

# **Battle Royale: The Fight over Sea Lions, Salmon, and Hydroelectric Dams in the Columbia River**

*by Catherine Danley*

*“Man selects only for his own good: Nature only for that of the being which she tends.”*

*— Charles Darwin, The Origin of Species<sup>1</sup>*

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<sup>1</sup> CHARLES DARWIN, ON THE ORIGIN OF SPECIES, 146 (Joseph Carroll ed., Broadview Press, 2003) (1859).

## I. INTRODUCTION: COMPETING SPECIES AND A STATUTORY CONFLICT

Below the massive hydroelectric facility of Bonneville Dam, California sea lions prey on endangered salmon migrating up the Columbia River.<sup>2</sup> Because the fish funnel through narrow fish ladders<sup>3</sup> to a single exit, the annual spring salmon runs become bottlenecked, creating a feasting opportunity for numerous, opportunistic sea lions each year.<sup>4</sup> The Columbia River Basin may seem a strange battleground for marine species, but this expansive river system hosts a variety of salmon runs and their accompanying predators.<sup>5</sup> In this unique conflict there are two protected species at play: California sea lions (the predator invoking the Marine Mammal Protection Act)<sup>6</sup> and salmon (the prey protected by the Endangered Species Act).<sup>7</sup>

The states of Idaho, Washington, and Oregon have confronted this dilemma and chosen to protect endangered salmon by harassing and killing the sea lions under Section 120 of the Marine Mammal Protection Act.<sup>8</sup> This controversy comes with a variety of complications: political debates erupt over retiring dams and which species warrants more protection;<sup>9</sup> analysts cite the economic importance of the fishing industry and hydropower;<sup>10</sup> and animal rights activists

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<sup>2</sup> Blair E. McCrory, *2007 Legislative Review*, 14 ANIMAL L. 265, 271–72 (2008).

<sup>3</sup> Fish ladders are detour routes for fish species to go over or around dams and other infrastructure. While designs vary, most fish ladders are narrow passages with an ascending series of pools the fish leap up one by one. See Nat'l Oceanic & Atmospheric Admin., *What Is A Fish Ladder?*, <http://oceanservice.noaa.gov/facts/fish-ladder.html>, (last updated Oct. 10, 2017); cf. John Harrison, *Fish Passage at Dams*, THE NW. POWER & CONSERVATION COUNCIL (Oct. 31, 2008), <https://www.nwcouncil.org/history/FishPassage> (discussing the historical background of fish passage over dams by way of fish ladders among other avenues).

<sup>4</sup> Humane Soc'y of U.S. v. Bryson, 924 F. Supp. 2d 1228, 1232 (D. Or. 2013).

<sup>5</sup> *Id.* at 1232–33.

<sup>6</sup> 16 U.S.C. § 1372 (2016) (prohibiting taking marine mammals); 16 U.S.C. § 1362(6) (2016) (defining marine mammal as “any mammal which (A) is morphologically adapted to the marine environment (including sea otters and members of the orders Sirenia, Pinnipedia and Cetacea)”). *Pinnipeds*, THE MARINE MAMMAL CTR., <http://www.marinemammalcenter.org/education/marine-mammal-information/pinnipeds/> (last visited Nov. 14, 2016).

<sup>7</sup> 16 U.S.C. § 1538 (2016) (prohibiting certain acts against endangered and threatened species); 50 C.F.R. § 17.11(h) (listing all currently endangered and threatened species protected by the Endangered Species Act).

<sup>8</sup> Humane Soc'y of U.S. v. Bryson, 924 F. Supp. 2d 1228, 1233 (D. Or. 2013); Thomas A. Jefferson & Barbara E. Curry, *Acoustic Methods of Reducing or Eliminating Marine Mammal-Fishery Interactions: Do They Work?* 31 OCEAN & COASTAL MGMT. 41, 52 (1996); Jessica Cheng, *One Sea Lion's Worth—Evaluating the Role of Values in Section 120*, 29 UCLA J. ENVTL. L. & POL'Y 165, 177–81 (2011).

<sup>9</sup> Cheng, *supra* note 8, at 168–69; Cassandra Profita, *Love 'Em or Hate 'Em, Sea Lions Raise Concerns on the Columbia*, OR. PUB. BROADCASTING (Apr. 26, 2015, 9:00 PM), <http://www.opb.org/news/article/sea-lions-columbia/>.

<sup>10</sup> THE NW. POWER & CONSERVATION COUNCIL, ECONOMIC EFFECTS FROM COLUMBIA RIVER BASIN ANADROMOUS SALMONID FISH PRODUCTION ES-3 (2005), [https://www.nwcouncil.org/media/30505/ieab2005\\_1.pdf](https://www.nwcouncil.org/media/30505/ieab2005_1.pdf) (noting that based on data from the early 2000s, Columbia River salmon “contribute about \$142 million total personal income

call for humane treatment of sea lions, which are killed as a result of the same Act meant to protect them.<sup>11</sup> The situation is as dire as it is controversial. While California sea lions have a healthy population of over 300,000 across the Pacific,<sup>12</sup> salmon are dwindling close to extinction, with some ancient runs at one percent of their historic size.<sup>13</sup> For example, Snake River Chinook runs exceeded 1.5 million fish per year historically, “but the average return between 1997 and 2007 was roughly 3,700, a decline of nearly 98.8%.”<sup>14</sup> Only two of the historic 23 Lower Columbia coho populations have “significant remaining natural productivity.”<sup>15</sup> Meanwhile, upper Columbia steelhead populations are so reduced that “the remaining wild fish are not producing enough surviving offspring to replace themselves.”<sup>16</sup> Even the plentiful years of 2002 and 2003, where salmon hit record high returns, owed the increased populations to favorable ocean cycles and large hatchery fish stocks.<sup>17</sup>

Although some states have applied measures to reduce sea lion predation on the salmon over the last sixteen years, most efforts to deter sea lions from the

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annually” to West Coast communities, and may support some 3,600 jobs in Oregon, Idaho, and Washington); Kevin Lillis, *The Columbia River Basin Provides More than 40% of Total U.S. Hydroelectric Generation*, U.S. ENERGY INFO. ADMIN. (June 27, 2014), <https://www.eia.gov/todayinenergy/detail.php?id=16891> (highlighting that hydroelectric plants in the Columbia River Basin “account for 29 gigawatts (GW) of hydroelectric generating capacity and contributed 44% of the total hydroelectric generation in the nation in 2012.”).

<sup>11</sup> *The Humane Society of the United States and Wild Fish Conservancy File Suit to Stop Illegal Sea Lion Killing at Bonneville Dam*, HUMANE SOC’Y OF THE U.S. NEWS (May 20, 2011), [http://www.humane.org/news/press\\_releases/2011/05/wild\\_fish\\_conservancy\\_lawsuit\\_sea\\_lions\\_bonneville\\_dam\\_052011.html](http://www.humane.org/news/press_releases/2011/05/wild_fish_conservancy_lawsuit_sea_lions_bonneville_dam_052011.html).

<sup>12</sup> Endangered Salmon Predation Prevention Act, 112 H.R. 946 § 2(6) (2011) [hereinafter *Endangered Salmon Predation Prevention Act*]; John Ritter, *Sea Lions Show Salmon What Endangered Really Is*, USA TODAY (Apr. 16, 2007), [http://usatoday30.usatoday.com/news/nation/2007-04-16-sealions\\_N.html](http://usatoday30.usatoday.com/news/nation/2007-04-16-sealions_N.html).

<sup>13</sup> Michael C. Blumm, *The Columbia River Gorge and the Development of American Natural Resources Law: A Century of Significance*, 20 N.Y.U. ENVTL. L.J. 1, 19 (2012) [hereinafter Blumm, *The Columbia River Gorge*].

<sup>14</sup> Michael C. Blumm et. al., *Practiced at the Art of Deception: The Failure of Columbia Basin Salmon Recovery Under the Endangered Species Act*, 36 ENVTL. L. 709, 720 (2006) [hereinafter Blumm, *Practiced at the Art of Deception*]; see also Laurence Michael Bogert, *The Four Governors’ Recommendations for Anadromous Fish Restoration in the Pacific Northwest: What’s So Funny ‘Bout Peace, Love and Understanding?*, 38 IDAHO L. REV. 529, 538 (2002).

<sup>15</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 722–23.

<sup>16</sup> Michael C. Blumm & Greg D. Corbin, *Symposium on Salmon Recovery: Salmon and the Endangered Species Act: Lessons From the Columbia Basin*, 74 WASH. L. REV. 519, 537–38 (1999) [hereinafter Blumm, *Symposium on Salmon Recovery*].

<sup>17</sup> The cooling ocean temperatures in 2002 and 2003 increased wild salmon stocks, but the runs still consisted of 69 percent hatchery fish. See Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 720, n.50; see also Nat’l Wildlife Fed’n v. Nat’l Marine Fisheries Serv. (*Nat’l Wildlife Fed’n I*) 184 F. Supp. 3d 861, 879 (D. Or. 2016); see also *Endangered and Threatened Species: Proposed Listing Determinations for 27 ESUs of West Coast Salmonids*, 69 Fed. Reg. 33102-01 (June 14, 2004).

Columbia River's feeding grounds have failed.<sup>18</sup> Salmon recovery is equally disappointing as efforts repeatedly fail.<sup>19</sup> Even after a decade of predator management, Bonneville Dam remains the freshwater battleground between these two marine species. However, the key to this conflict is scale, because sea lion predation is only one of many adverse impacts on endangered salmonids.<sup>20</sup> To protect salmon and ease the conflict between natural predator and prey, states and federal agencies must mitigate all threats to salmon, especially the dams.

Part I of this comment covers the development of this statutory conflict, specifically how salmon populations declined and why California sea lions are a threat to salmonid species. Part II outlines applications of the Endangered Species Act, including recent court decisions over Biological Opinions and jeopardizing impacts on salmon species, as well as failed recovery efforts. Part III addresses the Marine Mammal Protection Act, the development of Section 120, and the efficacy of Section 120's lethal pinniped removals. Finally, Part IV provides potential alternatives to recover salmon populations and mitigate adverse impacts on endangered salmon. It concludes that by focusing primarily on the minor impact of sea lion predation, states and federal agencies have failed to address the cumulative effects on salmon runs across the Columbia River Basin.

## II. THE CREATION OF A CONFLICT: HOW THE COLUMBIA RIVER BECAME A BATTLEGROUND

The Columbia River Basin stretches across Washington, Oregon, Idaho, Montana, Wyoming, Nevada, and Canada, ultimately flowing 1200 miles from its Canadian headwaters to the Pacific Ocean.<sup>21</sup> The river system is not only vast, but powerful: "its average annual streamflow is twice that of the Nile River and ten times greater than that of the Colorado River."<sup>22</sup> Historically, the Columbia River was well known for its dangerous course<sup>23</sup> and its abundant

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<sup>18</sup> Ritter, *supra* note 12; Cheng, *supra* note 8, at 169–70.

<sup>19</sup> *Nat'l Wildlife Fed'n I*, 184 F. Supp. 3d 861, 876 (D. Or. 2016); Michael C. Blumm, *Saving Snake River Water and Salmon Simultaneously: The Biological, Economic, and Legal Case for Breaching the Lower Snake River Dams, Lowering John Day Reservoir, and Restoring Natural River*, 28 ENVTL. L. 997, 1048 (1998) [hereinafter Blumm, *Saving Snake River Water*]; Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 727, n.197.

<sup>20</sup> See Cheng, *supra* note 8, at 168–69; Profita, *supra* note 9; Mary Christina Wood, *Reclaiming the Natural Rivers: The Endangered Species Act as Applied to Endangered River Ecosystems*, 40 ARIZ. L. REV. 197, 219–20 (1998).

<sup>21</sup> Wood, *supra* note 20, at 204.

<sup>22</sup> *Id.* (The various rivers within this system are each unique and powerful in their own right. For example, "its major tributary, the Snake River, has an average flow of 56,900 cubic feet per second.").

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

salmon runs, once the largest in the world.<sup>24</sup> As Lewis and Clark navigated the Columbia River, Lewis wrote, “the multitudes of this fish are almost inconceivable.”<sup>25</sup> As an abundant, vital resource to the historic peoples of the Pacific Northwest, salmon developed both a cultural and spiritual significance.<sup>26</sup> To this day, salmon are sacred to many Native American tribes and are used in weddings, funerals, celebrations, and ceremonies.<sup>27</sup>

However, nineteenth-century explorers’ journals show that pinnipeds also swam up the historic, wild Columbia in pursuit of migratory fish species. On October 23, 1805, Lewis and Clark witnessed “great numbers” of seals at Celilo Falls.<sup>28</sup> About twenty years later, explorer John Kirk Townsend wrote, “We see great numbers of seals as we pass along. Immediately below the Dalles they are particularly abundant, being attracted thither by the vast shoals of salmon which seek the turbulent water of the river.”<sup>29</sup> Thus, salmon and sea lions co-existed historically.

Declines in salmon runs began in the Columbia only after infrastructure altered the river.<sup>30</sup> Years before hydroelectric dam construction, early salmon canneries changed the Columbia as they implemented fish wheels that

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<sup>24</sup> Michael C. Blumm & Aurora Paulsen, *The Role of the Judge in ESA Implementation: District Judge James Redden and the Columbia Basin Salmon Saga*, 32 STAN. ENVTL. L.J. 87, 92 (2013).

<sup>25</sup> MERIWETHER LEWIS, HISTORY OF THE EXPEDITION UNDER THE COMMAND OF CAPTAINS LEWIS AND CLARK VOLUME II, 14–15 (Firework Press, 2015) (1814).

<sup>26</sup> “Columbia River salmon are the signature species of the Northwest, a powerful symbol of the rich ecological and cultural heritage of the region.” Wood, *supra* note 20, at 218. They were the “primary staple of subsistence” to native populations, and “absolutely essential to [tribes’] survival.” *Id.* at 206.

<sup>27</sup> Ritter, *supra* note 13.

<sup>28</sup> Although Clark originally called these mammals “sea otters” in his journal entry, Native Americans later explained to Lewis and Clark that they observed seals, not sea otters. Lewis wrote, “the seal are found here in great numbers, and as far up the Columbia river as the great falls [Celilo Falls] above which there are none. I have reason to beleive [*sic*] from the information of the men that there are several species of the seal on this coast and in the river but what the difference is I am unable to state not having seen them myself sufficiently near for minute inspection nor obtained the different kinds to make a comparison. the skins of such as I have seen are covered with a short coarse stiff and glossey [*sic*] hair of a redish bey [*sic*] brown colour. [*sic*] tho’ the anamal [*sic*] while in the water or as we saw them frequently in the river appear to be black and spotted [*sic*] with white sometimes. When we first saw those animals at the great falls and untill [*sic*] our arrival at this place we conseived [*sic*] they were the Sea Otter. But the indians [*sic*] here have undeceived us.” MERIWETHER LEWIS & WILLIAM CLARK, THE JOURNALS OF THE LEWIS AND CLARK EXPEDITION, Feb. 23, 1806, *available at* <https://lewisandclarkjournals.unl.edu/item/lc.jrn.1806-02-23#lc.jrn.1806-02-23.01>; MERIWETHER LEWIS & WILLIAM CLARK, THE JOURNALS OF THE LEWIS AND CLARK EXPEDITION, Oct. 23, 1805 *available at* [http://lewisandclarkjournals.unl.edu/read/?\\_xmlsrc=1805-10-23&\\_xslsrc=LCstyles.xsl](http://lewisandclarkjournals.unl.edu/read/?_xmlsrc=1805-10-23&_xslsrc=LCstyles.xsl).

<sup>29</sup> JOHN KIRK TOWNSEND, NARRATIVE OF A JOURNEY ACROSS THE ROCKY MOUNTAINS TO THE COLUMBIA RIVER, 252–53 (Oregon State University Press, 1978).

<sup>30</sup> Wood, *supra* note 20, at 206–11.

“[scooped] salmon from the river continuously.”<sup>31</sup> Meanwhile, canals and infrastructure constructed to improve navigation changed the river itself, transforming a once dangerous course into a series of lakes.<sup>32</sup> Consequently, this destruction of salmon habitat and a “corresponding decline of the fishery led to the first hatchery in the Basin in 1877.”<sup>33</sup>

Construction on the Columbia continued in the early twentieth century as dam development became the method “to transform rivers into engines of economic growth.”<sup>34</sup> The 1930s New Deal programs created Bonneville Dam, which transformed the Columbia “into the largest interconnected hydroelectric system in the world.”<sup>35</sup> Under the 1937 Bonneville Project Act,<sup>36</sup> Congress created the Bonneville Power Administration (BPA) to market electricity from the dam and “eventually [from] all of the thirty-one federal dams in the Columbia Basin.”<sup>37</sup> Despite congressional authority to market electricity, the BPA had no authority to construct power plants.<sup>38</sup> That authority remained with the U.S. Army Corps of Engineers and the Bureau of Reclamation, and these “institutional arrangements” developed into the Federal Columbia River Power System (FCRPS).<sup>39</sup> The FCRPS now consists of 14 sets of dams, powerhouses, and reservoirs, and its purpose is to provide flood control, navigation, hydropower, and irrigation to the region.<sup>40</sup> Today, the BPA, U.S. Army Corps of Engineers, and Bureau of Reclamation are agencies that control the operations of the various Columbia River Basin hydroelectric projects, while the National Marine Fisheries Service (NMFS) holds responsibility for the salmon under the Endangered Species Act.<sup>41</sup>

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<sup>31</sup> Katrine Barber, *Celilo Falls*, THE OREGON ENCYCLOPEDIA, [https://oregonencyclopedia.org/articles/celilo\\_falls/#.V9lqqmVrLFI](https://oregonencyclopedia.org/articles/celilo_falls/#.V9lqqmVrLFI) (last updated Sept. 26, 2017).

<sup>32</sup> *Id.*; Wood, *supra* note 20, at 204, 219.

<sup>33</sup> Barbara Cosens & Alexander Fremier, *Assessing System Resilience and Ecosystem Services in Larger River Basins: A Case Study of the Columbia River Basin*, 51 IDAHO L. REV. 92, 107 (2014).

<sup>34</sup> *Id.* at 108 (citing Jeremy Mouat, *The Columbia Exchange: A Canadian Perspective on the Negotiation of the Columbia River Treaty, 1944–1964*, in THE COLUMBIA RIVER TREATY REVISITED: TRANSBOUNDARY RIVER GOVERNANCE IN THE FACE OF UNCERTAINTY 15 (Barbara Cosens ed., 2012)).

<sup>35</sup> Blumm, *The Columbia River Gorge*, *supra* note 13, at 6; Blumm & Paulsen, *supra* note 24, at 93; John Harrison, *Bonneville Power Administration: History*, THE NW. POWER & CONSERVATION COUNCIL (Oct. 31, 2008), <https://www.nwcouncil.org/history/BPAHistory> (last visited Nov. 30, 2017).

<sup>36</sup> 16 U.S.C. § 832 (2016).

<sup>37</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at n.8; Blumm, *The Columbia River Gorge*, *supra* note 13, at 7.

<sup>38</sup> Blumm, *The Columbia River Gorge*, *supra* note 13, at 78.

<sup>39</sup> *Id.*

<sup>40</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at n.8.

<sup>41</sup> Blumm & Paulsen, *The Role of the Judge*, *supra* note 24, at 100; *see also* 50 C.F.R. § 402.01 (2016); 50 C.F.R. § 222.23(a) (2016); 50 C.F.R. § 227.4 (2016); Interagency Cooperation—Endangered Species Act of 1973, as Amended; Final Rule, 51 Fed. Reg. 19926-

By 1937, adult salmon were climbing narrow fish ladders toward their historic spawning grounds across the Columbia,<sup>42</sup> and by the 1960s dams without fish passage “blocked salmon from forty percent of their former habitat.”<sup>43</sup> With dam construction taking over the river, and electricity demands spiking in the 1960s and 1970s, salmon stocks declined precipitously, leading to their eventual placement on the endangered species list.<sup>44</sup> In comparison, the California sea lion population grew from several thousand in 1972 to over 300,000 today,<sup>45</sup> transforming the species from an endangered competitor to an overabundant predator. Although sea lions are recently responsible for salmon takings, hydroelectric facilities are the primary threat to salmonids. Dams drove salmon to the edge of extinction long before sea lions posed a contemporary threat to the fishes’ survival.<sup>46</sup>

### III. SALMON AND THE ENDANGERED SPECIES ACT

Congress enacted both the Endangered Species Act (1973) and the Marine Mammal Protection Act (1972) during President Nixon’s administration in the early 1970s, a time of increasing environmental awareness and alarm, to protect species from extinction.<sup>47</sup> Although President Nixon gained a reputation for his

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01 (proposed June 3, 1986) (to be codified at 50 C.F.R. pt. 402).

<sup>42</sup> Salmon decline was an earnest concern even before dam construction began in 1933, but fears escalated as the runs continued to deteriorate over the course of the twentieth century. Harrison, *Fish Passage at Dams*, *supra* note 3. The U.S. Army Corps of Engineers deserves credit for installing more expensive and efficient fish ladders when cheaper options—like a fish elevator or wooden fish ladder—were available and when other dams opted against any fish passage at all. *Id.*

<sup>43</sup> Cosens & Fremier, *supra* note 33, at 110.

<sup>44</sup> Blumm, *The Columbia River Gorge*, *supra* note 13, at 8–9.

<sup>45</sup> Endangered Salmon Predation Prevention Act, *supra* note 12, at 1; Ritter, *supra* note 12; Alastair Bland, *California Sea Lions Are Starving, But Do They Need Our Help?*, SMITHSONIAN MAGAZINE (Apr. 2, 2015), <http://www.smithsonianmag.com/science-nature/california-sea-lions-are-starving-rescue-need-help-180954833/?no-ist>. (last visited Nov. 14, 2016).

<sup>46</sup> Dams have the potential to kill over ninety percent of salmon smolts swimming downstream through a variety of means, including spinning turbines, blocked passage, decreased habitat, misshapen ecosystems, warmer water temperatures, and altered flow. Profita, *supra* note 9. “The salmon populations were going extinct when there were no sea lions in the river back in the ‘80s,” Ninette Jones of the Sea Lion Defense Brigade told Oregon Public Broadcasting. *Id.* “So to draw the connection that the sea lions are causing the extinction of salmon it’s basically scapegoating but it’s not going to address the real cause of the extinction of salmon. Even if they killed all the sea lions it’s not going to save the salmon.” *Id.*; see also Wood, *supra* note 20, at 220; John Harrison, *Dams: Impacts on Salmon and Steelhead*, THE NW. POWER & CONSERVATION COUNCIL (Oct. 31, 2008), <http://www.nwcouncil.org/history/damsimpacts>.

<sup>47</sup> See C.M. Cameron Lynch, *Environmental Awareness and the New Republican Party: The Re-Greening of the GOP?*, 26 WM. & MARY ENVTL. L. & POL’Y REV. 215, 218 (2001); see also *Tennessee Valley Auth. v. Hill*, 437 U.S. 153, 176–77 (1978); H.R. REP. NO. 92-707, at 4144–45 (1971).



industrial focus, he “was the first modern-era president willing to address environmental issues from a regulatory standpoint.”<sup>48</sup> During his presidency – and following the “mounting environmental concerns” of the 1960s – the federal government established the Council on Environmental Quality and the Environmental Protection Agency, and it enacted several early environmental statutes, including the Endangered Species Act.<sup>49</sup>

#### A. Overview of the Endangered Species Act

The U.S. Supreme Court described the 1973 Endangered Species Act (ESA) as “the most comprehensive legislation for the preservation of endangered species ever enacted by any nation.”<sup>50</sup> Today, the ESA remains a highly protective statute containing detailed procedures and scientific study requirements to preserve species and biological diversity.<sup>51</sup> Congress recognized the importance of protecting species because they provide biodiversity and a genetic heritage whose value “is, quite literally, incalculable.”<sup>52</sup>

Although the Act prohibits economic considerations in decisions on whether to list species, and the Supreme Court has stated that species deserve protection, “whatever the cost,” money and politics often linger in the background of ESA disputes.<sup>53</sup> Whether expenses stem from halted dam construction or protective regulations over fish, no cost should trump the incalculable value of genetic diversity. As Congress explained,

It is in the best interests of mankind to minimize the losses of genetic variations. The reason is simple: they are potential resources. They are keys to puzzles which we cannot solve, and may provide answers to questions which we have not yet learned to ask. . . . Who knows, or can say, what potential cures for cancer or other scourges, present or future, may lie locked up in the structures of plants which may yet be undiscovered, much less analyzed? More to the point, who is prepared to risk being those potential cures by eliminating those plants for all time? Sheer self-interest

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<sup>48</sup> Lynch, *supra* note 47, at 220.

<sup>49</sup> *Id.* at 218–19.

<sup>50</sup> *Hill*, 437 U.S. at 180.

<sup>51</sup> See 16 U.S.C. § 1533 (2016).

<sup>52</sup> H.R. REP. NO. 93-412, at 143 (1973).

<sup>53</sup> See *Hill*, 437 U.S. at 184 (“The plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost.”); Erica Goode, *A Shifting Approach to Saving Endangered Species*, N.Y. TIMES (Oct. 5, 2015), <http://www.nytimes.com/2015/10/06/science/a-shifting-approach-to-saving-endangered-species.html> (last visited Nov. 14, 2016) (“The law has become a partisan battleground, with fights over a variety of species, including the spotted owl, whose protection collided with the aims of the timber industry in the 1990s.”).



impels us to be cautious.<sup>54</sup>

Although anthropocentric, this foundation established the ESA as a statutory shield to guard threatened and endangered species at land and sea.<sup>55</sup>

However, a species cannot receive the ESA's protections unless it is listed as endangered or threatened.<sup>56</sup> An endangered species is one "in danger of extinction throughout all or a significant portion of its range," while a threatened species is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."<sup>57</sup> Either the U.S. Fish and Wildlife Service (generally for terrestrial species) or National Marine Fisheries Service (generally for marine species) act as consulting agencies to evaluate a species for potential ESA listing.<sup>58</sup> These consulting agencies must use only the "best scientific and commercial data available" and rely on the following five factors: A) habitat destruction or modification, B) species overutilization, C) disease or predation, D) inadequate regulations, or E) other natural or manmade factors affecting the species.<sup>59</sup> If an agency does not list a species, the ESA provides a citizen suit provision and citizen petition process, which can force the agency to make an official determination on whether a species deserves the Act's protections.<sup>60</sup>

Section 7 of the ESA governs the federal agency actions involved at Bonneville Dam and requires these acting agencies to "insure that any action authorized, funded, or carried out by such agency. . . is not likely to jeopardize the continued existence of any endangered species."<sup>61</sup> This mandate contains both a procedural and substantive component. Procedurally, it requires acting agencies to properly consult with one of the ESA's expert agencies; substantively, there is a duty to "insure" species are not jeopardized.<sup>62</sup> Because NMFS is responsible for anadromous fish, it is the consulting agency for

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<sup>54</sup> H.R. REP. NO. 93-412, at 144 (1973).

<sup>55</sup> See 16 U.S.C. § 1538(a)(1).

<sup>56</sup> Daniel J. Rohlf, *Pacific Salmon: There's Something Fishy Going on Here: A Critique of the National Marine Fisheries Service's Definition of Species Under the Endangered Species Act*, 24 ENVTL. L. 617, 619 (1994).

<sup>57</sup> 16 U.S.C. § 1532(6) (2016) (defining endangered); 16 U.S.C. § 1532(20) (2016) (defining threatened).

<sup>58</sup> 50 C.F.R. § 402.01 (2016); 51 Fed. Reg. 19926-01 (2016) (proposed June 3, 1986) (to be codified at 50 C.F.R. pt. 402) ("Generally, marine species are under the jurisdiction of the Secretary of Commerce and all other species are under the jurisdiction of the Secretary of the Interior.").

<sup>59</sup> 16 U.S.C. § 1533(a)(1) (2016); 16 U.S.C. § 1533(b)(1)(A) (2016).

<sup>60</sup> 16 U.S.C. § 1540(g) (2016).

<sup>61</sup> 16 U.S.C. § 1536(a)(2) (2016); see also *Nat'l Wildlife Fed'n I*, 184 F. Supp. 3d at 877. In addition to section 7, section 9 of the ESA prohibits any person from taking an endangered species. 16 U.S.C. § 1536 (2016); 16 U.S.C. § 1538 (2016). Together, these two sections bar both private and public takings. *Id.*

<sup>62</sup> 16 U.S.C. § 1536(a)(2) (2016); Wood, *supra* note 20, at 253–54.

potential salmon listings and the expert agency for Biological Opinions.<sup>63</sup> Biological Opinions report the effects of an agency's actions on listed species and the expert agency's opinion "on whether the action is likely to jeopardize the continued existence of a listed species"<sup>64</sup> Accordingly, under the ESA, NMFS "bear[s] primary responsibility for carrying out Congress' policies concerning protection of endangered species in a manner which reflects current biological knowledge."<sup>65</sup> As the consulting agency for salmonids and other anadromous fish, NMFS must evaluate "the current status of the listed species or critical habitat, the effects of the [acting agency's] action, and cumulative effects."<sup>66</sup> If the consulting agency determines that actions may jeopardize the endangered species, "the action must be modified."<sup>67</sup>

### B. *Salmon Listings Under the Endangered Species Act*

NMFS and the U.S. Fish and Wildlife Service reviewed salmon populations for potential ESA listings as early as 1978, but passage of the Northwest Power Act<sup>68</sup> stalled listing efforts because the Services believed that the Act would improve the salmon runs.<sup>69</sup> The Act was a mitigation attempt to balance species protection with hydropower, but its conservation failures led frustrated citizens to take action to protect salmon runs.<sup>70</sup> Petitions by the Shoshone-Bannock Tribe led to the 1991 listing of Snake River sockeye salmon, the first Pacific salmon species listed under the ESA,<sup>71</sup> and additional listings quickly followed: Snake

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<sup>63</sup> Interagency Cooperation—Endangered Species Act of 1973, as Amended, Final Rule, 51 Fed. Reg. 19,926-01 (June 3, 1986).

<sup>64</sup> See 50 C.F.R. § 402.14(h)(2)–(3); see also 16 U.S.C. § 1536(b)(3)(A) (2016). Acting agencies complete Biological Assessments while expert agencies complete Biological Opinions. Biological Assessments are investigations using the "best scientific and commercial data available" to determine whether actions will adversely affect species listed under the ESA. Indications that adverse effects are unlikely still require an Incidental Take Statement if any takings could occur, but if the agency finds likely adverse effects it must consult with NMFS for a Biological Opinion on those effects. Like preceding assessments, Biological Opinions must rely on the best science available, and should ensure protective compliance with the ESA. Because they are considered final agency actions, Biological Opinions are subject to judicial review. 16 U.S.C. § 1536(c) (2016); *Bennett v. Spear*, 520 U.S. 154, 175 (1997); *Nat'l Wildlife Fed'n I*, 184 F. Supp. 3d at 878; Blumm & Paulsen, *supra* note 24, at 100–01.

<sup>65</sup> Rohlf, *supra* note 56, at 625.

<sup>66</sup> *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv. (Nat'l Wildlife Fed'n II)*, 524 F.3d 917, 924 (9th Cir. 2008); 50 C.F.R. § 402.14(g)(2)–(3) (2016).

<sup>67</sup> *Nat'l Wildlife Fed'n II*, 524 F.3d at 925.

<sup>68</sup> 16 U.S.C. § 839 (2016).

<sup>69</sup> Blumm, *Symposium on Salmon Recovery*, *supra* note 16, at 526; see also John Harrison, *Endangered Species Act and Columbia River Salmon and Steelhead* (Nov. 22, 2011), <http://www.nwcouncil.org/history/endangeredspeciesact>.

<sup>70</sup> Blumm, *Symposium on Salmon Recovery*, *supra* note 16, at 526; Cosens & Fremier, *supra* note 33, at 111.

<sup>71</sup> Blumm & Paulsen, *supra* note 24, at n.57; Harrison, *Endangered Species Act and Columbia River Salmon and Steelhead*, *supra* note 69.

River Chinook (1992), Snake River Steelhead (1997), Lower Columbia steelhead (1999), Columbia River chum (1999), and several more.<sup>72</sup> Today, multiple species of Chinook, chum, coho, and steelhead salmonids of the Columbia River, as well as Snake River sockeye salmon, are listed as either endangered or threatened<sup>73</sup> (see Figure A below).

Hydroelectric infrastructure erected throughout the twentieth century caused most of the salmonid species declines across the Columbia River Basin,<sup>74</sup> with the FCRPS triggering abrupt population declines as early as the 1940s.<sup>75</sup> Consequently, the dams and the FCRPS continue to receive major scrutiny under the ESA, especially in connection with NMFS's Biological Opinions for the hydroelectric system.<sup>76</sup> In multiple cases, the U.S. District Court for the District of Oregon has recognized the dams' destructive effects on salmon runs and their potential to further jeopardize the species.<sup>77</sup> To combat the dams' adverse impacts on runs, the Oregon District Court rejected NMFS's Biological Opinions for FCRPS operations from 2000-2016 and demanded greater protection for salmon.<sup>78</sup> By rejecting the 2000, 2004, 2008, and 2010 Biological Opinions, Judge Redden "became the most influential participant in the saga of salmon protection efforts during the first years of the 21st century."<sup>79</sup>

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<sup>72</sup> Harrison, *Endangered Species Act and Columbia River Salmon and Steelhead*, *supra* note 69.

<sup>73</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 716-17; FED. COLUMBIA RIVER POWER SYS., FCRPS BiOP 2014 ANNUAL PROGRESS REPORT – SECTION 1, 3 (Sept. 2015), [https://www.salmonrecovery.gov/doc/default-source/default-document-library/2014-apr\\_section-1\\_9-30-15\\_final.pdf](https://www.salmonrecovery.gov/doc/default-source/default-document-library/2014-apr_section-1_9-30-15_final.pdf). For a current list of endangered and threatened salmon species see *Endangered and Threatened Marine Species Under NMFS' Jurisdiction*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., <http://www.nmfs.noaa.gov/pr/species/esa/listed.htm#fish> (last updated Sept. 19, 2017).

<sup>74</sup> See Wood, *supra* note 20, at 220; see also Profita, *supra* note 9; Harrison, *Dams: Impacts on Salmon and Steelhead*, *supra* note 46.

<sup>75</sup> Blumm, *The Columbia River Gorge*, *supra* note 13, at 8-9; Harrison, *Endangered Species Act and Columbia River Salmon and Steelhead*, *supra* note 69; Harrison, *Dams: Impacts on Salmon and Steelhead*, *supra* note 46.

<sup>76</sup> See *Nat'l Wildlife Fed'n I*, 184 F. Supp. 3d at 869-72 (detailing the litigation history under Judge Redden).

<sup>77</sup> *Id.*

<sup>78</sup> *Id.*

<sup>79</sup> Blumm & Paulsen, *supra* note 24, at 101.

**Figure A. Salmonids and Dams of the Columbia River Basin<sup>80</sup>**

While deference to federal agencies led other judges to uphold earlier Biological Opinions,<sup>81</sup> Judges Marsh and Redden scrutinized the “improper” jeopardy standards and vague mitigation plans of NMFS’s Biological Opinions.<sup>82</sup> In his rejection of the 1993 Biological Opinion for Snake River salmon, the first Biological Opinion relating to FCRPS operations,<sup>83</sup> Judge Marsh expressed grave concerns over hydro-facility impacts on salmon and the lack of change from agencies.<sup>84</sup> He wrote:

the process is seriously, “significantly,” flawed because it is too heavily geared towards a status quo that has allowed all forms of river activity to proceed in a deficit situation—that is, relatively small steps, minor improvements and adjustments—*when the situation literally cries out for a major overhaul*. Instead of looking for what can be done to protect the species from jeopardy, NMFS and the action agencies have narrowly focused their attention on what the establishment is capable of handling with minimal disruption.<sup>85</sup>

Several years later, Judge Redden held the 2000 Biological Opinion unlawful because it depended on unreliable mitigation practices.<sup>86</sup> He directed NMFS to issue a new Biological Opinion by 2004 “that addressed and cured these deficiencies.”<sup>87</sup> Judge Redden similarly struck down the 2004, 2008, and 2010

<sup>80</sup> FCRPS BIOP 2014 ANNUAL PROGRESS REPORT, *supra* note 73, at 3.

<sup>81</sup> See Blumm & Paulsen, *supra* note 24, at 110–11; see also, Wood, *supra* note 20, at 252–55 (on the deference principle).

<sup>82</sup> See *Idaho Dep’t of Fish & Game v. Nat’l Marine Fisheries Serv.*, 850 F. Supp. 886, 899 (D. Or. 1994); *Nat’l Wildlife Fed’n I*, 184 F. Supp. 3d at 949. See also *Nat’l Wildlife Fed’n v. Nat’l Marine Fisheries Serv. (Nat’l Wildlife Fed’n III)*, 839 F. Supp. 2d 1117, 1121 (D. Or. 2011); *Nat’l Wildlife Fed’n II*, 524 F.3d at 925–27.

<sup>83</sup> *Nat’l Wildlife Fed’n I*, 184 F. Supp. 3d at 869.

<sup>84</sup> *Idaho Dep’t of Fish & Game*, 850 F. Supp. at 900.

<sup>85</sup> *Id.* (emphasis added).

<sup>86</sup> *Nat’l Wildlife Fed’n I*, 184 F. Supp. 3d at 870.

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

Biological Opinions,<sup>88</sup> reminding NMFS repeatedly that “there is ample evidence in the record that indicates that the operation of the FCRPS causes substantial harm to listed salmonids.”<sup>89</sup> In his last opinion on the Biological Opinions, Judge Redden even instructed NMFS to consider “whether more aggressive action, such as dam removal and/or additional flow augmentation and reservoir modifications are necessary [sic] to avoid jeopardy.”<sup>90</sup>

After Redden’s retirement in 2011, Judge Michael H. Simon of the Oregon District Court took on the NMFS Biological Opinion cases and followed Redden’s precedent.<sup>91</sup> In May 2016 he rejected the 2014 Biological Opinion because NMFS once again acted arbitrarily and capriciously.<sup>92</sup> Like Judges Marsh and Redden before him, Judge Simon conveyed his frustration with the agencies’ failure to impose stricter standards:

For more than 20 years. . . the federal agencies have ignored these admonishments and have continued to focus essentially on the same approach to saving the listed species—hydro-mitigation efforts that minimize the effect on hydropower generation operations with a predominant focus on habitat restoration. These efforts have already cost billions of dollars, yet they are failing. Many populations of the listed species continue to be in a perilous state. The 2014 BiOp [Biological Opinion] continues down the same well-worn and legally insufficient path taken during the last 20 years.<sup>93</sup>

Thus, over the last 16 years NMFS’s Biological Opinions have failed and were deemed unlawful, arbitrary, and capricious while salmon stocks remained in a perilous state.<sup>94</sup> Recent data reveal that 65% of salmonid populations are at a “high risk” of extinction, 28.5% are at a “maintained” risk of extinction, 4%

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

<sup>89</sup> *Nat'l Wildlife Fed'n III*, 839 F. Supp. 2d at 1131.

<sup>90</sup> *Id.* at 1130.

<sup>91</sup> *See Nat'l Wildlife Fed'n I*, 184 F. Supp. 3d at 870.

<sup>92</sup> *Id.* at 872.

<sup>93</sup> *Id.* at 876. The 2014 Biological Opinion, the most recent as of this writing, was unlawful because its “trending toward recovery” standard did not consider population goals or the minimum viable abundance of species. *Id.* at 61–62. Under this standard a population could trend toward recovery as long as all the recovery metric were greater than 1.0, meaning almost any increase, even only a few fish, would deem dangerously low populations “not to be in jeopardy.” *Id.*

<sup>94</sup> *Id.* at 881–82, 949. As of 2016, there were 13 species listed under the ESA and all were affected by FCRPS operations. *Id.* at 870, 879. They include: “(1) Snake River fall Chinook salmon; (2) Snake River spring/summer Chinook salmon; (3) Snake River steelhead; (4) Upper Columbia River spring Chinook salmon; (5) Upper Columbia River steelhead; (6) Middle Columbia River steelhead; (7) Snake River sockeye salmon; (8) Columbia River chum salmon; (9) Lower Columbia River Chinook salmon; (10) Lower Columbia River coho salmon; (11) Lower Columbia River steelhead; (12) Upper Willamette River Chinook salmon; and (13) Upper Willamette River steelhead.” *Id.*; *See also* FCRPS BiOp 2014 ANNUAL PROGRESS REPORT, *supra* note 73, at 3.

are “viable,” and 2.5% are “highly viable.”<sup>95</sup> As Biological Opinions continue to “minimize the effect on hydropower generation,”<sup>96</sup> salmon populations continue to decline.<sup>97</sup> While prowling sea lions below Bonneville put salmon at even greater risk, focusing on sea lion predation centers the conflict on a relatively minor issue, when dams have historically been the main culprit in the salmon species’ decline.<sup>98</sup>

### C. *The Endangered Species Act and Salmon Recovery Efforts*

Thus far, salmon recovery efforts have been slow and disappointing, especially as bureaucratic frameworks strive to maintain the status quo.<sup>99</sup> Despite the U.S. Supreme Court’s holding that the ESA requires all federal agencies “to halt and reverse the trend toward species extinction, whatever the cost,”<sup>100</sup> economics and politics often dictate salmon recovery efforts in a variety of ways.<sup>101</sup> Mitigation efforts, including fish passage at the dams, fishing restrictions, spill, trucking, and hatcheries, are in place,<sup>102</sup> but they tend to provide minimal protections.

Fish passage and fishing restriction are two examples of mitigation efforts that reduce salmon mortality but cannot, by themselves, recover populations to healthy levels. Fish passage goals have improved in recent years: between 93% to 96% for adults migrating upstream, and between 86% to 99% for juvenile smolts heading downstream.<sup>103</sup> However, while these percentages appear high, it is important to remember how many dams salmon migrate through. For example,

if 100 Upper Snake River salmon migrate downstream, with an expected

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<sup>95</sup> *Nat’l Wildlife Fed’n I*, 184 F. Supp. 3d at 879–80; Blumm, *The Columbia River Gorge*, *supra* note 13, at 19; *see also* Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 720.

<sup>96</sup> *Nat’l Wildlife Fed’n I*, 184 F. Supp. 3d at 876.

<sup>97</sup> *Id.* at 879–80.

<sup>98</sup> Profita, *supra* note 9; *see also* Wood, *supra* note 20, at 220.

<sup>99</sup> Wood, *supra* note 20, at 251–52; Blumm, *The Columbia River Gorge*, *supra* note 13, at 19–20.

<sup>100</sup> *Tennessee Valley Auth. v. Hill*, 437 U.S. 153, 184–85 (1978) (stating that this was Congress’s unequivocal intent, as discerned from the language of the Act, its stated policies, and its legislative history).

<sup>101</sup> Goode, *supra* note 53 (“[T]he law has become a partisan battleground, with fights over a variety of species, including the spotted owl, whose protection collided with the aims of the timber industry in the 1990s.”).

<sup>102</sup> BONNEVILLE POWER ADMIN., COLUMBIA RIVER HATCHERIES: AN EVOLVING ROLE 1-2, 4 (Sept. 2010), <https://www.salmonrecovery.gov/Files/Hatchery/Columbia%20River%20Hatcheries%20-%20Sept%202010.pdf>.

<sup>103</sup> BONNEVILLE POWER ADMIN., COLUMBIA BASIN SALMON AND STEELHEAD: MANY ROUTES TO THE OCEAN 2 (June 2013), <https://www.bpa.gov/news/pubs/FactSheets/fs-201306-Columbia-Basin-salmon-and-steelhead-many-routes-to-the-ocean.pdf> [hereinafter BPA, MANY ROUTES TO THE OCEAN].

80% passage rate at each dam, 80 fish would survive the first dam, 64 salmon would make it through the second dam, and so forth. Since some Snake River salmon must pass eight dams during their migration, only approximately 13 salmon would actually complete the migration. Upper Columbia River runs pass through nine dams, so below Bonneville Dam about 11 salmon would survive.<sup>104</sup>

Thus, even with excellent fish passage rates, salmon mortality remains high.

Likewise, fishing restrictions meant to protect endangered salmonids often fail because salmon are so commercially viable and culturally desirable that “competing claims of commercial, recreational, and native fisheries” ensure annual harvests.<sup>105</sup> Each year, commercial and recreational fishermen take between 5.5% and 17% of listed salmonids.<sup>106</sup> In addition, many fishers detest regulations such as capped harvests, gear restrictions, and closed areas,<sup>107</sup> and some tribal fishers outright refuse to restrict their salmon harvests.<sup>108</sup>

Accordingly, recovery efforts that improve river quality, flow, and habitat conditions for migrating salmon are essential.<sup>109</sup> Spill is “the diversion of water around hydroelectric projects rather than through the power generating turbines,” achieved by releasing large volumes of water through spillway gates.<sup>110</sup> It is the safest way for juvenile smolts to progress downstream because they can pass through the dams without navigating through the turbines.<sup>111</sup>

However, there are two main drawbacks to spill: it is expensive and it interferes with salmon migration patterns. First, spill causes lost revenue because “it reduces the amount of power the river can generate.”<sup>112</sup> For example,

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<sup>104</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at n.197.

<sup>105</sup> Karol de Zwager Brown, *Truce in the Salmon War: Alternatives for the Pacific Salmon Treaty*, 74 WASH. L. REV. 605, 609 (1999). Estimates place both recreational and commercial salmon values between “\$108 million and \$396 million per year.” *Id.* at 610–11.

<sup>106</sup> *Humane Soc’y of U.S. v. Locke*, 626 F.3d 1040, 1045 (9th Cir. 2010).

<sup>107</sup> Eric Mortenson, *Astoria Gillnetters, Recreational Anglers Renew Battle*, THE DAILY ASTORIAN (Nov. 10, 2016, 9:23 AM), <http://www.dailyastorian.com/da/capital-bureau/20161110/astoria-gillnetters-recreational-anglers-renew-battle>.

<sup>108</sup> Blumm, *Symposium on Salmon Recovery*, *supra* note 16, at 609, 626, 647; Rollie Wilson, *Removing Dam Development to Recover Columbia Basin Treaty Protected Salmon Economies*, 24 AM. INDIAN L. REV. 357, 362 (1999) (Salmon fishing “has always been the foundation of the Tribes’ economic structure” and a primary treaty right for Native American tribes.).

<sup>109</sup> See Blumm, *Saving Snake River Water*, *supra* note 19, at 1024; see also Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 732; see also Melissa Powers, *Spirit of the Salmon: How the Tribal Restoration Plan Could Restore Columbia Basin Salmon*, 30 ENVTL. L. 867, 880–81 (2000).

<sup>110</sup> Bogert, *supra* note 14, at n.122; Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 729, 732.

<sup>111</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 732; Blumm & Paulsen, *supra* note 24, at 121; Powers, *supra* note 109, at 880–81 (finding that smolts passing through turbines “run a fifteen percent chance of dying.”).

<sup>112</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 732.



despite spill mandates, NMFS approved BPA's proposal to curtail summer spill in 2004, which would generate between \$18-28 million in hydropower revenue.<sup>113</sup> Judge Redden immediately ordered spills for ESA compliance, an enforcement that cost BPA about \$67 million.<sup>114</sup> In 2007, BPA again tried to curtail expensive spill requirements by declaring a system emergency "to conceal the variance,"<sup>115</sup> but Judge Redden again reminded agencies that the spill program was not optional.<sup>116</sup>

Second, some studies indicate that spill can contribute to salmon decline because it interferes with natural migration behavior, where "juvenile salmon alternate movement with resting and feeding as they migrate downstream."<sup>117</sup> Essentially, spill shoots the juvenile salmon downstream so quickly that the fish cannot "grow and accumulate energy as they migrate" to sea.<sup>118</sup> Spill is helpful in salmon recovery and juvenile survival, but it requires vigilant application. High volumes result in supersaturation,<sup>119</sup> but low volumes reduce passage and subject smolts to turbines.<sup>120</sup> To achieve the best balance of spill, most dams employ spill seasonally to aid the majority of the migrating run, but any salmon arriving early or late must pass through the turbines.<sup>121</sup>

Trucking is another mitigation effort where vehicles carry salmon smolts around dams "so that transportation and electricity production are not disrupted."<sup>122</sup> This process began as an experiment and remains extremely controversial.<sup>123</sup> After collecting juvenile smolts upriver, trucks or barges move the fish downriver and then release them below the dams so they can migrate out to sea without passing through the dangerous hydropower turbines.<sup>124</sup> While this

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<sup>113</sup> Blumm & Paulsen, *supra* note 24, at 121–22.

<sup>114</sup> The \$67 million losses to spill increased the average consumer's electric bill by 1.2%, or 87 cents, per month. See Blaine Harden, *Future of Salmon Leads to Dispute Over Federal Dams*, WASH. POST (July 2, 2005), <http://www.washingtonpost.com/wp-dyn/content/article/2005/07/01/AR2005070101808.html>.

<sup>115</sup> Blumm & Paulsen, *supra* note 24, at 134–35.

<sup>116</sup> *Id.*

<sup>117</sup> Powers, *supra* note 109, at 880–81; see also Harrison, *Fish Passage at Dams*, *supra* note 3 (indicating that juvenile salmon primarily rest and feed during the day and migrate at night).

<sup>118</sup> Powers, *supra* note 109, at 880–81.

<sup>119</sup> *Id.* (describing how supersaturation is "a condition that can lead to death when gas bubbles enter the salmon blood stream and tissue," much like scuba divers who get the bends from ascending too quickly); BONNEVILLE POWER ADMIN., COLUMBIA BASIN SALMON AND STEELHEAD: MANY ROUTES TO THE OCEAN, *supra* note 103, at 3.

<sup>120</sup> Powers, *supra* note 109, at 880–81.

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

<sup>122</sup> Wood, *supra* note 20, at 220.

<sup>123</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 727; Bogert, *supra* note 14, at 553 ("fish transportation was acknowledged as a 'transitional strategy'").

<sup>124</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 726–27; Blumm, *Saving Snake River Water*, *supra* note 19, at 1009.

process reduces smolt mortality from dam infrastructure, the barging process leaves the juveniles disoriented and vulnerable.<sup>125</sup> Not only does the trucking interfere with natural homing behavior, but the fish also become stressed from the bagging, tagging, and trucking process, leaving the smolts far more susceptible to disease and predators.<sup>126</sup> Despite over 20 years of practice, transportation of smolts has failed to recover fish runs.<sup>127</sup> States and tribes still advocate for reduced reliance on barging because “the transportation program alone. . . [will] never adequately compensate for poor river conditions.”<sup>128</sup>

Finally, implementing agencies often herald recovery efforts as successful when declines are actually “masked by the heavy reliance on Columbia River hatcheries.”<sup>129</sup> Hatcheries on the Columbia began in 1877 to bolster salmon harvests and compensate for spawning habitat losses,<sup>130</sup> and they remain the primary means of supplementing harvests today.<sup>131</sup> About 130 million hatchery fish supplement wild salmon runs every year, with many populations now consisting of over 80% hatchery fish.<sup>132</sup> While these supplemental salmon help to elevate population levels, they also tend to transmit disease, jeopardize wild stock through interbreeding, and outcompete wild salmon for food.<sup>133</sup>

Even with all these mitigation efforts in place, salmon populations remain about half the size of 30 years ago and are a depressing 1% of historical runs.<sup>134</sup> Moreover, recovery efforts have cost about “\$600 million annually, and nearly \$10 billion cumulatively.”<sup>135</sup> While these recovery schemes help stem off extinction, none are effective enough independently or collectively to recover the runs to their historic levels. Nevertheless, agencies continue to focus on individual small-scale problems, like sea lion predation, when the major source of species loss is the Columbia Basin dams. The combination of failed recovery, a growing sea lion population protected under the MMPA, and the various dams blocking fish runs require a comprehensive, large-scale approach to salmon recovery.

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<sup>125</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 727; Blumm, *Saving Snake River Water*, *supra* note 19, at 1009.

<sup>126</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 727; Blumm, *Saving Snake River Water*, *supra* note 19, at 1009.

<sup>127</sup> Blumm, *Saving Snake River Water*, *supra* note 19, at 1009.

<sup>128</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 727.

<sup>129</sup> Blumm, *The Columbia River Gorge*, *supra* note 13, at 20.

<sup>130</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 724–25; Harrison, *Fish Passage at Dams*, *supra* note 3.

<sup>131</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at 724–25.

<sup>132</sup> Blumm & Paulsen, *supra* note 24, at 96.

<sup>133</sup> *Id.*

<sup>134</sup> Blumm, *The Columbia River Gorge*, *supra* note 13, at 19; *see also* Blumm & Paulsen, *supra* note 24, at 92–94.

<sup>135</sup> Blumm, *The Columbia River Gorge*, *supra* note 13, at 19.

## IV. THE MARINE MAMMAL PROTECTION ACT AND SECTION 120

While sea lions are not Columbia River salmonids' most imperative problem, they nevertheless attract considerable federal and state attention and invoke the Marine Mammal Protection Act (MMPA). The MMPA protects marine mammals from diminishing "beyond the point at which they cease to be a significant functioning element in the ecosystem of which they are a part" or "below their optimum sustainable population."<sup>136</sup> Congress passed this protective statute to rectify the various harms committed against marine mammals, especially against the dangers posed to these animals by the fishing industry.<sup>137</sup> In its Report, the House of Representatives explained,

Recent history indicates that man's impact upon marine mammals has ranged from what might be termed malign neglect to virtual genocide. These animals, including whales, porpoises, seals, sea otters, polar bears, manatees and others, have only rarely benefitted from our interest; they have been shot, blown up, clubbed to death, run down by boats, poisoned, and exposed to a multitude of other indignities, all in the interests of profit or recreation, with little or no consideration of the potential impact of these activities on the animal populations involved.<sup>138</sup>

Moreover, in the Act's preamble, Congress declared protection necessary because "marine mammals have proven themselves to be resources of great international significance, esthetic and recreational as well as economic."<sup>139</sup> This protective foundation in the statute, which demonstrates the large-scale public concerns of the time, governs all interactions with marine mammals, both public and private.<sup>140</sup> Courts have also upheld these goals, arguing that "the Act [is] to be administered for the benefit of the protected species rather than for the benefit of commercial exploitation."<sup>141</sup>

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<sup>136</sup> 16 U.S.C. § 1361 (2016). Optimum yield is defined in the MMPA as "the number of animals which will result in the maximum productivity of the population or the species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element." 16 U.S.C. § 1362(9) (2016).

<sup>137</sup> H.R. REP. NO. 92-707, at 4144-45 (1971).

<sup>138</sup> *Id.*

<sup>139</sup> 16 U.S.C. § 1361(6) (2016).

<sup>140</sup> Nina M. Young, *The Conservation of Marine Mammals Using a Multi-Party Approach: An Evaluation of the Take Reduction Team Process*, 6 OCEAN & COASTAL L.J. 293, 297-98 (2001) [hereinafter Young, *The Conservation of Marine Mammals*]; Mary M. Sauer, *Balancing Marine Mammal Protection Against Commercial Fishing: The Zero Mortality Goal, Quotas, and the Gulf of Maine Harbor Porpoise*, 45 ME. L. REV. 419, 425-26 (1993).

<sup>141</sup> *Comm. for Humane Legislation, Inc. v. Richardson*, 540 F.2d 1141, 1148 (D.C. Cir. 1976); *see also Pac. Ranger, LLC v. Pritzker*, No. 15-CV-509 (KBJ), 2016 WL 5676276, at \*226 (D.D.C. Sept. 30, 2016) ("The MMPA... sought to grant marine mammals pride in the world of commercial fishing.").

The MMPA prohibits any marine mammal taking.<sup>142</sup> “Take” means “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.”<sup>143</sup> A taking may occur “whenever a marine mammal is detained or restrained, no matter how briefly.”<sup>144</sup> The MMPA also governs incidental takings, which occur primarily in commercial fishing operations, through a permitting program.<sup>145</sup> Nevertheless, even when authorized, incidental takings must result in only negligible effects on species stocks.<sup>146</sup> Thus, this statute provides strict protections for all marine mammals, regardless of their population status or interference with fisheries.

#### A. *California Sea Lion Recovery Under the MMPA*

California sea lions are pinnipeds, a marine mammal family meaning “fin or flipper-footed.”<sup>147</sup> Three pinnipeds are present in the Columbia River below Bonneville Dam: the harbor seal, the Steller sea lion, and the California sea lion.<sup>148</sup> All receive MMPA protections, but the Steller sea lion receives extra protection under the ESA.<sup>149</sup>

The California sea lion is an intelligent, playful, and social animal that breeds mainly off the coast of southern California.<sup>150</sup> Females tend to remain in these rookeries, while males migrate along the Pacific coast, as far north as Alaska, for the winter.<sup>151</sup> As “opportunistic eaters,” these migrating males enjoy the Columbia’s spring fish runs bottlenecked below Bonneville Dam.<sup>152</sup> California sea lions are the main focus of this ESA-MMPA conflict because they have a strong population, consume more salmonids than either harbor seals or Steller

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<sup>142</sup> 16 U.S.C. § 1372(a) (2016).

<sup>143</sup> 16 U.S.C. § 1362(13) (2016).

<sup>144</sup> *Humane Soc’y of U.S. v. Bryson*, 924 F. Supp. 2d 1228, 1252 (D. Or. 2013).

<sup>145</sup> 16 U.S.C. § 1387(a)(1) (2016).

<sup>146</sup> *Id.*

<sup>147</sup> *Pinnipeds*, *supra* note 6.

<sup>148</sup> Cheng, *supra* note 8, at 178.

<sup>149</sup> *Id.* at 178–79.

<sup>150</sup> *California Sea Lion*, THE MARINE MAMMAL CTR., <http://www.marinemammalcenter.org/education/marine-mammal-information/pinnipeds/california-sea-lion/> (last visited Nov. 14, 2016); Madonna L. Moss & Robert L. Losey, *Native American Use of Seals, Sea Lions, and Sea Otters in Estuaries of Northern Oregon and Southern Washington*, in HUMAN IMPACTS ON SEAL, SEA LIONS, AND SEA OTTERS: INTEGRATING ARCHAEOLOGY AND ECOLOGY IN THE PACIFIC NORTHEAST 171 (Torben C. Rick & Todd J. Braje eds., 2011).

<sup>151</sup> *California Sea Lion*, *supra* note 150; Moss & Losey, *supra* note 150, at 171.

<sup>152</sup> NAT’L OCEANIC & ATMOSPHERIC ADMIN., SEAL AND SEA LION FACTS OF THE COLUMBIA RIVER AND ADJACENT NEARSHORE MARINE AREAS (May 2006) [http://www.westcoast.fisheries.noaa.gov/publications/protected\\_species/marine\\_mammals/pinnipeds/sea\\_lion\\_removals/seal\\_and\\_sea\\_lion\\_facts\\_of\\_the\\_columbia\\_river\\_adjacent\\_nearshore\\_marine\\_areas.pdf](http://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/pinnipeds/sea_lion_removals/seal_and_sea_lion_facts_of_the_columbia_river_adjacent_nearshore_marine_areas.pdf); *Humane Soc’y of U.S. v. Bryson*, 924 F. Supp. 2d 1228, 1232 (D. Or. 2013); Ritter, *supra* note 12; *California Sea Lion*, *supra* note 150.

sea lions, and are the most difficult of these pinniped species to deter.<sup>153</sup>

Under MMPA protections, the California sea lion population grew from about 50,000 in 1972 to over 300,000 today.<sup>154</sup> Some studies suggest that the sea lion population “may currently be at or near its carrying capacity.”<sup>155</sup> Since 1972, “the California sea lion population off the West Coast of the United States has increased steadily at an average annual rate of more than 5%. . . as indicated by pup counts.”<sup>156</sup> This abundant population is an excellent example of species recovery under the MMPA, but it creates many problems as well, including increased competition between sea lions and other predators vying for depleted fish stocks.<sup>157</sup> In addition, the numerous sea lions wreak havoc on the coast as they destroy property, attack anglers, and consume up to 4.2% of migrating salmon each year.<sup>158</sup>

### B. Section 120’s Lethal Taking Provisions

Concerns over the growing sea lion population and its affect on anadromous fish stocks came about in the 1980s when California sea lions first preyed on steelhead trout migrating through Ballard Locks.<sup>159</sup> While the sea lions were initially sources of entertainment, garnering names like Hondo and Herschel, “amusement quickly turned to alarm when in a few years, sea lion numbers expanded to over forty individuals consuming more than half of the steelhead run.”<sup>160</sup> NMFS and the U.S. Fish and Wildlife Service estimated that sea lions consumed between 42% and 65% of the run from 1986 to 1992.<sup>161</sup> Frustrated and confined by the “no take” provisions of the MMPA, the fishing industry sought congressional aid to amend the provision, which came through the 1994 MMPA amendments to improve the Act’s incidental take regime.<sup>162</sup> These revisions were a result of negotiations between conservation organizations and

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<sup>153</sup> Cheng, *supra* note 8, at 165, 179–80.

<sup>154</sup> Ritter, *supra* note 12; Bland, *supra* note 45.

<sup>155</sup> Lecky Testimony, 112 H.R. 946, 1, 9 (2011).

<sup>156</sup> *California Sea Lion: Population Size and Trends*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., <https://www.nwfsc.noaa.gov/publications/scipubs/techmemos/tm28/mammal.htm> (last visited Nov. 14, 2016).

<sup>157</sup> See Bland, *supra* note 45.

<sup>158</sup> *Humane Soc’y of U.S. v. Locke*, 626 F.3d 1040, 1045 (9th Cir. 2010); Cheng, *supra* note 8, at 183–84; Profita, *supra* note 9.

<sup>159</sup> Cheng, *supra* note 8, at 165, 169–70.

<sup>160</sup> *Id.* at 170, 177.

<sup>161</sup> Nina M. Young, Stephanie Mairs & Suzanne I. Martley, *At Point Blank Range: The Genesis and Implementation of Lethal Removal Provisions Under the Marine Mammal Protection Act*, 5 OCEAN & COASTAL L.J. 1, 5 (2000) [hereinafter Young, *At Point Blank Range*].

<sup>162</sup> See generally Nina M. Young & Suzanne Iudicello, *Blueprint for the Whale Conservation: Implementing the Marine Mammal Protection Act*, 3 OCEAN & COASTAL L.J. 149, 150, 195–97 (1997).

the fishing industry as part of “a multi-party negotiation process to devise strategies for eliminating marine mammal entanglements in commercial fishing gear while maintaining the viability of commercial fisheries.”<sup>163</sup> The amendments created three new major sections: (1) required stock assessments, status determinations, and calculation of potential biological removal levels for marine mammals; (2) commercial fishing requirements; (3) and the taking process provisions for pinniped-salmon interactions (codified in Section 120).<sup>164</sup>

Section 120 ultimately sets out a step-by-step process for states and the Secretary of Commerce to address detrimental pinniped-salmon interactions, but states cannot invoke it if the pinnipeds are endangered, threatened, depleted, or a strategic stock.<sup>165</sup> Thus, this section provides a takings exception only for pinnipeds with viable populations. This lethal takings process begins when “a State [applies] to the Secretary to authorize the intentional lethal taking of individually identifiable pinnipeds which are having a significant negative impact on the decline or recovery of salmonid fishery stocks” that are listed as endangered, are approaching endangered or threatened status, or migrate through Seattle’s Ballard Locks.<sup>166</sup> Each application must include “a detailed description of the problem interaction and expected benefits of the taking.”<sup>167</sup> The Secretary then has fifteen days to determine whether the application contains sufficient evidence to warrant a Task Force; if so, she establishes a Task Force with representatives from the appropriate state and from scientific, fishing, conservation, Native American, and other interests.<sup>168</sup> Next, the Task Force has sixty days to recommend (or oppose) lethal takes to the Secretary,<sup>169</sup> and upon receipt of its report the Secretary has thirty days to deny or approve the state’s application.<sup>170</sup>

Ultimately, Section 120 entails a long process, filled with checks, analysis, and investigations. Under this statute, the Task Force must consider population trends, feeding habits, location, pinniped interactions, the number of pinnipeds involved, past deterrence efforts, any feasible and prudent alternatives, whether the applicant has taken all reasonable nonlethal steps without success, and “the extent to which the pinnipeds are causing undue injury, impact to, or imbalance with other species in the ecosystem or are exhibiting behavior that presents an ongoing threat to public safety.”<sup>171</sup> Unless a pinniped meets all of the criteria

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<sup>163</sup> Young, *The Conservation of Marine Mammals*, *supra* note 140, at 293.

<sup>164</sup> *Id.* at 293, 299–300.

<sup>165</sup> *Humane Soc’y of U.S. v. Bryson*, 924 F. Supp. 2d 1228, 1234 (D. Or. 2013).

<sup>166</sup> 16 U.S.C. § 1389(b)(1)(A)–(C) (2016).

<sup>167</sup> 16 U.S.C. § 1389(b)(2) (2016).

<sup>168</sup> 16 U.S.C. § 1389(c)(1)–(2) (2016).

<sup>169</sup> During this sixty day period, public comments can be made. 16 U.S.C. § 1389(c)(3)(A) (2016).

<sup>170</sup> 16 U.S.C. § 1389(c)(4) (2016).

<sup>171</sup> Young, *At Point Blank Range*, *supra* note 161, at 4–5; *see also* 16 U.S.C. § 1389(d)(1)–

under Section 120, it remains protected. With numerous considerations at play and required investigations for every pinniped taking, Section 120 “allows NMFS to take action, yet preserves the protective nature of the MMPA.”<sup>172</sup> In fact, the legislative history clearly states that “current levels of protection afforded to seals and sea lions under the Act should not be lifted without first giving careful consideration to other reasons for the decline, and to all other available alternatives.”<sup>173</sup> Indeed, Congress explicitly noted that “a variety of factors have contributed to the salmon’s decline, including habitat destruction, dam construction, and poor forestry management” in addition to sea lion predation.<sup>174</sup> Despite enacting lethal takings provisions, Congress clearly meant for states to exhaust all alternatives first and for Section 120 to afford as much protection to pinnipeds as possible.

### C. Sea Lion Predation on Salmon and the Efficacy of Section 120

Despite increases in California sea lion predation through the 1980s and 1990s at Ballard Locks, sea lions remained sparse or non-existent below Bonneville Dam until 2001.<sup>175</sup> Officials observed a few in 2001, about two dozen in 2002, and over 100 by 2003.<sup>176</sup> Today, agencies suspect that 500 to 1000 sea lions roam the 146 miles of river between Bonneville Dam and the Pacific Ocean.<sup>177</sup> The presence of sea lions is not surprising. They are naturally opportunistic feeders, historically venturing up the Columbia River to feed on migrating salmon.<sup>178</sup> In addition, the dam essentially corrals salmon as they enter the fish ladders through a narrow two-foot-square opening,<sup>179</sup> and the resulting “bottleneck makes the salmonids easy prey” for congregating sea lions.<sup>180</sup> The clever and opportunistic sea lions discovered a buffet beneath

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(4) (2016).

<sup>172</sup> Young, *At Point Blank Range*, *supra* note 161, at 15.

<sup>173</sup> Humane Soc’y of U.S. v. Locke, 626 F.3d 1040, 1052 (9th Cir. 2010) (citing H.R. REP. NO. 103-439 Title V § 10 (1994)).

<sup>174</sup> H.R. REP. NO. 103-439 Title V § 10 (1994).

<sup>175</sup> Cheng, *supra* note 8, at 165, 169–70; *Washington and Oregon Authorized to Remove Salmon Eating California Sea Lions*, NAT’L OCEANIC & ATMOSPHERIC ADMIN. (May 13, 2011), [http://www.noaaews.noaa.gov/stories2011/20110512\\_sealion.html](http://www.noaaews.noaa.gov/stories2011/20110512_sealion.html).

<sup>176</sup> *Washington and Oregon Authorized to Remove Salmon Eating California Sea Lions*, *supra* note 175.

<sup>177</sup> Ritter, *supra* note 12; *About the Columbia River: Bonneville Dam to the Pacific Ocean*, ENVTL. PROTECTION AGENCY, <https://www.epa.gov/columbiariver/about-columbia-river-bonneville-dam-pacific-ocean> (last updated July 3, 2017).

<sup>178</sup> Townsend, *supra* note 29, at 252–53; MERIWETHER LEWIS & WILLIAM CLARK, *supra* note 28; *California Sea Lion*, *supra* note 150.

<sup>179</sup> *Bonneville Dam Fish Ladders and Fish Counting*, THE COLUMBIA RIVER: A PHOTOGRAPHIC JOURNEY, [http://columbiariverimages.com/Regions/Places/bonneville\\_dam\\_fish\\_ladders.html](http://columbiariverimages.com/Regions/Places/bonneville_dam_fish_ladders.html) (last visited Nov. 14, 2016).

<sup>180</sup> Humane Soc’y of U.S. v. Bryson, 924 F. Supp. 2d 1228, 1232 (D. Or. 2013); *see also* Ritter, *supra* note 12 (“Salmon usually can evade sea lions in the open ocean... Once in the



Bonneville Dam, and their subsequent impacts on the runs increased each year. By 2004, sea lions gained access to the dam's fish ladders, and by 2005, the U.S. Army Corps of Engineers estimated that "the sea lions' consumption of salmon had tripled."<sup>181</sup> In addition, the Corps observed that sea lions stayed near the dam for longer periods each year.<sup>182</sup> According to its estimates, sea lions consume between 0.4% and 4.2% of migrating salmon each year, although these could be "minimum estimates because not all predation events are observed."<sup>183</sup> While four percent may seem an insignificant number, one to four percent of an already depleted species brings it that much closer to extinction. The growing predation rates also affect future stocks, because sea lions can have a disproportionate impact on early and late run fish, making salmonid reproduction less successful overall.<sup>184</sup>

In 2006, Oregon, Washington, and Idaho applied for a lethal takings permit under Section 120 of the MMPA because of the "significant negative impact" of California sea lions on endangered salmonids.<sup>185</sup> The appointed Task Force investigated and recommended approval, with only the Humane Society representative advocating against lethal takings.<sup>186</sup> NMFS issued the permit in 2008, authorizing takings of "problem sea lions" for the next five years.<sup>187</sup> Each taking had to meet the criteria set forth in Section 120, and states had permission to take up to 85 sea lions per year.<sup>188</sup> The authorization would expire automatically if the sea lions consumed less than one percent of salmonids, on average, over the following three years.<sup>189</sup>

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river, the fish tend to hug the shoreline and are somewhat more vulnerable, but as they mill around below the bottleneck of a dam, sometimes for days or weeks before entering a fish ladder, they're a virtual sushi bar for sea lions. Even a 30-pound salmon is no match for a sea lion.").

<sup>181</sup> McCrory, *supra* note 2, at 275.

<sup>182</sup> Humane Soc'y of U.S. v. Locke, 626 F.3d 1040, 1045 n.2 (9th Cir. 2010).

<sup>183</sup> *Id.* at 1045.

<sup>184</sup> Bryson, 924 F. Supp. 2d at 1247.

<sup>185</sup> See Blumm, *The Columbia River Gorge*, *supra* note 13, at 31; see also Bryson, 924 F. Supp. 2d at 1234.

<sup>186</sup> Blumm, *The Columbia River Gorge*, *supra* note 13, at 31.

<sup>187</sup> NOAA Authorizes States to Remove Sea Lions that Threaten Protected Salmon, NAT'L OCEANIC & ATMOSPHERIC ADMIN. (Mar. 15, 2012), [http://www.noaa.gov/stories/2012/20120315\\_sealion.html](http://www.noaa.gov/stories/2012/20120315_sealion.html); Blumm, *The Columbia River Gorge*, *supra* note 13, at 31.

<sup>188</sup> NMFS authorized 85 takings under its 'one percent rule' for Section 120. Bryson, 924 F. Supp. 2d at 1254–55. The number is determined by evaluating current population numbers of California Sea Lions and how many sea lions could be taken before affecting the population's viability. *Id.* Then "one percent of the number of [sea lions] that [can] be removed from the wild without affecting the overall abundance, distribution, or productivity of the population" may be taken. *Id.* Thus, 85 sea lion takings were permissible because 8,500 sea lions "could be lost each year without affecting the viability of the population." *Id.*

<sup>189</sup> *Id.* at 1235 ("In this one percent threshold, the Ninth Circuit saw an implicit finding that only CSL predation greater than one percent would have the requisite "significant negative impact on the decline or recovery" of protected fish.").

In 2010, the U.S. Court of Appeals for the Ninth Circuit vacated the permit and instructed NMFS to explain inconsistencies between its determinations, namely how sea lions caused a significant negative impact on salmonids when dams and fisheries did not.<sup>190</sup> Following this decision, the states resubmitted their Section 120 applications in December 2010.<sup>191</sup> What followed was a judicial game of cat-and-mouse. In 2011, NMFS gave authorization to the states, but it then withdrew it when confronted with another suit from the Humane Society.<sup>192</sup> After resubmitting their applications, for the third time, the states received authorization from NMFS in 2012, which allowed up to 92 sea lion takings per year.<sup>193</sup> That authorization also underwent judicial review, but the Ninth Circuit upheld NMFS's explanation that pinniped predation's "significant negative impact on the decline or recovery of protected salmonids does not mean that pinniped predation is *jeopardizing* those salmonids."<sup>194</sup> NMFS went on to explain that a sea lion's consumption of one fish was worse than either a fisherman or dam taking a fish because the latter sources have regulations and mitigations, while sea lions "do not adjust their predation rates."<sup>195</sup> Meanwhile, as the court reviewed the 2012 permits, the states submitted another application in January 2016 for a five-year extension on their authorization.<sup>196</sup> In July 2016, the Task Force recommended the extension to the Secretary of Commerce, with only two dissenters: the Humane Society Task Force member objected outright, while the NMFS member accepted on the condition that they would conduct more research on the program's effectiveness.<sup>197</sup>

Although litigation interrupted the Task Force's work, the states conducted removal activities over the 2012 to 2016 salmon migration seasons, primarily engaging in deterrence activities and physical removal.<sup>198</sup> Deterrence techniques proved ineffective despite the variety implemented, including acoustic deterrent

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<sup>190</sup> See *Humane Soc'y of U.S. v. Locke*, 626 F.3d 1040, 1051 (9th Cir. 2010) ("But in this case the agency's seemingly inconsistent approach to, on the one hand, fishery and hydropower activities, which are deemed not to be significant obstacles to the recovery of listed salmonid populations, and, on the other hand, sea lion predation, which *is* deemed to be a significant barrier to salmonid recovery, has occupied the center of this controversy from the start."); see also *Bryson*, 924 F. Supp. 2d at 1234.

<sup>191</sup> *Bryson*, 924 F. Supp. 2d at 1235.

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

<sup>193</sup> *Id.*

<sup>194</sup> *Id.* at 1242 (emphasis added).

<sup>195</sup> *Id.* at 1242–43.

<sup>196</sup> NMFS PINNIPED-FISHERY INTERACTION TASK FORCE: BONNEVILLE, MAY 31, 2016 TASK FORCE MEETING: FINAL FACILITATOR'S SUMMARY 2 (June 22, 2016), [http://www.westcoast.fisheries.noaa.gov/publications/protected\\_species/marine\\_mammals/pinnipeds/June2016/5.31.2016\\_bonneville\\_2016\\_pfitf\\_meeting\\_summary\\_final.pdf](http://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/pinnipeds/June2016/5.31.2016_bonneville_2016_pfitf_meeting_summary_final.pdf).

<sup>197</sup> *Id.* at 19–20.

<sup>198</sup> Physical removal includes relocation for public display or lethal takings with euthanasia. *Id.* at 5–6; *Bryson*, 924 F. Supp. 2d at 1233; Cheng, *supra* note 8, at 177–81.

devices (ADDs),<sup>199</sup> boat hazing, vessel chases, mesh barriers, sea lion exclusion devices (SLEDs), taste aversion, relocation programs, concrete barriers, rubber bullets, rubber tipped arrows, and seal bombs (large firecrackers weighted with sand so they explode underwater).<sup>200</sup> Locals even deployed a fiberglass orca playing recorded orca calls near Astoria, Oregon, to scare sea lions away from the coast, but the orca capsized on its first run.<sup>201</sup> So far, sea lions simply adapt to or ignore the harassment.<sup>202</sup> For example, when the Task Force uses acoustic deterrents, the sea lions swim away for a short period of time or put their heads above water during the sonar projections.<sup>203</sup> Likewise, if shot point blank with rubber bullets, many sea lions “just turn around and look like a mosquito bit them.”<sup>204</sup> Additionally, as hazing techniques intensify, sea lions spend more time underwater to avoid detection.<sup>205</sup>

In comparison, the 2016 Task Force Report cited the successes of lethal takings and called for more time to test the program.<sup>206</sup> It reported:

Because the efficacy of the program is improving as a result of more efficient approval from NMFS and faster removal of predators, many on the Task Force believed the positive impact of the program in reducing significant adverse impacts will be shown within a few years. Still, at least one Task Force member thought if the program were to continue, it would have to show real benefits,

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<sup>199</sup> Pinnipeds are remarkably resilient to sonar harassment. Like in the Columbia River, Scotland uses ADDs to deter seals from preying on salmon, but has yet to achieve long-term effects. Some researchers believe the technology can be developed further, but ultimately the potential of ADDs is restricted by the “little research done on pinnipeds and acoustic effects.” The damage seals wreak on coastal communities is exacerbated by the fact they cannot be deterred. Many rural communities depend on the local salmon aquaculture, so seal predation is a major economic threat to these areas. While the economic and environmental effects of seal predation need further study, reports found economic losses of more than £10,000 at several sites, and an average loss of £31,000 per site. The highest estimated loss was one farm’s annual loss of £280,000. Another report analyzed the number of fish lost to seals, and determined that pinnipeds consumed almost 1.4 million salmon, resulting in a total loss of £25 million. For a full report on pinniped predation on Scotland’s aquaculture, see ALEX CORAM, JONATHAN GORDON, DAVE THOMPSON & SIMON NORTHRIDGE, EVALUATING AND ASSESSING THE RELATIVE EFFECTIVENESS OF NON-LETHAL MEASURES, INCLUDING ACOUSTIC DETERRENT DEVICES, ON MARINE MAMMALS (2014), <http://www.gov.scot/Resource/0050/00504418.pdf>.

<sup>200</sup> Jefferson & Curry, *supra* note 8, at 52; Young, *At Point Blank Range*, *supra* note 161, at 6-7; Cheng, *supra* note 8, at 169-70.

<sup>201</sup> Associated Press, *Fake Orca Nearly Drowns Before It Can Scare Oregon Sea Lions*, THE WASHINGTON TIMES (June 5, 2015), <https://www.washingtontimes.com/news/2015/jun/5/fake-orca-meant-to-scare-off-sea-lions-runs-into-t/>.

<sup>202</sup> Ritter, *supra* note 12.

<sup>203</sup> Jefferson & Curry, *supra* note 8, at 56.

<sup>204</sup> Ritter, *supra* note 12.

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

<sup>206</sup> BONNEVILLE PINNIPED-FISHERY INTERACTION TASK FORCE, 5-YEAR EXTENSION REPORT & RECOMMENDATIONS: FINAL REPORT 8 (June 22, 2016), [http://www.westcoast.fisheries.noaa.gov/publications/protected\\_species/marine\\_mammals/pinnipeds/June2016/5.31.2016\\_bonneville\\_2016\\_pfitf\\_meeting\\_report\\_final.pdf](http://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/pinnipeds/June2016/5.31.2016_bonneville_2016_pfitf_meeting_report_final.pdf).

which are not evident to date, and those expected benefits would need to be clearly articulated.<sup>207</sup>

By May 2016, the states had removed 166 individually identified predatory sea lions from the waters below Bonneville Dam.<sup>208</sup> Between 2008 and 2016, they relocated fifteen sea lions to permanent holding facilities and euthanized 139, while seven sea lions died in trapping accidents.<sup>209</sup> The Task Force estimated that these removals protected about 15,000-20,000 salmon, because each sea lion needs to consume two to five fish per day.<sup>210</sup> Earlier years also saw some success, as officials observed “decreases in [sea lion] abundance at the dam and a decrease in the proportion of spring Chinook lost to [sea lion] predation.”<sup>211</sup>

While the lethal takings permits began as a “temporary” solution to protect salmonids, they are the most effective means of protecting salmon from pinniped predators so far.<sup>212</sup> However, these minor successes do not mean that Section 120 has proved itself as successful predator management. While lethal takings protect thousands of salmon each year, the process does not appear to deter pinnipeds over time. Figures B and C, for example, show an overall increase in pinnipeds and salmonid consumption below the dam.<sup>213</sup> While Section 120 may need more time to prove itself, it may prove ineffective because too many sea lions roam the river consuming salmon out of sight.<sup>214</sup> Moreover, even “if animals are removed, others quickly fill into the area vacated.”<sup>215</sup>

So the question of efficacy remains: Does Section 120 provide proper predation management? Many state and federal agencies believe that Section 120 is an inefficient and ineffective system because it fails to address immediate pinniped threats, while conservation groups find the entire section contradicts

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<sup>207</sup> *Id.*

<sup>208</sup> NMFS PINNIPED-FISHERY INTERACTION TASK FORCE: BONNEVILLE, *supra* note 196, at 3.

<sup>209</sup> *Id.* at 5–6.

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

<sup>211</sup> BONNEVILLE PINNIPED-FISHERY INTERACTION TASK FORCE, *supra* note 206.

<sup>212</sup> Lecky Testimony, *supra* note 155, at 1.

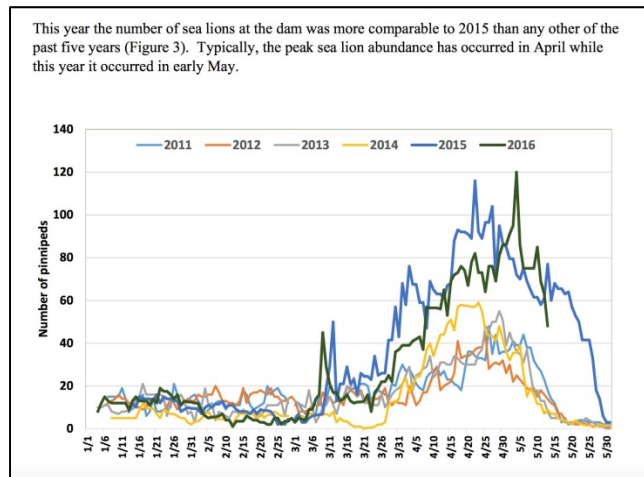
<sup>213</sup> Warmer ocean cycles that killed many California sea lions, salmon, and other marine life are the most likely cause of the 2011–2014 declines in pinniped presence and salmonid consumption. See Craig Welch, *The Blob That Cooked the Pacific*, NAT'L GEOGRAPHIC (Sept. 2016), <http://www.nationalgeographic.com/magazine/2016/09/warm-water-pacific-coast-algae-nino>.

<sup>214</sup> Officials suspect 500 to 1000 sea lions roam the 140 miles of river between Bonneville Dam and the Pacific Ocean. See Ritter, *supra* note 12.

<sup>215</sup> Sharon Young, *Bonneville Minority Report* at 4, THE HUMANE SOC'Y OF THE U.S., [http://www.humanesociety.org/assets/pdfs/marine\\_mammals/bonneville\\_minority\\_report.pdf](http://www.humanesociety.org/assets/pdfs/marine_mammals/bonneville_minority_report.pdf) (last visited Nov. 14, 2016).

the purpose of the MMPA.<sup>216</sup> Proponents in favor of Section 120, however, present equally compelling arguments: its process prevents any “blanket authorization” for lethal removal, and it provides action against a growing threat to endangered salmon.<sup>217</sup> Section 120 offers a path toward predator management to protect endangered salmon, but “if predator management is not being applied effectively, then [predator management] is not taking place.”<sup>218</sup>

**Figure B. Annual Number of Pinnipeds at Bonneville Dam, January to May**<sup>219</sup>



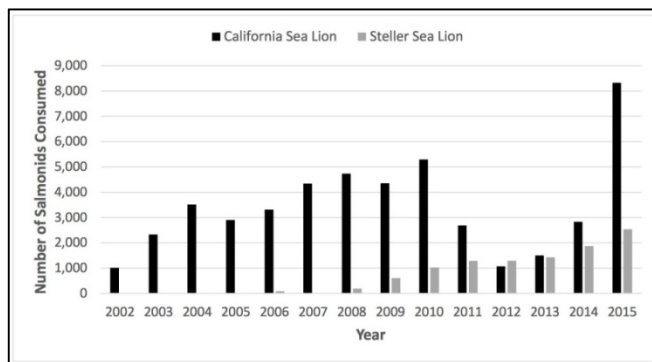
<sup>216</sup> Young, *At Point Blank Range*, *supra* note 161, at 14–15, 20; Bogert, *supra* note 14, at 567 (establishing that pinnipeds are having an impact on salmonids “is exceedingly time intensive, difficult and expensive. . . . In short, the MMPA has been spectacularly successful in protecting salmon predators.”); *see also* 16 U.S.C. § 1361(6) (2016).

<sup>217</sup> Young, *At Point Blank Range*, *supra* note 161, at 15–16 (noting that in addition to concerns of blanket authority are the dangers of labeling this takings process “ecosystem management” when the efforts are only “to benefit humans who want to prey on the same fish.”).

<sup>218</sup> Richard M. Engeman, Bernice U. Constantin, Kenneth S. Gruver & Corey Rossi, *Managing Predators to Protect Endangered Species and Promote Their Successful Reproduction*, in *ENDANGERED SPECIES: NEW RESEARCH* 172–75 (A. Columbus & L. Kuznetsov eds., 2009). The dangers of improper predator management extend to predator and prey species, as well as future recovery efforts. *Id.* To remove a predator species haphazardly “is a disservice to a species in need of protection” and it may discourage managers from implementing predator management in the future, “when, in fact, it could be the essential tool for saving the species if applied prudently.” *Id.*

<sup>219</sup> PATRICIA L. MADSON & BJORN VAN DER LEEUW, STATUS REPORT—PINNIPED PREDATION AND DETERRENT ACTIVITIES AT BONNEVILLE DAM, 2016 3 (May 13, 2016), [http://pweb.crohms.org/tmt/documents/FPOM/2010/Task%20Groups/Task%20Group%20Pinnipeds/160415\\_Bonneville\\_pinniped\\_update.pdf](http://pweb.crohms.org/tmt/documents/FPOM/2010/Task%20Groups/Task%20Group%20Pinnipeds/160415_Bonneville_pinniped_update.pdf).

**Figure C. Adjusted Salmonid Consumption by Pinnipeds at Bonneville Dam**<sup>220</sup>



Ultimately, however, sea lions are neither scapegoats nor the primary problem; they are an extra concern in a greater conflict. So far, NMFS’s conservation strategies are “staving off extinction...but salmon advocates complain that, while the status quo might be maintaining populations, it’s not recovering them.”<sup>221</sup> This failure to enact aggressive actions has consigned the salmon and steelhead populations “to permanent jeopardy.”<sup>222</sup> As one researcher illustrated,

If NMFS expects to effectively conserve biodiversity and recover depressed salmonid populations, it should consider additional removal of barriers to fish passage, restoration of spawning habitat, and restrictions on fishers. The burden to conserve biodiversity and these fish stocks must be distributed proportionally among all human causes of salmonid declines before penalizing seals and sea lions for simply doing what comes naturally to them, eating fish. This approach is consistent with an important purpose of the Act, which is to ‘maintain the health and stability of the ecosystem.’<sup>223</sup>

Salmon recovery and pinniped predation management efforts thus have largely focused on small-scale threats, when the greater conflict “cries out for a major overhaul.”<sup>224</sup> So far, agencies “have sought technological band-aids to

<sup>220</sup> FISH FIELD UNIT, U.S. ARMY CORPS OF ENGINEERS, 2015 FIELD REPORT: EVALUATION OF PINNIPED PREDATION ON ADULT SALMONIDS AND OTHER FISH IN THE BONNEVILLE DAM TAILRACE, 2015 15 (March 2016), [http://www.westcoast.fisheries.noaa.gov/publications/protected\\_species/marine\\_mammals/pinnipeds/sea\\_lion\\_removals/2015\\_coe\\_field\\_rpt.pdf](http://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/pinnipeds/sea_lion_removals/2015_coe_field_rpt.pdf).

<sup>221</sup> Ben Goldfarb, *For Better or Worse, Feds’ Columbia River Salmon Plan Stays the Course*, HIGH COUNTRY NEWS (Jan. 31, 2014), <https://www.hcn.org/blogs/goat/for-better-or-worse-feds-latest-columbia-river-salmon-opinion-stays-the-course>.

<sup>222</sup> *Id.*

<sup>223</sup> Young, *At Point Blank Range*, *supra* note 161, at 17.

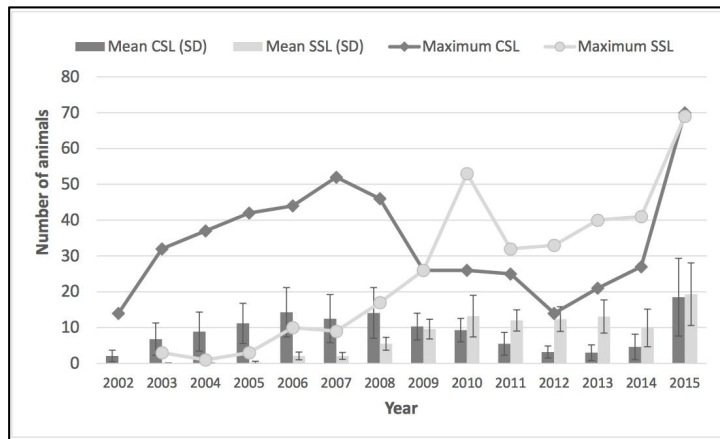
<sup>224</sup> Idaho Dep’t of Fish & Game v. Nat’l Marine Fisheries Serv., 850 F. Supp. 886, 900 (D.

repair lost ecosystem functions,<sup>225</sup> but by focusing on the large-scale issue—how Columbia River Basin dams threaten salmonids—recovery improvements become comprehensive and attainable.

*D. An Expanding Pinniped-Salmonid Controversy*

A comprehensive approach is especially important because recent developments will exacerbate the conflict between pinnipeds and salmon in the coming years. In addition to the California sea lion conflict between the MMPA and ESA, another legal challenge and threat to salmonids is emerging that puts the ESA against itself: the endangered Steller sea lion. While California sea lions previously outnumbered Stellers and consumed far more salmon, Steller sea lions’ presence below Bonneville Dam is on the rise<sup>226</sup> (see Figure D below).

**Figure D. Steller Sea Lion & California Sea Lion Presence at Bonneville Dam**<sup>227</sup>



This increase could create a conflict between two endangered species, and Steller sea lions could pose a greater threat to salmonids over time because they arrive months earlier than California sea lions to prey on Chinook, coho,

Or. 1994).

<sup>225</sup> *Columbia River Study: Dam Overhaul Needed to Save Salmon*, KITSAP SUN (June 12, 1996), [http://web.kitsapsun.com/archive/1996/06-12/348719\\_columbia\\_river\\_study\\_dam\\_overh.html](http://web.kitsapsun.com/archive/1996/06-12/348719_columbia_river_study_dam_overh.html).

<sup>226</sup> *Columbia Basin Bulletin, As Spring Chinook Passage Picks Up at Bonneville Dam So Do Sea Lion Numbers, Salmon Mortality*, CHINOOK OBSERVER (Apr. 22, 2016), <http://www.chinookobserver.com/co/local-news/20160422/as-spring-chinook-passage-picks-up-at-bonneville-dam-so-do-sea-lion-numbers-salmon-mortality>.

<sup>227</sup> FISH FIELD UNIT, U.S. ARMY CORPS. OF ENGINEERS, *supra* note 220, at 26.



steelhead, and sturgeon.<sup>228</sup> Consequently, Steller sea lions can have a greater impact on fish reproduction and survival because they are consuming more migratory fish over a longer period of time.<sup>229</sup> In addition, states omitted Stellers from Section 120 primarily because of their protected status and because they did not consume as many prized salmon as their California cousins.<sup>230</sup> Whether agencies can deal with one endangered species preying on another, or whether Section 120 can extend to Steller sea lion predation on salmonids, remain open questions.<sup>231</sup>

Climate change will also escalate this problem; recent years demonstrated the dramatic effects that warming ocean temperatures can have on marine life.<sup>232</sup> In 2013, a large area of warm ocean water—dubbed “the Blob”—spiked ocean temperatures and killed a variety of marine species<sup>233</sup> (see Figure E below). As dead whales, starving seals, and weak otters washed up on Pacific coasts, scientists feared the Blob was “a dress rehearsal” for when “climate change unleashes its fever in the Pacific.”<sup>234</sup> However, lethally warm water does not have to come in the form of a marine blob; less snowpack and warmer winters are enough to raise river temperatures to lethal levels for anadromous fish like salmon.<sup>235</sup> For instance, in 2015 drought and unseasonable temperatures resulted in warm river water that was “at least partially to blame for more than 400,000

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<sup>228</sup> Conrad Wilson, *Salmon Munching Sea Lions at Bonneville Dam Shifting to Different Species, New Problems*, THE OREGONIAN (June 16, 2014), [http://www.oregonlive.com/environment/index.ssf/2014/06/salmon\\_munching\\_sea\\_lions\\_at\\_b.html](http://www.oregonlive.com/environment/index.ssf/2014/06/salmon_munching_sea_lions_at_b.html) [hereinafter Wilson, *Salmon Munching Sea Lions*].

<sup>229</sup> *Id.*

<sup>230</sup> *Id.* (“Last year, the data show that California and Steller sea lions killed nearly the same number of salmon. In 2012, Stellers killed even more salmon than their California cousins. ‘I don’t think they’ve (Stellers) reached that point where they’ve taken enough salmon that would cause the alarm that it did with California’s -- yet,’ said Robert Stansell, a fish biologist with the Corps at Bonneville. ‘That may change after this year.’”); see also Amelia Templeton, *Steller Sea Lions Are Putting the Bite on Columbia Sturgeon*, THE OREGONIAN (Oct. 15, 2012), <http://www.opb.org/news/article/stellar-sea-lions-are-putting-the-bite-on-columbia/> (“In 2008, Steller sea lions were responsible for just 3.8% of the estimated predation at the dam; by 2012, they were responsible for 53.3%.”).

<sup>231</sup> Humane Soc’y of U.S. v. Bryson, 924 F. Supp. 2d 1228, 1247–48 (D. Or. 2013) (“...when the Ninth Circuit accepted NMFS’s two-step application of the Section 120 standard, it described the first step as determining ‘whether California sea lions collectively were having a significant negative impact on listed salmonids.’ *Locke*, 626 F.3d at 1054–55. Whether NMFS can also count Steller sea lion predation in this first step is therefore an open question.”); see also Wilson, *Salmon Munching Sea Lions*, *supra* note 228 (“Experts say these two factors mean there’s a chance the sea lion removal program, which includes trapping and killing animals, could be expanded to new species and seasons.”).

<sup>232</sup> Welch, *supra* note 213.

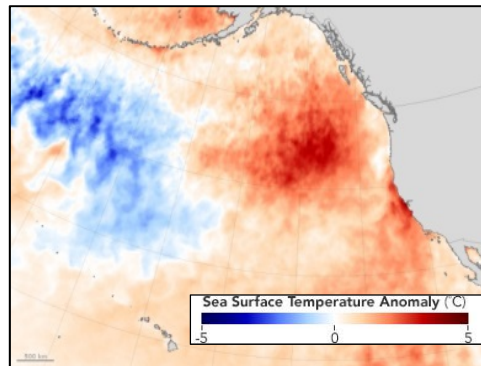
<sup>233</sup> *Id.*

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

<sup>235</sup> Courtney Sherwood, *Thousands of Salmon Die in Hotter-Than-Usual Northwest Rivers*, REUTERS (July 27, 2015, 9:57 PM), <http://www.reuters.com/article/us-usa-oregon-salmonidUSKCN0Q203P20150728>.

additional salmon deaths.”<sup>236</sup>

**Figure E. “The Blob” Warmed Ocean Temperatures**<sup>237</sup>



One way warm water changes the marine environment is by increasing fish metabolism, resulting in smaller fish, increased susceptibility to disease, and failing populations.<sup>238</sup> Of course, these effects travel up the food chain as predators have less prey to feed on, leaving many animals malnourished and underfed.<sup>239</sup> Warming ocean waters also drive more sea lions further north, including to the Columbia River, in search of food in cooler waters.<sup>240</sup> However, warmer ocean temperatures also cause acute lethal effects such as toxic algae blooms that can kill animals with a neurotoxin called *Pseudo-nitzschia*.<sup>241</sup> While the Blob faded away in 2015, thanks to a powerful El Niño, these climate change events are a preview of “higher extremes” and chaos in the marine world.<sup>242</sup> With the controversy worsening and current management programs unproven, states and federal agencies must consider alternative solutions.

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<sup>236</sup> *Id.*

<sup>237</sup> *The Demise of the Warm Blob*, NASA EARTH OBSERVATORY (Feb. 16, 2016), [http://earthobservatory.nasa.gov/IOTD/view.php?id=87513&eocn=image&eoci=related\\_image](http://earthobservatory.nasa.gov/IOTD/view.php?id=87513&eocn=image&eoci=related_image) (last visited Nov. 14, 2016) (“At times, this patch of warm water seeped into the Bering Sea, the Gulf of Alaska, and the coastal waters off Washington, Oregon, and California. In fact, many parts of the northeastern Pacific experienced the greatest sea surface temperature anomalies in the historical record. Scientists and journalists took to calling the patch of warm water ‘the Blob.’”).

<sup>238</sup> Welch, *supra* note 213.

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

<sup>240</sup> *Id.* (“...[a]ccording to the Intergovernmental Panel on Climate Change, many fish and plankton are heading toward the poles in search of cooler temperatures. As productive areas grow scarcer with less cold water, fish and predators will congregate in fewer places, creating new challenges.”); see also BONNEVILLE PINNIPED-FISHERY INTERACTION TASK FORCE, *supra* note 206, at 6.

<sup>241</sup> Welch, *supra* note 213.

<sup>242</sup> *Id.*

## V. ALTERNATIVES

Many alternative deterrents and management schemes have failed as agencies tried to control pinniped predation on the Columbia River. However, most approaches focused on pinnipeds alone instead of the overarching confluence of stressors on salmonid survival and recovery. States and federal agencies must confront the cumulative impacts on salmon runs to prevent salmonid extinctions. This article presents three alternatives: (1) breaching unviable dams in the Columbia River Basin; (2) creating a new predator management program that emphasizes native hunting rights; and (3) establishing one agency to oversee all salmon recovery efforts.

*A. Alternative 1: Breaching Columbia Basin Dams*

All parties agree that hydroelectric dams wreaking havoc on local salmon species have led to significant salmon decline. These dams “pose substantial hurdles to both upstream and downstream migrating salmon and have destroyed important spawning grounds.”<sup>243</sup> One option to save salmon runs requires breaching Columbia River dams, but the practice remains expensive and politically controversial, necessitating new statutory requirements and agency processes.<sup>244</sup> Furthermore, international treaties govern several of the dams and consequently require Canadian and American cooperation over hydropower decisions.<sup>245</sup> The practice has ignited political and public debate: advocates cite improved salmon recovery and long term economic benefits, while opponents prefer to keep the dams to improve navigation and provide irrigation, flood control, and clean energy.<sup>246</sup>

While hydropower can harm salmon and waterways, “its emissions-free, baseload capacity and potential to provide storage capacity and flood control [cannot] be ignored.”<sup>247</sup> First, Columbia River dams altered the geographic and economic layout of the Pacific Northwest, including southern Idaho’s transformation from arid desert into irrigable farmland.<sup>248</sup> Water pumped from the Snake River “[fuels] an industry sector worth more than \$3 billion”<sup>249</sup> and

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<sup>243</sup> Blumm, *Saving Snake River Water*, *supra* note 19, at 999.

<sup>244</sup> Blumm, *The Columbia River Gorge*, *supra* note 13, at 29 (illustrating the difficulties that arise when considering dam removal).

<sup>245</sup> Cosens & Fremier, *supra* note 33, at 109 (describing the 1964 Columbia River Treaty).

<sup>246</sup> Aaron Kunz, *Judge Redden on Saving Salmon: Tear Down Those Dams*, OREGON PUBLIC BROADCASTING (Apr. 25, 2012, 5:30 AM), <http://www.opb.org/news/article/judge-redden-on-saving-salmon-tear-down-those-dams/>.

<sup>247</sup> Herman K. Trabish, *A Lot of Dam Potential: Renewables Growth Could Drive Massive Hydro Buildout*, UTILITY DRIVE (Aug. 9, 2016), <http://www.utilitydrive.com/news/a-lot-of-dam-potential-renewables-growth-could-drive-massive-hydro-buildout/423984/>.

<sup>248</sup> Bogert, *supra* note 14, at 534–35.

<sup>249</sup> *Id.*

helps irrigate 7.8 million acres of farmland.<sup>250</sup> Additionally, the BPA provides one-third of the Northwest's electric energy through the hydroelectric dams.<sup>251</sup> Hydropower in the Northwest is a valuable, clean energy resource, and about 40% of all U.S. hydropower comes from the Columbia Basin alone.<sup>252</sup> Moreover, the BPA's hydroelectric facilities generate 83.6% of its overall power.<sup>253</sup> Dams also provide benefits like recreational reservoirs and increased property values.<sup>254</sup>

While dam removal is still a controversial and complex process, there is a developing "global interest" in river restoration.<sup>255</sup> Between 2011 and 2014, federal agencies breached the Condit, Elwha, and Glines Dams in Washington to restore the rivers and fisheries.<sup>256</sup> Retiring these dams on the White Salmon and Elwha Rivers may have set the stage for the U.S. to turn away from hydroelectric power, especially as dam removals gain traction nationwide.<sup>257</sup> For example, in California's and Oregon's Klamath River Basin, four dams will be removed by 2020, which will be the largest dam removal project in history.<sup>258</sup> Dams may seem like permanent structures, but they actually have "a finite engineering and economic life expectancy."<sup>259</sup> Between 1912 and 2015, 1300 dams fell across the United States, with 62 dams removed in 2015 alone.<sup>260</sup>

<sup>250</sup> Cosens & Fremier, *supra* note 33, at 109.

<sup>251</sup> *Finance & Rates*, BONNEVILLE POWER ADMIN., <https://www.bpa.gov/finance/Pages/default.aspx> (last visited Nov. 14, 2016).

<sup>252</sup> *Dam Guide: A Guide to Major Hydropower Dams of the Columbia River Basin*, THE NW. POWER & CONSERVATION COUNCIL (Nov. 13, 2013), <https://www.nwcouncil.org/energy/powersupply/dam-guide>.

<sup>253</sup> *BPA Fuel Mix Percent Summary. CY 2015 Data*, BONNEVILLE POWER ADMIN. (June 1, 2016), <https://www.bpa.gov/p/Generation/Fuel-Mix/FuelMix/BPA-Official-Fuel-Mix-2015.pdf>.

<sup>254</sup> After removal of the Condit Dam on the White Salmon River, some residents are still mourning the loss of Northwestern Lake. Eric Florip, *White Salmon River Evolves Amid Mixed Feelings*, THE COLUMBIAN (May 2, 2015, 5:00 PM), <http://www.columbian.com/news/2015/may/03/after-dam-white-salmon-river-evolves-mixed-feeling/>. A sign at the old dock read, "Northwestern Lake RIP." Other residents are facing physical damage and decreased property values on their cabins as the landscape continues to change. *Id.* PacifiCorp has compensated some cabin owners, but many others continue to bring their cases on deaf ears. *Id.* Though some locals regret the loss of the lake and dam breaching altogether, others prefer the river despite the damage done to their property. One local reported, "I like the free-flowing river. I like hearing it...It's just that PacifiCorp needs to be responsible for the changes that are happening." *Id.*

<sup>255</sup> Michael Milstein, *River Proves There's Life After Dam*, THE OREGONIAN, July 30, 2008, at A01.

<sup>256</sup> Sarah Gilman, *This Will Be the Biggest Dam Removal Project in History*, NAT'L GEOGRAPHIC (Apr. 11, 2016), <http://news.nationalgeographic.com/2016/04/160411-klamath-glen-canyon-dam-removal-video-anniversary/>; Murray Carpenter, *Taking Down Dams and Letting the Fish Flow*, N.Y. TIMES (Oct. 24, 2016), [http://www.nytimes.com/2016/10/25/science/penobscot-river-maine-dam-removal-fish.html?emc=eta1&\\_r=0](http://www.nytimes.com/2016/10/25/science/penobscot-river-maine-dam-removal-fish.html?emc=eta1&_r=0).

<sup>257</sup> Carpenter, *supra* note 256.

<sup>258</sup> *Id.*; see also Gilman, *supra* note 256.

<sup>259</sup> Wood, *supra* note 20, at 274.

<sup>260</sup> *62 Dams Removed to Restore Rivers in 2015, Benefiting Rivers and Communities*

Nonetheless, most of the breached dams were small and did not provide hydroelectric power.<sup>261</sup> Economics and energy reliability are the main catalysts behind removal decisions because “some dams just aren’t worth the cost anymore.”<sup>262</sup>

Condit Dam in the Pacific Northwest provides a prime example of economics motivating dam removal. Breached on the White Salmon River in 2011, Condit became one of the largest dam removals in the country to date.<sup>263</sup> However, the differences between Condit and Bonneville Dam are staggering. First, Condit was never built for fish passage.<sup>264</sup> Frustrated by failed wooden and concrete fish ladders, Condit’s owner simply paid \$5,000 for hatchery mitigation and absolution “from responsibility for further fish passage.”<sup>265</sup> Laws requiring fish passage caught up with the 1913 Condit Dam when it applied for relicensing with the Federal Energy Regulatory Commission (FERC) in the 1990s.<sup>266</sup> The renovation expenses rendered the project uneconomical and ultimately led to the dam’s retirement.<sup>267</sup> Second, Condit Dam provided very little hydroelectric power to the region.<sup>268</sup> It generated only about 15 megawatts, while the larger dams have production capacities ranging from 1,077 megawatts (Bonneville Dam) to 6,779 megawatts (Grand Coulee Dam).<sup>269</sup> As a result, the removal of Condit Dam had “no appreciable effect on PacifiCorp’s capacity to supply power to its customers in the Pacific Northwest.”<sup>270</sup> Yet even with these considerations in mind, removal of the Condit Dam became a long, expensive, and political process—a “dozen years of legal wrangling and plenty of opposition.”<sup>271</sup>

Nevertheless, breaching Condit Dam brought many environmental, cultural, and recreational benefits to the region. First and foremost fish returned,

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*Nationwide*, AM. RIVERS (Feb. 9, 2016), <https://www.americanrivers.org/conservation-resource/62-dams-removed-2015-benefitting-rivers-communities-nationwide/>; see also Gilman, *supra* note 256.

<sup>261</sup> Gilman, *supra* note 256.

<sup>262</sup> *Id.*; Bogert, *supra* note 14, at 570.

<sup>263</sup> Blumm, *The Columbia River Gorge*, *supra* note 13, at 27–28, 30.

<sup>264</sup> David H. Becker, *The Challenges of Dam Removal: The History and Lessons of the Condit Dam and Potential Threats from the 2005 Federal Power Act Amendments*, 36 ENVTL. L. 811, 817–18 (2006) [hereinafter Becker, *The Challenges of Dam Removal*].

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

<sup>266</sup> *Id.* at 816–17.

<sup>267</sup> *Id.*; see also Blumm, *The Columbia River Gorge*, *supra* note 13, at 27–28 (“...[w]hen the NEPA process produced fishway conditions under section 18 of Federal Power Act that called for construction of upstream and downstream fish passage, the price of a new license increased by about \$30 million.”).

<sup>268</sup> Becker, *The Challenges of Dam Removal*, *supra* note 264, at 818.

<sup>269</sup> *Id.*

<sup>270</sup> *Id.* at 819.

<sup>271</sup> Florip, *supra* note 253; see Becker, *The Challenges of Dam Removal*, *supra* note 263, for a full account of the Condit Dam’s removal procedures and difficulties.

including salmon, steelhead, and trout.<sup>272</sup> Witnesses reported the return of salmon and other fish species before dam removal even finished, and the runs have increased dramatically over the last few years.<sup>273</sup> Steelhead numbers doubled in Trout Creek, and the White Salmon River now boasts salmon populations in the thousands, even though the runs “had been effectively extirpated” before.<sup>274</sup> Habitat conditions also improved rapidly. “Ankle-breakers”—naturally rounded stones that provide nesting sites to anadromous fish—have returned, along with increased vegetation and insect life.<sup>275</sup> Not only did breaching the dam allow the rivers to return to normal, the sediment build up from behind the dam helped develop estuaries, “a critical haven for salmon transitioning between freshwater and saltwater.”<sup>276</sup>

Other rivers across the U.S. have also seen fish return after dam removal: Wisconsin’s Baraboo River regained its sturgeon population; Maine’s Kennebec and Penobscot Rivers are home again to Atlantic alewives and shad; and Oregon’s Sandy River saw the rapid return of salmon after breaching Marmot Dam, with coho swimming upriver “the day after the dam crumbled.”<sup>277</sup> Although researchers estimated that fish run recovery would take years because of previous sediment build up, natural water flow cleared up the water within months.<sup>278</sup> The benefits of dam removal seem almost universal as miles of previously blocked fish habitat open up, fish survival and productivity increase, water quality improves, vegetation grows, and natural ecosystems return.<sup>279</sup> As

<sup>272</sup> Richard A. Lovett, *Dam Removals: Rivers on the Run*, NATURE (July 30, 2014), <http://www.nature.com/news/dam-removals-rivers-on-the-run-1.15636>.

<sup>273</sup> Florip, *supra* note 254; Andy Maser, *Condit Dam Removal Complete!*, WHITE SALMON RESTORED (Dec. 3, 2012), <https://whitesalmontimelapse.wordpress.com>.

<sup>274</sup> Lovett, *supra* note 272.

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

<sup>276</sup> Gilman, *supra* note 256.

<sup>277</sup> Lovett, *supra* note 272 (“On south-central Wisconsin’s Baraboo River, the removal of a string of dams has allowed sturgeon to reach their former spawning grounds. And in New England, the destruction of two dams 7–9 metres high on Maine’s Kennebec River and one of its tributaries has allowed Atlantic alewives (*Alosa pseudoharengus*) to repopulate 100 kilometres of previously blocked-off river. In 1999, before the first dam was taken out, no alewives were recorded in the upper part of the watershed, says Serena McClain, head of river restoration for American Rivers. By 2013, the annual run had rebounded to around 3 million.”); Carpenter, *supra* note 256 (“More than 500 Atlantic salmon have made the trip, along with nearly two million alewives, countless baby eels, thousands of mature sea lamprey and dozens of white perch and brook trout. Striped bass are feeding a dozen miles above Bangor in waters closed to them for more than a century.”); Milstein, *supra* note 254 (“Though some officials had worried that the sediment would linger and pose an obstacle to fish, federally protected coho salmon were swimming upriver the day after the dam crumbled. Salmon spawned in the river as they always have.”).

<sup>278</sup> Milstein, *supra* note 255.

<sup>279</sup> These benefits are not just contained within the river’s ecosystem either. Plentiful salmon (and other anadromous fish) provide food to a variety of ocean predators, which means dam breaches can benefit both riverine and marine environments. See Phuong Le, *Scientists Call For Breaching Dams to Save Puget Sound Orcas*, ASSOCIATED PRESS (Oct. 28, 2016),

communities see these benefits, dam removal tends to “create momentum for removing other dams.”<sup>280</sup>

As dams age and require repair, breaching may become more common as states turn to alternative sources of energy. Offshore wind energy is one of the fastest growing energy sources in Europe,<sup>281</sup> and the U.S. Department of Energy recently promoted offshore wind projects in the U.S. as a means of achieving energy independence.<sup>282</sup> As of 2016, three projects are in the works: New Jersey’s Fishermen’s Energy Project, Virginia’s VOWTAP (Virginia Offshore Wind Technology Advancement Project), and Oregon’s WindFloat Pacific Project.<sup>283</sup> The Governor of Oregon and other officials predict that WindFloat will revitalize the economy of Oregon’s coastal communities and provide a cheaper, more powerful sustainable energy source than hydroelectric facilities.<sup>284</sup> However, the offshore turbines remain expensive and controversial. The Oregon project in particular faces financial and political obstacles as it struggles to confirm a power purchase agreement.<sup>285</sup> WindFloat will be fifteen to eighteen miles offshore in Coos Bay, which is ideal for harvesting wind, but also makes it a vastly more expensive venture than on-shore facilities—a cost utility market may not be willing to pay.<sup>286</sup>

Despite concerns over WindFloat, the Pacific Northwest continues to pursue alternative clean energy sources, including hydrokinetic technology.<sup>287</sup>

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<https://apnews.com/aaa8b3c8e9d94a46844dd662b19ddffb/scientist-breach-dams-save-orcas-washington-state>.

<sup>280</sup> Milstein, *supra* note 255.

<sup>281</sup> Keith Tymchuk, *Ocean Wind Project Would Benefit Coastal Economy*, STATESMAN J. (Oct. 3, 2015, 9:26 PM), <http://www.statesmanjournal.com/story/opinion/readers/2015/10/04/ocean-wind-project-benefit-coastal-economy/73251854/>.

<sup>282</sup> *Id.*

<sup>283</sup> Pete Danko, *Oregon Offshore Wind Project’s Troubles Leave the DOE 0-for-3 So Far*, BREAKING ENERGY (June 25, 2015, 3:00 PM), <http://breakingenergy.com/2015/06/25/oregon-offshore-wind-projects-troubles-leave-the-doe-0-for-3-so-far/>; *Virginia Offshore Wind Technology Advancement Project*, DOMINION ENERGY (July 10, 2017), <http://dominionenergy.mediaroom.com/2017-07-10-Dominion-Energy-Moving-Forward-on-Offshore-Wind-Project-with-Global-Market-Leader-DONG-Energy-as-Partner>.

<sup>284</sup> Tymchuk, *supra* note 281; *see also* Jes Burns, *Oregon Offshore Wind Project Stalls*, OR. PUB. BROADCASTING (Sept. 9, 2016, 1:45 PM), <http://www.opb.org/news/article/oregon-offshore-wind-project-stalls/> (“Under the initial proposal filed with federal regulators, the project would have produced 30 megawatts of power from five different floating turbines anchored to the seafloor more than 1,000 feet deep. It was enough energy to power several thousand homes.”).

<sup>285</sup> Danko, *supra* note 283; Burns, *supra* note 284.

<sup>286</sup> *See generally* Chelsea Davis, *Without Oregon Utilities Nod, Coos Bay WindFloat Dead in the Water*, THE WORLD (Dec. 7, 2015), [http://theworldlink.com/news/local/without-oregon-utilities-nod-coos-bay-windfloat-dead-in-the/article\\_095e12ca-6d7e-53e0-a313-05181d324cf3.html](http://theworldlink.com/news/local/without-oregon-utilities-nod-coos-bay-windfloat-dead-in-the/article_095e12ca-6d7e-53e0-a313-05181d324cf3.html).

<sup>287</sup> Glenn Meyers, *Waves and Tides Star as DOE Rekindles Marine Hydrokinetic Energy Program, Targeting Commercialization*, CLEAN TECHNIC (May 20, 2016), <https://cleantechnica.com/2016/05/20/waves-tides-star-as-doe-rekindles-marine-hydrokinetic-energy->



Hydrokinetic energy utilizes marine and river environments by converting the kinetic force of waves, tides, and currents into electricity.<sup>288</sup> Although a new industry, hydrokinetic power's potential and recent international successes caught the United States' attention.<sup>289</sup> Scotland recently employed underwater turbines to harvest tidal energy and provide electricity to the Shetland Islands, becoming "the world's first network of tidal turbines to deliver electricity to the power grid."<sup>290</sup> While there are concerns over the technology's current reliability and costs, hydrokinetic power provides a variety of benefits, including combating climate change, providing continuous power generation and a reliable energy source to large populations, creating jobs, and stimulating economic growth.<sup>291</sup> The U.S. Department of Energy predicts that U.S. tidal streams "could generate enough electricity to power nearly 30 million homes a year"<sup>292</sup> and promised to invest \$16 million in hydrokinetic projects as part of its energy strategy.<sup>293</sup>

With the U.S. turning to alternative energy sources, dependence on hydroelectricity is increasingly unreliable and unprofitable. For example, while hydroelectric production increased by 175% between 1950 and 1970, it stagnated in the 1970s.<sup>294</sup> More recently, the net total energy production in the U.S. from hydroelectric dams dropped to seven percent in 2013 as "other sources have been added to the nation's energy portfolio."<sup>295</sup> In addition, both

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program/; *FERC, Oregon Sign Memorandum of Understanding for Wave Energy Projects*, FED. ENERGY REG. COMMISSION (March 27, 2008), <https://www.ferc.gov/media/news-releases/2008/2008-1/03-27-08.asp>.

<sup>288</sup> *Marine and Hydrokinetic Energy Research & Development*, U.S. DEP'T ENERGY, <http://energy.gov/eere/water/marine-and-hydrokinetic-energy-research-development> (last visited Nov. 12, 2016).

<sup>289</sup> Taylor Hill, *The Tide is Turning for a New Source of Green Energy*, TAKEPART (Sept. 1, 2016), <http://www.takepart.com/article/2016/09/01/tide-shifting-worlds-most-reliable-renewable-energy-sources> (last visited Nov. 12, 2016).

<sup>290</sup> *Id.*

<sup>291</sup> Concerns over hydrokinetic energy revolve around the industry's infancy, unproven technology, and high costs. The technology has not been fully researched or developed yet, so costs remain high, but recent successes – like in the Shetland Islands – show that the technology could be an instrumental success that is worth the gamble. Moreover, the industry has great economic potential in addition to environmental benefits. The U.K. Carbon Trust "estimates a \$165 billion global tidal energy market could be developed by 2050." See Hill, *supra* note 289; Ken Silverstein, *Ocean Technologies are Moving Forward But Still Have a Ways to Go*, ENVTL. LEADER (July 29, 2016), <http://www.environmentalleader.com/2016/07/29/ocean-technologies-are-moving-forward-but-still-have-a-ways-to-go/>; *DOE Funds R&D on Tidal and Ocean Energy*, MARINE LOG (Sept. 1, 2016), [http://www.marinelog.com/index.php?option=com\\_k2&view=item&id=22894:doe-funds-rd-on-tidal-and-ocean-energy&Itemid=224](http://www.marinelog.com/index.php?option=com_k2&view=item&id=22894:doe-funds-rd-on-tidal-and-ocean-energy&Itemid=224).

<sup>292</sup> Hill, *supra* note 289.

<sup>293</sup> Silverstein, *supra* note 291.

<sup>294</sup> U.S. DEP'T OF ENERGY, *HYDROPOWER VISION: A NEW CHAPTER FOR AMERICA'S 1ST RENEWABLE ELECTRICITY SOURCE 76* (July 26, 2016), <http://energy.gov/sites/prod/files/2016/10/f33/Hydropower-Vision-Chapter-2-10212016.pdf>.

<sup>295</sup> *Id.* ("Since the 1970s, average total energy produced by hydro-power plants has

Condit and Marmot Dams fell to economic realities, because “updating [a dam] to help declining fish runs would cost more than the dam was worth for the hydroelectric power it generated.”<sup>296</sup> Should wind and hydrokinetic projects prove successful over the years, hydroelectric facilities may take on a secondary, even unviable, role in energy production.

However, until that point, hydroelectric dams will continue to provide many benefits to the Columbia River Basin and beyond, including flood control, navigation, irrigation, in addition to clean energy.<sup>297</sup> While many salmon and wild river advocates long for more dam removals throughout the Basin,<sup>298</sup> that hope remains impractical so long as hydroelectric facilities produce revenue and provide benefits to the region. A more feasible plan lies in case-by-case analysis to determine whether the benefits of removing a particular dam outweigh the costs.<sup>299</sup> By using a holistic approach to ensure environmental and economic protection, states can trade uneconomic dams for restored salmon runs and an improved fishing industry.<sup>300</sup> This comprehensive approach to salmon recovery addresses the primary threat to salmon runs, has the greatest chance of recovering populations, and consequently minimizes the impacts of other threats to salmonids, such as sea lion predation. However, because dam removal has such a complicated and controversial political background, the number of dams

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remained consistent, at around 275 TWh per year.”).

<sup>296</sup> Milstein, *supra* note 255; *see also* Becker, *The Challenges of Dam Removal*, *supra* note 264, at 816–17.

<sup>297</sup> Blumm, *Practiced at the Art of Deception*, *supra* note 14, at n. 8.

<sup>298</sup> Bogert, *supra* note 14, at 560.

<sup>299</sup> For example, as the U.S. and Canada review the Columbia River Treaty (1964), there is a “key window of opportunity” to modernize the treaty with ecological considerations that may restore “some of the prior variability, connectivity, and/or diversity of the natural system.” Cosens & Fremier, *supra* note 33, at 92, 122–23.

<sup>300</sup> Within the Columbia River Basin are fifty-six hydropower dams, and seventy-seven multi-purpose projects that provide navigation, irrigation, and other services in addition to hydropower. Right now the most targeted dams by breach advocates and the Oregon District Court are the four federal dams on the lower Snake River: Lower Granite, Little Goose, Lower Monumental, and Ice Harbor. Multiple reports concluded that the benefit of breaching the lower Snake River dams in the Pacific Northwest outweighs the costs. For example, the 1996 Harza Report estimated dam removal of the lower Snake River dams would cost between \$75 million – \$135 million, while current agency flow programs already cost \$200 million per year. The Idaho Statesman Report in 1997 also recommended breaching dams for a net benefit of \$183 million annually. Though Judge Redden hinted at dam removal in his judicial reviews on NMFS’s Biological Opinions, he clearly expressed his views after retiring that the four lower Snake River Dams should be removed to improve salmon recovery. While he is no longer exercising judicial authority over the agencies involved, his opinion still carries weight from his role as “the one person charged with listening to hundreds of hours of testimony, poring over thousands of pages of legal briefs and scientific research, and then rendering his independent judgment on how to make sure the mandates of the Endangered Species Act are upheld.” Kunz, *supra* note 246; *Nat’l Wildlife Fed’n III*, 839 F. Supp. 2d at 1130; *A Guide to Major Hydropower Dams of the Columbia River Basin*, *supra* note 252; Blumm, *Saving Snake River Water*, *supra* note 19, at 1024–26 (*see full article for economic analysis on each report supporting Snake Dam removal*); Blumm & Paulsen, *supra* note 24, at 147–48.

removed in the future still “depends on what we as a society decide to prioritize.”<sup>301</sup>

If officials refuse dam removal, or if the political process delays removal for too long, then river restoration becomes essential. After all, dam breaching is so effective because it restores a river to its natural state.<sup>302</sup> Many salmon runs declined because dam infrastructure “transformed the freeflowing [*sic*] rivers to a series of slack, lake-like environments,” leaving salmon with reservoirs in place of a once mighty river.<sup>303</sup> Today, only “about 55 miles of mainstem [*sic*] riverine habitat remain out of the original 1200 miles available to salmon and steelhead.”<sup>304</sup> Spill and reservoir drawdowns are two methods to replicate natural river flow and cool temperatures to improve salmon survival.<sup>305</sup> However, even with effective riverine conditions in place, salmon recovery requires additional measures to address every stressor to the species.

### B. *Alternative 2: Alternate Predator Management*

In the 2016 Task Force report, most members “felt that pinnipeds need to be managed.”<sup>306</sup> Although opinions varied on how and whether management should fall under Section 120, the group recognized an urgent need for more regulation and management over the species.<sup>307</sup> These “grizzly-sized carnivores” are now so pervasive that “they’re pushing up the Sacramento River into the farmlands of the Central Valley.”<sup>308</sup> These high numbers cause much distress; many communities label these pinnipeds “vermin” and are upset that these “aquatic beasts. . . [take] their fill of fresh sushi under the soothing spray of Willamette Falls.”<sup>309</sup> As sea lions spread up the coast, they have a reputation for

<sup>301</sup> Gilman, *supra* note 256.

<sup>302</sup> *Id.*; Carpenter, *supra* note 256.

<sup>303</sup> Wood, *supra* note 20, at 219; THE NW. POWER & CONSERVATION COUNCIL, RETURN TO THE RIVER, 235 (2000), <https://www.nwcouncil.org/reports/2000/2000-12> (“[S]o many reservoirs are present that riverine characteristics are largely replaced by lacustrine conditions throughout the mainstems.”).

<sup>304</sup> THE NW. POWER & CONSERVATION COUNCIL, *supra* note 303, at 235.

<sup>305</sup> Blumm, *Saving Snake River Water*, *supra* note 19, at 1024; BPA, *Many Routes to the Ocean*, *supra* note 103, at 3.

<sup>306</sup> BONNEVILLE PINNIPED-FISHERY INTERACTION TASK FORCE, *supra* note 206, at 8.

<sup>307</sup> *Id.*, at 8–9.

<sup>308</sup> Bland, *supra* note 45.

<sup>309</sup> Fishermen and sea lions tend to have a poor relationship, especially as sea lion predation negatively affects the fishing industry. Some fishermen see hazing techniques and Section 120 as “a big waste of money,” even going as far to say, “they all need to be euthanized because there’s no fear of man in any of them.” While many people do not have such strong animosity for the marine mammals, locals are alarmed by the increased presence of sea lions as they appear more and more on waterfront property, docks, and other coastal areas “where sea lions had rarely been seen before.” Communities are trying, unsuccessfully, to keep the sea lions off docks and other areas as the pinnipeds damage property and are aggressive towards people. Raymond Rendleman, *Fed Up With Feeding Sea Lions*, PORTLAND TRIB. (July 13, 2011),

damaging ports, overturning boats, attacking anglers, conquering docks, sinking boats, “and even biting people and their dogs.”<sup>310</sup> Some see these mammals as “smart, lovable creatures that shouldn’t be harmed in any way,” while others find them “destructive pests that need to be controlled.”<sup>311</sup> As a result, “both sides have gripes about how these hulking pinnipeds are being managed on the Columbia River.”<sup>312</sup>

Predation management is necessary to counteract the harmful effects that pinnipeds have on the salmon runs, but it requires efficient application, performed in conjunction with other recovery methods. Historically, predation management targeted animals that threatened agriculture, livestock, forestry, or hunting and fishing.<sup>313</sup> These archaic programs “showed little concern for determining whether species actually preyed on humans or livestock, nor [] whether individual livestock killers were killed.”<sup>314</sup> Unabated killing sprees led to the deaths of wolves, bears, eagles, mountain lions, coyotes, and other predators, creating “an imbalance in the ratio of predator and prey, and reducing overall species diversity and genetic strength.”<sup>315</sup> This imbalance was especially damaging on the Kaibab Plateau in Arizona. After hunters killed over 6,000 predators, the mule deer population exploded from 4,000 to 100,000, and the deer quickly “exhausted its natural food supply.”<sup>316</sup>

Compared to these historic attempts, Section 120 provides a progressive approach to controlling predators. First, for a lawful taking, observers witness an individually identified sea lion consuming salmon below Bonneville Dam.<sup>317</sup> As a result, the Task Force only allows the states to take predators known to be harmful to local salmon runs. In addition, restricted takings allow removal of only “one percent of [sea lions]. . . from the wild without affecting the overall abundance, distribution, or productivity of the population.”<sup>318</sup> Despite its faults, Section 120 is very effective at protecting predatory pinnipeds and keeping lethal takings to a minimum. Nevertheless, Section 120 still retains an element of historic predator management because, like wolves or bears in the nation’s

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<http://portlandtribune.com/component/content/article?id=9544>; Moss & Losey, *supra* note 150, at 171; Tim Becker, *Rainier Docks Overtaken By Sea Lions*, KOIN 6 NEWS (Mar. 7, 2016, 10:51 AM), <http://koin.com/2016/03/07/rainier-docks-overtaken-by-sea-lions/>.

<sup>310</sup> Profita, *supra* note 9; Cheng, *supra* note 8, at 9; BONNEVILLE PINNIPED-FISHERY INTERACTION TASK FORCE, *supra* note 206 (noting that recorded encounters between California sea lions and fishermen “ranged from being thrown from boats to stealing fish from nets.”).

<sup>311</sup> Profita, *supra* note 9.

<sup>312</sup> *Id.*

<sup>313</sup> June C. Edverson, *Predator Control and Regulated Killing: A Biodiversity Analysis*, 13 UCLA J. ENVTL. L. & POL’Y 31, 37 (1994).

<sup>314</sup> *Id.*

<sup>315</sup> *Id.* at 35–37.

<sup>316</sup> *Id.* at 39–40.

<sup>317</sup> 16 U.S.C. § 1389(b)(1) (2016).

<sup>318</sup> *Humane Soc’y of U.S. v. Bryson*, 924 F. Supp. 2d 1228, 1254–55 (D. Or. 2013).

early history, officials kill sea lions to protect their prey. However, in comparing sea lions and salmon with coyote and mule deer, the sea lions actually have more in common with the deer. Though a natural predator on the salmonids, the sea lion population has exploded.<sup>319</sup> Just as exploding deer populations must be kept in check,<sup>320</sup> California sea lions require management techniques to keep their numbers at sustainable levels, especially given the limited fish stocks available.<sup>321</sup>

One possible solution for alternate predator management is amending the MMPA to give it a protection hierarchy for recovering populations. Creating multiple categories based on marine species and their respective population status could provide more effective management over species and ecosystems as a whole. Conservation efforts would “work on a larger scale, focusing not on preserving single species in small islands of wilderness but on large landscapes and entire ecosystems, and the benefits that nature provides to humans.”<sup>322</sup> Under this system, highly endangered species, like the Right Whale,<sup>323</sup> could retain all the protections the MMPA now affords, while overabundant populations, like the California sea lion, will receive more balanced regulations and protections. The inherent risk in this hierarchy system is opening the door to increased marine mammal takings, a risk agencies must prevent for the same reasons that Congress enacted the MMPA in the first place. Although agencies would have more authority to manage species, lethal takings must remain a last resort and permitted only in dire situations like the conflict at Bonneville Dam. Sea lions are magnificent creatures of aesthetic and ecological value that deserve protection under the MMPA, but strict protection of an overabundant species at the expense of endangered wildlife and threatened ecosystems is a dangerous gamble.

A second alternative is the expansion of Native American tribal hunting rights for California sea lions. Today, California sea lions are “more numerous now than they’ve been at any time in the past 13,000 years.”<sup>324</sup> Regular hunting kept pinniped numbers depressed throughout history, with Native hunting practices dating back to Bering land bridge crossings.<sup>325</sup> Tribes considered seals and sea

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<sup>319</sup> Lecky Testimony, *supra* note 155, at 1; Ritter, *supra* note 12.

<sup>320</sup> Andrew C. Revkin, *Out of Control, Deer Send Ecosystem Into Chaos*, N.Y. TIMES (Nov. 12, 2002), <http://www.nytimes.com/2002/11/12/science/out-of-control-deer-send-ecosystem-into-chaos.html>.

<sup>321</sup> Bland, *supra* note 45; Cornelia Dean, *Study Sees ‘Global Collapse’ of Fish Species*, N.Y. TIMES (Nov. 3, 2006), <http://www.nytimes.com/2006/11/03/science/03fish.html>.

<sup>322</sup> Goode, *supra* note 53.

<sup>323</sup> *North Atlantic Right Whales (Eubalaena glacialis)*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., <http://www.nmfs.noaa.gov/pr/species/mammals/whales/north-atlantic-right-whale.html> (last updated July 20, 2017).

<sup>324</sup> Bland, *supra* note 45.

<sup>325</sup> *Id.*

lions “symbols of wealth and plenty” because they provided food, medicine, tools, and pelts.<sup>326</sup> With sea lions at carrying capacity and fish stocks depleted,<sup>327</sup> expanding native hunting rights could bring sea lion populations to sustainable levels and concurrently preserve tribal traditions.

### C. *Alternative 3: One Agency to Govern Salmon Recovery*

Bonneville Dam is the battleground of federal statutes and marine species in this controversy, but it is also home to competing jurisdictions and agencies that only intensify this “ecological conundrum of competing protected species.”<sup>328</sup> The complexity comes from the variety of “technical, scientific, economic, legal, and bureaucratic framework[s] surrounding the operations” in the Columbia River Basin, each of which “threatens to drown the decision-making process” and “tends to induce a myopic view of what is possible in terms of restoring ecosystems and species.”<sup>329</sup> Two nations, six states, multiple tribes, and a variety of federal, state, and local agencies reign in the Columbia River Basin, including several federal actors: NMFS, the U.S. Army Corps of Engineers, the BPA, and others.<sup>330</sup> While this jurisdictional layering balances out the political motivations of each governmental body, it also often results in deadlock and uncertainty,<sup>331</sup> often to the detriment of endangered salmonids.

The Northwest Power Act, enacted in 1980, gives one example of how competing interests thwart salmon recovery.<sup>332</sup> While it placed “fish protection goals ‘on par’ with hydroelectric operations,”<sup>333</sup> conservation efforts for fish have remained foiled and frustrated over the years.<sup>334</sup> The Act’s failure to reverse salmon declines resulted primarily because of the planning council’s

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<sup>326</sup> *North-South-East-West: American Indians and the Natural World—Partners With Nature*, CARNEGIE MUSEUM OF NAT. HIST., <http://www.carnegiemnh.org/online/indians/tingit/sea-mammals.html> (last visited Nov. 19, 2016) (“Seals and sea lions were the most valuable sea mammals to the people of the Northwest Pacific Coast. Symbols of wealth and plenty, they provided food, clothing, and medicines. In addition, skins were fashioned into floats and bags, the intestines into string and bow-strings, and the bladders into containers.”).

<sup>327</sup> Bland, *supra* note 45; Lecky Testimony, *supra* note 155, at 1; Ritter, *supra* note 12.

<sup>328</sup> McCrory, *supra* note 2, at 271.

<sup>329</sup> Wood, *supra* note 20, at 202.

<sup>330</sup> “The Columbia River Basin includes large parts of Idaho, Washington, Oregon, the lower portion of British Columbia, Canada, a smaller portion of Montana, and much smaller areas in Wyoming, California, Nevada, and Utah.” Cosens & Fremier, *supra* note 33, at 99. However, the economic and energy regions of the Columbia River Basin stretch to Vancouver, Seattle, Southern California, and Arizona. *Id.*; *see also* Wood, *supra* note 20, at 204.

<sup>331</sup> Wood, *supra* note 20, at 235–36.

<sup>332</sup> *Id.* at 223.

<sup>333</sup> *Id.* at 238.

<sup>334</sup> *See* Henry B. Lacey, *New Hope for Pacific Salmon? Northwest Resource Information Center v. Northwest Power Planning Council, Idaho Department of Fish & Game v. National Marine Fisheries Service, and the Aftermath of Judicial Impatience*, 14 HASTINGS W.-N.W. J. ENVTL. L. & POL’Y 333, 337–38 (2008); *see also* Cosens & Fremier, *supra* note 33, at 111.

“unwillingness to adhere to the role Congress created for it.”<sup>335</sup>

With multiple jurisdictions and agencies controlling the Columbia River and its dams, there are a variety of competing interests and opinions over the salmon-sea lion controversy. Multiple state, commercial, recreational, tribal, and private interests came forward with legislative bids and judicial actions to hinder or help the lethal takings process, while salmon declines continued unimpeded.<sup>336</sup> Accordingly, the final alternative to manage the salmon-sea lion conflict suggests the creation of one agency to deal solely with salmon recovery or to assign all salmon recovery efforts to an existing agency. That agency can then address the sea lions, dams, and other adverse impacts on wild salmon populations. With one agency overseeing all recovery efforts, salmon survival becomes the priority of one agency instead of a hindrance to many others.

Establishing salmon recovery as the priority of the Columbia River Basin is especially important because dam breaching is so unlikely and controversial despite the necessity of river restoration. As such, efficient species management becomes more important, even though it remains difficult to implement and achieve. In addition, the current excessive statutory and administrative fragmentation make salmon recovery much more difficult.<sup>337</sup> Only by eliminating conflicting interests and political competition can a governing agency focus primarily on salmon recovery. Although there are many vital concerns on all sides of this conflict—all of which must be considered and evaluated—salmon protection is the greatest mitigation effort in the ESA-MMPA conflict and of utmost importance to the cultural, ecological, and economic wellbeing of the Pacific Northwest.

#### VI. CONCLUSION: CHANGING THE STATUS QUO AND FOCUSING ON THE BIG PICTURE

So far, the courts have favored salmon over sea lions. In *Humane Society of the U.S. v. Bryson*, the U.S. District Court for the District of Oregon upheld sea lion takings while simultaneously affirming increased salmon protections by rejecting the hydroelectric dam Biological Opinions in the *National Wildlife Federation* cases.<sup>338</sup> However, while salmon have trumped sea lions in court, that does not mean that the ESA always upstages the MMPA. Despite the conflict surrounding sea lions takings, Section 120 of the MMPA actually works with the ESA to protect salmonids, whether the ESA shields the fish species or not. In *Bryson*, the Oregon District Court explained,

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<sup>335</sup> Lacey, *supra* note 334, at 338.

<sup>336</sup> McCrory, *supra* note 2, at 271–73.

<sup>337</sup> *See id.* at 271; *see also* Wood, *supra* note 20, at 202.

<sup>338</sup> *Humane Soc’y of U.S. v. Bryson*, 924 F. Supp. 2d 1228, 1242–43 (D. Or. 2013); *Nat’l Wildlife Fed’n I*, 184 F. Supp. 3d at 870–72.



pinniped protection gives way to salmonid protection under Section 120 when pinnipeds are impacting salmonid survival or recovery to a significant degree, even if that impact does not rise to the level of appreciably reducing the likelihood that the salmonids will survive and recover. Indeed, *Section 120 allows the protection of salmonids to take precedence over that of pinnipeds even before the salmonids are listed as threatened or endangered under the ESA*, which indicates that Congress intended the Section 120 standard to trigger action before the problem escalated to jeopardizing salmonid populations.<sup>339</sup>

Thus, Section 120 arguably increases the importance of the MMPA for salmon protection by giving all salmonids, even populations not listed under the ESA, protection from predators. It is an ironic victory for the salmon considering that the MMPA should protect the mammalian predator, not the piscine prey. While Congress enacted both statutes to combat anthropogenic harms on species, it failed to consider protecting one species from another.<sup>340</sup>

This conflict between protected species often presents a binary decision: to protect salmonids or pinnipeds, forcing the choice of one species over another. Under this binary regime, salmon continuously edge out the sea lions due to their strengthened legal protection, as well as their cultural and utilitarian value to people.<sup>341</sup> Such dualistic thinking developed two leading perspectives: the conservationist approach of “balancing” the species in their natural environment by removing surplus sea lions, and the ecological viewpoint that pinnipeds are “unnatural” intruders.<sup>342</sup> Both views are misguided because they rely only on modern populations and environments, conditions that exist only because of artificial developments over the last century. Hydroelectric dams and

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<sup>339</sup> *Bryson*, 924 F. Supp. 2d at 1245–46 (emphasis added).

<sup>340</sup> Bonneville Dam is actually home to multiple species and statutory conflicts. Not only are protected pinnipeds consuming salmonids, but so are protected avian predators. Caspian Terns prey on smolt swimming downstream through the dams and are protected under the Federal Migratory Bird Treaty Act. Juvenile smolts are especially vulnerable to predators below the dams because the fish are acclimating to the salt-water environment and because many of the fish are stunned (or already dead) from the dam turbines. Though the Terns have been managed with a habitat relocation program, deterrence methods have only been partially successful. In addition, there are potential conflicts developing in the North Pacific between marine mammal species, many of which are endangered. Recent research indicates that orcas are consuming harbor seals, Steller sea lions, sea otters, narwhals, and other protected species. As these conflicts develop and heighten between protected species, Congress may see more and more pleas for lethal takings as one creature’s survival is chosen over another. Yet such Byzantine predator management is more likely to escalate the situation, rather than solve it. See Bogert, *supra* note 14, at 563–65; Harrison, *Fish Passage at Dams*, *supra* note 3; Engeman, *supra* note 218, at 179–80; Michael Bhargava, *Of Otters and Orcas: Marine Mammals and Legal Regimes in the North Pacific*, 32 *ECOLOGY L.Q.* 939, 940, 952–53; Nature, *Killer Whales Attack Pod of Narwhal*, PUB. BROADCASTING SERV. (Nov. 19, 2014), <http://www.pbs.org/wnet/nature/invasion-killer-whales-killer-whales-attack-pod-narwhals/11165/>.

<sup>341</sup> Cheng, *supra* note 8, at 200.

<sup>342</sup> *Id.* at 198.

infrastructure permanently altered the Columbia River habitat; salmon numbers declined prodigiously over the last century, and the sea lion population exploded under the protective MMPA. The modern Columbia River is nothing like the historic river Native Americans relied on or that early explorers traveled down. So addressing the Bonneville Dam conflict requires a comprehensive analysis and approach.<sup>343</sup>

With salmon populations dwindling and marine conditions fluctuating under climate change, how long can the status quo last? Sixteen years of rejected Biological Opinions and inadequate mitigation efforts have simply increased the number of salmonid species on the endangered species list and resulted in the removal of 156 California sea lions.<sup>344</sup> These administrative actions are meager efforts to protect salmon in the face of an increasingly perilous situation, a small-scale issue in the larger social-ecological context, where Columbia River Basin dams decimate salmon populations. Binary thinking, forcing the choice of one species over another, leaves both salmonid and pinniped species more vulnerable over time and fails to address the greater impacts that hydroelectric dams inflict on salmon. The stakes are high here: hydroelectric power, the existence of several salmon runs, and millions of dollars in both industries hang in the balance. However, even with skeptical courts weighing in on behalf of endangered salmon, the resolution of this conflict will depend far more on the political process than judicial opinion. Balancing species protections against hydropower is essential to salmon recovery efforts and ultimately “depends on what we as a society decide to prioritize.”<sup>345</sup> The real question is, will it be too late?

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<sup>343</sup> Wood, *supra* note 20, at 198–99.

<sup>344</sup> NMFS PINNIPED-FISHERY INTERACTION TASK FORCE: BONNEVILLE, *supra* note 196, at 3, 5–6.

<sup>345</sup> Gilman, *supra* note 256.