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Collaborative Governance Under the Endangered Species Act: An Empirical Analysis of Protective Regulations

Robert L. Fischman,[†] Vicky J. Meretsky^{††} & Matthew P. Castelli^{†††}

Recent conservation and administrative law scholarship emphasizes the need for potential legal adversaries to work together. Stakeholders and regulators can pool their political capital, money, property, expertise, and legal leverage to achieve more than could be accomplished through mere mechanical implementation of statutory commands. Most commentators associate collaboration with programs promoting fuzzy objectives to engage the public and advisory groups.

The Endangered Species Act (ESA) is a polarizing statute that imposes seemingly uncompromising mandates. But this Article demonstrates that the ESA actually provides rich opportunities for collaborative governance. In exploring this underappreciated success story, we document how conservation collaboration adapts otherwise strict, generic prohibitions to the recovery needs of individual species on the brink of extinction. We identify conditions under which collaboration arises.

This Article examines the nearly two hundred ESA protective regulations that tailor federal restrictions to the ecological and social circumstances of particular extinction threats. Our original empirical study explores how the rules manifest collaborative governance, as well as the extent to which they foster imperiled species recovery. We focus on provisions in which parties agree to constrain activities in exchange for limited statutory liability. Almost three-quarters of the protective regulations substitute practice-based limitations for difficult-to-detect, proximate-effect prohibitions.

Our results show that collaborative governance transforms the ESA from a statute prohibiting certain outcomes (such as harm or jeopardy to a species) to a regulatory program implementing collaboratively crafted best practices, along the lines of pollution-control statutes. Paradoxically, this shift may improve the

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prospect for species recovery, even with regulations that are less stringent than the standard statutory prohibitions. This insight allows us to recommend mechanisms for constructing better regulations and suggest avenues for future research.

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Introduction

Mollie Beattie, the former director of the U.S. Fish and Wildlife Service (FWS), the principal federal agency responsible for implementing the Endangered Species Act, stated that “[w]hat a country chooses to save is what a country chooses to say about itself.”¹ The Endangered Species Act (ESA)² is both revered as a moral commitment to restraint³ and reviled as a pit bull, oblivious to the plight of landowners facing dramatic economic losses through no fault of their own.⁴ These divergent views polarize ESA policy debates, seeming to leave scant room for compromise. The Act’s strict prohibitions appear inflexible, impeding collaboration between and among regulators and stakeholders.⁵

Yet, contrary to this conventional wisdom, our research shows that the ESA embraces conservation collaborations. We document our surprising findings and demonstrate how agencies can spur better-tailored solutions to the extinction crisis. While it is surely true that *what* a country chooses to save makes an important statement, *how* the United States chooses to achieve legislative goals reveals much about its ability to sustainably govern.

The ESA literature makes productive use of case studies, but it lacks a comprehensive evaluation of existing rules. This study generates new data and offers a complete analysis. It also contributes to the collaborative governance debate, which lacks “rigorous, empirical scrutiny of emerging” approaches.⁶ Our research explores the incentives for collaborative conservation and the extent to which special rules promote imperiled species recovery. We focus on emerging approaches that convert the effects-based ESA prohibition on harm to individual animals into best practices that immunize activities from liability. Our analysis offers practical lessons for improving these approaches to achieve more effective wildlife conservation.

1. U.S. Fish & Wildlife Serv., *A Look Back: Mollie Beattie*, NAT’L WILDLIFE REFUGE SYS. (Oct. 15, 2015), https://www.fws.gov/refuges/about/conservationheroes/Mollie%20Beattie_07182012.html [<https://perma.cc/WXX7-9LKR>].

2. 16 U.S.C. §§ 1531-41 (2018).

3. See *TVA v. Hill*, 437 U.S. 153, 187, 194 (1978) (noting that the ESA’s provisions amount to a policy of “institutionalized caution” confining cost-benefit balancing to the margins of decisions in order to prevent the “incalculable” loss of species).

4. See Karl Gleaves, Michele Kuruc & Patricia Montanio, *The Meaning of “Species” Under the Endangered Species Act*, 13 PUB. LAND L. REV. 25, 25 (1992); Steven P. Quarles & Thomas R. Lundquist, *The Pronounced Presence and Insistent Issues of the ESA*, 16 NAT. RESOURCES & ENV’T. 59 (2001).

5. See STEVEN L. YAFFEE, PROHIBITIVE POLICY: IMPLEMENTING THE FEDERAL ENDANGERED SPECIES ACT (1982).

6. Cameron Holley, *Removing the Thorn from New Governance’s Side: Examining the Emergence of Collaboration in Practice and the Roles for Law, Nested Institutions, and Trust*, 40 ENVTL. L. REP. NEWS & ANALYSIS (ELI) 10,656, 10,660 (2010).

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“Collaborative governance,” though an amorphous concept, enjoys bipartisan, multisector support as a path to finding common ground and win-win solutions in regulation.⁷ The collaborative governance literature sometimes considers the term a policy goal and other times a means of achieving specific objectives.⁸ The related concept of “new governance,” which emphasizes “the role of non-state actors in influencing behavior against a backdrop of the state,” has deep roots in regulatory practice.⁹ The origins of collaborative governance trace from the Federalist Papers through the enormous literature on cooperative federalism and polycentric public administration.¹⁰ Collaborative governance tempers the substance-neutral, free-for-all of pluralism, the dominant lens through which scholars have defended regulatory law’s legitimacy in the past half-century.¹¹

Collaboration is not merely the darling of governance theory. This Article reveals how collaboration offers pragmatic, proven avenues to

7. See Kirk Emerson, Tina Nabatchi & Stephen Balogh, *An Integrative Framework of Collaborative Governance*, 22 J. PUB. ADMIN. RES. & THEORY 1, 1 (2012); see also MICHAEL L. ROSENZWEIG, WIN-WIN ECOLOGY (2003) (applying the win-win principle to conservation disputes); ROBERT WRIGHT, NONZERO: THE LOGIC OF HUMAN DESTINY (1999) (arguing that zero-sum, win-lose games are no longer common in complex social governance); Karen Bradshaw, *Agency Engagement with Stakeholder Collaborations*, in *Wildfire Policy and Beyond*, 51 ARIZ. ST. L.J. 437, 443 (2019) (describing the bipartisan nature of collaborative governance for public lands and natural resources, demonstrated by the fact that Presidents Clinton, Bush, Obama, and Trump have all issued orders directing agencies to collaborate); Kent Redford & M.A. Sanjayan, *Retiring Cassandra*, 17 CONSERVATION BIOLOGY 1473 (2003) (calling for collaborative compromise and criticizing conservation approaches employing strict, scientifically established minimum criteria for recovery).

8. See Lisa Blomgren Amsler, *Collaborative Governance: Integrating Management, Politics, and Law*, 76 PUB. ADMIN. REV. 700, 702 (2016) (acknowledging the inconsistent and amorphous use of the term while proposing a framework that captures most uses of the term).

9. Karen Bradshaw Schulz, *New Governance and Industry Culture*, 88 NOTRE DAME L. REV. 2515, 2515-16 (2013) (first citing Orly Lobel, *The Paradox of Extralegal Activism: Critical Legal Consciousness and Transformative Politics*, 120 HARV. L. REV. 937, 983 (2007); and then citing Bradley C. Karkkainen, “New Governance” in *Legal Thought and in the World: Some Splitting as Antidote to Overzealous Lumping*, 89 MINN. L. REV. 471, 478 (2004)).

10. See Lisa Blomgren Amsler & Rosemary O’Leary, *Federalist No. 51: Is the Past Relevant to Today’s Collaborative Public Management?*, 71 PUB. ADMIN. REV. 78 (2011) (focusing on how federalism and separation of powers impel different governing institutions to act cooperatively); Robert L. Fischman, *Cooperative Federalism and Natural Resources Law*, 14 N.Y.U. ENVTL. L.J. 179 (2005) (describing cooperative federalism); Michael D. McGinnis & Elinor Ostrom, *Reflections on Vincent Ostrom, Public Administration, and Polycentricity*, 66 PUB. ADMIN. REV. 15 (2012) (explaining polycentricity as the diffuse powers exercised by public and private institutions with overlapping responsibilities and capacities for action).

11. Richard Stewart’s *The Reformation of American Administrative Law* provided the standard account of pluralism as the basis for administrative legitimacy via a “surrogate political process” to consider a wide range of stakeholder interests. 88 HARV. L. REV. 1667, 1670 (1975). Critics view pluralism as providing little basis for normative judgments. See Sidney A. Shapiro, *Law, Expertise and Rulemaking Legitimacy: Revisiting the Reformation*, 49 ENVTL. L. 661 (2019) (arguing that administrative law promotes legitimacy through negotiating pluralism only if it preserves agency duty to apply its expertise in fulfilling congressional mandates); see also Peter M. Shane, *Empowering the Collaborative Citizen in the Administrative State: A Case Study of the Federal Communications Commission*, 65 U. MIAMI L. REV. 483 (2011) (analyzing FCC efforts to encourage better “participatory governance” through collaboration).

advance the aims of environmental law. If collaborative governance can work within the framework of the ESA, it can work for many other regulatory statutes. Besides serving as a rigorous test case for governance, the ESA also presents “wicked” conservation challenges.¹² In light of climate change, rapidly disappearing habitat, and strong domestic property rights, environmental law desperately needs better tools. Our recommendations are not just aspirational inventions. They build on elements found in existing protective regulations that can be sharpened and adapted for broader use.

Legal scholars observe that public administration increasingly employs collaborative governance, dispelling “the false dilemma between centralized regulation and deregulatory devolution.”¹³ Social scientists likewise study informal governance regimes arising from otherwise inflexible, uniform regulatory programs.¹⁴ Professor Karen Bradshaw finds hundreds of laws requiring stakeholder collaboration but laments that understanding how governance works is “virtually unstudied.”¹⁵ Our comprehensive, empirical study fills that gap.

Most of the collaborative governance scholarship examines programs exhorting stakeholders to work together with few substantive mandates.¹⁶ This Article makes the seemingly paradoxical claim that the dreaded ESA prompts collaborative governance and “voluntary” projects through binding protective regulations that reward people who go beyond what is required.¹⁷ Getting the incentives right is critically important, and the devil is in the details of each rulemaking. This study also shows that, along with collaborative successes, the program’s zeal for overcoming opposition to strict federal regulation invites special exceptions that may undermine species recovery.

How does collaborative governance apply to endangered species conservation? The answer begins with the ESA’s disparate treatment of imperiled species. First, the Act places no limits on actions that harm

12. J.B. Ruhl & James Salzman, *Climate Change, Dead Zones, and Massive Problems in the Administrative State: A Guide for Whittling Away*, 98 CAL. L. REV. 59, 72 (2010) (describing the attributes of “wicked” problems).

13. Orly Lobel, *The Renew Deal: The Fall of Regulation and the Rise of Governance in Contemporary Legal Thought*, 89 MINN. L. REV. 342, 343 (2004).

14. See, e.g., Thomas Dietz, Elinor Ostrom & Paul Stern, *The Struggle to Govern the Commons*, 302 SCIENCE 1907 (2003); Carl Folke et al., *Adaptive Governance of Social-Ecological Systems*, 30 ANN. REV. ENVTL. RESOURCES 441 (2005).

15. Bradshaw, *supra* note 7, at 441. The stakeholders she identifies in her study correspond closely to the ones with an interest in ESA § 4(d) rules: landowners, industrial land users, nongovernmental organizations, states, tribes, sportsmen, and conservationists. *Id.* at 445.

16. See, e.g., *id.* at 454, 458-60.

17. Hannah Gosnell et al., *Transforming (Perceived) Rigidity in Environmental Law Through Adaptive Governance: A Case Study of Endangered Species Act Implementation*, 22 ECOLOGY & SOC’Y 42 (2017), show how the seemingly inflexible ESA consultation standard can prompt a transformative reorganization that revives conservation effectiveness.

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species absent from the federal list promulgated through informal rulemaking. Collaborations that succeed in preventing listing will avoid direct regulation under the ESA.¹⁸ That is a classic “win-win” scenario. Second, protected species are listed in two separate categories.¹⁹ Strict prohibitions shield from harm the 500 “endangered” animals in the United States on the brink of disappearing.²⁰ In contrast, “protective regulations” offer some flexibility in crafting prohibitions for the 220 “threatened” animals at risk of becoming endangered in the foreseeable future.²¹

The protective regulations for threatened species bridge the all-or-nothing distance between the strict prohibitions applicable to endangered species and the thousands of imperiled—but unprotected—species. When the regulations meet the statutory objective of advancing species recovery,²² they are paragons for the advocates who find greater potential in collaborative approaches than in one-size-fits-all, command-and-control models.²³ Others find the regulations to constitute “lethal loopholes” that undermine the ESA’s conservation goal to recover species from the brink of extinction.²⁴

We find examples that support both views.²⁵ Some regulations manifest collaborative tailoring that allows harm to individual animals in exchange for larger contributions to species recovery. Other rules reflect an accommodation approach, where the federal agency merely adopts

18. See Robert L. Fischman et al., *State Imperiled Species Legislation*, 48 ENVTL. L. 81, 88-89 (2018); see also *Briefing on Improving the Endangered Species Act: Perspectives from the Fish and Wildlife Service and State Governors: Hearing Before the Subcomm. on Fisheries, Water, and Wildlife of the S. Comm. on Env’t and Pub. Works*, 114th Cong. 3-4 (2015) (statement of Sen. Jon Tester) (“Montana has leveraged Federal resources with its own funding in tools like the Candidate Conservation Agreements with private landowners to reduce areas of conflict and to find solutions with broad benefits, and that is how it should be. We should strengthen the State and Federal partnerships, and we also need to ensure that the intent of bedrock laws like the Endangered Species Act remains both a backstop and a catalyst for action.”).

19. See 16 U.S.C. § 1532 (2018) (defining endangered and threatened species); *id.* § 1533 (prescribing the standards for listing a species as either endangered or threatened).

20. *Id.* § 1538(a); see U.S. Fish & Wildlife Serv., *Listed Species Summary (Boxscore)*, ENVTL. CONSERVATION ONLINE SYS., <https://ecos.fws.gov/ecp/report/boxscore> [<https://perma.cc/KA3D-MVGC>] (last visited Aug. 1, 2020) (compiling numbers of endangered and threatened animals protected through promulgated rules).

21. 16 U.S.C. § 1533(d) (commonly referred to as section “4(d)”).

22. “Recovery,” or “conservation,” is the improvement in a listed species conservation status to the point at which it no longer needs the ESA’s protection to avoid extinction. See *id.* § 1532 (defining the term).

23. See, e.g., MICHAEL P. VANDENBERGH & JONATHAN M. GILLIGAN, *BEYOND POLITICS: THE PRIVATE GOVERNANCE RESPONSE TO CLIMATE CHANGE* (2018); *Hearing on the Modernization of the Endangered Species Act Before the S. Comm. on Env’t. and Pub. Works*, 115th Cong. 224-26 (2017) (statement of Dave Freudenthal, Former Governor, State of Wyoming).

24. Tanya Sanerib, Cynthia Elkins, & Noah Greenwald, *LETHAL LOOPHOLES: HOW THE OBAMA ADMINISTRATION IS INCREASINGLY ALLOWING SPECIAL INTERESTS TO ENDANGER RARE WILDLIFE* (2016).

25. See *infra* Part III.

exceptions to prohibitions in order to placate stakeholders. Our recommendations explain how federal policy can build on the recovery-enhancement approach. Biodiversity conservation is too important to allow expedient concessions to doom a program that otherwise holds potential to break the political logjam. Conservation is also too expensive for federal agencies to bear the entire cost of species recovery without enlisting private sector help.

In collaborative governance, “economic efficiency and democratic legitimacy can be mutually reinforcing.”²⁶ Improving the conservation status of imperiled animals so that they no longer face an imminent threat of disappearing forever is expensive. Congressional appropriation for ESA recovery supplies less than twenty-five percent of the funding needed to carry out recovery plans, which exist for only two-thirds of listed species.²⁷ The federal budget pushes most expenses onto other parties, especially states, businesses, and landowners. Collaborative governance can spread costs more widely and bolster local acceptance of conservation constraints. States, local jurisdictions, conservation groups, trade organizations, and ad-hoc assemblages of interested parties jointly implementing programs that they helped create may enlarge the pot of funding available to rescue species from extinction.²⁸ Because habitat loss poses the greatest risk to listed species, even cash-poor parties may contribute significantly to collaborative conservation through changes in land-management practices or habitat restoration.

Implemented properly, flexible protective regulations catalyze recovery better than seemingly more stringent restrictions that protect individual animals. Regulations can—but do not always—focus resources on the most efficient, high-priority tasks to conserve species. Many legal commentators “fail to appreciate the interaction between new tools like [collaboration] . . . and more familiar tools, like agency rulemaking and adjudication.”²⁹ This Article explores those interactions and analyzes how collaboration arises in the shadow of statutory prohibitions. We show how agencies can employ collaboration to craft approaches to specific circumstances even under nationally mandated standards.

Part I begins with a primer on the ESA framework to support the discussion of protective regulations that follows. Part II focuses on the

26. Lobel, *supra* note 13, at 344.

27. Leah R. Gerber, *Conservation Triage or Injurious Neglect in Endangered Species Recovery*, 113 PROC. NAT'L ACAD. SCI. 3563, 3563, 3565 (2016) (providing statistics based on 2016 data with 1,125 listed species).

28. See, e.g., *Interior, Environment, and Related Agencies Appropriations for 2013: Hearings Before the Subcomm. on Interior, Env't, and Related Agencies of the H. Comm. on Appropriations*, 112th Cong. 86-92 (2012) (statement of M. Beetham, Director of Legislative Affairs, Defenders of Wildlife) (explaining that decreasing financial resources requires more effective work across jurisdictional boundaries).

29. Karen Bradshaw, *Agency Coordination of Private Action*, 6 TEX. A&M L. REV. 229, 231 (2018).

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ESA conservation standard, which delimits administrative latitude to tailor protective regulations for threatened species. It explains how collaborative governance arises within the discretionary space of protective regulations as relational contracting or accommodative conservation. It connects these ideas to the tailored restrictions we identify in this study. Part III describes the method and results of our empirical analysis. It highlights where collaborative governance induces land-use planning and best practices otherwise out of reach of federal implementation. It also describes some of the shortcomings that may undermine conservation in the exceptions promulgated through protective regulations. Lastly, Part IV compiles lessons to be learned from our investigation. It builds upon the track record of tailored regulations and emphasizes opportunities for greater conservation collaboration. We also suggest avenues for future research to better understand how collaborative governance arises. New empirical studies should track over time the outcomes of the different collaborative governance tools uncovered in our comprehensive evaluation.

I. The ESA Conservation Framework

The ESA does not protect any species, no matter how close to extinction it may be, unless the FWS or National Marine Fisheries Service (NMFS, also known as NOAA Fisheries) lists it through notice-and-comment rulemaking.³⁰ A fluke of agency reorganization under the Nixon Administration places different species under the aegis of two different agencies.³¹ While the ESA assigns responsibility for extinction prevention to “the Secretary,” the actual decisionmaker may be the Secretary of the Department of the Interior (who delegates responsibility to the FWS) or the Department of Commerce (who delegates responsibility to the National Oceanic and Atmospheric Administration’s NMFS).³² The vast majority of listed species are selected and protected by the FWS, but NMFS promulgates protective regulations for most threatened marine species, including fishes that travel between fresh and marine waters during their life cycle.³³ We explore differences between the two Services in our data analysis. We employ the term “Secretary” or “Service” to refer to either.³⁴

30. 16 U.S.C. § 1533(a) (2018).

31. Reorganization Plan No. 4 of 1970, 35 Fed. Reg. 15,627 (July 9, 1970), *reprinted in* 84 Stat. 2090 (1970).

32. 16 U.S.C. § 1532(15) (2018).

33. Reorganization Plan No. 4 of 1970, 35 Fed. Reg. 15,627.

34. In rare situations, both Services share conservation duties for the same species. For instance, when imperiled sea turtles nest on the beach, they are protected by FWS regulations addressing beach habitat, shoreline armoring, and artificial lighting. But, when they enter their marine habitat, turtles are protected by NMFS regulations addressing incidental capture in fishing

The following Sections explain just enough about the ESA to understand protective regulations.³⁵ First, we describe how the modern approach to biodiversity conservation emerged in the ESA. Second, we detail the ESA prohibitions that prevent certain actions resulting in harm, death, injury, and other effects to individual organisms. Third, we relate how incidental take permits became prominent tools to loosen the application of the otherwise strict prohibitions. The incidental take permit program offers contrasts to and lessons for protective regulations.

A. *The Evolution of the ESA*

The ESA conservation framework emerged from the failure of two previous statutes to stem the tide of extinctions. In 1966, Congress instructed the Interior Secretary to prevent domestic species extinctions but provided no new powers other than authorizing land acquisition for habitat protection.³⁶ Earlier statutes sought to conserve particular types of animals, such as anadromous fish and migratory waterfowl.³⁷ In contrast, the 1966 law mandated preservation of all animal species. Three years later, Congress authorized the Interior Secretary to list wildlife threatened by extinction and to restrict trade in those species.³⁸ That list is the origin of the current ESA roster, which contains 1,275 endangered and 391 threatened species at risk of extinction in the United States.³⁹

In 1973, Congress tossed the old playbook and created a new framework.⁴⁰ It retained land acquisition authority for domestic species imperiled by habitat degradation and loss. But the ESA broke new ground

gear and marine contamination. See Catherine M. McClellan et al., *Conservation in a Complex Management Environment: The By-Catch of Sea Turtles in North Carolina's Commercial Fisheries*, 35 MARINE POL'Y 241 (2011). This administrative peculiarity has long delighted legal wags, especially after President Obama misidentified the jointly managed species as salmon rather than turtles. See Barack Obama, *Remarks by the President in State of Union Address*, WHITE HOUSE (Jan. 25, 2011), <https://obamawhitehouse.archives.gov/the-press-office/2011/01/25/remarks-president-state-union-address> [<https://perma.cc/EE34-Q73F>]; Elizabeth Shogren, *Obama's Salmon Quip: The Truth is Murky*, NPR (Jan. 26, 2011, 3:00 PM), <https://www.npr.org/2011/01/26/133249608/The-Salmon-Bureaucracy-From-Egg-To-Table> [<https://perma.cc/X8PZ-UX3W>].

35. For comprehensive explanations of the entire ESA regulatory apparatus, see SAM KALEN & MURRAY FELDMAN, *BASIC PRACTICE SERIES: ESA (ENDANGERED SPECIES ACT)* (2d ed. 2012); *ENDANGERED SPECIES ACT: LAW, POLICY AND PERSPECTIVES* (Donald C. Bauer & Ya-Wei Li eds., 3d ed. 2020).

36. Endangered Species Preservation Act of 1966, Pub. L. No. 89-669, 80 Stat. 926.

37. See Anadromous Fish Act of 1965, Pub. L. No. 89-304, 79 Stat. 1126 (codified at 16 U.S.C. § 757(a)-(g) (2018)); Migratory Bird Conservation Act, ch. 257, 45 Stat. 1222, 1222-26 (1928) (codified at 16 U.S.C. § 715-715r (2018)). Anadromous fish are species that breed in freshwater but spend most of their lives feeding at sea.

38. Endangered Species Conservation Act of 1969, Pub. L. No. 91-135, 83 Stat. 275.

39. See U.S. Fish & Wildlife Serv., *supra* note 20. When we use the term “species,” we mean the statutory definition, which includes subspecies and distinct population segments of animals. See 16 U.S.C. § 1532(16) (2018).

40. Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884.

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in two key respects. First, section 9 established the first prohibitions against *all activities* (not just federal agency actions) that result in the “take” of an endangered animal species. It also prohibited activities centered around wildlife trafficking. But for threatened species, ESA section 4(d) allows the Services to promulgate special rules identifying what prohibitions, if any, apply. The Act defines “take” to include “harm,”⁴¹ which the Services interpret to encompass habitat alteration in certain circumstances.⁴² - Otherwise legal, land-disturbing activity, including farming or construction, may result in an illegal take if its habitat alteration actually injures a listed animal. Because listed plants are not protected by the take prohibition, section 4(d) rules have not played a role in threatened plant conservation.⁴³ The importance of 4(d) rules in collaborative conservation stems from their ability to tailor ESA take liability to specific situations rather than applying the more general prohibitions under section 9.

Second, section 7 created new procedural and substantive duties for federal agencies. The ESA imposes an affirmative—but nonspecific—duty for agencies to use their legal authorities to implement species recovery programs.⁴⁴ Because the ESA defines “conservation” to mean the use of any methods to improve a species’ status to the point at which ESA protections are no longer necessary, this duty is commonly called the conservation duty.⁴⁵ Courts consistently hold that the conservation duty requires *some* action or reason why the agency has not acted. However, courts seldom rely on the conservation duty as the sole basis for overturning an agency’s decision.⁴⁶ The ESA neglected either to identify a

41. 16 U.S.C. § 1532(19) (2018).

42. See 50 C.F.R. § 17.3 (2019) (FWS definition of harm); § 222.102 (NMFS definition of harm).

43. Compare 16 U.S.C. § 1538(a)(1) (2018) (providing general prohibitions for listed animals), with § 1538(a)(2) (specifying general prohibitions for listed plants). During the timeframe of our study, the FWS blanket rule automatically extended the section 9 endangered plant prohibitions to all threatened plants. The FWS promulgated no extant rules tailoring section 9 prohibitions to listed plants. However, the FWS extends a blanket limit to the statutory application of endangered prohibitions for seeds of “cultivated origin” and for state agency employees or agents acting under the terms of a section 6 cooperative agreement who remove and reduce to possession plants from federal lands. See 50 C.F.R. § 17.71 (2019). After September 26, 2019, the blanket rule no longer extends section 9 plant prohibitions to newly listed species. Therefore, the FWS has begun work to promulgate individual plant 4(d) rules. See, e.g., Endangered Species Status for Beardless Chichweed With Designation of Critical Habitat, and Threatened Species Status for Bartram’s Stonecrop With Section 4(d) Rule, 84 Fed. Reg. 67,060 (proposed Dec. 6, 2019) (proposing 4(d) prohibitions for Batram’s stonecrop, a plant species from southern Arizona and northern Mexico). During the time period of our study, the NMFS list contained only one threatened plant, Johnson’s seagrass, but the NMFS did not promulgate any prohibitions under ESA section 4(d). See 50 C.F.R. § 226.213 (2019).

44. See 16 U.S.C. § 1536(a)(1) (2018).

45. *Id.* § 1532(3).

46. See J.B. Ruhl, *Section 7(a)(1) of the “New” Endangered Species Act: Rediscovering and Redefining the Untapped Power of Federal Agencies’ Duty to Conserve Species*, 25 ENVTL.

trigger for applying or specify a procedure for fulfilling the conservation duty. Courts rarely use the conservation duty to compel agencies to assist in species recovery.⁴⁷ The overlapping, but separate and more specific, mandate to prepare recovery plans overshadows the conservation duty.⁴⁸ In other parts of the ESA, especially section 4(d), Congress more clearly established “conservation” as a substantive standard that limits agency discretion.⁴⁹

Section 7 also includes a far more prominent and effective mandate that employs the model of environmental impact analysis pioneered by the National Environmental Policy Act.⁵⁰ Section 7 requires all agencies to engage in a “cooperation” procedure to “insure that any action authorized, funded, or carried out . . . is not likely to jeopardize the continued existence” of a listed species or result in the destruction or adverse modification of critical habitat.⁵¹ This requirement is called “consultation,” even though it entails not just the interagency procedure but also the substantive duty to avoid jeopardy and critical habitat impairment. The marriage of substance with procedure elevates the consultation duty to the most important component of the 1973 ESA in reshaping federal anti-extinction efforts.⁵² Section 7 requires agencies considering discretionary actions to consult with the Service that listed a species potentially affected by the action.⁵³ The Service then replies with a biological opinion stating whether jeopardy or adverse modification will likely result from the

L. 1107 (1995) (describing how the duty to conserve may be used as a shield by an agency or as a sword by an agency’s critic).

47. See, e.g., *Sierra Club v. Glickman*, 156 F.3d 606 (5th Cir. 1998); *Sierra Club v. Lujan*, 36 Env’t. Rep. Cas. (BNA) 1533 (W.D. Tex. Feb. 1, 1993), *appeal dismissed*, 995 F.2d 571 (5th Cir. 1993).

48. 16 U.S.C. § 1533(f) (2018). The mandate to prepare recovery plans, however, does not compel federal agencies to actually comply with the plan’s provisions. See *Nat’l Wildlife Fed’n v. Nat’l Park Serv.*, 669 F. Supp. 384 (D. Wyo. 1987) (holding that the National Park Service need not comply with the recovery plan’s recommendations for recovering the grizzly bear).

49. 16 U.S.C. § 1533(d) (2018).

50. 42 U.S.C. § 4332 (2018).

51. 16 U.S.C. § 1536(a)(2) (2018).

52. In an opinion that has come to typify the judicial response to the consultation mandate, the Ninth Circuit stated:

[T]he strict substantive provisions of the ESA justify *more* stringent enforcement of its procedural requirements, because the procedural requirements are designed to ensure compliance with the substantive provisions. The ESA’s procedural requirements call for a systematic determination of the effects of a federal project on endangered species. If a project is allowed to proceed without substantial compliance with those procedural requirements, there can be no assurance that a violation of the ESA’s substantive provisions will not result. The latter, of course, is impermissible.

Thomas v. Peterson, 753 F.2d 754, 764 (9th Cir. 1984) (citing *TVA v. Hill*, 437 U.S. 153 (1978)) (rejecting the Forest Service’s contention that the procedural requirements of consultation should be enforced flexibly and loosely and requiring that the Forest Service prepare a biological assessment).

53. 16 U.S.C. § 1536(a)(2) (2018).

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action.⁵⁴ The Service’s expert opinion is not strictly binding, but in practice it exerts a “powerful coercive effect.”⁵⁵ Even if the Service concludes that no jeopardy is likely, it must provide the agency contemplating action with an incidental take statement specifying the “impact of such incidental taking on the species,” any “reasonable and prudent measures that the [Service] considers necessary or appropriate to minimize such impact,” and “terms and conditions . . . that must be complied with by the Federal agency . . . to implement [those measures].”⁵⁶ The incidental take statement operates as a kind of permit, authorizing the agency action notwithstanding any otherwise illegal takes.⁵⁷ For instance, a property developer seeking a permit from the U.S. Army Corps of Engineers to fill a wetland need not obtain an incidental take permit if the Corps’ section 7 consultation results in a biological opinion containing an incidental take statement.

B. “Take” Prohibitions

Like the conservation duty for federal agencies, the section 9 prohibitions themselves are purely substantive. However, unlike the section 7 conservation duty, the prohibitions are not general, affirmative obligations. In other words, section 9 violations are easier to identify and enforce. Also, the section 9 prohibitions apply not only to federal agencies, but also to all “persons,” defined broadly to include individuals, corporations, and state or federal agencies.⁵⁸ Many of the general prohibitions relate to commerce in listed species and their parts, including delivery, shipping, transportation, and import/export.

For endangered animals only,⁵⁹ the ESA proscribes “take,”⁶⁰ defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”⁶¹ Of these terms, “harm” and “harass” are the broadest, encompassing incidental effects of activities

54. *Id.* § 1536(b).

55. *Bennett v. Spear*, 520 U.S. 154, 169 (1997).

56. 16 U.S.C. § 1536(b)(4) (2018).

57. *See Bennett*, 520 U.S. at 170. The ESA requires an incidental take statement for taking incidental to the agency action, even if the incidental take is otherwise legal because it is not prohibited under a relevant 4(d) rule. *See Ctr. for Biological Diversity v. Salazar*, 695 F.3d 893 (9th Cir. 2012) (interpreting 16 U.S.C. § 1536(b)(4)(B)).

58. 16 U.S.C. § 1532(13) (2018).

59. Apart from the commercial prohibitions, the ESA proscribes only actions that remove, cut, dig up, damage, or destroy an endangered plant in knowing violation of any state law or regulation or in the course of any violation of state criminal trespass law. § 1538(a)(2). On federal lands, however, it is unlawful to “remove and reduce to possession” or “maliciously damage or destroy” endangered plants. 16 U.S.C. § 1538(a)(2) (2018).

60. 16 U.S.C. § 1538(a)(1)(B) (2018).

61. *Id.* § 1532(19) (2018). Section 9 also imposes indirect liability on those who cause a take “to be committed.” *Id.* § 1538(g).

whose principal goal, such as logging or construction, is otherwise legal. Though the definition of “harass” is in certain respects broader,⁶² “harm” has become the pressure point limiting habitat disrupting activities.

The Services define “harm” as “an act which actually kills or injures wildlife. . . include[ing] significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.”⁶³ The Supreme Court upheld this definition against a facial challenge.⁶⁴ But lower courts continue to debate its precise meaning, as applied to particular situations.⁶⁵ Nonetheless, it seems clear that harm may occur indirectly, through a foreseeable chain of causation.⁶⁶ This creates a liability risk for a wide array of industries and landowners who disturb habitat in ways that will injure listed animals.

For instance, logging in suitable habitat for the threatened marbled murrelet, in an area where many of the birds display nesting behavior, would likely cause prohibited harm to the bird (i.e., significant impairment of breeding behavior).⁶⁷ The Ninth Circuit found that demonstrating past or present harm is not necessary for injunctive relief under the Act; imminent threat of future harm can be a basis for an order enjoining harm-causing activity.⁶⁸ On the other hand, the same court subsequently clarified that the “mere potential for harm” from cattle trampling desert fish habitat is insufficient without evidence that a take would occur.⁶⁹

Landowners seldom face a serious risk of prosecution for violating ESA prohibitions. But, the specter of enforcement—including citizen suits⁷⁰—motivates collaborative governance by landowners and others whose businesses degrade habitat or otherwise impede species recovery.⁷¹

62. Under 50 C.F.R. § 17.3 (2019), harassment, as compared to harm, includes omissions as well as acts, and requires only the likelihood of injury, not actual injury. See MICHAEL J. BEAN & MELANIE J. ROWLAND, *THE EVOLUTION OF NATIONAL WILDLIFE LAW* 234 (3d ed. 1997). For a history of the harm and harass definitions, see Steven G. Davison, *Alteration of Wildlife Habitat as a Prohibited Taking Under the Endangered Species Act*, 10 J. LAND USE & ENVTL. L. 155 (1995).

63. 50 C.F.R. § 17.3 (1999). The NMFS definition adds the terms “spawning,” “rearing,” and “migrating” to the list of essential behavioral patterns. Endangered and Threatened Wildlife and Plants; Definition of “Harm,” 64 Fed. Reg. 60727, 60731 (Nov. 8, 1999).

64. *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687 (1995).

65. See, e.g., *Palila v. Haw. Dep’t of Land & Nat. Res.*, 73 F. Supp. 2d 1181 (D. Haw. 1999).

66. Robert L. Fischman, *The Divides of Environmental Law and the Problem of Harm in the Endangered Species Act*, 83 IND. L.J. 661 (2008).

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

68. *Id.* at 1064.

69. *Ariz. Cattle Growers’ Ass’n v. U.S. Fish & Wildlife Serv.*, 273 F.3d 1229, 1246 (9th Cir. 2001).

70. 16 U.S.C. § 1533(g) (2018) (authorizing citizen suits).

71. BEAN & ROWLAND, *supra* note 62, at 224 (noting that the federal government rarely prosecutes incidental takes).

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Professor Steven Yaffee shows that successful conservation collaborations depend on “legal structures that establish management bottom lines” for conservation goals.⁷² In about half of the hundreds of conservation collaborations he studied, the ESA served as the “regulatory driver” of stakeholder cooperation.⁷³ The stringent legal mandates create collaboration incentives to avoid more drastic outcomes (e.g., an endangered rather than a threatened listing).⁷⁴

C. Incidental Take Permits

Although the prohibitions in section 9 and section 4(d) apply to everyone generally, there are exceptions. First, a biological opinion shields all covered activities from section 9 liability to the extent specified in the incidental take statement.⁷⁵ Second, but rarely, certain subsistence activities by Alaska natives enjoy narrow exemptions.⁷⁶ Third, the Services issue permits to allow takes incidental to legitimate scientific and conservation projects.⁷⁷ Fourth, though the statute does not exempt takes stemming from actions protecting a human from bodily harm, it provides a defense from liability.⁷⁸

The most important exception to the general prohibitions is the incidental take permit (ITP) of section 10(a), which allows takes under prescribed conditions in exchange for implementing a habitat conservation plan (HCP).⁷⁹ Congress created the permit program in 1982 at the request of a coalition of San Francisco Bay Area developers, municipal governments, and a local environmental organization that agreed to allow some harm to the endangered mission blue butterfly from a new housing development at San Bruno Mountain, California.⁸⁰ In exchange, the

72. Steven L. Yaffee, *Collaborative Strategies for Managing Animal Migrations: Insights from the History of Ecosystem-Based Management*, 41 ENVTL. L. 655, 677 (2011).

73. *Id.*; see STEVEN L. YAFFEE ET AL., ECOSYSTEM MANAGEMENT IN THE UNITED STATES: AN ASSESSMENT OF CURRENT EXPERIENCE 21, 27 (1996); see also JULIA M. WONDOLLECK & STEVEN L. YAFFEE, MAKING COLLABORATION WORK: LESSONS FROM INNOVATION IN NATURAL RESOURCE MANAGEMENT 102, 240 (2000) (describing more case studies).

74. Yaffee, *supra* note 72, at 677-78.

75. 16 U.S.C. § 1536(b)(4), (o)(2) (2018). The incidental take statement details: (1) the impact of the taking on the species (e.g., the amount and extent), (2) reasonable and prudent measures to minimize the impact, and (3) terms and conditions that must be complied with when implementing the measures. § 1536(b)(4); see 50 C.F.R. § 402.14(i) (1999).

76. 16 U.S.C. § 1539(e) (2018).

77. *Id.* § 1539(a)(1).

78. *Id.* § 1540(a)(3).

79. *Id.* § 1539(a)(2).

80. *Id.* § 1539(a); see H.R. REP. NO. 97-835, at 31-32 (1982) (Conf. Rep.) (describing the San Bruno Mountain plan as the model for the amendment authorizing incidental take permits); see generally TIMOTHY BEATLEY, HABITAT CONSERVATION PLANNING: ENDANGERED SPECIES

project proponents agreed to habitat preservation and enhancement efforts.⁸¹ Although section 10(a) provides for a permitting program, the Services have used section 10(a) to foster “[c]ollaboration, flexibility, ingenuity, innovation, and thoughtful planning” in HCPs.⁸² In other words, the permit program is an alternative to section 4(d) rules for promoting collaborative governance.⁸³

The ESA lists several requirements that, if fulfilled, mandate the issuance of a permit. But the Services retain discretion to include in the permit “terms and conditions” to carry out the purposes of the HCP.⁸⁴ The most controversial administrative initiative to foster collaborative governance is the “no surprises” policy providing ITP holders with long-term security.⁸⁵ Through the life of the permit, which may extend to a century, the “no surprises” assurance means that changed circumstances or new information about a species covered by the HCP will never trigger any additional obligations for the permittee. A permittee will not be liable for habitat restoration or financial compensation beyond the level of mitigation negotiated in the HCP. Instead, the public and the Services bear the risk of unforeseen circumstances. The debate over motivating participation in the HCP program⁸⁶ parallels issues with collaborative governance in 4(d) rules. Part II discusses how the ESA and courts determine when flexible promotion of conservation agreements crosses the line into betrayal of statutory standards.

AND URBAN GROWTH (1994) (providing a general discussion and detailed description of the rise of habitat conservation plans under the ESA).

81. See H.R. REP. NO. 97-835, at 30-32 (1982) (Conf. Rep.); Albert C. Lin, *Participants' Experiences with Habitat Conservation Plans and Suggestions for Streamlining the Process*, 23 *ECOLOGY L.Q.* 369 (1996). A federal court upheld the San Bruno Mountain incidental take permit and HCP in *Friends of Endangered Species, Inc. v. Jantzen*, 760 F.2d 976, 982-83 (9th Cir. 1985).

82. *Habitat Conservation Planning and Incidental Take Permit Processing Handbook*, U.S. FISH AND WILDLIFE SERV. 1-2 (2016), https://www.fws.gov/endangered/esa-library/pdf/HCP_Handbook-Ch1.pdf [<https://perma.cc/4M5Y-T3KF>].

83. See, e.g., Patrick Duggan, *Incidental Extinction: How the Endangered Species Act's Incidental Take Permits Fail to Account for Population Loss*, 41 *ENVTL. L. REP. NEWS & ANALYSIS* 10628 (2011); Robert L. Fischman & Jaelith Hall-Rivera, *A Lesson for Conservation from Pollution Control Law: Cooperative Federalism for Recovery Under the Endangered Species Act*, 27 *COLUM. J. ENVTL. L.* 45, 132-67 (2002) (comparing the relative conservation effectiveness of 4(d) rules and ITPs); Robert Meltz, *Where the Wild Things Are: The Endangered Species Act and Private Property*, 24 *ENVTL. L.* 369, 383 (1994) (analogizing 4(d) rules promoting land-use restrictions to rulemaking versions of HCPs); Jessica Owley, *Keeping Track of Conservation*, 42 *ECOLOGY L.Q.* 79 (2015).

84. 16 U.S.C. § 1539(a)(2)(B) (2018).

85. *Habitat Conservation Plan Assurances (“No Surprises”) Rule*, 63 *Fed. Reg.* 8859 (Feb. 23, 1998). *Spirit of Sage Council v. Kempthorne*, 511 F. Supp. 2d 31 (D.D.C. 2007), upheld the rule as within the regulatory discretion that Congress delegated to the Services.

86. See, e.g., Michael C. Blumm & Kya B. Marienfeld, *Endangered Species Act Listings and Climate Change: Avoiding the Elephant in the Room*, 20 *ANIMAL L.* 277, 278 (2014); Fred Bosselman, *The Statutory and Constitutional Mandate for a No Surprises Policy*, 24 *ECOLOGY L.Q.* 707 (1997); Alejandro Camacho, *Can Regulation Evolve?*, 55 *UCLA L. REV.* 293, 355-56 (2007); J.B. Ruhl, *Who Needs Congress? An Agenda for Administrative Reform of the Endangered Species Act*, 6 *N.Y.U. ENVTL. L.J.* 367, 397-98 (1998).

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II. The Collaborative Governance Framework in ESA 4(d) Rules

The ESA itself sets out prohibitions only for endangered species, not threatened species. Unlike the federal duties in section 7, which do not distinguish between threatened and endangered species, section 9 gives the Services discretion to promulgate regulations specifying prohibitions that apply to threatened species.⁸⁷ The Services issue what the ESA calls “protective regulations” under section 4(d) (hence the nickname “4(d) rules”) as they deem “necessary and advisable to provide for the conservation” of threatened species.⁸⁸ This discretion to tailor prohibitions provides flexibility to design a regulatory framework that is no more stringent than required by a particular threatened species’ recovery needs. In contrast to section 10 ITPs, 4(d) rules may allow direct harm to listed species even if the harm is not incidental to the purpose of the activity. For instance, several protective regulations allow lethal trapping of animals that interfere with farming and ranching.⁸⁹

This Part begins with a review of the statutory standards and their judicial interpretations. Section II.A shows how the seemingly strict ESA command to promulgate threatened species rules that provide for recovery nonetheless provides broad latitude for tailored rulemaking. The judiciary generally endorses 4(d) rules as long as they make some contribution to recovery, even if just by reducing population depletion. That range of discretion creates space for potential collaborative outcomes. Section II.B discusses how the framework for special rules circumscribes that domain for collaborative conservation and explains the elements of negotiated governance, which we examine in the empirical study described in Part III.

A. Substantive Standards for Protective Regulations

“Protective regulations” are protective only from a baseline of no prohibitions. Until 2019, the FWS automatically applied all section 9 prohibitions to threatened species absent a species-specific rule.⁹⁰ Therefore, the FWS species-specific regulations we studied focus on the exceptions from the general section 9 prohibitions. After September 26, 2019, no prohibitions apply to threatened species unless adopted by a 4(d)

87. See 16 U.S.C. § 1538(a)(1)(G), (2)(E) (2018).

88. The Endangered Species Act of 1973, Pub. L. No. 93-205, § 4, 87 Stat. 884, 888 (codified at 16 U.S.C. § 1533(d) (2018)); see also Regulations for Prohibitions to Threatened Wildlife and Plants, 84 Fed. Reg. 44,753, 44,753 (Aug. 27, 2019) (explaining why the FWS also calls the 4(d) rules “special rules”).

89. See, e.g., 50 C.F.R. § 17.40(g)(3) (2019) (Utah prairie dog).

90. Reclassification of the American Alligator and Other Amendments, 40 Fed. Reg. 44,412 (Sept. 26, 1975), first established this blanket coverage.

rule.⁹¹ Now, *any act* proscribed in a 4(d) rule may be properly considered protective because no prohibitions would apply in the absence of a species-specific rule. That brings FWS practice into line with the NMFS, which prohibits only those actions specifically identified in special rules.⁹² Future research may explore whether and how the new FWS approach changes the mix of 4(d) regulatory tools and the use of collaborative conservation.

In our study, the key provisions of the rules are *special exceptions* to the statutory prohibitions applicable to endangered species under section 9. This is because all but a handful of the 4(d) rules first apply the blanket prohibitions and then carve out safe harbors from take liability. Section III.B shows that regulations may fail to achieve the titular “protective” objective when they neglect to address the chief threats causing the species decline.

Closely related to the ESA 4(d) provision is ESA section 10(j), which authorizes the Secretary to transport and release an “experimental population” of listed “species outside the current range of such species if the Secretary determines that such release will further the conservation of such species.”⁹³ For experimental populations, even an endangered species is “treated as a threatened species” for the purposes of tailored rules defining prohibited acts.⁹⁴ Both 4(d) and 10(j) rules identify prohibited actions or exceptions from the generally applicable prohibitions of section 9.⁹⁵ Therefore, the caselaw interpreting 4(d) rules also applies to 10(j) rules, which must meet the same conservation standard.

The ESA requires the Service to list species as either endangered or threatened based solely on the degree of risk of extinction faced by the species.⁹⁶ In the ESA framework, a listed species is either “in danger of extinction”⁹⁷ and therefore endangered, or is “likely to become an endangered species within the foreseeable future”⁹⁸ and therefore threatened. Conservation biology conceives of extinction risk as a continuum—all species face *some* risk, however small, of extinction.⁹⁹ The ESA requires that listing determinations rely on “the best scientific and

91. See 50 C.F.R. § 17.31 (2019). This regulation superseded Protection for Threatened Species of Wildlife, 42 Fed. Reg. 46,539 (Sept. 16, 1977), and Protection for Threatened Species of Wildlife, 43 Fed. Reg. 18,180 (Apr. 28, 1978), which applied the section 9 prohibitions to all threatened species unless limited by species-specific rule.

92. These rules are promulgated at 50 C.F.R. § 223 (1999).

93. 16 U.S.C. § 1539(j)(2)(A) (2018) (emphasis added).

94. *Id.* § 1539(j)(2)(C).

95. *Id.* § 1539(j)(2)(B).

96. *Id.* § 1533(b)(1)(A).

97. *Id.* § 1532(6).

98. *Id.* § 1532(20).

99. See Ben Collen et al., *Clarifying Misconceptions of Extinction Risk Assessment with the IUCN Red List*, 12 BIOLOGY LETTERS, Apr. 2016, at 1 (characterizing extinction risk as a continuous metric that is divided into categories with subjective boundaries).

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commercial data available.”¹⁰⁰ The judiciary reviews rulemakings to ensure that they rationally consider credible scientific studies of extinction threats.¹⁰¹ The categorical disparity between endangered and threatened listings fits poorly within the scientific basis justifying listings. The Services understand this conundrum. Yet, categorize they must.

For instance, the 2015 rulemaking listing the northern long-eared bat as threatened candidly observed that the species “resides firmly in th[e] category where no distinct determination exists to differentiate between endangered and threatened.”¹⁰² Courts nonetheless review such listings and section 4(d) rules using two key standards from two statutes. First, the Administrative Procedure Act’s (APA) “arbitrary and capricious” standard requires that an administrative record demonstrate how an agency “considered the relevant factors and articulated a rational connection between the facts found and the choice made.”¹⁰³ Judicial deference to the agency is greatest when courts review technical matters within the agency’s expertise, particularly its choice of scientific data and statistics.¹⁰⁴ Courts generally review of 4(d) rules in this zone of greatest deference.¹⁰⁵

Second, the ESA requires the Services to project current trends into the future to determine the risk of extinction.¹⁰⁶ Here, courts apply the concept of the foreseeability. Where defendants’ actions lead to harms that are outside the scope of reasonable expectations for future consequences, foreseeability limits liability.¹⁰⁷ A Service finding of foreseeable risk of

100. 16 U.S.C. § 1533(b)(1)(A) (2018). Congress added the word “solely” to the ESA listing mandate in 1982 to limit the Reagan Administration’s attempts to inject economic cost considerations into species determinations. Endangered Species Act Amendments of 1982, Pub. L. No. 97-304, § 2(a), 96 Stat. 1411. In 2019, the Services revised the regulations governing the listing process to remove a provision that had stated that listing determinations would occur “without reference to possible economic or other impacts of such determination.” Regulations for Listing Species and Designating Critical Habitat, 84 Fed. Reg. 45,020, 45,024 (Aug. 27, 2019) (codified at 50 C.F.R. § 424) (conceding “that the statute and its legislative history are clear that listing determinations must be made solely on the basis of the best scientific and commercial data available,” but insisting that the legislation does not prohibit “compiling economic information or presenting that information to the public, as long as such information does not influence the listing determination.”).

101. *See, e.g.*, In re Polar Bear Endangered Species Act Listing and Section 4(d) Rule Litigation, 709 F.3d 1 (D.C. Cir. 2013).

102. Threatened Species Status for the Northern Long-Eared Bat With 4(d) Rule, 80 Fed. Reg. 17,974, 18,020 (Apr. 2, 2015).

103. 5 U.S.C. § 706(2)(A)-(D) (2018); *see* *Baltimore Gas & Elec. Co. v. Nat. Res. Def. Council*, 462 U.S. 87, 105 (1983).

104. *See Baltimore Gas*, 462 U.S. at 103.

105. *See, e.g.*, *Louisiana ex rel. Guste v. Verity*, 853 F.2d 322, 329 (5th Cir. 1988) (upholding shrimp net towing duration limits and net design restrictions to protect sea turtles).

106. *See* 16 U.S.C. § 1532(20) (2018) (defining threatened species as those “likely to become an endangered species within the foreseeable future”).

107. *See* Robert L. Fischman, *supra* note 66, at 688-90 (discussing the concept of foreseeability in the context of ESA litigation); *see also* *Babbitt v. Sweet Home Chapter of Cmty.*

extinction (or not) must meet a similar reasonableness test. *Center for Biological Diversity v. Everson* remanded the long-eared bat rule because the administrative record failed to fully consider the extinction risk in the most significant portion of the bat's range, where most individuals reside.¹⁰⁸ The same record also improperly constrained its analysis of the foreseeable future. The court stated that the ESA requires the Service to “look not only at the foreseeability of threats, but also at the foreseeability of the impact of the threats on the species.”¹⁰⁹ For the bat, this would require consideration of the controllable threats posed by habitat loss and logging in combination with the uncontained, contagious disease sweeping through the species.¹¹⁰

The 4(d) rule had limited—but not completely eliminated—the harm prohibition for incidental takes from damaging habitat or maternity roost trees.¹¹¹ These incidental takes, by themselves, might be compatible with recovery. But, in combination with disease, they might push the bat closer to extinction. *Everson* emphasized the importance of cumulative impacts in conservation. A 4(d) rule must assess cumulative effects in justifying permitted takes. The strongest principle to emerge from litigation over how much recovery is enough to meet the conservation criterion is that the Services must consider all sources of extinction risk—not just the primary factor driving imperilment. In 2019, the Services promulgated a rule defining “foreseeable future” for evaluating the statutory factors that influence listing decisions.¹¹² The rule largely codifies the judicial interpretations, though there remains some debate about how it may limit the timeframe for applying climate models to wildlife conservation.¹¹³

We focus on the content of ESA 4(d) rules that directly pertains to the narrowest statutory issue—whether the rules provide for recovery of threatened species or merely maintain the status quo. We call this the

for a Great Or., 515 U.S. 687, 713 (1995) (O'Connor, J., concurring) (describing foreseeability as the functional equivalent to proximate causation and a limit on take liability in the ESA); *In re Polar Bear Endangered Species Act Listing and Section 4(d) Rule Litigation*, 709 F.3d 1, 15-16 (D.C. Cir. 2013) (upholding the use of a case-by-case approach of the FWS in applying a forty-five year period for the foreseeable future showing a loss of sea ice habitat in listing the polar bear as a threatened species).

108. 435 F. Supp. 3d 69 (D.D.C. 2020).

109. *Id.* at 86.

110. The emerging infectious disease, white-nose syndrome, is the most “severe and immediate [threat] to the northern long-eared bat’s persistence.” Threatened Species Status for the Northern Long-Eared Bat with 4(d) Rule, 80 Fed. Reg. 17,974, 17,989 (Apr. 2, 2015). The listing rule provides considerable information about the disease. *Id.* at 17,994-98.

111. See 4(d) Rule for the Northern Long-Eared Bat, 81 Fed. Reg. 1900, 1921 (Jan. 14, 2016). Other courts emphasize that the foreseeable future for determining extinction risk depends on the available data for species, habitat, and principal threats. *In re Polar Bear*, 709 F.3d 1.

112. Regulations for Listing Species and Designating Critical Habitat, 84 Fed. Reg. 45,020 (Aug. 27, 2019) (codified at 50 C.F.R. § 424.11 (2019)).

113. See Ya-Wei Li et al., *Species Protection Will Take More Than Rule Reversal*, 370 SCIENCE 665, 665 (2020).

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conservation standard. Congress tinkered with the 1973 ESA in 1976, 1978, 1979, 1982, 1988, and 2003.¹¹⁴ However, the “4(d) rule” text authorizing protective regulations remains unchanged except for updated statutory citations. Section 4(d) contains two sentences, one mandatory and the other discretionary. The mandatory sentence compels the Secretary to “issue such regulations as he deems necessary and advisable to provide for the conservation of such species.”¹¹⁵ This duty requires the foreseeability inquiry to forecast future conservation of currently imperiled species. The discretionary sentence authorizes regulations that “prohibit any act prohibited under section 9(a)(1).”¹¹⁶

The judiciary largely endorses the Service argument that the baseline for measuring protective contributions to recovery is no prohibitions at all. In other words, as long as the rule itself makes *some* contribution to recovery, it meets the conservation standard. This interpretation gives the Services almost unrestrained latitude to accommodate collaborative conservation. But it comes at the cost of momentum to advance species recovery.

Courts refuse to compel the Services to justify excluding a section 9 prohibition that could *better* the prospects of recovery. In upholding the protective regulation for the polar bear, a species threatened by sea ice loss from greenhouse-gas emissions, a court rejected the environmentalists’ arguments that the rule should have restricted emissions wherever they occur. As the court noted, “[t]he relevant question . . . is whether the Service reasonably concluded that the specific prohibitions and exceptions set forth in its Special Rule are necessary and advisable to provide for the conservation of the polar bear.”¹¹⁷ In other words, the court did not consider stricter prohibitions that could have been—but were not—included in the rule. A more protective interpretation requiring the

114. See Endangered Species Act of 1973, Pub. L. No. 93-205, § 4, 87 Stat. 886; Act of July 12, 1976, Pub. L. No. 94-359, § 1, 90 Stat. 911; Endangered Species Act Amendments of 1978, Pub. L. No. 95-632, §§ 11, 13, 92 Stat. 3764, 3766; Act of Dec. 28, 1979, Pub. L. No. 96-159, § 3, 93 Stat. 1225; Endangered Species Act Amendments of 1982, § 2(a), 96 Stat. 1411; Endangered Species Act Amendments of 1988, Pub. L. No. 100-478, Title I, §§ 1002-04, 102 Stat. 2306, 2307; National Defense Authorization Act for Fiscal Year 2004, Pub. L. No. 108-136, § 318, 117 Stat. 1433.

115. 16 U.S.C. § 1533(d) (2018).

116. *Id.* Section 9(a)(1) is codified at § 1538(a)(1), the ESA section that prohibits a variety of actions related to endangered animals. A final phrase in this 4(d) sentence deals with species covered by cooperative agreements with states under § 1535(c).

117. *In re Polar Bear Endangered Species Act Listing and Section 4(d) Rule Litigation*, 818 F. Supp. 2d 214, 230 (D.D.C. 2011) (upholding the content of the 4(d) rule against a challenge that it was arbitrary and capricious but remanding for failure to comply with the environmental impact analysis required by the National Environmental Policy Act, Pub. L. No. 91-190, 83 Stat. 852 (1970) (codified at 42 U.S.C. § 4321)). Though this particular decision was not appealed, other challenges to the polar bear listing were finally resolved in *In re Polar Bear Endangered Species Act Listing and Section 4(d) Rule Litigation*, 709 F.3d 1 (D.C. Cir. 2013). Despite the case caption, the court of appeals did not address or change Judge Sullivan’s analysis of ESA section 4(d).

Services to justify exceptions to the section 9 prohibitions would prompt better conservation outcomes. Nevertheless, the deferential standard embraces tailored, collaborative governance as long as it abates some harm.

The strong consensus among courts is that the conservation criterion for 4(d) is flexible enough to support trade-offs in protective regulations. Rules that allow some take (e.g., residual by-catch of turtles) but that reduce the overall depletion of threatened populations (e.g., through use of turtle excluder devices in nets) may be presumed to contribute to recovery. This principle is the foundation for conservation collaboration in 4(d) rulemakings. Conservation limitations in protective regulations may mitigate harms that are not the principal source of imperilment. Most courts allow the Services to justify a 4(d) rule as contributing to recovery if it relieves any threat to the species.¹¹⁸

The only qualification to this general principle concerns protective regulations permitting purposeful take for sport or reducing depredation. Cases challenging such rules turn on the ESA's definition of conservation, which is

[T]he use of all methods and procedures which are necessary to [recover listed species]. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, *in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.*¹¹⁹

Litigation stopped almost all sport hunting of threatened species due to the Service's failure to show population pressures in need of relief.¹²⁰

Depredation control to ameliorate the costs to farming and ranching from species protection is widespread. Live trapping and translocation are "takes" under ESA section 9. But they are not purposeful kills, unlike hunting, fishing, and lethal trapping. The ESA definition of conservation distinguishes "live trapping," listed as an ordinary conservation method along with such tools as habitat acquisition, from the "extraordinary case" of "regulated taking."¹²¹ Depredation control via lethal methods survives in many 4(d) programs, especially if states administer or oversee the regulated takes rather than simply allowing private self-help.¹²² Lethal

118. *See, e.g.*, *Defs. of Wildlife v. Andrus*, 428 F. Supp. 167 (D.D.C. 1977).

119. 16 U.S.C. § 1532(3) (2018) (emphasis added).

120. *See, e.g.*, *Sierra Club v. Clark*, 755 F.2d 608 (8th Cir. 1985) (remanding 4(d) rule allowing sport trapping of wolves). The only protective regulation allowing hunting applies to an experimental population of wood bison in Alaska. *See* 50 C.F.R. § 17.84(x)(5) (2019).

121. 16 U.S.C. § 1532(3) (2018).

122. *See, e.g.*, 50 C.F.R. § 17.40(d)(2)(i)(C) (2019) (wolves); § 17.40(b)(1)(i)(C) (grizzly bears).

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controls may be necessary to gain social acceptance for higher priority recovery action. But they rest on a weak statutory foundation except in the exceedingly unusual circumstance where they relieve overpopulation.

B. Collaborative Governance Manifestations

Collaborative governance is a kind of informal contracting for public goods among stakeholders where enforceable rules circumscribe the negotiating domain. The conservation standard for ESA 4(d) rules sets an indistinct boundary, which the Services could clarify through guidance.¹²³ Before we review the promulgated protective regulations, this Section explores in greater detail how collaborative governance manifests in special exceptions to the ESA's prohibitions. We begin by explaining how we identified signs of collaborative conservation in tailored rules. Then we turn to the informal collaborative process to show where the rules may bend in response to negotiating power.

Listing under the ESA is like a “toggle switch” that flips a species' status from unprotected to protected. It creates more political and institutional opposition to species protection than *incremental* and *tailored* methods.¹²⁴ One important result from our study is that protective regulations do more than just apply or waive the individual statutory prohibitions that safeguard endangered species. That would be solely an *incremental* approach. For instance, many 4(d) rules simply waive federal take prohibitions for anglers who comply with state law.¹²⁵ Incremental options for prohibitions are useful and feature prominently in the attributes of successful commons management.¹²⁶ But they may provide too coarse a menu of choices to address the diverse situations involving habitat harms to threatened species. Species recovery needs differ from place to place, and some activities can avoid or minimize harm with minor adjustments (e.g., seasonal restrictions).¹²⁷

Our study shows that many rules *tailor* special exceptions to encourage better conservation practices in specific activities, such as farming. For instance, rather than merely prohibit soil tilling or timber

123. See *infra* Section IV.A.

124. Professor J.B. Ruhl describes the ESA statutory provisions that trigger a transition from little or no regulation to draconian restrictions “toggle switches.” J.B. Ruhl, *The Regulation Charade*, 24 SUP. CT. ECON. REV. 139 (2017) (responding to Jonathan J. Adler, *The Science Charade in Species Conservation*, 24 SUP. CT. ECON. REV. 109 (2017)). We thank Professor Ruhl for suggesting the distinction between incremental and tailored approaches.

125. See, e.g., 50 C.F.R. § 17.44(d) (2019) (allowing take of the leopard darter only when it complies with state fishing law).

126. See ELINOR OSTROM, GOVERNING THE COMMONS 94-100 (1990) (discussing graduated sanctions, which is the converse of incremental relief from prohibitions).

127. See, e.g., § 17.47(b)(3)(v) (establishing a Dakota skipper exception for haying to mowing after breeding season, when the butterfly lays eggs upon leaves).

cutting, the tailored regulations specify how each of those drivers of imperilment can be undertaken in a manner that reduces impacts on the threatened species.¹²⁸ Rather than simply relying on state fishing law, tailored exceptions for the Kentucky arrow darter require minimizing certain types of disturbances during low flow periods.¹²⁹ Tailoring serves as the currency for more creative collaborative conservation.¹³⁰

Section III.A organizes our empirical results to highlight instances of tailoring that we think offer the greatest potential to meet a recovery standard for 4(d) rules. Limitations on activities by ownership, location, land use, and method are the prime dimensions of tailoring. The content for the tailored exceptions may come from recovery plans, land-use plans, best agricultural practices or other regulatory programs. Sometimes they are crafted solely for the 4(d) rule itself.

Protective regulations are not hammered out in a conference room with all parties at the table in the way that a contract or permit might be negotiated. Yet they bear the imprint of collaborative governance. Professor Bradshaw calls this kind of collaborative governance “relational contracting” because no parties are strictly bound to the terms of any agreement.¹³¹ Other than the sea turtles’ shrimp-boat rules, the ESA protective regulations tailoring the practices of stakeholders do not bind any parties. Stakeholders may ignore the special exceptions and instead risk liability for harming a threatened animal. Conversely, regulators may later decide to tighten limitations unilaterally to meet the recovery standard of ESA section 4(d).¹³²

Nonetheless, the very process of collaborating on the content of the rule helps foster commitment to a common goal. In many cases, the Services need to coordinate with the same regulatory stakeholders when it comes time to develop and implement a recovery plan. Loose, non-binding “contracting” helps build these relationships.¹³³ The most common parties identified in rules as subject to special exceptions are (1) state/tribal

128. See, e.g., § 17.40(a)(4)(ii)(D) (detailing practices such as managing the depth of farm plowing to avoid take liability for Mazama pocket gophers).

129. § 17.44(p)(2).

130. See generally James Salzman and J.B. Ruhl, *Currencies and the Commodification of Environmental Law*, 53 STAN. L. REV. 607 (2000) (describing the issues of creating currencies for environmental trading markets).

131. Bradshaw, *Agency Coordination of Private Action*, *supra* note 29, at 236 (describing relational contracting as the practice by which parties “use trust-based agreements, without the potential for judicial enforcement, to coordinate private action on regulatory goals”).

132. See *infra* Section III.B.2 (describing the steady tightening of turtle-protection standards for the shrimping industry).

133. See Bradshaw, *Agency Coordination of Private Action*, *supra* note 29, at 233 (noting that the mere threat of regulation may prompt industry to “undertake preemptive steps to improve practices”); see also *infra* Section III.B.1 (describing how the FWS justified a 4(d) hay-harvesting delay date for a butterfly based on consistency with harvest dates in existing conservation agreements for bird breeding).

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institutions, and (2) landowners, livestock owners, and farmers.¹³⁴ In other words, the Services are most attentive to (1) other entities exercising sovereign power, which generally offer more “boots on the ground” to accomplish conservation actions, and (2) rural land-use decision makers, who control much of the habitat for threatened species. The latter match the most common category of incidental take authorized by purpose: agricultural activities.

The conservation imperative to fine-tune recovery actions over time requires continual coordination with stakeholders—a process called “adaptive management.”¹³⁵ Though most adaptive management literature focuses on natural science learning through conservation actions, collaborative governance can employ adaptive management to build stronger commitments to recovery over time.¹³⁶ Turtle-protection rulemakings that limit shrimp harvesting show how NMFS built on both technological improvements as well as changing attitudes of the shrimpers to improve conservation measures over time.¹³⁷

Even where the FWS does not actually negotiate with the stakeholders themselves, it is aware of their views, political influence, and litigation capability. Our study shows how protective regulations accommodate those interests to relieve the political pressure and litigation threat. Such “*accommodative conservation*,” like “relational contracting,” may be considered a form of collaborative governance, as accommodation is a form of negotiation.¹³⁸ Accommodative conservation risks, but does not necessarily result in, limitations that fail to contribute to recovery.

The ESA requires the Services to justify their protective regulations on the basis of science. But, while science informs conservation, science cannot actually achieve recovery of imperiled species without social mechanisms. Collaborative governance can implement what science indicates might be needed to improve conditions so that the protections of the ESA are no longer necessary.¹³⁹ In that respect, collaborative governance is beholden to the real thresholds of the natural world that

134. Though livestock owners often own farms or ranches and farmers often own farms, leasing arrangements sometimes create non-landowner stakeholders who make decisions that affect habitats.

135. See *infra* Section III.A.4.

136. See Robert L. Fischman et al., *Planning for Adaptation to Climate Change: Lessons from the US National Wildlife Refuge System*, 64 *BIOSCIENCE* 993, 1003 (2014) (discussing literature that links successful conservation to strong relationships and an understanding of the social dimension of linked social-ecological systems).

137. See *infra* Section III.B.2.

138. See G. Richard Shell, *Bargaining Styles and Negotiation: The Thomas-Kilmann Conflict Mode Instrument in Negotiation Training*, 17 *NEGOT. J.* 155, 161-62 (2001) (describing the widely employed “Thomas-Kilmann Conflict Mode Instrument,” a continuum of conflict management approaches that includes compromising, accommodating, and avoiding).

139. 16 U.S.C. § 1532(3) (2018) (defining “conservation”).

separate viability from extinction.¹⁴⁰ But, in other respects, collaborative governance constitutes an end in itself to avoid backlash from the very people who manage habitat.¹⁴¹ Social opposition may prompt preemptive habitat destruction to prevent threatened species from occupying locations that stakeholders seek to use for unrestricted activities. Collaboration, in turn, can build trust.¹⁴² Moreover, the Services also displace state authority when they list species, and states themselves often oppose the preemption of their programs. The Services are relatively weak players in the federal administrative firmament.¹⁴³ They bend in the face of fierce opposition to regulation of private property.¹⁴⁴ Thus, to ease political pressure, some rules manifest defensive tailoring.¹⁴⁵ Section III.B examines instances where accommodative special exceptions bump up against recovery realities.

Contemporary congressional hearings consistently urge more support for conservation collaboration.¹⁴⁶ Notwithstanding some persistent critics,¹⁴⁷ collaborative governance now enjoys a strong foothold as an essential, bipartisan conservation tool.¹⁴⁸ Though our study is limited to the

140. See, e.g., 50 C.F.R. § 223.203(b)(12)(i) (2019) (requiring land-use plans to ensure “properly functioning habitat conditions” for salmon species covered by the exception).

141. See Amsler, *supra* note 8, at 702 (discussing how collaborative governance is sometimes used as a means and other times employed as a goal).

142. See Bradshaw, *Agency Coordination of Private Action*, *supra* note 29.

143. See JEANNE CLARKE & DANIEL MCCOOL, *STAKING OUT THE TERRAIN* 111-12 (2d ed. 1996).

144. See *supra* text accompanying notes 143-45 (noting that land and livestock owners negotiate special exceptions for themselves in exchange for cooperation in establishing experimental populations).

145. See *supra* text accompanying note 187 (horned lark exceptions).

146. See, e.g., H.R. 424, “Gray Wolf State Management Act of 2017”; H.R. 717, “Listing Reform Act”; H.R. 1274, “State, Tribal, and Local Species Transparency and Recovery Act”; H.R. 2603, “Saving America’s Endangered Species Act” or “SAVES Act”; and H.R. 3131, “Endangered Species Litigation Reasonableness Act”: *Legislative Hearing Before the H. Comm. on Nat. Res.*, 115th Cong. (2017) (statements of Greg Sheehan, Deputy Director, U.S. Fish & Wildlife Serv.; David Willms, Policy Advisor, Wyoming Governor Matt Mead; Rep. Jim Costa, Member, H. Comm. on Nat. Res.).

147. See, e.g., George C. Coggins, *Regulating Federal Natural Resources: A Summary Case Against Devolved Collaboration*, 25 *ECOLOGICAL L.Q.* 602, 603 (1999) (characterizing much of the collaboration under federal natural resources laws as an “abdication of responsibility” to achieve federal objectives); Michael Hibbard & Jeremy Madsen, *Environmental Resistance to Place-Based Collaboration in the U.S. West*, 16 *SOC’Y & NAT. RESOURCES* 703 (2003) (collecting qualitative studies, interviews, and documents that discuss attitudes toward and roles of environmentalists in collaborative conservation initiatives); Martin Nie & Peter Metcalf, *National Forest Management: The Contested Use of Collaboration and Litigation*, 46 *ENVTL. L. REP. NEWS & ANALYSIS* 10,208 (2016) (interviewing critics of collaborative governance in national forest management).

148. In 2004, President Bush proclaimed as federal policy “cooperative conservation,” another name for collaborative governance for natural resource management. Exec. Order No. 13,352, 69 Fed. Reg. 52,989, 52,989 (Aug. 30, 2004) (defining “cooperative conservation” to mean “collaborative activity among Federal, State, local, and tribal governments, private for-profit and nonprofit institutions, other nongovernmental entities and individuals” for achieving environmental and natural resource management goals).

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ESA 4(d) program, we expect the tailoring tools we identify to play an increasingly important role in other programs, such as area-wide permitting under the Clean Water Act.¹⁴⁹

III. A Comprehensive Evaluation of Protective Regulations

This Article presents the first comprehensive survey of all the 4(d) and 10(j) rules. Prior law journal commentary on 4(d) rules examined selected subsets of special exceptions.¹⁵⁰ Three non-profit institutions have published white papers containing summary comprehensive information, highlights of key 4(d) rules, and recommendations for reform.¹⁵¹ In Section III.A, we focus on attributes of protective regulations that reveal conditions under which collaborative conservation arises. We catalog the common forms of tailoring in the resulting special exceptions. In Section III.B, we selectively evaluate the rules' conservation bases to review where accommodative conservation may conflict with the science of species recovery.

A. Method and Results

We reviewed all species-specific FWS and NMFS 4(d) and 10(j) rules in force as of September 26, 2019,¹⁵² the date that the FWS reversed its default approach of applying all section 9 prohibitions unless a protective regulation created exceptions.¹⁵³ Prior to that date, both Services

149. 33 U.S.C. § 1344(e) (2018) (detailing general permits for discharge of fill, often used to develop wetlands).

150. The best analyses employing case examples include Daniel J. Rohlf, *Section 4 of the Endangered Species Act: Top Ten Issues of the Next Thirty Years*, 34 ENVTL. L. 483, 530-35 (2004); Frank R. Lupo, *Species-Specific Regulation of Threatened Species Under Section 4(d) of the Endangered Species Act*, in ENDANGERED SPECIES ACT: CURRENT & EMERGING ISSUES AFFECTING RESOURCE DEVELOPMENT 7A (2015); Travis J. Ternes, *Special 4(d) Rules: Break Glass in Case Political Reality Slaps Lofty Goals in the Face*, 55 WASHBURN L.J. 461 (2016); Ruhl, *The Regulation Charade*, *supra* note 124 at 139; Joshua Ulan Galperin, *Trust Me, I'm a Pragmatist: A Partially Pragmatic Critique of Pragmatic Activism*, 42 COLUM. J. ENVTL. L. 425, 459-67 (2017); *see also* Fischman & Hall-Rivera, *supra* note 83, at 132-67 (comparing the effectiveness of 4(d) rules relative to ITPs in a case study of the rules for the coastal California gnatcatcher and the West Coast salmonids).

151. *Expanding Opportunities for Threatened Species Conservation Through Section 4(d) of the ESA*, MISSION:WILDLIFE (2015), <https://sandcountyfoundation.org/uploads/Section-4d-of-the-ESA.pdf> [<https://perma.cc/U3UY-H657>]; Ya-Wei Li, *4(d) Rules: The Peril and the Promise*, DEFENDERS OF WILDLIFE (2017), https://defenders.org/sites/default/files/publications/section-4d-rules-the-peril-and-the-promise-white-paper_0.pdf [<https://perma.cc/UAJ7-YGZM>]; Sanerib, Elkins & Greenwald, *supra* note 24.

152. Readers seeking more information about our domain and methods should contact Professor Fischman at rfischma@iu.edu. He will also provide an Excel spreadsheet of the data upon request.

153. We do not evaluate rules that are no longer in force because of delisting or judicial vacatur.

structured almost all rules by first applying the endangered species prohibitions and then setting out exceptions to the general liability provisions.¹⁵⁴ Even the NMFS 4(d) protective regulations, which have never been subject to a default rule applying all the section 9 prohibitions, employ an exceptions approach.¹⁵⁵

Except where we separately comment on 10(j) rules, we use the term “4(d) rule” to refer to both types of rules. For each species-specific 4(d) rule, we coded each tailored prohibition or exception as a different protective regulation. We disaggregated 4(d) rules into separate exceptions for different types of activities or different regulated parties. Some rules contain just a single exception.¹⁵⁶ Others compile multiple exceptions manifesting a variety of collaborative governance efforts.¹⁵⁷ The NMFS promulgated 9 percent of the 4(d) rules but accounted for 16 percent of the exceptions we coded—many NMFS rules contain complex protective regulations. The disparity arises from land-use conflicts involving habitat for anadromous fishes (sturgeon, salmon, and steelhead species) and detailed regulatory regimes attempting to reduce sea turtle mortality from commercial fishing nets. We use the terms “tailored prohibition,” “protective regulation,” and “special exception” interchangeably to mean individual liability shields. In contrast, we refer to a 4(d) rule when we mean a compilation of all the exceptions applicable to a particular threatened animal or experimental population.

While our count of tailored 4(d) rules is easily reproducible, our judgments on lumping and splitting each rule into special exceptions are somewhat subjective, though consistent. We coded the 87 rules extant on September 26, 2019, which contain 189 separate exceptions.¹⁵⁸ Figure 1

154. A rare exception from the FWS covers the northern long-eared bat. The rule contains a few affirmative, incidental take prohibitions within a zone where the species suffers from a lethal fungal disease. *See* 50 C.F.R. § 17.40(o)(1) (2019) (remanded but not vacated by *Everson v. Ctr. For Biological Diversity*, 435 F. Supp. 3d 69 (2020)) (banning incidental take in known hibernacula, and tree-removal incidental take within 0.25 miles of a known hibernaculum or in a known, occupied maternity roost tree). Outside of the disease zone, the rule prohibits no incidental take. The affirmative prohibitions aspect of the final 4(d) rule served as an initial test of what would become the 2019 rule lifting the blanket application of all ESA section 9 prohibitions to threatened species. *See* 4(d) Rule for the Northern Long-Eared Bat, 81 Fed. Reg. 1900 (Jan. 14, 2016).

155. The major NMFS outlier is the sea-turtles regulation affirmatively requiring any shrimper in certain areas to employ special technology to reduce incidental take. 50 C.F.R. §§ 223.205(b)(1), 223.206(d)(2) (2019).

156. *See, e.g.*, § 17.44(g) (2019) (4(d) rule for Chihuahua chub containing just a single exception to the section 9 prohibitions for a take “in accordance with applicable State law”).

157. *See, e.g.*, § 223.203 (4(d) rule for West Coast salmon ESUs and steelhead DPSs containing thirteen exceptions to the section 9 prohibitions, applying to public and private parties covering diverse activities including water diversions, residential development, habitat restoration, tribal fisheries management, and forest management); *see also* Fischman & Hall-Rivera, *supra* note 83, at 109-27 (detailing the collaborative governance efforts in the West Coast salmon ESUs and steelhead DPSs 4(d) rule).

158. The number of rules does not correspond to the number of threatened species with 4(d) rules. In one case, sea turtles (two 4(d) rules, one for each Service), we count more than one

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shows the number of rules promulgated by each service over time, with no clear trends evident.¹⁵⁹ The NMFS lists many fewer threatened species than the FWS because of its limited jurisdiction. Apart from experimental populations, the NMFS promulgated only five 4(d) rules during the time frame of our study. The NMFS has not been active in creating experimental populations, designating its first one in 2013. With only the three species and four protective regulations,¹⁶⁰ our results for the NMFS 10(j) rules have little descriptive value. However, a 2016 NMFS rulemaking describes a plan to expand its experimental population program.¹⁶¹ Figure 2 shows a slight uptick in special exceptions over the past decade, led by the FWS.

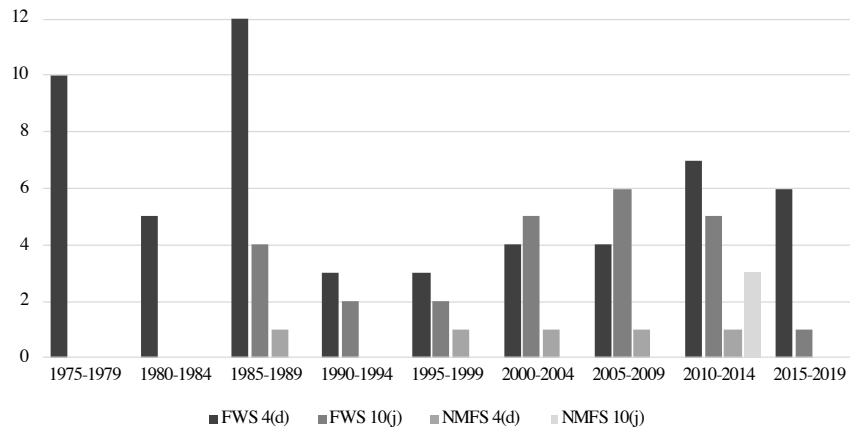
rule per species. The official list at 50 C.F.R. § 17.11 (2019) counts the FWS and the NMFS listings as one species. In other cases, we identify one rule that covers multiple species, each with a separate listing at § 17.11 (e.g., single rule for slender chub, spotfin chub, slackwater darter, and yellowfin madtom, § 17.84(m); a single rule at for multiple West Coast salmonid evolutionarily significant units, § 223.203). On September 26, 2019, there were 215 threatened animals in the United States. Although 216 threatened animals were reported as of September 1, 2019, *see* U.S. Fish & Wildlife Serv., *Listed Species Summary (Boxscore)*, ENVTL. CONSERVATION ONLINE SYS., (Sept. 1, 2019), <https://web.archive.org/web/20190901065706/https://ecos.fws.gov/ecp0/reports/box-score-report> [<https://perma.cc/SK5Q-9TLS>], the Fossitt speckled dace was delisted on September 13, 2019, *see* Removing the Fossitt Speckled Dace from the List of Endangered and Threatened Wildlife, 84 Fed. Reg. 48,290 (Sept. 13, 2019), bringing the number of threatened animals to 215, *see* U.S. Fish & Wildlife Serv., *Listed Species Summary (Boxscore)*, ENVTL. CONSERVATION ONLINE SYS. (Oct. 17, 2019), <https://web.archive.org/web/20191017034929/https://ecos.fws.gov/ecp0/reports/box-score-report> [<https://perma.cc/6PH8-8YEK>] (recording 215 threatened animals).

159. A single rule does not always correspond to a single listed species. *See, e.g.*, 50 C.F.R. § 17.44(c) (2019) (covering four fishes). Li, *supra* note 151, at 5, counted 159 threatened animals covered by 4(d) rules.

160. 50 C.F.R. §§ 223.301(a)(2), (b)(4), (b)(5), (c) (2019) (providing one set of special exceptions for Middle Columbia River steelhead, two special exceptions for San Joaquin River Central Valley spring-run Chinook, and one set of special exceptions for Okanogan River Upper Columbia River spring-run Chinook Salmon, respectively). The NMFS promulgated these protective regulations in three rulemakings. Designation of a Nonessential Experimental Population for Middle Columbia River Steelhead Above the Pelton Round Butte Hydroelectric Project in the Deschutes River Basin, OR, 78 Fed. Reg. 2893 (Jan. 15, 2013); Designation of a Nonessential Experimental Population of Central Valley Spring-Run Chinook Salmon Below Friant Dam in the San Joaquin River, CA, 78 Fed. Reg. 79,622 (Dec. 31, 2013); Designation of a Nonessential Experimental Population of Upper Columbia River Spring-Run Chinook Salmon in the Okanogan River Subbasin, Washington, and Protective Regulations, 79 Fed. Reg. 40,004 (Jul. 11, 2014).

161. Designation of Experimental Populations Under the Endangered Species Act, 81 Fed. Reg. 33,416 (May 26, 2016). In contrast, the FWS promulgated its experimental population designation framework in 1984. Experimental Populations, 49 Fed. Reg. 33,885 (Aug. 27, 1984).

Figure 1: Rules by Service Over Time



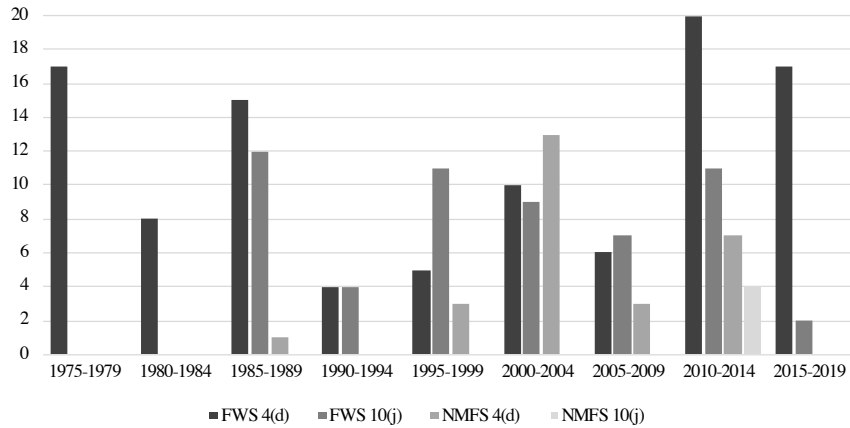
Section 4(d) may well authorize the Services to promulgate additional prohibitions that go beyond those contained in section 9, where necessary for recovery. But, other than the turtle-excluding device requirement for shrimp trawlers,¹⁶² no tailored 4(d) rule exercises that latent authority—except for those that make violation of state laws also a violation of the ESA.¹⁶³ In practice, tailoring either restates or loosens the section 9 take prohibition. Nonetheless, as we discuss in Part IV, the enforcement difficulties of the section 9 outcome-based prohibitions may justify a rule inducing stakeholders to adopt liability-exempt conservation practices. In that respect, collaborative governance transforms the ESA from a statute that prohibits certain effects (i.e., harm, jeopardy, recovery impairment) to a regulatory program insisting on best practices.

162. 50 C.F.R. §§ 223.205(b)(1), 223.206(d)(2) (2019).

163. Federalizing violations of state laws is particularly common in about two dozen FWS protective regulations for fishes. *See, e.g.*, 50 C.F.R. § 17.44(h)(2) (2019) (describing 4(d) rule for Yaqui catfish and beautiful shiner making any violation of Arizona law a violation of the ESA). But it is also apparent elsewhere, such as in the rule for Canada lynx, § 17.40(k)(5). Federalization of state law violations may assist in enforcement, even though it does not alter the legal obligations of any person.

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Figure 2: Exceptions by Service Over Time



We also coded the higher-level taxon in which the species belongs (e.g., fish, reptile). Table 1 shows that fishes and mammals are overrepresented relative to the proportion of listed taxa in both 4(d) rules and in protective regulations. Of the 220 threatened animals occurring in the United States, 34 percent are fishes and 13 percent are mammals.

Fishes constitute 40 percent of 4(d) rules and 37 percent of exceptions in protective regulations. The FWS rules, which account for all but five of the fish rules, tend toward simplicity because they address non-target take incidental to recreational fishing—generally with a single exception for take where it occurs in accordance with state law.¹⁶⁴ Their simplicity and general consistency across rules suggest that they are relatively standardized and easy to promulgate to deploy incremental cooperative federalism. The NMFS rules covering fishes, in contrast, deal with anadromous species whose migrations and breeding requirements present tremendous conflicts with human enterprises, mediated through twenty-four tailored special exceptions.

164. All states require fishing licenses, and these 4(d) rules protect anglers from ESA liability for activities that comply with their state permits.

Table 1: Numbers of Rules and Exceptions by Service, By Taxon

		Mammal	Bird	Reptile	Amphibian	Fish	Invertebrate	Total
FWS Rules	4(d)	11	3	6	5	26	3	54
	10(j)	6	4	0	0	11	4	25
	Total	17	7	6	5	37	7	79
NMFS Rules	4(d)	1	0	1	0	2	1	5
	10(j)	0	0	0	0	3	0	3
	Total	1	0	1	0	5	1	8
Total Rules		18	7	7	5	42	8	87
FWS Exceptions	4(d)	41	5	9	5	33	9	102
	10(j)	31	8	0	0	12	5	56
	Total	72	13	9	5	45	14	158
NMFS Exceptions	4(d)	1	0	3	0	20	3	27
	10(j)	0	0	0	0	4	0	4
	Total	1	0	3	0	24	3	31
Total Exceptions		73	13	12	5	69	17	189

Twenty-one percent of rules cover mammals. These account for 40 percent of exceptions in protective regulations, many of which display tailored responses to stakeholder concerns. The mammal rules often deal with predation and other behaviors that pose direct conflicts with human enterprises. The complications of mediating those conflicts through collaborative governance explain the even more dramatic proportion of exceptions.

We present our results in the context of how and why we made the coding decisions. We excluded from coding those exceptions that merely restate the legality of an activity already exempted from ESA section 9.¹⁶⁵ We also excluded the few protective regulations based on other federal rules no longer in force.¹⁶⁶ In order to center our investigation on collaborative governance, we excluded from our domain any rules or

165. That is, an activity covered by a section 10 permit (e.g., an ITP) or by a section 7 incidental take statement in a biological opinion.

166. See, e.g., 50 C.F.R. § 17.42(b)(1)(v) (2019) (exempting from liability incidental sea turtle take as specified in the NMFS's rule at § 227.72, a provision that is no longer extant).

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exceptions that simply apply, wholesale, the ESA section 9 prohibitions.¹⁶⁷ Such rules and exceptions essentially treat threatened species the same as endangered species and do not leverage the flexibility to carve out exceptions for particular settings and circumstances. Few FWS 4(d) rules fit this exclusion from our domain, because all of the FWS threatened listings until September 26, 2019 were, by default, covered by all the ESA section 9 prohibitions.¹⁶⁸ The majority of FWS threatened species listed before September 26, 2019 have no 4(d) rule, which is tantamount to having a 4(d) rule with no exceptions. Subsequent research should examine whether the number of 4(d) rules applying all of the ESA section 9 prohibitions decreases as a result of the 2019 rulemaking. Because wholesale application of the prohibitions now requires the affirmative effort of a species-specific rule, we expect to see more tailoring—motivated the rulemaking process. For a species whose recovery needs conflict with many private land uses, such as the desert tortoise, we predict different outcomes.

In general, we are less interested in exceptions related to conservation, restoration, and scientific research activities typically covered by permits or permit-like programs as well as 4(d) rules.¹⁶⁹ We focused on land use and commercial enterprises. Each of the four subsections below combines a description of method along with the results for a suite of variables. We explain why we selected particular variables to code and then how we split or lumped each exception into the result categories we report in the tables. The first subsection addresses special exceptions that apply only to certain parties or in certain places. These regulations reveal with whom the Services seek to collaborate, and the places of greatest conflict or lowest conservation value. The second subsection explores why certain activities receive special exceptions. It highlights the disparity between activities purposefully taking an animal and activities causing undesired take. The third subsection catalogs how activities can proceed under special exceptions. We distinguished between provisions that shield certain conservation practices from provisions that identify impact thresholds below which take activities are exempt. This is a familiar distinction in environmental law, which similarly employs

167. *See, e.g.*, 50 C.F.R. § 223.212 (2019) (southern DPS of the spotted seal); § 223.213 (Mexico DPS of the humpback whale).

168. *See* Protection for Threatened Species of Wildlife, 42 Fed. Reg. 46,539 (Sept. 16, 1977) (rule applying the section 9 prohibitions to all threatened species unless limited by species-specific rule); Protection for Threatened Species of Wildlife, 43 Fed. Reg. 18,180 (Apr. 28, 1978) (same); Regulations for Prohibitions to Threatened Wildlife and Plants, 84 Fed. Reg. 44,753 (reversal of the earlier rules, applying no prohibitions by default upon threatened listing). Nonetheless, FWS 4(d) rules sometimes merely clarify that regulations implementing the section 9 prohibitions and section 10 permits apply to a threatened species. *See, e.g.*, 50 C.F.R. § 17.42(e) (2019) (desert tortoise).

169. 16 U.S.C. § 1539(a)(1)(A) (2018).

exceptions from illegal pollution-generating activities through both practices (technology-based standards) and thresholds (ambient environmental conditions). In 4(d) rules, many practice-based exceptions reveal private or cooperative governance. The fourth subsection examines review and revision provisions in special exceptions. Such provisions may reflect adaptive conservation management that monitors the results of regulations and uses the information to periodically adjust regulations.

1. Who and Where

Some protective regulations apply only to certain parties. For instance, rules commonly limit purposeful takes to public agencies or officials.¹⁷⁰ We coded those exceptions for state/local entity, federal entity, or both. We coded Indian tribes as states.¹⁷¹ Where a rule identifies a party as a public entity, agency contractor, or “designated agent,” we coded it as public only because the designating agency is ultimately responsible, even where the designee may be private.¹⁷²

Table 2 shows that we found forty-three protective regulations carving out a special role for a non-federal agency or official. This may indicate cooperative federalism at play. For instance, rather than directly regulating forest management to protect anadromous fish habitat, the NMFS relies on Washington’s relatively stringent legal regime controlling timber management practices on non-federal forests. If the forest management complies with the state’s regulatory regime, then no federal permits are needed to avoid ESA liability for harming salmon.¹⁷³ In other rules, federal officials share the administrative burden with states. For instance, the grizzly bear exception for nuisance bears relies on federal, state, or tribal authorities to accomplish removal of the animal, rather than allowing landowners to help themselves.¹⁷⁴

We coded special exceptions for landowners. For instance, landowners are the only parties eligible to receive permits for intentional

170. See, e.g., 50 C.F.R. § 17.40(b)(1)(i)(C)(2) (2019) (limiting take exception of removal of nuisance bears only to authorized federal, state, or tribal authorities); § 17.40(i)(3)(ii) (excepting certain takes of problem Columbian white-tailed deer by “any employee or agent of the Service or the State conservation agency”).

171. For the purposes of cooperative federalism, most of the federal pollution control statutes either treat tribes as states, e.g., Clean Water Act, 33 U.S.C. § 1377 (2018), or contain special tribal delegation programs, e.g., Clean Air Act, 42 U.S.C. § 7474(c) (2018). See Judith V. Royster & Rory SnowArrow Fausett, *Control of the Reservation Environment: Tribal Primacy, Federal Delegation, and the Limits of State Intrusion*, 64 WASH. L. REV. 581, 619-20 (1989). The ESA lacks these types of provisions but does not prohibit the Services from treating tribes as states. See, e.g., 50 C.F.R. § 17.40(k)(5) (2019) (making a violation of state or tribal law also a violation of the protective regulation for Canada lynx).

172. See, e.g., 50 C.F.R. § 17.84(h)(10) (2019).

173. § 223.203(b)(13).

174. § 17.40(b)(1)(i)(C).

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harassment of Columbian white-tailed deer.¹⁷⁵ Though some rules designate other private actors,¹⁷⁶ landowners and livestock owners are the most common and important because of the political power they wield, the habitat they control, and the burden they bear under the section 9 prohibitions. Eight of the ten exceptions for land and livestock owners appear in 10(j) rules, which are more accommodating of those who control the habitat necessary for the experimental population's success.¹⁷⁷ An additional twenty exceptions apply take exceptions to locations designated as privately owned or non-federal land. Because the owners of those locations will benefit from the rules, we tally thirty exceptions reflecting participation of property owners. In exchange for the take exception, private owners must act in accordance with certain protocols or only under certain circumstances.

Table 2: Numbers of Owner and Identity Exceptions, By Service

		Role for Non-Federal Agency/ Official	Exception for Landowners	Exception for Livestock Owners	Exception for Private or Non-Federal Land
FWS Exceptions	4(d)	11	2	0	13
	10(j)	17	4	4	6
	Total	28	6	4	19
NMFS Exceptions	4(d)	12	0	0	1
	10(j)	3	0	0	0
	Total	15	0	0	1
Total Exceptions		43	6	4	20

In addition to ownership, 4(d) rules sometimes distinguish among different locations by land-use and by geographic location. Table 3 shows our results. We coded three categories of land use: (1) agricultural (in which we place farming, forestry, and ranching), (2) cultural sites

175. § 17.40(i)(3)(i).

176. *See, e.g.*, § 17.40(p) (authorizing sea otter use by Native Alaskans under the Marine Mammal Protection Act).

177. *See, e.g.*, § 17.84(c)(4)(iii) (excepting certain takes of red wolves by private landowners); § 17.84(l)(5)(v) (allowing permitted livestock owners to take or harass grizzly bears pursuing or killing livestock); § 17.84(k)(7)(iv) (excepting certain takes of Mexican wolves on non-Federal lands). Livestock owners are typically ranchers/farmers who graze their stock on more acreage than they own.

(including burial sites)¹⁷⁸ and developed areas (including single-family residential use),¹⁷⁹ and (3) water infrastructure.¹⁸⁰ Not surprisingly, given the large areas of private-land habitat in forests, farms, and ranches, the agriculture category is most common, with twenty exceptions.¹⁸¹ Six of those (30 percent) apply to insects, which otherwise account for only 6 percent of all exceptions in 4(d) rules.

Table 3: Numbers of Land Use and Location Exceptions, By Service

		Land Use			Location	
		Farming, Forestry, Ranching	Cultural Sites, Developed Areas	Water Infrastructure	Distance From Reserve or Habitat Feature	Distance From Jurisdictional Boundary
FWS Exceptions	4(d)	16	5	1	11	21
	10(j)	0	0	0	0	1
	Total	16	5	1	11	22
NMFS Exceptions	4(d)	1	0	0	1	2
	10(j)	3	2	3	0	1
	Total	4	2	3	1	3
Total Exceptions		20	7	4	12	25

Twelve protective regulations identify certain areas for special treatment based on distance from a conservation reserve or some key habitat feature.¹⁸² Twenty-five make geographic distinctions based on the jurisdiction where a property occurs or its distance from a jurisdictional boundary.¹⁸³ Experimental population designations always include the

178. See, e.g., § 17.40(g)(4).

179. See, e.g., § 17.40(a)(5).

180. See, e.g., § 223.301(b)(5) (excepting from take of San Joaquin River Central Valley spring-run Chinook experimental population individual fish that swim outside of the experimental population area where avoiding the take would “impose more than de minimus water supply reductions, additional storage releases, or bypass flows on unwilling” parties).

181. See, e.g., § 17.47(b)(3) (excepting certain activities from take of the Dakota skipper where they are “associated with livestock ranching”).

182. See, e.g., § 17.40(g)(3)(ii) (excepting takes of Utah prairie dog for private property within 0.5 miles of a conservation reserve); § 17.40(o)(1) (prohibiting incidental takes of northern long-eared bats within 0.4 km of a known hibernaculum or within 45 m of a roost tree).

183. See, e.g., § 17.47(s)(4) (prohibiting collection of butterflies in certain coastal counties south of Interstate 4).

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boundary circumscribing where a protected animal is part of the experimental population.¹⁸⁴ Therefore, we categorized a 10(j) regulation as having a geographic limitation only if it defines an area other than the designated range of the experimental population or if it permits take outside of the experimental population area.¹⁸⁵

2. Why

The protective regulations differentiate between purposeful takes, where harming or harassing an animal is the very reason for an activity, and incidental takes, where an otherwise lawful purpose results in an undesired harm.¹⁸⁶ Though we employ more precision in calling these two categories “purposeful” and “incidental,” some regulations employ the equivalent distinction between “direct” and “indirect” takes. All accidental takes are incidental;¹⁸⁷ but many incidental takes are not accidents.¹⁸⁸ Table 4 shows our counts of purposeful and incidental takes authorized by exceptions.

184. The area of the experimental population must be “wholly separate geographically from nonexperimental populations of the same species” 16 U.S.C. § 1539(j) (2018).

185. *See, e.g.*, 50 C.F.R. § 223.301(b)(5) (2019) (allowing takes outside of the salmon’s designated experimental population boundary).

186. For instance, harming or harassing an animal may occur as part of a conservation program to translocate individuals.

187. *See, e.g.*, § 17.40(i)(3) (exempting accidental shooting of threatened Columbian white-tailed deer in the course of hunting black-tailed deer or carrying out black-tailed deer damage control).

188. *See, e.g.*, § 17.40(o)(2)(ii) (permitting incidental harm to northern long-eared bat in the course of removal of hazardous trees).

Table 4: Numbers of Exceptions by Reason for Take, By Service

		Purposeful Take	Incidental Take	Purposeful and Incidental Take	Fishing, Hunting, Collecting	Depredation or Nuisance	Acute Safety
FWS Exceptions	4(d)	52	73	35	9	13	7
	10(j)	32	39	16	15	18	8
	Total	84	112	51	24	31	15
NMFS Exceptions	4(d)	23	24	21	4	1	1
	10(j)	0	4	0	2	0	0
	Total	23	28	21	6	1	1
Total Exceptions		107	140	72	30	32	16

We code as “incidental take” all exceptions labeled as such. However, an exception the Service labels as an “incidental take” may encompass purposeful takes as well. For instance, the 4(d) rule for the California red-legged frog excludes from prohibition “incidental take” from “routine ranching activities.”¹⁸⁹ The rule lists examples of routine ranching activities, which include “control and management of burrow complexes using discing and grading to destroy burrows and fill openings.”¹⁹⁰ We consider actions to destroy the burrow complexes in which the frogs spend most of their time to be a purposeful take, as compared to construction of fences or planting of forage, which harm the frog incidentally. Nonetheless, we code this as an “incidental take” to ensure we capture all special exceptions relating to activities that might otherwise qualify for an ITP. As a result, our count of incidental take exceptions may sometimes include purposeful takes as well. Table 4 shows 140 exceptions allow incidental takes and 107 allow purposeful takes. Of those, seventy-two exceptions, such as those applicable on agricultural land for the Utah prairie dog, contain a mix of both purposeful (translocations) and incidental (ordinary ranching activities, such a fencing) takes.¹⁹¹ These numbers underscore that the chief motivation for 4(d) rulemaking is to allow take otherwise prohibited under ESA section 9, ideally where enforcement of the prohibitions would not advance species recovery.

The incidental take permit program applies to both endangered and threatened species. A 4(d) rule creating a liability exception for incidental take provides an alternative avenue for stakeholders to secure a shield

189. § 17.43(d)(3).
 190. § 17.43(d)(3)(iii).
 191. § 17.40(g)(3).

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from section 9 liability. A common category of incidental take authorizes routine farming and ranching activities, which are less frequently addressed in ESA section 10 ITPs than residential, commercial, and industrial development.¹⁹² Even where agricultural land uses are not mentioned in a regulation, they may benefit from rules allowing a purposeful take (e.g., relocation) where a species creates “conflict with human activities.”¹⁹³ Other section 4(d) incidental take authorizations overlap with the kind of commercial and residential development often covered by ITPs.¹⁹⁴

Thirty exceptions allow fishing, hunting, and collecting notwithstanding takes of threatened species. Most of these exceptions allow only incidental take of non-target threatened species (of fish, reptiles, and mollusks) in commercial and sport fishing.¹⁹⁵ The sport-fishing exceptions mostly rely upon state fishing license regulations and enforcement to limit the conservation impacts.¹⁹⁶ Hunting game or collecting butterflies constitute just three of these exceptions, two of which include purposeful take.¹⁹⁷

The protective regulations commonly authorize purposeful takes for activities that could be authorized solely by ESA section 10 scientific and conservation permits.¹⁹⁸ However, 4(d) rulemaking may be the only viable avenue for stakeholders to avoid liability for purposeful takes to limit depredation or nuisances. We counted thirty-two exceptions that allow such purposeful takes. The most controversial purposeful take exceptions

192. See, e.g., § 17.40(l) (exempting established, ongoing agricultural activities from takes of the Preble’s meadow jumping mouse); § 17.43(c) (exempting ranching activities from takes of the California tiger salamander); see also Barton H. Thompson, Jr., *Managing the Working Landscape*, in *THE ENDANGERED SPECIES ACT AT THIRTY* 101 (Dale D. Goble, J. Michael Scott, and Frank W. Davis eds., 2005).

193. 50 C.F.R. § 17.84(g)(4) (2019) (allowing relocation of a black-footed ferret in an experimental population that causes the conflict).

194. See, e.g., § 223.203(b)(12) (describing program to authorize incidental takes for municipal, residential, commercial, and industrial development under local ordinances and plans approved by the Service).

195. See, e.g., § 17.44(1)(ii) (permitting recreational fishing incidental catch of the Pecos bluntnose shiner); § 223.206(d)(2) (allowing commercial shrimp trawler netting incidental catch of sea turtles).

196. See, e.g., § 17.44.

197. See, e.g., *id.* § 17.40(i)(3) (allowing incidental shooting of threatened Columbian white-tailed deer in the course of hunting black-tailed deer under a lawful state permit and with the exercise of “reasonable due care”); § 17.47(a)(4) (exempting purposeful collection of three butterfly species—listed as threatened due to their similarity of appearance to an endangered butterfly—outside of the range where the endangered butterfly occurs); § 17.84(x)(5) (exempting purposeful hunting of the sustained yield generated by an experimental wood bison population in Alaska).

198. 16 U.S.C. § 1539(a)(1)(A) (2018); see, e.g., 50 C.F.R. § 17.40(h)(3) (2019) (allowing direct takes of mountain lions consistent with actions to conserve the Florida panther). These exceptions often allow small harms that may ultimately save an individual animal from death, such as moving stranded Guadalupe fur seals. § 223.201(b)(2).

allow shooting or trapping of charismatic fauna—such as wolves and bears—that prey on livestock or pets.¹⁹⁹ But other rules that abate hazards allow purposeful takes for nuisances, such as northern long-eared bats in human structures or Utah prairie dogs burrowing that disrupts farms and ranches.²⁰⁰ Of the thirty-two depredation/nuisance purposeful takes, twenty-eight apply to mammals and four apply to birds.

Acute safety concerns associated with emergencies, self-defense, and defense of others prompted an additional sixteen purposeful take exceptions.²⁰¹ The ESA itself creates a defense to liability for good-faith acts of self-defense or defense of others.²⁰² In addition, the Services exclude acts in defense of lives from their take regulation applying to all endangered species.²⁰³ Nonetheless, stakeholders find more assurance in species-specific liability shields.²⁰⁴

Though wildlife trafficking spurred the original federal species protection laws, it is no longer a key driver of imperilment within the United States.²⁰⁵ Only three protective regulations allow for export and commerce of individual organisms and their parts or products. One deals with lynx in captivity at the time of listing.²⁰⁶ Another concerns the American alligator,²⁰⁷ which is listed under a special provision of the ESA not for its own status but for its similarity of appearance to other endangered crocodylians.²⁰⁸ The final provision concerns authentic Native handicrafts made from the southwest Alaska distinct population segment of the northern sea otter.²⁰⁹

199. See, e.g., § 17.40(d)(2)(i)(C) (wolves); § 17.40(b)(1)(i)(C) (grizzly bears); see also *Sierra Club v. Clark*, 755 F.2d 608 (8th Cir. 1985) (reviewing a wolf trapping exception challenge that became a leading case on the limits of Service discretion to allow purposeful take).

200. See, e.g., § 17.84(j)(4)(ii) (describing liability exemption in condor experimental population area for public officials when acting on a removal request by landowners adversely affected by condor behavior); § 17.40(o)(2) (detailing liability exemptions for removal of bats from human structures and for the protection of public health); § 17.40(g) (Utah prairie dog).

201. See, e.g., § 17.84(l)(5)(iii) (waiving liability in experimental population areas for self-defense by any person, but not for general nuisance bears).

202. 16 U.S.C. § 1540(a)(3), (b)(3) (2018).

203. See 50 C.F.R. § 17.21(c)(2) (2019).

204. See, e.g., § 17.40(h)(4) (providing that the Florida mountain lion may be taken “for reasons of human safety”).

205. BEAN & ROWLAND, *supra* note 62.

206. 50 C.F.R. § 17.40(k)(4) (2019).

207. § 17.42(a) (allowing take and commercial use of American alligators under certain circumstances).

208. Reclassification of the American Alligator to Threatened Due to Similarity of Appearance Throughout the Remainder of Its Range, 52 Fed. Reg. 21,059 (Jun. 4, 1987) (explaining the rationale for listing the American alligator under 16 U.S.C. § 1533(e)).

209. 50 C.F.R. § 17.40(p) (2019).

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3. How

The most innovative collaborative governance approaches to section 4(d) rulemaking describe how activities can proceed without take liability. We distinguished between provisions that shield certain conservation practices (e.g., use of turtle excluder devices)²¹⁰ from those that identify impact thresholds below which take activities are exempt (e.g., limiting take exception to 5 percent of the population).²¹¹ Table 5 shows that almost three-quarters of the protective regulations contain some practice-based criterion for an activity to qualify for an exception. Only twenty-seven exceptions provided effects-based standards, and many of them also contained practice-based limitations.²¹²

Table 5: Triggers for Exceptions, By Service

	Triggers			Practice-Based Triggers		
		Practice	Effect	Special Practice Definition or Standard	According to a Plan	Reporting Requirement
FWS Exceptions	4(d)	81	12	28	5	1
	10(j)	28	5	11	0	0
	Total	109	17	39	5	1
NMFS Exceptions	4(d)	25	9	8	8	9
	10(j)	1	1	0	0	0
	Total	26	10	8	8	9
Total Exceptions		135	27	47	13	10

Effects-based triggers for exceptions establish outcomes that focus on the consequences of the take. The thresholds may be quantitative (e.g., a certain number of individual deaths) or qualitative (e.g., a take that results in death).²¹³ The threshold approach to trigger take mirrors the Service’s

210. § 223.206(d)(2) (requiring turtle excluder devices on fishing nets to qualify for take exception).

211. § 17.40(i)(4) (limiting a program permitting a variety of takes to no more than 5 percent of the Columbian white-tailed deer population).

212. *See, e.g.*, § 17.40(l)(2)(iii) (excepting incidental take of Preble’s jumping mouse for certain agricultural activities (practice-based) that “do not increase impacts to or further encroach upon the Preble’s meadow jumping mouse or its habitat” (effects-based)).

213. *Compare* § 17.40(g)(3)(iii) (limiting state permitted take of Utah prairie dogs on agricultural lands and private property near conservation land to 10% of estimated range-wide

“harm” definition, which triggers liability when an act “actually kills or injures wildlife . . . through habitat modification or degradation . . . by significantly impairing essential behavior patterns, including breeding, feeding or sheltering.”²¹⁴ The spotty enforcement of the ESA harm prohibition indicates that monitoring impacts, especially from habitat disruption, on species recovery is exceedingly difficult. Devastating impacts on species viability from habitat alteration may never result in any detected injury to an individual animal proximately caused by the alteration activity. The 4(d) effects-based thresholds may alleviate the problem of proving take by measuring habitat directly, rather than relying on actual, injured wildlife. The best effects-based rules provide a quantitative surrogate for identifying the boundary between a take exception and potential section 9 liability. The advantage of effects-based approaches is that they avoid overregulation by allowing some number of takes not expected to impede recovery.

Exceptions that substitute practice-based limitations for difficult-to-detect proximate consequences of an activity are far more common. A practice that causes some takes may result in better conservation than banning unnoticed effects on individual animals. Moreover, some practices derive from collaborative plans or relational contracting. We found evidence of collaborative governance transforming the ESA from a statute that prohibits actions proximately causing species or individual animals from crossing certain thresholds (i.e., harm, jeopardy, recovery impairment) into a regulatory program insisting on best practices along the lines of pollution-control statutes.²¹⁵

The practice-based exceptions usually specify only a general type of activity, such as “restoration” or “enforcement.”²¹⁶ But forty-seven exceptions—35 percent of practice-based limitations—provide some sort of definition or standard for the activities that qualify as a “practice” triggering the exception. These exceptions vary in their level of detail, creating a continuum of clarity. We describe this gradient in the following paragraphs, because we consider specificity important in both constraining exceptions and in providing stakeholders with clear guidelines for what they may do without risking ESA liability. We draw many of our examples from agricultural activities. All but one exception limited to agricultural

population annually), *with* § 17.84(x)(5)(v) (allowing harassment of wood bison experimental population as long as it is not “lethal or physically injurious” to an individual bison).

214. § 17.3.

215. See Robert L. Fischman, *Predictions and Prescriptions for the Endangered Species Act*, 34 ENVTL. L. 451, 475-79 (2004).

216. See, e.g., 50 C.F.R. § 223.210(b)(2) (2019) (describing exception for take of green sturgeon in the course of enforcement activity); § 223.208(c)(2) (exempting take of threatened coral in the course of restoration activity); § 17.84(b)(2)(i) (allowing take of Colorado squawfish and woundfin for “educational purposes, scientific purposes, the enhancement of propagation or survival of the species, zoological exhibition, and other conservation purposes”).

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land uses (which includes forest management and ranching) contained a practice-based standard; two-thirds of them included some kind of definition or standard for determining which agricultural activities the exception covers.

The least specific standards that we count in Table 5 as “special practice definition or standard” limit liability exceptions descriptively, through such terms as *normal*, *generally accepted*, *routine*, or *humanely*. The descriptions may be subjective. For instance, no liability attends to a government official or designated agent who takes a stranded Guadalupe fur seal as long as she does it in a “humane manner.”²¹⁷ That is a practice-based approach because liability does not hinge on the outcome, such as whether the seal actually experienced injury. More objective—but not very specific—standards sometimes characterize exceptions. For instance, immune incidental takes of the California tiger salamander from “routine ranching activities . . . include, but are not limited to, livestock grazing according to normally acceptable and established levels of intensity in terms of the number of head of livestock per acre of rangeland.”²¹⁸

Other exceptions explain a standard through illustrative practices the Services intend to endorse. For instance, qualifying for an exception to incidental takes of Utah prairie dogs requires the use of “standard” agricultural practices, which “include plowing to depths that do not exceed 46 cm (18 in.), discing, harrowing, irrigating crops, mowing, harvesting, and bailing.”²¹⁹ The Mazama pocket gophers exception for “accepted agricultural or horticultural (farming) practices include “[p]lanting, harvest, fertilization, harrowing, tilling, or rotation of crops . . . [with soil disturbance not exceeding] a 12-inch (30.5-cm) depth.”²²⁰ Though the depth limits introduce an outcome component to the practice-based standard, we code these exceptions as practice-based. Our coding decision more clearly distinguishes the less common exceptions defined by proximate effects on an individual, population, or habitat feature.

Many rules prescribe a manner of acting with reference to some express standard. The regulation itself may define the standard of practice. For instance, experimental populations of the grizzly bear may be subject to “opportunistic, noninjurious harassment,” a term defined elsewhere in

217. § 223.201(b)(2) (implying that the take may be lethal so long as it “[i]ncludes steps designed to ensure the return of the animal to its natural habitat, if feasible”). Undefined humane constraints also apply to some permitted takes of grizzly bears and wolves. *See, e.g.*, § 17.40(b)(1)(i)(C), (d)(2)(i)(C).

218. § 17.43(c)(3). A similar exception for the California red-legged frog contains almost identical standards. *See* § 17.43(d)(2).

219. § 17.40(g)(5).

220. § 17.40(a)(4)(ii)(D).

the rule.²²¹ Or, a regulation may incorporate practices through reference to other federal criteria. For instance, the streaked horned lark exception for “routine management activities associated with airport operations to minimize hazardous wildlife”²²² contains a reference to an FAA regulation prescribing certain standards.²²³

Collaborative governance is especially evident in the thirteen exceptions that define the manner of exempted behavior with reference to plans adopted outside of federal rulemaking. Because land-use planning is less common in rural areas and generally regulates a wide array of uses, none of the exceptions limited to agricultural uses include practices defined in plans. The 1993 coastal California gnatcatcher 4(d) rule marked the earliest incorporation of practice standards from a plan. It allows incidental takes resulting from activities authorized by an approved California Natural Community Conservation Planning (NCCP) program with the written concurrence of the Service.²²⁴ In supporting the relatively new NCCP, the FWS attempted to motivate collaborative governance of gnatcatcher habitat in the context of land-use planning. In 1998, the FWS concurred on the San Diego Species Conservation Program’s plan for the unincorporated areas in the county. Those areas contained most of the gnatcatcher’s remaining habitat but also tracts ripe for residential development.²²⁵

Like the NCCP-authorized gnatcatcher plan, protective regulations often encourage planning in incidental take exceptions, even if the plans are still prospective at the time of the 4(d) rulemaking. The West Coast salmon ESUs protective regulation for municipal, residential, commercial, and industrial development waives liability for incidental takes only if the development occurs pursuant to plans that the NMFS determines “adequately conserve listed salmonids by maintaining and restoring

221. §§ 17.84(l)(5)(iv), (16) (describing exceptions for permitted harassment and definition of “opportunistic noninjurious harassment” respectively).

222. § 17.41(a) (4(d) rule for streaked horned lark).

223. 14 C.F.R. § 139.337 (2019) (describing requirements for wildlife hazard assessment and plans to abate the hazards).

224. 50 C.F.R. § 17.41(b)(2) (2019). Determination of Threatened Status for the Coastal California Gnatcatcher, 58 Fed. Reg. 16,742 (Mar. 30, 1993), marked the first important collaborative governance effort to support non-federal plans by relieving parties of incidental take liability. See Fischman & Hall-Rivera, *supra* note 83, at 97 (“[T]he 1993 rule was one of the very first demonstrations of Secretary Babbitt’s initiative to show that the Act provided sufficient flexibility to accommodate development.”).

225. *Implementing Agreement by and Between United States Fish and Wildlife Services California Department of Fish and Game City of San Diego To Establish a Multiple Species Conservation Program (“MSCP”) For The Conservation of Threatened, Endangered and Other Species in the Vicinity of San Diego, California*, U.S. FISH & WILDLIFE SERV. 33-34 (Mar. 17, 1998), https://www.fws.gov/carlsbad/HCPs/documents/County%20of%20San%20Diego%20MSCP%20IA_1998.pdf [<https://perma.cc/9Z93-PDH9>].

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properly functioning habitat conditions.”²²⁶ Aside from the gnatcatcher and the West Coast salmon rules, most other 4(d) exceptions neglect to require Service concurrence before authorizing activities to proceed.²²⁷

The final column in Table 5 tallies the ten practice-based triggers requiring some kind of reporting to the Services. Protective regulations for land development plans affecting the West Coast salmon require periodic reporting, as do the research projects exempted from green sturgeon takes.²²⁸ Reporting is especially important because the Services receive information necessary to adjust requirements so that the conservation criterion remains fulfilled. We explore this issue in the next Section.

An alternative to planning as a method for specifying what criteria an exempt practice must meet is state and local permitting. Where a state has the expertise and capacity to restrict and monitor activities, the Service may rely on the state as a matter of efficiency, cooperative federalism, and collaborative governance. Reliance on state permitting is particularly evident in FWS exceptions for fishes, which commonly contain exceptions that require ordinary state hunting and fishing licenses. Some 4(d) rules allow a state to “permit” certain activities without clarifying whether that may occur only through individual permit issuance or by blanket permission.²²⁹

A Utah prairie dog regulation illustrates a rare reliance on cooperative federalism to restrict and monitor an exception to the section 9 take prohibition.²³⁰ The FWS allows takes of the Utah prairie dog “when permitted by the Utah Division of Wildlife Resources,” subject to geographic limitations and a requirement that the state maintain records on the takes.²³¹ The state requires landowners to obtain a “certificate of registration” in order to take a Utah prairie dog in compliance with the

226. 50 C.F.R. § 223.203(b)(12) (2019) (listing twelve considerations relevant in the NMFS adequacy determination); *see also* Wash. Env'tl. Council v. Nat'l Marine Fisheries Serv., No C00-1547R, 2002 WL 511479 (W.D. Wash. Feb. 27, 2002) (upholding the salmonid rule against a challenge that the incidental take liability waiver for activities under prospectively approved development plans violated the ESA).

227. Some exceptions for activities not related to land development may proceed according to some kind of plan, such as a study design. If subject to federal permitting, concurrence may not be important. For instance, no green sturgeon take prohibitions apply to scientific research as long as the study objectives, methods, funding, and estimated takes are described and submitted to the NMFS regional office. No NMFS concurrence or approval is required. 50 C.F.R. §223.210(b)(1) (2019).

228. 50 C.F.R. §§ 223.203(b)(12)(ii), 223.210(b)(1)(viii).

229. *See, e.g.*, 50 C.F.R. § 17.44 (l), (o), (r), (x) (2019) (allowing for “state-permitted recreational fishing activities” for the Warner sucker, Sonora chub, Pecos bluntnose shiner and bull trout, respectively); § 17.40(g)(3) (allowing takes of Utah prairie dogs “when permitted by the Utah Division of Wildlife Resources”).

230. § 17.40(g).

231. § 17.40(g)(3).

FWS 4(d) rule.²³² In return for the certificate, the registrant must make monthly reports of the location, method of take, and method of disposal for each Utah prairie dog taken.²³³ This allows the state to monitor its compliance with the annual limits established by the FWS to ensure that the program does not diminish the populations by set percentages.²³⁴ Whether the state actually has any incentive or capacity to engage accurate populations surveying is a separate issue of conservation effectiveness requiring Service oversight.²³⁵ Other protective regulations rely on more specific state permitting and reporting.²³⁶

4. How Long: Review and Revision

As we explain in Section IV.C.2, species recovery requires adaptive management to promote learning while taking steps intended to achieve conservation objectives. Adaptive management relies on monitoring key indicators of success and establishing triggers for reassessing actions when monitoring indicates unexpected outcomes. We analyzed the 4(d) rules to identify provisions that incorporate these under-implemented elements of adaptive management.²³⁷ Our results echo studies of judicial review of agency actions and federal public land planning in finding that the protective regulations only weakly attempt to employ adaptive management.²³⁸

The need for better and more current information on species populations and habitats drives monitoring requirements, which are the only element of adaptive management apparent in 4(d) rules. Table 6 shows that seventy-seven exceptions require monitoring and reporting by

232. UTAH ADMIN. CODE r. 657-19-6 (2020) (describing application requirements to receive authorization to take via firearm or trapping).

233. *Id.* r. 657-19-8.

234. 50 C.F.R. § 17.40(g)(3)(iii) (2019).

235. Prairie dog “plinking” is a common hobby widely considered beneficial for ranchers. See Melissa Bachman, *Prairie Dog Plinking – Great Summertime Rifle Practice*, WINCHESTER, <https://winchester.com/Blog/2017/07/prairie-dog-plinking-great-summer-rifle-practice> [<https://perma.cc/SC2T-ECMC>].

236. See, e.g., § 17.84(l)(5)(v) (requiring the reporting of the “date, exact location, and circumstances” of the take within 24 hours for livestock owners’ permits to kill grizzly bears actually pursuing or killing livestock); § 17.40(i)(3)(i) (allowing harassment of Columbian white-tailed deer if state conservation agency determines that such action is not likely to cause mortality); § 17.84(x)(5)(iii) (allowing takes for any person with a valid Alaska Department of Fish and Game permit for a wide variety of purposes).

237. See generally Robert L. Fischman & J.B. Ruhl, *Judging Adaptive Management Practices of U.S. Agencies*, 30 CONSERVATION BIOLOGY 268 (2016) (identifying as shortcomings of federal agency practice of adaptive management the lack of clear objectives and processes, monitoring thresholds, and defined actions triggered by thresholds).

238. See *id.*; Robert L. Fischman, *Leveraging Federal Land Plans into Landscape Conservation*, 6 GEO. WASH. J. ENERGY & ENVTL. L. 46 (2016); Martin A. Nie & Courtney A. Schultz, *Decision-Making Triggers in Adaptive Management*, 26 CONSERVATION BIOLOGY 1137 (2012).

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some entity (aside from what plans require, which we report in the previous section). We counted any reporting requirement of take as fulfilling the monitoring element.²³⁹ The experimental population 10(j) rules and the NMFS 4(d) rules are far more likely to require monitoring and reporting than FWS 4(d) rules. Reporting may be required even for routine actions by officials (designated agents) under take exceptions, such as removal of stranded Guadalupe fur seals.²⁴⁰ The NMFS also requires fishing vessels to host its approved observers to monitor commercial fisheries to overcome perverse incentives for underreporting.²⁴¹ Overall, the NMFS salmonid rule is the best example of adaptive management, with monitoring, reporting, and revocation review provisions.²⁴²

Table 6: Monitoring and Review in Exceptions, By Service

		Triggers for Review of Regulation		
		Monitoring	Time	Conservation Measure
FWS Exceptions	4(d)	11	3	7
	10(j)	56	48	2
	Total	67	51	9
NMFS Exceptions	4(d)	9	2	2
	10(j)	1	1	0
	Total	10	3	2
Total Exceptions		77	54	11

We focused on exceptions that allow modification of requirements outside of the time-consuming process of revision via notice-and-comment rulemaking. Many rules state that the Service may or will revise an exception via rulemaking, but the Services may do that in any event. Outside of reevaluation and revision of area-wide plans, a trigger for changing the content of exceptions is rare outside of time-limited FWS 10(j) rules. We identified fifty-four exceptions that use a time period to

239. *See, e.g.*, 50 C.F.R. § 17.40(b)(i)(B) (2019) (requiring that any individual who takes advantage of the general authorization of grizzly bear takes for self-defense or defense of others report the take within five days).

240. § 223.201(b)(2). For further discussion, see *supra* note 217.

241. *See, e.g.*, § 223.206(d)(2)(iii)(C), (10)(v) (requiring observers to monitor and report on compliance with the threatened sea turtles 4(d) incidental take regulations).

242. § 223.203.

trigger review, excluding exceptions promising reevaluation of the species' status in five years, which is a statutory requirement.²⁴³ We found a handful of innovative review provisions. For instance, the NMFS employed a “hammer” to ensure that tribal and state regulators submitted a timely fishery management plan.²⁴⁴ The rule provided for revocation of a take-by-harvest exception if the NMFS did not receive the plan by a particular date.²⁴⁵ The Jarbridge River DPS of bull trout 4(d) rule contains a rare expiration date for its two exceptions.²⁴⁶ Other date-certain reevaluations simply promise reviews of a conservation program without any particular consequence for stakeholders.²⁴⁷

Eleven exceptions incorporate review triggers based on the number or proportion of a population taken. The exception for accidental and problem-deer takes of Columbian white-tailed deer is unusual in providing several different triggers for graduated action depending on how much the takes exceed the annual allowable limit of 5 percent of the population.²⁴⁸ If takes allowed under the special rule exceed the limit by 2 percent of the population, then the FWS will convene a meeting to discuss strategies to minimize further losses. But, if the takes exceed the limit by 5 percent, then no further take will be allowed for the remainder of the year.²⁴⁹ More typically, the Utah prairie dog rule allows the Service to “immediately prohibit or restrict” take exceptions “if the Service receives evidence” that they are “having an effect that is inconsistent with the conservation” of the species.²⁵⁰ Sea turtle protective regulations applicable to the fishing

243. *See, e.g.*, § 17.85(d)(4).

244. *Steel Mfrs. Ass'n v. Env'tl. Prot. Agency*, 27 F.3d 642, 644 (D.C. Cir. 1994), explained the commonly used term in regulating hazardous chemicals under the Resource Conservation and Recovery Act (RCRA): “The 1984 amendments to RCRA establish a strict timetable for the promulgation of specific treatment standards for the land disposal of hazardous wastes. . . . If treatment standards were not in place for any waste on the list by May 8, 1990, a statutory ‘hard hammer’” would fall, [with the draconian consequence of] precluding any land disposal of the waste in question.” (citing 42 U.S.C. § 6924(g)(6)(C) (1988)). The hammer succeeded in motivating regulated industries to support prompt promulgation of regulations. *See* Susan M. McMichael, *RCRA's Statutory and Regulatory Framework*, 40 ENVTL. L. REP. NEWS & ANALYSIS 10,432 (2010) (describing how RCRA's various hammer provisions operated to ensure strict regulation of hazardous waste).

245. 50 C.F.R. § 223.203(b)(2)(ii) (2019).

246. § 17.44(x)(2). The FWS intended the expiration date to encourage Idaho and Nevada to “develop a management and conservation plan” for long-term recovery. *Determination of Threatened Status for the Jarbirdge River Population Segment of Bull Trout*, 64 Fed. Reg. 17,110, 17,122 (Apr. 8, 1999).

247. *See, e.g.*, § 17.84(c)(11) (promising reevaluation of the red wolf experimental population program for the Alligator National Wildlife Refuge by Oct. 1, 1992); § 17.84(g)(11) (promising reevaluation of the black-footed ferret experimental population program within the first five years after release of introduced ferrets).

248. § 17.40(i)(4).

249. *Id.*

250. § 17.40(g)(6). Because these takes occur on private land, we are skeptical that the FWS will receive much of this evidence, which would likely need to be self-reported by landowners.

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industry provide a complex set of procedures for adaptive modifications of practices.²⁵¹

Our results show incremental adjustment of the section 9 take prohibition, with the Services applying it in some instances and waiving it in others. But it is the tailoring of special exceptions that best manifests collaborative governance. The primary interest motivating collaboration is allowing habitat harms otherwise prohibited by the ESA. After 2019, these will be habitat harms excluded from ESA regulation absent a species-specific 4(d) rule. The forty-three exceptions creating special roles for non-federal agencies illustrate the vitality of cooperative federalism in wildlife conservation. The exceptions for landowners, livestock owners, and activities on non-federal land focus on decision makers who control most of the habitat not directly protected under ESA section 7. Further progress in 4(d) rulemaking will require improvements to the incentives and conservation outcomes bearing on these collaborators. In particular, the role of tailoring in converting effect-based thresholds to practice-based limitations for common activities is preeminently important. Whether through practices hammered out in the course of a 4(d) rulemaking, land-use planning, or by third-party standard-setters, we found overwhelming evidence of this form of tailoring found in 135 exceptions. It is an effective way to nudge behaviors toward conservation outcomes and speaks to the evolution of the ESA toward a pollution-control model of shaping behavior.

B. Potential Conservation Shortcomings

The past several decades of ESA administration emphasized incentives to negotiate collaborative conservation to improve recovery and to moderate opposition to the statute. Several critics worry that the rise in 4(d) rulemaking generally, and in collaborative conservation especially, sacrifices the conservation standard in order to reward any collaboration.²⁵² To evaluate the criticism, we reviewed the conservation justifications of protective regulations. We find some conservation shortcomings but also potential for recovery.

We limited our review of conservation justifications to the materials published in the Federal Register upon promulgation of the final listing and 4(d) rules. Unlike the judiciary, which evaluates the administrative record supporting the final rulemaking, we do not dig into the actual data and quantitative tools referenced by the rulemaking. We intend only to

251. See, e.g., § 223.206(d)(3)(iv) (modification of tow-time restrictions on trawlers), (10)(vi) (expedited schedule of modifications for restrictions via rulemaking).

252. See, e.g., Blumm & Marienfeld, *supra* note 86; Sanerib, Elkins, & Greenwald, *supra* note 24.

highlight *potential* conservation shortcomings in the rules we analyzed. In other words, we are evaluating the rules through a coarse filter to provide a sense of where weaknesses *may* lurk in the record justifying the regulation as “necessary and advisable to provide for” recovery of the species.²⁵³ Future research may evaluate accommodative rules to quantify the extent of the problems we raise here. Courts leave “the scope and contours” of the 4(d) rules entirely to Service discretion.²⁵⁴ We probe more deeply into the connection between the specific factors driving the species’ decline and the special exceptions. Potential to fail does not mean harm without benefit—the Service may simply neglect to provide information in the Federal Register to justify the exception.

In its recent rulemaking prospectively removing the blanket extension of section 9 prohibitions to all threatened species except as provided for in 4(d) rules, the FWS described how it marshals its limited resources. It stated that its 4(d) rules fulfill the conservation criterion “by focusing prohibitions on the stressors contributing to the threatened status of the species.”²⁵⁵ The FWS explained that its staff “tailor regulations by limiting the prohibitions to those activities that are causing the threat of extinction.”²⁵⁶ This Section questions the accuracy of those representations for some tailored special exceptions.

Many 4(d) exceptions shield lawful activities that clearly pose no threat either to persistence or to recovery of the listed taxon. For example, fence construction and maintenance as part of agriculture and ranching is not considered a factor threatening the Dakota skipper.²⁵⁷ However, we identify several exceptions where the information on threats seems to contradict the conservation justification in the 4(d) rule. The first subsection, below, describes failures to address known threats in justifying an exception. Then we present two case studies on responding to stakeholder resistance. In all these cases, we find evidence of accommodative conservation. The turtle protection rules discussed in Section III.B.2 also illustrate how early laxity created time for stakeholders to amortize investments, adjust to new technology, and ultimately achieve greater conservation results after a series of rule revisions. Finally, Section III.B.3 discusses an exception for the pygmy sculpin that fails to consider foreseeable impacts on recovery, a troubling shortcoming given the expected pace of environmental change. Unlike the turtle protective

253. 16 U.S.C. § 1533(d) (2018). Our broad-brush review is likely to miss many conservation shortcomings that would be revealed by a more detailed analysis of the studies supporting the administrative record.

254. Ruhl, *The Regulation Charade*, *supra* note 124, at 150.

255. Regulations for Prohibitions to Threatened Wildlife and Plants, 84 Fed. Reg. 44,753, 44,754 (Aug. 27, 2019).

256. *Id.* at 44,755.

257. Threatened Species Status for Dakota Skipper and Endangered Species Status for Poweshiek Skipperling, 79 Fed. Reg. 63,672, 63,745 (Oct. 24, 2014).

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regulations, the pygmy sculpin rule has not been strengthened through revisions and so may no longer reflect a long-term conservation benefit.

1. Failure to Address Known Threats

Two 4(d) exceptions for the streaked horned lark seem insufficiently aligned with the conservation needs of the species.²⁵⁸ The lark has disappeared from much of its range, and its short-grass habitat widely converted by development and intensive agriculture.²⁵⁹ Airport fields and grass-seed farms now provide its most productive habitat and enjoy take exceptions. The FWS insists that creating these acceptable habitats is necessary for conservation.²⁶⁰ However, creation of habitat for streaked horned lark is not the intended purpose of airport maintenance or agriculture. As a result, several of the activities shielded from take liability (e.g., mowing, discing, and burning) may create the short vegetation sought by the larks, but also can destroy nests and kill nestlings.²⁶¹

Much of the agricultural land in the larks' range is private and unsurveyed for larks. Compared to their small footprint, airports are disproportionately important for conservation of known populations of the species. The largest recorded current population of streaked horned larks in the Willamette Valley occurs at the Corvallis Municipal Airport.²⁶² The listing rule explains that airports “routinely implement programs to minimize the presence of hazardous wildlife on airfields, and these activities unintentionally create suitable habitat for streaked horned larks.”²⁶³ The FWS describes practices at some air bases and airports that protect nests and nestlings, in particular the adjustment of mowing regimes to limit harm during the nesting season.²⁶⁴ However, the exception for airport maintenance requires none of those mowing adjustments and places no constraints on the excepted maintenance activities. The Service explained that constraints on airport managers would cause them to

258. 50 C.F.R. §17.41(a)(3) (2019) (excepting airport management of grass, weeds, shrubs, and trees through mowing, discing, herbicide application, or burning); § 17.41(a)(4)(iii)(A) (excepting accepted agricultural practices including—but not limited to—planting, harvesting, rotation, mowing, tilling, discing, burning, and herbicide application to crops). Litigation challenging the combined listing and 4(d) rulemaking resulted in a 2019 bench ruling that remanded the listing decision to the FWS without vacating the rule. *See* Center for Biological Diversity v. Zinke, No. 3:18-CV-00359-MO (D. Or. July 8, 2019). The FWS is expected to make a new finding on risk of endangerment/extinction in 2021.

259. Determination of Endangered Status for the Taylor’s Checkerspot Butterfly and Threatened Status for the Streaked Horned Lark, 78 Fed. Reg. 61,452, 61,480-81 (Oct. 3, 2013).

260. *Id.* at 61,500-02.

261. *Id.* at 61,474.

262. *Id.* at 61,492.

263. *Id.* at 61,500.

264. *Id.* at 61,474.

exclude streaked horned larks entirely, due to the burdensome requirements.²⁶⁵ Yet, adjusting mowing practices does not seem—on its face—to be a heavy burden in exchange for a shield from the take prohibition.

The FWS noted that economic pressures on farms were reducing acreage in the most suitable cover: grass-seed production.²⁶⁶ The Service concluded that providing an exception for routine farming practices would benefit the lark by reducing producers' incentives to change crops or convert the land through development.²⁶⁷ Mowing practices may be less flexible in agricultural settings due to the timing of the seed crop. The Service promised to “work closely with the farming community in the Willamette Valley to develop ways to monitor impacts on streaked horned larks from routine agricultural activities.”²⁶⁸ But it made no commitment to act upon monitoring information or to investigate agricultural practices that might reduce harm to, or even benefit, the lark.

Both streaked horned-lark exceptions involve activities known to reduce reproductive success of the species. The exceptions provide relief to land managers without counter-balancing restrictions, even when the restrictions are demonstrably feasible (as with airport maintenance). They also lack commitment to act on information that improves understanding of take (from routine agricultural practices). As a result, they fail to provide the conservation benefit potentially available from the exceptions.

Haying and grazing exceptions that seek to retain agricultural land cover for the Dakota skipper similarly fail to connect information on threats and status with a conservation benefit under the 4(d) rule.²⁶⁹ The Dakota skipper is a small butterfly inhabiting Minnesota, the Dakotas, Manitoba, and Saskatchewan.²⁷⁰ As with the airport exception for streaked horned lark, the FWS referenced its own unpublished studies on minimizing take during haying to ensure that nectar-producing plants remain available to breeding adults.²⁷¹ Specifically, the listing rule concludes that “fall haying is beneficial” to the skipper “if it is conducted after . . . August 1 . . . no more than every other year, and there is no indication that native plant species diversity is declining due to timing or frequency of haying.”²⁷² From this information, the Service crafted an

265. *Id.* at 61,500.

266. *Id.* at 61,480.

267. *Id.* at 61,500-01.

268. *Id.* at 61,501.

269. 50 C.F.R. § 17.47(b)(3)(v), (vii) (2019).

270. Threatened Species Status for Dakota Skipper and Endangered Species Status for Poweshiek Skipperling, 79 Fed. Reg. 63,672, 63,677 (Oct. 24, 2014).

271. *Id.* at 63,728.

272. *Id.*

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exception for harvest of native haylands after July 15.²⁷³ In response to a comment that haying should not be permitted to begin that early, the Service offered three justifications. “First, factors other than the date in the 4(d) rule will likely play a greater role in determining actual haying dates, . . . [s]econd, the July 15 date has been used for many years in a variety of conservation agreements as a date to ensure that the effects of haying on nesting birds is minimized, . . . [and] [t]hird, even if haying is conducted immediately after July 15, it *may* be sufficient to minimize adverse effects to Dakota skippers at most sites and in most years.”²⁷⁴ If most haying will be after July 15 (elsewhere the Service indicates most haying starts after August 1), the record would better support a start date of August 1.²⁷⁵ Further, the ground-nesting, grassland bird species protected by the July date will likely accrue additional protection from an August date. The Service provided no estimate of the increase in take that might occur from the less conservative mid-July date. The rulemaking also failed to address the frequency of haying, which often occurs annually.²⁷⁶ The rule did not purport to retain the diverse, native vegetation that supports skippers.

Thus, a useful, although unpublished, FWS study with nuanced information on the ways in which haying can benefit the Dakota skipper became the basis for an exception. But the exception ultimately lacked protections that may benefit the species, with no analysis or estimate of the increased risk to the skipper.²⁷⁷ Even if the departures from a skipper-benefitting harvest regime are consistent with persistence of the skipper, the published materials contain nothing to suggest they will support recovery.

Though flawed, the Dakota skipper haying exception is recognizably connected to research results. In contrast, the exception for grazing in the Dakota skipper 4(d) rule is based on observations that fail to show a benefit to the species. The FWS included “heavy grazing” as one of the factors believed to have resulted in extirpation of the species from part of its range.²⁷⁸ Nevertheless, the cattle, bison, or horse grazing exception on private, state, or tribal land contains no limitations on grazing intensity or methods.²⁷⁹

273. *Id.* at 63,748.

274. *Id.* at 63,700 (emphasis added).

275. *Id.* at 63,746.

276. *Id.* at 63,728.

277. *Id.* (citing unpublished studies that “assessed the level of impact of haying to populations at 41 Dakota skipper sites . . . where we had sufficient information to assess the stressor”).

278. Threatened Species Status for Dakota Skipper and Endangered Species Status for Poweshiek Skipperling, 79 Fed. Reg. at 63,680.

279. *Id.* at 63,748.

The FWS explained that grazing may maintain habitat, but “as with any management practice, appropriate timing, frequency, and intensity are important.”²⁸⁰ Grazing management scenarios that benefit the skipper include “adaptive management to adjust grazing prescriptions according to their effects on essential features of the prairie ecosystem,”²⁸¹ a practice that is not common even on federal lands with staff trained in adaptive management.²⁸² Other studies found rotational grazing light enough to maintain plant species diversity could benefit the skipper.²⁸³ Despite all these limitations on the circumstances under which grazing conserves skipper habit, the FWS concluded that, “in light of the great importance that cooperative relationships with . . . private livestock producers will play in conserving the Dakota skipper, we find that it is necessary and advisable to exempt take that may be caused by grazing on non-Federal lands.”²⁸⁴ The grazing exception illustrates an accommodative conservation approach that fails to tailor a special exception to avoid impairing recovery.

The Service presented no information to indicate that some useful proportion of livestock owners used grazing regimes associated with benefit to the skipper (e.g., adaptive management, light grazing, maintenance of native plant diversity for nectar sources for breeding adults). Neither did it describe a funded program to support collaborative agreements between the Service and livestock owners to encourage such grazing regimes. Allowing unrestricted grazing is unlikely to prevent conversion to row crops, which are currently “more economically viable.”²⁸⁵ Nothing in the FWS rulemaking suggests that grazing, in the absence of limitations, guidance, and monitoring, contributes to recovery. Grazing may potentially support skipper conservation, but the exception does not actually support it.²⁸⁶

2. Resistance to Protective Regulation

A pair of ranching exceptions for two different amphibians with overlapping ranges offers contrasting approaches to generating

280. *Id.* at 63,724.

281. *Id.*

282. *See* Fischman & Ruhl, *supra* note 237237.

283. Threatened Species Status for Dakota Skipper and Endangered Species Status for Poweshiek Skipperling, 79 Fed. Reg. at 63,724.

284. *Id.* at 63,745.

285. *Id.* at 63,724-25; *see* 2020 *Plowprint Report*, WORLD WILDLIFE FUND (Aug. 5, 2020), <https://www.worldwildlife.org/publications/2020-plowprint-report> [<https://perma.cc/W5LL-2RZZ>] (documenting the steady decline in unplowed grassland).

286. To its credit, the Service properly points out that, whereas overgrazed land can be returned to a condition that benefits the Dakota skipper, land that is converted to row-crop agriculture or to development is unlikely to benefit the species in the foreseeable future. Threatened Species Status for Dakota Skipper and Endangered Species Status for Poweshiek Skipperling, 79 Fed. Reg. 63,672, 63,698 cmt. 40, 63,724-26 (Oct. 24, 2014).

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conservation benefits.²⁸⁷ In two similar circumstances, only one rule constrains ranching activity to ensure conservation benefit. Further research should explore why some collaborations include a give-and-take while others permit unrestricted continuation of practices that contribute to species imperilment. We conclude this subsection by describing the NMFS path to improving conservation outcomes in one of the most controversial 4(d) restrictions on commercial activity: turtle-excluding devices (TEDs). It offers hope that weak rules may improve over time.

The California tiger salamander and red-legged frog both need moist conditions, which they find in burrows created by small mammals, often near stream-side (riparian) habitats or water impoundments (stock ponds). The salamanders spend most of the year in burrows; the frogs use them in summer.²⁸⁸ Both species' 4(d) rules create an exception for "routine ranching activity."²⁸⁹ Burrowing mammals impose costs on ranchers because they compete with livestock for food and create holes in the ground that may injure livestock.²⁹⁰ Soil treatments, such as discing, can be used to destroy burrows; discing may also be used to plant specific crops or ground covers for grazing.

The salamander exception applies categorically to the "control and management of burrow complexes using discing and grading to destroy burrows and fill openings."²⁹¹ In contrast, the parallel exception for red-legged frogs "does not apply to areas within 0.7 mi. . . . of known or potential California red-legged frog breeding ponds."²⁹² The 0.7-mile radius supports habitat connectivity in order to provide dispersal habitat for frogs moving between closely-located aquatic habitats. The rule also protects some burrows, ensuring they are available for summer occupation.²⁹³

The routine ranching activities exception for the salamander mirrors the grazing exception for the skipper—both seek to protect a land use that *may* benefit the species, but without providing adequate conditions to

287. See 50 C.F.R. § 17.43(c) (2019) (Cal. tiger salamander); § 17.43(d) (red-legged frog).

288. Determination of Threatened Status for the California Tiger Salamander; and Special Rule Exemption for Existing Routine Ranching Activities, 69 Fed. Reg. 47,212, 47,215 (Aug. 4, 2004); Determination of Threatened Status for the California Red-Legged Frog, 61 Fed. Reg. 25,813, 25,814 (May 23, 1996).

289. The FWS promulgated the salamander rule in 2004, at the time of listing, Determination of Threatened Status for the California Tiger Salamander, 69 Fed. Reg. 47,212, and the frog rule in 2006, ten years after listing. Designation of Critical Habitat for the California Red-Legged Frog, and Special Rule Exemption Associated With Final Listing for Existing Routine Ranching Activities, 71 Fed. Reg. 19,244 (Apr. 13, 2006).

290. *Id.* at 19,288.

291. Determination of Threatened Status for the California Tiger Salamander, 69 Fed. Reg. 47,212, 47,248 (Aug. 4, 2004).

292. Designation of Critical Habitat for the California Red-Legged Frog, 71 Fed. Reg. 19,244, 19,293 (Apr. 13, 2006).

293. *Id.* at 19,262.

ensure that it *does* benefit the species. The contrasting red-legged frog exception indicates that the FWS sometimes *can* impose conditions on ranchers to ensure a conservation benefit. The FWS promulgated its frog 4(d) rule two years after the salamander rule, so the contrast may demonstrate its ability to learn from past shortcomings. But it also casts doubt on the Service's commitment to adaptively revise rules.

Attempts to support economic activity while conserving species are not limited to terrestrial activity. Sea turtles are reptiles and have lungs, rather than gills. As a result, they must surface to breathe. When shrimping nets towed behind boats entangle turtles, they drown unless the trawlers raise the net often enough to remove the shrimp before the turtles suffocate. Entangled turtles are "bycatch," non-target species caught incidentally rather than purposefully. The NMFS exception to accommodate shrimp harvests in the waters off the southeastern coast began with very limited conservation benefits to threatened sea turtles. Despite vehement opposition from the trawling industry, the proportion of the shrimping fleet using harvest techniques associated with better turtle survivorship has grown over several iterations of the protective regulation.

In the 1970s, NMFS began to develop TEDs that would allow turtles but not shrimp to escape from nets during towing.²⁹⁴ In 1987, NMFS initially required TEDs on all shrimping vessels longer than twenty-five feet in offshore waters. Inshore, these larger boats could employ tow times less than ninety minutes or TEDs. For smaller boats, NMFS required only tow times less than ninety minutes.²⁹⁵ The NMFS's shorter tow-time alternative reduced the incidence of turtle drownings in nets, approximating the benefit of TEDs without imposing the devices on trawlers, who regarded them as costly nuisances. But the regulation sparked intense conflict resulting in regulatory chaos and temporary federal actions creating a welter of requirements. Louisiana enacted legislation (not repealed until 2015) preventing its Department of Wildlife and Fisheries from enforcing TED requirements.²⁹⁶ As a result, TED use remained low.²⁹⁷

294. *History of Turtle Excluder Devices*, NAT'L OCEANIC & ATMOSPHERIC ADMIN. (June 4, 2019), <https://www.fisheries.noaa.gov/southeast/bycatch/history-turtle-excluder-devices> [<https://perma.cc/9U4B-6S5M>].

295. Sea Turtle Conservation; Shrimp Trawling Requirements, 52 Fed. Reg. 24,244 (June 29, 1987). Tow times were not part of the initial proposed rule but were added due to the volume of comments that described them as the most effective alternative to TEDs. At the time, shrimping killed more than 11,000 sea turtles each year. *Id.* at 24,246.

296. See Benjamin Alexander-Bloch, *Bobby Jindal Signs Bill Allowing Enforcement of Turtle-Excluder Provisions*, NOLA: TIMES-PICAYUNE (July 2, 2015, 3:54 AM), https://www.nola.com/news/environment/article_f0bf143b-c858-5e57-8394-7dbf8f4138e9.html [<https://perma.cc/6TAG-DESX>].

297. National Oceanic and Atmospheric Administration, *supra* note 294.

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From the beginning, NMFS acknowledged the difficulty of enforcing tow times. Once a TED is installed in a net, observers can confirm their use simply by inspecting the nets. In contrast, tow-time enforcement requires some form of operations monitoring by an observer either on the shrimping vessel or another vessel able, covertly, to view the shrimping vessel for extended periods.²⁹⁸ In 2012, NMFS proposed to terminate the tow-times option. Instead, all shrimping vessels would require TEDs.²⁹⁹ The proposed rule responded to an increase in sea-turtle mortality consistent with drowning, which suggested that tow-time restrictions were ineffective.³⁰⁰ Nevertheless, NMFS withdrew its proposal over concerns that the TED design at that time permitted too many turtles to enter nets of the vessels in question.³⁰¹

In 2016, with new TED designs available, NMFS again proposed to narrow the tow-time option. The proposal would have required TEDs for three classes of vessels previously permitted to use the tow-time approach.³⁰² The 2019 final rule eliminated the tow-time exception for only some vessels in one of the three classes, while also postponing the compliance date.³⁰³ Compared to the changes proposed in 2016, the final rule asserted it would “achieve a significant conservation benefit for listed sea turtles, while affecting significantly fewer vessels and imposing far fewer costs upon industry.”³⁰⁴ However, NMFS still lacks observer data on turtle impacts from two classes of shrimping vessels, despite three decades of shrimping regulation.

The history of 4(d) rules related to TEDs shows a tortuous but incremental improvement in sea-turtle protection. The progress is even more impressive because the NMFS 4(d) rule rejected the typical liability-waiver framework. Typical protective regulations allow businesses to opt out of exceptions and instead risk the unlikely contingency that a prosecutor can prove a take. In contrast, the TED rules actually compel compliance with the 4(d) restrictions. Businesses must adopt the rule’s

298. Sea Turtle Conservation; Shrimp Trawling Requirements, 77 Fed. Reg. 27,411, 27,413 (May 10, 2012).

299. *Id.* at 27,411.

300. Benjamin Alexander-Bloch, *Federal Fisheries Official Tells Shrimpers That New Turtle Rules are Coming*, NOLA: TIMES-PICAYUNE (Mar. 1, 2013, 1:05 AM), http://www.nola.com/environment/index.ssf/2013/02/federal_fisheries_official_tel.html [<https://perma.cc/YU7E-ECVS>] (quoting NMFS biologist Michael Barnett, who noted that “only 35 percent of the observed skimmers followed the 55-minute seasonal tow time limit, with many towing for 2 ½ hours”).

301. Notice of Intent to Prepare an Environmental Impact Statement for Sea Turtle Conservation and Recovery Actions in Relation to the Southeastern United States Shrimp Fishery and To Conduct Public Scoping Meetings, 81 Fed. Reg. 13,772, 13,774 (Mar. 15, 2016).

302. *Id.* at 13,772.

303. Sea Turtle Conservation; Shrimp Trawling Requirements, 84 Fed. Reg. 70,048 (Dec. 20, 2019).

304. *Id.* at 70,049.

practices or stop shrimping altogether. The NMFS needed to overcome resistance from the shrimping industry and states; Louisiana forbade state enforcement of TED requirements for twenty-eight years. Despite the controversy, NMFS leveraged increasing familiarity with TEDs over generational time to advance its conservation agenda. In contrast, we find no example of incremental bar-raising among the FWS agricultural exceptions. In trying to conserve species while also sustaining economically marginal operations, FWS must strike a difficult balance. If trawlers leave the industry, threats to marine resources likely decrease; if farmers and ranchers sell out to other land uses, threats to listed species are likely to increase.

3. Consideration of Future Conditions

Some exceptions fail to advance recovery primarily because they fail to consider foreseeable changes in current conditions that might undermine long-term conservation. These shortcomings may not jeopardize the status quo, but they fail to contribute to recovery. For instance, the pygmy sculpin is a threatened fish limited to one place, Coldwater Spring and its 500-foot outflow to the nearest creek. The City of Anniston, Alabama owns the spring, the outflow, and some surrounding land. At the time of the 1989 listing, Coldwater Spring discharged an average of 32 million gallons of water per day. The City withdrew water from the impounded spring at an average rate of 16.5 million gallons per day.³⁰⁵ The FWS examined threats to the sculpin from planned construction that might alter the hydrology of the spring, potential for toxic spills, and water pollution. But the Service excluded consideration of increased water withdrawals and climate change.

At the time it listed the sculpin, the FWS also promulgated a take exception for Anniston to continue using Coldwater Spring as its water supply. The FWS cited the city's ownership of the spring as an incentive for protection. It justified the exception with the observation that "withdrawal of substantial quantities of water from the spring has not adversely impacted this species, as evidenced by the continued stable population in the spring."³⁰⁶ The FWS noted that a drought reducing the spring flow 50 percent had not affected sculpin survival. The rule permits the city to deplete the spring down to 2 million gallons per day, which would reduce the flow by 94 percent.³⁰⁷

305. Pygmy Sculpin Determined To Be Threatened, 54 Fed. Reg. 39,846, 39,846 (Sept. 28, 1989).

306. *Id.* at 39,849.

307. *Id.*

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The observation that all had gone well in the past is at least a reasonable indicator that continued withdrawals will not increase jeopardy if nothing changes. But is that adequate for conservation? The creek below the spring might have held sculpin before water quality deteriorated from local land use.³⁰⁸ Should recovery require reintroduction of sculpins into the downstream creek, spring flow might affect sculpin use of and survival in the creek. Nothing in either the listing or the 4(d) rule actively contemplates recovery.

The FWS promulgated the Anniston water supply exception at the time of listing, an approach that the FWS promised to expand in 2019. In that respect, the failure of the sculpin rule to fully consider recovery issues bodes ill for forthcoming tailored rules, which increasingly will be promulgated with less time for analysis. Climate-change predictions for the Southeast forecast rising temperatures, which will increase evaporation and more frequent, deeper droughts.³⁰⁹ Maintaining appropriate conditions for sculpin will likely require higher flows in the future, at the same time that water demand for Anniston will likely rise.

IV. Lessons for More Effective Collaborative Governance Through Protective Regulations

Protective regulations incorporate collaborative governance in two ways: (1) by endorsing pre-listing conservation agreements, and (2) by creating post-listing incentives for conservation initiatives. First, protective regulations offer some reward for early action to prevent listing. Efforts to prevent listing after a petitioner or a Service has identified a species as a candidate for ESA protection are commonly praised forms of collaborative conservation.³¹⁰ Some of these efforts to avoid the toggle to ESA regulation are formalized through candidate conservation agreements (CCAs) between a Service and stakeholders.³¹¹ Some 4(d) rules may

308. See *id.* at 39,847.

309. See L.M. Carter et al., *Southeast and the Caribbean*, in *CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT* 396-417 (J.M. Melillo et al. eds., 2014), http://s3.amazonaws.com/nca2014/low/NCA3_Full_Report_17_Southeast_LowRes.pdf?download=1 [<https://perma.cc/R8PH-HVQL>].

310. See, e.g., *Briefing on Improving the Endangered Species Act: Perspectives from the Fish and Wildlife Service and State Governors*, *supra* note 18; Galen Schuler, Greg Corbin & Lawson Fite, *Candidate Conservation Agreements with Assurances: The Next Great Tool for Win-Win Conservation*, 35 NAT. RESOURCES & ENV'T 32 (2020).

311. Candidate conservation agreements provide enhancement-of-survival permits in which an early commitment to conservation action insulates parties from further habitat regulation upon listing. See *Candidate Conservation Agreements with Assurances Policy*, 81 Fed. Reg. 95,164 (Dec. 27, 2016) (final revised policy); *Candidate Conservation Agreements with Assurances*, 82 Fed. Reg. 55,625, 55,626 (Nov. 22, 2017) (policy review and request for comments). Our recommendation is to expand 4(d) exceptions to a broader range of informal conservation

promote pre-listing initiatives by shielding early efforts to adopt habitat mitigation and best practices with liability exceptions once a threatened listing becomes necessary.³¹² In other words, even if the conservation efforts fail to prevent listing, as long as they prevent *endangered* listing they will not trigger take liability. Of course, an individual 4(d) rule cannot turn back the clock on encouraging preventive initiatives. But the emerging custom that 4(d) rules immunize early adopters of mitigation or practices does increase the expected benefit to stakeholders considering pre-listing collaborative programs for other species.

Second, and seldom noted, 4(d) exceptions create incentives for recovery actions after listing. Landowners who did not attempt to prevent listing may nonetheless benefit from participating in collaborative conservation after listing to dodge the shadow of take liability. In this respect, a 4(d) rule may operate like a safe harbor agreement that exchanges recovery efforts for assurances that landowners will not be required to take any further steps.³¹³ For instance, if a landowner grows new habitat for a listed species under a safe harbor agreement, then she will not be restricted in the use of that habitat by the ESA harm prohibition. In fact, the landowner may eventually degrade or destroy the new habitat without liability as long as what remains is no worse than the baseline conditions at the time of the initial agreement.³¹⁴ Similarly, if a community adopts a development ordinance that meets the conservation criteria of a 4(d) special exception, then subsequent private development would not face federal take restrictions.³¹⁵

These two incentives must be preserved for the 4(d) program to better support recovery. Recovery cannot be achieved by federal agencies

efforts. This is particularly important now because, over the past several years, the “umbrella” CCAs covering broad areas of habitat have neither succeeded in recovery nor in attracting many participants. *See* *Defs. of Wildlife v. Jewell*, 815 F.3d 1 (D.C. Cir. 2016) (upholding FWS decision to withdraw a listing proposal for the dune sagebrush lizard based upon private stakeholder enrollment in a CCA); *Colorado v. U.S. Fish & Wildlife Serv.*, 362 F. Supp. 3d 951 (D. Colo. 2018) (noting that the CCA failed to prevent Gunnison sage-grouse listing).

312. *See, e.g.*, 50 C.F.R. § 223.203(b)(13) (2019) (shielding from take liability activities that occur pursuant to a previously adopted, state-wide forest practices plan).

313. *For Landowners / Safe Harbor Agreements*, U.S. FISH & WILDLIFE SERV.: ENDANGERED SPECIES, <https://www.fws.gov/endangered/landowners/safe-harbor-agreements.html> [<https://perma.cc/PNQ6-STAX>] (last updated Jan. 30, 2020).

314. The FWS has employed the safe harbor program to enroll more than 400 landowners covering nearly 2.5 million acres to raise nesting trees for endangered red cockaded woodpeckers in exchange for ESA immunity for eventual timber harvests. *See Examining the Endangered Species Act: Hearing Before the Subcomm. on Energy Pol., Health Care & Entitlements of the H. Comm. on Oversight & Gov't Reform*, 113th Cong. 11 (2014) (statement of Michael J. Bean, Counselor to the Assistant Secretary for Fish and Wildlife and Parks, Department of the Interior).

315. *See, e.g.*, 50 C.F.R. § 223.203(b)(12) (2019) (specifying take exception for prospective municipal, residential, and industrial development occurring under NMFS-approved local ordinances), *upheld by* *Wash. Envtl. Council v. Nat'l Marine Fisheries Serv.*, No C00-1547R, 2002 WL 511479 (W.D. Wash. Feb. 27, 2002).

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alone—even in the unlikely scenario where their budgets substantially increase—because they do not control enough habitat.³¹⁶ Some degree of accommodative conservation will continue to play a role to induce conservation by people who control habitat via sovereign power or property rights. This Part suggests systematic ways to accommodate stakeholder concerns with better conservation outcomes. We draw lessons from our study to strengthen the recovery potential of protective regulations in 4(d) rulemaking. The recommendations we offer in the following sections are not merely pie-in-the-sky hopes for reconciliation. They build upon actual practice-based rules that best incorporate tailoring, as revealed in our empirical results. We start by emphasizing the need for a published framework to encourage and guide collaboration in drafting protective regulations. We then discuss four substantive considerations that could be folded into the Service framework to strengthen 4(d) rules.

A. A Framework for Preparing Regulations

The Services should publish national guidance for drafting 4(d) rules to make clearer to stakeholders how to contribute to the process.³¹⁷ The Services enjoy great deference from courts reviewing special regulations.³¹⁸ But a winning judicial record comes at the cost of a strong negotiating position when seeking agreement among stakeholders for a special exception that promotes recovery. The Services need a backstop in the form of clear standards in order to resist expedient concessions that fail to address known threats, as illustrated by the Dakota skipper.³¹⁹ Without consistency and transparency, continued disparities, such as between the California salamander and red-legged frog exceptions, will undermine the integrity of the 4(d) program.³²⁰ Disparities discourage stakeholders (e.g., California ranchers dealing with red-legged frogs) who sacrifice profits in modifying practices, only to find fellow stakeholders facing similar species needs cut a more lenient deal. Whether true or not, the perception that

316. See Fischman et al., *supra* note 18, at 91-92 (discussing the need for states to exercise land-use control for habitat conservation); *ESA Basics: 40 Years of Conserving Endangered Species*, U.S. FISH & WILDLIFE SERV. (Feb. 2017), https://www.fws.gov/endangered/esa-library/pdf/ESA_basics.pdf [<https://perma.cc/DJ4J-KUJ6>] (“Two-thirds of federally listed species have at least some habitat on private land[.]”); *Our Endangered Species Program and How It Works with Landowners*, U.S. FISH & WILDLIFE SERV. (July 2009), <https://www.fws.gov/endangered/esa-library/pdf/landowners.pdf> [<https://perma.cc/FV7M-8MYB>] (“Approximately half of listed species have at least 80 percent of their habitat on private lands.”).

317. Li, *supra* note 151, at 1, 4, 14.

318. See *supra* Part II.A.

319. See *supra* notes 269-286 and accompanying text.

320. See *supra* notes 291-293 and accompanying text. Li et al., *supra* note 113, at 666 provide another example of similar unexplained disparities between two species with similar needs: the Gunnison sage-grouse and the lesser prairie chicken.

unexplained disparities result from “ad hoc decisions influenced by political pressure to minimize regulatory impacts” generates contention and may embroil the Services in litigation.³²¹ A framework for preparing 4(d) rules should address each of the four topics we discuss in the following sections: cooperative federalism, recovery, enforcement, and delisting. Of the four, the most urgent need is for a framework that explains how each rule meets the statutory standard “to provide for the conservation” of the species.³²²

The section 10 incidental take permit is the flagship post-listing program for habitat-disturbing activities. Both ITPs and protective regulations seek to advance recovery by engaging with stakeholders in conservation collaborations. However, unlike the ITP, the 4(d) program drifts in the absence of a published framework guiding collaborative conservation. That may lead to confusion, discouragement, inefficient use of time, and ultimately less stakeholder interest.³²³ These ills manifest in the wide variation in the structures of final rules.³²⁴ Staff who facilitate collaborations in far-flung field offices may not be aware of best practices developed in other regions to handle complex situations.³²⁵ In contrast, the Services have refined their handbook for ITPs, which is a model of clarity and incorporates the best practices of conservation biology and wildlife management.³²⁶ Even the CCA program now proceeds in accordance with a policy that provides potential collaborators with clear definitions, sets out the expected benefits to landowners and species, and describes the obligations of collaborators in exchange for the assurance of no additional regulation.³²⁷ The Services should offer the same clarity for 4(d) rules so that, even before listing, potential conservation actions can be motivated by a published commitment to reward early efforts with tailored special exceptions.

Of all of our recommendations, the call for clarity and consistency in 4(d) rulemaking appears to enjoy the most widespread support in the

321. *Id.*

322. We agree with Li et al. that having such a standard “would limit the Services’ tendency to bow to political pressures. . . . It could also help assure landowners that voluntary efforts at conservation will not bring a heavy regulatory crackdown.” *Id.*

323. Letter from Environmental Policy Innovation Center, Environmental Defense Fund, and Sand County Foundation to Ryan Zinke, Sec’y, Dep’t of the Interior (on file with author) (commenting on proposed rule withdrawing the default 4(d) rule under the ESA and claiming that the lack of guidance or a handbook leads to “inconsistencies in the contents of 4(d) rules, creating controversy, litigation, and lost conservation opportunities”).

324. See Temple Stoellinger et al., *Improving Cooperative State and Federal Species Conservation Efforts*, 20 WYO. L. REV. 183, 205 (2020) (noting that special rules “vary considerably without a clear rationale”).

325. *Id.*

326. See *Habitat Conservation Planning and Incidental Take Permit Processing Handbook*, *supra* note 82.

327. Final Policy for Candidate Conservation Agreements with Assurances, 64 Fed. Reg. 32,726 (June 17, 1999).

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conservation community.³²⁸ Institutions like the Services, which pride themselves on providing good science, should seek to learn from the experience of rulemaking. Our study shows that protective regulations span a wide variety of mechanisms and standards. Without a rubric for evaluating and comparing the performance of the regulations, the Services cannot hope to improve their programs and disseminate lessons learned through best practices. A handbook or guidance subject to frequent revision is a necessity.³²⁹

This is particularly true now that FWS has revoked its default extension of all section 9 prohibitions to threatened species.³³⁰ The FWS' former, blanket rule put the onus on landowners and commercial enterprises to collaborate in order to satisfy the conservation criterion justifying exceptions. Now that the FWS has adopted the same approach as NMFS, it will need to promulgate 4(d) rules at the time species are listed as threatened. Otherwise, no prohibitions will protect a newly threatened species.³³¹ Though the FWS "intends" to promulgate special rules at the time a species is listed as threatened, there is no enforceable requirement.³³² The FWS admits that promulgating "species-specific 4(d) rules for every threatened species may require additional resources at the time of listing."³³³ Yet, the FWS did not indicate where it will find additional resources. Its proposed budgets do not request additional resources from Congress. Relative to the previous year's actual budget, the Interior Department consistently proposed significant cuts in the FWS listing budget, most recently by 55 percent in appropriations for a 68 percent decrease in staff.³³⁴ The FWS promises to make its 4(d) decisions

328. See, e.g., Stoellinger et al. *supra* note 324, at 205 (summarizing the consensus of a workshop composed of academics, environmental advocates, government officials, advocates for the regulated community, and representatives of potential stakeholders, such as the Western Landowners Alliance, the Western Governors' Association, Occidental Petroleum); see also Li, *supra* note 151, at 14; Li et al., *supra* note 14; Letter from Environmental Policy Innovation Center, Environmental Defense Fund, and Sand County Foundation to Ryan Zinke, Sec'y, Dep't of the Interior (on file with author).

329. The Services' recovery planning guidance can serve as a model. See Listing and Recovery Priority Guidelines, 84 Fed. Reg. 18,243 (Apr. 30, 2019).

330. See Regulations for Prohibitions to Threatened Wildlife and Plants, 84 Fed. Reg. 44,753 (Aug. 27, 2019); *supra* note 88 and accompanying text.

331. The consultation mandates will continue to require federal actions not jeopardize the species or adversely modify its critical habitat, if any habitat is designated. 16 U.S.C. § 1536(a)(2) (2018).

332. See Regulations for Prohibitions to Threatened Wildlife and Plants, 84 Fed. Reg. at 44,755.

333. *Id.*

334. U.S. DEP'T OF THE INTERIOR, BUDGET JUSTIFICATIONS AND PERFORMANCE INFORMATION FISCAL YEAR 2021: FISH AND WILDLIFE SERVICE ES-3, <https://www.fws.gov/budget/2021/FY2021-FWS-Budget-Justification.pdf> [<https://perma.cc/A5WC-N7RS>]; U.S. DEP'T OF THE INTERIOR, BUDGET JUSTIFICATIONS AND PERFORMANCE INFORMATION FISCAL YEAR 2020: FISH AND WILDLIFE SERVICE ES-3, <https://www.fws.gov/budget/2020/FY2020-FWS-Budget-Justification.pdf> [<https://perma.cc/R8KL->

while it is also considering the status of a proposed species. The time pressure to do both, simultaneously, will exacerbate the austerity for section 4 activities.³³⁵

The California tiger salamander and pygmy sculpin rules pose troubling conservation shortcomings for special exceptions promulgated with final listing.³³⁶ If the Service defers 4(d) rulemaking, then it risks further imperilment, possibly requiring up-listing to endangered status, which limits collaborative conservation options.³³⁷ Yet, any listing takes years to promulgate, so threatened species may languish without prohibitions as their condition declines. Therefore, any framework that builds on the existing tailored special exceptions will save time and avoid situations where parties reinvent tools already deployed elsewhere.

With reduced time and money, we fear a weakening of the FWS negotiating position in collaborating with other parties on section 4(d) content. We expect more accommodation and less creative tailoring from the FWS. It may be that landowners and industry will foot-drag during negotiations over 4(d) rules. Delay would benefit some stakeholders by either obstructing listing itself or extending the period after listing and before special rule promulgation, when no ESA prohibitions would yet apply.

One way that the Services could mitigate this problem would be to publish advanced notices of proposed 4(d) rulemakings at the time they publish warranted findings, which often lead to listing proposals. An advanced notice calls for general ideas rather than responses to the terms of a specific proposal.³³⁸ It would alert potential stakeholders and could kick-start collaboration. A published framework could encourage this practice.

Future research should measure the impact of the 2019 FWS revocation of the blanket extension of section 9 prohibitions. We suspect threatened listings will take longer to proceed from proposal to final promulgation when they include protective regulations. Evidence might be

E6HL] (42% budget cut); U.S. DEP'T OF THE INTERIOR, BUDGET JUSTIFICATIONS AND PERFORMANCE INFORMATION FISCAL YEAR 2019: FISH AND WILDLIFE SERVICE ES-3, <https://www.fws.gov/budget/2019/FY2019%20FWS%20Budget%20Justification.pdf> [https://perma.cc/67W5-9UNW] (48% budget cut); U.S. DEP'T OF THE INTERIOR, BUDGET JUSTIFICATIONS AND PERFORMANCE INFORMATION FISCAL YEAR 2018: FISH AND WILDLIFE SERVICE ES-3, <https://www.fws.gov/budget/2018/FY2018-FWS-Greenbook.pdf> [https://perma.cc/6C96-GN8F] (19% budget cut); James Jay Tutcheon, *Getting Species on Board the Ark One Lawsuit at a Time*, 20 ANIMAL L. 401, 414 (2014) (noting the consistent, longer term refusal of the Department of the Interior to propose budgets adequate to fulfill the ESA listing mandate).

335. Tutcheon, *supra* note 334, at 414 (2014).

336. See *supra* notes 287-290, 297-300 and accompanying text.

337. Jamie Rappaport Clark, *The Endangered Species Act at 40: Opportunities for Improvement*, 63 BIOSCIENCE 924, 925 (2013).

338. JAMES T. O'REILLY, ADMINISTRATIVE RULEMAKING § 5:6 (2020).

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sought to gauge the shift in incentives for affected landowners and businesses to collaborate on a 4(d) agreement. Early lessons learned can then be applied adaptively through the framework we envision. For the reasons described earlier, we are skeptical of the claim by Stoellinger et al. that the change to the blanket rule “will cause the FWS to more frequently consider how best to tailor protections for threatened species.”³³⁹ Collaboration manifestations that we quantified, especially the number of large-scale plans or defined best practices, will appear more frequently only if the new default succeeds in fostering more cooperation for recovery rather than merely more accommodation.

A framework for 4(d) rulemaking could also spur the FWS to learn from the experience of the NMFS in its protective regulations for sea turtles that we discuss in Section III.B.2. The exceptions-based approach to take prohibitions is not the only way to establish a protective regulation. The NMFS requirement that all shrimpers employ practices to reduce turtle bycatch by shrimp trawlers points to the option of imposing affirmative duties. Affirmative duties are vastly easier to enforce because failure to meet the duty is itself a violation of the ESA. In contrast, the FWS approach does not require compliance with practice-based exceptions. Failure to comply simply defeats the liability shield and subjects a person to the take prohibition, with detection and proximate-cause challenges posing hurdles to enforcement. The NMFS turtle approach is also politically explosive and often not even applicable to terrestrial settings where the federal government exercises far less commercial oversight than it does over offshore fishing. Our recommendations build on the existing foundation of 4(d) rules, so they assume that all but the rare circumstance will employ the exceptions-to-liability approach. Still, Service guidance should recommend at least *considering* the feasibility of more easily enforceable approaches.

B. Cooperative Federalism

Wildlife management traditionally falls mostly in the domain of state sovereignty. When statutes, such as the ESA, displace state authorities under the Supremacy Clause, they typically employ cooperative federalism to induce state cooperation.³⁴⁰ The ESA section 6 program of cooperative agreements channels funding to state programs that assist recovery of

339. Stoellinger et al., *supra* note 324, at 203. We concede that, without the blanket prohibitions, some 4(d) rules may better think through just what private actions should receive the greatest priority for conservation limitations.

340. See Fischman, *Cooperative Federalism and Natural Resources Law*, *supra* note 10.

federally listed species.³⁴¹ The monies are small compared to the need. Nonetheless, state revenue combined with federal grants sustain some 50,000 staff on the front lines of conservation.³⁴² These boots-on-the-ground and field experts are critical assets for achieving ESA goals.

A major weakness of federal biodiversity protection policy is the meager resources available for preventing declining species from reaching the point where ESA listing is necessary. States, which are primarily responsible for this task, loathe relinquishing control of wildlife management. In addition to securing biodiversity for future generations, states seek to conserve their imperiled species to avoid federal regulation under the ESA. Every state prepares and updates wildlife action plans, prerequisites for a modest federal grant program funding state actions to prevent species from slipping to the brink of extinction.³⁴³ States have identified some 16,000 “species of greatest conservation need” (SGCNs) in their plans.³⁴⁴ However, the conservation needs overwhelm state capacity, especially because most funding for state agencies comes from hunting and fishing licenses, with the expectation that agencies will serve the interests of those sports.³⁴⁵ Meanwhile, the Services labor under a growing backlog of ESA listings.³⁴⁶

The ESA requires the Services to commit to cooperation with states on efforts to prevent listing.³⁴⁷ The Services’ current policy promises to “[u]se the expertise of State agencies in designing and implementing

341. See Fischman et al., *supra* note 18, at 85-87 (describing section 6’s preemption ambiguity, its implementation focus, and appropriations to support state agreements); J.B. RUHL, *Cooperative Federalism and the Endangered Species Act: A Comparative Assessment and Call for Change*, in THE ENDANGERED SPECIES ACT AND FEDERALISM: EFFECTIVE CONSERVATION THROUGH GREATER STATE COMMITMENT 35, 41 (Kaush Arha & Barton H. Thompson, Jr. eds., 2011) (noting that most agreements related to listing, monitoring, and voluntary conservation programs).

342. Fischman et al., *supra* note 18, at 87-88 (citing *Oversight: Modernization of the Endangered Species Act: Hearing Before the S. Comm. on Env’t & Pub. Works*, 115th Cong. 50 (2017) (statement of Gordon S. Myers, Executive Director, North Carolina Wildlife Resources Commission & President, Southeastern Association of Fish and Wildlife Agencies)).

343. See Fischman et al., *supra* note 18, at 84-85 (describing state wildlife action plans and funding sources); see also Act of Dec. 21, 2000, Pub. L. No. 106-553, Title IX, §§ 901-02, 114 Stat. 2762, 2762A-118, 122-23.

344. See *New Database Available: USGS Releases “Species of Greatest Conservation Need” Lists*, U.S. GEOLOGICAL SURV. (Oct. 25, 2017), <https://www.usgs.gov/news/new-database-available-usgs-releases-species-greatest-conservation-need-lists> [https://perma.cc/M4HK-U4V3]. As with the ESA, “species” is somewhat broadly construed. In state plans, the term may encompass taxonomic levels from distinct population segments all the way up to entire orders.

345. V.J. Meretsky et al., *A State-based National Network for Effective Wildlife Conservation*, 62 BIOSCIENCE 970 (2012); J.F. Organ et al., *The North American Model of Wildlife Conservation* (The Wildlife Soc’y and The Boone & Crockett Club Tech. Review No. 12-04, 2012), <https://wildlife.org/wp-content/uploads/2014/05/North-American-model-of-Wildlife-Conservation.pdf> [https://perma.cc/3ESF-PGLA].

346. See, e.g., Benjamin Jesup, *Endless War or End This War?*, 14 VT. J. ENVTL. L. 327, 342 (2013) (calling the long list of candidate species for which listing may be warranted an administrative black hole).

347. 16 U.S.C. § 1535 (2018).

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prelisting stabilization actions, consistent with their authorities, for species and habitat to remove or alleviate threats so that the listing priority is reduced or listing . . . is not warranted.”³⁴⁸ Successful SGCN initiatives need no help from ESA section 4(d) because they stave off listing.³⁴⁹ But, a section 4(d) rule can shield effective state SGCN conservation actions from liability where they show progress even though they ultimately fail to prevent listing. Such an exception would be particularly compelling where other, less effective, states in a species’ range undermine conservation.³⁵⁰ A state would more likely undertake an expensive and politically difficult conservation program when it is confident the program will receive preferential treatment in any subsequent special rule. Protective regulations frequently exempt state conservation and research programs from take prohibitions. Because the state wildlife action plans themselves encourage conservation collaborations, the Services should extend conservation activity exceptions to cover private parties (e.g., land trusts) conducting prescribed burns and other habitat management consistent with the state plans.³⁵¹ This would allow the Services to focus more attention on activities that pose greater risks to recovery.

Special rules should support state permit programs that serve as one-stop shops for stakeholders and reduce duplicative paperwork.³⁵² This approach is now routine for incidental take from sport fishing. But habitat protection requires more complex programs. The Utah prairie dog permits rely on state regulation supplemented by a general conservation plan to streamline implementation.³⁵³ To protect habitat for anadromous fish, the

348. Revised Interagency Cooperative Policy Regarding the Role of State Agencies in Endangered Species Act Activities, 81 Fed. Reg. 8663, 8664 (Feb. 22, 2016) (policy section A.3).

349. *Id.* at 8664 (emphasizing the role of states in preventing listings).

350. *See, e.g.*, Stoellinger et al., *supra* note 324, at 204.

351. *See* Revised Interagency Cooperative Policy Regarding the Role of State Agencies in Endangered Species Act Activities, 81 Fed Reg., *supra* note 338348, at 8664; State Wildlife Action Plan Best Practice Working Grp., Teaming with Wildlife Comm., *Best Practices for State Wildlife Action Plans*, ASS’N OF FISH & WILDLIFE AGENCIES 30-37 (Nov. 2012), https://www.fishwildlife.org/application/files/3215/1856/0300/SWAP_Best_Practices_Report_Nov_2012.pdf [<https://perma.cc/U3DN-QMWF>] (recommending a collaborative conservation model to implement FWS requirements for states to develop plans in conjunction with conservation partners); *Expanding Opportunities for Threatened Species Conservation Through Section 4(d) of the ESA*, *supra* note 151, at 13 (recommending site-specific exceptions for conservation management activities on land-trust and conservancy properties). Many special exceptions already fulfill our blanket recommendation. *See, e.g.*, 50 C.F.R. § 17.40(o)(2)(vi) (2019) (excepting certain state northern long-eared bat conservation programs).

352. *See Expanding Opportunities for Threatened Species Conservation Through Section 4(d) of the ESA*, *supra* note 151 (recommending that state permits substitute for federal regulation).

353. *See* Incidental Take Permit Application; Draft Range-Wide General Conservation Plan for Utah Prairie Dogs and Environmental Assessment, 82 Fed. Reg. 60,211 (Dec. 19, 2017); *see also* People for the Ethical Treatment of Prop. Owners v. U.S. Fish & Wildlife Serv., 852 F.3d 990 (10th Cir. 2017) (upholding the constitutionality of ESA-authorized Service regulation of private lands under the Utah prairie dog 4(d) rule). *See also* 50 C.F.R. § 17.40(i)(3) (allowing

NMFS relies on Washington’s relatively stringent review of timber management practices on non-federal forests—if a forest manager complies with the state’s FWS-approved regulatory regime, then the manager need not concern herself with federal permits or liability.³⁵⁴ This cooperative federalism approach, however, requires states to accept greater Service oversight than they have historically been comfortable doing.³⁵⁵

In addition to wildlife staff and expertise, states have almost exclusive powers to control private, land-disturbing activities that affect habitat. Promoting state land-use controls to protect, improve, and restore habitat is the most important function 4(d) rules can serve for two reasons. First, habitat degradation is the most common cause of species imperilment.³⁵⁶ Second, Congress asserts only very limited direct power to prescribe land-use restrictions.³⁵⁷ Therefore, state programs that incorporate or overlay habitat conservation on private land use controls are essential for most threatened species to recover.³⁵⁸

Most states delegate land-use control to local jurisdictions under enabling statutes and “home rule” laws. Therefore, more 4(d) rules should offer incentives for counties and cities to include habitat protection in their zoning ordinances and land-development regulations.³⁵⁹ Section 10(a) ITPs for developments that disturb habitat rely on applicants to propose the scope of coverage. In practice, most applications cover just an individual plot of land. In contrast, the Services can establish a broad geographic scope in special rules to encourage area-wide planning across swaths of habitat.³⁶⁰ Planning for larger areas accommodates more effective habitat

private landowners certain forms of take of Columbian white-tailed deer if authorized under a state conservation agency permit).

354. 50 C.F.R. § 223.203(b)(13) (2019).

355. See *supra* text accompanying notes 230-37 for our misgivings on the prairie dog exceptions.

356. COMM. ON SCI. ISSUES IN THE ENDANGERED SPECIES ACT, NAT’L RESEARCH COUNCIL, SCIENCE AND THE ENDANGERED SPECIES ACT 7, 40, 94 (1995).

357. See Fred Bosselman, *The Twilight of National Land Use Policy*, 45 JOHN MARSHALL L. REV. 237 (2012) (discussing the failed attempts at passing federal legislation to guide private land use).

358. See Carson Reeling, Leah H. Palm-Forster & Richard T. Melstrom, *Policy Instruments and Incentives for Coordinated Habitat Conservation*, 73 ENVTL. & RESOURCE ECON. 791 (2019) (finding that land-use restrictions improve coordinated habitat conservation with or without voluntary conservation agreements).

359. See, e.g., Fischman & Hall-Rivera, *supra* note 83, at 146-50; Stoellinger et al., *supra* note 324, at 203-04; *Expanding Opportunities for Threatened Species Conservation Through Section 4(d) of the ESA*, *supra* note 151, at 11; see also Christopher Serkin, *Divergence in Land Use Regulations and Property Rights*, 92 S. CAL. L. REV. 1055, 1071-72 (2019) (describing the rise of innovations in zoning to conserve habitats).

360. For a discussion of the importance of extending plans to cover as large an area as possible to optimize conservation effectiveness, see Fischman & Hall-Rivera, *supra* note 83, at 146-50, and Alejandro E. Camacho, Elizabeth M. Taylor & Melissa L. Kelly, *Lessons from Areawide, Multiagency Habitat Conservation Plans in California*, 46 ENVTL. L. REP. NEWS & ANALYSIS 10,222, 10,226 (2016).

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trade-offs between neighborhoods that are more valuable for development and places with higher potential to serve species' recovery. Landscape-scale conservation that incorporates bottom-up collaborations among landowners—facilitated by local government—can be more effective than federal regulation.³⁶¹ It also supports the large-scale habitat reserves needed for longer-term survival of species, particularly in light of climate change.³⁶²

As we discussed in Section III.A, the gnatcatcher 4(d) rule relied upon area-wide planning under California's NCCP program.³⁶³ While other states are unlikely to have in place conservation planning programs as comprehensive as California's, the Services can support narrower, nascent planning for habitat mitigation—and not just for incidental take permits.³⁶⁴ More frequently than recognizing pre-listing efforts, 4(d) rules need to promote prospective land-use controls to conserve habitat.³⁶⁵ For instance, West Coast salmonid 4(d) regulation for municipal, residential, commercial, and industrial development waives liability for incidental takes only if the development occurs pursuant to plans that the NMFS determines “adequately conserve listed salmonids by maintaining and restoring properly functioning habitat conditions.”³⁶⁶

Both the gnatcatcher and the salmon regulations are models for area-wide conservation planning because, in addition to monitoring the effects of the plan, they provide for adaptive changes to the plan and periodic reviews. No other 4(d) rules come even close to that level of adaptive management. It is discouraging to observe that these two rules are both over two decades old, promulgated before the more recent surge in 4(d)

361. See Karen Bradshaw Schulz & Dean Lueck, *Contracting for Control of Landscape Level Resources*, 100 IOWA L. REV. 2507 (2015) (discussing collaborative management of wildlife and wildlife). Amanda Brook et al., found that the ESA 4(d) rule for Preble's meadow mouse failed to enhance its recovery on private land. *Landowner's Responses to an Endangered Species Act Listing and Implications for Encouraging Conservation*, 17 CONSERVATION BIOLOGY 1638 (2003) (finding that most private landowners in the habitat of the Preble's meadow mouse had not permitted and would not allow a biological survey on their property, and 26% of the landowners made efforts to harm the mouse).

362. See N.E. Heller & E.S. Zavaleta, *Biodiversity Management in the Face of Climate Change: A Review of 22 Years of Recommendations*, 142 BIOLOGICAL CONSERVATION 14 (2009).

363. 50 C.F.R. § 17.41(b)(2) (2019). Camacho, Taylor & Kelly, *supra* note 360 (providing the most comprehensive, recent analysis of the NCCP program).

364. See J. MICHAEL SCOTT, FRANK W. DAVIS & DALE D. GOBLE, *Introduction*, in 1 THE ENDANGERED SPECIES ACT AT THIRTY: RENEWING THE CONSERVATION PROMISE 1, 12 (Michael Scott et al. eds., 2005) (“While HCPs work well for land developers, they are of little use to ranchers.”).

365. See, e.g., Stoellinger et al., *supra* note 324, at 203-04.

366. 50 C.F.R. § 223.203(b)(12) (2019) (listing twelve considerations relevant in the NMFS adequacy determination); see also *Wash. Envtl. Council v. Nat'l Marine Fisheries Serv.*, No C00-1547R, 2002 WL 511479 (W.D. Wash. Feb. 27, 2002) (upholding the salmonid rule against a challenge that the incidental take liability waiver for activities under prospectively approved development plans violated the ESA).

collaborative governance. It suggests that rigor in conservation effectiveness may be sidelined in Service enthusiasm to induce greater stakeholder participation. Since the 2000 salmon rule, the Services have promulgated only four extant exceptions that rely on any plans to define take limitations, which suggests waning enthusiasm for that kind of collaborative governance in 4(d) rules. Planning guided by 4(d) exceptions hatched but never fledged. The Services must try to revive planning.

Finally, for a species whose range covers multiple states, protective regulations should reward states with successful recovery programs. The emerging caselaw makes it difficult to designate distinct population segments for delisting if they were not identified in original listing rules, unless the remnant population outside of the DPS remains viable.³⁶⁷ Threatened species, such as the grizzly bear, may benefit from revised 4(d) rules that lift take restrictions in states that have succeeded in reaching population goals established through recovery plans. Instead of allowing lagging states to delay relief from hunting and depredation-control prohibitions,³⁶⁸ successive 4(d) rulemakings can shield from liability certain takes in a state as it achieves recovery goals.³⁶⁹ Even within a state, special rules can facilitate conservation efforts where state managers designate certain regions for strict protection and others for takes. For instance, the Gila trout special rule authorizes Arizona to allow takes by recreational anglers except in four creeks where relict populations important to recovery remain.³⁷⁰

367. See *Crow Indian Tribe v. United States*, 965 F.3d 662 (9th Cir. 2020); *Humane Soc’y v. Zinke*, 865 F.3d 585 (D.C. Cir. 2017).

368. For example, Wyoming’s inadequate gray wolf management plan held up delisting of the distinct population segment that also occurred in Montana and Idaho for many years. See ERIN H. WARD, CONG. RES. SERV., R46184, *THE GRAY WOLF UNDER THE ENDANGERED SPECIES ACT (ESA): A CASE STUDY IN LISTING AND DELISTING CHALLENGES* 15 (2020).

369. The FWS adopted this approach for experimental wolf populations in the northern Rocky Mountains, where states and tribes with FWS-approved wolf management plans could address “unacceptable impacts” of depredation on ungulates. See *Revision of Special Regulation for the Central Idaho and Yellowstone Area Nonessential Experimental Populations of Gray Wolves in the Northern Rocky Mountains*, 73 Fed. Reg. 4720 (Jan. 28, 2008). Tailoring prohibitions to account for variations in existing state regulatory regimes have been the subject of statutory reform proposals. See *Hearing on the Modernization of the Endangered Species Act Before the S. Comm. on Env’t. and Pub. Works*, 115th Cong. 224-26 (2017) (statement of Dave Freudenthal, Former Governor, State of Wyoming); *Expanding Opportunities for Threatened Species Conservation Through Section 4(d) of the ESA*, *supra* note 151, at 11 (advocating for greater distinctions between states based on disparate conservation successes and contrasting the recovery experiences of Karner blue butterflies in Wisconsin and Ohio).

370. 50 C.F.R. § 17.44(z) (2019); see also Li, *supra* note 151, at 14 (citing a Gila trout rule as a good illustration of effective delegation to states that can fine-tune wildlife management on a finer geographic scale).

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C. Promoting Recovery

In order to fulfill both the ESA's purpose and the conservation mandate of section 4(d),³⁷¹ the Services must enhance the performance of special rules in promoting species recovery. Budgets, staff, and private investment are tightly limited in species conservation. Therefore, in implementing lessons for recovery, the Services will need to focus on reducing the most important threats driving extinction. Activities that take individual organisms but benefit recovery, cause trivial population impacts, or are conservation neutral should qualify for 4(d) exceptions without much concern.³⁷² In addition to freeing the Services to focus on more important harms, quick approval of these exceptions builds relationships and social acceptance critical for further recovery projects.

Recovery priorities generally protect and restore habitat. The section 9 take prohibition is difficult to tie directly to habitat alteration. Hence, our finding that 4(d) exceptions focus on practice-based standards is an important strength that the Services should build upon in advancing recovery. We recommend that the Services revive the use of collaborative governance to encourage habitat-wide plans, such as the one for the California gnatcatcher, that contain site-specific, tailored standards for land-disturbing activities.³⁷³ Where that is not feasible, we recommend defining as precisely as possible the practices shielded from liability in 4(d) rulemakings.

Even within a species' existing range, 4(d) exceptions should distinguish between different places in which the same species faces different threats.³⁷⁴ The Services can build on the existing thirty-six exceptions that distinguish among activities based on location. That can allow for fine-tuning of restrictions based upon counties or other jurisdictions.³⁷⁵ To increase social acceptability of conservation reserves, rules may contemplate loosening limitations on take to reduce economic impacts on neighboring landowners.³⁷⁶ In other situations, rules may tailor exceptions based on habitat features critical for recovery, such as bat hibernacula and roost trees.³⁷⁷

This Section recommends two priority reforms to promote recovery. First, we urge the Services to promulgate a rule defining the 4(d) recovery

371. 16 U.S.C. §§ 1531(b), 1533(d) (2018).

372. *See* Li, *supra* note 151, at 11-12.

373. *See supra* notes 224-227 and accompanying text.

374. *See, e.g.,* Stoellinger et al., *supra* note 324, at 203-05.

375. *See, e.g.,* 50 C.F.R. § 17.40(b)(1)(i)(F) (2019) (deferring to national park regulations to control grizzly bear takes within national parks).

376. *See, e.g.,* § 17.40(g)(3)(ii) (describing Utah prairie-dog exception for private property within 0.5 mile of a conservation reserve).

377. *See, e.g.,* § 17.40(o)(1) (prohibiting incidental takes of northern long-eared bats within 0.4 km of a known hibernaculum or within 45 meters of a roost tree).

standard. It would establish a backstop to avoid accommodative conservation that fails to lower a species' extinction risk. Such a rule should incorporate sequential mitigation to ensure that 4(d) rules practice avoidance and minimization of impacts before imposing a compensation requirement. Compensation both advances recovery and limits adverse impacts by forcing parties taking advantage of special exceptions to internalize the costs to conservation objectives. Second, we urge that the 4(d) program catch up with other collaborative initiatives by structuring its special exceptions for adaptive management. Adaptive management will assist recovery through iterative adjustments as the Services monitor and learn from experiments with special exceptions.

1. A Conservation Standard

Courts typically review only whether a 4(d) rule provides *some* conservation benefit relative to no prohibitions at all.³⁷⁸ For incidental takes, the Services enjoy unrestrained discretion to accommodate stakeholder activities. But that comes at the cost of momentum advancing recovery. The Services could promote more effective implementation of the ESA by publishing a rule defining the 4(d) standard of “necessary and advisable to provide for” recovery of the species.³⁷⁹ By tying their own hands, the Services would strengthen their position to engage with stakeholders rather than merely accommodate landowners and businesses in collaborations. Such a rule would avoid the shortcomings we document in Section III.B³⁸⁰ and ensure that stakeholders contribute their fair share of recovery needs.³⁸¹ This might translate into more precisely defined best practices, such as the habitat protection zones for red-legged frogs that are absent from the California tiger salamander rule.³⁸² In other words, a definition for the conservation standard should insist that all rules counteract the known threats to habitat that special exceptions permit to occur. The Service can accomplish this by implementing sequential mitigation.

National and international environmental management programs commonly practice sequential mitigation.³⁸³ The strategy involves first

378. *See, e.g.*, In re Polar Bear Endangered Species Act Listing and Section 4(d) Rule Litigation, 818 F. Supp. 2d 214, 230 (D.D.C. 2011); *see supra* note 117 and accompanying text.

379. 16 U.S.C. § 1533(d) (2018).

380. *See, e.g.*, *supra* text accompanying notes 269-278 (discussing the hay harvesting exception for the Dakota skipper, which lacks limits and data to ensure that the species actually benefits).

381. *See, e.g.*, Endangered Species Act Compensatory Migration Policy, 81 Fed. Reg. 95,316 (Dec. 27, 2016), *withdrawn* Endangered Species Act Compensatory Migration Policy, 83 Fed. Reg. 36,469 (July 30, 2018).

382. *See supra* text accompanying notes 219-293.

383. *See* Shelley Welton, Michela Biasutti & Michael B. Gerrard, *Legal & Scientific Integrity in Advancing a “Land Degradation Neutral World”*, 40 COLUM. J. ENVTL. L. 39 (2015);

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avoiding harms, then minimizing the harms that cannot be avoided, and finally mitigating whatever harms do occur from habitat-modifying activities. A critical shortcoming of 4(d) rules is that they fail to cultivate avoidance, minimization, and compensatory mitigation strategies to reverse habitat loss.

The Services can build on their experience with the ITPs. Recall that habitat modification, in and of itself, does not constitute a take unless it rises to the level of harm by actually killing or injuring wildlife.³⁸⁴ But habitat modification resulting from a major investment, such as a shopping mall or residential development, often hinges on financing. Banks and other lenders generally proceed cautiously around liability risk. Congress provided an escape valve for this potential harm liability: an ITP for otherwise lawful activities. A 4(d) framework can borrow from the 2016 ITP Handbook emphasizing that an HCP must be based on a conservation strategy.³⁸⁵ The manual lists the conservation measures as:

- avoiding the impact through project design
- minimizing the impact through best management practices
- minimizing the impacts of the taking by reducing or eliminating other threats
- mitigating (offsetting) impacts by: restoration of degraded habitat, enhancement of functional habitat, preservation of habitat, creation of new habitat, and translocating or repatriating species.³⁸⁶

The HCP Handbook does not go so far as to require sequencing, but it should. Sequencing is more effective because avoiding habitat degradation is more likely to succeed than attempts to compensate for the impact from such degradation.³⁸⁷ Though the ESA does not compel such an interpretation, the best way to advance species recovery would be to

United Nations Convention to Combat Desertification Secretariat, *Zero Net Land Degradation: A Sustainable Development Goal for Rio +20*, UNCCD 13 UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION (May 2012), https://catalogue.unccd.int/58_Zero_Net_Land_Degradation.pdf [https://perma.cc/5PUH-GSQL]. Domestically, sequential mitigation is employed in ESA ITPs and Clean Water Act (CWA) fill permits. See 16 U.S.C. § 1539(a) (2018); 33 U.S.C. § 1344 (2018).

384. The FWS harm regulation prohibits as a take “an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.” 50 C.F.R. § 17.3 (1999). The NMFS definition adds the terms “spawning,” “rearing,” and “migrating” to the list of essential behavioral patterns. Definition of “Harm,” 64 Fed. Reg. 60,727, 60,731 (Nov. 8, 1999).

385. *Habitat Conservation Planning and Incidental Take Permit Processing Handbook*, *supra* note 82, at § 9.0.

386. *Id.* § 9.3.

387. Scholars often cite the sequencing requirement for avoiding, minimizing, and mitigating impacts on wetlands as the most effective aspect of the CWA fill permitting program. 33 C.F.R. § 332.1(c) (2019) (sequencing requirements). See Royal C. Gardner et al., *Compensating for Wetland Losses Under the Clean Water Act (Redux)*, 38 STETSON L. REV. 213, 231-33, 249 (2009); Welton, Biasutti & Gerrard, *supra* note 383, at n.116.

require all three mitigation steps, sequentially, to the maximum extent practicable. Such a strategy proved successful in arresting the net loss of wetlands under the CWA.³⁸⁸

Currently, FWS 4(d) rules typically do not implement the avoidance, minimization, and mitigation strategy, which makes them more permissive and less likely to contribute to recovery than the ITPs.³⁸⁹ This may drive savvy landowners and businesses toward negotiating 4(d) exceptions rather than applying for ITPs. A threatened species should be able to endure greater habitat modification than an endangered species without going extinct, but a threatened species still needs recovery efforts. The current disparity between rules and permits is too great, undermines conservation, and flies in the face of conservation biology.³⁹⁰

Moreover, the Services have shown they are able to employ such a strategy in a 4(d) rule. The NMFS salmon exception for purposeful fish harvests requires a plan that avoids depleting even populations already above viable thresholds, in order to improve the likelihood of recovery.³⁹¹ Some of the twelve FWS exceptions documented in Table 3 are limited by distance from habitat elements, resembling an avoidance and minimization strategy for habitat. For instance, the California red-legged frog's exception for rodent control outside of 0.7 miles of "known or potential breeding ponds," avoids loss of those key habitat features.³⁹² Similar avoidance strategies may be evident in exceptions that limit activities seasonally.³⁹³

Many take exceptions do not impair species recovery at all. Section 4(d) does not require affirmative conservation offsets. But Congress did not forbid it, and the capacious text of section 4(d) provides the Services with authority to go beyond the prohibitions of section 9 where additional

388. See Gardner et al., *supra* note 387, at 231-33 (showing how the three-step process requires an emphasis on avoidance, first and foremost); Welton, Biasutti & Gerrard, *supra* note 383, at 62-69 (emphasizing the design challenges in mitigation efforts, especially in banking and exchanging wetland reserves).

389. Li, *supra* note 151, at 14.

390. Several environmental groups have also identified the need for reform. See, e.g., Li, *supra* note 151, at 14-15; Letter from Environmental Policy Innovation Center, Environmental Defense Fund, and Sand County Foundation to Ryan Zinke, Sec'y, Dep't of the Interior (on file with author) (commenting on proposed rule withdrawing the default 4(d) rule under the ESA).

391. 50 C.F.R. § 223.203(b)(4)(B) (2019) ("Harvest actions impacting populations that are functioning at or above the viable threshold must be designed to maintain the population or management unit at or above that level."); see also Li, *supra* note 151, at 15 (discussing this exception).

392. § 17.43(d)(3)(iii); see also § 17.40(l)(2)(iii) (describing the Preble's meadow jumping mouse exception for ongoing agricultural activities limited to existing cultivated footprint).

393. See, e.g., § 17.47(b)(3)(v) (providing Dakota skipper exception for haying to mowing after breeding season, when the butterfly lays eggs upon leaves); see *supra* text accompanying notes 272-276 (discussing implementation shortcomings of seasonal restrictions in the skipper rule).

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restrictions on activities could promote recovery.³⁹⁴ The Services have used that power sparingly.³⁹⁵ Requiring avoidance, minimization, and mitigation is a fair and effective limitation on incidental take activities that enjoy liability shields.

2. Adaptive Management

Just as a listing decision must evaluate foreseeable future conditions, the protective regulations should also consider whether a special exception might burden long-term recovery. Integrating elements of adaptive management into 4(d) rules would advance recovery. Adaptive management is especially important in the typical situation where great uncertainty surrounds both the ecological conditions necessary for species conservation and the efficacy of actions and programs to attain those conditions. Climate change multiplies those uncertainties,³⁹⁶ and the FWS relies heavily on 4(d) rules to craft prohibitions for species listed because of climate change threats.³⁹⁷

A strong consensus supports adaptive management in conservation programs generally, as well as in ESA implementation.³⁹⁸ Without adaptive management, promulgation of the 4(d) rule may spell the end of collaboration activities, allowing parties to neglect implementation. Service directors and their cabinet secretaries get a political bang out of announcing a new collaboration and showing how well they play with

394. See Li, *supra* note 151, at 7-8. President Obama attempted to promote net conservation benefits in mitigation, *Presidential Memorandum: Mitigating Impacts on Natural Resources from Development and Encouraging Related Private Investment*, WHITE HOUSE (Nov. 3, 2015) <https://obamawhitehouse.archives.gov/the-press-office/2015/11/03/mitigating-impacts-natural-resources-development-and-encouraging-related> [https://perma.cc/AW4R-LHZQ], but the Trump Administration rolled the benefits back and withdrew the ESA mitigation policy, Endangered Species Act Compensatory Migration Policy, 83 Fed. Reg. 36,469 (July 30, 2018).

395. See, e.g., § 17.40(e) (describing the African elephant rule limiting trophy importation more stringently than the section 9 prohibitions demand).

396. See Tim Newbold, *Future Effects of Climate and Land-use Change on Terrestrial Vertebrate Community Diversity Under Different Scenarios*, 285 PROC. OF THE ROYAL SOC'Y B, no. 20180792 (2018) (predicting that climate-change impacts will exceed land-use driven habitat disturbance as the chief threats facing biodiversity by 2070); E. Barrett Ristorph, *Can Adaptive Management Help Alaska's Natural Resource Managers Respond to Climate Change?*, 60 NAT. RESOURCES J. 47 (2020) (concluding that the answer to the question posed in the article title is "yes").

397. See Ruhl, *The Regulation Charade*, *supra* note 124, at 150; see also Blumm & Marienfeld, *supra* note 86 (reviewing climate-change driven listings and their failure to constrain GHG emissions).

398. See Fischman & Ruhl, *supra* note 237 (documenting the consensus in natural resource management generally); Daniel M. Evans et al., *Species Recovery in the United States: Increasing the Effectiveness of the Endangered Species Act*, 20 ISSUES IN ECOLOGY 1, 18-19 (2016) (describing a panel of experts convened by the Ecological Society of America reporting on improving the ESA track record of recovery).

others in promulgating the 4(d) rule. Following through with implementation, interactive problem solving, enforcement, and program modification are challenging and yield little in the way of kudos for jobs well done.³⁹⁹ Yet, our evaluation of the NMFS TED rules, which improved substantially over several iterations, shows that evaluation and revision are possible to move 4(d) programs toward greater conservation contributions.

In order to fulfill its promise, adaptive management requires clear objectives against which to assess the results of conservation actions.⁴⁰⁰ Then, the Services can respond to results through iterative monitoring and adjustment. Ideally, adaptive management needs a framework for facilitating learning so that actions may serve as experiments to enhance understanding of species recovery. The more effective adaptive approaches specify clear triggers to indicate when experiments need to be extended, modified, or terminated. But, even where budget constraints preclude true experimentation and frequent fine-tuning, some adaptive planning is better than none. The Services commit to adaptive management in their 2016 ITP and HCP Handbook.⁴⁰¹ The protective regulations should similarly incorporate adaptive management.

The best practices for recovery plans already incorporate metrics to evaluate success.⁴⁰² The ESA itself requires “objective, measurable criteria” for determining when recovery occurs.⁴⁰³ Because section 4(d) requires conservation, protective regulations should adapt those recovery metrics. But 4(d) rules promulgated at the time of listing will not have the benefit of an existing recovery plan.⁴⁰⁴ Therefore, we recommend that the protective regulations contain triggers for reevaluation when the Service completes a recovery plan to ensure that indicia of success match recovery plan criteria.⁴⁰⁵ Such triggers for the stream flows upon which the pygmy

399. For instance, the streaked horned lark 4(d) promulgation promised that FWS would “work closely with the farming community in the Willamette Valley to develop ways to monitor impacts on streaked horned larks from routine agricultural activities.” Determination of Endangered Status for the Taylor’s Checkerspot Butterfly and Threatened Status for the Streaked Horned Lark, 78 Fed. Reg. 61,452, 61,501 (Oct. 3, 2013). Further research should be done to determine whether the Service followed through on such unenforceable promises upon which adaptive management depends.

400. See generally Byron K. Williams, Robert C. Szaro, & Carl D. Shapiro, *Adaptive Management: The U.S. Department of the Interior Technical Guide*, U.S. DEP’T OF THE INTERIOR (2009), https://www.fwspubs.org/doi/suppl/10.3996/072017-JFWM-059/suppl_file/10.3996072017-jfwm-059.s4.pdf [<https://perma.cc/WW8G-HELZ>] (providing the authoritative guide for design and implementation of adaptive management in natural resources administration).

401. *Habitat Conservation Planning and Incidental Take Permit Processing Handbook*, *supra* note 82, ch. 9.0.

402. Evans et al., *supra* note 398, at 18-21.

403. 16 U.S.C. § 1533(f)(1)(B)(ii) (2018).

404. See Regulations for Prohibitions to Threatened Wildlife and Plants, 84 Fed. Reg. 44,753, 44,755 (Aug. 27, 2019).

405. Again, here, the Services could borrow from the HCP handbook. *Habitat Conservation Planning and Incidental Take Permit Processing Handbook*, *supra* note 82, at ch.

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sculpin depend, discussed in Section III.B.3, would relieve our concern that nearby development and climate change will undermine the conservation promise of the special exception.

Even the best metrics are useless unless someone collects data to indicate whether a protective regulation is making conservation progress. We found seventy-seven exceptions directly requiring monitoring and ten based on plans that require reporting. Sustaining monitoring programs is a big challenge for agencies with small budgets that suffer unpredictable variations in annual appropriations. Protective regulations already enlist private or state help in monitoring.⁴⁰⁶ Still, 4(d) rules will never entirely relieve the Services of oversight and sponsoring research to better understand the causes of species decline.⁴⁰⁷

Unexamined monitoring data cannot shed light on the effectiveness of conservation. Adaptive management scholarship criticizes the dearth of clear triggers for modifying plans, programs, and actions.⁴⁰⁸ Only eleven protective regulations (Table 6) contain a standard for triggering review of conservation effectiveness. Without such triggers, regulatory regimes linger to the detriment of species and the public that bears the cost of the resulting increased imperilment.⁴⁰⁹

Sometimes identifying a trigger acceptable to all collaborators is not possible because of information gaps or disagreements about recovery standards. In that case, the Services should establish hard deadlines to force reevaluation of a rule's effectiveness and—if necessary—restarting the collaborative process.⁴¹⁰ Sunset provisions establish an expiration date for some authority, such as a statute or a regulation.⁴¹¹ They are common in 10(j) rules. They are rare in the 4(d) rules but should be more common incentives to assess progress. The ESA requires the Services to reevaluate the status of all listed species every five years.⁴¹² That establishes a schedule

10.5.1 (illustrating triggers with Montana's Native Fish HCP, which requires mitigation actions if stream temperature increases by 1.0° C.).

406. See, e.g., 50 C.F.R. § 17.40(g)(iii)(D) (2019) (limiting Utah prairie dog exceptions to a percentage of a baseline population determined by the state wildlife agency's surveys).

407. The most rigorous models for monitoring and oversight remain the FWS coastal California gnatcatcher rule and the NMFS anadromous fish rule. §§ 17.41(b), 223.203.

408. Nie & Schultz, *supra* note 238; Fischman & Ruhl, *supra* note 237 (identifying as shortcomings of federal agency practice of adaptive management the lack of clear objectives and processes, monitoring thresholds, and defined actions triggered by thresholds).

409. Li, *supra* note 151, at 15.

410. See, e.g., 50 C.F.R. § 223.203(b)(2)(ii) (2019) (providing revocation of a take-by-harvest exception if the NMFS does not receive the plan by a particular date).

411. See Justin Pidot, *Governance and Uncertainty*, 37 CARDOZO L. REV. 113 (2016).

412. 16 U.S.C. § 1533(c)(2) (2018). As with so many deadlines in federal environmental law, appropriations have not kept up with statutory mandates. As a result of higher priorities, especially writing recovery plans, the FWS has not kept pace with the statutory command to review listings every five years, and current data suggest more species are overdue for review than have experienced timely reviews. To track the status of reviews, see *ESA 5-year Status Review*

for review that can be used in sunset timing. A sunset provision might also spur collaborators to act expeditiously to implement their promised conservation measures in order to show progress by the time the rule expires and needs renewal. Because both Services now apply no take prohibitions to threatened listings without protective regulations, simple expiration dates no longer suffice. Instead, protective regulations need to specify default protections if collaborative efforts fail to achieve conservation metrics.⁴¹³

D. Enforcement

The section 9 prohibitions are notoriously difficult to enforce. Harmed animals may be hard to locate. Once found, proximately connecting the harms to some responsible party may be impossible.⁴¹⁴ Section 4(d) rules that establish liability shields for economic activities offer a clear refuge for parties wishing to avoid violating prohibitions. But others willing to take the risk of exposing themselves to broader ESA section 9 prohibitions may face only small likelihoods of detection and prosecution. Scarce investigative resources compound the difficulty of demonstrating proximate cause. Collaboration, while necessary to bring diverse interests together to implement recovery programs, also builds relationships where enforcement may seem like a double cross, or at least a betrayal of the collaborative spirit. On the other hand, collaboration creates a community of insiders motivated to monitor and enforce prohibitions on actors who do not contribute to the program or renege on commitments.⁴¹⁵

An important counterweight to timid federal enforcement is the powerful citizen suit provision that allows any person to commence a civil suit to enjoin any other person from violating a section 9 prohibition or a 4(d) rule.⁴¹⁶ The expense of litigation precludes most people from considering citizen enforcement, but some environmental groups have

Dashboard, DEFENDERS OF WILDLIFE: CTR. FOR CONSERVATION INNOVATION, https://defenders-cci.org/app/five_year_review [<https://perma.cc/7AK7-JU8W>].

413. See, e.g., 50 C.F.R. § 223.203(b)(2)(ii) (2019) (revoking a take exception if the Service failed to receive an adequate resource management plan by a certain time).

414. See, e.g., *Aransas Project v. Shaw*, 756 F.3d 801 (5th Cir. 2014) (reversing a district court finding that state permits allowing water diversions proximately caused the deaths of 23 endangered whooping cranes downstream during a drought).

415. Insiders police collaborations against encroachment from outsiders. See, e.g., OSTROM, *supra* note 126, 62; Maria Damon et al. *Grandfathering: Environmental Uses and Impacts*, 13 REV. ENVTL. ECON. & POL'Y 23, 29-30 (2019). Collaborators police themselves to ensure that insiders do not cheat. See, e.g., OSTROM, *supra* note 126, at 67-69.

416. 16 U.S.C. § 1540(g) (2018). Citizens acting as private attorneys general must provide notice to the federal government of the alleged violation. The federal government then has sixty days to preclude citizen enforcement by filing its own enforcement action. If it does not, the private suit may move ahead. *Id.* § 1540(g)(2).

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experienced success.⁴¹⁷ The citizen suit provision allows parties outside of the collaborative community to ensure that participants are held to the promises reflected in 4(d) rules. This is especially true if rules precisely delineate the boundaries between exceptions and prohibited actions.

The Services should build on existing exceptions that convert the foreseeable causation needed to enforce take prohibitions on habitat degradation into clear planning maps and behavioral mandates. Outcome-based section 9 prohibitions present difficult burdens of proximate proof. The stochastic and indirect relationship between any particular habitat modification and actual species harm confounds proof of a take.⁴¹⁸ It is much easier to monitor compliance with adherence to land use development zones and required practices.

There is a trade-off between the certainty that landowners and businesses seek through special exceptions and the adaptation needed to continually adjust activities to new information from monitoring. Too much certainty for stakeholders can lead to conservation failure. Too much adaptation by agencies may lead collaborating stakeholders to abandon their support because the “time and emotional energy” required exceeds the risk of enforcement.⁴¹⁹ One approach to balance those competing interests is to promote planning that generates the specifics of how activities may qualify for a liability shield. With oversight and periodic concurrence from the Service, the collaborators on the plan may themselves define and modify practices. In the absence of plans, the Services should define practices in detail in the 4(d) rules themselves. The examples we discuss in our results, such as for the Mazama pocket gopher exception for farming practices, point toward the greater clarity we suggest.⁴²⁰

E. Delisting Trials

A 4(d) rule may serve as a trial for downlisting, where an endangered species is moved to the threatened list, or delisting, where a species is removed entirely from the ambit of ESA protection.⁴²¹ Just as CCAs negotiated before listing may test conservation approaches that may then be incorporated into 4(d) rules after listing, delisting approaches may be incorporated into 4(d) rules to create incentives for conservation experiments. Both delisting and downlisting require rulemakings that

417. See, e.g., *Marbled Murrelet v Babbitt*, 83 F.3d 1060 (9th Cir. 1996).

418. See Fischman, *The Divides of Environmental Law and the Problem of Harm in the Endangered Species Act*, *supra* note 66.

419. Bradshaw, *Agency Engagement*, *supra* note 7, at 447.

420. See 50 C.F.R. § 17.40(a)(4)(ii)(D) (2019); *supra* text accompanying note 220.

421. Stoellinger et al., *supra* note 324, at 204; Li, *supra* note 151, at 13.

consider the same risk factors that previously justified listing.⁴²² In addition to factors relating to habitat, over-exploitation, and disease, the ESA requires the Service to evaluate the “inadequacy of existing regulatory mechanisms” and other threats undermining species viability.⁴²³ A 4(d) rule may harness collaborative governance to test the effectiveness of new regulatory mechanisms and habitat management practices.

When a species reaches its ESA recovery goal, the Service “delists” it. However, delisting is a dramatic toggle that poses risks for species reliant on the legal protections of the ESA in order to sustain populations.⁴²⁴ The Services often predicate delisting rules on the attainment of population targets established in recovery plans.⁴²⁵ If those targets are reached only because of ongoing ESA programs, then delisting could undermine the progress already achieved. One approach to prevent backsliding after delisting is for states to fill the regulatory gap left when the ESA no longer protects a species.⁴²⁶ Still, applicable state law may vary, implementation may be unenthusiastic, and states often allow takes prohibited by the ESA.⁴²⁷

A 4(d) rule can assist in transitioning species like the gray wolf off the ESA list. One approach would be to downlist the wolf before delisting it. The downlisting would allow the Service to promulgate a rule that mimics the regulatory approach to takings that would ultimately apply when the species is delisted. The Services should take advantage of the flexibility of the threatened status to downlist before delisting when private takes (including incidental habitat degradation) present an ongoing risk to species viability.⁴²⁸ Even threatened species, though, would benefit from a transitional 4(d) rule that mimics the state regulatory regime.⁴²⁹

Delisting and downlisting are vitally important to sustaining political support for the ESA, as they demonstrate tangible success in conservation and recovery. But durable success, where a delisted species continues to recede from imperiled status, is best achieved through adaptive

422. 16 U.S.C. § 1533(a)(1) (2018).

423. *Id.*

424. J. Michael Scott et al. demonstrate the falsehood of the ESA’s underlying assumption that “once recovery goals for a species are met it will no longer require continuing management” for 84% of listed species. *Conservation-reliant Species and the Future of Conservation*, 3 CONSERVATION LETTERS 91 (2010).

425. 16 U.S.C. § 1533(f)(1); *see, e.g.*, Removal of the Louisiana Black Bear from the Federal List of Endangered and Threatened Wildlife, 81 Fed. Reg. 13,124 (Mar. 11, 2016).

426. *See* § 1533(a)(1)(D) (providing that adequate state “regulatory mechanisms” may be a basis for revising the status of a species).

427. *See* Fischman et al., *supra* note 18.

428. Listed species whose habitat occurs mostly on federal land or whose habitat is affected mostly through activities subject to federal permits are not as well-suited for delisting experimentation, because section 7 applies strictly to both endangered and threatened species. *See* Stoellinger et al., *supra* note 324, at 204; Li, *supra* note 151, at 13.

429. *See, e.g.*, Proposed Reclassification of the Red-Cockaded Woodpecker From Endangered to Threatened with a Section 4(d) Rule, 85 Fed. Reg. 63,474 (Oct. 8, 2020)..

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management. An effective first step would be to use 4(d) rules to pilot post-listing prohibitions and programs. If monitored, the 4(d) trial may be fine-tuned at the time of delisting.⁴³⁰ We agree with Stoellinger et al. that delisting trials should involve cooperation with states to implement management plans that could endure after final delisting.⁴³¹ Innovative 4(d) experimentation might subject different populations to different potential post-listing regimes to test the relative effectiveness of approaches that states might adopt.

Conclusion

Habitat loss and degradation imperil most species currently on the brink of extinction in the United States. Collaborative governance can tailor recovery solutions to fit the shared problem of improving habitat. Our study reveals specific methods that can be expanded through shared management of habitat resources. But our recommendations call for much broader adoption of tools to generate more motivation and commitment for stakeholders to act.

The greatest weakness of the ESA is not its content but rather its context. It stands isolated, with few other federal programs to prevent species from declining into its domain. When invoked, it dramatically, even rudely, shifts the regulatory environment into a new phase, triggering resentment and—sometimes—hardship. States remain largely responsible for preventing species from slipping to the brink of extinction. Yet, states allocate little money to reverse population declines and habitat degradation. Without significant infusions of money for states, the forecast indicates a flood of ESA listings for increasingly imperiled species. States do not welcome the listings, but they cannot afford to prevent the listings. Service directors do not want to promulgate all the listings, but the science compels them to do so.

Avoiding species extinctions requires undoing, in many cases, centuries of habitat degradation. The cost of achieving the ESA's "no extinctions" policy must be borne by somebody and over a long period of time. Private landowners object to paying for recovery without concomitant private benefit. Sharing the recovery burden seems the best path forward. Short of giving up on the congressional commitment to avoid extinctions, collaboration is essential to balance trade-offs between increased regulatory pressure on the private sector and greater government subsidies, grants, and budgets.

Our research demonstrates that collaborative governance guides many elements of the protective regulations covering threatened species.

430. See Li, *supra* note 151, at 13.

431. Stoellinger et al., *supra* note 324, at 204.

Our recommendations point the way to negotiating more deals that employ incremental, tailored approaches in place of the dramatic disparity between unlisted status and endangered species prohibitions. Our most important result is that almost three-quarters of protective regulations substitute practice-based limitations for difficult-to-detect proximate consequences of an activity. In that respect, collaborative governance transforms the ESA from a statute that prohibits biological entities from crossing invisible ecological thresholds (i.e., harm, jeopardy, recovery impairment) into a regulatory program insisting on best practices. Greater compliance with collaboratively crafted, practice-based conservation requirements may improve the prospect for recovery, even if they are less stringent than the standard statutory prohibitions. That is a paragon of the “win-win” scenario often promised by supporters of collaborative governance.

The ESA’s protective regulations offer lessons for collaborative governance. Most U.S. legislation and administrative programs dealing with collaborative governance focus on procedures and feel-good encouragement. But our study insists that prohibitive backstops provide traction for collaborative governance requiring stakeholder sacrifice. Understanding how collaborative governance can promote conservation effectiveness while still accommodating the interests of stakeholders requires detailed case studies that trace the arc of a process over several iterations.⁴³² This Article comprehensively documents ongoing recovery experiments through protective regulations that should be compared through longitudinal research employing congruent rubrics.

The collaborative governance literature teaches that behind the tentative successes, promising approaches, and skepticism that surround protective regulations is the need to craft incentives. Any statutory reforms that relieve the private sector of responsibilities for recovering imperiled species would reduce the motivation for participating in collaborations either to avoid listing or to recover already listed species. Flexibility to tailor rules must be constrained to avoid creating a *carte blanche* for continuing activities that thwart conservation. But collaborative rules must also offer some certainty to the regulated community that it can shoulder its share of the costs associated with recovery.

Appendix

The Appendix supplements the information above by providing details on the method of our empirical analysis of protective regulations and also introducing interested readers to the data spreadsheet.

432. Emerson, Nabatchi & Balogh, *supra* note 7, at 10.

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I. Supplemental Information About Domain and Method

We reviewed all species-specific FWS and NMFS 4(d) and 10(j) rules in force as of September 26, 2019, the date that the FWS reversed its default approach of applying all section 9 prohibitions unless excepted by a protective regulation. We do not evaluate rules that are no longer in force because of delisting or judicial vacatur. Our domain includes all animal species that occur in the United States and its territories outside of captivity. Because our focus is on incidental takes and habitat conservation, we exclude protective regulations with only extraterritorial application, generally dealing with solely commerce in wildlife.⁴³³ Though ESA section 4(d) does apply to plants, the Services promulgated no extant rules tailoring section 9 prohibitions to particular listed plants during the time frame of our study. During the timeframe of our study, the FWS extended to all threatened plants a blanket limit to the statutory application of endangered prohibitions for seeds of “cultivated origin” and for state agency employees or agents acting under the terms of a section 6 cooperative agreement who remove and reduce to possession plants from federal lands.⁴³⁴

All the coding decisions we make with respect to 4(d) rules also apply to 10(j) rules. When we refer to 4(d) rules or regulations, we mean also to include 10(j) rules and regulations. Both tailor prohibitions to a listed species (or experimental subset). Though we coded the two types of tailoring rules the same way, our tables and discussion frequently separate 4(d) rules from 10(j) rules to show how they sometimes differ. With a few notable exceptions, such as the Mexican and red wolf reintroduction programs, experimental population regulations tend to be less controversial and more accommodating of landowners. Where the Services promulgate both a 4(d) and a 10(j) rule for the same species, such as the grizzly bear, we count them as two separate rules because they appear in two different sections of the Code of Federal Regulations (Code).⁴³⁵

In examining rules, we drew from the Code to ensure that we captured any revisions accumulated since initial promulgation. Other than the information referenced in our analysis of the conservation shortcomings in Section III.B, we limited our analysis of the rules to the material in the Code itself. We did not examine documents, such as plans or best practices, referenced in a rule. Similarly, we did not examine state laws and

433. *See, e.g.*, 50 C.F.R. § 17.40(m)(2) (2019) (setting out tailored prohibitions that allow some trade in vicuna products, such as raw wool, wool cloth, and handicraft products).

434. § 17.71

435. § 17.40(b) (grizzly bear 4(d) rule); § 17.84(l) (grizzly bear 10(j) rule). This is also the practice of the Services in the official ESA list § 17.11(h), which count 10(j) populations in a separate species line from threatened species.

regulations, such as fishing restrictions, which serve as standards in many rules.

We refer to a particular attribute we analyzed in coding as a variable. We interpreted each exception to code it with a value that sorted each variable into two or more categories.

We read, coded, and cross-checked all of the extant content of the rule, as published in the Code as of September 26, 2019. For our qualitative analysis of conservation shortcomings in Section III.B, we supplemented this content with the supporting materials included in Federal Register notices and secondary sources.

II. Data and Values Spreadsheet

We provide as a separate, Excel document, the data we collected. While limitations of publishing preclude its inclusion in this document, it is available on request from Robert Fischman at rfischma@indiana.edu. The spreadsheet tabs contain a row for each of the exceptions in protective regulations. The columns display the variables we coded.