climate change and the potential harm to the marine environment. An international regulatory regime is currently evolving under several international environmental treaties in an effort to regulate the trade-offs in this balancing and to determine in what manner, and to what degree, OIF experiments should be regulated.

This Article has addressed a different dimension of OIF regulation, in which the balancing shifts to indigenous peoples' right to food versus the potential harm to the marine environment. This Article has proposed that the cost-benefit evaluation in this context should yield a different outcome, provided certain limiting criteria are met. The benefits of allowing federally recognized indigenous communities with a demonstrated reliance on salmon to conduct small-scale OIF experiments are significant, while the potential environmental harm from such experimentation is minimal. Allowing federally recognized tribal communities to restore a marine resource that is necessary for their culture, subsistence, and self-determination should not be stymied by the relatively low risks associated with small-scale OIF experiments.

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<sup>276</sup> The Swinomish Indian Senate, *Proclamation of the Swinomish Indian Senate on a Swinomish Climate Change Initiative*, (Oct. 2007), [http://www.swinomish-nsn.gov/climate\\_change/Docs/Swinomish%20Climate%20Change%20Proclamation.pdf](http://www.swinomish-nsn.gov/climate_change/Docs/Swinomish%20Climate%20Change%20Proclamation.pdf).