

ARTICLES

CRITICAL HABITAT'S "PRIVATE LAND PROBLEM": LESSONS FROM THE DUSKY GOPHER FROG

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SUMMARY

The Endangered Species Act provides for the designation as "critical habitat" of habitat deemed "essential" for conservation of listed species. To understand the incentive effects of critical habitat designations, this Article examines the designation for the dusky gopher frog, which included private land unoccupied by the frog and which reached the U.S. Supreme Court. It argues that critical habitat designations can penalize landowners for conserving habitat features, thereby disincentivizing habitat maintenance and restoration. Market-based alternatives that reward landowners for habitat features would provide the needed incentives for private landowners to protect and restore habitat.

The Endangered Species Act's (ESA's)¹ principal goals are to prevent the extinction of imperiled species and encourage their recovery.² To address the threat of habitat loss—the leading cause of species decline³—the statute provides for the designation of "critical habitat" for listed species.⁴ Such designations can encompass any occupied or unoccupied habitat that is "essential for the conservation of the species."⁵

To understand the effects of critical habitat designations on the incentives for private landowners and how these incentives should influence decisions whether to designate private land as critical habitat, we consider the critical habitat designation for the dusky gopher frog and the conflict it

engendered.⁶ This extremely rare species depends on active human intervention to sustain the few extant populations, and will require similar or greater interventions to establish additional populations. In 2012, the U.S. Fish and Wildlife Service (FWS) designated 1,544 acres of private land in Louisiana as critical habitat for the species. There were no dusky gopher frogs on the land, and all but one of the frog's required habitat features were absent. However, the sole feature, a seasonal pond, was rare and difficult to replace, making the land perhaps the best hope for restoring some of the frog's lost habitat.

The owners objected that the designation reduced the land's value and threatened to interfere with its development. Despite these costs, the landowners contended that the designation would contribute nothing to the species' conservation and recovery since they had no intention or incentive to modify the land for the frog's benefit. Litigation over that designation culminated in the U.S. Supreme Court's *Weyerhaeuser Co. v. U.S. Fish & Wildlife Service* decision, which held that land must first be "habitat" to be deemed critical habitat.⁷

FWS and the National Marine Fisheries Service (NMFS) have revised their critical habitat regulations in response to *Weyerhaeuser*, but the future of those reforms is

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1. 16 U.S.C. §§1531-1544, ELR STAT. ESA §§2-18.
2. U.S. FISH & WILDLIFE SERVICE, ESA BASICS: 40 YEARS OF CONSERVING ENDANGERED SPECIES (2017), https://www.fws.gov/endangered/esa-library/pdf/ESA_basics.pdf.
3. Stuart L. Pimm & Peter Raven, *Extinction by Numbers*, 403 NATURE 843 (2000).
4. 16 U.S.C. §1433(b).
5. *Id.*

6. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Dusky Gopher Frog (Previously Mississippi Gopher Frog), 77 Fed. Reg. 35118, 35131 (June 12, 2012). See *Weyerhaeuser Co. v. U.S. Fish & Wildlife Serv.*, 139 S. Ct. 361, 48 ELR 20196 (2018).
7. 139 S. Ct. at 368-69.

uncertain.⁸ Whatever the eventual outcome of that uncertainty, the dusky gopher frog case offers several important policy lessons.

First, it underlines that the effects of a critical habitat designation will significantly depend upon the type of land designated. While a designation on federal land will require agencies to adjust their plans to help conserve habitat, designating private land as critical habitat may result in conflict, lead to no conservation actions, and even create perverse incentives to preemptively destroy habitat. Second, designating unoccupied land may provide no meaningful conservation benefits to offset landowner disincentives. Lastly, designating land that is currently unsuitable and would require significant restoration is unlikely to promote conservation given critical habitat's lack of incentives for affirmative habitat restoration efforts.

The case suggests that private landowners could be better encouraged to partake in conservation and recovery of imperiled species by a regulatory approach that rewarded them for maintaining habitat features, rather than penalizing them by limiting their land use options or reducing the value of their property. A market approach that compensates landowners for their land's habitat features, habitat potential, or associated ecosystem services would encourage the conservation or restoration of these features, aligning the incentives of landowners with the interests of species.

Part I of this Article introduces the ESA's critical habitat provisions. Part II describes the dusky gopher frog critical habitat designation and the litigation it caused. Part III explains how the dusky gopher frog case is an example of the "private land problem" that has been observed for other provisions of the ESA. Part IV draws several policy lessons from the dusky gopher frog case, including when designation of private land as critical habitat is likely to create perverse incentives. Finally, Part V discusses market-based alternatives to critical habitat designations that can avoid these consequences while encouraging habitat restoration and species recovery, and Part VI concludes.

I. The ESA's Critical Habitat Provisions

The ESA was intended "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved," among other goals.⁹ To that end, the statute provides that, whenever a species is listed under the Act, FWS or NMFS¹⁰ shall "to the maximum extent practicable" also designate "any habitat of such

species which is then considered to be critical habitat."¹¹ The statute defines "critical habitat" as follows:

(i) the specific areas within the geographical area occupied by the species, at the time it is listed . . . on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and

(ii) specific areas outside the geographical area occupied by the species at the time it is listed . . . upon a determination by the Secretary that such areas . . . are essential for the conservation of the species.¹²

The definition also clarifies that critical habitat shall presumptively "not include the entire geographical area which can be occupied by the threatened or endangered species."¹³ Critical habitat must be determined based on "the best scientific data available" and considering "the economic impact, and any other relevant impact."¹⁴ If the negative impacts of designating a particular area exceed its benefits, the relevant Service may decline to designate that area unless doing so "will result in the extinction of the species."¹⁵

For the first several decades after the ESA was enacted, these provisions lay essentially dormant. According to a 1988 study, for instance, FWS and NMFS declined to designate critical habitat for 78% of listed species.¹⁶ This is because the Services generally viewed designation of critical habitat as a costly, time-consuming process with at best modest benefits to species and, therefore, deemed such designation imprudent.¹⁷ Several court defeats in the 1990s and early 2000s, however, required the agencies to reevaluate and expand their use of critical habitat authority.

In 2003, for instance, the U.S. Court of Appeals for the Ninth Circuit held that the agencies had too narrowly interpreted a prohibition against "destruction or adverse modification" of critical habitat, thereby giving less effect to critical habitat designations than the law provided.¹⁸ Under

8. See Endangered and Threatened Wildlife and Plants; Regulations for Listing Endangered and Threatened Species and Designating Critical Habitat, 85 Fed. Reg. 81411 (Dec. 16, 2020); Endangered and Threatened Wildlife and Plants; Regulations for Designating Critical Habitat, 85 Fed. Reg. 55398 (proposed Sept. 8, 2020); Endangered and Threatened Wildlife and Plants; Regulations for Listing Species and Designating Critical Habitat, 84 Fed. Reg. 45020 (Aug. 27, 2019).

9. 16 U.S.C. §1531(b).

10. With few exceptions not relevant here, FWS has primary responsibility for implementing the ESA with respect to terrestrial species and NMFS has responsibility for marine species. Because this Article focuses on the statute's application to private land, it will primarily address FWS' role.

11. *Id.* §1533(a)(3). See Oliver A. Houck, *The Endangered Species Act and Its Implementation by the U.S. Departments of Interior and Commerce*, 64 U. COLO. L. REV. 277, 296-314 (1993).

12. 16 U.S.C. §1532(5)(A). See Norman D. Jones & Thomas J. Ward, *Critical Habitat's Limited Role Under the Endangered Species Act and Its Improper Transformation Into "Recovery" Habitat*, 34 UCLA J. ENV'T L. & POL'Y 1, 30 (2016).

13. 16 U.S.C. §1532(5)(C).

14. *Id.* §1533(b)(2). See Damien M. Schiff, *Judicial Review Endangered: Decisions Not to Exclude Areas From Critical Habitat Should Be Reviewable Under the APA*, 47 ELR 10352, 10353-56 (Apr. 2017) (discussing the history and motivation behind the requirement to consider critical habitat's economic impact).

15. 16 U.S.C. §1533(b)(2).

16. See James Salzman, *Evolution and Application of Critical Habitat Under the Endangered Species Act*, 14 HARV. ENV'T L. REV. 311, 332 (1988).

17. See David J. Hayes et al., *A Modest Role for a Bold Term: "Critical Habitat" Under the Endangered Species Act*, 43 ELR 10671, 10671-72 (Aug. 2013). See also Salzman, *supra* note 16, at 332 (reporting that 317 of 320 decisions not to designate critical habitat between 1980 and 1988 were because designation was deemed imprudent).

18. Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv., 378 F.3d 1059, 34 ELR 20068 (9th Cir. 2004). See also Hayes et al., *supra* note 17, at 10672.

the ESA, federal agencies must “insure” that the activities they authorize, fund, or carry out will not “result in the destruction or adverse modification” of critical habitat.¹⁹ If they might, the relevant agency must “consult” with FWS or NMFS about how the activity can be modified to avoid these impacts, a process that can take some time.²⁰

Consequently, the Services have ramped up critical habitat designations in recent decades. Between 2007 and 2017, FWS designated nearly 207 million acres as critical habitat.²¹ Almost all of that area was deemed occupied at the time of listing, with unoccupied areas constituting less than 1% of the total.²² However, recent years have seen greater interest within and outside of the Service to increase designation of unoccupied areas.²³ Predictably, this increased use of the critical habitat designation power has seen a corresponding rise in conflict over the ESA’s impact on designated land and associated activity. It also presents an opportunity to consider how critical habitat can help or hinder conservation.

II. A Shy Frog, Uninhabitable Critical Habitat, and Supreme Conflict

The dusky gopher frog (*Rana sevosa*) is a grayish-brown, spotted amphibian known for covering its eyes and peeking out when it feels threatened.²⁴ It is native to longleaf pine ecosystems found in coastal plains of the southeastern United States, a once common ecosystem type that has been reduced considerably during the past two centuries. The total population of the frog in the wild numbers approximately 135 individuals across six ponds in Mississippi.²⁵

The dusky gopher frog lives most of its adult life in abandoned burrows dug by other animals, including the gopher tortoise, which is itself listed as threatened in Mississippi and whose range overlaps with the remaining range

of the frog.²⁶ According to FWS, the frog requires three habitat features to support a self-sustaining population: (1) ephemeral ponds for breeding and to support tadpoles, (2) upland open-canopied forest containing the holes or burrows needed to support adult frogs, and (3) open-canopied forest connecting these two areas.²⁷ The frog’s breeding ponds must dry up for part of the year to eliminate fish that could prey on eggs or tadpoles. The adult frog’s longleaf pine forest habitat must be of adequate size to sustain a healthy adult frog population and requires active management, including prescribed burns, to maintain a rich layer of herbaceous cover. The connectivity habitat may also require active intervention to maintain suitable ground cover.²⁸ If any of these features are missing from an area, the dusky gopher frog has little-to-no hope of long-term survival there.²⁹

These features used to be common in Alabama, Louisiana, and Mississippi, but fire suppression and centuries of human development have made suitable frog habitat rare. Fire-disturbed, longleaf pine forest once constituted 90 million acres in the American South, but this has been reduced to only two million acres by residential and other development and conversion from open-canopied longleaf pine to denser, faster-growing forests more favorable to commercial timber harvesting.³⁰ Changes in land use have also reduced the number of ephemeral ponds suitable for the dusky gopher frog’s breeding.³¹

The dusky gopher frog’s population has declined along with the availability of its suitable habitat. Today, there is only one viable breeding population, at a site called Glen’s Pond in De Soto National Forest. Several other populations have recently been established by translocating frogs to other suitable habitats, as part of ongoing recovery efforts.³² But these populations are not yet believed to be self-sustaining.

Given the significant loss of habitat that suits the frog, conservation of the species and any potential recovery prospects for it depend greatly on human intervention.³³ Efforts to recover the frog to date demonstrate this reality. Biologists from FWS have worked to nurture the population at Glen’s Pond for approximately two decades.³⁴ In addition, The Nature Conservancy has been working to reintroduce and recover the frog on nearby private land owned by the conservancy. One of the world’s largest and most sophisticated conservation groups, The Nature Conservancy’s

19. 16 U.S.C. §1536(a)(2).

20. *Id.* §1536(b). See Jacob Malcom & Ya-Wei Li, *Data Contradict Common Perceptions About a Controversial Provision of the Endangered Species Act*, 112 PROC. NAT’L ACAD. SCI. 15844 (2015); Dave Owen, *Critical Habitat and the Challenge of Regulating Small Harms*, 43 ELR 10662, 10664-66 (Aug. 2013). See also Paul S. Weiland et al., *Analysis of Data on Endangered Species Consultations Reveals Nothing Regarding Their Economic Impacts*, 113 PROC. NAT’L ACAD. SCI. E1593 (2016) (reporting that consultation “can result in major changes to or abandonment of projects with substantial economic implications”).

21. See ENVIRONMENTAL POLICY INNOVATION CENTER, ENDANGERED SPECIES ACT: 2018 ADMINISTRATIVE REFORM 7 (2018), available at <http://policyinnovation.org/wp-content/uploads/2018/07/ESA-proposals-report.pdf>.

22. *Id.*

23. See Listing Endangered and Threatened Species and Designating Critical Habitat; Implementing Changes to the Regulations for Designating Critical Habitat, 81 Fed. Reg. 7414, 7415 (Feb. 11, 2016) (eliminating a preference for designating occupied areas before considering unoccupied areas), *rev’d*, 84 Fed. Reg. 45020. See also Jason C. Rylander et al., *Defining Habitat to Promote Conservation Under the ESA*, 50 ELR 10531 (July 2020) (arguing that designation of unoccupied areas is important to address the impacts of climate change).

24. FWS, DUSKY GOPHER FROG FACT SHEET (2018), https://www.fws.gov/uploadedFiles/2018_GopherFrogFactsheet.pdf [hereinafter DUSKY GOPHER FROG FACT SHEET].

25. *Id.*

26. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Mississippi Gopher Frog, 75 Fed. Reg. 31387, 31392 (proposed June 3, 2010).

27. 77 Fed. Reg. at 35131.

28. *Id.* at 35131-32.

29. *Id.* at 35130.

30. *Restoring a Disappearing Ecosystem: The Longleaf Pine Savanna*, PNW SCI. FINDINGS (Pacific Northwest Research Station, U.S. Forest Service, Portland, Or.), May 2013, at 2.

31. 77 Fed. Reg. at 35124, 35130.

32. DUSKY GOPHER FROG FACT SHEET, *supra* note 24.

33. See, e.g., FWS, DUSKY GOPHER FROG (*Rana Sevosa*) RECOVERY PLAN 28 (2015) [hereinafter DUSKY GOPHER FROG RECOVERY PLAN] (describing efforts to support the dusky gopher frog population at Glen’s Pond).

34. *Id.*

experience reintroducing the dusky gopher frog on its land reveals the challenges landowners face, even those with substantial resources and commitment to conservation, simply to give the frog a chance to repopulate an area.³⁵ Any private landowners wishing to restore habitat on their land would have to undertake efforts similar to those of The Nature Conservancy.

In 2002, The Nature Conservancy acquired a 1,700-acre parcel in Old Fort Bayou, Mississippi, from a timber company.³⁶ Over the course of several years, Nature Conservancy staff recreated a longleaf pine ecosystem by thinning existing timber stands, planting longleaf seedlings, and executing controlled burns to rejuvenate the grasses and shrubs that provide a diverse layer of landscape cover. The property features an ephemeral pond that fills during spring rains, when the dusky gopher frog breeds, but generally dries up later in the year.

To establish a dusky gopher frog population at Old Fort Bayou, The Nature Conservancy began translocating tadpoles and frogs from the existing Glen's Pond population in 2004.³⁷ The group eventually established its own frog-rearing station at a Nature Conservancy lab. Today, biologists and technicians collect egg masses each year from the pond on The Nature Conservancy property. At the lab, the eggs are raised into tadpoles and frogs under controlled conditions. The goal is to “head-start” enough frogs so that, once reintroduced to the wild, they will survive to help bolster the flagging population.³⁸ From 2004 to 2018, The Nature Conservancy released approximately 3,800 tadpoles and more than 5,500 frogs at the pond on the Old Fort Bayou property.³⁹ Due to that effort, the pond supported at least 28 females in the spring of 2018, and biologists estimated that perhaps 20 males resided at the pond, meaning that likely no more than 50 adult frogs have survived at the site.⁴⁰

Maintaining the restored frog habitat remains difficult. To maintain the proper forest type and vegetative cover, the organization uses a fire crew of at least six people to burn the landscape throughout the growing season, a prospect that can be derailed by weather, wind patterns, and neighbors, which include a golf course.⁴¹ Moreover, the pond does not always dry up in the summer, meaning small fish must be removed by staff before the frog breed-

ing season.⁴² Other regular activities required to maintain the habitat include manually removing shrubs, small trees, and invasive cogongrass.⁴³

One Nature Conservancy staff member emphasized the amount of effort required to maintain the property and contrasted it with the resources available to a typical private-property owner. In speaking to the incentives presented by endangered species policy, she noted, “It’d be cool if private landowners could do something like this and get credit for it—or at least not get penalized for it.”⁴⁴

FWS had listed the dusky gopher frog as an endangered species in 2001, an action that followed a listing petition and the threat of legal action by two environmental groups.⁴⁵ After further petitioning and additional threats of legal action, the Service in 2010 proposed to designate 1,957 total acres as critical habitat for the species, more than 70% of which was federal land.⁴⁶ The proposed designation included 11 units in Mississippi, four of which remained occupied by dusky gopher frogs.⁴⁷

However, biologists familiar with the frog who were selected by FWS to review the proposed designation questioned whether it would be sufficient to conserve the species, and suggested the Service reinvestigate the frog’s historical range, including a site in Louisiana, for additional habitat.⁴⁸ Expanding the geographic range of the species beyond Mississippi could provide a hedge against risk of storms, disease, drought, or other events that might devastate an entire population across its existing small range. In 2012, the agency made a final critical habitat designation of 6,477 total acres, including an additional unit of 1,544 acres of private land in St. Tammany Parish, Louisiana.⁴⁹

The St. Tammany Parish parcel was part of an approximately 45,000-acre tract owned by local resident Edward Poitevent and family members, who leased the tract to Weyerhaeuser Company for timber operations.⁵⁰ Upon the suggestion of its biologist peer reviewers, FWS surveyed the land without the landowners’ knowledge or consent and deemed it contained five ponds of “ephemeral wetland habitat.” The dusky gopher frog had not been documented in the area since 1965, the last known sighting of the frog in the state of Louisiana.⁵¹

The Service cited the presence of the ponds, and the general “importance of ephemeral ponds to the recovery of the dusky gopher frog,” as the reason for including the St. Tammany Parish site, despite the Service’s acknowledgement that the uplands surrounding the site were “poor-

35. Nonprofit conservation groups experience the same private land problem (e.g., reduced property values and burdensome permitting requirements). In The Nature Conservancy’s case, for instance, possessing and moving frogs and tadpoles requires a federal permit, since such activity is considered prohibited “take.” 16 U.S.C. §1532(19). However, because these groups are uniquely motivated to pursue conservation, they may be more likely to overcome these obstacles than most private landowners.

36. For detailed background on The Nature Conservancy’s efforts to establish and maintain a dusky gopher frog population, see Tate Watkins, *If a Frog Had Wings, Would It Fly to Louisiana?*, 37 PERC REP. 26 (2018).

37. DUSKY GOPHER FROG RECOVERY PLAN, *supra* note 33, at 30.

38. For a description of “head-starting” dusky gopher frogs, see Linda LaClaire, *Cattle Tanks Prevent Extinction of the Dusky Gopher Frog*, FISH & WILDLIFE SERV., Dec. 27, 2016, <https://www.fws.gov/ecological-services/highlights/12272016.html>.

39. Watkins, *supra* note 36, at 30.

40. *Id.*

41. *Id.*

42. *Id.*

43. DUSKY GOPHER FROG RECOVERY PLAN, *supra* note 33, at 30-31.

44. Watkins, *supra* note 36, at 30.

45. Biodiversity Legal Foundation, Petition to Emergency List the Mississippi Gopher Frog (May 21, 2001), <https://ecos.fws.gov/docs/petitions/92100/597.pdf>.

46. 75 Fed. Reg. at 31387.

47. *Id.* at 31395-96.

48. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Mississippi Gopher Frog, 76 Fed. Reg. 59774 (proposed Sept. 27, 2011).

49. 77 Fed. Reg. at 35118 tbl.2.

50. Watkins, *supra* note 36, at 28.

51. See 77 Fed. Reg. at 35118 tbl.2.

quality terrestrial habitat for dusky gopher frogs” that lacked the open-canopied ecosystem required for the frog’s survival.⁵² While the uplands did not “currently contain the essential physical or biological features of critical habitat,” FWS “believed them to be restorable with reasonable effort” because the land already contained the most difficult habitat feature to recreate—the ephemeral ponds.⁵³

Transforming the Poitevent land into habitat would have required similar effort, time, and expense as that undertaken by The Nature Conservancy in Old Fort Bayou, Mississippi. To make the land suitable for the frog, the landowners would have had to remove their commercially valuable trees, replace them with relatively slow-growing longleaf pines, maintain the land with regular fire, and preserve the ephemeral ponds. Then, active frog reintroduction would require raising and releasing enough dusky gopher tadpoles or frogs. Even if a typical landowner could undertake all these steps, he or she would be unlikely to do so without there being some personal benefit. Further, a typical landowner certainly would not characterize this as mere “reasonable effort,” as FWS did.

Because the critical habitat designation would reduce the value of the property and impose other economic costs, the proposal prompted immediate opposition from the Poitevent family, Weyerhaeuser, and even members of the public. The landowners had previously worked with the real estate arm of the timber company to rezone the area, in one of the fastest-growing parts of the state,⁵⁴ for development of residential and commercial sites as well as open space.⁵⁵ And they believed it likely that the critical habitat designation could interfere with the mixed development they envisioned.

The economic impact of the designation depended on whether continued timber harvesting or conversion to mixed-use development would require a federal permit or federal funding. If not, FWS’ economic analysis found that the critical habitat designation would not affect the owners’ use of the property—although the Service acknowledged that the designation would not be costless even in this circumstance. Citing the stigma of critical habitat designations, FWS found that “public attitudes about the limits or restrictions that critical habitat may impose can cause real economic effects to property owners, regardless of whether such limits are actually imposed.”⁵⁶ Consequently, the Service concluded, the designation as critical habitat would immediately reduce the land’s value, relative to non-designated properties.⁵⁷ If a permit were required, FWS estimated that the landowners could lose as much as \$34

million, depending on the extent of mitigation or curtailment of development that might be required.⁵⁸

Despite the landowners’ objections, FWS included the St. Tammany Parish land in the critical habitat designation because it did not impose “any disproportionate costs” that would warrant an exclusion. The Service published its final designation on June 12, 2012.⁵⁹ Shortly after, the Poitevent family and Weyerhaeuser announced their intent to sue FWS, arguing that their land was not habitat for the frog and thus could not be designated as critical habitat.⁶⁰ They also expressed their intention to never convert the land to frog habitat, arguing that this meant the land could not be “essential” to the frog’s recovery.

After lower courts sided with FWS by deferring to the agency’s judgment, the Supreme Court agreed to hear the case. In 2018, the Court decided *Weyerhaeuser Co. v. U.S. Fish & Wildlife Service*, holding that only “habitat” could be designated as “critical habitat.” The Court declined to say what was required for land to be deemed “habitat,” leaving that question for the lower court or the Service to decide in the first instance.⁶¹ FWS ultimately settled the case, agreeing to remove the critical habitat designation from the Poitevent family land and putting off for another day resolution of the question left open by the Supreme Court.⁶²

III. Critical Habitat’s “Private Land Problem”

The dusky gopher frog case demonstrates that critical habitat, like other ESA provisions, can create perverse incentives for landowners by making rare species or their habitats a liability rather than an asset.⁶³ This is a well-known phenomenon under the ESA’s prohibition against the take of endangered species,⁶⁴ for instance, which has been interpreted to forbid a wide variety of ordinary land use activities affecting species or their habitat.⁶⁵ Because

52. *Id.* at 35123, 35133.

53. *Id.* at 35135.

54. James Gill, *Endangered Gopher Frog Won’t Be Missed in Tammany if Supreme Court Sides With Fish and Wildlife*, NEW ORLEANS ADVOC., Jan. 27, 2018.

55. FWS, DRAFT ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR THE MISSISSIPPI GOPHER FROG ES-5 (2011) [hereinafter DRAFT ECONOMIC ANALYSIS].

56. *Id.* at 2-17.

57. *Id.*

58. 77 Fed. Reg. at 35140.

59. *Id.* at 35141.

60. Robert Rhoden, *St. Tammany Parish Landowners Intend to File Lawsuit Over Frog Habitat*, TIMES-PICAYUNE, Oct. 24, 2012.

61. *Weyerhaeuser Co. v. U.S. Fish & Wildlife Serv.*, 139 S. Ct. 361, 368-69, 48 ELR 20196 (2018).

62. Consent Decree, *Markle Interests, LLC v. U.S. Fish & Wildlife Serv.*, No. 13-cv-234 (E.D. La. July 3, 2019). FWS subsequently amended its critical habitat regulations in response to *Weyerhaeuser*. See 85 Fed. Reg. 81411; 85 Fed. Reg. 55398; 84 Fed. Reg. 45020. However, with the recent change in administration, it is unclear whether these rules will be retained, revoked, or substantially modified.

63. Jonathan Adler, *The Leaky Ark: The Failure of Endangered Species Regulation on Private Lands*, in REBUILDING THE ARK: NEW PERSPECTIVES ON ENDANGERED SPECIES ACT REFORM 6-31 (Jonathan Adler ed., AEI Press 2011).

64. The ESA authorizes FWS to regulate the take of threatened species in some circumstances. 16 U.S.C. §§1532(19), 1533(d). See JONATHAN WOOD, PROPERTY AND ENVIRONMENT RESEARCH CENTER, THE ROAD TO RECOVERY: HOW RESTORING THE ENDANGERED SPECIES ACT’S TWO-STEP PROCESS CAN PREVENT EXTINCTION AND PROMOTE RECOVERY (2018), available at <https://www.perc.org/wp-content/uploads/2018/04/endangered-species-road-to-recovery.pdf>; Jonathan Wood, *Take It to the Limit: The Illegal Rule Prohibiting the Take of Any Threatened Species Under the Endangered Species Act*, 33 PACE ENV’T L. REV. 23 (2015).

65. *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 25 ELR 21194 (1995).

this prohibition can impose significant burdens on private landowners who accommodate rare species, they may respond by preemptively destroying habitat or engaging in a practice referred to as “shoot, shovel, and shut up.”⁶⁶

A 2003 study of how landowners responded to protections for the red-cockaded woodpecker, for instance, found that a single colony of these woodpeckers could, because of take regulation, preclude the harvest of \$200,000 of timber.⁶⁷ In analyzing more than 1,000 forest plots in North Carolina, the researchers found that proximity to red-cockaded woodpeckers influenced when landowners harvested trees, suggesting that landowners preemptively cut their trees before they could become prime old-growth habitat for the woodpecker. Even though older, larger trees could fetch a higher price, this effect was overcome by the effect of the bird’s presence and associated regulations. Similarly, a 2004 study found that landowners who either knew or perceived that they were close to red-cockaded woodpecker habitat were more likely to clearcut their timber, preemptively destroying habitat “so that the existing values of their property could be protected from the Endangered Species Act-related land use limitations.”⁶⁸

As alluded to by The Nature Conservancy staff member referenced above, critical habitat designations similarly do not reward private landowners for maintaining or restoring habitat features. Instead, they are more likely to penalize—and, therefore, discourage—these efforts on private land.⁶⁹ True, critical habitat designations do not directly prohibit land use, as the take prohibition does. They do not require landowners to give the government or the public access to private lands, nor do they immediately require implementation of restoration, recovery, or enhancement measures. However, they do entail real costs for private landowners.

First, critical habitat designations immediately decrease the market value of designated property. FWS has described this as a critical habitat’s stigma effect—prospective purchasers account for the risks and anticipate regulatory burdens associated with the designation.⁷⁰ The Service, environmental groups, and others have argued that this effect is irrational, and that property owners and prospective purchasers overestimate critical habitat’s adverse impacts on market value.⁷¹ But there is little doubt

that the effect exists and is large. A recent study that examined more than 13,000 real estate transactions for land within or near critical habitat for two listed species in California found that a designation “resulted in a large and statistically significant decrease in land value.”⁷² The authors specifically found that for the parcels analyzed, a critical habitat designation decreased land values by 48% for the red-legged frog and by at least 78% for the bay checkerspot butterfly.⁷³

Second, critical habitat designations require more intense scrutiny and mitigation of the landowner’s activities, should those activities ever require a federal permit. For instance, if a landowner’s development plans require filling in a wetland regulated under the Clean Water Act (CWA),⁷⁴ the U.S. Army Corps of Engineers (the Corps), which administers that permitting program, must consult with FWS about any impacts to critical habitat and how the landowner can avoid or mitigate those impacts.⁷⁵ The cost of that process, in terms of both delay and performing mitigation, falls on the landowner. While projects on private lands are rarely stopped altogether, the consultation process and required mitigation increase the costs in terms of time and money spent on private land development projects.⁷⁶ The handbook that details the consultation process runs more than 300 pages—a small indicator of the complexity and cost of a critical habitat designation to private landowners.⁷⁷

As with the ESA’s take prohibition, a critical habitat designation offers no benefit to the landowner to compensate for these costs. Instead, “some people alone” bear the costs of providing habitat to endangered species, “which, in all fairness and justice, should be borne by the public as a whole.”⁷⁸ Consequently, the presence of habitat features on private land can be a liability for landowners, which they have incentives to minimize. This is true not only for features required by currently listed species, but also those that may be listed in the future.

Likely due to this incentive effect, the overall evidence that critical habitat contributes to species recovery is mixed, at best. For decades, FWS and NMFS asserted that critical habitat was largely redundant of other protections.⁷⁹ Court decisions have caused the agencies to “temper” these views

66. WOOD, *supra* note 64, at 14.

67. Dean Lueck & Jeffrey A. Michael, *Preemptive Habitat Destruction Under the Endangered Species Act*, 46 J.L. & ECON. 27 (2003).

68. Daowei Zhang, *Endangered Species and Timber Harvesting: The Case of Red-Cockaded Woodpeckers*, 32 ECON. INQUIRY 150 (2004) (estimating that, if a landowner knew or thought that their land was within one mile of the woodpecker, they were 25% more likely to clearcut).

69. Adam J. Eichenwald et al., *U.S. Imperiled Species Are Most Vulnerable to Habitat Loss on Private Lands*, 18 FRONTIERS ECOLOGY & ENV’T 439 (2020). For a collection of studies on the ESA’s “private land problem,” see Adler, *supra* note 63, at 6-31.

70. See Hayes et al., *supra* note 17, at 10673.

71. See, e.g., *id.*; Amicus Brief of Landowners, *Weyerhaeuser Co. v. U.S. Fish & Wildlife Serv.*, No. 17-71, 2018 WL 3374997 (U.S. filed July 3, 2018). There are substantial reasons to doubt this speculation. Foremost among them is that markets create strong incentives to uncover and profit from irrational price distortions. Given the size of the observed stigma effect, the returns that could be achieved from acquiring designated property would be huge, yet we know of no evidence that anyone with skin in the game sees it this way.

72. Maximilian Aufhammer et al., *The Economic Impact of Critical-Habitat Designation: Evidence From Vacant-Land Transactions*, 96 LAND ECON. 188 (2020).

73. *Id.* at 190.

74. 33 U.S.C. §§1251-1387, ELR STAT. FWPCA §§101-607.

75. See, e.g., Roger Fleming, *Does the Clean Water Act Protect Endangered Species? The Case of Maine’s Wild Atlantic Salmon*, 7 OCEAN & COASTAL L.J. 259 (2002).

76. Weiland et al., *supra* note 20, at E1593 (“even informal consultation can result in major changes to or abandonment of projects with substantial economic implications”).

77. FWS & NMFS, *ENDANGERED SPECIES CONSULTATION HANDBOOK: PROCEDURES FOR CONDUCTING CONSULTATION AND CONFERENCE ACTIVITIES UNDER SECTION 7 OF THE ENDANGERED SPECIES ACT* (1998).

78. *Armstrong v. United States*, 364 U.S. 40 (1960).

79. See Hayes et al., *supra* note 17, at 10671 (comments by current and former U.S. Department of the Interior officials on the limited benefits of critical habitat designations).

“somewhat,”⁸⁰ but cost-benefit analyses for critical habitat designations continue to report only vague and unquantified benefits to species.⁸¹

Academic research is largely in accord. Although a few studies have found that FWS is more likely to report a species as improving if critical habitat has been designated than if it has not,⁸² others have shown that this effect disappears when unrelated spending on recovery efforts is accounted for.⁸³ Still other studies show that a critical habitat designation can increase development pressures, thereby potentially undermining conservation.⁸⁴

IV. Lessons for Species Recovery From the Dusky Gopher Frog Conflict

The conflict over the dusky gopher frog’s critical habitat suggests that some factors may play an outsized role in determining the incentives a critical habitat designation will create for private landowners. Fortunately, FWS has wide latitude to account for these complicating factors. Although the ESA requires the agency to designate critical habitat “to the maximum extent prudent and determinable,” the statute also gives it discretion to include or exclude areas based on economic and other policy considerations. The incentives of landowners affect both sides of the cost-benefit analysis. Perverse incentives increase costs and reduce the likelihood of any benefit to the species. Consequently, the considerations discussed below affect whether a designation is likely to aid or frustrate the recovery of a species and, therefore, should inform the Service’s exercise of its discretion.

A. *Is the Land Public or Privately Owned?*

The dusky gopher frog case demonstrates the conflicts that can arise when privately owned land is designated because of the uncertainty whether the designation will limit future land use. Although designating critical habitat on federal land may frustrate agency goals, like managing fuel loads in national forests or pursuing landscape-level conservation,⁸⁵ it does not fundamentally alter them—federal land agencies operate under a “multiple use” mandate, requiring them to balance commercial uses, public recreation, and conservation goals.⁸⁶ Moreover, management of federal land necessarily has the federal nexus required to trigger consultation, so a critical habitat designation will

require federal agencies to adjust their plans to conserve critical habitat.⁸⁷

Private landowners, by contrast, are free to use their property to pursue their private goals, whatever those may be.⁸⁸ Designating the land as critical habitat may cause conflict if the landowner wants to develop the land for housing or other purposes, as in the dusky gopher frog case, and such development would preclude the land from also being habitat for a listed species. Moreover, where the private landowners’ plans do not require a federal permit or funding, they would be as free to bulldoze the habitat features on their land after a critical habitat designation as they were before. The risk that the presence of such habitat features may stymie a landowner’s plans in the future creates a significant, perverse incentive to preemptively eliminate those features.

This is significant because, even if a federal permit is required in the future, the U.S. Constitution limits FWS to requiring mitigation of the effects of that project.⁸⁹ It cannot use the permit process to extract public benefits unrelated to the immediate effects of the project, including the restoration of previously destroyed or degraded habitat.⁹⁰ Consequently, FWS should take care not to designate private land as critical habitat if the designation is likely to cause conflict and if the probability that the designation will benefit the species is low, such as where any development is unlikely to have a federal nexus or where habitat modification will not necessarily result in take of the species.

Somewhat consistent with this, FWS and NMFS adopted a policy in 2016 to prioritize designation of federal land as critical habitat because of “the unique obligations that Congress imposed for Federal agencies in conserving endangered and threatened species.”⁹¹ Under that policy, the Service would, “[t]o the extent possible, . . . focus designation of critical habitat on Federal lands in an effort to avoid the real or perceived regulatory burdens on non-Federal lands.” In 2020, however, FWS (but not NMFS) withdrew this explicit preference for designating federal land, at least for land on which nonfederal entities have permits, leases, contracts, or other authorizations.⁹² It remains to be seen whether the change in administration will affect this rule, but even it acknowledges an implicit difference between the designation of federal and nonfederal land. Most notably, as explained above, consultation would likely be required over the effect of any permit, lease, or

80. *Id.* at 10672 n.7.

81. See, e.g., DRAFT ECONOMIC ANALYSIS, *supra* note 55.

82. This may not be a reliable metric. FWS’ method of estimating whether species are improving or declining has been criticized as “inconsistent and of questionable accuracy” because, among other things, it relies on “simply the best guesses” of Service personnel who have incentives to inflate the agency’s successes and downplay its failures. See Adler, *supra* note 63, at 12.

83. *Id.* at 11-12.

84. *Id.*

85. Dale Bosworth, U.S. Forest Service Chief, A Perspective on the Endangered Species Act, Speech to the Western Association of Fish and Wildlife Agencies (July 26, 2004), <https://www.fs.usda.gov/speeches/perspective-endangered-species-act>.

86. 43 U.S.C. §1702(c).

87. 16 U.S.C. §1536(a)(2).

88. That freedom is qualified by a host of federal, state, and local regulations, of course, which restrict how landowners may pursue their goals. But for this discussion, the slightly oversimplified version suffices.

89. See U.S. CONST. amend. V.

90. See *Koontz v. St. Johns River Water Mgmt. Dist.*, 570 U.S. 595, 43 ELR 20140 (2013); *Dolan v. City of Tigard*, 512 U.S. 374, 24 ELR 21083 (1994); *Nollan v. California Coastal Comm’n*, 483 U.S. 825, 17 ELR 20918 (1987).

91. Policy Regarding Implementation of Section 4(b)(2) of the Endangered Species Act, 81 Fed. Reg. 7226 (Feb. 11, 2016).

92. 85 Fed. Reg. at 82382-83. See 85 Fed. Reg. at 55402-03.

contract on a listed species regardless of whether the federal land is also designated as critical habitat.⁹³

B. *Is the Land Occupied or Unoccupied?*

The dusky gopher frog case also demonstrates how designation of unoccupied areas can increase conflict where private landowners feel they are being burdened arbitrarily or irrationally. As explained above, the ESA explicitly distinguishes between occupied and unoccupied areas, and FWS has historically focused on designation of occupied areas.⁹⁴ This makes sense.

For occupied critical habitat, the take prohibition may provide overlapping protection for the habitat.⁹⁵ At a minimum, the species' presence and need for an incidental take permit provides the federal nexus required for consultation and for mitigating adverse modification of the habitat. Designating occupied areas can make habitat features a liability, to be sure. But the likelihood that a federal permit will be required for take and, thus, that consultation will occur, provides some probability of conservation benefit to weigh against costs to the landowner.

For unoccupied areas, however, a critical habitat designation may provide no meaningful protection to habitat features. The habitat features receive no direct protection under the ESA, even under the broad interpretation given to take.⁹⁶ In the dusky gopher frog case, for instance, the St. Tammany's Parish landowners would be free to fill in or otherwise modify their ephemeral ponds, unless that activity required a federal permit under the CWA or other statute. But the prospect that a future permit may be required gives landowners some incentive to preemptively destroy the habitat features. By doing so, any future permitted activity would have no habitat features to adversely modify or destroy, thereby limiting the obstacles the designation might place on that activity.

As noted above, FWS' policy prior to 2016 was to designate all occupied areas before considering unoccupied areas, and then to only do so when the occupied areas were insufficient.⁹⁷ The Service's elimination of this preference was short-lived. In August 2019, FWS and NMFS restored the pre-2016 policy.⁹⁸ Moreover, the 2019 rule requires a "reasonable certainty" that unoccupied areas will contribute to species conservation if designated as critical habitat.⁹⁹ This requires consideration of a landowner's willingness to restore habitat and reintroduce a species, in light of the incentives a designation creates for the landowner.¹⁰⁰ A 2020 rule adds that FWS will always exclude areas from a critical habitat designation if the costs to the landowner

exceed any benefits to species.¹⁰¹ Again, it is unknown what effect the change in administration will have on these rules, but the ESA's requirement to consider the benefits of including or excluding an area necessarily includes the likelihood that a consultation will occur and the potential for creating perverse incentives for landowners.

C. *Is the Land Habitable or Does It Require Restoration Efforts?*

The dusky gopher frog case also demonstrates the foolhardiness of designating land if its capacity to serve as habitat is dependent on active restoration or management. The Nature Conservancy's efforts to recover the dusky gopher frog are representative of a much larger challenge. A majority of listed species are "management dependent," meaning they will not persist or recover if left alone but require active maintenance or restoration of habitat on private land. A 2010 study estimated that 84% of all listed species require "some form of conservation management for the foreseeable future."¹⁰² With regard to habitat specifically, the authors found that 51% of all listed species, including 62% of listed vertebrates, require active habitat management.¹⁰³

Designating private land as critical habitat may hinder, not help, these species' recovery. Many landowners view federal regulation as an unwanted and burdensome intrusion, even those who express positive views about conservation generally.¹⁰⁴ Such landowners may be forced to conserve species in particular ways without their input, but they receive little credit for their positive contributions and are more likely to be villainized if conservation efforts fall short.¹⁰⁵ Yet if a landowner's existing use of the property requires no federal permit, he or she can simply do nothing, and habitat restoration will never occur and management-dependent features will disappear. Indeed, a critical habitat designation incentivizes the landowner to prevent the natural establishment or continuation of habitat features.¹⁰⁶ Moreover, extraordinary efforts by landowners, like those required to recover the dusky gopher frog, are not easily imposed on landowners through permit conditions, even where permits are required.

93. 85 Fed. Reg. at 82382.

94. See ENVIRONMENTAL POLICY INNOVATION CENTER, *supra* note 21.

95. See *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 687, 25 ELR 21194 (1995).

96. *Id.* at 713 (O'Connor, J., concurring) (requiring adverse habitat modification to cause injury to "identifiable protected animals" to constitute take).

97. 81 Fed. Reg. at 7415.

98. 84 Fed. Reg. at 45021.

99. *Id.*

100. *Id.*

101. Endangered and Threatened Wildlife and Plants; Regulations for Designating Critical Habitat, 85 Fed. Reg. 82376 (Dec. 18, 2020).

102. J. Michael Scott et al., *Conservation-Reliant Species and the Future of Conservation*, 3 CONSERVATION LETTERS 91 (2010).

103. *Id.* at 94.

104. MEGAN E. HANSEN ET AL., COOPERATIVE CONSERVATION: DETERMINANTS OF LANDOWNER ENGAGEMENT IN CONSERVING ENDANGERED SPECIES (Center for Growth and Opportunity at Utah State University, Policy Paper No. 2018.003, 2018); Lauren K. Ward et al., *Family Forest Landowners and the Endangered Species Act: Assessing Potential Incentive Programs*, 116 J. FORESTRY 529 (2018).

105. "Landowners . . . expressed not only concerns about compensation, but also a deep desire to be included in the protection and recovery process, as well as to be recognized by government and society as good stewards of the land." Andrea Olive, *It Is Just Not Fair: The Endangered Species Act in the United States and Ontario*, 21 ECOLOGY & SOC'Y 13 (2016).

106. Lueck & Michael, *supra* note 67.

In late 2020, FWS and NMFS issued a rule in response to *Weyerhaeuser*, defining “habitat” as “the abiotic and biotic setting that currently or periodically contains the resources and conditions necessary to support one or more life processes of a species.”¹⁰⁷ The definition’s focus on an area’s current condition, rather than mere potential to become habitat through restoration or maintenance, is consistent with the ESA’s reference to habitat as something that can be destroyed, modified, or curtailed.¹⁰⁸ Land may remain habitat despite some amount of degradation; but when it can no longer support a self-sustaining population—when it has been destroyed, in other words—it is no longer habitat.¹⁰⁹ The future of this rule too is uncertain. But to the extent it or any eventual replacement deemphasizes designation of areas that require significant restoration or active management efforts to function as habitat, such reforms may avoid disincentivizing such efforts.

D. *Would Merely Identifying an Area’s Importance or Habitat Potential Achieve the Same Benefits Without the Costs?*

The dusky gopher frog case also suggests caution before assuming a critical habitat designation will lead to significant conservation benefits. For its part, FWS has consistently concluded that critical habitat’s benefits are modest. But it sometimes credits benefits to a designation that would exist even were an area excluded.

Take, for instance, the information benefits frequently identified by FWS.¹¹⁰ According to the Service, a critical habitat designation can help to identify areas that the agency or a nonprofit group might later acquire to conserve or restore.¹¹¹ However, this benefit does not depend on the Service formally designating the area. It could identify an area as a priority target for conservation or restoration without designating it critical habitat, and therefore without creating the perverse incentives associated with critical habitat.

Indeed, it is plausible at least that were the Service to identify an area as important but nonetheless exclude the area from critical habitat, the agency or a nonprofit group would be more motivated to act on this information than otherwise. A burdensome designation, however, may salt the earth for a future acquisition by creating ill will between FWS, the landowner, and any conservation group the landowner might perceive as taking advantage of the artificially reduced value of the land.

Further, this informational benefit must be measured against another, likely larger, informational cost. Recognizing that public awareness of the presence of habitat features can trigger significant regulatory burdens, land-

owners might withhold consent for government biologists or private scientists to access their land for environmental surveys.¹¹² This restricts the information available to regulators, preventing them from making wise and informed decisions or—in extreme cases—preventing them from making any decision whatsoever.¹¹³ Indeed, the landowners in the dusky gopher frog case accused FWS of trespassing on their property to discover the pond, as they would never have consented to access.¹¹⁴ Incomplete or unreliable information about the presence of species and habitat features has been a significant problem for regulators, with FWS and NMFS acknowledging the listing based on such bad data of several species that were actually not threatened with extinction.¹¹⁵

V. Valuing Habitat Features Through Markets

Imposing costly and burdensome critical habitat designation is not the only tool available to federal agencies for conserving habitat. Federal agencies already have various options available to them that could better align the incentives of imperiled species with those of landowners who can provide habitat for them. There are also other creative, market-based approaches that could be pursued to make habitat features for listed species a valuable asset rather than a liability for landowners.

A. *Purchase of Habitat or Potential Habitat*

Rather than imposing costly and potentially counterproductive critical habitat designations, the government could purchase land containing valuable habitat or potential habitat. If private land is more valuable as habitat for a species than as a working forest, a farm, or a housing development, purchasing the land allows the landowner to capture some of this value, thereby rewarding the conservation of habitat features. Rather than habitat being a liability, as it often is under critical habitat designations, it would be an asset, the value of which landowners would account for when making land use decisions.

112. HANSEN ET AL., *supra* note 104; Amara Brook et al., *Landowners’ Responses to an Endangered Species Act Listing and Implications for Encouraging Conservation*, 17 CONSERVATION BIOLOGY 1638 (2003).

113. Stephen Polasky & Holly Doremus, *When the Truth Hurts: Endangered Species Policy on Private Land With Imperfect Information*, 35 J. ENV’T ECON. & MGMT. 22 (1998).

114. Watkins, *supra* note 36.

115. FWS Environmental Conservation Online System, *Delisted Species*, <https://ecos.fws.gov/ecp/report/species-delisted> (last visited May 10, 2021). According to at least one estimate, fully one-half of all delistings are best explained as the result of incomplete or unreliable data, rather than recoveries. See ROBERT GORDON, CORRECTING FALSELY “RECOVERED” AND WRONGLY LISTED SPECIES AND INCREASING ACCOUNTABILITY AND TRANSPARENCY IN THE ENDANGERED SPECIES PROGRAM (Heritage Foundation, Background Report No. 3300, 2018). The author finds that agencies wrongly credited themselves with recovering a species in 19 cases where a reliable and complete survey was only performed after the species was listed; these surveys found the populations in question much larger than previously thought, and the increase could be attributed neither to time nor to any intervening conservation activity. *Id.*

107. 85 Fed. Reg. at 81411.

108. 16 U.S.C. §1533(a)(1).

109. For a contrary view, see Rylander et al., *supra* note 23, at 10531-39.

110. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Black Pinesnake, 85 Fed. Reg. 11238, 11242 (Feb. 26, 2020).

111. *Id.*

The U.S. Congress envisioned such purchases to play a significant role in conserving and recovering species. The ESA directs the Secretaries of the Interior and Agriculture to develop a program to conserve endangered and threatened species, to be implemented through the acquisition of land or interests in land.¹¹⁶ The statute also provides that funds available under the Fish and Wildlife Act of 1956, the Fish and Wildlife Coordination Act, the Migratory Bird Treaty Act, and the Land and Water Conservation Fund may be used to implement this program.¹¹⁷ The federal government can also fund the acquisition of land or interest in land through grants to states under §6 of the ESA.¹¹⁸ The Supreme Court has identified the statute's purchase provisions as particularly useful for "land that is not yet but may in the future become habitat for an endangered or threatened species."¹¹⁹

These authorities have been used successfully to encourage conservation and proactive recovery efforts. In early 2020, for instance, FWS issued a \$9 million grant to the Alabama Department of Conservation and Natural Resources to purchase and conserve nearly 5,000 acres of habitat for the Red Hills salamander, which has been listed as threatened since 1977.¹²⁰ According to the Service and state wildlife agencies, the protection of such a large, intact area of habitat is a significant step toward achieving FWS' proposed recovery goal for the species, which is to have conservation agreements protecting half of the species' available habitat.¹²¹

Federal spending has also played a central role in recent years in conserving candidate species before the ESA's perverse incentives can kick in and potentially undermine cooperation or erect other roadblocks to recovery efforts. For several years, for instance, federal agencies, states, conservation groups, and private landowners have collaborated on a \$150 million program to avoid the listing of the eastern gopher tortoise by protecting and improving its habitat.¹²²

Unlike the mixed evidence of critical habitat's effects, financial incentives have consistently shown to be beneficial. A 2007 study, for instance, found that recovery spending accounts for almost all the benefits species receive under the ESA and that regulation, without such spending, "appears to have adverse consequences for species recovery."¹²³ The takeaway, according to the authors, is

that "using scarce conservation funding" on bureaucratic processes like listing and designating critical habitat "may be less effective than using this funding to promote recovery directly."¹²⁴ In other words, "the ESA works when it is backed up with money, and not otherwise."¹²⁵ Consequently, funds spent for agencies to perform bureaucratic functions and costs imposed on landowners by regulation should be seen as missed opportunities, as they consume resources that could be redirected to purchasing habitat or providing other positive incentives to landowners.

Unfortunately, the ability to purchase land containing valued habitat features is not adequately incorporated into decisions about whether to list a species, regulate take, or designate critical habitat, even though such spending may be a more effective alternative to any of these regulatory impositions. With critical habitat designations, for instance, FWS does not consider the relative merits of designating critical habitat versus providing positive inducements to landowners when deciding whether to include or exclude private lands from the designation.¹²⁶ If instead, after listing a species, FWS prioritized recovery planning over other regulatory decisions, it would be more likely to consider how imposing regulatory burdens on landowners would fit with or frustrate other incentive-based approaches.

Of course, federal funding to acquire species habitat will always be limited, and trade offs between that goal and others are inevitable. FWS has rarely been given more than a few tens of millions of dollars per year to acquire land or entice recovery efforts.¹²⁷ While that may seem like a substantial sum, it is depleted rapidly when spread across 2,361 listed species occupying more than 100 million acres of public and private land.¹²⁸ Indeed, the Service has acknowledged that it can support an average of only a few hundred recovery projects per year with this funding.¹²⁹

But limited funding is a challenge regardless of the means used to protect habitat. The existing regulatory program, too, suffers from significant underfunding. For instance, FWS faces a backlog of petitions to list species that, under current funding levels, would take a decade to work through.¹³⁰ Because of resource constraints, the Service has also been unable to prepare recovery plans for one-quarter of eligible species and, for those species that have recovery plans, at least one-half are far out of date.¹³¹ Thus, accepting that funding for species conservation will fall far

116. 16 U.S.C. §1434(a).

117. *Id.*

118. *Id.* §1435. See FWS, *Endangered Species—Grants: Overview*, <https://www.fws.gov/endangered/grants/index.html> (last updated Apr. 23, 2021).

119. See *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 703, 25 ELR 21194 (1995).

120. Alabama Department of Conservation and Natural Resources, *Public-Private Partnership Conserves Red Hills Salamander Habitat in South Alabama*, COURIER J., Mar. 26, 2020, https://www.courierjournal.net/online_only/article_df9d5852-6f90-11ea-8326-4f8bdf5ec778.html.

121. FWS, AMENDED RECOVERY PLAN FOR RED HILLS SALAMANDER (2019), https://ecos.fws.gov/docs/recovery_plan/Red%20Hills%20Salamander%20Recovery%20Plan%20Amendment.pdf.

122. Dan Chapman, *Boosting the Gopher Tortoise*, FISH & WILDLIFE SERV., Aug. 22, 2017, <https://www.fws.gov/southeast/articles/boosting-the-gopher-tortoise/>.

123. Paul J. Ferraro et al., *The Effectiveness of the U.S. Endangered Species Act: An Econometric Analysis Using Matching Methods*, 54 J. ENV'T ECON. & MGMT. 245 (2007).

124. *Id.* at 252 (finding that critical habitat has no measurable benefit).

125. *Id.*

126. See, e.g., 77 Fed. Reg. at 35118.

127. FWS, COOPERATIVE ENDANGERED SPECIES CONSERVATION FUND GRANTS (SECTION 6 OF THE ENDANGERED SPECIES ACT) (2020), <https://www.fws.gov/endangered/esa-library/pdf/section6.pdf>.

128. FWS Environmental Conservation Online System, *USFWS Threatened & Endangered Species Active Critical Habitat Report*, <https://ecos.fws.gov/ecp/report/table/critical-habitat.html> (last visited May 10, 2021).

129. FWS, FY 2019 COOPERATIVE ENDANGERED SPECIES CONSERVATION FUND (CESCF): TRADITIONAL CONSERVATION GRANTS PROGRAM NOTICE OF FUNDING OPPORTUNITY (2019), <https://www.fws.gov/endangered/esa-library/pdf/FY19-CESCF-Request-for-Proposals.pdf>.

130. Press Release, FWS, Service Announces Final Methodology for Prioritizing and Addressing Endangered Species Act Status Reviews (July 26, 2016).

131. Jacob Malcom & Ya-Wei Li, *Missing, Delayed, and Old: The Status of ESA Recovery Plans*, 11 CONSERVATION LETTERS e12601 (2018).

short of the level desired by many, the question is whether limited funds are best spent on issuing and enforcing regulations, with the perverse incentives they can create, or on another approach that rewards landowners for conserving species and habitat. The available evidence favors the latter approach.¹³²

B. Incentives for Recovery Efforts

Another market alternative to critical habitat designation would be to compensate private landowners for achieving habitat restoration or species recovery benchmarks. An acquisition or conservation easement approach suffers two major shortcomings. First, it focuses on inputs (amount of land conserved) rather than outputs (contribution to species recovery). Second, it requires landowners to permanently give up their property rights, including in ways that can be difficult to change even if circumstances later suggest change would benefit the landowner and the species. An alternative would focus on outputs and maintain landowner flexibility to develop innovative solutions that deliver measurable results.

Private conservation groups have shown this to be an effective approach. American Prairie Reserve (APR), for instance, hopes to establish a 3.2-million-acre reserve in the Great Plains of eastern Montana by purchasing private lands and managing them in concert with surrounding public lands.¹³³ Because the ecosystem APR wants to protect depends also on the health of neighboring private lands, it has sought to entice its neighbors to adopt wildlife-friendly practices as well. Acquiring the land would be expensive and could exacerbate local tensions over APR's project, so the group has instead compensated landowners who adopt wildlife-friendly practices and can show benefits to key species.¹³⁴

FWS has recently taken a similar approach in response to public concerns about the release and recovery of predator species. Through the Mexican Wolf/Livestock Coexistence Council, the federal government, states, conservation groups, and landowners have developed a program to compensate ranchers for the presence of endangered Mexican gray wolves, as opposed to compensating only for lost livestock.¹³⁵ Consequently, ranchers and other landowners may see a financial gain from increases to the wolf population, thereby reducing conflict.

C. Rewards for Provision of Ecosystem Services

Another market approach to encouraging habitat maintenance and restoration would be to incorporate it into

existing mitigation programs where such habitat provides valuable ecosystem services. Under a variety of regulatory regimes, federal agencies require mitigation for environmental harms. A permit to discharge pollution into a regulated waterway, for instance, may be conditioned on a company first treating the discharge to remove the most harmful pollutants.

In some circumstances, “green infrastructure” may offer a cheaper alternative to traditional mitigation measures, while also providing additional environmental benefits.¹³⁶ Where a species' habitat provides ecosystem services, like filtering air or water, a regime that compensates the private landowner for providing these services will also incidentally reward the owner for conserving the habitat.

Often, the provision of ecosystem services associated with a species' habitat is suggested as a benefit of designating critical habitat,¹³⁷ but this is only true if the designation results in less disturbance to the habitat. Given the perverse incentives critical habitat designations can create for private landowners, it may be more fruitful for agencies to incorporate into recovery plans an analysis of the ecosystem services provided by habitat and whether compensation for them could be incorporated into existing mitigation regimes.¹³⁸

VI. Conclusion

In the case of the 1,500 acres of private land designated for the dusky gopher frog in St. Tammany Parish, Louisiana, to make the land suitable for the frog, the landowners would have had to remove their commercially valuable trees, replace them with relatively slow-growing longleaf pines, maintain the land with regular fire, and preserve the ephemeral ponds. After that, active frog reintroduction would require raising and releasing viable dusky gopher tadpoles or frogs. Most private landowners would not undertake all these steps without benefits for themselves and certainly would not characterize this as a “reasonable effort,” as FWS did in the dusky gopher frog case.

The often-punitive regulatory approach of endangered species policy serves neither property owners nor rare species. In perhaps all cases, but especially when it comes to management-dependent species like the frog, alternatives that reward landowners for providing habitat are likely to have much more success at encouraging conservation and recovery of imperiled species.

132. Ferraro et al., *supra* note 123, at 246.

133. APR, *Why APR?*, <https://www.americanprairie.org/why-apr> (last visited May 10, 2021).

134. APR, *Wild Sky*, <https://www.americanprairie.org/wild-sky> (last visited May 10, 2021).

135. MEXICAN WOLF/LIVESTOCK COEXISTENCE COUNCIL, 2014 STRATEGIC PLAN (2014).

136. U.S. Environmental Protection Agency, *What Is Green Infrastructure?*, <https://www.epa.gov/green-infrastructure/what-green-infrastructure> (last updated Nov. 2, 2020).

137. Jacob P. Byl, *Accurate Economics to Protect Endangered Species and Their Critical Habitats*, 35 PACE ENV'T L. REV. 308 (2018).

138. LYNN SCARLETT & JAMES BOYD, ECOSYSTEM SERVICES: QUANTIFICATION, POLICY APPLICATIONS, AND CURRENT FEDERAL CAPABILITIES (Resources for the Future, Discussion Paper No. 11-13, 2011). Lynn Scarlett and James Boyd discuss regulatory programs that already reward ecosystem services or could easily do so.