

C O M M E N T S

DEFINING HABITAT TO PROMOTE CONSERVATION UNDER THE ESA

by Jason C. Rylander, Megan Evansen, Jennifer R.B. Miller, and Jacob Malcom

Jason C. Rylander is Senior Endangered Species Counsel with the Defenders of Wildlife. Megan Evansen is Conservation Science and Policy Analyst with the Center for Conservation Innovation (CCI), Defenders of Wildlife. Jennifer R.B. Miller is a Senior Scientist at CCI. Jacob Malcom is the Director of CCI.

The U.S. Supreme Court’s opinion in *Weyerhaeuser Co. v. U.S. Fish & Wildlife Service* raises important questions about the scope of the Endangered Species Act’s (ESA’s)¹ protections for critical habitat.² Foremost among them is a question one might think was long settled: what is “habitat”?

Under §4 of the ESA, when a species is listed as threatened or endangered, the U.S. Fish and Wildlife Service (FWS or the Service) or National Marine Fisheries Service (NMFS) must also, to the maximum extent practicable, designate as “critical habitat” those areas deemed “essential to the conservation of the species.” By “conservation,” the ESA requires measures necessary to ensure that a listed species both survives and recovers. The designation of critical habitat matters because, under §7, federal agencies must ensure that any action they authorize, fund, or carry out does not result in the “destruction or adverse modification” of habitat the agencies have deemed to be “critical.”³

Not surprisingly, this provision has engendered a fair amount of controversy over the years.⁴ Most of that controversy has focused on either the definition of “adverse modification” or whether the designated habitat is essential to the conservation of the species, a finding that must be made “on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact of specifying any particular area as critical habitat.”⁵ But until *Weyerhaeuser*, no court had ever considered specifi-

cally what the word “habitat” actually means as a legal or scientific matter.

Enter the dusky gopher frog, a shy species of frog endemic to ephemeral ponds and adjacent forested uplands in Louisiana and Mississippi. Habitat loss—destruction of those transitory ponds and conversion of longleaf pine forests to loblolly pine plantations—reduced the frog’s range to a single population in a Mississippi pond. With fewer than 100 frogs remaining at that site, FWS declared the species to be endangered in 2001.⁶

At the time, FWS did not designate critical habitat. When, following litigation by conservation groups, the Service finally proposed to designate critical habitat for the frog, it concluded after peer review that the existing occupied habitat was not sufficient to provide for conservation and recovery of the species.⁷ After scouring the frog’s historic range for habitat that contained the right mix of ephemeral ponds and forest uplands, the Service designated an area in Louisiana within the historic range of the frog that contained some of the last remaining ponds suitable for breeding.⁸ These uplands, however, were degraded, and the species had not been seen there since 1965.⁹

According to FWS, the parcel in question—referred to as Unit 1—was essential to the conservation of the dusky gopher frog because it was the last remaining area of the species’ historic range that could still support the species in the future.¹⁰ According to the property owners, which include the Weyerhaeuser timber company, the area is not only unoccupied but uninhabitable without extensive restoration efforts. Whether the frog actually could live on the parcel without restoration is a matter of some debate

1. 16 U.S.C. §§1531-1544, ELR Stat. ESA §§2-18.

2. 139 S. Ct. 361, 48 ELR 20196 (2018). [Editor’s Note: Jason Rylander authored an amicus brief in the Supreme Court in the *Weyerhaeuser* case on behalf of Defenders of Wildlife, Animal Welfare Institute, Humane Society of the United States, Sierra Club, and WildEarth Guardians.]

3. 16 U.S.C. §1532(5)(A).

4. Debate over this provision can be found in both legal and scientific literature. See, e.g., *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1070, 34 ELR 20068 (9th Cir. 2004) (requiring FWS to provide for species recovery, not just survival, in designating critical habitat); see also Dennis D. Murphy & Barry R. Noon, *Exorcising Ambiguity From the Endangered Species Act: Critical Habitat as an Example*, 8 ENDANGERED SPECIES UPDATE 6 (1991).

5. 16 U.S.C. §1533(b)(2); *id.* §1533(a)(3)(A), (a)(3)(A)(i).

6. FWS, Final Rule to List the Mississippi Gopher Frog Distinct Population Segment of Dusky Gopher Frog as Endangered, 66 Fed. Reg. 62993 (Dec. 4, 2001).

7. FWS, Designation of Critical Habitat for Mississippi Gopher Frog, 75 Fed. Reg. 31387, 31394 (June 3, 2010).

8. FWS, Designation of Critical Habitat for Dusky Gopher Frog, 77 Fed. Reg. 35118 (June 12, 2012).

9. 77 Fed. Reg. at 35131.

10. *Id.* at 35124 (“[T]he five ponds in Unit 1 provide breeding habitat that in its totality is not known to be present elsewhere within the historic range of the dusky gopher frog.”).

in the administrative record.¹¹ But assuming it could not, the question then arises: can an area be considered “habitat,” let alone “critical habitat,” if a species cannot currently live there?

In a short ruling, the *Weyerhaeuser* Court opined that “critical habitat” must first be “habitat,” but it did not attempt to define exactly what habitat is or how much deference FWS should get on what is both a biological and policy question. The Court also sidestepped whether currently unoccupied “habitat” must in fact be “habitable” at the time of designation as critical habitat. The task of defining “habitat” now falls to the ESA’s implementing agencies or to the U.S. Congress.¹²

It should go without saying that how habitat is ultimately defined has serious implications for species conservation. In the wake of recent reports on the accelerating loss of biodiversity due largely to habitat loss in the United States and across the globe, how and where we protect habitat is vital to preventing extinction and ensuring the long-term security of species. A definition that is too narrow and excludes degraded but restorable habitat, or areas that are likely to become habitat in the foreseeable future, could leave areas essential to species recovery unprotected.

It is, however, possible to define habitat in a way that is consistent with the intent of the ESA, reflects the best available science, is operationally workable, and also broad enough to account for species’ needs. This Comment proposes such a definition.

I. Background

When Congress passed the ESA in 1973, it was acutely aware that stemming the loss of biodiversity required more than protecting individual animals and plants; it also required protecting critical habitat from destruction or adverse modification.¹³ Unfortunately, that is as true today as ever. The recent Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) report found that as many as one million species—one in eight species on earth—face extinction in the coming decades.¹⁴ This is a rate “tens to hundreds of times higher” than the background rate of extinction.¹⁵ Despite significant efforts to prevent extinction under the

ESA and other laws, the loss of biodiversity remains a rapidly growing crisis.

As the National Academy of Sciences made clear in a seminal report 25 years ago, “there is no disagreement in the ecological literature about one fundamental relationship: sufficient loss of habitat will lead to species extinction.”¹⁶ Indeed, the IPBES report found habitat loss remains the leading cause of this extinction crisis, ahead of direct exploitation, climate change, pollution, and invasive species.¹⁷ Climate change will only exacerbate these trends, causing some habitats to become inhospitable for some species, while currently unsuitable areas may become viable habitats for species seeking to adapt and survive in a warming world.¹⁸

Recognizing the importance of habitat protection in any comprehensive scheme to protect imperiled species, Congress designed the ESA to address not only actions directed at species themselves—such as hunting and trade—but also to “provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.”¹⁹ To that end, habitat protection is elemental to the ESA’s statutory scheme: §4 requires designation of critical habitat at the time of listing²⁰; §5 explicitly calls for land conservation²¹; §7 contains the operative provisions for protecting critical habitat²²; §9 prohibits destruction of habitat that would directly harm a listed species²³; and §10 provides for habitat conservation plans.²⁴ Almost every part of the Act addresses the need to protect habitat in order to prevent extinction.

The Act’s critical habitat provisions, however, may be the most significant of those habitat protection provisions. In the lead-up to the 1978 amendments, Congress reemphasized that “[t]he loss of habitat for many species is universally cited as the major cause for the extinction of species worldwide.”²⁵ Moreover, Congress specifically stated that “if the protection of endangered and threatened species depends in large measure on the preservation of the species’ habitat, then the ultimate effectiveness of the Endangered Species Act will depend on the designation of critical habitat.”²⁶

11. *Weyerhaeuser Co. v. U.S. Fish & Wildlife Serv.*, 139 S. Ct. 361, 369, 48 ELR 20196 (2018).

12. After the *Weyerhaeuser* decision, FWS agreed to withdraw the critical habitat rule, and the parties agreed to dismiss the case. Accordingly, the lower courts have no present opportunity to consider the definition of habitat in the first instance.

13. As the Supreme Court has recognized: “Congress started from the finding that ‘[the] two major causes of extinction are hunting and destruction of natural habitat.’ Of these twin threats, Congress was informed that the greatest was destruction of natural habitats.” *Tennessee Valley Auth. v. Hill*, 437 U.S. 153, 179, 8 ELR 20513 (1978) (quoting S. REP. NO. 93-307, at 2 (1973), reprinted in 1973 U.S.C.C.A.N. 2989, 2990) (alteration in original).

14. IPBES, SUMMARY FOR POLICYMAKERS OF THE GLOBAL ASSESSMENT REPORT ON BIODIVERSITY AND ECOSYSTEM SERVICES 12 (Sandra Díaz et al. eds., 2019), https://ipbes.net/sites/default/files/2020-02/ipbes_global_assessment_report_summary_for_policymakers_en.pdf.

15. *Id.*

16. NATIONAL RESEARCH COUNCIL, SCIENCE AND THE ENDANGERED SPECIES ACT 72 (1995).

17. IPBES, *supra* note 14, at 12-13.

18. Daniel A. Farber, *Separated at Birth? Addressing the Twin Crises of Biodiversity and Climate Change*, 42 *ECOLOGY L.Q.* 841, 846 (2015).

19. 16 U.S.C. §1531(b). “Conservation,” in turn, is statutorily defined as “the use of all methods and procedures which are necessary to bring any endangered or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary.” *Id.* §1532(3).

20. *Id.* §1533(a)(3)(A)(i) (requiring, when possible, designation of critical habitat at the time of listing); *id.* §1534 (providing for land conservation).

21. *Id.* §1534 (providing for land conservation).

22. *Id.* §1536(a)(2) (prohibiting destruction or adverse modification of critical habitat).

23. *Id.* §1538 (prohibiting “harm” to a listed species, which has been defined by FWS and NMFS as including destruction of habitat that kills or injures wildlife by impairing essential behavioral patterns); see also *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 25 ELR 21194 (1995) (requiring a reasonable likelihood of harm to individual animals for habitat modification to constitute take under the ESA).

24. 16 U.S.C. §1539 (providing for habitat conservation plans).

25. H.R. REP. NO. 95-1625, at 5 (1978).

26. H.R. REP. NO. 94-887, at 3 (1976).

Consistent with Congress' understanding that habitat preservation is the key to recovering species, the ESA recognizes that critical habitat can be occupied or unoccupied by the species at the time of listing and provides separate definitions for each. "Occupied critical habitat" is defined as "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 consideration or protection."²⁷

By contrast, the definition of "unoccupied critical habitat" includes the "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."²⁸ Notably, Congress' definition of unoccupied critical habitat specifically omits the requirement that such habitat possess the "physical or biological features" essential to species conservation and, instead, requires only that FWS (or NMFS) make a "determination . . . that such areas are essential for the conservation [(i.e., recovery)] of the species."²⁹

Congress' determination that both occupied and unoccupied habitat may be essential to conservation makes biological and practical sense. When a species with a previously larger range has been reduced to a small patch of presently suitable habitat by the "destruction [or] modification . . . of its habitat," recovery may necessarily require the protection of both the dwindling areas where the species still occurs and other areas needed for its conservation. That includes historically occupied areas capable of being restored and recolonized. For such species, designation of unoccupied critical habitat could play an indispensable role in their recovery.

For all the emphasis on defining occupied and unoccupied critical habitat, including reference to physical features essential to the species' conservation, it is perhaps surprising that Congress never defined "habitat" in the first instance. But while nearly 50 years have passed since the ESA was enacted, only now have courts begun to parse whether lands designated as critical habitat because of their actual or potential benefits to a species might not qualify as habitat.

II. The Importance of Critical Habitat

Before digging deeper into what habitat means, it is worth considering why critical habitat matters. Although for many years FWS downplayed the value of critical habitat as redundant with the ESA's take prohibition and generally tried to avoid designating it,³⁰ critical habitat has important benefits to species. In 1995, the National Research Council found that while "ecosystem protection is of para-

mount importance to species preservation," the fact that "nearly 80% of all species listed do not have critical habitat designations is a cause for concern."³¹ Prompted in part by conservation litigation, FWS has since done an about-face on the value of critical habitat. Still, only about one-half of listed species currently have designated critical habitat.³²

Critical habitat's contribution to recovery will, of course, vary on a species-by-species basis, but research shows a correlation between critical habitat designation and positive trends in recovery status.³³ Other studies have shown that designation of critical habitat is "correlated with increased effort to protect species."³⁴ Species with critical habitat are also more likely to have recovery plans that are up-to-date and being implemented than species without critical habitat.³⁵

For projects on federal lands or that require federal funding, approval, or implementation, ESA §7 provides important substantive and procedural checks on actions affecting critical habitat. Section 7 is particularly important for unoccupied critical habitat because there is no other statutory mechanism for protecting these potentially vital areas. Although the Act's take prohibition protects species from, among other things, "harm," the regulatory definition of "harm" only applies to habitat modification that could actually kill or injure wildlife. That is unlikely to happen if the listed species is not present.³⁶ By contrast, the proscription on federal agency actions that may destroy or adversely modify critical habitat protects designated areas regardless of whether an action will directly harm individual animals. Thus, critical habitat designation provides an important statutory protection for areas that are unoccupied but necessary for the expansion and recovery of the species.

When critical habitat is designated on federal lands, it can also help prioritize §7(a)(1) conservation efforts. Under §7(a)(1), all federal agencies must "utilize their authorities in furtherance of the purposes of [the ESA] by carrying out programs for the conservation of endangered species and threatened species."³⁷ This obligation includes everything from recovery planning to direct restoration of habitat on federal lands. Take, for example, the U.S. Forest Service's efforts to restore degraded unoccupied critical habitat for the New Mexico meadow jumping mouse. Unoccupied

27. 16 U.S.C. §1532(5)(A)(i).

28. *Id.* §1532(5)(A)(ii).

29. Compare 16 U.S.C. §1532(5)(A)(i), with 16 U.S.C. §1532(5)(A)(ii).

30. David J. Hayes et al., *A Modest Role for a Bold Term: "Critical Habitat" Under the Endangered Species Act*, 43 ELR 10671, 10672 (Aug. 2013) ("Critical habitat designations typically have modest impacts primarily because the regulatory consequences of listing a species in the first place are so far-reaching").

31. NATIONAL RESEARCH COUNCIL, *supra* note 16, at 76, 179.

32. At this writing, according to the ESA box score, FWS and NMFS had designated critical habitat 853 times for 1,665 domestic species. See FWS, *USFWS Threatened & Endangered Species Active Critical Habitat Report*, <https://ecos.fws.gov/ecp/report/table/critical-habitat.html> (last visited May 12, 2020).

33. Martin F.J. Taylor, *The Effectiveness of the Endangered Species Act: A Quantitative Analysis*, 55 BIOSCIENCE 360, 363 (2005).

34. Amy N. Hagen & Karen E. Hodges, *Resolving Critical Habitat Designation Failures: Reconciling Law, Policy, and Biology*, 20 CONSERVATION BIOLOGY 399, 400 (2006).

35. *Id.* ("Critical habitat designation therefore helps populations improve, increases knowledge about trends, and contributes to recovery goals being met.")

36. 50 C.F.R. §17.3 (2019); *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 25 ELR 21194 (1995) (requiring a reasonable likelihood of harm to individual animals for habitat modification to constitute take under the ESA).

37. 16 U.S.C. §1536(a)(1).

critical habitat for this species was designated along riparian tracts degraded by years of overgrazing.³⁸ Following this designation, the Forest Service engaged with conservation partners and local ranchers to install a series of cattle exclusion fences and alternative water sources that allowed these degraded areas to return to their natural condition and once again host the mouse.³⁹

Designation also generates valuable information that federal, state, local, and private landowners can use to help conserve species, including the location and importance of the particular areas that are essential to species recovery.⁴⁰ The information developed during the designation process can also help focus the efforts of conservationists, states, and private landowners when developing habitat conservation plans. Even where no federal action is involved, these actors may elect to tailor their activities to avoid negatively affecting a sensitive area.⁴¹ Designation can help maximize the conservation value of land acquisition by allowing parties to target those areas that would most benefit a species. For example, after conservation groups expressed concern about development near one of the dusky gopher frog's last known breeding ponds, the real estate developers agreed to a land purchase that protected 170 acres of critical habitat for the species.⁴²

Perhaps most importantly, designating critical habitat ensures that adequate focus is placed on species recovery and not just survival.⁴³ While other provisions of the Act protect species from direct harm, only critical habitat mandates that FWS determine precisely which areas are essential to recovery. Designation of unoccupied critical habitat is especially important for historically occupied areas and areas that scientists believe to be essential for expanding a species' range in the future.⁴⁴ In fact, of all the provisions in the ESA, critical habitat designation is particularly valuable because it is not limited just to those areas where a

species lives at any given moment. This is especially true for species that have been driven to the point of extinction by habitat loss.

It is also worth noting that critical habitat serves this vital function in the ESA's conservation scheme without converting an area into a park or preserve or ceasing all activity on the land. The consultation requirement that attaches to critical habitat is directed solely at federal agency actions.⁴⁵ Thus, so long as no federal permit is required, and no federal funding needed, designating critical habitat on private land may have no effect on the owner's use of the property. Even when a federal permit is required, empirical evidence demonstrates that §7 consultation almost never stops a proposed development in its tracks. In practice, consultation has allowed most development projects to proceed with no more than minor modifications.⁴⁶

As research shows, §7 does not, in theory or practice, hamstring all private development. Properly implemented, it advances the ESA's recovery goals by striking a science-driven balance between conservation and economic activity. In fact, one could argue that FWS has generally been too cautious in its designation of critical habitat because of political and economically driven concerns.

III. Considering Habitat in the Wake of *Weyerhaeuser*

The Supreme Court began its analysis in *Weyerhaeuser* with a bit of linguistic formalism. "According to the ordinary understanding of how adjectives work," the Court said, "'critical habitat' must also be habitat."⁴⁷ Because "adjectives modify nouns," the Court reasoned that "[i]t follows that 'critical habitat' is a subset of habitat that is 'critical' to the conservation of an endangered species."⁴⁸ In other words, "[o]nly the 'habitat' of the endangered species is eligible for designation as critical habitat."⁴⁹

At first blush, this makes sense. The ESA states that FWS (or NMFS for marine species) must "designate any *habitat* of such species which is then considered to be *critical* habitat."⁵⁰ As Prof. J.B. Ruhl has noted: "Had the statute instead used the term 'critical areas' or 'critical resources,' the question for the Court in *Weyerhaeuser* would have been much different. But after *Weyerhaeuser*, you can't take the 'habitat' out of 'critical habitat.'"⁵¹ Thus, according to the Supreme Court, even if FWS finds that an area is essential to the conservation of the species, "Section 4(a)(3)(A)(i) does not authorize the Secretary to designate the area as *critical* habitat unless it is also habitat for the species."⁵²

38. FWS, Designation of Critical Habitat for the New Mexico Meadow Jumping Mouse, 81 Fed. Reg. 14264, 14267 (Mar. 16, 2016).

39. See U.S. Forest Service, *New Mexico Meadow Jumping Mouse Habitat Improvement Projects on the Agua Chiquita Grazing Allotment*, <https://www.fs.usda.gov/project/?project=51273> (last visited May 12, 2020). Without critical habitat designation, it is unlikely that these areas would have received the same priority.

40. Jack McDonald, *Critical Habitat Designation Under the Endangered Species Act: A Road to Recovery?*, 28 ENVTL. L. 671, 688-91 (1998) (discussing the notice benefits of designating critical habitat).

41. See, e.g., Dashiell Farewell, *Revitalizing Critical Habitat: The Ninth Circuit's Pro-Efficiency Approach*, 46 ENVTL. L. 653, 663 (2016) ("With more parties on notice the more likely it is that habitat will receive the consideration and protection it deserves.")

42. See Press Release, Center for Biological Diversity, Land Purchase Protects Essential Mississippi Habitat for Endangered Dusky Gopher Frog (May 14, 2015), https://www.biologicaldiversity.org/news/press_releases/2015/dusky-gopher-frog-05-14-2015.html.

43. Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv., 378 F.3d 1059, 1070, 34 ELR 20068 (9th Cir. 2004) (requiring FWS to provide for species recovery, not just survival, in designating critical habitat).

44. MICHAEL J. BEAN & MELANIE J. ROWLAND, THE EVOLUTION OF NATIONAL WILDLIFE LAW 261-62 (3d ed. 1997) ("Unoccupied critical habitat is habitat, the protection of which is needed to improve the species' status quo; that is, it is primarily needed for the recovery of the species."). If the goal is to recover species to a point where the Act's protections are no longer needed, then logically "it will be necessary to protect some of [a species'] former habitat as well as that which it currently occupies." Kalyani Robbins, *Recovery of an Endangered Provision: Untangling and Reviving Critical Habitat Under the Endangered Species Act*, 58 BUFF. L. REV. 1095, 1105 (2010).

45. 16 U.S.C. §1536(a)(2).

46. Jacob Malcom & Ya-Wei Li, *Data Contradict Common Perceptions About a Controversial Provision of the U.S. Endangered Species Act*, 112 PROC. NAT'L ACAD. SCI. 15844, 15845 (2015) (reviewing all 88,920 FWS consultations from January 2008 through April 2015).

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

48. *Id.*

49. *Id.*

50. 16 U.S.C. §1533(a)(3)(A)(1) (emphasis added).

51. J.B. Ruhl, *What Is Habitat?*, 34 NAT. RESOURCES & ENV'T 52, 53 (2019).

52. *Weyerhaeuser*, 139 S. Ct. at 368.

So, what did Congress mean when it used the word “habitat”? Legal advocates often turn to the dictionary when a term is not clearly defined in the law. In the *Weyerhaeuser* case, the petitioners used *Webster’s Dictionary* to define habitat as “the place where a plant or animal species naturally lives and grows,” or “the kind of site or region with respect to physical features . . . naturally or normally preferred by a biological species.”⁵³ By their reading of the dictionary definition, if a species cannot currently live on a site, then it does not “naturally” or “normally” live there, and that area cannot qualify as habitat.

But that is not necessarily so. Such a reading fails to examine what it means for a thing to be “natural” or even “normal.” For example, “natural” has many definitions in *Webster’s*, among them “growing without human care,” “not cultivated,” and “closely resembling an original: true to nature.”⁵⁴ This implies a state prior to significant human disturbance. When understood in that frame, what “naturally lives and grows” on Unit 1 are not the loblolly pines that the landowners currently cultivate, but the longleaf pine forests that FWS found could provide “food, shelter and protection” for the frog with some restoration.⁵⁵ The frog, after all, naturally—and normally—lived there until at least 1965, when the last observations of the species were recorded.⁵⁶

Whichever view one prefers, the dictionary alone will not settle the issue. As Professor Ruhl put it: “Apparently, the plain meaning of ‘habitat’ is not so plain.”⁵⁷

The Supreme Court correctly did not address the issue further and remanded the case to the lower courts to consider the definition of “habitat” in the first instance. The Court did recognize that “habitat can, of course, include areas where the species does not currently *live*, given that the statute defines critical habitat to include unoccupied areas.”⁵⁸ Alas, this further begs the question of whether an unoccupied area must be presently habitable in order to be considered habitat that could be designated critical. After the *Weyerhaeuser* decision, FWS agreed to withdraw and reconsider the designation of Unit 1, and the parties dismissed the case. Accordingly, the lower courts no longer have the opportunity to consider the definition of habitat in that case.

IV. Toward a Scientific Understanding of Habitat

If the ESA itself is silent as to precisely what habitat means, and dictionary definitions fail to illuminate the concept beyond a most general (and largely unhelpful) definition, what might science tell us? It turns out that the scientific literature is not crystal clear either. The National Academy of Sciences, in its seminal report *Science and the Endan-*

gered Species Act, defined habitat as “the physical and biological setting in which organisms live and in which the other components of the environment are encountered.”⁵⁹ But while scientists universally agree that loss of habitat leads to species extinction, recent reviews of the scientific literature find that the term is used inconsistently, even incorrectly, in a large number of articles. In fact, the word habitat and habitat-related terminologies are used so often and in so many ways that David Kirk et al. have dubbed the term to be a “Panchreston problem,” which means “an explanation or theory used in such a variety of ways as to become meaningless.”⁶⁰

One highly cited 1997 paper by Linnea Hall et al. called for a standardized definition of habitat.⁶¹ Under their own proffered definition, habitat is “the resources and conditions present in an area that produce occupancy—including survival and reproduction—by a given organism.” That said, defining a specific habitat is highly species-dependent. In their view, habitat “relates the presence of a species, population, or individual (animal or plant) to an area’s physical and biological characteristics. Habitat implies more than vegetation or vegetation structure; it is the sum of the specific resources that are needed by organisms.”⁶²

This definition emphasizes not just physical presence, but the “resources and conditions” that support presence, including the “sum” of the resources that an individual species may need to survive. But from a policy perspective, it does not settle the question posed by the *Weyerhaeuser* Court. If this were the definition of habitat, would Unit 1 be considered habitat or not? It is not clear.

A broader look at the ecological literature makes clear just how fluid the concept of habitat can be. For example, Hall et al. note specifically that “‘unused’ and ‘unoccupied’ habitat are not synonymous with ‘non-habitat,’” and that such terms are appropriate when discussing threatened, endangered, or rare species who might use such unoccupied areas given the opportunity. Others have pointed out that habitat important for conservation can include a wide variety of space and resource configurations, including areas that are marginal or of low quality.⁶³ Moreover, the value or quality of habitat for a species can also change over time. As the National Academy noted, “the rhythm of natural disturbance, the waxing and waning of predator and prey population, and the cycling of soil nutrients” among other things, can “change the distribution, growth, abundance, and interaction of species.”⁶⁴

Similarly, stopover habitats that are occupied temporarily or sporadically such as during migration can be very

53. Brief of Petitioners at 23, *Weyerhaeuser Co. v. U.S. Fish & Wildlife Serv.*, 139 S. Ct. 361, 48 ELR 20196 (2018) (No. 17-71) (citing “Habitat,” WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY (1976)).

54. “Natural,” WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY (1976).

55. 77 Fed. Reg. at 35131.

56. *Id.* at 35133.

57. Ruhl, *supra* note 51, at 54.

58. *Weyerhaeuser*, 139 S. Ct. at 369.

59. NATIONAL RESEARCH COUNCIL, *supra* note 16, at 71.

60. David Anthony Kirk et al., *Our Use, Misuse, and Abandonment of a Concept: Whither Habitat?*, 8 ECOLOGY & EVOLUTION 4197, 4198 (2018), available at <https://doi.org/10.1002/ece3.3812>.

61. Linnea S. Hall et al., *The Habitat Concept and a Plea for Standard Terminology*, 25 WILDLIFE SOC’Y BULL. 173 (1997).

62. *Id.*

63. Carmen Vanbianchi et al., *Navigating Fragmented Landscapes: Canada Lynx Brave Poor Quality Habitats While Traveling*, 8 ECOLOGY & EVOLUTION 11293 (2018).

64. NATIONAL RESEARCH COUNCIL, *supra* note 16, at 95.

important for species,⁶⁵ as can artificial or built habitats.⁶⁶ Some “dispersal habitat”—habitat that “organisms occasionally or periodically disperse through”—may be of little value to a species for breeding or foraging, but may nonetheless be key to its survival in that it provides “stepping stones or unbroken corridors” that facilitate migration. For that matter, species may take refuge in areas that would typically be unsuitable due to environmental stressors.⁶⁷

Finally, and most critically, science tells us that “[h]abitat restoration results in an increase in population size—and therefore, viability—because of an expansion in available habitat. Importantly, connecting fragments allows immigration from source populations that rescue floundering populations.”⁶⁸ Given that so much habitat is already degraded, not enough “move-in-ready” habitat exists to support both the survival and recovery of some species.

V. Toward an Operative Definition of Habitat

So, where does this leave us? The Supreme Court has made clear that “critical habitat” must be habitat, but the ESA does not define the term and the first recourse of lawyers and judges—the dictionary—does not offer a common understanding that is nuanced enough to account for the kinds of situations that FWS or NMFS must address in actually designating critical habitat. Similarly, attempts to define habitat scientifically tend to fall short as a road map for decisionmaking, when one considers that a species’ habitat needs can change over time and that habitat quality can wax and wane depending on a wide range of environmental factors.

The structure and purpose of the ESA is perhaps the best guide. The goal of the ESA is to conserve imperiled species. The ESA defines “conservation” as “the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary.” As the Supreme Court noted in *Tennessee Valley Authority v. Hill*, the “plain intent of Congress in enacting [the ESA] was to halt and reverse the trend towards species extinction, whatever the cost.”⁶⁹ Thus, any definition of habitat adopted by FWS and NMFS should further that conservation goal.

Congress also required FWS and NMFS to utilize the “best scientific data available” in designating critical habitat. Principles of ecology, including the dynamic nature of habitat, the life-cycle needs of species, and other factors, thus must inform the decision.

With all this in mind, a definition that reflects the best available science, is consistent with the intent of the ESA, and is broad enough to account for species’ needs might look like the following:

Habitat is the area or type of site where a species naturally occurs or that it depends on directly or indirectly to carry out its life processes, or where a species formerly occurred or has the potential to occur and carry out its life processes in the foreseeable future.

The proposed definition has a number of features. It is consistent with habitat definitions from the scientific literature, and it accommodates existing regulatory definitions and key concepts essential to implementing the ESA. It is separate from but complementary to the ESA’s definition of “critical habitat.” And, as discussed further below, it is operational.

First, the proposed definition respects the ESA’s definition of “critical habitat,” which divides the designations into currently occupied or unoccupied habitat. Second, it is centered on identifying areas of interest that can be mapped, not just a list of the “physical and biological features” present in any given area. Taking more of a landscape view of habitat rather than looking only at associations of factors a species needs, such as temperature regimes or specific vegetation, allows for a more holistic assessment. Third, it recognizes that because of material and energy flows in real ecosystems, areas that indirectly contribute to a species’ life processes are part of habitat (more on this below).

Finally, it includes a temporal component. Definitions of habitat in the scientific literature generally do not include a temporal restriction, but critical habitat in the ESA must be considered at least to the horizon of the foreseeable future because these areas are “essential to the conservation of the species”—that is, to recovery. The proposed definition recognizes that there is a temporal component to critical habitat and allows for the possibility that species have “the potential to occur” and even thrive in new areas.

This definition of “habitat” is broad enough to encompass areas where a species currently lives, areas that species depend upon for portions of their life cycle, areas that could presently support reintroduction, areas that could reasonably be restored or could be expected to support range expansion in the future, and places that provide essential nutrients or services to such areas. This gives FWS the flexibility needed to determine specifically what portions of a species’ range (current, historic, or potential) are in fact “critical” and require designation as areas “essential to the conservation of the species.”

VI. Applying the Definition

How would this definition work in practice? As a threshold matter, it is important to note that the need to parse what “habitat” is only arises when FWS or NMFS consider designating unoccupied habitat. If the area is already occu-

65. Justin Sheehy et al., *The Importance of Stopover Habitat for Developing Effective Conservation Strategies for Migratory Animals*, 152 J. ORNITHOLOGY 161, 162 (2011).

66. Hugh L. Wright et al., *Agriculture—A Key Element for Conservation in the Developing World*, 5 CONSERVATION LETTERS 11 (2012).

67. NATIONAL RESEARCH COUNCIL, *supra* note 16, at 101.

68. William D. Newmark et al., *Targeted Habitat Restoration Can Reduce Extinction Rates in Fragmented Forests*, 114 PROC. NAT’L ACAD. SCI. 9635, 9635 (2017).

69. 437 U.S. 153, 184-85, 8 ELR 20513 (1978).

pied, then there should be no question under any definition that the area is habitat for the species. Moreover, under current regulations, FWS and NMFS are only permitted to designate unoccupied habitat after concluding that the remaining occupied habitat is not sufficient to conserve the species.⁷⁰ This rule was briefly abandoned during the Barack Obama Administration and was recently revived. So, for many critical habitat designations, unoccupied habitat may not even come into play.

In a recent essay, Professor Ruhl posits four scenarios where a clear definition of habitat could impact designations of unoccupied habitat. The first scenario involves areas that are essentially intact or “move-in ready.” All that is required is for the species to make its way there or be reintroduced. Everything the species needs is present and it is understood that the species can live there. These areas seem, in his words, “squarely to be a candidate for critical habitat—it’s habitat just waiting to be occupied.”⁷¹ Under virtually any definition of habitat, these areas could be designated.

The second scenario is “an area that is unoccupied and could never practicably be made occupiable for the species, naturally or through human intervention.”⁷² This is essentially the hypothetical that Chief Justice John Roberts posited during the oral argument in *Weyerhaeuser*, when he asked counsel for the government whether you could simply move the frogs to ephemeral ponds in Alaska, build a greenhouse around them, and call it critical habitat.⁷³ In this scenario, the area in question cannot sustain the species and cannot be meaningfully restored or converted to habitat. This is an easy case: an ephemeral pond greenhouse in Alaska would never be habitat; it would be a zoo. Similarly, no one would seriously consider the former polar bear enclave at the Smithsonian National Zoo to be habitat even though bears lived there (happily or not) for decades.

In between these scenarios, we have the actual facts of *Weyerhaeuser*—an area within the historic range of the species that is presently unoccupied and arguably unoccupiable. In this example, the area has been degraded due to human intervention or natural causes, but with some degree of effort it could be restored and once again support the species. Inherent in this example is whether critical habitat must be immediately habitable in order to qualify as habitat. The proposed definition would allow Unit 1 to be designated critical habitat if the record evidence supported a finding that it is essential to the conservation of the species, regardless of whether the property was immediately habitable. While it is fair to argue the *Weyerhaeuser* Court was skeptical of such a view, the Court did not decide what habitat is, nor did it, in remanding the case to consider what habitat means in

the first instance, expressly require habitat to be immediately habitable.⁷⁴

The question then is what level of restoration is too much? Although Chief Justice Roberts’ Alaska hypothetical goes too far, it does raise a legitimate question of limits. As he put it at the time, “there has to be presumably some limit on what restoration you would say is required.”⁷⁵ Later in the argument, Justice Samuel Alito raised a similar question: “I think your argument requires you to provide some definition of reasonable restoration.”⁷⁶

But that is a different question than whether the best available scientific data indicate that the area should be considered habitat essential to species recovery. Rational basis review requires an application of specific facts. Once FWS and NMFS have defined habitat in a way that could be deemed an exercise of agency discretion worthy of judicial deference, the task of deciding what is reasonable is much simpler. It is no different, really, than the other question at issue in *Weyerhaeuser*—whether FWS’ decision not to exclude an area from critical habitat as imprudent is subject to judicial review. In most cases, a reasoned agency decision will be upheld.⁷⁷ When the facts do not support the decision, it will not.⁷⁸

Professor Ruhl’s fourth scenario involves areas *outside* the historic range of the species that may become habitable due to climate change or human intervention to change the ecological conditions of the site beyond restoration. Professor Ruhl himself argued in a 2018 article that such areas could be designated as critical habitat,⁷⁹ but he now believes the argument is “tenuous at best” because it did not rely on the premise that “critical habitat” must be “habitat.”⁸⁰ While this may indeed be the least solid ground on which to hang a critical habitat designation, the proposed definition would allow it with the proviso that the habitat transition must be foreseeable. FWS already makes listing determinations on the basis of threats that are non-imminent but reasonably foreseeable. A similar approach could be taken where there is evidence that species are beginning to shift their range in response to climate change. If a duly enacted regulation were to define habitat to include areas that will be essential to the conser-

74. *Weyerhaeuser*, 139 S. Ct. at 369:

The Court of Appeals concluded that “critical habitat” designations under the statute were not limited to areas that qualified as habitat. See [*Markle Interests, L.L.C. v. U.S. Fish & Wildlife Serv.*, 827 F.3d 452, 468 (5th Cir. 2016)] (“There is no habitability requirement in the text of the ESA or the implementing regulations.”). The court therefore had no occasion to interpret the term “habitat” in Section 4(a)(3)(A)(i) or to assess the Service’s administrative findings regarding Unit 1. Accordingly, we vacate the judgment below and remand to the Court of Appeals to consider these questions in the first instance.

75. Oral Argument Transcript at 29, *Weyerhaeuser* (No. 17-71).

76. *Id.* at 35.

77. *Baltimore Gas & Elec. Co. v. Natural Res. Def. Council, Inc.*, 462 U.S. 87, 103, 13 ELR 20544 (1983) (“When examining this kind of scientific determination . . . a reviewing court must generally be at its most deferential.”).

78. *Motor Vehicle Mfrs. Ass’n of the United States, Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 42-43, 13 ELR 20672 (1983) (applying the arbitrary and capricious standard to agency actions).

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

80. Ruhl, *supra* note 51, at 53.

70. 50 C.F.R. §424.12(b)(2) (2019); FWS, NMFS, Regulations for Listing Species and Designating Critical Habitat, 84 Fed. Reg. 45020 (Aug. 27, 2019).

71. Ruhl, *supra* note 51, at 53.

72. *Id.*

73. Oral Argument Transcript at 29, *Weyerhaeuser Co. v. U.S. Fish & Wildlife Serv.*, 139 S. Ct. 361, 48 ELR 20196 (2018) (No. 17-71), https://www.supremecourt.gov/oral_arguments/argument_transcripts/2018/17-71_4f15.pdf.

vation of the species in the foreseeable future, any determination FWS made to that effect would again be reviewable under a rational basis test.

There is, however, one additional scenario that the proposed definition contemplates, and that is unoccupied, uninhabitable areas that nonetheless are critically important to sustaining the species and its occupied habitat. Unlike some of the hypotheticals considered above, this one is real. A good example is the upstream reaches of the Big Tujunga Creek that provide stream and sediment flows necessary for the survival of the Santa Ana sucker in downstream occupied areas,⁸¹ or the sandy desert north of Ramon Road in Riverside County, California, that provides the source of windblown sand essential to the conservation of the Coachella Valley fringe-toed lizard in its range to the south.⁸²

The proposed definition expressly countenances the possibility of designating areas like these that are not themselves habitable, but that provide the physical or biological features that are essential to the survival of the species in occupied areas. Indeed, the U.S. Court of Appeals for the Ninth Circuit expressly rejected the argument that unoccupied but essential upstream areas should be excluded from the Santa Ana sucker designation because these areas were not occupied (or occupiable) habitat. As the court held, “[t]here is no support for this contention in the text of the ESA or the implementing regulation, which requires the Service to show that the area is ‘essential,’ without further defining that term as habitable.”⁸³ While the *Weyerhaeuser* decision may call this holding into question, under the proposed definition of habitat, it would stand.

Consistent with the purpose of the ESA to conserve species, the essentiality of the area to species recovery, not its present habitability, should be at the core of any understanding of habitat. This not only makes biological and policy sense, it addresses a practical limitation of the ESA. Without designation as critical habitat, these unoccupied areas would not generally receive any protection. That is because while an action “does not have to occur on designated critical habitat to trigger Section 7 consultation,”⁸⁴ where no critical habitat is designated, only the possibility of impact to species present in the area will prompt consultation.⁸⁵ Actions solely affecting unoccupied areas will thus never trigger §7’s “may affect” standard for a jeopardy analysis.

Critics of the proposed definition might argue that this approach attempts too much. As Professor Ruhl suggests,

“Perhaps a way to reconcile all this is to acknowledge that the ESA was not designed to be the exclusive mechanism for conserving species in peril. If critical habitat must be a subset of habitat, habitat should be defined in a way that does not stretch credulity.”⁸⁶ But while Professor Ruhl thinks it may be a “big jump” to include restorable areas of a species’ historic range, areas in transition due to climate change, or areas that contribute essential resources to undisputed habitat, this may well be what conservation under the ESA requires.

As for the need for limiting principles, it is unlikely that FWS or NMFS will suddenly begin designating large swaths of uninhabitable areas under the proposed definition. First, as noted above, the Services can only designate unoccupied areas after concluding that there is not enough occupiable habitat to conserve the species. Second, in some cases, the unoccupied habitat will be part of the species’ historic range and will require little to no restoration. The proposed definition would not change the status quo in such cases.

Third, as an empirical matter, the Services rarely designate unoccupied critical habitat. One survey of critical habitat designations between 2003 and 2012 found that “unoccupied habitat was included as part of critical habitat for less than one third of the species we considered.”⁸⁷ Fourth, FWS and NMFS have already addressed the *Weyerhaeuser* case in new regulations “by adding a requirement that, at a minimum, an unoccupied area must have one or more of the physical or biological features essential to the conservation of the species in order to be considered as potential critical habitat.”⁸⁸ This regulation also ensures that future designations of unoccupied habitat will not be untethered from reality. Ultimately, very few additional designations will likely be made possible by the proposed definition, but those that are could be the difference between recovery and extinction for the affected species.

Finally, even under a broad definition of habitat, the judiciary will act as a check on overly expansive designations. Under the ESA, in order to designate such areas, FWS or NMFS must still find that a presently unoccupied area is “essential for the conservation of a species.”⁸⁹ The designation must be supported by the best available scientific data and can only be made after taking into account economic and other factors. While those technical determinations are entitled to deference, they are reviewable for abuse of discretion. In situations where the scientific merit is lacking or the costs of designations clearly outweigh the benefits, the Services cannot lawfully include the area in its designation.

81. 75 Fed. Reg. 77961, 77973 (Dec. 14, 2010).

82. 45 Fed. Reg. 63812, 63818 (Sept. 25, 1980).

83. *Bear Valley Mut. Water Co. v. Jewell*, 790 F.3d 977, 994, 45 ELR 20121 (9th Cir. 2015). Similarly, when it considered the designation of unoccupied areas for the dusky gopher frog, the U.S. Court of Appeals for the Fifth Circuit found that “there is no habitability requirement in the text of the ESA or the implementing regulations.” *Markle Interests, L.L.C. v. U.S. Fish & Wildlife Serv.*, 827 F.3d 452, 468 (5th Cir. 2016).

84. *Markle Interests, L.L.C. v. U.S. Fish & Wildlife Serv.*, 848 F.3d 635, 645 (5th Cir. 2017) (Jones, J., dissenting).

85. FWS & NMFS, ENDANGERED SPECIES CONSULTATION HANDBOOK 3-11, https://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf (“A biological assessment is required if listed species or critical habitat may be present in the action area.”).

86. Ruhl, *supra* note 51, at 54.

87. Abbey E. Camaclang et al., *Current Practices in the Identification of Critical Habitat for Threatened Species*, 29 CONSERVATION BIOLOGY 482, 482-92 (2014); see also Stephanie Brauer, *Arizona Cattle Growers’ Pyrrhic Victory for Critical Habitat*, 38 ECOLOGY L.Q. 369, 379 (2011) (“Despite its importance, unoccupied habitat constitutes ‘a relatively small amount of habitat designated as critical habitat.’”).

88. 84 Fed. Reg. at 45022 (“We note that we do not in the rule attempt to definitively resolve the full meaning of the term ‘habitat.’”).

89. 16 U.S.C. §1533(b)(2).

The dusky gopher frog case illustrates just how difficult it can be for FWS to designate unoccupied critical habitat. Indeed, the Service designated Unit 1 as unoccupied critical habitat only after making a scientific determination that existing occupied critical habitat was insufficient to conserve the frog. The Service's original proposal only included occupied sites within Mississippi.⁹⁰ But scientific peer reviewers of the proposed rule "were united in their assessment that this proposal was inadequate for the conservation of the dusky gopher frog."⁹¹

Before designating Unit 1, FWS surveyed recorded sightings of the frog throughout its historic range and followed up on those leads with detailed aerial and on-the-ground surveys of potential remnant habitat.⁹² It also ruled out many other areas in both Alabama and Louisiana that lacked the breeding ponds that are so important to the frog's life cycle.⁹³ Finally, the Service weighed the economic burden of designating Unit 1 against the conservation benefit from such action and determined that it was not appropriate to exclude these tracts.⁹⁴ As the U.S. Court of Appeals for the Fifth Circuit explained: "The Final Designation was based on the scientific expertise of the agency's biologists and outside gopher frog specialists. If this scientific support were not in the record, the designation could not stand."⁹⁵

VII. Conclusion

Nearly 50 years since the passage of the ESA, biodiversity remains in crisis. Species are now going extinct at an unprecedented rate. Although the ESA is rightly credited with helping to recover or stabilize many species on the endangered and threatened species list,⁹⁶ hundreds more await listing decisions. Moreover, climate change threatens to undermine much of the progress we have made in protecting species and habitats in the United States and around the world. Whatever we are doing to preserve the world as we know it is not enough.

The ESA's purpose is to recover species to the point that the Act's protections are no longer necessary.⁹⁷ That lofty goal will only be possible if every aspect of the statute is used to its maximum potential. Critical habitat is a historically underutilized conservation tool that could yield significant benefits for species. This is not the time to unnecessarily restrict the tools we have to conserve wild places and wildlife.

At the end of the day, the Supreme Court's admonition that "critical habitat" must first be "habitat" does not actually tell us very much. Accordingly, FWS, NMFS, and Congress should consider the conservation purposes of the ESA and adopt a definition of habitat, like the one we propose, that will provide the flexibility to recover species in these challenging times. As this Comment has hopefully shown, FWS and NMFS can designate unoccupied critical habitat consistent with legal and ecological principles and still meet the evolving needs of America's wildlife.

90. 75 Fed. Reg. 31387, 31395 (proposed June 3, 2010).

91. 77 Fed. Reg. at 35123-24.

92. *Id.* at 35133 (noting that the five ponds on Unit 1 were of "remarkable quality").

93. *Id.*

94. *Id.* at 35140-41.

95. *Markle Interests, L.L.C. v. U.S. Fish & Wildlife Serv.*, 827 F.3d 452, 472 (5th Cir. 2016).

96. See Noah Greenwald et al., *Extinction and the U.S. Endangered Species Act*, 7 PEERJ e6803 (2019), available at <https://peerj.com/articles/6803.pdf>; Daniel M. Evans et al., *Species Recovery in the United States: Increasing the Effectiveness of the Endangered Species Act*, ISSUES ECOLOGY, Winter 2016, https://www.fs.fed.us/rm/pubs_journals/2016/rmrs_2016_evans_d001.pdf.

97. 16 U.S.C. §1532(3).