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**“Pit Bulls Can’t Fly: Adapting the Endangered Species Act
to the Reality of Climate Change”**

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Pit Bulls Can't Fly: Adapting the Endangered Species Act to the Reality of Climate Change

J.B. Ruhl

Notwithstanding its reputation as the “pit bull” of American environmental laws, the Endangered Species Act (ESA) has its limits. It has helped stem the decline of endangered species in terrestrial, freshwater, and marine ecosystems largely because of its close nexus with discrete land and resource development uses. A new subdivision consumes habitat of an endangered lizard; a dam blocks passage of an endangered fish; seine nets threaten an endangered sea turtle—these fit easily within the ESA’s reach because they present straightforward causal scenarios with easily identified causal agents. But as cause and effect become attenuated by spatial and temporal discontinuities, or when causal agents are dispersed, numerous, and difficult to identify, the ESA has proven unwieldy and ineffective in application. There is and will be no better example of these limiting factors than the fit between the ESA and climate change. In short, asking the ESA to take on the causes of climate change is like asking pit bulls to fly. They can’t.

This chapter explores the fit between the ESA and climate change and recommends reforms designed to avoid ineffective applications of the ESA while enhancing ways to employ the statute to assist climate-threatened species. The great divide in this respect is between using the ESA to force reductions in greenhouse gas emissions (known as climate change *mitigation*), which is a path to folly, and using it to help species through the massive transformations climate change will inflict on ecosystems (known as climate change *adaptation*), which is where the ESA can gainfully be enlisted. The first section of the chapter summarizes the ecological consequences of climate change in terms relevant to ESA policy. The next section provides a brief review of the legal context that has formed thus far with respect to the ESA and climate change, focusing in particular on greenhouse gas emissions. The final section spells out the proposed reforms designed around the concept of transition—that is, focusing first on getting species through the ecological consequences of climate change and worrying later about how to recover them from their imperiled status.

Thinking of Climate Change through the Pit Bull’s Eyes¹

Three metrics drive much of the discussion of climate change as a *global* phenomenon: rising tropospheric carbon dioxide levels as a causal agent, escalating mean global surface temperatures, and rising sea levels.² The cause and effect relationships at this level are fairly well understood: carbon dioxide and other greenhouse gases trap heat radiating from the earth’s surface, which causes surface level temperatures to rise, which in turn causes polar and glacial ice to melt and ocean water volume to expand, which cause sea levels to rise.³

¹ The discussion of climate change and ecosystems in this section is drawn from J.B. Ruhl, *Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, 88 B.U. L. REV. 1 (2008).

² See Stefan Rahmstorf et al., *Recent Climate Observations Compared to Projections*, 316 SCIENCE 709, 709 (2007) (presenting climate trends and comparing them to previous projections).

³ See INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SUMMARY FOR POLICYMAKERS, CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS, CONTRIBUTION OF WORKING GROUP I TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 10-17 (2007), *available at*

Of course, what matters for most regulatory agencies is not how well we predict global trends such as mean surface temperature and sea levels, but what happens at the sub-global regional and local scales at which agencies act. The question at that level is not going to be limited to the temperature and the high tide line, but will encompass matters of rainfall, snowmelt, vegetative transition, migrating species, fire regimes, drought, flooding, and much more. For the FWS it often will be the case that what matters for a particular species is primarily a function of these local ecological transitions and their effects on the species. The FWS, in other words, has to find models that reliably predict the effects of global climate warming on a wide range of physical and biological cycles, “downscale” those effects to local ecological conditions, and then evaluate the effects of those local changes on the species of concern.

The FWS has no models of this sort at its disposal because nobody has the experience or knowledge upon which to base them. Ultimately, moreover, such models may simply be beyond our capacity. Although all ecosystems undergo disturbance regimes such as flood, fire, and drought, ecologists understand that these forms of disturbance are part of the stable disequilibrium of resilient, dynamic ecosystems.⁴ Climate change does not represent a mere disturbance regime, the operations of which we can extrapolate from current ecological knowledge; rather, it will be the undoing of ecosystems as we know them. As one comprehensive study concluded, “the resilience of many ecosystems is likely to be exceeded this century by an unprecedented combination of climate change, associated disturbances (e.g., flooding, drought, wildfire, insects, ocean acidification), and other global change drivers (e.g., land-use change, pollution, over-exploitation of resources).”⁵ Of course, there will always be ecosystems; rather, their physical and biological conditions, in particular the assembly of species in any locale, will undergo transition for many decades to come.

Although accurate prediction of climate change effects on local ecological conditions is for now (and perhaps always will be) beyond the capacity of ecological models, a taxonomy of effects can be constructed and may be useful for evaluating where the ESA can be employed most effectively when climate change threatens the continued existence of a species:⁶

- *Primary Ecological Effects.* Species with specific ecological needs and limited migration capacity are likely to face significant threats from first order changes in ecological conditions such as altered water regimes, rising temperature, and vegetative transitions. Some species will be unable to tolerate these changes, but also unable to do anything about it given limited migratory capacity.⁷ The polar bear, for example, has limited options as the ice melts below its feet. Some species that are able to migrate may

<http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf> (covering this causal chain, as well as other primary and secondary drivers, both natural and anthropogenic) [hereinafter PHYSICAL SCIENCE BASIS SUMMARY].

⁴ See generally PANARCHY: UNDERSTANDING TRANSFORMATION IN HUMAN AND NATURAL SYSTEMS (Lance H. Gunderson and C.S. Holling eds., 2002) (covering disequilibrium and resilience theories of ecosystem dynamics).

⁵ See INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SUMMARY FOR POLICYMAKERS, CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY, CONTRIBUTION OF WORKING GROUP II TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 8 (2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-spm.pdf> [hereinafter CLIMATE CHANGE IMPACTS SUMMARY].

⁶ See INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE AND BIODIVERSITY, IPCC TECHNICAL PAPER V 16-23 (2002), available at <http://www.ipcc.ch/pdf/technical-papers/climate-changes-biodiversity-en.pdf> [hereinafter CLIMATE CHANGE AND BIODIVERSITY].

⁷ See *id.* at 22 (discussing lifestyle-changing effects of climate change in various ecosystems).

not be able to find the critical habitat attributes needed to sustain them anywhere on the planet.⁸ Other species will suffer when life-sustaining links with other species are broken; for example, an insect that hatches when soil temperature reaches a certain level, which will change with climate change, and a bird that times breeding based on the hours of daylight, which will not change. If the latter depends on the former to feed its young, the new timing mismatch may disrupt both species.⁹

- *Secondary Ecological Effects.* Not all species will find it necessary and possible to adapt climate change by migrating from their current ecosystems to find new homes, but many will. Others will stay to fight it out. While humans might cheer species on as they fight to adapt or fight to stay put, the aggregate effects of ecological disruption and species reshuffling are likely to lead to several secondary threats, including increased stress from the first order changes in the ecosystem,¹⁰ competition between species that have successfully migrated and those that have stayed put,¹¹ and opportunistic invasion by other species into the ecosystem once previous limiting barriers are diminished.¹² Consider, for example, rising water temperatures in a marine ecosystem. One species of fish may find the higher temperature tolerable, but just so, the stress of which may make it more susceptible to disease and parasites. Another species of fish which formerly could not inhabit the area because the temperature was too low may now find it just right, in which case the former species may have a new competitor or, worse, a new predator.
- *Human Adaptation Impacts.* Just as the primary threats to species before climate change centered on human-induced ecological change, it is likely that human adaptation to climate change will play a leading role in threatening species. Human adaptation impacts will come in the form of direct habitat conversion as human populations migrate,¹³ degraded ecological conditions as people fortify their communities from the effects of climate change,¹⁴ and species invasions induced as people move themselves, their belongings, and their infrastructure to new places.¹⁵

⁸ See *id.* at 17-18 (explaining the varying global effects of increasing temperatures).

⁹ See *id.* at 12 (listing observed changes in the timing of biological events).

¹⁰ See *id.* at 13-14 (explaining that coral bleaching, widespread in the late 1990s, is a sign of ecological stresses like pollution and disease).

¹¹ See *id.* at 17 (discussing the challenges of species community reorganization and regional limitations imposed by changing temperatures on land and at sea).

¹² See *id.* at 16-17 (outlining how climate change can drive complicated, uneven changes in habitat and ecosystem characteristics).

¹³ Many human communities are likely to find it necessary and possible to migrate to avoid rising sea levels along coastal areas, to relocate agricultural land uses, and to obtain secure water supplies. These migrations will necessarily involve some conversion of land uses in areas that presently provide suitable ecological conditions for particular species, in some cases at scales sufficient to pose a threat to the species. See *id.* at 3-4 (discussing some environmental effects of climate-motivated human migration).

¹⁴ See *id.* at 43 (examining effects of new adaptation strategies on ecosystems).

¹⁵ Human adaptation to climate change is likely to involve spatial relocations, as well as increased flow of goods to new settlement areas, which as in the past are likely to introduce non-native species to local ecosystems, some of which will establish successfully. The EPA has suggested that “important progress has been made in identifying climate change effects on invasive species, but . . . our understanding of effects on specific species and interactions of other stressors needs to be improved.” Effects of Climate Change on Aquatic Invasive Species and Implications for Management and Research, 72 Fed. Reg. 45046, 45047 (Aug. 10, 2007) (notice of availability of

The question for the ESA, of course, is what to do about these three categories of threats induced by climate change. The central purpose of the ESA is to “provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.”¹⁶ The agencies delegated to administer the ESA, the U.S. Fish and Wildlife Service (FWS) for terrestrial and freshwater species and the National Marine Fisheries Service (NMFS) for marine and anadromous species, have authority over several core programs aimed toward that objective:

- *The Listing Programs.* Section 4 authorizes the agencies to identify “endangered” and “threatened” species, known as the listing function,¹⁷ and then to designate “critical habitat”¹⁸ and develop “recovery plans”¹⁹ for the species.
- *Interagency Consultation and the Jeopardy Prohibition.* Section 7 requires all federal agencies to “consult” with the FWS or NMFS (depending on the species) to ensure that actions they carry out, fund, or authorize do not “jeopardize” the continued existence of listed species or “adversely modify” their critical habitat.²⁰
- *The Take Prohibition.* Section 9 requires that all persons, including all private and public entities subject to federal jurisdiction, avoid committing “take” of listed species of fish and wildlife.²¹ Take is defined to include any act that causes actual death or injury to the listed species, including habitat modification.
- *Incidental Take Permits.* Sections 7 (for federal agency actions)²² and 10 (for actions not subject to Section 7)²³ establish a procedure and criteria for the FWS and NMFS to approve “incidental take” of listed species.

While preserving ecosystems is clearly the statute’s primary goal, precisely how to use the agency’s regulatory weaponry to “provide a means” of achieving that goal in the face of climate change threats is not self-evident from the text of the statute. No provision of the ESA addresses pollutants, emissions, or climate in any specific, regulatory sense. Climate change thus presents several policy quagmires for the FWS and NMFS:

- *Identifying Climate-Threatened Species.* As no regulatory authorities of the ESA operate until a species is listed as endangered or threatened under section 4 of the ESA, the initial pressure point is how the agencies use available science to determine the effects of climate change on particular species and which are threatened by the primary or secondary effects of climate change.

research report and public comment period). Most invasive species introductions are human-induced. Peter M. Vitousek et al., *Biological Invasions as Global Environmental Change*, 84 AM. SCIENTIST 468, 468.

¹⁶ 16 U.S.C. § 1531(b).

¹⁷ 16 U.S.C. § 1522(a)(1).

¹⁸ 16 U.S.C. § 1533(a)(3).

¹⁹ 16 U.S.C. § 1533(f).

²⁰ 16 U.S.C. § 1536(a)(2).

²¹ 16 U.S.C. § 1538(a)(1).

²² 16 U.S.C. § 1536(b)(4).

²³ 16 U.S.C. § 1539(a)(1).

- *Regulating Greenhouse Gas Emissions.* If the FWS or NMFS identifies climate change as a basis for designating a species for protection under the ESA, the agency inevitably will face the question whether federal actions that cause, fund, or authorize greenhouse gas emissions jeopardize the species under section 7, and whether any person emitting greenhouse gases is taking the species in violation of section 9.
- *Regulating Non-Climate Effects to Protect Climate-Threatened Species.* Regardless of how aggressively the ESA is used in attempts to regulate greenhouse gas emissions, the FWS and NMFS inevitably will face the problem of how aggressively to regulate other actions that injure a climate-threatened species but which do not contribute to climate change, such as habitat conversion, water diversion, and pollution.
- *Designing Conservation and Recovery Initiatives.* As the FWS and NMFS regulate more activities associated with climate-threatened species, the agencies inevitably will face the need to design conservation measures as conditions for approval of incidental take under sections 7 and 10, as well as the need to formulate recovery measures for the species under section 4.
- *Species Trade-Offs.* As noted above, the ESA depends on an overriding purpose of conserving ecosystems. Yet the reshuffling of species under climate change conditions will make it difficult to identify “the ecosystems” to be conserved and is likely to pit species against species in a manner unprecedented in nature under the ESA.²⁴
- *Dealing with the Doomed.* Perhaps the most confounding question for the FWS will be how to respond with respect to species that appear doomed because of lack of migratory and adaptive capacity to withstand climate change effects in their natural habitat range.

These questions are hardly the usual policy fodder for the FWS and NMFS. To be sure, the ESA has been dragged into scenarios that cover vast expanses of land, such as the spotted owl in the northwest forests, and that involve complex issues of dispersed and indirect causation, such as water usage in Western states. But never before have the FWS and NMFS been asked to respond to a phenomenon as dynamic, complex, and global as climate change. It seems reasonable that the agencies might ask for time for serious thought about how to pull it off. Yet, as the next section discusses, some interest groups, in their zeal to wrangle control of greenhouse gas emissions—a necessary cause indeed—have attempted to rush the ESA into the fray in ways that are unlikely to prove useful in the long run.

²⁴ NATIONAL RESEARCH COUNCIL, SCIENCE AND THE ENDANGERED SPECIES ACT 111-23 (1995). Obviously, species naturally compete with one another, such as for habitat and food, or conflict as predator and prey. There are also a number of examples in which conservation measures taken to benefit a species protected under the ESA pose adverse effects for other species protected under the ESA or for other species generally. See William W. Kinsey, *Zalaphus (Sea Lion) and Oncorhynchus (Salmon/Steelhead): Protected Predator Versus Protected Prey*, 22 NAT. RESOURCES & ENV'T, Fall 2007 36 (providing a detailed case study of such a conflict in its legal context).

Throwing the Pit Bull Off the Cliff²⁵

A wave of “mitigation litigation”—litigation designed to force agencies into regulating greenhouse gas emissions under existing laws—is rising in full force.²⁶ For example, with over \$6 million of funding already committed, the Center for Biological Diversity recently formed the Climate Law Institute to, among other things, “establish legal precedents requiring existing environmental laws such as the Clean Air Act, Endangered Species Act, National Environmental Policy Act, Clean Water Act, and the California Environmental Quality Act to be fully implemented to regulate greenhouse gas emissions.”²⁷ While it has pushed a few agencies into examining the role of existing authorities, this kind of mitigation litigation in the long run is unlikely to produce a coherent and effective national climate change policy. Existing legislation, if creatively applied within the bounds of permissible agency statutory interpretation, offers many opportunities for agencies to pursue mitigation and adaptation policies, but not all such opportunities necessarily should be employed to the maximum an agency’s policy discretion might allow. The pursuit of mitigation litigation against federal agencies has been designed to push them into emissions mitigation regulation “because it’s there,” with no clear vision of how to do so at the agency level and no plan for how to coordinate a government-wide climate change policy initiative that includes both mitigation and adaptation.

Nowhere is this more evident than in the debate over how to integrate the ESA into climate change policy. Like most other existing environmental laws, the ESA does not mention climate change but is riddled with provisions that offer varying ranges of discretion to agencies to formulate climate change mitigation and adaptation policies,²⁸ making it a sitting duck for mitigation litigation. In particular, Section 7(a)(2) of the ESA provides:

Each Federal agency shall, in consultation with and with the assistance of the Secretary, 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 habitat of such species which is determined . . . to be critical²⁹

The statute builds an elaborate procedure for carrying out these consultations under which the agency proposing the action (known as the “action agency”) must consult with, depending on the species, either the FWS or NMFS through a series of steps designed to predict the impact of the action on listed species, with the ultimate product being a “biological opinion” from the FWS or NMFS “setting forth the [agency’s] opinion, and a summary of the information

²⁵ The discussion of climate change “mitigation litigation” in this section is drawn from J.B. Ruhl, *Climbing Mount Mitigation Because It’s There: A Proposal for Legislative Suspension of Climate Change “Mitigation Litigation,”* 1 WASH. & LEE J ENERGY, CLIMATE, & ENV’T (forthcoming) .

²⁶ A comprehensive taxonomy and record of climate change litigation cases is available at Micheal B. Gerrard & J. Cullen Howe, *Climate Change Litigation in the U.S.*, <http://www.climatecasechart.com> (last visited July 14, 2009).

²⁷ Center for Biological Diversity, *Press Release, Center for Biological Diversity Announces Climate Law Institute, Dedicates \$17 Million to Combat Global Warming* (Feb. 12, 2009), available at http://www.biologicaldiversity.org/news/press_releases/2009/climate-law-institute-02-12-2009.html. **Also see CRS**

²⁸ See J.B. Ruhl, *Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, 88 B.U. L. REV. 1 (2008).

²⁹ 16 U.S.C. 1536(a)(2) (2000). The provision also requires that “[i]n fulfilling the requirements of this paragraph each agency shall use the best scientific and commercial data available.” *Id.*

on which the opinion is based, detailing how the agency action affects the species or its critical habitat.”³⁰

The substantive content for conducting the consultation analysis is defined primarily in joint FWS-NMFS regulations.³¹ “Jeopardize” is defined there as “to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.” “Action” is defined as “all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas.” “Effects of the action” include “the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline.” The “indirect effects” are “those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.”

On the one hand, greenhouse gas emissions and their climate change consequences arguably can be fit into this framework. Greenhouse gas emissions from actions carried out, funded, or authorized by federal agencies contribute to tropospheric warming, the indirect effects of which could at some later time adversely affect a protected species. Although determining whether these effects actually occur may be difficult to do reliably in particular scenarios, the point is that they could occur.

On the other hand, there are considerable legal, scientific, and practical difficulties with fitting climate change into the consultation framework at the level of detail necessary to evaluate particular federal agency actions (all of which would apply equally to claims that emissions are causing “take” of climate-threatened species in violation of ESA section 9). Consider, for example, a proposed coal-fired power plant in Florida and its effects on the polar bear in the Arctic.³² The argument for applying the ESA goes as follows: the power plant emits greenhouse gases (a direct effect of the action), greenhouse gases are reasonably certain to warm the troposphere (an indirect effect of the action), a warming troposphere is reasonably certain to adversely alter ecological conditions for the polar bear, and it is reasonably expected that such ecological changes will bring an end to the polar bear as a species.

While that chain of events makes for an easy A leads to B story, in fact any effort to link the individual plant’s emissions as the jeopardizing agent for the polar bear species would meet obvious objections stemming from the fact that *all* greenhouse gas emissions worldwide are subject to the same causal analysis. All greenhouse gas molecules are equally to blame for whatever impact climate change has on a species. It is not possible, therefore, to “upscale” emissions from a particular source and “downscale” them to a particular impact on the ground, which is precisely what the section 7 consultation process would require the FWS and NMFS to do for every action funded, carried out, or authorized by federal agencies. Every source of greenhouse gas emissions funded, carried out, or authorized by a federal agency, therefore, would in theory be a causal source of jeopardization for a climate-threatened species. In other words, going down the mitigation road with section 7 would subject a vast segment of our

³⁰ 16 U.S.C. 1536(b)(3)(A).

³¹ All the definitions discussed in the text are found in 50 C.F.R. § 402.02 (2006).

³² The considerable distance between the action and the species is not determinative. The FWS consultation regulations define “action area” – the geographic scope of the consultation analysis – as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” 50 C.F.R. §402.02 (2006). Thus, the analysis is not limited to the “footprint” of the action nor is it limited by the action agency’s authority. Rather, it is a biological determination of the reach of the proposed action on listed species.

nation's economy to greenhouse gas regulation *under the ESA*, with no principled way of distinguishing between emission sources for purposes of assigning "jeopardizing" causal status. Either all federal actions involving greenhouse gas emissions would trigger jeopardy status and be subject to regulation by the FWS and NMFS,³³ or the FWS and NMFS would have to adopt arbitrary thresholds for assigning jeopardy status (e.g., quantity or efficiency of emissions)

Either scenario is disastrous for the agencies and the ESA. The comprehensive regulation approach, besides being political suicide, would be beyond the resources and expertise of the FWS and NMFS. Proponents of this use of the ESA have yet to explain how the FWS and NMFS would establish emission caps for different sources. Neither agency is equipped to function in an EPA-like role of emissions regulator across a multitude of industries, and neither has the resources to do so even if the expertise could be acquired. The selective regulation approach would face difficult legal challenges.³⁴ Moritz et al., argue, for example, that "the Services could set a threshold level for consultation, as long as it was reasonable and sufficiently protective of listed species." But they do not point to authority in section 7 or elsewhere in the ESA for differentiation between sources in terms of legal status if there is no scientific basis for causal differentiation. Why would greenhouse gas emissions from, say, a farm not cross the jeopardy threshold but emissions from a large power plant would? If a species is put in jeopardy by the incremental molecule of carbon dioxide, how will the agency know which source was the causal agent? Questions like these, for which there simply is no good answer under the ESA, are bound to become routine litigation fodder in response to any such regulatory push.

Nevertheless, many interest groups, with the Center for Biological Diversity in the lead, are pursuing mitigation litigation to "require these agencies to adopt all feasible measures to reduce emissions immediately through the section 7 process."³⁵ The reaction by the George W. Bush Administration was to launch a strong defense as a counter-offensive. In May 2008, the FWS promulgated a final rule listing the polar bear as threatened based on factors that included the impacts of climate change on Arctic sea ice.³⁶ Secretary of the Interior Dirk Kempthorne stressed at the time that the listing would not provide a basis for using the ESA to regulate greenhouse gas emission sources.³⁷ The FWS also issued interim and final section 4(d) rules for the polar bear, exempting from section 9 take prohibitions any activity already exempt or authorized under the Marine Mammal Protection Act and, for any activity outside of Alaska, also exempting all takes incidental to a lawful purpose.³⁸ The unspoken purpose of the latter approach undoubtedly was to cut off claims that greenhouse gas emissions sources outside of Alaska are causing unauthorized take of the polar bear. In tandem with that, the Department of the Interior also issued a memorandum explaining it will not consider greenhouse gas emissions in consultations about the polar bear or other species listed due to climate threats.³⁹

³³ Regulation by the FWS and NMFS comes in the form of the agencies specifying "reasonable and prudent" alternatives to the action as proposed. See 1536(b)(3)(A). Presumably, in the climate change mitigation context this would mean placing caps on emission levels.

³⁴ Anna T. Moritz et al., *Biodiversity Baking and Boiling: Endangered Species Act Turning Down the Heat*, TULSA L. REV. (forthcoming) (manuscript on file).

³⁵ *Id.* at ___.

³⁶ See 73 Fed. Reg. 28212 (May 15, 2008).

³⁷ U.S. Dept of the Interior, News Release, Secretary Kempthorne Announces Decision to Protect Polar Bears under Endangered Species Act (May 14, 2008).

³⁸ See 73 Fed. Reg. 28,306 (May 15, 2008) (interim rule); 73 Fed. Reg. 76,249 (Dec. 16, 2008) (final rule).

³⁹ See Solicitor, U.S. Dept. of the Interior, Guidance on the Applicability of the Endangered Species Act's Consultation Requirements to Proposed Actions Involving the Emission of Greenhouse Gases (Oct. 3, 2008); U.S.

The FWS and NMFS later followed up on that position by promulgating new section 7(a)(2) consultation regulations designed to, among other things, preclude consideration of greenhouse emissions in consultations. Culminating one of the most controversial rulemakings in the history of ESA implementation, in December 2008, the FWS and NMFS promulgated final rules revising various features of the section 7 consultation regulations. The changes, too extensive to cover and assess in detail here, fall into three categories: (1) revised and new definitions for the causation and effects analyses; (2) revisions to applicability designed to preclude consideration of greenhouse gas emissions in consultations; and (3) streamlined consultations through a shift in decision authority to action agencies. Some of the changes merely codify existing conditions, such as a new provision limiting consultations to discretionary actions. But some have the potential to radically alter consultation practice. Some significant changes include:

- Indirect effects are limited to those effects that occur later in time for which the proposed action is an “essential cause.”⁴⁰
- If an effect will occur whether or not the proposed action takes place, it is not an indirect effect.⁴¹
- Indirect effects must be reasonably likely to occur based on “clear and substantial information.”⁴²
- For actions not anticipated to cause take, no consultation is necessary if the effects are manifested through “global processes” that cannot be reliably predicted or measured, have an insignificant impact, or pose only a remote risk.⁴³
- For actions not anticipated to cause take, no consultation is necessary if the effects are not capable of being measured in a way that permits “meaningful evaluation.”⁴⁴
- Action agencies will determine for themselves whether, under these new standards, formal consultation is necessary.

The rule attracted considerable controversy: tens of thousands of comments were filed on the proposed rule, and litigation was filed immediately to challenge the final rule. Many environmental strategists outlined ways the Obama Administration could, through executive action or in concert with Congress, swiftly nullify the rule. In March 2009 President Obama ordered FWS and NMFS to review the rules and authorized other federal agencies “to follow the prior longstanding consultation and concurrence practices.”⁴⁵ Soon thereafter Congress passed legislation allowing the agencies to withdraw the polar bear section 4(d) rule and the consultation rule with no notice and comment procedures,⁴⁶ which the agencies did for the consultation rule effective May 4, 2009.⁴⁷

Geological Survey, *The Challenges of Linking Carbon Emissions, Atmospheric Greenhouse Gas Emissions, Global Warming, and Consequential Impacts* (May 14, 2008).

⁴⁰ 50 C.F.R. § 402.02 (2002).

⁴¹ 50 C.F.R.

⁴² 50 C.F.R.

⁴³ 50 C.F.R. § 402.03(b)(2).

⁴⁴ 50 C.F.R. § 402.03(b)(3)(i).

⁴⁵ See Office of the Press Secretary, The White House, Memorandum for the Heads of Executive Departments and Agencies Re: The Endangered Species Act (Mar. 3, 2009).

⁴⁶ 2009 Omnibus Appropriations Act, Pub. L. 111-8, Division E, Title IV, § 429 (2009).

⁴⁷ See 74 Fed. Reg. 20421 (May 4, 2009)

Other than raise a fuss about the Bush Administration consultation rule, however, neither Congress nor the Obama Administration has shown any interest in dragging the ESA into the war on greenhouse gas emissions. Nothing in the legislation allowing the agencies to overturn the rules or in the agencies' statement accompanying the decision to overturn the consultation rule so much as mentions climate change or greenhouse gas emissions. Indeed, the only indications suggest environmental groups will not like the Obama Administration's position much more than the Bush Administration's: David Hayes, recently confirmed Deputy Secretary of the Department of the Interior, told senators during his confirmation hearing that the endangered species law is ill-suited for addressing greenhouse gas emissions; Tom Strickland, the new Assistant Secretary for Fish, Wildlife and Parks overseeing the ESA, said the same at his hearing; and, more directly to the point, FWS spokesman Josh Winchell said in February 2009 that "we have zero legislative authority to regulate carbon emissions. That's just not what we do. With the polar bear, the science definitely pointed to climate change, but that doesn't all of a sudden give us the authority to address the underlying cause, which is carbon emissions."⁴⁸ Putting those words into action, on May 8, 2009, Interior Secretary Salazar announced the agency's decision *not* to rescind the polar section bear section 4(d) rule, proclaiming that "the Endangered Species Act is not the proper mechanism for controlling our nation's carbon emissions."⁴⁹ In other words, the Obama Administration understands the pit bull can't fly.

On the other hand, the FWS and NMFS may be reversing course from the Bush Administration on identifying climate change as a basis for listing species. For example, on February 12, 2009, the Center for Biological Diversity (represented by Earthjustice) and the FWS settled litigation over the pika, a small (and adorably cute) rodent whose montane habitat in the Rocky Mountains is slowly moving upslope due to rising temperatures, so as to require the agency to assess whether the pika may warrant protection under the ESA by May 2009 and, if so, to determine whether the pika will be designated as an endangered species nine months later.⁵⁰ On May 7, 2009, the agency provided notice that it had determined listing of the pika may be warranted and that it will initiate a status review to determine whether the species should be listed.⁵¹ Hence, while clearly not interested in using the ESA to regulate greenhouse gas emissions, the Obama Administration has signaled that it recognizes the specter of climate change and will use the ESA identify climate-threatened species. The remaining question is what to do after that.

Keeping the Pit Bull on the Ground

In its quest to regulate coal-fired power plants and other industrial sources of greenhouse gases, the mitigation litigation charge is leading the ESA away from its central mission of

⁴⁸ Greenwire, *Endangered Species: Some See EPA's Climate Proposal Prodding Interior on ESA* (Apr. 23, 2009), available at <http://www.eenews.net/public/Greenwire/print/2009/04/23/4>; see also Alan Kovski, *Interior Nominee Agrees Climate Change Fits Poorly in Endangered Species Rules*, 40 Env't Rep. (BNA) 622 (2009).

⁴⁹ U.S. Fish & Wildlife Service, News Release, Salazar Retains Conservation Rule for Polar Bears, Underlines Need for Comprehensive Energy and Climate Legislation (May 8, 2009), available at <http://www.fws.gov/news/NewsReleases/showNews.cfm?newsId=20FB90B6-A188-DB01-04788E0892D91701>.

⁵⁰ See Center for Biological Diversity, Press Release, Federal Agency Agrees to Consider Endangered Species Protection for American Pika: Global Warming Driving Alpine Rock Rabbit Toward Extinction (Feb. 12, 2009), at http://www.biologicaldiversity.org/news/press_releases/2009/pika-02-12-2009.html (last visited May 18, 2009).

⁵¹ See 74 Fed. Reg. 21301 (May 7, 2009).

conserving ecosystems. The most effective application of the statute is to aim it at what is happening on the ground, not what is happening in the troposphere. The following series of reforms is designed to restore that focus.

As for greenhouse gases, a decisive measure must be used to prevent the statute from being used to police emission sources. To forge an integrated climate change policy, however, emission sources should not simply be comprehensively excluded from ESA jurisdiction. Rather, the statute should be amended to exclude from its provisions emissions of greenhouse gases subject to other federal, state, or local controls, including any cap-and-trade program, carbon taxes, direct emissions regulation, or other code or regulation designed to reduce emissions without directly regulating them, such as a “green” building code. This exclusion would extend to all ESA regulatory provisions, including section 7 consultations and the section 9 take prohibition, but would not extend to any other feature of an emission source that could pose risks to protected species, such as habitat modification or water diversion. Because emission sources not subject to other controls are likely to become insignificant in scope, they would be at no risk of being deemed a cause of jeopardy or take of climate-threatened species on the basis of their emissions.

Turning to what can be done proactively for species on the ground, I propose a series of interrelated reforms, all of which can easily be engrafted onto the existing ESA structure, designed to replace the goal of *recovery* with that of *transition* for species listed primarily due to threats associated with climate change.

Listing of climate-threatened species: Indeed, the first reform proposal is to create a new category of listing, “climate-threatened species,” to identify species that should be managed for adaptation to climate change over a fifty-year period rather than with the unrealistic goal of recovery. The ESA currently has two listing categories: an “endangered species” is one “in danger of extinction throughout all or a significant portion of its range,”⁵² and a “threatened species” is one “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”⁵³ Climate-threatened species would be defined a “any endangered or threatened species the threats to which are attributable substantially to climate change and its impacts on the ecological conditions upon which the species depends for its survival.” Climate-threatened species would hold the same status as threatened species for purposes of the take prohibition—i.e., allowing the FWS and NMFS to craft specialized rules under ESA section 4(d) regarding what actions constitute take under Section 9⁵⁴—but in addition would be tracked into a transition program designed to maintain their chances of survival through the fifty-year climate change period, at which time their status would be reevaluated.

Replacing recovery with transition. Whereas the recovery goal applied to other species is activated through conservation measures designed “to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary,” climate-threatened species will benefit from “transition measures” designed to have maintained their chances of survival as a species at the conclusion of the fifty-year transition period. In other words, worry about transition first so as to keep recovery a viable goal

⁵² 16 U.S.C. 1532(6).

⁵³ 16 U.S.C. 1532(20)

⁵⁴ 16 U.S.C. § 1533(d). This would require no more than adding the term “climate-threatened species” to section 4(d).

for the more distant future. The existing provision for recovery plans in section 4(f) of the ESA thus will be amended to encompass “recovery and transition plans.” Transition plans will apply only to climate-threatened species and will specify transition measures, defined as “the methods and procedures which are necessary to maintain the survival of any climate-threatened species.” The transition plan, which *must* be prepared within one year of the listing (otherwise, what’s the point?), will develop and employ the best available model of how climate change will affect the species over the fifty-year time frame to identify changes in the species’ home ecosystem, likely areas in which suitable habitat will emerge and to which the species could adaptively migrate or be relocated, to be identified in the transition plan as “transition habitat,” and likely conflicts with other species. The plan will then outline practicable cost-effective strategies for assisting the survival of the species through the fifty-year period. This may involve anything from reducing stress in its current ecosystem to improving conditions in transition habitat areas.

Transition consultations. A new “transition consultation” procedure will be added to the Section 7 consultation provisions, requiring federal agencies to consult with the FWS or NMFS to determine the impact of their actions on climate-threatened species, ensuring that they do not substantially interfere with the goals of the relevant transition plans, and to identify transition measures the federal agency can reasonably incorporate into its action. Thus, in parallel with the consultation procedure used for endangered and threatened species, the transition consultation provision will require that “Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency is not likely to substantially reduce the likelihood of survival of any climate-threatened species or to substantially impair the value to such species of the transition habitat identified in the transition plan prepared for such species.” In all other respects the consultation procedure used for climate-threatened species will track that currently used for endangered and threatened species.

Incentives for non-federal actions. Using the playbook Interior Secretary Bruce Babbitt developed in the Clinton Administration, an incentive-based series of reforms should be installed to enlist non-federal actors in the transition plans for climate-threatened species. For example, nothing in the ESA prevents a landowner from passively allowing ecological conditions to deteriorate, and nothing requires a landowner actively to improve ecological conditions. In other words, unless a landowner affirmatively proposes to develop or otherwise use the land, the ESA sits on the sidelines. Areas identified in a species’ transition plan as deteriorating habitat or potentially emerging transition habitat thus may receive little assistance without an incentive to prompt landowners into taking conservation measures consistent with the plan. Landowners voluntarily reducing climate change stresses in an ecosystem or improving the chances of emerging transition habitat in another ecosystem—for example, by controlling invasive species, improving groundwater recharge, or introducing controlled fires—could be awarded transition measures “credits” for sale or transfer to other landowners whose proposed land uses are subject to ESA regulation, and who thus are required to support transition measures, because of regulated impacts on the species. This kind of approach already is used in the agencies’ habitat conservation banking and recovery crediting programs, and could prove useful in particular for protecting the value of transition habitat that is outside the scope of federal public lands.

Biodiversity priority. Finally, it is likely that as climate change grips more and more species, prompting many to adaptively migrate and putting many others in stressed conditions, there will be conflicts between different species' recovery and transition plans as one species' adaptive migration imposes stress on another species' fight to stay put, or as measures to reduce stress for one species in an ecosystem may increase stress for other species in that or other ecosystems. In those situations the FWS and NMFS should be authorized to suspend their species-specific mission and manage conditions in the relevant ecosystems with the goal of maximizing overall species biodiversity through the transition period. In other words, do what is best for the transition of ecosystems as whole systems rather than on behalf of particular species in the ecosystems. This would require suspension of the transition plans developed for each of the protected species in the relevant ecosystems and, in their place, development of an "integrated ecosystem transition plan" employing adaptive management measures to conserve overall species biodiversity to the extent practicable. The new provision thus would require that "where the Secretary determines that the recovery goals for endangered and threatened species and the transition goals for climate-threatened species in the same ecological region are in conflict and incompatible due to the effects of climate change on ecological conditions, the Secretary shall prepare an integrated ecosystem transition plan for the region." The plan will have the goal of "maintaining the level of ecosystem, species, and genetic diversity the Secretary deems reasonable and appropriate for the region to remain ecologically resilient in response to climate change." The ecosystem-based plan "shall replace the recovery plans and transition plans for all affected species in that region for all purposes under the Act." Consultations under section 7 would also shift from a species-specific focus to consultation as to whether the federal action "substantially impairs the ecosystem, species, and genetic diversity of the region covered by the integrated ecosystem transition plan."

These measures recognize that the ESA, as tough as it is on the ground, really is no match for climate change. The focus must be not on a futile quest to use the ESA to stop climate change, but rather on responding to the ecological transition conditions species are likely to face.

I recognize, to be sure, that my proposals are incremental and work within the existing structure of the ESA to respond to a narrow question—what to do about climate change? One could envision some form of comprehensive federal climate change regulation integrating greenhouse gas emission controls, renewable energy production, green building codes, and including species protection measures to supplant the ESA entirely. Or, more modestly, but no less a pipe dream, one could envision a comprehensive overhaul of the ESA that would, among other things, take care of the climate change question in some integrated manner. I chose the tinkering approach because once one opens the door to comprehensive climate change legislation or ESA reform, the range of possibilities is simply too wide to anticipate how the climate change issue would be resolved. It is also, I believe, far more likely that anything Congress does with respect to climate change and the ESA will be incremental and not disrupt the basic structure of the statute, which has attained third-rail status politically.

That said, some of the reform proposals other authors in this volume have proposed offer promising platforms for integrating a climate change solution. [Here, if appropriate, I would suggest ways some of the other proposals could, either as is or with some additional thoughts, respond to the question of how to handle climate change in the ESA]

Conclusion

The ESA is both noble and arrogant. It commits humans to protect the species our actions threaten, but it assumes we can do so while still having our way. The reality is that the ESA has worked out as a pragmatic compromise—few species actually recover, but few slide into extinction, and people don't always get to do whatever they want. It will be difficult to keep that pact intact in the face of climate change. Some species are doomed; we just don't know which yet. Some species can make it through climate change without a scratch; we just don't know which yet. Most species, however, will hobble through it, but some will need our help. My proposals are designed to respond to those species' needs by focusing on transition over the next 50 years. Attempting to use the ESA to regulate greenhouse gas emissions would waste resources and ultimately fail legally, politically, and practically. Taking greenhouse gas emissions out of the picture allows the FWS and NMFS to focus on employing the ESA where it works best—on the ground level. Emphasizing transition planning rather than recovery as the goal, at least for the next 50 years, responds to the reality of climate change as a prolonged event of massive ecological reshuffling. In short, the ESA must become noble and *humble* if it is to have any chance of helping species through the era of climate change.