NOTE

The Dark Horse of the Endangered Species Act: How Section 7(a)(1) Can Be Used to Mitigate Climate Change

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ABSTRACT

The Endangered Species Act ("ESA") has been a powerful tool for conserving both national and global biodiversity. As human society continues to evolve, however, so too does its impact on endangered species. Most troublesome is mankind's contribution to climate change since the Industrial Revolution. As extreme weather events, rising sea levels, and increased spread of disease indiscriminately harm living creatures, the fight against species extinction has become an uphill battle.

Thankfully, there is still hope. Past legal scholarship has proposed using the ESA to protect species from the effects of climate change, for example, by preserving habitats that they will likely need in the future. Using the ESA in this fashion, however, only addresses climate change retrospectively.

This Note proposes using section 7(a)(1) of the ESA to address climate change prospectively. Section 7(a)(1) commands federal agencies to pursue the conservation of endangered species—a mandate that can be used to mitigate climate change. Because section 7(a)(1) has only been interpreted by courts and not by the agencies that administer the ESA, this Note fills in the logical gaps and extrapolates a rule that can properly carry out the policy

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asserted in Tennessee Valley Authority v. Hill*—that endangered and threatened species be afforded the "highest priority." Specifically, this Note proposes that federal agencies must consult with the Fish & Wildlife Service ("FWS") or National Marine Fisheries Service ("NMFS") under section 7(a)(1) if there is a conservation-friendly alternative to either (1) a proposed agency action or (2) the administration of a statute within the agency's authority. The agency must implement a conservation-friendly alternative if one exists. If more than one exists, the agency retains discretion to choose among the alternatives.*

Finally, this Note applies the affirmative conservation framework to the Environmental Protection Agency ("EPA"), concluding that section 7(a)(1) requires the EPA to regulate greenhouse gas emissions under the Clean Air Act's ("CAA") national air quality standards to mitigate climate change and thus protect endangered species. This Note demonstrates that regulating methane emissions by focusing on Concentrated Animal Feeding Operations would allow the EPA to satisfy its affirmative conservation duty while avoiding costly economic and political alternatives.

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INTRODUCTION

In 2015, 21 young plaintiffs filed a lawsuit in the U.S. District Court for the District of Oregon that has shaped much of the country's current conversations around climate change. The plaintiffs in *Juliana v. United States*[1] alleged that the federal government has failed in its duty as a public trustee to ensure a safe and clean environment for current and future generations by "substantially . . . contributing to a dangerous concentration of [carbon dioxide] in the atmosphere."[2] While the case has gone through a procedural rollercoaster, the plaintiffs have demonstrated an inspirational drive and determination to see a fundamental change in the way the U.S. federal government addresses climate change.[3]

Unfortunately, the *Juliana* case is not a guaranteed success. The plaintiffs rely on the public trust doctrine, a concept adopted from English common law that has evolved over time but has only been imposed on the *states*.[4] Nowhere in the U.S. Constitution is the duty of public trustee imposed on the federal government.[5] In 2012, the Supreme Court stated unequivocally that "the public trust doctrine remains a matter of state law . . . ."[6] Although the District Court of Oregon expressed doubts as to whether this precedent applies to the *Juliana* case, victory for the young plaintiffs is anything but assured.[7]

For many people, the gravity of climate change impacts on biodiversity is just beginning to sink in. According to the Center for Biological Diversity, 68% of plants, 50% of primates, 33% of amphibians, sharks, and rays, 30% of invertebrates, 21% of fish and

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1 217 F. Supp. 3d 1224 (D. Or. 2016).

2 *Id.* at 1264.

3 *See Details of Proceedings*, OUR CHILD. TR., https://www.ourchildrenstrust.org/federal-proceedings [https://perma.cc/4K86-EL8X].

4 *See* Geer v. Connecticut, 161 U.S. 519, 527–28 (1896); Mary Christina Wood, *Protecting the Wildlife Trust: A Reinterpretation of Section 7 of the Endangered Species Act*, 34 ENVTL. L. 605, 609 n.18, 611 (2004).

5 *See* Alec L. *ex rel.* Loorz v. McCarthy, 561 F. App'x 7, 8 (D.C. Cir. 2014) (finding plaintiffs unable to establish federal question jurisdiction for federal public trust claim because they lacked citations to U.S. Constitution or laws supporting their theory).

6 PPL Mont., L.L.C. v. Montana, 565 U.S. 576, 603 (2012).

7 *Juliana*, 217 F. Supp. 3d at 1272–74. Given the case's implications for a federal public trust duty, this case may reach the U.S. Supreme Court.

reptiles, 20% of mammals, and 12% of birds are "at risk of *extinction*" globally.[8] Experts believe that we are "currently experiencing the worst spate of species die-offs since the loss of the dinosaurs 65 million years ago."[9] Species are going extinct at a rate *1,000 times* the normal background rate.[10] These statistics suggest that the fight against species extinction is becoming increasingly difficult.

Protecting biodiversity is just as crucial for humans as it is for other species.[11] Species diversity offers humans variety in food, nutrients, and medicine.[12] Genetic variation among and across species also provides resilience against catastrophic events like floods, droughts, and disease, thus providing assurance that natural resources remain available despite environmental changes.[13] Mitigating climate change and avoiding species extinction therefore is of paramount importance.

A federal duty to address climate change, akin to what the young plaintiffs in the *Juliana* case are attempting to impose, would put the United States at the forefront of environmental conservation. Because the idea of a federal public trust doctrine is not guaranteed to survive judicial scrutiny, this Note instead proposes that the Endangered Species Act ("ESA" or "Act")[14] be used to impose a federal duty to address climate change.

In particular, this Note argues that section 7(a)(1) of the ESA provides the tools necessary to ensure that the federal government plays a role in species conservation through climate change mitigation. Part I will provide background on climate change and the ESA and discuss why current uses of the Act fall short of addressing climate change prospectively. Part II will articulate the current scope of the

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8 *Halting the Extinction Crisis*, CTR. FOR BIOLOGICAL DIVERSITY, https://www.biologicaldiversity.org/programs/biodiversity/elements_of_biodiversity/extinction_crisis/ [https://perma.cc/Q2N5-76YW] (emphasis added).

9 Doyle Rice, *These Species Went Extinct in 2018. More May Be Doomed to Follow in 2019*, USA TODAY (Aug. 13, 2019, 11:35 AM), https://www.usatoday.com/story/news/nation/2018/12/31/extinct-species-these-animals-were-lost-forever-2018/2450121002/ [https://perma.cc/L5XM-ZE7J] (quoting the Center for Biological Diversity).

10 Beth Gavrilles, *Species Going Extinct 1,000 Times Faster than in Pre-Human Times, Study Finds*, PHYS.ORG (Sept. 18, 2014), https://phys.org/news/2014-09-species-extinct-faster-pre-human.html [https://perma.cc/6XGE-KBLT].

11 *See, e.g.*, Danielle Buttke et al., *Benefits of Biodiversity to Human Health and Well-Being*, NAT'L PARK SERV. (Aug. 28, 2018), https://www.nps.gov/articles/parksciencev31-n1_buttke_etal-htm.htm [https://perma.cc/S9LA-GN6J].

12 *See Biodiversity*, WORLD HEALTH ORG., https://www.who.int/globalchange/ecosystems/biodiversity/en/ [https://perma.cc/6NKE-DNT7].

13 *See id.*; *Crop Diversity: Why It Matters*, CROP TR., https://www.croptrust.org/our-mission/crop-diversity-why-it-matters/ [https://perma.cc/58MW-L8LE].

14 Endangered Species Act of 1973, 16 U.S.C. §§ 1531–1544 (2018).

section 7(a)(1) affirmative conservation duty imposed on federal agencies and expand on this interpretation to cover situations not yet judicially explored. This Note proposes that federal agencies are required to consult with the Fish & Wildlife Service ("FWS") or National Marine Fisheries Service ("NMFS") under section 7(a)(1) if there is a conservation-friendly alternative to either (1) a proposed agency action or (2) the administration of a statute within the agency's authority. The agency must implement a conservation-friendly alternative if one exists. If more than one exists, the agency retains discretion to choose among the alternatives. Part III will argue that climate change can be mitigated by applying this Note's proposed interpretation of the section 7(a)(1) affirmative conservation duty to the Environmental Protection Agency ("EPA") and its administration of the Clean Air Act ("CAA")[15] by requiring the national regulation of greenhouse gas emissions. This Note concludes by suggesting that the EPA satisfy its affirmative conservation duty by regulating methane emissions.

I. Background

A. Overview of Climate Change

1. Introduction to Climate Change

The phrase "climate change,"[16] also known as global warming, refers to the increase in average global temperature and the various environmental effects associated with this increase.[17] These effects include droughts, floods, rising sea levels, ocean acidification, and increased global mean precipitation, among others.[18] The polar vortex that hit Canada and the United States in January 2019 was also likely a result of climate change, even though it manifested in record-breaking *low* temperatures.[19]

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15 42 U.S.C. §§ 7401–7671q (2018).

16 This section is not intended to be an exhaustive depiction of the science behind climate change.

17 *See* Myles R. Allen et al., *Framing and Context*, *in* Intergovernmental Panel on Climate Change, Global Warming of 1.5°C, at 49, 53 (Valerie Masson-Delmotte et al. eds., 2018).

18 *See id.* at 53, 61.

19 *See* Robert McSweeney, *Q&A: How Is Arctic Warming Linked to the 'Polar Vortex' and Other Extreme Weather?*, CarbonBrief (Jan. 31, 2019, 4:56 PM), https://www.carbonbrief.org/qa-how-is-arctic-warming-linked-to-polar-vortext-other-extreme-weather [https://perma.cc/ME9L-Q7BC]. Scientists have postulated that decreasing Arctic sea ice may contribute to the increased frequency of "sudden stratospheric warming" events, which cause cold Arctic air to leech out from its typical winter confinement at the North Pole. *Id.*

Experts agree that the principal driver of climate change is the anthropogenic emission of greenhouse gases[20] like carbon dioxide, methane, and nitrous oxide,[21] which trap and prevent heat from escaping Earth's atmosphere.[22] These gases are released through energy consumption (e.g., fossil fuel combustion, natural gas, coal mining), industrial processes (e.g., iron and steel production, aluminum production), agriculture (e.g., soil management, enteric fermentation, manure management), and waste management (e.g., landfills, wastewater treatment).[23]

Unfortunately, previously emitted greenhouse gases can continue to have a "warming commitment" effect on global temperatures.[24] The magnitude of this lingering effect varies with each greenhouse gas and "depends on the absorbing characteristics, concentration in the atmosphere, and the lifetime of each gas."[25] For example, the effects of carbon dioxide remain for hundreds of thousands of years, the effects of nitrous oxide remain for about a century, but the effects of methane only remain for approximately one decade.[26]

Greenhouse gases also differ in their "global warming potential," or their ability to trap heat in the atmosphere.[27] This metric is normalized to carbon dioxide, meaning that carbon dioxide has a global warming potential of one.[28] In comparison, methane has a global warming potential of 25—one kilogram of methane traps 25 times as much heat as one kilogram of carbon dioxide.[29]

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20 *E.g.*, Allen et al., *supra* note 17, at 53. "Since 2000, the estimated level of human-induced warming has been equal to the level of observed warming with a likely range of ±20% accounting for uncertainty due to contributions from solar and volcanic activity over the historical period." *Id.* at 31.

21 *Greenhouse Gas Emissions: Overview of Greenhouse Gases*, U.S. ENVTL. PROTECTION AGENCY (Mar. 16, 2020), http://www.epa.gov/ghgemissions/overview-greenhouse-gases [https://perma.cc/6J3N-WL3R].

22 *See* U.S. ENVTL. PROT. AGENCY, EPA 430-R-18-003, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990–2016 ES-2 (2018) [hereinafter EPA INVENTORY].

23 *Id.* at ES-19 tbl.ES-4.

24 Allen et al., *supra* note 17, at 64. There are two "variants" of warming commitment: "(i) . . . the further warming that would result if atmospheric concentrations of [greenhouse gases] and other climate forcers were stabilised at the current level; and (ii) . . . the further warming that would still occur if all future anthropogenic emissions of greenhouse gases and aerosol precursors were eliminated instantaneously." *Id.*

25 U.S. CONG., OFFICE OF TECH. ASSESSMENT, OTA-O-483, CHANGING BY DEGREES: STEPS TO REDUCE GREENHOUSE GASES 4 (1991), https://babel.hathitrust.org/cgi/pt?idň.31951p01002883z&view=1up&seq=14 [https://perma.cc/2Y9X-7ZKF].

26 Allen et al., *supra* note 17, at 64.

27 EPA INVENTORY, *supra* note 22, at ES-3.

28 *See id.* at ES-3 & tbl.ES-1.

29 *See id.* at ES-3 tbl.ES-1, -15.

Because each gas has a different warming commitment and global warming potential, the most effective way of combating climate change is to reduce greenhouse gas emissions in a mathematically optimal manner rather than a uniform manner.[30]

2. *The Effects of Climate Change on Biodiversity*

Ecosystems are particularly sensitive to the consequences of climate change. In addition to the direct damage caused by droughts and floods on natural habitat, rising temperatures are forcing terrestrial species to leave their current ranges in search of more suitable areas.[31] Successful translocation of a species or population from its current habitat to a more suitable one is limited by the availability of alternate locales,[32] physical barriers,[33] new predators encountered along the way,[34] and whether the new habitat creates population "islands" that weaken the genetic viability of the species as a whole.[35] Even if the move is successful, ecosystem "breakdown" is still possible because not every species in an ecosystem will translocate at the same time.[36] In other words, if the new habitat does not offer the same or similar species-to-species relationships as those present in the previous habitat, the species may not endure even though it survived the move.[37]

Marine species are also affected by climate change. Ocean acidification, the process by which carbon dioxide reacts with water to form carbonic acid,[38] poses major threats to ecosystem stability by altering important physiological processes such as calcification and acid-base regulation.[39] The "coral bleaching" at the Great Barrier Reef is a

30 *See* Allen et al., *supra* note 17, at 64 ("[The] different behaviours [of greenhouse gases] must be taken account in assessing the implications of any approach to calculating aggregate emissions . . . .").

31 *See* Kalyani Robbins, *The Biodiversity Paradigm Shift: Adapting the Endangered Species Act to Climate Change*, 27 FORDHAM ENVTL. L. REV. 57, 67 (2015). The movement of a species under these conditions is called "translocation." *Id.* at 78. While translocation is distinct from the annual process of "migration," some sources use the terms interchangeably. *See id.*

32 *Id.* at 67–68.

33 *Id*.

34 *Id*.

35 *Id.* at 77; *see also* J.B. Ruhl, *Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, 88 B.U. L. REV. 1, 2–4 (2008).

36 Robbins, *supra* note 31, at 68.

37 *See id.*

38 *Understanding the Science of Ocean and Coastal Acidification*, ENVTL. PROTECTION AGENCY (Aug. 23, 2019), https://www.epa.gov/ocean-acidification/understanding-science-ocean-and-coastal-acidification#ocean [https://perma.cc/X7N3-MMWB].

39 *See* Robbins, *supra* note 31, at 71.

striking example of the damage caused by ocean acidification on once flourishing ecosystems.[40]

Climate change is impacting biodiversity on a truly global scale.[41] Because biodiversity is crucial to human welfare, the survival of the human species depends on expeditiously reversing or mitigating climate change. The ESA offers a powerful tool in achieving this goal.

B. Overview of the Endangered Species Act

1. Purpose

The ESA[42] was crafted to prevent further extinction of plant and animal species.[43] Just five years after its enactment, the Supreme Court solidified the ESA's reputation as a powerful conservation tool detached from the typical utilitarian values normally ascribed to natural resources.[44] In *Tennessee Valley Authority v. Hill* ("*TVA v. Hill*"),[45] the Court held in favor of the snail darter, a three-inch fish living in the Little Tennessee River, whose endangered status under the Act and impending threat of extinction halted the construction of a nearly complete multimillion-dollar dam.[46] The Court so held despite learning that the snail darter was not useful to humans as either a source of food or as bait for fishing.[47]

Gone was the notion that a species must serve a known purpose for it to enjoy legal protection.[48] Instead, the Court asserted that while "[i]t may seem curious to some that the survival of a relatively small number of three-inch fish among all the countless millions of species

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40 *See Reef Health: Reef Health over the Last Five Years*, AUSTL. GOV'T, GREAT BARRIER REEF MARINE PARK AUTHORITY, http://www.gbrmpa.gov.au/the-reef/reef-health [https://perma.cc/PHJ9-L4AY].

41 *See generally* Allen et al., *supra* note 17 (mapping the effects of climate change globally).

42 Endangered Species Act of 1973, 16 U.S.C. §§ 1531–1544 (2018).

43 *See id.* § 1531(b); *see also* Tenn. Valley Auth. v. Hill, 437 U.S. 153, 174–75 (1978) (describing the legislative history of the ESA to highlight the Act's purpose).

44 *See Hill*, 437 U.S. at 174–75; Ruhl, *supra* note 35, at 4 (the ESA is "[o]ften referred to as the 'pit bull' of environmental laws").

45 437 U.S. 153 (1978).

46 *See id.* at 161, 172, 193–95.

47 *See* Donald S. Cohen, *Judicial Predictability in United States Supreme Court Advocacy: An Analysis of the Oral Argument in* Tennessee Valley Authority v. Hill, 2 U. PUGET SOUND L. REV. 89, 104 (1978).

48 *See Hill*, 437 U.S. at 177 ("The legislative proceedings in 1973 are, in fact, replete with expressions of concern over the risk that might lie in the loss of *any* endangered species."). While some of the legislative testimony cited in *TVA v. Hill* suggested that species have value because they may one day prove useful, other testimony affixes aesthetic and ecological value. *See id.* at 177–79.

extant" would warrant such drastic measures, the ESA unequivocally "require[s] precisely that result."[49] In sum, the ESA affords species the "highest of priorities" simply by being listed under the Act.[50]

The ESA categorizes species as (1) endangered and (2) threatened.[51] According to the Act, endangered species are those "in danger of extinction throughout all or a significant portion of [their] range,"[52] and threatened species are those "likely to become an endangered species within the foreseeable future throughout all or a significant portion of [their] range."[53] Species can be listed under the ESA as either endangered or threatened if they satisfy at least one of five factors, two of which are linked intimately with climate change: (1) "present or threatened destruction, modification, or curtailment of [the species'] habitat or range;" and (2) "other natural or manmade factors affecting [the species'] continued existence."[54] These determinations are objective and must be based solely on the "best scientific and commercial data available."[55]

FWS and NMFS (together "Services"), which co-administer the Act,[56] have recognized that climate change and its associated harms are sound justifications for listing species.[57] In fact, several listings and petitions for listing cite climate change as a primary concern.[58] These species include the subtropical elkhorn coral,[59] staghorn coral,[60] sage-grouse,[61] bearded seal,[62] ringed seal,[63] and polar bear.[64] Despite the

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49 *Id.* at 172–73.

50 *Id.* at 174, 194.

51 *See* Endangered Species Act of 1973, 16 U.S.C. §§ 1531(b)–(c)(1), 1533(a)(1) (2018).

52 *Id.* § 1532(6).

53 *Id.* § 1532(20).

54 *Id.* § 1533(a)(1)(A), (E). The other three factors are: (1) "overutilization for commercial, recreational, scientific, or educational purposes;" (2) "disease or predation;" and (3) "the inadequacy of existing regulatory mechanisms." *Id.* § 1533(a)(1)(B)–(D).

55 *Id.* § 1533(b)(1)(A).

56 50 C.F.R. § 402.01(b) (2019).

57 *See, e.g.*, Alaska Oil & Gas Ass'n v. Ross, 722 F. App'x 666, 668–69 (9th Cir. 2018) (NMFS relied on climate change models when listing Arctic ringed seal).

58 *See* James Ming Chen, *The Fragile Menagerie: Biodiversity Loss, Climate Change, and the Law*, 93 IND. L.J. 303, 342–43 (2018).

59 *See* Final Listing Determinations for Elkhorn Coral and Staghorn Coral, 71 Fed. Reg. 26,852, 26,855 (May 9, 2006) (codified at 50 C.F.R. § 223.208 (2019)).

60 *See id.*

61 *See* Endangered Status for Gunnison Sage-Grouse, 78 Fed. Reg. 2,486, 2,486 (proposed Jan. 11, 2013) (to be codified at 50 C.F.R. pt. 17).

62 *See* Threatened Status for the Beringia and Okhotsk Distinct Population Segments of the Erignathus Barbatus Nauticus Subspecies of the Bearded Seal, 77 Fed. Reg. 76,740, 76,741 (Dec. 28, 2012) (codified at 50 C.F.R. pt. 223).

63 *See* Threatened Status for the Arctic, Okhotsk, and Baltic Subspecies of the Ringed Seal

uncertainties inherent in projecting global environmental trends, the Ninth Circuit has held that the Services' reliance on climate models in defense of a species listing satisfies the "best scientific and commercial data available" standard required under the Act.[65] These examples show that listing under the ESA can help protect species that are at risk of extinction or endangerment due to climate change.

The ESA arguably protects listed species[66] from climate change via three other avenues: (1) designating habitat as critical to the species' survival and recovery, (2) prohibiting the "take" of listed species (e.g., killing, capturing, destroying critical habitat), and (3) requiring that federal agencies consult with the Services to determine the ecological effects of agency actions.[67] Each of these approaches, however, falls short in combating climate change.

2. Designation of Critical Habitat

When a species is listed under the Act, the Secretary[68] must also designate areas as the species' "critical habitat."[69] Two types of critical habitat can be designated: occupied and unoccupied.[70] Occupied habitat must contain certain "physical or biological features."[71] In contrast, unoccupied habitat need only be "essential for the conservation of the species."[72] This language enables the Services to preserve unoccupied critical habitat if they believe that climate change may compel

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and Endangered Status for the Lagoda Subspecies of the Ringed Seal, 77 Fed. Reg. 76,706, 76,707 (Dec. 28, 2012) (codified at 50 C.F.R. pts. 223–24).

64 *See* Special Rule for the Polar Bear Under Section 4(d) of the Endangered Species Act, 78 Fed. Reg. 11,766, 11,785 (Feb. 20, 2013) (codified at 50 C.F.R. § 17.40(q)); *see also* Chen, *supra* note 58, at 342–43 ("Climate change has figured prominently in both listing and critical habitat designation decisions for [a number of] species . . . .").

65 Endangered Species Act of 1973, 16 U.S.C. § 1533(b)(1)(A) (2018); *see, e.g.*, Alaska Oil & Gas Ass'n v. Ross, 722 F. App'x 666, 668 (9th Cir. 2018) (NMFS's reliance on climate change models when listing Arctic ringed seal was not arbitrary and capricious); Alaska Oil & Gas Ass'n v. Pritzker, 840 F.3d 671, 672, 674 (9th Cir. 2016) (same for Pacific bearded seal).

66 The term "listed species" will be used in this Note when it is unnecessary to differentiate between endangered and threatened species under the Act.

67 *See* 16 U.S.C. §§ 1532(19), 1533(a)(3)(A)(i), 1536(a)(2), 1538(a)(1)(B).

68 *Id.* § 1532(15). Unless otherwise indicated, the term "Secretary" may refer to either the Secretary of the Interior or the Secretary of Commerce; the distinction depends on the particular species at issue and is not relevant when discussing many procedures of the Act.

69 *Id.* § 1533(a)(3)(A)(i). Section 1533(a)(3)(B) details the narrow exceptions where the Secretary may not designate an area as critical habitat. *Id.* § 1533(a)(3)(B). See *id.* § 1532(5) for the statutory definition of "critical habitat."

70 *See id.* § 1532(5)(A)(i)–(ii).

71 *Id.* § 1532(5)(A)(i).

72 *Id.* § 1532(5)(A)(ii).

future translocation of a species from its current habitat.[73] Consider, for example, the recently designated critical habitat for the Gunnison sage-grouse, a large fowl—easily identifiable by its thick filoplumes—found primarily in Colorado.[74] The FWS emphasized that the "unoccupied critical habitat across the range of the species offers the potential for range expansion and migration, whether associated with environmental (e.g., *climate change*), demographic (e.g., population growth), or catastrophic (e.g., large fires) factors."[75] The Services have made many other critical habitat designations in response, at least in part, to climate change.[76] Such forward-looking use of the ESA may help prevent—or at least delay—extinctions caused by climate change.

Unfortunately, unlike the listing of species, critical habitat designations do not stand solely on scientific grounds. Designations are to be made "on the basis of the best scientific data available *and after taking into consideration the economic impact, the impact on national security, and any other relevant impact* . . . ."[77] Therefore, the Services must engage in a cost-benefit analysis when designating critical habitat.[78] This procedural limitation poses a barrier to ensuring that land is reserved adequately to address the threat of climate change to species.

Even more importantly, critical habitat designations only allow species to *adapt* to environmental changes caused by climate change; these designations cannot be repurposed to *mitigate* climate change itself. Stated differently, this use of the ESA takes climate change as a given and shelters at-risk species from concomitant harm. It does not facilitate prospective action by reversing or mitigating climate change.

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73 *See* Robbins, *supra* note 31, at 91–92.

74 *See* Designation of Critical Habitat for Gunnison Sage-Grouse, 79 Fed. Reg. 69,312, 69,340–43 (Nov. 20, 2014) (codified at 50 C.F.R. pt. 17); Determination for the Gunnison Sage-Grouse as a Threatened or Endangered Species, 75 Fed. Reg. 59,804, 59,805, 59,853 (proposed Sept. 28, 2010) (to be codified at 50 C.F.R. pt. 17).

75 Designation of Critical Habitat for Gunnison Sage-Grouse, 79 Fed. Reg. at 69,337 (emphasis added).

76 Chen, *supra* note 58, at 342–43; *see also* Designation of Critical Habitat for the Polar Bear (Ursus Maritimus) in the United States, 75 Fed. Reg. 76,086, 76,111–13 (Dec. 7, 2010) (codified at 50 C.F.R. § 17.40(q)); Critical Habitat for Threatened Elkhorn and Staghorn Corals, 73 Fed. Reg. 72,210, 72,225–27 (Nov. 26, 2008) (codified at 50 C.F.R. pts. 223, 226).

77 16 U.S.C. § 1533(b)(2) (emphasis added).

78 *See* N.M. Cattle Growers Ass'n v. U.S. Fish & Wildlife Serv., 248 F.3d 1277, 1280–82, 1284–85 (10th Cir. 2001) (discussing the proper method of calculating economic impact), *superseded by regulation*, Revisions to the Regulations for Impact Analyses of Critical Habitat, 78 Fed. Reg. 53,058, 53,059, 53,062 (Aug. 28, 2013) (codified at 50 C.F.R. pt. 424) (favoring incremental impact approach over baseline approach).

3. "Take" Prohibition

Section 9 of the ESA prohibits the "take" of listed species[79] and builds on the critical habitat designation by assigning liability for "significant habitat modification or degradation where it . . . significantly impair[s] essential behavioral patterns, including breeding, feeding or sheltering."[80] Justice O'Connor's concurrence in *Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*,[81] later adopted by the lower courts,[82] asserted that the principle of foreseeability applies when deciding whether there can be liability for harm caused.[83] Because actions that will cause *future* harm to listed species are also prohibited under the Act,[84] contributions to climate change arguably fall within the section 9 take prohibition because climate change may foreseeably cause future adverse habitat modifications.[85]

Unfortunately, using the take prohibition to mitigate climate change is unlikely to succeed because of the difficulty in assigning liability for the harm caused by the conduct of a single individual or entity within the framework of a global phenomenon.[86] Typically, each individual's contribution to climate change is de minimis and perhaps incalculable.[87] Even if prosecution of small-scale actions were feasible, the cost of litigation would far exceed the measurable benefits.

An alternative approach would be to selectively prosecute larger-scale conduct. Governmental entities can be held vicariously liable for the take of endangered species by a third party if the take would not have occurred but for a governmental action.[88] For example, in *De-*

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79 16 U.S.C. § 1538(a)(1)(B)–(C). "Take" is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Id.* § 1532(19).

80 50 C.F.R. § 17.3(c)(3) (2019); *see* Babbitt v. Sweet Home Chapter of Cmtys. for a Great Or., 515 U.S. 687, 708 (1995) (upholding regulatory definition of "take" as a reasonable interpretation of the term).

81 515 U.S. 687, 708–09 (O'Connor, J., concurring).

82 *See, e.g.*, Aransas Project v. Shaw, 775 F.3d 641, 656–59 (5th Cir. 2014) (finding Justice O'Connor's concurrence "instructive" in holding that the district court erred in failing to "explain why the remote connection between water licensing, decisions to draw river water by hundreds of users, whooping crane habitat, and crane deaths that occurred during a year of extraordinary drought compels ESA liability" for the take).

83 *Sweet Home*, 515 U.S. at 709, 712–14 (O'Connor, J., concurring).

84 *See* Marbled Murrelet v. Babbitt, 83 F.3d 1060, 1067 (9th Cir. 1996).

85 *See supra* text accompanying notes 16–19.

86 *See* Interagency Cooperation Under the Endangered Species Act, 73 Fed. Reg. 76,272, 76,283 (Dec. 16, 2008) (codified at 50 C.F.R. pt. 402).

87 *See id.*

88 *See* LAWRENCE R. LIEBESMAN & RAFE PETERSEN, ENDANGERED SPECIES DESKBOOK 70–71 (2d ed. 2010).

fenders of Wildlife v. Administrator,[89] the court affirmed an injunction against the EPA for the take of black-footed ferrets resulting from the use of strychnine because the deaths would not have occurred but for the EPA's registration of the pesticide.[90] Similarly, in *National Wildlife Federation v. Hodel*,[91] the court found the EPA vicariously liable for the lead poisoning of bald eagles because the agency had authorized the use of lead ammunition.[92]

This rule may not hold true, however, if the governmental agency is merely *regulating* the harmful conduct.[93] In *Loggerhead Turtle v. County Council of Volusia County*[94] ("*Loggerhead*"), the court refused to impose vicarious liability on a county government for failing to enact a more turtle-friendly beach lighting ordinance in response to the allegation that the existing ordinance allowed for prohibited take of sea turtles under the Act.[95] Part of the court's reasoning for not assigning vicarious liability rested on the acknowledgment that "[t]he Act requires no affirmative conservation action by states or local governments."[96] As a result, the *Loggerhead* holding may only cover state and local governments. However, a court faced with similar facts involving a federal agency could also draw the same conclusion: inadvertently *allowing* prohibited takes by a third party is not equivalent to *causing* prohibited takes and thus does not establish vicarious liability.[97]

Unfortunately, the federal government's relationship with greenhouse gas emissions is more aptly characterized as insufficient regulation than an explicit license to emit. For example, the CAA compels the regulation of pollutant emissions—including greenhouse gases—from new motor vehicles by requiring "the *greatest degree of emission reduction achievable* through the application of technology . . . ."[98]

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89 882 F.2d 1294 (8th Cir. 1989).

90 *See id.* at 1300–01 (EPA's failure to obtain an incidental take statement from FWS resulted in a violation of the ESA); *see also* LIEBESMAN & PETERSEN, *supra* note 88, at 70.

91 Civ. No. S-85-0837 EJG, 1985 U.S. Dist. LEXIS 16490 (E.D. Cal. Aug. 26, 1985).

92 *See id.* at *12–13. The lead ammunition was not used for hunting bald eagles; rather, the eagles were poisoned by consuming poisoned prey. *See id.* at *2.

93 *Compare Defs. of Wildlife*, 882 F.2d at 1301 (EPA found liable for the take of black-footed ferret because of registered pesticide under Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. §§ 136–136y (2018)), *with* Loggerhead Turtle v. Cty. Council of Volusia Cty., 92 F. Supp. 2d 1296, 1307–08 (M.D. Fla. 2000) (county not liable because its regulations *restricted* actions causing the take of Loggerhead turtles).

94 *Loggerhead Turtle*, 92 F. Supp. 2d 1296.

95 *Id.* at 1298, 1307.

96 *Id.* at 1308.

97 *See id.*

98 Clean Air Act, 42 U.S.C. § 7521(a)(3)(A)(i) (2018) (emphasis added); *see* Massachu-

Therefore, applying the theory of vicarious liability for takes resulting from inadequate greenhouse gas emission regulations may not succeed in mitigating climate change because, under the reasoning in *Loggerhead*, the CAA is not causing the take of species but instead allowing polluters to do so.

4. Agency Consultation

Section 7(a)(2) of the ESA requires every federal agency 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 or threatened species or result in the destruction or adverse modification of [critical] habitat . . . ."[99] "Jeopardy" is found when an action will likely, either directly or indirectly, negatively impact the survival or recovery of the species.[100] For example, the FWS concluded that two endangered fish species, the Lost River Sucker and the Shortnose Sucker, would be jeopardized by the operation of the Klamath Irrigation Project because it would appreciably reduce the water level in the species' habitat.[101] "Recovery," in contrast, is achieved when the species no longer needs protection under the Act.[102]

The federal agency seeking to take an action that triggers section 7(a)(2) ("action agency") can satisfy its duty to "insure" against jeopardy by seeking consultation with the relevant consulting agency (i.e., FWS or NMFS) depending on the species that may be affected.[103] If the consulting agency determines that the action is likely to jeopardize a covered species or adversely modify critical habitat, the Act says that the consulting agency "shall suggest . . . reasonable and prudent alternatives."[104] A reasonable and prudent alternative is an alternative

setts v. EPA, 549 U.S. 497, 528 (2007) (holding that EPA has jurisdiction to regulate greenhouse gas emissions under new motor vehicle provision of CAA).

99 Endangered Species Act of 1973, 16 U.S.C. § 1536(a)(2) (2018). Agencies seeking to take such actions will be referred to as "action agencies."

100 50 C.F.R. § 402.02 (2019). The regulation uses the phrase "survival and recovery" in a way that seems conjunctive (i.e., both are required). *See id.* The regulation has, however, been interpreted to be disjunctive—there is jeopardy if the likelihood of either survival or recovery is reduced. *See* Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv., 524 F.3d 917, 931–32 (9th Cir. 2008).

101 *See* Bennett v. Spear, 520 U.S. 154, 157–59 (1997).

102 50 C.F.R. § 402.02.

103 *See id.* §§ 402.01(b), .13, .14(a)–(b)(1). Generally, FWS has jurisdiction over terrestrial species and NMFS has jurisdiction over marine species. *See id.* §§ 17.2(b), .11.

104 16 U.S.C. § 1536(b)(3)(A). "Reasonable and prudent alternative" and "reasonably prudent alternative" are used interchangeably.

"that is consistent with the purposes of the proposed action" but which the consulting agency believes may avoid the risk present in the originally proposed action.[105] Furthermore, the alternative "cannot alter the basic design, location, scope, duration, or timing of the action and may involve only minor changes."[106]

If the original action is not likely to jeopardize a species—or the action's reasonably prudent alternative would avoid jeopardy—but moving forward may still result in a take, the consulting agency will issue an incidental take statement outlining the precise conditions under which the incidental take is permitted.[107] The action agency has full discretion to disregard any proffered reasonably prudent alternative but risks a violation of the section 9 take prohibition that it would otherwise not face if it had followed the terms of the incidental take statement.[108] Thus, section 7(a)(2) incentivizes consultation in order to avoid jeopardy, but it does so at a price—it allows the take of some members of the species.

To illustrate, assume that the Forest Service would like to harvest a forest in the East Cascades of California.[109] The Forest Service may decide to consult with the FWS to ensure that it does not face liability for the incidental take of northern spotted owls that might nest in that forest.[110] If the FWS determines, in consultation with the Forest Service, that the northern spotted owl's chance of survival or recovery is not likely to be negatively impacted if the agency follows the proposed action—say, because the owl does not actually nest there—then the FWS will issue to the Forest Service an incidental take statement. The statement will outline the permissible conduct, based on the original action plan, upon which the FWS's waiver of liability rests. For example, the FWS might stipulate that timber harvesting must be main-

105 LIEBESMAN & PETERSEN, *supra* note 88, at 56; *see also* 50 C.F.R. § 402.14(g)(5).

106 50 C.F.R. § 402.14(i)(2).

107 § 402.14(i)(1) (also known as reasonably prudent *measures*); LIEBESMAN & PETERSEN, *supra* note 88, at 57–58 (despite statutory language suggesting incidental take statements are required for *all* "no-jeopardy determinations," the Ninth Circuit held that "incidental take statements must be predicated on the finding of an actual take that would result from the proposed activities" (citing Ariz. Cattle Growers' Ass'n v. U.S. Fish & Wildlife Serv., 273 F.3d 1229 (9th Cir. 2001))).

108 *See* 50 C.F.R. § 402.15(a); LIEBESMAN & PETERSEN, *supra* note 88, at 57.

109 See Designation of Revised Critical Habitat for the Northern Spotted Owl, 77 Fed. Reg. 71,876, 71,903 (Dec. 4, 2012) (codified at 50 C.F.R. pt. 17) for more information on the facts used for this hypothetical scenario.

110 *See* 50 C.F.R. § 17.11(h) (northern spotted owl is listed as threatened); *see also* Designation of Revised Critical Habitat for the Northern Spotted Owl, 77 Fed. Reg. at 71,903, 71,937.

tained within the geographic limits originally proposed to the FWS by the Forest Service.

If, on the other hand, the FWS finds that the timber harvest would likely negatively impact the survival or recovery of the owls or adversely modify the owl's critical habitat—for example, by destroying owl nests—then the FWS will offer reasonable and prudent alternatives to the Forest Service to avoid jeopardizing the owls in the area.[111] The FWS could suggest that the Forest Service limit timber harvesting to months when the owls do not actively nest to avoid owlet mortality, even though this nesting habitat would no longer be available for the owls the following year. Reduction in nesting spots may constitute a take but may not rise to the level of jeopardy. Another alternative, especially if critical habitat is involved, could be to modify the geographical area that the Forest Service could harvest. While the Forest Service does not have to follow these proposed alternatives, the incidental take statement will only grant the agency immunity from liability if the Forest Service meets the terms of the alternatives.[112] Therefore, if the Forest Service decides to follow its original plan despite the jeopardy finding, it has the discretion to do so. If there is no actual take of northern spotted owls, then the Forest Service faces no liability. If, however, there *is* a take of a northern spotted owl or adverse modification of the species' critical habitat, then the Forest Service is liable under the section 9 take prohibition.[113]

To use section 7(a)(2) to combat climate change, there must be an agency action that is proximately causing or contributing to climate change, which is, in turn, jeopardizing a listed species or adversely modifying its critical habitat.[114] According to the Services, this indirect causal connection is too attenuated to trigger liability under the Act:

> The best scientific data available today do not allow us . . . to draw a causal connection between [greenhouse gas] emissions from a given facility and effects posed to listed species or their habitats, nor are there sufficient data to establish that such impacts are reasonably certain to occur.[115]

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111 *See* Designation of Revised Critical Habitat for the Northern Spotted Owl, 77 Fed. Reg. at 71,937.

112 *See* text accompanying note 108.

113 *See* Endangered Species Act of 1973, 16 U.S.C. §§ 1538(a)(1)(B)–(C) (2018).

114 *See* text accompanying note 99.

115 Memorandum from Dir. H. Dale Hall, Fish & Wildlife Serv., U.S. Dep't of Interior, to Regional Dirs., Regions 1–8, at 1–2 (May 14, 2008) ("To constitute an indirect effect, the impact to the species must be later in time, must be caused by the proposed action, and must be reasonably certain to occur."). Memoranda are not legally binding documents. *See, e.g.*, Pac. Gas &

For example, section 7(a)(2) liability cannot attach to oil drilling because, according to the Services, there is "no traceable nexus between the ultimate consumption of the petroleum product and *any particular effect* to listed species or their habitats."[116] Thus, the application of section 7(a)(2) to climate change mitigation is stifled by the need to point to a specific harm suffered by a specific listed species.

Put another way, this situation suffers from the same shortcoming as the section 9 take prohibition: the contribution of a single act on a global phenomenon is typically de minimis. The EPA has "projected that even the emissions of a very large coal-fired power plant would likely result in a rise in the maximum global mean temperature of less than one-thousandth of a degree."[117] No single emitter can be held liable for its portion of harm caused because its actions are drowned out by all other emitters around the globe.

Even if the harm is de minimis, any contribution to a process that currently jeopardizes a species—here, climate change—is enough to trigger section 7(a)(2) consultation.[118] What, however, would result from such a consultation? That is, what reasonably prudent alternative could the Services suggest that would eliminate jeopardy to the species from the agency's action?[119] If the action's harm is truly de minimis, significantly reducing greenhouse gas emissions from that one action may still fail to avoid harm to the species because climate change will continue to progress at much the same rate. Moreover, an alternative requiring a zero-carbon footprint may not be reasonable because it likely requires more than the minimal changes that the Act allows.[120] If the Services cannot propose a reasonable and prudent alternative because one does not exist, the action may receive an exemption under the Act, and there will be no reduction in greenhouse gas emissions.[121]

Elec. Co. v. Fed. Power Comm'n, 506 F.2d 33, 38 (D.C. Cir. 1974) (memoranda constitute general policy statements).

116 Memorandum from Dir. H. Dale Hall, *supra* note 115, at 2 (emphasis added).

117 Interagency Cooperation Under the Endangered Species Act, 73 Fed. Reg. 76,272, 76,283 (Dec. 16, 2008) (codified at 50 C.F.R. pt. 402).

118 *See* Defs of Wildlife v. Babbitt, 130 F. Supp. 2d 121, 128 (D.D.C. 2001) (environmental baseline approach); John Kostyack & Dan Rohlf, *Conserving Endangered Species in an Era of Global Warming*, 38 ENVTL. L. REP. 10203, 10212 (2008).

119 *See generally* Kostyack & Rohlf, *supra* note 118, at 10212 (proposing a creative reasonably prudent alternative based on compliance with a to-be-determined national greenhouse gas cap; dismissing because of three weaknesses).

120 *See supra* text accompanying note 106.

121 Exemptions are given by the Endangered Species Committee. *See* Endangered Species Act of 1973, 16 U.S.C. § 1536(e), (g) (2018).

Each of the tools above—species listing, critical habitat designation, the take prohibition, and agency consultation—fails to effectively mitigate climate change. There is still one provision under the ESA, however, that could viably and proactively address climate change on a nationwide scale: section 7(a)(1), which charges all federal agencies with an affirmative conservation duty.[122]

II. Analysis

A. The Section 7(a)(1) Affirmative Duty to Conserve

1. ESA Policy and Purpose

Congress declared in the ESA that "all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes" of the Act.[123] One such purpose is to develop conservation programs for listed species.[124] Section 7(a)(1), often referred to as the "affirmative conservation duty," substantively reiterates this policy.[125]

"Conservation" as used in the ESA means "the use of *all methods and procedures which are necessary* to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary."[126] In other words, the goal of conservation is species "recovery."[127] Agencies can even use their rulemaking and adjudicatory powers to this end.[128] Facially, section 7(a)(1) appears to require nearly unrestricted participation by all federal agencies in developing programs to remove species from the endangered and threatened species lists.[129] Unfortunately, the FWS and NMFS have not issued any regulations clarifying the scope

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122 *Id.* § 1536(a)(1).

123 *Id.* § 1531(c)(1).

124 *Id.* § 1531(b).

125 *Id.* § 1536(a)(1) ("All . . . Federal agencies shall . . . utilize their authorities in furtherance of the purposes of this chapter by carrying out programs for the conservation of endangered species and threatened species . . . .").

126 *Id.* § 1532(3) (emphasis added).

127 *See* 50 C.F.R. § 402.02 (2019) ("*Recovery* means improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in . . . the Act.").

128 *See* 16 U.S.C. § 1532(3) ("Such methods and procedures include . . . law enforcement . . . .").

129 *See id.* § 1531(c)(1) ("[*A*]*ll* Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes" of the Act. (emphasis added)).

of responsibilities created by section 7(a)(1).[130] As a result, the only interpretative sources are judicial opinions.[131]

2. *Rule Statement as Applied to FWS, NMFS, and "Other" Agencies*

The first sentence of section 7(a)(1) creates an affirmative duty for FWS and NMFS to conserve species when administering programs within the Services' jurisdiction.[132] This duty extends to regulations promulgated in furtherance of not just the ESA but any statute administered by the Services.[133] Although the Services must "actively pursue a species conservation policy,"[134] this duty does not give the Services unlimited authority to implement *any* program alleged to conserve a protected species under the color of section 7(a)(1). When implementing a conservation program, the Services must show a rational basis or a conservation-based justification for the regulation.[135]

All other federal agencies have the same affirmative conservation duty.[136] In addition, these agencies must also consult with the Services about their conservation plans.[137] This includes agency programs not primarily geared toward conservation goals.[138] Furthermore, the duty to develop conservation programs extends to each individual listed species; it is *not* "a generalized duty to confer and develop programs for the benefit of endangered and threatened species—*i.e.*, not with respect to any particular species."[139] An agency also violates section 7(a)(1) if it stops implementing a previously established valid conser-

130 LIEBESMAN & PETERSEN, *supra* note 88, at 39.

131 *Id.*; Federico Cheever, *The Road to Recovery: A New Way of Thinking About the Endangered Species Act*, 23 ECOLOGY L.Q. 1, 19 n.87 (1996); J.B. Ruhl, *Section 7(a)(1) of the "New" Endangered Species Act: Rediscovering and Redefining the Untapped Power of Federal Agencies' Duty to Conserve Species*, 25 ENVTL. L. 1107, 1110 (1995).

132 16 U.S.C. § 1536(a)(1).

133 *See* Defs. of Wildlife v. Andrus, 428 F. Supp. 167, 169–70 (D.D.C. 1977).

134 Carson-Truckee Water Conservancy Dist. v. Clark, 741 F.2d 257, 262 (9th Cir. 1984).

135 Connor v. Andrus, 453 F. Supp. 1037, 1041–42 (W.D. Tex. 1978) ("The record does not support a finding that banning hunting of all ducks will increase or even tend to increase the Mexican duck population.").

136 Pyramid Lake Paiute Tribe of Indians v. U.S. Dep't of Navy, 898 F.2d 1410, 1416 n.15 (9th Cir. 1990) (correcting judgment of district court).

137 Sierra Club v. Glickman, 156 F.3d 606, 618 (5th Cir. 1998); *Pyramid Lake*, 898 F.2d at 1416 n.15.

138 *See, e.g.*, Fla. Key Deer v. Stickney, 864 F. Supp. 1222, 1228–29, 1238 (S.D. Fla. 1994) (national flood insurance program).

139 *Sierra Club*, 156 F.3d at 615. *Contra* Ctr. for Biological Diversity v. Nielsen, No. CV-17-00163-TUC-CKJ, 2018 U.S. Dist. LEXIS 188042, at *10–*11 (D. Ariz. Nov. 2, 2018) (holding defendant agency not required to have program covering "*certain* species" because conserving any is sufficient to satisfy section 7(a)(1) duty).

vation program[140] or explicitly terminates the program while the species is still in need of conservation.[141]

There are two significant caveats on the use of section 7(a)(1) as a "sword." First, federal agencies can only act within the authority granted by their organic statutes.[142] Second, the agencies retain some discretion in how they fulfill this mandate.[143] For example, agencies are not required to follow the ideas of other interested parties, particularly if those ideas immaterially enhance conservation.[144]

3. Judicial Consensus on Section 7(a)(1)

The cases analyzing the scope of section 7(a)(1) are often cross-referenced and consistent with one another even though many come from different jurisdictions and are merely persuasive.[145] The judicial consensus appears to be that if an agency is administering a program that has a more conservation-friendly alternative, but for policy reasons—rather than for reasons made obligatory by statute—has chosen not to implement the alternative, then the agency has failed to satisfy its section 7(a)(1) affirmative conservation duty if it has not consulted with the FWS or NMFS on this decision.[146] Many scenarios, however, remain unresolved.[147] For example, is the agency always required to choose the alternative with the greater conservation impact?[148] Is the absence of a program, as opposed to an insufficient program, subject

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140 *See* Red Wolf Coal. v. U.S. Fish & Wildlife Serv., 346 F. Supp. 3d 802, 813–15 (E.D.N.C. 2018).

141 *See* Ctr. for Biological Diversity v. Vilsack, 276 F. Supp. 3d 1015, 1031 (D. Nev. 2017).

142 *See* Platte River Whooping Crane Critical Habitat Maint. Tr. v. FERC, 962 F.2d 27, 34 (D.C. Cir. 1992); Ruhl, *supra* note 131, at 1134–35.

143 *See* Pyramid Lake Paiute Tribe of Indians v. U.S. Dep't of Navy, 898 F.2d 1410, 1418 (9th Cir. 1990); Nat'l Wildlife Fed'n v. Nat'l Park Serv., 669 F. Supp. 384, 388 (D. Wyo. 1987).

144 *See Pyramid Lake*, 898 F.2d at 1418–19.

145 *See, e.g.*, Connor v. Andrus, 453 F. Supp. 1037, 1041 (W.D. Tex. 1978) (citing Defs. of Wildlife v. Andrus, 428 F. Supp. 167 (D.D.C. 1977)).

146 *See supra* Section II.A.2. This consultation duty is not the same consultation duty under section 7(a)(2).

147 For example, what must an agency do if confronted with two mandatory statutory obligations, one of which is section 7(a)(1)? *See* Carson-Truckee Water Conservancy Dist. v. Clark, 741 F.2d 257, 262 n.5 (9th Cir. 1984) ("Because we hold that the Washoe Project Act does not require the Secretary to sell water for M & I use, we need not reach the question whether, given competing mandatory statutory directives, the Secretary would be required to use the project's water entirely for conservation purposes under ESA § 2(b), (c), § 3(3), & § 7(a)(1)."). This question is beyond the scope of this Note.

148 *See, e.g.*, *Pyramid Lake*, 898 F.2d at 1417 (alternatives had comparable conservation value).

to review under section 7(a)(1)?[149] The proposed rule, described in the following subsection, attempts to answer these and other questions.

B. Proposed Rule for the Section 7(a)(1) Affirmative Duty to Conserve

1. The Trigger

The affirmative duty, or "duty to take a positive step to do something,"[150] must be "triggered" to give the agency notice that it is required to act.[151] The proposed rule in this Note, which builds on the current understanding of section 7(a)(1), is that the affirmative conservation duty is triggered by the existence of a conservation-friendly alternative to an agency action that puts the agency on notice of its duty to consult with the Services under section 7(a)(1).[152] Conservation-friendly alternatives—or alternatives with a net positive conservation value—can require actions that are not necessary to achieve the purpose of the agency action but nevertheless offer the agency an opportunity to act affirmatively to conserve a listed species.

The agency actions capable of triggering section 7(a)(1) overlap with those capable of triggering section 7(a)(2) consultation. Section 7(a)(2) is triggered by agency actions that may affect listed species, including "(1) actions intended to conserve listed species or their habitat; (2) the promulgation of regulations; [and] (3) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid . . . ."[153] The proposed rule would require that agency actions triggering section 7(a)(2) consultation also trigger section 7(a)(1) con-

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149 *See Carson-Truckee*, 741 F.2d at 262 n.5 ("Similarly, because the Secretary actively seeks to use the project for conservation purposes, we need not consider the extent of his affirmative obligations under ESA § 2(b), (c), § 3(3), & § 7(a)(1) had he decided neither to sell the water nor to protect the fish."). The court in *Florida Key Deer v. Paulison*, 522 F.3d 1133, 1147 (11th Cir. 2008), described the incentive program at issue as "amount[ing] to . . . total inaction," which is distinguishable from the lack of a program altogether. LIEBESMAN & PETERSEN, *supra* note 88, at 40 (citing Fla. Key Deer v. Paulison, 522 F.3d 1133, 1147 (11th Cir. 2008)).

150 *Duty*, BLACK'S LAW DICTIONARY (11th ed. 2019).

151 For example, in torts, an affirmative duty of care is only triggered by certain circumstances such as the presence of a special relationship. *See* RESTATEMENT (THIRD) OF TORTS §§ 40–41 (AM. LAW INST. 2012).

152 *But cf.* Ruhl, *supra* note 131, at 1123 (trigger "is simply that a species has been 'listed . . . .'" (quoting Endangered Species Act of 1973, 16 U.S.C. § 1536(a)(1) (1994))). The proposed rule will be described as it applies to "other federal agencies" as opposed to the FWS and NMFS to ensure that the consultation requirement is adequately addressed. This Note applies the proposed rule to the EPA in Part III.

153 LIEBESMAN & PETERSEN, *supra* note 88, at 41 (citing 50 C.F.R. § 402.02 (1990)). The first category shows that potentially beneficial agency actions also fall under the definition of "agency action."

sultation if there is a conservation-friendly alternative, including a reasonably prudent alternative with a net positive conservation value. All reasonably prudent alternatives with a net positive conservation value are, by definition, conservation-friendly alternatives, but not all conservation-friendly alternatives are necessarily reasonably prudent alternatives. For example, alternatives that exceed the "minor changes" requirement cannot be considered reasonably prudent alternatives.[154]

To illustrate the distinction between conservation-friendly alternatives and reasonably prudent alternatives, consider strategic logging of a forest. Limiting the logging to a certain geographical area, restricting the tree density to which the forest is reduced, or requiring the replanting of a different tree species could add conservation value by promoting habitat restoration for listed species. For example, in *Weyerhaeuser Co. v. United States Fish & Wildlife Service*,[155] the Court considered whether FWS could designate as critical habitat for the dusky gopher frog land currently unoccupied by the frog at the time.[156] The land designated by FWS, which was partially owned by the timber company Weyerhaeuser, lacked the open canopy forest essential to support an adult frog population.[157] Under the proposed rule, the Forest Service could satisfy the agency's section 7(a)(1) duty by requiring Weyerhaeuser to (1) limit logging to within a certain geographic region, (2) restrict the tree density to which the forest is reduced, or (3) replace "the closed-canopy timber plantation . . . with an open-canopy longleaf pine forest" essential to the frog as conditions to issuing the logging permit.[158] The first two alternatives, provided they are minor changes to the original action, are likely examples of reasonably prudent alternatives with net positive conservation values. Because of the net positive conservation value, these alternatives are also conservation-friendly alternatives. However, replacing the old habitat with a new pine forest goes beyond the scope of reasonably prudent alternatives under section 7(a)(2) because replacing the trees with a new species does not further the purpose of selling timber for profit. Nevertheless, it is still a conservation-friendly alternative.

Both sections 7(a)(1) and 7(a)(2) are triggered if (1) there is a reasonably prudent alternative with a net positive conservation value or (2) there is both a reasonably prudent alternative with a net zero or

154 *See supra* text accompanying note 106.

155 139 S. Ct. 361 (2018).

156 *Id.* at 364.

157 *Id.* at 366–67.

158 *Id.* at 367.

negative conservation value *and* a conservation-friendly alternative. Put another way, actions triggering section 7(a)(2) would not trigger section 7(a)(1) consultation if the only available reasonably prudent alternatives have a net negative conservation value—i.e., the alternative involves the take of a species—and there is no other alternative that offers a net positive conservation value.[159]

The proposed rule would also allow inaction—the failure to establish a conservation program—to trigger the affirmative conservation duty even though it would not trigger a section 7(a)(2) consultation.[160] Specifically, inaction could trigger section 7(a)(1) if the agency is subject to a statutory mandate that could be administered for the conservation of endangered species. An agency would likely be put on notice through a petition for informal rulemaking that seeks a more conservation-friendly administration of a statute.

For example, the Magnuson-Stevens Fishery Conservation and Management Act ("Magnuson-Stevens Act"),[161] administered by the NMFS,[162] was enacted to ensure sustainable use of fisheries in the territorial seas of the United States.[163] Fishery management plans are developed to, inter alia, "prevent overfishing while achieving . . . optimum yield."[164] Optimum yield, in turn, requires considering "the protection of marine ecosystems."[165] Therefore, the NMFS would satisfy its affirmative conservation duty in administering the Magnuson-Stevens Act by specifically requiring that all fishery management plans ensure a large enough fish population to support the endangered or threatened species that rely on the fishery as a food source.

2. The Consultation Procedure

The procedure for agency consultation must eventually be defined by promulgating regulations specific to section 7(a)(1). Because

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159 *See* 50 C.F.R. § 402.14(i) (2019) (suggesting that reasonably prudent alternatives avoid jeopardy, not takes).

160 *See* Ruhl, *supra* note 131, at 1123 ("FWS and NMFS need not wait until a federal agency . . . action before they may develop conservation measures under section 7(a)(1) . . . .").

161 16 U.S.C. §§ 1801–1891d (2018).

162 *See Laws & Policies: Magnuson-Stevens Act*, NOAA FISHERIES, https://www.fisheries.noaa.gov/topic/laws-policies [https://perma.cc/FK7K-MBMJ]. The National Oceanic and Atmospheric Administration Fisheries ("NOAA") is another name for the NMFS. *About Us*, NOAA FISHERIES, https://www.fisheries.noaa.gov/about-us [https://perma.cc/876C-DKUE].

163 *See* 16 U.S.C. § 1801(b)(1), (4). Contrast the Magnuson-Stevens Act's utilitarian policy with the ESA's conservation-focused policy. *See supra* Section I.B.1.

164 16 U.S.C. § 1851(a)(1).

165 *Id.* § 1802(33)(A).

the ESA does not define the term "consultation"[166] and uses the same term for both sections 7(a)(1) and (2),[167] courts could infer that the same or an analogous consultation procedure should attach to both provisions.[168] That is, regulations defining the consultation procedure for section 7(a)(1) could be analogous to those already implemented for section 7(a)(2).[169] The Act itself, however, specifically limits the provisions describing the consultation procedure to section 7(a)(2) and (3) consultations.[170] By not expressly referring to section 7(a)(1) in the explanatory provisions, Congress may have intended a materially different procedure for section 7(a)(1) consultation.

Because many situations triggering a section 7(a)(2) consultation also trigger a section 7(a)(1) consultation, it would be most efficient for the consultation procedures to overlap significantly. In practice, the applicable agency would issue a Biological Opinion[171] that would include (1) conservation-friendly alternatives if section 7(a)(1) is triggered and (2) reasonably prudent alternatives if section 7(a)(2) is also triggered.[172] This way, the consulting agency need only produce a single advising document to the action agency. Regardless of what the actual section 7(a)(1) consultation procedure entails, a lack of any consultation between the action agency and consulting agency is a section 7(a)(1) violation.

3. Steps Following the Consultation Procedure

Following a section 7(a)(1) consultation, this Note proposes that the agency *must* choose a conservation-friendly alternative if one exists provided it is consistent with the agency's authority.[173] For section

166 *See id.* § 1532.

167 *See id.* § 1536(a)(1)–(2).

168 *See* Karl N. Llewellyn, *Remarks on the Theory of Appellate Decision and the Rules or Canons About How Statutes Are to Be Construed*, 3 VAND. L. REV. 395, 404 (1950) ("The same language used repeatedly in the same connection is presumed to bear the same meaning throughout the statute.").

169 The regulations should be analogous, as opposed to identical, to allow for necessary variations resulting from the different subject matter to be covered by the consultation. *Compare supra* text accompanying note 99 (establishing from section 7(a)(2) a negative duty to insure that no agency action jeopardizes a listed species or their habitat), *with supra* Section II.A (establishing from section 7(a)(1) an affirmative duty to develop conservation programs for listed species).

170 *See* 16 U.S.C. § 1536(b)–(d).

171 50 C.F.R. § 402.02 (2019) ("*Biological opinion* is the document that states the opinion of the Service as to whether or not the Federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.").

172 *See* 16 U.S.C. § 1536(b)(4)(C)(ii).

173 *See* Platte River Whooping Crane Critical Habitat Maint. Tr. v. FERC, 962 F.2d 27, 34 (D.C. Cir. 1992); *see also* Sierra Club v. Glickman, 156 F.3d 606, 616 n.5 (5th Cir. 1998). At least

7(a)(1) analysis, the option of not taking the proposed action that triggered section 7(a)(2) consultation ("no-action alternative") is not a conservation-friendly alternative because it does not provide a *net positive* conservation value. Instead, the no-action alternative offers a *net zero* conservation value.

This mandate is consistent with current regulations, which allow the Services to issue "conservation recommendations," or purely discretionary suggestions intended to minimize the adverse effects of an action.[174] Conservation recommendations, when amended to a "net negative conservation value" reasonably prudent alternative, may be insufficient to make the resulting alternative net positive. If, however, the conservation recommendations sufficiently attain a net positive conservation value, this choice can no longer be discretionary.

Agencies must be required to choose a conservation-friendly alternative to give effect to the "highest priority" language in *TVA v. Hill*.[175] In its opinion, the Court analyzed the Act's predecessor—the Endangered Species Act of 1966[176] ("Act of 1966")—which only required agency action "*insofar as* [*was*] *practicable* and consistent with the [agency's] primary purposes . . . ."[177] In comparison, the ESA's language now contains no such "practicability" qualifiers.[178] The Court saw this as a material change demonstrating Congress's intent to strengthen the Act.[179] As a result, the modern ESA is deaf to the woes of economic hardship.[180]

This mandate is also consistent with *Pyramid Lake Paiute Tribe of Indians v. United States Department of Navy*,[181] which held that an agency cannot be forced to choose one of two equally conservation-friendly alternatives under its affirmative conservation duty.[182] The *Pyramid Lake* court was silent, however, on what should happen

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one scholar has suggested that selecting the most conservation friendly alternative should be tempered by technological and economic "impracticalities." Ruhl, *supra* note 131, at 1150. A technologically infeasible alternative, however, is not an alternative. Moreover, creating a carveout for economic impracticality conflicts with the removal of "practicability" language from the ESA of 1966.

174 *See* 50 C.F.R. §§ 402.02, .14(j) (2019).

175 437 U.S. 153, 194 (1978); *see supra* text accompanying notes 45–50.

176 Endangered Species Act of 1966, Pub. L. No. 89-669, 80 Stat. 926, *repealed by* Endangered Species Act of 1973, Pub. L. No. 93–205, 87 Stat. 884, 903.

177 *Id.* § 1(b) (emphasis added); *see Hill*, 437 U.S. at 175–76.

178 *See* Endangered Species Act of 1973, 16 U.S.C. § 1531(b), (c)(1) (2018).

179 *Hill*, 437 U.S. at 176–77.

180 Recall that listing decisions must not account for economic considerations. *See supra* text accompanying note 55.

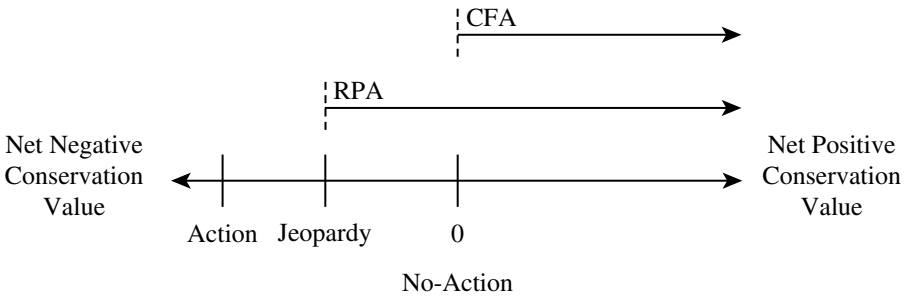
181 898 F.2d 1410 (9th Cir. 1990).

182 *Id.* at 1417–18.

when one alternative is *more* conservation-friendly than the other.[183] This Note addresses that gap by arguing that the agency should retain discretion to choose between the two conservation-friendly alternatives.

To illustrate, suppose a federal agency has proposed an action that both triggers section 7(a)(2) consultation and may jeopardize a listed species.[184] When graphed along an axis denoting net conservation value, "jeopardy" exists on the "net negative conservation value" side of the graph (see Figure 1). An action that may jeopardize a listed species ("Action" in Figure 1) poses a net negative conservation value equal to or greater than the threshold level establishing jeopardy. A reasonably prudent alternative ("RPA" in Figure 1) proposed by the consulting agency must have a higher conservation value than "jeopardy" but need not have a net positive conservation value.[185] That is, a reasonably prudent alternative may cause the take of a species, which this Note suggests has a net negative conservation value but is insufficient to establish jeopardy.[186] A conservation-friendly alternative ("CFA" in Figure 1), however, has a net positive conservation value.[187] The no-action alternative ("No Action" in Figure 1) is equivalent to net zero conservation value on the graph.

FIGURE 1. RELATIVE NET CONSERVATION VALUES[188]



In Scenario 1 (see Figure 2), assume that the consulting agency has determined that the agency action may jeopardize a listed species

183 *See generally id.* at 1418 (holding limited to the choice between alternatives of comparable conservation value).

184 This premise is limited to Scenarios 1, 2a, and 2b, below. Section 7(a)(2) is "triggered" by the presence of a qualifying agency action. *See supra* text accompanying note 153.

185 *See* 50 C.F.R. § 402.02 (2019).

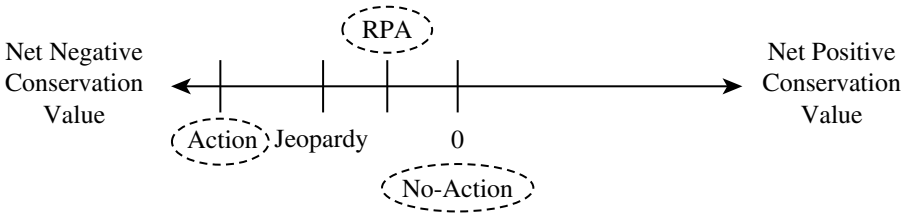
186 *See id.* § 402.14(i).

187 When section 7(a)(2) is implicated, conservation-friendly alternatives include reasonably prudent alternatives with net positive conservation value.

188 Dashed lines indicate the noninclusive edge on a range of values. In mathematical terms: RPA > Jeopardy and CFA > No Action (0).

but that no conservation-friendly alternative exists. This does not trigger section 7(a)(1), and the agency has discretion to choose among the original action, any reasonably prudent alternatives offered, and the no-action alternative (indicated by dashed circles). Necessarily, the reasonably prudent alternatives must either (1) implicate some degree of take or (2) result in a net zero conservation value; otherwise, the reasonably prudent alternative would be a conservation-friendly alternative. The practical result is that the agencies proceed with a typical section 7(a)(2) consultation.

FIGURE 2. SCENARIO 1



In Scenario 2a (see Figure 3), assume that there is a jeopardy finding, a conservation-friendly alternative and a reasonably prudent alternative that has a net *negative* conservation value. This triggers both section 7(a)(1) and (2), and the agency must choose the conservation-friendly alternative.[189] In Scenario 2b (see Figure 4), assume that there is a conservation-friendly alternative and a reasonably prudent alternative that has a net *positive* conservation value. As stated above, a conservation-friendly alternative may be an alternative that deviates significantly—e.g., in either time or place—from the proposed action, and therefore is not necessarily a reasonably prudent alternative.[190] Because a net positive reasonably prudent alternative and a conservation-friendly alternative both further the purpose of section 7(a)(1), the agency has discretion to choose between these two options (indicated by dashed circles). Similarly, if there exists only a single net positive reasonably prudent alternative, the agency *must* follow that alternative.[191]

189 Lack of agency discretion indicated by a solid circle.

190 *See supra* Section II.B.1.

191 This differs from the current state of the law, which allows the agency to maintain its discretion to follow the originally proposed action despite the existence of a net positive reasonably prudent alternative. *See supra* text accompanying note 182.

FIGURE 3. SCENARIO 2A

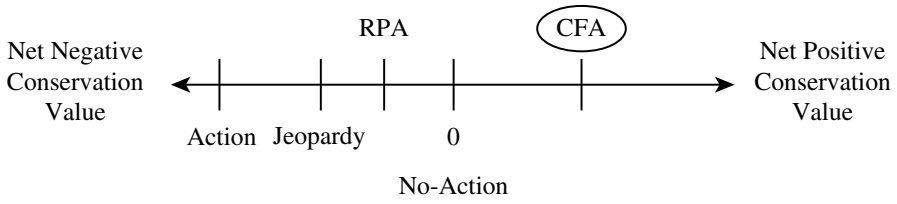
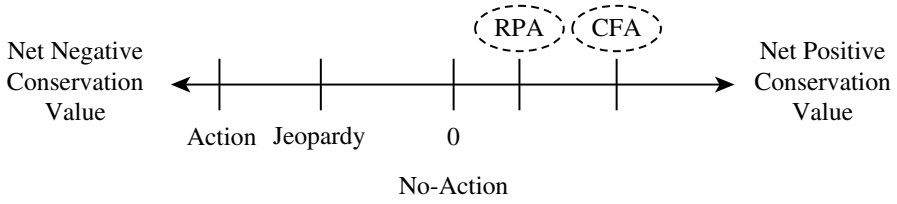


FIGURE 4. SCENARIO 2B



Now assume that the consulting agency determines that the agency action will not jeopardize the species. Because there is no jeopardy finding, the consulting agency does not look for reasonably prudent alternatives. In Scenario 3a (see Figure 5), assume that there is a conservation-friendly alternative. The agency *must* choose the conservation-friendly alternative over the original action. In Scenario 3b (see Figure 6), assume there is no conservation-friendly alternative. This does not trigger section 7(a)(1), and the agency has discretion to choose between the action and the no-action alternative.

FIGURE 5. SCENARIO 3A

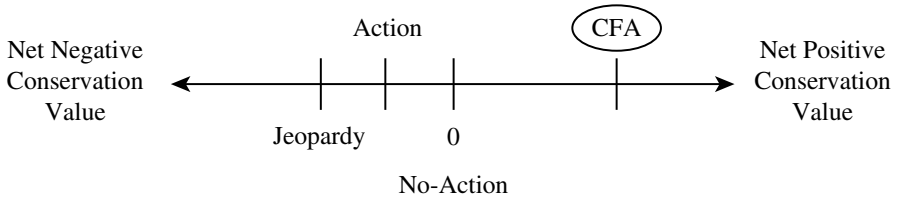
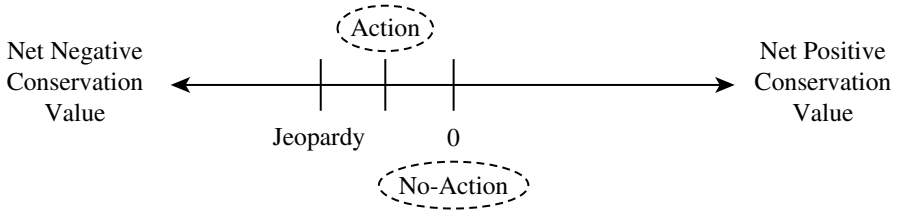


FIGURE 6. SCENARIO 3B



Lastly, in Scenario 4, assume that only section 7(a)(1) is triggered, such as through a rulemaking petition for more conservation-friendly

administration of a statute. The agency must carry out the conservation-friendly alternative. If no such alternative exists, then the agency may maintain the status quo. For the foregoing reasons, Scenario 4 provides the greatest potential for effective mitigation of climate change.

III. Application of the Proposed Rule to the EPA's Administration of the CAA

A. Overview

Having established a working interpretation of section 7(a)(1), the question then becomes how to apply the provision to mitigate climate change. This Section will apply Scenario 4 described in the previous section to the EPA's administration of the CAA,[192] which regulates the emission of air pollutants by establishing national air quality standards.[193] One of the purposes of the CAA is to achieve welfare for wildlife,[194] which naturally includes threatened and endangered species. This nexus with the purpose of the ESA makes the EPA's section 7(a)(1) duty difficult to deny.

Section 7(a)(1) is particularly appealing because the use of section 7(a)(2) consultations to curb climate change is frustrated by the CAA's chosen enforcement mechanism wherein the EPA transfers permitting authority to the states upon receiving a satisfactory state implementation plan.[195] Because state permitting decisions do not constitute federal agency actions triggering section 7(a)(2) consultation, any enforcement decisions made by states under the CAA are outside the jurisdiction of the FWS and NMFS.[196]

B. Application of the Proposed Section 7(a)(1) Rule

Applying the proposed interpretation of section 7(a)(1)—the mandatory adoption of a conservation-friendly alternative proposed in consultation with the Services—is more promising. The CAA mandates that the EPA regulate air pollutants by establishing national ambient air quality standards ("NAAQS") for each listed pollutant

192 Clean Air Act, 42 U.S.C. §§ 7401–7671q (2018).

193 *See id*. § 7409.

194 *See id.* § 7602(h).

195 *Id.* § 7410.

196 *See* Nat'l Ass'n of Home Builders v. Defs. of Wildlife, 551 U.S. 644, 653 (2007) (expressing analogous concern with the Clean Water Act: "Specifically, the FWS feared that, because § 7(a)(2)'s consultation requirement does not apply to permitting decisions by state authorities, the transfer of authority would empower [state] officials to issue individual permits without considering and mitigating their indirect impact on [certain] species" (footnote omitted)).

("criteria pollutant").[197] Section 7(a)(1) is triggered if the EPA can administer this mandate as a conservation program for listed species.[198] Because regulating national greenhouse gas concentrations could conserve listed species by mitigating climate change, section 7(a)(1) is triggered.[199] Furthermore, because a decision not to regulate does not trigger section 7(a)(2) consultation, this situation mirrors Scenario 4.[200]

The EPA is not regulating greenhouse gases nationally[201] and therefore must consult with the Services on its section 7(a)(1) duty. The goal of the consultation would be to determine whether the EPA's air pollution program through the CAA uses "*all methods and procedures which are necessary* to bring any endangered species or threatened species to the point at which the measures provided pursuant to [the ESA] are no longer necessary."[202] The Services would likely assert the following two alternatives: (1) the EPA does not list greenhouse gases as criteria pollutants (the status quo, or the no-action alternative), and (2) the EPA lists one or more greenhouse gases as criteria pollutants (the conservation-friendly alternatives).

Option (1) offers no net positive conservation value. Option (2), however, offers significantly more conservation value through the national regulation of greenhouse gas emissions. As of 2017, the U.S. contributed 13.4% of global greenhouse gas emissions.[203] Consequently, regulation of greenhouse gases under the CAA does not present the same concern that the achieved emission reductions would be marginal, as was the case with both the section 9 take prohibition and section 7(a)(2) consultation.[204] Under the proposed rule, the EPA is required to follow one of the conservation-friendly alternatives under Option (2).[205]

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197 *See* 42 U.S.C. § 7409.

198 *See supra* Section II.B.1.

199 *See supra* Section I.A.2.

200 W. Watersheds Project v. Matejko, 468 F.3d 1099, 1108 (9th Cir. 2006) (holding that an agency's "discretion [to regulate] without more is not an 'action' triggering a consultation duty"); *see supra* Section III.B.3.

201 *See* 40 C.F.R. §§ 50.4–.19 (2019) (NAAQS for all listed criterial pollutants: lead, ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matter, none of which are greenhouse gases); *infra* Section III.C.

202 16 U.S.C. § 1532(3) (2018) (emphasis added).

203 *Global Emissions: Greenhouse Gas Emissions from Top Ten Emitters, 2017*, CTR. FOR CLIMATE & ENERGY SOLUTIONS, https://www.c2es.org/content/international-emissions/ [https://perma.cc/Z4UC-MLFT].

204 *See supra* Sections I.B.3–.4.

205 *See supra* Section II.B.3.

If required to regulate greenhouse gases as a result of its section 7(a)(1) affirmative conservation duty, the EPA would still retain discretion in *how* it regulates emissions.[206] The agency could choose which greenhouse gases it regulates (e.g., carbon dioxide, methane, nitrous oxide, hydrofluorocarbons)[207] and what criteria should be established for the newly listed pollutant(s) (e.g., an ambient air concentration cap).[208] A court cannot enforce a particular *means* through which the EPA regulates greenhouse gas emissions, but it can enforce the *ends*.[209]

For example, the EPA could choose to focus primarily on methane emissions. Methane is the second greatest contributor to climate change with 657.4 million metric tons of carbon dioxide equivalent emitted in 2016.[210] This accounts for 10.1% of the total carbon dioxide equivalent emissions in the United States.[211] Given its short atmospheric lifespan and strong global warming potential, methane regulation is an attractive candidate for mitigating climate change.[212]

Specifically, regulating animal agriculture is a promising method of reducing methane production. Domestic livestock (specifically ruminant animals) are the largest source of methane emissions through a process called enteric fermentation.[213] Microbes, which naturally exist in the digestive tract, help ruminant livestock digest food by breaking it down into compounds that are more bioavailable to the animal.[214] The microbes release methane as a byproduct, which is then expelled through the animal's mouth or nose.[215] Of the methane emissions that come from enteric fermentation, cattle produce 96%—71% from beef cattle and 25% from dairy cattle.[216] An additional 10.3% of methane emissions are associated with domestic livestock rearing through manure management.[217] Agricultural soil management—in-

206 *See supra* text accompanying note 144.

207 *Greenhouse Gas (GHG) Emissions: Overview of Greenhouse Gases*, *supra* note 21.

208 *See* 40 C.F.R. § 50.2(b) (2019); *see, e.g.*, *id.* § 50.4(a).

209 *See* Pyramid Lake Paiute Tribe of Indians v. U.S. Dep't of Navy, 898 F.2d 1410, 1418 (9th Cir. 1990).

210 EPA INVENTORY, *supra* note 22, at ES-6 tbl.ES-2 (as compared to 5,310.9 million metric tons of carbon dioxide in 2016).

211 *See id.* at ES-9 fig.ES-4.

212 *See supra* text accompanying notes 24–29.

213 EPA INVENTORY, *supra* note 22, at ES-15, 5-3 (enteric fermentation accounts for 25.9% of methane emissions).

214 *See id.* at 5-3.

215 *See id.*

216 *See id.*

217 *See id.* at ES-21.

cluding the "deposition of livestock manure"—is responsible for 76.7% of nitrous oxide emissions in the United States.[218] Given that nitrous oxide is a medium-lifespan compound and has a global warming potential 298 times that of carbon dioxide, methane regulation will also have appreciable effects on climate change by reducing ancillary greenhouse gases.[219]

Regulating methane emissions by targeting factory farms is an economically and politically viable method of deterring climate change. Most cattle are raised on factory farms, or Concentrated Animal Feeding Operations ("CAFOs"), which use confining enclosures to maximize the number of animals housed per square foot of land.[220] Although fewer than 10% of all animal feeding operations qualify as CAFOs, they hold 81% of all cattle kept on feed.[221] Therefore, regulating a small number of animal agriculture businesses can have a significant impact on greenhouse gas emissions.

C. Addressing the Counterarguments

Section 7(a)(1) would not require the EPA to regulate greenhouse gases under the CAA if it were outside the agency's jurisdiction.[222] The EPA has claimed such lack of jurisdiction, citing the absence of explicit and implicit Congressional intent for the agency to consider greenhouse gases "air pollutants."[223] The Supreme Court has zealously disagreed:

> The Clean Air Act's sweeping definition of "air pollutant" includes "*any* air pollution agent or combination of such agents, including *any* physical, chemical . . . substance or matter which is emitted into or otherwise enters the ambient

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218 *Id.*

219 *Id.* at ES-3; *see supra* text accompanying note 26.

220 *See Inhumane Practices on Factory Farms*, ANIMAL WELFARE INST., https://awionline.org/content/inhumane-practices-factory-farms [https://perma.cc/36BZ-FQ3B]. The EPA has specifically defined a CAFO as a "facility that has more than 1000 animal units, or has between 300 and 1000 animal units and meets certain conditions or is designated a CAFO by the state, or has less than 300 animals and is designated a CAFO by the state." U.S. ENVTL. PROT. AGENCY, EPA/600/R-04/042, RISK MANAGEMENT EVALUATION FOR CONCENTRATED ANIMAL FEEDING OPERATIONS 7 (2004).

221 *See* U.S. ENVTL. PROT. AGENCY, EPA 833-F-12-001, NPDES PERMIT WRITERS' MANUAL FOR CONCENTRATED ANIMAL FEEDING OPERATIONS 2 (2012); *Industry Statistics*, NAT'L CATTLEMEN'S BEEF ASS'N, http://www.beefusa.org/beefindustrystatistics.aspx [https://perma.cc/LW7C-5VFE].

222 *See supra* Section II.A.2.

223 *See* Massachusetts v. EPA, 549 U.S. 497, 528–30 (2007) ("Because EPA believes that Congress did not intend it to regulate substances that contribute to climate change, the agency maintains that carbon dioxide is not an 'air pollutant' within the meaning of the provision.").

> air . . . ." On its face, the definition embraces all airborne compounds of whatever stripe, and underscores that intent through the repeated use of the word "any." Carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons are without a doubt "physical [and] chemical . . . substance[s] which [are] emitted into . . . the ambient air." The statute is unambiguous.[224]

While the Court in *Massachusetts v. EPA* was specifically concerned with the EPA's authority to regulate greenhouse gas emissions from new motor vehicles under the CAA—as opposed to national ambient air concentrations—the Court's holding relied on the expansive definition of "air pollutant," which is applicable to both the motor vehicle and national ambient air provisions.[225] In other words, because the EPA has jurisdiction to regulate greenhouse gas emissions from new motor vehicles because of their effects on climate change,[226] the agency also has jurisdiction to regulate greenhouse gas emissions under the CAA's NAAQS provision.

The Court distinguished this expansion of the EPA's jurisdiction from *Food & Drug Administration v. Brown & Williamson Tobacco Corp.*,[227] which held that the Food and Drug Administration did not have jurisdiction to *ban* tobacco products because this would contradict the "'common sense' intuition that Congress never meant to remove those products from circulation."[228] Here, the EPA "would only *regulate* emissions, and even then, it would have to delay any action 'to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance.'"[229] EPA regulation of greenhouse gases does not offend "common sense" in the same way that a universal ban on cigarettes could in the late 1900s.

Furthermore, the EPA is fully capable of administering the CAA for this purpose despite the arguments that the agency might raise. For example, the EPA could argue that it lacks the resources to regulate greenhouse gases nationally because (1) to do so would more than double the number of criteria pollutants currently regulated (the EPA

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224 *Id.* at 528–29 (footnote omitted) (quoting 42 U.S.C. § 7602(g) (2004)).

225 *See id.* at 497; *see also* 42 U.S.C. § 7602(g) (2018).

226 *See Massachusetts*, 549 U.S. at 529–30.

227 529 U.S. 120 (2000), *superseded by statute*, Family Smoking Prevention & Tobacco Control Act, Pub. L. No. 111-31, 123 Stat. 1776 (2009).

228 *Massachusetts*, 549 U.S. at 531 (quoting FDA v. Brown & Williamson Tobacco Corp., 529 U.S. 120, 133 (2000)).

229 *Id.* (quoting 42 U.S.C. § 7521(a)(2)).

has closely studied seven greenhouse gases, yet there are currently only six criteria pollutants under the Act),[230] and (2) ensuring compliance with regulations requires money and personnel, so doubling its national ambient air efforts would, at the very least, be impracticable.

This argument, however, fails for two reasons. First, under the proposed rule, the EPA has discretion to choose how it regulates greenhouse gases, including which greenhouse gases to regulate and to what extent.[231] This discretion resolves the contention that EPA would need to double the criteria pollutants regulated. EPA can mitigate climate change efficiently and effectively in the near future by regulating methane alone.[232] Second, concerns over expenses and resources are unfounded because most CAA enforcement is done by the states,[233] and each state has the ability to "personalize" its regulations to most efficiently attain ambient air quality standards.[234] Regardless, excuses based on impracticability are not valid under the "practicability language" analysis in *TVA v. Hill*.[235] Any excuse for inaction based on administrability would be arbitrary and capricious because it would show that "the agency has relied on factors which Congress has not intended it to consider . . . ."[236]

D. The Remedy

The EPA's failure to satisfy its section 7(a)(1) affirmative duty would expose the agency to citizen suit litigation by states under the ESA.[237] In *Massachusetts v. EPA*, the Supreme Court affirmed that states had standing to sue the EPA by showing that future injury to coastal lands from unmitigated climate change constituted an injury in

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230 *See* 40 C.F.R. §§ 50.4–.19 (2019) (current criteria pollutants: lead, ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matter); EPA INVENTORY, *supra* note 22, at ES-4 to -18 (greenhouse gases studied: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride).

231 *See supra* text accompanying note 143.

232 *See supra* Section III.B.

233 *See* 42 U.S.C. § 7410(a)(2)(A)–(D).

234 *See id.*

235 *See supra* text accompanying notes 175–79; *see also* Tenn. Valley Auth. v. Hill, 437 U.S. 153, 174–75, 182–83, 185 (1978).

236 *See* Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983) ("Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise."); 5 U.S.C. § 706(2)(A) (2018).

237 *See* Endangered Species Act of 1973, 16 U.S.C. §§ 1532(13), 1540(g)(1)(A) (2018) (states are considered "persons" under citizen suit provision).

fact.[238] In assessing whether a favorable judgment would actually address the state's injury, the majority recognized that, even though the EPA's actions would not completely halt the progression of climate change, the agency's actions could slow its progression, which is enough to satisfy the redressability prong.[239] Therefore, if the EPA fails to consult with the Services upon a petition for rulemaking providing notice that a conservation-friendly alternative might exist, then the states injured by climate change would have standing to sue the EPA for not satisfying its section 7(a)(1) affirmative conservation duty.

Conclusion

Section 7(a)(1) *mandates* that every federal agency actively seek the conservation of endangered and threatened species. Despite this, section 7(a)(1) has remained in hibernation. The rule proposed by this Note merely awakens the underlying force that Congress intended the ESA to possess as a means of addressing climate change prospectively. Federal agencies *must* consult with the FWS or NMFS under section 7(a)(1) if there is a conservation-friendly alternative to either (1) a proposed agency action or (2) the administration of a statute under the agency's authority. The agency *must* implement a conservation-friendly alternative if one exists. If more than one exists, the agency retains discretion to choose among the alternatives.

The EPA has the expertise to regulate greenhouse gases under the CAA, and, as this Note shows, the agency has an affirmative duty to do so under section 7(a)(1) of the ESA. Given the differing lifespans and global warming potentials of greenhouse gases,[240] the agency must retain the discretion to choose which gases to regulate and to what extent. Such regulation will inevitably impact industry, but it is a price society must be willing to pay for survival.

238 549 U.S. 497, 521–23, 526 (2007).

239 *Id.* at 525.

240 *See supra* Section I.A.1.