

SPECIES PROTECTION AS A NATURAL CLIMATE SOLUTION

by Mackenzie Landa

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SUMMARY

This Article, adapted from Chapter 16 of *What Can Animal Law Learn From Environmental Law?*, 2d Edition (ELI Press, forthcoming 2020), explores existing and potential wildlife conservation policies that could play a vital role in mitigating global climate change. It describes how climate change is impacting wildlife and biodiversity around the globe and reviews the history and current state of U.S. policy, including how the federal government currently manages climate change issues under the ESA. It then proposes ways that the ESA and other wildlife conservation policies can mitigate climate change as natural climate solutions. It analyzes new wildlife conservation policies for their potential to mitigate climate change, and concludes that these can provide much-needed protection for species and biodiversity, while also serving as a valuable and meaningful tool to combat climate change.

Climate change is among the leading threats to the long-term survival of species and habitats today.¹ As such, wildlife protection is a crucial component of the climate conversation. Increasingly warm temperatures are having widespread impacts on ecosystems and biodiversity around the globe. Species migration, extinctions, and changes in behavior and population have already been recorded.² Habitats are shifting and shrinking and the wildlife that depend on them face an uncertain future as temperatures continue to rise.³

While the impacts of climate change on biodiversity cannot be understated, wildlife can play another role in the climate discussion: mitigation. Wildlife conservation laws and policies can be used both as a tool to help wildlife adapt to climate change and as a powerful natural climate solution to mitigate climate change. Natural climate solutions, such as large landscape conservation and the

protection and restoration of forests, wetlands, and other natural spaces, are ways to significantly reduce greenhouse gas (GHG) emissions and store carbon in lands and soils.⁴ Improved land and habitat management have the potential to deliver up to one-third of the emissions reductions needed to meet emissions targets by 2030.⁵

Wildlife conservation policies should be considered and utilized as one such natural climate solution. For example, protecting species such as the polar bear from climate change under the Endangered Species Act (ESA) provides safeguards for the species, but it also makes oil and gas development in polar bear habitat more difficult, thereby limiting the potential for fossil fuel emissions⁶; establishing wildlife corridors is necessary for species connectivity, but it also requires preservation of natural spaces which sequester carbon; and designating critical habitat provides

1. United Nations, *U.N. Report: Nature's Dangerous Decline "Unprecedented"; Species Extinction Rates "Accelerating,"* SUSTAINABLE DEV. GOALS BLOG (May 6, 2019), <https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/> [hereinafter U.N. Report].

2. Douglas Lipton et al., *Ecosystems, Ecosystem Services, and Biodiversity, in 2 IMPACTS, RISKS, AND ADAPTATION IN THE U.S.: FOURTH NAT'L CLIMATE ASSESSMENT 275-76* (R.D. Reidmiller et al., eds. 2018).

3. *Id.*; see also Craig Welch, *Half of All Species Are on the Move—And We're Feeling It*, NAT'L GEO., Apr. 27, 2017, <https://www.nationalgeographic.com/news/2017/04/climate-change-species-migration-disease/>.

4. See Joseph E. Fargione et al., *Natural Climate Solutions for the United States*, *SCI. ADV.*, Nov. 2018, at 4.

5. *Natural Climate Solutions*, THE NATURE CONSERVANCY, <https://www.nature.org/en-us/what-we-do/our-insights/perspectives/natural-climate-solutions/> (last visited Dec. 19, 2019); Georgina Gustin, *Natural Climate Solutions Could Cancel Out a Fifth of U.S. Emissions, Study Finds*, *INSIDE CLIMATE NEWS*, Nov. 14, 2018, <https://insideclimatenews.org/news/14112018/climate-change-solutions-forests-farms-carbon-storage-cancel-out-emissions-study>.

6. See generally Eric Hull, *Using Climate Change Impacts as Leverage to Protect the Polar Bear: The Value of Habitat Protection in Promoting Animal Welfare, in WHAT CAN ANIMAL LAW LEARN FROM ENVIRONMENTAL LAW?* (2d edition forthcoming 2020).

additional protected areas for wildlife populations, but it also limits the potential for forest and wetland conversion to cropland or development. The health of the ecosystems on which humans and wildlife depend cannot be sustained without addressing the causes of climate change.

This Article proposes that wildlife protection is a natural climate solution and it will explore the array of existing and potential wildlife conservation policies that could play a vital role in mitigating global climate change. Part I of this Article describes how the consequences of climate change are impacting wildlife and biodiversity around the globe and how those impacts will increase in severity if GHG emissions continue on their current trajectory. Part II reviews the history and current state of U.S. policy on climate change. After setting the framework for the current regulatory regime, Part III describes one of the essential solutions to the climate crisis—natural climate solutions. Before proposing wildlife conservation policies that can serve as natural climate solutions, Part IV provides a brief review of how the federal government currently manages climate change issues within the framework of the ESA.

Part V proposes ways that the ESA and other wildlife conservation policies can mitigate climate change as natural climate solutions. As the strongest conservation law in U.S. history, the ESA has the potential, if implemented as a resource to protect species from climate change, to be a valuable and significant tool to regulate GHG emissions and increase carbon sequestration. Part V also analyzes new wildlife conservation policies for their potential to mitigate climate change. It concludes that wildlife conservation policies can provide much-needed protection for species and biodiversity, while also serving as a valuable and meaningful tool to combat climate change.

I. Climate Change Impacts on Wildlife

On March 1, 1872, President Ulysses S. Grant signed the Yellowstone National Park Protection Act, establishing the National Park System and officially making Yellowstone America's first national park.⁷ Part of what makes Yellowstone National Park special and worthy of the designation is its “diversity of natural wealth,” which includes unique hydrothermal features; pristine forests and waters; breathtaking geologic wonders; and most of all, iconic and treasured wildlife, including bison, grizzly bears, gray wolves, and elk.⁸ The Greater Yellowstone Ecosystem is one of the

largest intact temperate-zone ecosystems on earth and its habitat serves as a sanctuary for the largest concentration of wildlife in the lower 48 states.⁹

Despite nearly 150 years of federal protection, human-caused climate change is putting this iconic ecosystem at risk. Rising temperatures in higher elevations have increased the population of mountain pine beetles and greatly expanded their range.¹⁰ This particular species of bark beetle feed on whitebark pine trees, a keystone tree species that supports the entire Yellowstone ecosystem.¹¹ Since 2009, more than 95% of whitebark pine trees have died as a result of the pine beetles and 75% of the mature whitebark pines in Yellowstone National Park are now dead.¹² The destruction of these trees also puts other species in the park at risk, as whitebark pine trees create habitat and serve as a critical food source for species such as grizzly bears and squirrels.¹³

The consequences of climate change are not, of course, limited to the inhabitants of Yellowstone National Park—they are being felt by species in every corner of the globe. Sea turtles, for example, face threats from hotter sand temperatures, which cause greater numbers of turtles to be born female.¹⁴ In the Pacific Ocean's largest and most important green sea turtle nesting ground, female sea turtles now outnumber males by 116 to 1.¹⁵ Sea turtles around the world are showing similar trends, causing scientists to worry about the species' long-term sustainability.¹⁶ Coral reefs, which have the highest biodiversity of any ecosystem globally, are decreasing at alarming rates.¹⁷ Warming temperatures are causing mass coral bleaching events around the world, which will increase in intensity and frequency as temperatures continue to rise.¹⁸ In fact, all coral reefs in the 29 reef-containing World Heritage Sites will cease to exist by the end of the century if humans do not reduce

7. Nat'l Park Serv., *Birth of a National Park*, <https://www.nps.gov/yell/learn/historyculture/yellowstoneestablishment.htm> (last visited Dec. 19, 2019); Andrew Glass, *Yellowstone Becomes Nation's First National Park, March 1, 1872*, POLITICO (Mar. 1, 2019), <https://www.politico.com/story/2019/03/01/yellowstone-national-park-1189251>; cf. 8 *Presidents Who Shaped America's Public Lands*, U.S. DEP'T OF THE INTERIOR (DOI) BLOG (Feb. 12, 2016), <https://www.doi.gov/blog/8-presidents-who-shaped-americas-public-lands>. President Grant was also the first president to use federally owned land to protect wildlife. In 1868, he set aside the Pribilof Islands in Alaska as a reserve for the northern fur seal.

8. *Greater Yellowstone Ecosystem*, NAT'L PARK SERV., <https://www.nps.gov/yell/learn/nature/greater-yellowstone-ecosystem.htm> (last visited Dec. 19, 2019); NAT'L PARK SERV., YELLOWSTONE RESOURCES AND ISSUES HANDBOOK 53 (2016), https://www.nps.gov/yell/planyourvisit/upload/RI_2016_FINAL_

Ecosystem_web.pdf; *Yellowstone*, NAT'L WILDLIFE FED., <https://www.nwf.org/Home/Educational-Resources/Wildlife-Guide/Wild-Places/Yellowstone> (last visited Dec. 19, 2019).

9. YELLOWSTONE RESOURCES AND ISSUES HANDBOOK, *supra* note 8, at 53.

10. Elizabeth Shogren, *How a Tiny Beetle Could Decimate Yellowstone*, NAT'L PUB. RADIO (Dec. 26, 2010), <https://www.npr.org/2010/12/26/132348210/how-a-tiny-beetle-could-decimate-yellowstone>; Hillary Rosner, *The Bug That's Eating the Woods*, NAT'L GEO., Apr. 2015, <https://www.nationalgeographic.com/magazine/2015/04/pine-beetles-forest-destruction-canada-rockies/>.

11. Douglas Fischer, *Yellowstone's Iconic High Mountain Pines Dying by Beetle's Mouth*, SCI. AM., Oct. 8, 2014, <https://www.scientificamerican.com/article/yellowstone-s-iconic-high-mountain-pines-dying-by-beetle-s-mouth/>.

12. *Id.*; Rosner, *supra* note 10.

13. *Greater Yellowstone Inventory & Monitoring Network: Whitebark Pine*, NAT'L PARK SERV., <https://www.nps.gov/im/gryn/whitebark-pine.htm> (last visited Dec. 19, 2019); *Wildlife*, WHITEBARK PINE FOUND. (Nov. 13, 2018), <https://whitebarkfound.org/wildlife/>; see also Rosner, *supra* note 10.

14. Craig Welch, *Rising Temperatures Cause Sea Turtles to Turn Female*, NAT'L GEO., Jan. 8, 2018, <https://www.nationalgeographic.com/news/2018/01/australia-green-sea-turtles-turning-female-climate-change-raine-island-sex-temperature/>.

15. *Id.*

16. *Id.*; Craig Welch, *Sea Turtles Are Being Born Mostly Female Due to Warming—Will They Survive?*, NAT'L GEO., Apr. 4, 2019, <https://www.nationalgeographic.com/environment/2019/04/sea-turtle-sex-ratio-crisis-from-climate-change-has-hope/>.

17. *Coral Reefs and Climate Change*, INT'L UNION FOR CONSERVATION OF NATURE, <https://www.iucn.org/resources/issues-briefs/coral-reefs-and-climate-change> (last visited Dec. 19, 2019).

18. *Id.*

GHG emissions.¹⁹ Koalas, too, face threats to survival as a result of carbon pollution.²⁰ Increased carbon dioxide (CO₂) reduces nutrients in eucalyptus leaves, which the koala depends on as a food source, leaving koalas vulnerable to malnutrition and starvation.²¹ The poster species for climate change, polar bears, have earned this distinction as sea ice and snowpack melt and decline. Polar bears—and many ice- and snow-dependent species—are suffering the effects of warming temperatures. Polar bears rely on sea ice for hunting, breeding, migrating, and resting. As temperatures increase, so does their risk of starvation and, ultimately, extinction.²²

The above examples are just a small handful of species facing extinction and declining populations due to climate change. There are countless others. In fact, in May 2019, the United Nations Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) published a report finding that nature is declining globally at an unprecedented rate and that an estimated *one million* species are threatened with extinction, many within decades.²³ The report ranked climate change among the top-five leading direct drivers of species decline and projected that climate change will become an increasingly important driver of biodiversity loss as its impacts become more severe.²⁴

If current trends continue, biodiversity and species around the globe face a grim future. The earth's climate is changing faster than at any point in modern history—the consequences of which are already playing out around the world and are projected to increase and intensify.²⁵ Melting glaciers and snow cover are shrinking and sea ice is retreating.²⁶ Extreme weather events such as storms and wildfires are increasing in frequency and severity.²⁷ Seas are warming, rising, and becoming more acidic.²⁸ Flooding and droughts are becoming more frequent.²⁹ Wildlife species face all of these challenges from climate change,

combined with other threats to their survival such as habitat loss and exploitation.³⁰

In the last two years, numerous reports have been published that have warned of the impacts climate change will have on biodiversity, species, and habitats. The Intergovernmental Panel on Climate Change (IPCC) released a report in October 2018 that found that “[t]emperature rise to date has already resulted in profound alterations to human and natural systems, including increases in droughts, floods, and some other types of extreme weather; sea level rise; and biodiversity loss.”³¹ According to the Fourth National Climate Assessment, a report published by the U.S. Global Change Research Program in November 2018, “[w]ithout significant reductions in GHG emissions, extinctions and transformative impacts on some ecosystems cannot be avoided.”³² A second IPCC report, published in August 2019, found that as a consequence of the shifting of climate zones, “many plant and animal species have experienced changes in the ranges, abundances, and shifts in their seasonal activities.”³³

To adapt to the impacts of climate change, species are altering their behavior, geographic ranges and migrations patterns, and timing of biological events.³⁴ As habitats, food sources, and ecosystems are altered by warming temperatures, affected wildlife species face an uncertain future.³⁵ As the rate of warming outpaces species' ability to adapt, extinction may occur at both local and global levels, increasing the risk of extinction for 20-30% of species in this century alone.³⁶ Climate change is among the leading threats to the health, vitality, and—ultimately—the survival of species today.

II. A History of U.S. Climate Policy

Despite having more than half a century to confront the climate crisis, there continues to be a profound lack of congressional consensus on how to regulate GHG emissions.³⁷ The federal government acknowledged carbon pollution's impact on the climate as early as 1965, when the President's Science Advisory Committee released a report that warned of anthropogenic climate change, stating that the “production of carbon dioxide from fossil fuel combustion” will have a significant effect on climate and predicting that by the year 2000, “the increase in atmospheric CO₂” may “produce measurable and perhaps marked changes in cli-

19. *Id.*

20. INT'L UNION FOR CONSERVATION OF NATURE, KOALAS AND CLIMATE CHANGE: HUNGRY FOR CO₂ CUTS (2009), https://cmsdata.iucn.org/downloads/fact_sheet_red_list_koala_v2.pdf.

21. *Id.*

22. See Michelle Ma, *Polar Bears Across the Arctic Face Shorter Sea Ice Season*, NAT'L AERONAUTIC & SPACE ADMIN. (Oct. 3, 2016), <https://climate.nasa.gov/news/2499/polar-bears-across-the-arctic-face-shorter-sea-ice-season/>; see also *Polar Bears and Climate Change*, WORLD WILDLIFE FUND, <https://www.worldwildlife.org/pages/polar-bears-and-climate-change> (last visited Sept. 14, 2019).

23. U.N. Report, *supra* note 1.

24. *Id.*

25. Alexa Jay et al., *Overview*, in 2 IMPACTS, RISKS, AND ADAPTATION IN THE U.S.: FOURTH NATIONAL CLIMATE ASSESSMENT 39 (R.D. Reidmiller et al. eds., 2018).

26. *Id.* at 37; see also Env'tl. Law Inst. (ELI), *The Impact of Climate Change on Species and Their Habitat*, in 3 LAW OF ENVIRONMENTAL PROTECTION §21:61 (2018) (many species rely on sea ice habitat for hunting, most notably the polar bear).

27. Jay et al., *supra* note 25, at 69; ELI, *supra* note 26. Storms diminish beach habitats, which will impact species that rely on them, such as seals and sea turtles.

28. *Id.* (these changes in seas can impact, for example, species that rely on shallow water for habitat, such as dolphins and manatees).

29. *Id.*

30. U.N. Report, *supra* note 1.

31. MYLES R. ALLEN, IPCC, GLOBAL WARMING OF 1.5°C 49-91, 53 (V. Masson-Delmotte et al. eds., 2018).

32. Jay et al., *supra* note 25, at 42.

33. ALMUT ARNETH ET AL., IPCC, CLIMATE CHANGE AND LAND 6 (2019), https://www.ipcc.ch/site/assets/uploads/2019/08/4.-SPM_Approved_Microsite_FINAL.pdf.

34. Lipton et al., *supra* note 2, at 269; ELI, *supra* note 26; Jay et al., *supra* note 25, at 53.

35. Jay et al., *supra* note 25, at 53, 57; see generally ELI, *supra* note 26.

36. Lipton et al., *supra* note 2, at 289; Barry Kellman, *Climate Change in the Endangered Species Act: A Jurisprudential Enigma*, 46 ELR 10845, 10846 (Oct. 2016).

37. Nicole Rushovich, *Climate Change and Environmental Policy: An Analysis of the Final Guidance of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews*, 27 B.U. PUB. INT'L L.J. 327, 329 (2018).

mate, and will almost certainly cause significant change in the temperature.³⁸ That same year, President Lyndon B. Johnson remarked in a speech to the U.S. Congress that “[a]ir pollution is no longer confined to isolated places. This generation has altered the composition of the atmosphere on a global scale through radioactive materials and a steady increase in carbon dioxide from the burning of fossil fuels.”³⁹

The next administration, under President Richard Nixon, established the Council on Environmental Quality and its first annual report published in 1970 included a chapter devoted to CO₂-driven warming of the planet.⁴⁰ In 1977, the U.S. National Academy of Sciences (NAS) published a report finding that “the primary limiting factor on energy production from fossil fuels over the next few centuries may turn out to be the climate effects of the release of carbon dioxide.”⁴¹ The report cautioned of catastrophic impacts on agriculture, fishing, and sea-level rise. The *Washington Post* reported in July 1977 that although scientific concern regarding global warming was not new, NAS’ warning “is the first to carry the cachet of the nation’s official scientific establishment.”⁴² In 1979, NAS published a follow-up report stating that “[w]e now have incontrovertible evidence that the atmosphere is indeed changing and we ourselves contribute to that change. . . . A wait-and-see policy may mean waiting until it is too late.”⁴³

In the early 1980s, Congress began organizing congressional hearings on climate change,⁴⁴ an effort led by then-congressman Albert Gore.⁴⁵ As a congressman in the lower

chamber, Gore secured the first two hearings on climate change, one in 1981 and a second in 1982.⁴⁶ It was, however, a series of breakthrough U.S. Senate hearings in 1986 on the subject of “Ozone Depletion, the Greenhouse Gas Effect, and Climate Change,” followed by groundbreaking testimony from National Aeronautics and Space Administration scientist Dr. James Hansen in a 1988 Senate hearing that really brought the dangers of GHG emissions into policy discussions.⁴⁷ Dr. Hansen testified that the earth was warmer than at any other time in recent history and that it was 99% certain that the global warming trend was not a natural variation, but caused by man-made pollution, primarily from burning fossil fuels and land-use changes.⁴⁸

The same year Dr. Hansen delivered his historic testimony, the United Nations (U.N.) assembled the IPCC and in 1992, it established the U.N. Framework Convention on Climate Change (UNFCCC).⁴⁹ In signing the UNFCCC, President George H.W. Bush declared that the United States intends “to be the world’s pre-eminent leader in protecting the global environment.”⁵⁰ In 1997, President Bill Clinton signed the Kyoto Protocol, which set emissions targets for developed countries.⁵¹ The agreement, however, was never submitted to the Senate for approval⁵² and in 2001, President George W. Bush announced that the United States would not join the Kyoto Protocol and withdrew from the agreement.⁵³

Throughout the 1990s and 2000s, Congress did take incremental steps to reduce the U.S. carbon footprint,

38. PRESIDENT’S SCIENCE ADVISORY COMM., THE WHITE HOUSE, RESTORING THE QUALITY OF OUR ENVIRONMENT: REPORT OF THE ENVIRONMENTAL POLLUTION PANEL PRESIDENT’S SCIENCE ADVISORY COMMITTEE 113, 126-27 (1965); see also Cale Jaffe, *Melting the Polarization Around Climate Change Politics*, 30 GEO. ENVTL. L. REV. 455, 459 (2018).

39. Jaffe, *supra* note 38, at 459 (quoting President Lyndon Johnson, Special Message to the Congress on Conservation and Restoration of Natural Beauty (Feb. 8, 1965)); David Doniger, *The Clean Air Act and Climate Change: Where We’ve Been and Where We’re Going*, NATURAL RESOURCES DEF. COUNCIL (Nov. 18, 2014), <https://www.nrdc.org/experts/david-doniger/clean-air-act-and-climate-change-where-weve-been-and-where-were-going>.

40. COUNCIL ON ENVTL. QUALITY, ENVIRONMENTAL EQUALITY: THE FIRST ANNUAL REPORT (1970); see also Doniger, *supra* note 39; Rushovich, *supra* note 37, at 338.

41. See NATIONAL RESEARCH COUNCIL, ENERGY AND CLIMATE: STUDIES IN GEOPHYSICS viii (1977), <https://doi.org/10.17226/12024>; see also Jaffe, *supra* note 38, at 460.

42. Editorial, *Coal and the Global Greenhouse*, WASH. POST, July 27, 1977, at A22; Jaffe, *supra* note 38, at 460.

43. JULE G. CHARNEY ET AL., NATIONAL RESEARCH COUNCIL, CARBON DIOXIDE AND CLIMATE: A SCIENTIFIC ASSESSMENT vii-viii (1979).

44. The first hearing on climate change was actually in the 1960s and additional hearings were held in both the U.S. House of Representatives and the Senate in the 1970s. Some argue, however, that those hearings did not specifically focus on anthropogenic global warming. *The Adequacy of Technology for Pollution Abatement: Hearing Before the Subcomm. on Sci., Research, & Dev. of the H. Comm. of Sci. & Astronautics*, 89th Cong. (1966), http://njlw.rutgers.edu/collections/gdoc/hearings/6/66062721a/66062721a_2.pdf#page=88; *National Climate Program Act: Hearing Before the Subcomm. on Sci., Tech., & Space of the S. Comm. on Commerce, Sci., & Transp.*, 95th Cong. (1977), <https://babel.hathitrust.org/cgi/pt?id=mdp.39015068355463&view=1up&seq=10>; *The National Climate Program Act: Hearing Before the Subcomm. on the Env’t & the Atmosphere of the H. Comm. on Sci. & Tech.*, 94th Cong. (1976), <https://babel.hathitrust.org/cgi/pt?id=mdp.39015068355620&view=1up&seq=8>.

45. Chris Mooney, *30 Years Ago Scientists Warned Congress on Global Warming. What They Said Sounds Eerily Familiar*, WASH. POST, June 11, 2016, [\[ago-scientists-warned-congress-on-global-warming-what-they-said-sounds-eerily-familiar/\]\(https://www.washingtonpost.com/news/fact-checker/wp/2015/03/18/kerrys-claim-that-he-organized-the-very-first-hearings-on-climate-change/\); Ben Block, *A Look Back at James Hansen’s Seminal Testimony on Climate, Part One*, GRIST, June 16, 2008, <https://grist.org/article/a-climate-hero-the-early-years/>; Glenn Kessler, *Kerry’s Claim That He Organized the “Very First” Hearings on Climate Change*, WASH. POST, Mar. 18, 2015, <https://www.washingtonpost.com/news/fact-checker/wp/2015/03/18/kerrys-claim-that-he-organized-the-very-first-hearings-on-climate-change/>.](https://www.washingtonpost.com/news/energy-environment/wp/2016/06/11/30-years-</p>
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46. Kessler, *supra* note 45; *Carbon Dioxide and Climate: The Greenhouse Gas Effect: Hearing Before the Subcomm. on Natural Res., Agric. Research, & Env’t & the Subcomm. on Investigations & Oversight of the H. Comm. on Sci. & Tech.*, 97th Cong. (1981), <https://www.scribd.com/document/259162016/Gore-Hearing-on-global-warming-July-31-1981>.

47. Kessler, *supra* note 45; Mooney, *supra* note 45; *Ozone Depletion, The Greenhouse Effect, and Climate Change: Hearing Before the Subcomm. on Env’t. Pollution of the S. Comm. on Env’t & Pub. Works*, 99th Cong. (1986), http://njlw.rutgers.edu/collections/gdoc/hearings/8/86602726a/86602726a_1.pdf.

48. Kessler, *supra* note 45; Justine Sullivan, *The Historic 1988 Senate Climate Hearing: 30 Years Later*, UNITED NATIONS FOUND. BLOG (June 22, 2018), <https://unfoundation.org/blog/post/the-historic-1988-senate-climate-hearing-30-years-later/>; Philip Shabecoff, *Global Warming Has Begun, Expert Tells Senate*, N.Y. TIMES, June 24, 1988, <https://www.nytimes.com/1988/06/24/us/global-warming-has-begun-expert-tells-senate.html>.

49. Sullivan, *supra* note 48; Jaffe, *supra* note 38, at 463.

50. UNFCCC, May 9, 1992, 1771 U.N.T.S. 107, 165; S. Treaty Doc. No. 102-38 (1992); U.N. Doc. A/AC.237/18 (Part II)/Add.1; 31 I.L.M. 849 (1992); Center for Climate & Energy Solutions, *Congress Climate History*, <https://www.c2es.org/content/congress-climate-history/> (last visited Dec. 19, 2019).

51. Kyoto Protocol to the UNFCCC, Dec. 10, 1997, 37 I.L.M. 22 (1998); 2303 U.N.T.S. 148, 162; U.N. Doc. FCCC/CP/1997/1/Add.1; *Congress Climate History*, *supra* note 50.

52. The Senate passed a resolution stating that the United States should not be a signatory to any agreement that did not also include emissions commitments by developing countries. *Congress Climate History*, *supra* note 50.

53. *Id.*; David E. Sanger, *Bush Will Continue to Oppose Kyoto Pact on Global Warming*, N.Y. TIMES, June 12, 2001, <https://www.nytimes.com/2001/06/12/world/bush-will-continue-to-oppose-kyoto-pact-on-global-warming.html>; Paul Reynolds, *Kyoto: Why Did the U.S. Pull Out?*, BBC NEWS, Mar. 30, 2001, <http://news.bbc.co.uk/2/hi/americas/1248757.stm>.

such as adding a renewable energy tax credit to the 1992 Energy Policy Act; establishing a Greenhouse Gas Reporting Program for public reporting of GHG emissions from large sources; and passing the Energy Independence Security Act of 2007 which, among other things, boosted the use of renewable energy and established energy efficiency standards for buildings and appliances.⁵⁴ Many other bills aimed at regulating carbon pollution were introduced in both chambers of Congress but never became law.⁵⁵ As time went on, the increasing political polarization of acting on climate change made passing a meaningful climate regulatory plan impossible.

The opportunity to pass comprehensive climate legislation finally came in 2007. Shortly after Democrats took control of the U.S. House of Representatives following the 2006 elections, House Speaker Nancy Pelosi established the Select Committee on Energy Independence and Global Warming (Select Committee). The chair of the Select Committee, then-Rep. Ed Markey (D-Mass.), and the chair of the Energy and Commerce Committee, then-Rep. Henry Waxman (D-Cal.), introduced the American Clean Energy and Security Act (ACES) on May 15, 2009.⁵⁶ The groundbreaking bill, often referred to as Waxman-Markey, was a comprehensive climate bill that would have established a cap-and-trade program designed to reduce GHG emissions by more than 80% by 2050 compared to 2005 levels.⁵⁷ On June 26, 2009, Waxman-Markey passed in the House by a vote of 219-212.⁵⁸

Ultimately, Waxman-Markey died in the Senate when then-Senate Majority Leader Harry Reid (D-Nev.) refused to bring the legislation to a vote on the floor.⁵⁹ When, in the next election, Republicans won a majority of seats in the House, the new congressional leadership eliminated the Select Committee, and any efforts to include climate change in the legislative agenda were abandoned. Congress would fail to make another attempt at a major climate bill for another decade; however, with the collapse of the Waxman-Markey bill, President Barack Obama took executive action and his administration issued the Clean Power Plan on August 3, 2015.⁶⁰ The rule sought to reduce carbon pollution by setting a limit on emissions produced from existing power plants.⁶¹ Just a few months later in December

2015, the United States committed to join the Paris Climate Agreement, a historic international agreement aimed at combating climate change.⁶²

With the implementation of the Clean Power Plan and the adoption of the Paris Climate Accord, it seemed as if the United States was finally taking steps to lead on GHG regulation. As it seems with U.S. climate policy, however, what comes up must come down. When the Obama Administration came to an end, the new Trump Administration rolled back these climate victories, repealing the Clean Power Plan and announcing that the United States would withdraw from the Paris Climate Accord.⁶³

Therefore, as of this writing, Congress has failed to pass any comprehensive climate-focused legislation and the Trump Administration has rolled back any climate-related executive achievements. Although preexisting legislation such as the Clean Air Act and the National Environmental Policy Act are often used as tools to limit carbon pollution, specific climate-focused legislation, much less a comprehensive plan to solve the climate crisis, remains missing from U.S. policy.

Despite these developments, hope remains. A full decade after the failure of the Waxman-Markey climate bill, there is again an opportunity for congressional action on the climate crisis. After eight years of Republican rule, Democrats finally regained a majority in the House in the 2018 mid-term election, capturing control of the lower chamber's legislative agenda. Firmly back in control of the gavel, one of Speaker Pelosi's first acts as the newly reappointed Speaker of the House was to reestablish a Select Committee on climate change: the Select Committee on the Climate Crisis. In the first six months in the majority, congressional Democrats held nearly 50 hearings on climate change. For the first time since the 2009 Waxman-Markey Bill, the House passed major climate change legislation: H.R. 9, the Climate Action Now Act, which commits the United States to remaining in the Paris Agreement. After nearly a decade of congressional climate denial, legislative action on climate change is back on the table.

It is crucial that this climate momentum not dissipate, as has previously happened time and again. For the United States to significantly reduce carbon pollution and meet necessary emissions targets, the United States will need to

54. *Congress Climate History*, *supra* note 50; Rushovich, *supra* note 37, at 341; Greg Dotson, *The Carbon Tax Vote You've Never Heard of and What It Portends*, 36 UCLA J. ENVTL. L. & POL'Y 167, 191-92 (2018).

55. For example, the McCain-Lieberman Climate Stewardship Act was introduced in the Senate in 2003 and 2005. The bill proposed a cap-and-trade program that would have covered 85% of U.S. emissions. Rushovich, *supra* note 37, at 339; Dotson, *supra* note 54, at 190.

56. Amanda Reilly & Kevin Bogardus, *7 Years Later, Failed Waxman-Markey Bill Still Makes Waves*, E&E NEWS, June 27, 2016, <https://www.eenews.net/stories/1060039422>; Daniel J. Weiss, *Anatomy of a Senate Climate Bill Death*, CENTER FOR AM. PROGRESS (Oct. 12, 2010), <https://www.americanprogress.org/issues/green/news/2010/10/12/8569/anatomy-of-a-senate-climate-bill-death/>.

57. Reilly & Bogardus, *supra* note 56; *Congress Climate History*, *supra* note 50; Dotson, *supra* note 54, at 193-94.

58. Reilly & Bogardus, *supra* note 56; Office of the Clerk, U.S. House of Representatives, *Final Vote Results for Roll Call 477*, <http://clerk.house.gov/evs/2009/roll477.xml> (last visited Dec. 19, 2019).

59. Reilly & Bogardus, *supra* note 56.

60. Rushovich, *supra* note 37, at 342.

61. *Id.*

62. Press Release, The White House, U.S. Leadership and the Historic Paris Agreement to Combat Climate Change (Dec. 12, 2015), <https://obamawhitehouse.archives.gov/the-press-office/2015/12/12/us-leadership-and-historic-paris-agreement-combat-climate-change>; U.N. Doc. FCCC/CP/2015/L.9/Rev/1 (Dec. 12, 2015), <https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>.

63. Report of Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 82 Fed. Reg. 48035 (Oct. 16, 2017) (to be codified at 40 C.F.R. pt. 60); Press Release, U.S. Environmental Protection Agency, EPA Takes Another Step to Advance President Trump's America First Strategy, Proposes Repeal of "Clean Power Plan" (Oct. 10, 2017), <https://www.epa.gov/newsreleases/epa-takes-another-step-advance-president-trumps-america-first-strategy-proposes-repeal>; Michael D. Shear, *Trump Will Withdraw U.S. From Paris Climate Agreement*, N.Y. TIMES, June 1, 2017, <https://www.nytimes.com/2017/06/01/climate/trump-paris-climate-agreement.html>; Camila Domonoske & Colin Dwyer, *Trump Announces U.S. Withdrawal From Paris Climate Accord*, NAT'L PUB. RADIO (June 1, 2017), <https://www.npr.org/sections/thetwo-way/2017/06/01/530748899/watch-live-trump-announces-decision-on-paris-climate-agreement>.

use all the available tools in its regulatory toolbox, including passing new laws as well as using existing authority in creative ways. Nature-based climate solutions, such as wildlife conservation, are a prime example of this dual approach to climate regulation. Congress will need to pass new laws to ensure habitat protection at the scale necessary to combat climate change, but agencies must also use already existing legislation, such as the ESA, to begin using nature-based solutions as a means of climate mitigation.

III. Natural Climate Solutions

To limit warming to 1.5° Celsius (°C), or even 2°C—the target scientists agree must be achieved to avoid the most catastrophic consequences of climate change—it will be necessary to drastically reduce GHG emissions across all sectors of the global economy. Much of the effort to reduce emissions has been focused on energy efficiency, renewable energy, and clean transportation.⁶⁴ While emissions reductions in these sectors will be absolutely critical to reach global climate goals, it will also be necessary to reduce emissions from land use and use nature-based solutions to store and sequester carbon.

Natural climate solutions refer to ways to reduce GHG emissions and store carbon in landscapes based on the conservation, restoration, and management of forests, wetlands, farms, and natural lands.⁶⁵ Land stewardship options have significant potential for climate change mitigation and can deliver up to one-third of the emissions reductions needed to hit emissions targets by 2030.⁶⁶ While land-based strategies are not sufficient on their own to solve the climate crisis, they are essential to meeting emissions goals. Nations around the world have recognized the importance of nature-based solutions, with more than 120 countries—about 75% of the signatories to the Paris Agreement—including natural climate solutions in their nationally determined contributions.⁶⁷

A recently published study found that natural climate solutions could contribute over one-third of the necessary emissions reduction by removing of 23.8 billion tons of CO₂ equivalent per year.⁶⁸ For reference, if nature-based solutions were deployed across U.S. landscapes, it would be equal to the emissions reductions if every car and truck in the country were taken off the roads.⁶⁹ Furthermore, nature-based solutions, such as reforestation and the conservation and protection of lands and natural spaces are

low-cost, require no additional technology developments, and generate co-benefits such as improved biodiversity as well as air and water quality.⁷⁰

Land can be both a source and sink with respect to carbon in the atmosphere. Poor land stewardship results in the release of CO₂ in the atmosphere and reduces the opportunity for lands to sequester carbon. A recently released report by the IPCC on climate change and the land estimated that nearly one-quarter of total global GHG emissions come from land use, such as agriculture and deforestation.⁷¹ Humans have cut down 46% of all trees on the planet.⁷² In the tropics, where deforestation is especially problematic, less than half of forests remain.⁷³ In the Amazon Rainforest, a soccer field-size area is clear-cut every *minute*.⁷⁴ When forests and other landscapes, such as grasslands and wetlands, are converted to cropland and urban development, the carbon stored in the roots, soils, and trees is released into the atmosphere.⁷⁵

Improved land management both prevents carbon from being released through deforestation and conversion of natural spaces and increases carbon sequestration in soils, trees, oceans, and wetlands. Reforestation and afforestation have the largest maximum mitigation potential of all nature based solutions.⁷⁶ In fact, approximately 2.6 billion tons of CO₂, one-third of the fossil fuel-related CO₂ emissions, is absorbed by forests each year.⁷⁷ Moreover, it is estimated that nearly two billion hectares of degraded land across the world—an area the size of the entire continent of South America—offer opportunities for forest restoration.⁷⁸ Countries around the world are recognizing this climate mitigation potential. In July 2019, Ethiopia planted 350 million trees in one day, the largest one-day tree-planting effort in history, with the goal of combating deforestation and global warming.⁷⁹ China has plans to plant new forests covering an area the size of Ireland.⁸⁰

Other landscapes and habitats, such as wetlands and grasslands, are also effective carbon sinks. Coastal and

64. *Lands of Opportunity: Unleashing the Full Potential of Natural Climate Solutions*, THE NATURE CONSERVANCY, Nov. 2017, at 11, https://www.nature.org/content/dam/tnc/nature/en/documents/TNC_NCS_LandsofOpportunity_2017.pdf.

65. *Id.* at 10; *Natural Climate Solutions*, *supra* note 5; Gustin, *supra* note 5.

66. *Natural Climate Solutions*, *supra* note 5; Gustin, *supra* note 5.

67. *Lands of Opportunity*, *supra* note 64, at 22. Only 76 countries, however, plan to use nature-based solutions to reduce emissions and more than 60 of those countries that signed on to the Paris Agreement exclude nature-based solutions from their naturally determined contributions entirely. Sophie Yeo, *Why Aren't We Using Nature to Fight Climate Change?*, PAC. STANDARD, Feb. 26, 2019, <https://psmag.com/environment/why-arent-we-using-nature-to-fight-climate-change>.

68. *Lands of Opportunity*, *supra* note 64, at 12; Fargione et al., *supra* note 4; Gustin, *supra* note 5.

69. Gustin, *supra* note 5.

70. *Id.*; Fargione et al., *supra* note 4, at 1.

71. ARNETH, *supra* note 33, at 4, 7; *Forests and Climate Change*, IUCN, <https://www.iucn.org/resources/issues-briefs/forests-and-climate-change> (last visited Dec. 19, 2019).

72. Umair Irfan, *Restoring Forests May Be One of Our Most Powerful Weapons in Fighting Climate Change*, VOX, July 5, 2019, <https://www.vox.com/2019/7/4/20681331/climate-change-solutions-trees-deforestation-reforestation>.

73. *Id.*

74. *Id.*

75. Fargione et al., *supra* note 4, at 3.

76. *Lands of Opportunity*, *supra* note 64, at 11; Fargione et al., *supra* note 4, at 3; see generally CLIMATE CHANGE FOR FOREST POLICYMAKERS—AN APPROACH FOR INTEGRATING CLIMATE CHANGE INTO NATIONAL FOREST POLICY IN SUPPORT OF SUSTAINABLE FOREST MANAGEMENT (FAO, 2018), <http://www.fao.org/3/CA2309EN/ca2309en.pdf>.

77. *Forests and Climate Change*, *supra* note 71.

78. *Id.*

79. Palko Karasz, *Ethiopia Says It Planted Over 350 Million Trees in a Day*, a *Record*, N.Y. TIMES, July 30, 2019, <https://www.nytimes.com/2019/07/30/world/africa/ethiopia-tree-planting-deforestation.html>.

80. David Stanway, *China to Create New Forests Covering Size of Ireland*: *China Daily*, REUTERS, Jan. 4, 2018, <https://www.reuters.com/article/us-china-environment-forest/china-to-create-new-forests-covering-area-size-of-ireland-china-daily-idUSKBN1EU02L>; John Vidal, *A Eureka Moment for the Planet: We're Finally Planting Trees Again*, GUARDIAN, Feb. 13, 2018, <https://www.theguardian.com/commentisfree/2018/feb/13/worlds-lost-forests-returning-trees>.

marine ecosystems, such as mangroves, seagrasses, and marshes, remove carbon from the atmosphere by storing it in roots and soil, where it is known as “blue carbon.”⁸¹ There is a significant opportunity to mitigate climate change by maximizing blue carbon. In fact, coastal landscapes sequester more carbon per unit area than terrestrial forests.⁸² Grasslands, landscapes dominated by non-woody vegetation, such as tall-grass prairie, are also well known for their ability to absorb and store carbon in roots and soil.⁸³ Some studies have even estimated that they have more potential for storing carbon than terrestrial forests because they are less susceptible to wildfires and drought.⁸⁴

Wildlife conservation is also a natural climate solution. Habitats that are critical for wildlife protection such as forests, wetlands, and grasslands also function as carbon sinks. Yet, very few of these areas are protected. As natural habitats are converted from large intact landscapes to agricultural land and urban development, carbon that was previously stored in plants and soils is released into the atmosphere and limits the capacity of the land to store carbon.⁸⁵ At the same time, it destroys habitat for wildlife species. Therefore, policies that protect and conserve wildlife can also function as meaningful nature-based climate solutions. Moreover, many of these policies already exist. The ESA, for example, is one of the strongest conservation laws ever enacted in U.S. history. If advocates and policymakers used it as a climate mitigation resource, it could have significant potential to limit GHG emissions.

IV. A Review of the Endangered Species Act and Climate Change

The ESA was successfully used to protect species from climate change for the first time in 2008, when conservationists petitioned for the polar bear to be listed under the Act, arguing that rising global temperatures put the bears’ habitat at risk.⁸⁶ Polar bears live on ice year-round and depend on it to hunt, breed, and den.⁸⁷ Environmental groups initially petitioned to have the polar bear listed as threatened due to global warming in 2005.⁸⁸ When the U.S. Fish and Wildlife Service (FWS) decided not to list the polar bear,

the groups filed a lawsuit against the agency.⁸⁹ The parties settled after FWS agreed to issue a proposed rule by the end of the year.⁹⁰ FWS failed, however, to meet the required deadline, prompting environmental advocates to again file suit.⁹¹ A federal judge held that FWS violated the ESA by delaying its decision on the polar bear and ordered the agency to make a decision by May 2008.⁹² The agency complied with the court order and determined the polar bear warranted ESA protections, making it the first species to be listed as threatened with endangerment under the ESA due to climate change.⁹³

In listing the polar bear, FWS addressed the consequences of climate change head on. Much of the agency’s written rationale in listing the species cited declining sea ice due to climate change and other effects of carbon pollution.⁹⁴ The agency determined that polar bears are evolutionarily adapted to life on sea ice and rely on it for resting, breeding, and hunting.⁹⁵ It further determined that all polar bear populations will be affected by the loss of sea ice within the “foreseeable future” and that this loss of critical habitat “threaten[s] the species throughout all of its range.”⁹⁶ The polar bear has since become the poster species for climate change and a symbol of the threats global warming poses to wildlife across the world.⁹⁷

Since then, there have been more than 100 ESA lawsuits citing climate change.⁹⁸ Ringed and bearded seals, for example, are the subject of a lawsuit filed by environmental advocates to compel the designation of critical habitat, as the sea ice they depend on to survive melts.⁹⁹ Both seals are listed as threatened under the ESA, yet the National Marine Fisheries Service (NMFS)¹⁰⁰ has failed to provide the habitat protection the law requires.¹⁰¹ Another example is a lawsuit filed by environmentalists to list emperor penguins as endangered, arguing that the climate crisis has already inflicted suffering and death on the species and protecting them from further dangers of climate change

81. *Blue Carbon: Mitigating Climate Change Along Our Coasts*, CONSERVATION INT’L, <https://www.conservation.org/projects/blue-carbon> (last visited Dec. 19, 2019); *Blue Carbon for Climate Mitigation*, NAT’L GEO. BLOG (Dec. 15, 2016), <https://blog.nationalgeographic.org/2016/12/15/blue-carbon-for-climate-mitigation/>.

82. *Blue Carbon*, IUCN, <https://www.iucn.org/resources/issues-briefs/blue-carbon> (last visited Dec. 19, 2019); *Blue Carbon*, *supra* note 81.

83. Kelly April Tyrrell, *Grasslands Among the Best Landscapes to Curb Climate Change*, UWMADSCIENCE, Nov. 15, 2018, <https://uwmadscience.news.wisc.edu/ecology/grasslands-among-the-best-landscapes-to-curb-climate-change/>.

84. Christina Nunez, *Grasslands, Explained*, NAT’L GEO., <https://www.nationalgeographic.com/environment/habitats/grasslands/>.

85. *Lands of Opportunity*, *supra* note 64, at 10.

86. Jennifer Hijazi, *Climate Change Looms Large in Endangered Species Litigation*, E&E NEWS, July 2, 2019, <https://www.eenews.net/climatewire/2019/07/02/stories/1060682935>; *see generally* Center for Biological Diversity v. Kempthorne, No. 2008 WL 1902703 (N.D. Cal. Apr. 28, 2008).

87. Kellman, *supra* note 36, at 4.

88. Hijazi, *supra* note 86.

89. Michael C. Blumm & Kya B. Marienfeld, *Endangered Species Act Listings and Climate Change: Avoiding the Elephant in the Room*, 20 ANIMAL L. 277, 283 (2014).

90. *Id.* at 284.

91. *Id.*

92. *Id.*

93. *Id.*; Kellman, *supra* note 36, at 4.

94. Blumm & Marienfeld, *supra* note 89, at 285.

95. *Id.* at 286.

96. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Polar Bear (*Ursus Maritimus*) Throughout Its Range, 73 Fed. Reg. 28212-01 (May 15, 2008) (to be codified at 50 C.F.R. pt. 17) [hereinafter *Endangered and Threatened*]; Kellman, *supra* note 36, at 4.

97. Blumm & Marienfeld, *supra* note 89, at 284.

98. Hijazi, *supra* note 86.

99. Press Release, Center for Biological Diversity, *Lawsuit Launched to Protect Arctic Habitat of Endangered Ice Seals* (Mar. 14, 2019), https://www.biologicaldiversity.org/news/press_releases/2019/bearded-and-ringed-seals-03-14-2019.php [hereinafter *Protect Arctic Habitat*]; *see generally* Center for Biological Diversity v. Ross, No. 2019 WL 2498647 (D. Alaska Oct. 31, 2019) (Complaint for Declaratory and Injunctive Relief), http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/case-documents/2019/20190613_docket-319-cv-00165_complaint.pdf [hereinafter *CBD v. Ross*].

100. FWS and the NMFS share responsibility for administering the ESA. FWS has primary responsibility for terrestrial and freshwater species, while NMFS has responsibility for marine wildlife. *Endangered Species Act Overview*, U.S. FWS, <https://www.fws.gov/endangered/laws-policies/> (last visited Dec. 24, 2019).

101. *Protect Arctic Habitat*, *supra* note 99.

is necessary for their survival.¹⁰² Emperor penguins rely on sea ice for breeding and raising their young, and in areas where sea ice is disappearing, penguin populations are declining significantly.¹⁰³

Some of these species are less charismatic than polar bears and emperor penguins, yet no less worthy of protection. The lesser prairie chicken, for example, a striped white and brown grouse found in the Southwest region of the United States, is a species that once numbered in the millions but now just 40,000 remain across less than 17% of its original range.¹⁰⁴ Wildlife conservation organizations filed suit against FWS, seeking protections for the bird, citing threats from climate change and fossil fuel extraction.¹⁰⁵ The yellow banded bumblebee, western glacier stonefly, and the Miami tiger beetle are all examples of other often overlooked but invaluable species that are the subjects of a lawsuit filed by conservationists advocating for ESA protections due, in part, to climate change.¹⁰⁶

Just recognizing the ecological threat that climate change poses to biodiversity and species survival has altered the relationship between climate change and ESA policy. Nevertheless, while the ESA has increasingly been used as a resource to protect species from the impacts of climate change, it has not been as widely considered a resource to protect species with respect to *mitigating* climate change. The failure to mitigate climate change through the ESA originates from the polar bear listing in 2008. At the same time the agency granted the historic listing of the polar bear, it also effectively barred its ability to protect the species from the very dangers that put the species at risk. When protecting the polar bear under the ESA because of climate change, FWS stated that “the ESA was not the right tool to set U.S. climate policy or regulate GHG emissions.”¹⁰⁷ Despite noting how climate change

and disappearing sea ice threatens the species and stating that “[c]ontinued warming will lead to reduced numbers and reduced distribution of polar bears range-wide,” the agency made clear that the ESA is not the right tool to regulate the carbon pollution causing warming temperatures.¹⁰⁸ Although there is merit to the agency’s point that a comprehensive climate change law could regulate emissions more directly and effectively than the ESA, such a law does not exist and the ESA has the authority and, moreover, the responsibility to address these issues to protect threatened and endangered species from harms and adverse impacts if other legislation falls short.

The ESA aids species recovery in several ways, including what is known as the §7 consultation process and the §9 take prohibition.¹⁰⁹ The §7 consultation process requires federal agencies, in consultation with the listing agency—either FWS or NMFS—to ensure that actions they authorize, fund, or carry out are “not likely to jeopardize the continued existence” of any listed species or result in the destruction of the species’ critical habitat.¹¹⁰ The take prohibition in §9 prohibits any action that causes a “taking” of any listed species, which among other things, includes causing “harm” to the species.¹¹¹

The agency primarily blamed the inability to regulate GHG emissions on a lack of a clear causal connection between GHGs emitted outside of the polar bear’s range and the effects that contribute to the polar bear’s habitat loss.¹¹² According to the agency, §7 consultations must demonstrate a direct causal connection between the action under consultation and the adverse effects on a listed species.¹¹³ Therefore, federal projects would not trigger §7 consultation with respect to GHG emissions unless it could be established that adverse effects on the species were reasonably certain to occur.¹¹⁴ The problem for the agency was: how can the government identify a specific adverse effect on a species or habitat from an individual GHG emitter?¹¹⁵

In the press conference announcing the agency’s decision to list the species, then-Secretary of the U.S. Department of the Interior (DOI) Dirk Kempthorne made clear that the answer was simply that it could not attribute harm to a specific species from a global emissions source. Kempthorne stated that the decision to list the polar bear as a threatened species was particularly difficult because for most species, “we can identify a localized threat, but the threat to the polar bear comes from global influences on sea ice.”¹¹⁶ Moreover, the agency noted that although the polar bear’s listing recognizes the impacts of climate change, it does not assign blame for warming temperatures on anyone in particular.¹¹⁷

102. Center for Biological Diversity v. Bernhardt, No. 1:19-cv-02282 (D.D.C. July 31, 2019) (Complaint for Declaratory and Injunctive Relief), <https://www.courthousenews.com/wp-content/uploads/2019/07/emperor-penguin.pdf> [hereinafter *CBD v. Bernhardt*]; Press Release, Center for Biological Diversity, *Lawsuit: Trump Is Failing to Protect Emperor Penguins From Climate Crisis* (July 31, 2019), <https://biologicaldiversity.org/w/news/press-releases/lawsuit-trump-failing-protect-emperor-penguins-climate-crisis-2019-07-31/> [hereinafter *Failing to Protect*]; Jennifer Hijazi, *Greens Sue Over Climate Threats to Penguins*, E&E News, Aug. 1, 2019, <https://www.eenews.net/climatewire/2019/08/01/stories/1060818875> [hereinafter *Hijazi II*].

103. *Bernhardt*, No. 1:19-cv-02282 *supra* note 102; *Hijazi II*, *supra* note 102.

104. Press Release, Center for Biological Diversity, *Lawsuit Launched to Protect Imperiled Lesser Prairie Chicken* (Feb. 14, 2019), https://www.biologicaldiversity.org/news/press_releases/2019/lesser-prairie-chicken-02-14-2019.php [hereinafter *Launched to Protect*]. In 2014, FWS listed the bird as threatened but protection was overturned on procedural grounds after a lawsuit from the Permian Basin Petroleum Association and four counties. The primary causes of the species’ habitat loss are oil and gas development, cropland conversion, livestock grazing, and roads and powerlines. Climate change is another threat to the species’ survival. In 2011, ground temperatures exceeded 130 degrees Fahrenheit, a threshold above which lesser prairie chicken eggs cannot survive.

105. *Launched to Protect*, *supra* note 104 (petitioners in the case are: WildEarth Guardians; Defenders of Wildlife; and the Center for Biological Diversity); *Hijazi*, *supra* note 86.

106. Rich Hatfield et al., *Yellow-Banded Bumblebee, Bombus Terricola*, THE IUCN RED LIST OF THREATENED SPECIES (2015), <https://www.iucnredlist.org/species/44937505/46440206>; see generally *Bernhardt*, 1:19-cv-01071.

107. Press Release, U.S. DOI, Secretary Kempthorne Proposes Narrow Changes to ESA Consultation Process (Aug. 11, 2008), https://www.doi.gov/sites/doi.gov/files/archive/news/archive/08_News_Releases/080811a.html; *Hijazi*, *supra* note 86.

108. Blumm & Marienfeld, *supra* note 89, at 287-88; Larry Greenemeier, *U.S. Protects Polar Bears Under Endangered Species Act*, SCI. AM., May 14, 2008, <https://www.scientificamerican.com/article/polar-bears-threatened/>.

109. 16 U.S.C. §§1536, 1538 (2018).

110. *Id.* §1536.

111. *Id.* §1538.

112. Blumm & Marienfeld, *supra* note 89, at 290.

113. *Id.* at 290-91; Endangered and Threatened, *supra* note 96.

114. Blumm & Marienfeld, *supra* note 89, at 291.

115. *Id.* at 293.

116. Greenemeier, *supra* note 108.

117. *Id.*

Shortly after the announcement, in December 2008, the agency published a rule effectively barring FWS from regulating GHGs to protect polar bears and their habitat.¹¹⁸ In a press release announcing the new rule, the agency stated that

[t]he proposed rule is consistent with the FWS' current understanding that it is not possible to draw a direct causal link between GHG emissions and distant observations of impacts affecting species. As a result, it is inappropriate to consult on a remote agency action involving the contribution of emissions to global warming because it is not possible to link the emissions to impacts on specific listed species such as polar bears.¹¹⁹

In making this decision, the agency effectively exempted the very reasons it gave for listing the species in the first place from any regulation under the ESA.¹²⁰ Then-Representative Markey, who at the time served as the chairman of the House Select Committee on Energy Independence and Global Warming, responded to the decision by stating that the agency “simultaneously announced a rule aimed at allowing oil and gas drilling in the Arctic to continue unchecked even in the face of the polar bear’s threatened extinction” and described it as a “gift to Big Oil.”¹²¹ Indeed, the effect of the rule promulgated by FWS is that the agency can recognize the dangers climate change is causing to species but is powerless to do anything about it.¹²²

V. Wildlife Conservation as a Natural Climate Solution

Part V addresses how wildlife conservation can serve as an effective response to climate change. It first analyzes how the ESA can be used to promote this objective and then considers possible new policies to address the climate change crisis through wildlife conservation.

A. Using the Endangered Species Act to Reduce Greenhouse Gas Emissions

The ESA is one of the strongest and most effective legislative tools available for conservation and environmental protection. Moreover, the very purpose of the law is to provide protections for species threatened by extinction. FWS should modify the current policy in order to effectively carry out the mission of the law. If the agency fails to take action on its own, Congress should enact legislation that explicitly directs it to do so.

Specifically, FWS should expand the take prohibition in §9 of the law to include new and existing sources of GHG emissions and interpret §7 to require new federal sources

of GHGs to undergo species-specific consultation.¹²³ For example, if a species is listed as endangered because of climate change, which is caused by GHG emissions, the ESA and its §7 consultation provision should require agencies to consult with FWS when permitting or approving projects that would result in increased GHG emissions.¹²⁴ FWS should then be required to consider the impacts of that project on the affected species and take steps to mitigate those impacts.¹²⁵ If the agency were to adopt this new policy, the ESA would not only be able to function as intended by protecting endangered species from the threats to their survival, but would also fundamentally function as a means of climate mitigation.

Regulating GHG emissions under the ESA would require a change in policy, and therefore action by the agency or Congress. There are, however, ways the ESA can be used as a means to mitigate climate change without needing any new rules from the agency or additional authorization from Congress, such as designating critical habitat. As described above, large landscape conservation can serve as a natural climate solution by sequestering carbon in forests, wetlands, grasslands, and other natural spaces. Therefore, protecting and conserving habitat for wildlife through critical habitat designation not only protects species, but it also provides climate benefits through carbon sequestration.

When a species is listed under the ESA, the listing agency must designate critical habitat.¹²⁶ Critical habitat for a threatened or endangered species are specific areas in which there are features “essential to the conservation of the species” and “may require special management consideration or protection.”¹²⁷ Under §7(2) of the ESA, every federal agency must undertake a “no jeopardy” determination to ensure that their actions do not jeopardize any listed species.¹²⁸ This includes the destruction or adverse modification of the species’ habitat.¹²⁹ Therefore, avoiding adverse modification of critical habitat is an express obligation for federal agencies, providing protection for listed species and their habitats in the context of federal action.

There are two main climate benefits to critical habitat designation. First, by designating critical habitat, the government can protect natural spaces that species rely on, preventing conversion of forests and grasslands to cropland and development. This landscape conservation and restoration prevents GHG emissions from land conversion as well as allows for continued land sequestration of carbon. Designation of critical habitat in itself does not necessarily restrict further development or economic activity in the designated area and, notably, critical habitat designations

123. *Id.* at 289.

124. Woody, *supra* note 118.

125. *Id.*

126. 50 C.F.R. §424.12 (criteria for designating critical habitat); Lindsay Card, *Polar Bears: Climate Refugees Expanding and Protecting Designated Critical Habitat for Polar Bears Using the Endangered Species Act*, 34 J. LAND USE & ENVTL. L. 169, 176 (2018).

127. 16 U.S.C. §1532 (ESA); Card, *supra* note 126; Kellman, *supra* note 36, at 3; James Ming Chen, *The Fragile Menagerie Biodiversity Loss Climate Change and the Law*, 93 IND. L.J. 303, 333 (2018).

128. 16 U.S.C. §1536.

129. *Id.*

118. Todd Woody, *Enlisting Endangered Species as a Tool to Combat Warming*, YALE ENV'T 360, July 22, 2010, <https://e360.yale.edu/features/enlisting-endangered-species-as-a-tool-to-combat-warming>.

119. Press Release, U.S. DOI, *supra* note 107.

120. Blumm & Marienfeld, *supra* note 89, at 288–89.

121. Greenemeier, *supra* note 108.

122. Blumm & Marienfeld, *supra* note 89, at 279.

affect only federal agency actions of federally funded or permitted activities.¹³⁰ Critical habitat requirements do not apply to private landowners if there is no federal funding or authorization.¹³¹ Importantly, however, it imposes a responsibility on federal agencies and officials to protect important characteristics of the area and consult with the listing agency on proposed activities to ensure that they protect critical habitat in the interest of conservation.¹³²

Second, it can prevent oil and gas development in habitat designated as critical for threatened and endangered species. Returning to the polar bear as an example, in 2010, FWS designated nearly 200,000 square miles of Alaska's coast and water as critical habitat for the polar bear.¹³³ Following this designation, oil and gas trade associations, several Alaska Native corporations and villages, and the state of Alaska filed suit, claiming that the designation of critical habitat would deprive them of opportunities to exploit the natural resources found in the designated habitat.¹³⁴ In fact, then-Alaska Gov. Sean Parnell, said the critical habitat designation included areas that account for almost one-half of Alaska's oil production and would delay or restrict petroleum exploration and development.¹³⁵ Kara Moriarty, then-deputy director of the Alaska Oil and Gas Association perhaps said it best when she said that oil and gas "companies and the industry will be required to go through more permitting and create mitigation measures" as a result of the habitat designation.¹³⁶ The U.S. Court of Appeals for the Ninth Circuit ruled in favor of FWS, upholding the critical habitat designation and stating that the point of the ESA is to ensure species' recovery and, therefore, habitat necessary to species recovery should not be excluded.¹³⁷

Perhaps, no species better illustrates the impacts the ESA can have on oil and gas development than the sage grouse. The greater sage grouse is an iconic bird well-known for its unique mating dances and which was once found across 13

western U.S. states and numbered in the tens of millions.¹³⁸ Today, because of oil and gas development, land conversion, and climate change, sage grouse inhabit just half of their historic range and their population is thought to be less than 10% of what it was in the 19th century.¹³⁹ Yet, the species has never been listed under the ESA.¹⁴⁰ Whether to list the species—and put other protections in place—has been an ongoing battle both in Congress and in the DOI for more than two decades.¹⁴¹ Conservationists argue that the species' perilous decline warrants ESA protections, while interest groups oppose such a move, as an endangered listing would drastically limit grazing and energy development across 173 million acres of public, state, and private land in the western United States.

In 2015, the Obama Administration reached a compromise with western states and landowners, agreeing not to list the species under the ESA but putting a protective management plan in place to protect key sage grouse habitat, with the intent to reverse the bird's decline and prevent the need to list it as endangered, which might have resulted in more drastic restrictions on development.¹⁴² Then, in March 2019, the Trump Administration rolled back the deal, releasing a new plan that eliminated critical protections for the greater sage grouse and reopened millions of acres of previously protected habitat to oil and gas drilling and leasing.¹⁴³ Conservation advocates filed suit and, in October 2019, a federal district court judge granted a preliminary injunction to suspend the rollback, reinstating the Obama-era management plan. If the sage grouse had been a listed species under the ESA, nearly 175 million acres of western landscape would not only be protected for the conservation of the greater sage grouse, it would also impose limitations on oil and gas development, reducing the potential for resulting GHG emissions.

The ESA can serve as an obstacle to fossil fuel production—and thereby limit GHG emissions—even in the absence of critical habitat designation. Two controversial natural gas pipeline projects, the Mountain Valley Pipeline and the Atlantic Coast Pipeline, are examples of fossil fuel development projects that have faced numerous legal obstacles as a result of their impacts on listed species.

The Atlantic Coast Pipeline faced a major setback in July 2019, when the U.S. Court of Appeals for the Fourth Circuit struck down a key permit issued for the

130. *Critical Habitat: What Is It?*, U.S. FWS (Mar. 2017), https://www.fws.gov/endangered/esa-library/pdf/critical_habitat.pdf; *Critical Habitat*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/national/endangered-species-conservation/critical-habitat> (last visited Dec. 19, 2019); Jacob W. Malcom & Ya-Wei Li, *Data Contradict Common Perceptions About a Controversial Provision of the U.S. Endangered Species Act* (PNAS, 2015), <https://defenders.org/sites/default/files/publications/section-7-pnas.pdf> (finding that after analyzing "all 88,290 consultations recorded by FWS from January 2008 through April 2015 . . . no project was stopped or extensively altered as a result of FWS finding jeopardy or adverse modification during this period").

131. *Id.*

132. *Critical Habitat: What Is It?*, *supra* note 130.

133. Specifically, the agency designated 187,157 square miles of habitat in Alaska and adjacent water of the United States and its territories. Card, *supra* note 126, at 177; Kellman, *supra* note 36, at 5; James Ming Chen, *supra* note 127, at 344.

134. Dan Joling, *Appeals Court Upholds Designation of Polar Bear Habitat*, ABC NEWS, Feb. 29, 2016, <https://www.biologicaldiversity.org/news/center/articles/2016/abc-news-02-29-2016.html>; Kellman, *supra* note 36, at 5.

135. Joling, *supra* note 134.

136. Associated Press, *US Sets Aside "Critical Habitat" for Polar Bear in Alaska*, GUARDIAN, Nov. 25, 2010, <https://www.theguardian.com/environment/2010/nov/25/polar-bear-alaska-critical-habitat>. Kara Moriarty is now president and CEO of the Alaska Oil and Gas Association. Alaska Oil & Gas Ass'n, *Staff Bios*, <https://www.aoga.org/about/staff-bios> (last visited Sept. 15, 2019).

137. Joling, *supra* note 134; Kellman, *supra* note 36, at 6.

138. *Greater Sage-Grouse*, WORLD WILDLIFE FUND, <https://www.worldwildlife.org/species/greater-sage-grouse> (last visited Dec. 19, 2019); Press Release, Center for Biological Diversity, *Trump Administration Slashes Sage Grouse Protection* (Mar. 15, 2019), https://www.biologicaldiversity.org/news/press_releases/2019/greater-sage-grouse-03-15-2019.php [hereinafter *Administration Slashes Sage*]; Hannah Nordhaus, *An Iconic Bird Just Lost Important Habitat Protections: What It Means*, NAT'L GEO., Mar. 21, 2019, <https://www.nationalgeographic.com/environment/2019/03/sage-grouse-rule-rollback-conservation/>.

139. *Greater Sage-Grouse*, *supra* note 138; Douglas Main, *How One Odd Bird Embodies the Endangered Species Act Debate*, NAT'L GEO., July 23, 2018, <https://www.nationalgeographic.com/animals/2018/07/american-west-sage-grouse-sagebrush-sea-fate/>.

140. Main, *supra* note 139.

141. Nordhaus, *supra* note 138.

142. *Administration Slashes Sage*, *supra* note 138; Main, *supra* note 139; Nordhaus, *supra* note 138.

143. *Id.*

project's construction for failing to adequately protect multiple endangered and threatened species in the path of the 605-mile pipeline project.¹⁴⁴ Four species were the subject of the decision: (1) the rusty patched bumble bee; (2) the clubshell (a mussel); (3) the Indiana bat; and (4) the Madison Cave isopod (a crustacean). The court held that “[i]n fast tracking its decisions, the agency appears to have lost sight of its mandate under the ESA: ‘to protect and conserve endangered and threatened species and their habitats.’¹⁴⁵

The Mountain Valley Pipeline is also currently on hold while the pipeline developers and federal officials consider the pipeline's impacts on five threatened or endangered species that inhabit areas along the pipeline's path: (1) the Roanoke loggerch; (2) the Indiana and northern long-eared bats; (3) the small whorled pogonia; (4) the Virginia spiraea; and (5) the candy darter (a fish species that was designated as endangered after FWS' initial biological opinion).¹⁴⁶ In August 2019, environmental groups filed a lawsuit challenging an approval of the pipeline issued by FWS, asking the agency to reevaluate the pipeline's effects on wildlife.¹⁴⁷ Just days later, developers announced construction on the pipeline would stop in “areas along the route that may have an impact related to the [ESA].”¹⁴⁸

When used strategically, the ESA can be a valuable resource to meaningfully contribute to mitigating climate change. To meet the overwhelming challenge of solving the climate crisis, aggressive and ambitious legislation will be necessary. In the ESA, such a law already exists. If used to protect species from increased GHG emissions and oil and gas development as well as to conserve natural spaces for species habitat, the ESA could not only combat the unprecedented threat climate changes poses to biodiversity, habitats, and wildlife but it could also be a powerful natural climate solution.

B. New Policies to Address the Climate Crisis Through Wildlife Conservation

The ESA is just one possible means of mitigating climate change through wildlife conservation. Congress should enact additional legislation that is not only necessary to protect wildlife but can also contribute to solving the climate crisis. At a time when the tides might be shifting with respect to climate change policy in the United States, lawmakers should be considering all the tools available to reduce GHGs in the atmosphere.

The Wildlife Corridors Conservation Act, for example, is a bipartisan¹⁴⁹ bill that would establish a National Wildlife Corridors System and grant federal agencies the authority to designate wildlife corridors.¹⁵⁰ Wildlife corridors protect and restore species through habitat connectivity, which facilitates migration, range expansion, and mating, and are growing increasingly important in the face of climate change as habitats shift and shrink.¹⁵¹ There is a broad coalition of support for the bill, including conservationists, outdoor recreation companies, and scientists, including Dr. E.O. Wilson who, at a press conference on the bill, said that “[t]he National Wildlife Corridors Conservation Act would provide the most important step of any single piece of legislation at the present time in enlarging the nation's protected areas and thereby saving large swaths of America's wildlife and other fauna and flora.”¹⁵²

Connecting wildlife habitat is critical to conserving biodiversity. Wildlife corridors benefit all wildlife and are essential for numerous species' continued survival. Florida panthers, for example, need wildlife corridors to connect protected areas for dispersal and to find mates while allowing the cats to avoid dangerous roads and densely populated cities and towns.¹⁵³ Pronghorn antelope migrate 150 miles each winter from Wyoming's Upper Green River Basin to feeding grounds in Grand Teton National Park; however, roads, fences, and human development stand in its path.¹⁵⁴ Monarch butterflies travel 3,000 miles from the eastern United States to escape winter temperatures to Mexico and

144. *Defenders of Wildlife v. Department of the Interior*, 931 F.3d 339 (4th Cir. 2019); Michael Martz, *Federal Court Strikes Down Fish and Wildlife Permit for Atlantic Coast Pipeline*, RICHMOND TIMES-DISPATCH, July 26, 2019, https://www.richmond.com/news/virginia/government-politics/federal-court-strikes-down-fish-and-wildlife-permit-for-atlantic/article_c5c40622-f38c-59a3-a248-f16d1c50ed44.html; Sarah Rankin, *Appeals Court Vacates Key Atlantic Coast Pipeline Permit*, AP NEWS, July 26, 2019, <https://www.apnews.com/a7943d742a2e417ba606b297d4a74689>.

145. *Id.*

146. Laurence Hammack, *Mountain Valley Pipeline Faces New Legal Challenge, This One Over Endangered Species*, ROANOKE TIMES, Aug. 12, 2019, https://www.roanoke.com/business/mountain-valley-pipeline-faces-new-legal-challenge-this-one-over/article_569ed8b1-fc59-5749-a2ee-4219635980b1.html.

147. Associated Press, *New Lawsuit Filed Over Mountain Valley Pipeline*, WEST VA. PUB. BROADCASTING, Aug. 13, 2019, <https://www.wvpublic.org/post/new-lawsuit-filed-over-mountain-valley-pipeline#stream/0>. In August 2019, the Federal Energy Regulatory Commission (FERC) announced that it plans to reconsider FWS' review of endangered species protections, asking the agency to reinstate consultation on the four affected species. FERC's reconsideration appears to be in large part because of a change in the status of the candy darter, which has since been listed under the ESA and is known to inhabit streams in the project area. Jeremy Dillon, *FERC Wants Biologists to Revisit Review of Pipeline Project*, E&E NEWS, Aug. 28, 2019, <https://www.eenews.net/greenwire/stories/1061110615/search?keyword=mountain+valley+pipe+line>.

148. Letter from the James Martin, Chief, Division of Gas, Environment and Engineering, FERC, to Cindy Shulz, Field Supervisor, U.S. FWS (Aug. 28, 2019), https://www.eenews.net/assets/2019/08/29/document_gw_32.pdf.

149. The 2019 House bill was introduced by Rep. Don Beyer (D-Va.) and Rep. Vern Buchanan (R-Fla.). *Wildlife Corridors Conservation Act of 2019*, H.R. 2795, 116th Cong. (2019); *Wildlife Corridors Conservation Act of 2019*, S. 1499, 116th Cong. (2019). The bill has been introduced in both the House and Senate for the last two Congresses.

150. The bill authorizes key federal agencies to designate corridors on federal lands and provides grants to fund priority projects on state, private, and tribal lands. H.R. 2795; S. 1499.

151. Gabby Saunders, *Wildlife Corridors Conservation Act of 2019 Introduced in Congress With Bi-Partisan Support Following U.N. Report on Global Biodiversity Crisis*, WILDLANDS NETWORK BLOG (May 16, 2019), <https://wildlandsnetwork.org/blog/wildlife-corridors-conservation-act-press-release-2019/>.

152. *Wildlife Corridors Conservation Act*, WILDLANDS NETWORK, <https://wildlandsnetwork.org/policy/wildlife-corridors-conservation-act/> (last visited Dec. 19, 2019); Chris Heltne, *Wildlife Corridors Conservation Act of 2019 Introduced in Congress*, HALF-EARTH PROJECT (July 30, 2019), <https://www.half-earthproject.org/wildlife-corridors-conservation-act-of-2019-introduced-in-congress/>; see also Letter from Dr. Edward O. Wilson, Harvard Univ., to Member of Congress (May 15, 2019), https://wildlandsnetwork.org/wp-content/uploads/2019/05/Corridor-Act-20190509_2.pdf.

153. *Wildlife Corridors Conservation Act*, *supra* note 152.

154. *Id.*

southern California, relying on suitable habitat to rest, eat, and reproduce.¹⁵⁵

Perhaps the most unique illustration of the need for wildlife corridors are wolverines. Wolverines are uniquely adapted, and dependent on, year-round cold weather habitats and lingering snowpack.¹⁵⁶ They have even been described as “a relic of the northern hemisphere’s last ice age.”¹⁵⁷ Therefore, although the survival of the species faces many threats, the most overwhelming is a warming climate.¹⁵⁸ FWS has resisted listing the species under the ESA since 1994, despite numerous petitions and lawsuits and the fact that fewer than 300 individuals remain in the contiguous United States.¹⁵⁹ Finally, in 2016, a federal judge ordered the agency to reconsider its decision, citing the growing threat of climate change.¹⁶⁰ Even protection under the ESA, however, may not be sufficient to save the species from extinction. Wolverines are aggressively territorial—Glacier National Park, home to the densest populations of wolverines in the contiguous United States, only has capacity for a total of 30 to 40 individuals.¹⁶¹ To avoid inbreeding, individual wolverines must be able to migrate to other subpopulations, which requires wolverines separated by roads and human development to be connected to others within a larger region.¹⁶²

In the face of a warming climate, parks, preserves, and refuges will not be sufficient to protect vulnerable species. It is also necessary to establish and maintain natural wildlife corridors that link protected areas to allow species such as wolverines to travel across large landscapes and connect fragmented populations.¹⁶³ Preserving large landscapes from development for species migration and movement also has all the climate co-benefits previously described: conservation of natural spaces allows for increased carbon sequestration and prevents further fossil fuel development. In fact, the Trump Administration has offered thousands of oil and gas leases in the western United States, nearly one in five of which is in an area identified by the states as an important migration corridor.¹⁶⁴ Establishing and maintaining a wildlife corridor system would restrict those oil and gas leases.

The Safeguarding America’s Future and Environment (SAFE) Act is another bill that has been introduced to

protect and conserve wildlife species.¹⁶⁵ If enacted, the SAFE Act would establish a coordinated federal approach to respond to the ongoing impacts of climate change on species by protecting, restoring, and conserving natural lands and resources.¹⁶⁶ Although the intended purpose of the bill is to help species adapt to the effects of climate change, it would carry the same co-benefits of the ESA and Wildlife Corridors Conservation Act to mitigate climate change as well.

The common thread that runs throughout the existing and proposed legislation aimed at protecting wildlife that also provides solutions to the climate crisis is the conservation of land, habitat, and natural areas. A federal goal of land and ocean conservation may be the most straightforward and efficient means of addressing both climate change and biodiversity loss. Indeed, some environmental advocates are proposing an ambitious plan called the “Global Deal for Nature” which calls on countries to collectively protect 30% of the earth’s land and oceans by 2030¹⁶⁷ with the goal of safeguarding species and biodiversity, and ultimately, to mitigate climate change.¹⁶⁸

This global policy proposal could be scaled to a national level, with the U.S. committing to protect 30% of its domestic land by 2030. Such a policy would stem the loss of natural lands currently taking place in the United States. In fact, the *United States is losing its remaining forests, grasslands, and natural places to development at the rate of a football field size of land every 30 seconds.*¹⁶⁹ Therefore, to achieve such a conservation goal, it will be necessary to both protect existing natural areas and ecosystems as well as restore degraded lands and coasts.¹⁷⁰ A growing consensus of advocates, scientists, and policymakers are encouraging governments to set minimum targets of protecting 30% of lands and oceans by 2030 in order to preserve biodiversity and prevent global temperatures from exceeding 1.5°C above pre-industrial levels.¹⁷¹ Adopting such a policy would ensure that the United States is doing its part to achieve those goals.

155. *A Closer Look: Why Monarch Butterflies Need a National Wildlife Corridor System*, WILDLANDS NETWORK, <https://wildlandsnetwork.org/wp-content/uploads/2017/12/Monarch.pdf> (last visited Dec. 19, 2019).

156. Douglas H. Chadwick, *As Wolverines Battle to Survive, Warming Poses a New Threat*, NAT’L GEO., July 11, 2019, <https://www.nationalgeographic.com/animals/2019/07/wolverines-battling-climate-change-shrinking-north-territory-feature/#close>.

157. Kellman, *supra* note 36, at 7.

158. Chadwick, *supra* note 156.

159. Kellman, *supra* note 36, at 7; Chadwick, *supra* note 156.

160. *Id.*

161. Chadwick, *supra* note 156.

162. *Id.*

163. *Id.*

164. Ryan Richards et al., *Trump Administration Is Selling Western Wildlife Corridors to Oil and Gas Industry*, CENTER FOR AM. PROGRESS (Feb. 14, 2019), <https://www.americanprogress.org/issues/green/news/2019/02/14/466218/trump-administration-selling-western-wildlife-corridors-oil-gas-industry/>.

165. Safeguarding America’s Future and Environment Act, H.R. 2748, 116th Cong. (2019); Safeguarding America’s Future and Environment Act, S. 1482, 116th Cong. (2019).

166. *Safeguarding America’s Future and Environment Act*, DEFENDERS OF WILDLIFE, <https://defenders.org/sites/default/files/publications/defenders-safe-act-fact-sheet.pdf> (last visited Dec. 19, 2019).

167. Andrew Wetzler, *To Save Our Planet: Protect 30% of Land, Oceans by 2030*, NATURAL RESOURCE DEF. COUNCIL (Jan. 21, 2019), <https://www.nrdc.org/experts/andrew-wetzler/save-our-planet-protect-30-land-oceans-2030>; Bird-Life Int’l et al., *Joint Statement on Post-2020 Global Biodiversity Framework*, <https://presspage-production-content.s3.amazonaws.com/uploads/1763/jointstatement-905923.pdf?10000>; see also Stephen Leahy, *Half of All Land Must Be Kept in a Natural State to Protect Earth*, NAT’L GEO., Apr. 19, 2019, <https://www.nationalgeographic.com/environment/2019/04/science-study-outlines-30-percent-conservation-2030/>.

168. Jeff Tollefson, *Global Deal for Nature Fleshed Out With Specific Conservation Goals*, NATURE, Apr. 19, 2019, <https://www.nature.com/articles/d41586-019-01253-z>.

169. Matt Lee-Ashley, *How Much Nature Should America Keep?*, CENTER FOR AM. PROGRESS (Aug. 6, 2019), <https://www.americanprogress.org/issues/green/reports/2019/08/06/473242/much-nature-america-keep/>.

170. *Id.*

171. *Id.*; Jonathan Bailie & Ya-Ping Zhang, *Space for Nature*, AMERICAN ASS’N FOR THE ADVANCEMENT OF SCI., Sept. 14, 2019, at 361, https://science.sciencemag.org/content/361/6407/1051?ikey=a76486dbedbae03b94b4ae7de8430f201d41fc6a&keytype=2=tf_ipsecsha.

VI. Conclusion

Climate change has been a key aspect of wildlife conservation policy since at least 2008; however, the federal government has been clear that although some species are at risk of extinction due to warming temperatures, it is powerless to do anything about it.¹⁷² Wildlife protection has, therefore, been completely absent from climate change mitigation legislation and regulation. At the same time, the federal government has failed to enact any comprehensive or meaningful policy to regulate GHG emissions or act on climate change, leaving a gaping hole in U.S. policy with no mechanism to achieve necessary emissions reduction targets.

To meet the global target of limiting warming to 2°C, the United States must take action quickly. While transitioning to zero-carbon energy sources will be required, nature-based climate solutions have the ability to sequester up to one-fifth of the net annual GHG emissions annually in the United States and will be essential to avoiding the worst consequences of climate change.¹⁷³ Indeed, the restoration and conservation of landscapes such as forests, grasslands, and wetlands sequester substantial amounts of carbon and prevent land-based emissions.¹⁷⁴ By aggressively enforcing the ESA and enacting additional policies to protect habitat and natural spaces, wildlife conservation policy can play a key role in protecting large landscapes and habitats to mitigate climate change.

The ESA, for example, is a powerful conservation law with a mission to protect threatened and endangered species from extinction. This mission puts a responsibility on the federal government to prohibit actions that will increase warming in order to avoid harm and adverse impacts to species threatened by climate change. Although FWS has held the position that climate change is a significant threat to some threatened and endangered species for over a decade, it has maintained that it is not the right tool to regulate GHG emissions and has therefore abdicated

its responsibility to protect those species.¹⁷⁵ If the agency does not change this policy, Congress should direct it to do so. Specifically, new and existing sources of GHG emissions should be subject to the law's take prohibition and new federal permits for and sources of emissions should be required to undergo the required species-specific consultation process for federal actions.¹⁷⁶

Protecting habitat from development is also critical to both protecting species and mitigating climate change. Designating critical habitat under the ESA allows the responsible agencies to prevent natural spaces from being converted to development and therefore releasing stored carbon into the atmosphere and reducing the capacity for those landscapes to sequester carbon. It can also prevent oil and gas development in those areas, limiting the potential for fossil fuel production and the resulting carbon emissions. Nevertheless, critical habitat designation by itself will not be sufficient. New policies should be enacted to prevent biodiversity loss and increase large landscape conservation to mitigate climate change. The National Wildlife Corridors Conservation Act, the Safeguarding America's Future and Environment Act, and setting a national target to protect 30% of U.S. lands and oceans are all policy proposals that would help achieve these goals.

Wildlife conservation is a meaningful natural climate solution and should be utilized to maximize its climate mitigation potential. Protecting wildlife populations from habitat loss and global warming is critical to limit impacts on biodiversity and species extinction. At the same time, those habitats, such as forests, grasslands, and other natural areas have the potential to sequester significant amounts of carbon and mitigate climate change. Aggressive and ambitious wildlife conservation policies are not only critical to combat the unprecedented threat climate changes poses to wildlife, but can also be a powerful natural climate solution and play a key role in avoiding the most catastrophic consequences of climate change.

172. Press Release, U.S. DOI, *supra* note 107; Blumm & Marienfeld, *supra* note 89, at 279.

173. Fargione et al., *supra* note 4, at 1.

174. *Id.*

175. Press Release, U.S. DOI, *supra* note 107; Blumm & Marienfeld, *supra* note 89, at 279.

176. Blumm & Marienfeld, *supra* note 89, at 289.