USING ESA SECTION 9 TO PROTECT COHO SALMON HABITAT IN WESTERN OREGON

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INTRODUCTION

Habitat loss and degradation have devastated coho salmon (*Oncorhynchus kisutch*) in Oregon's coastal rivers.[1] Partly because of habitat destruction, Oregon's coho salmon populations declined precipitously in the latter half of the 1900s and remain depressed today.[2] Functional freshwater habitat is essential to Oregon's coastal coho populations because, although these fish migrate to the ocean, coho spend more than half of their lives rearing and spawning in rivers and estuaries.[3] Coho in Western Oregon prefer lowland streams and rivers, which are typified by low stream gradients, low water velocities, and off-channel pools and backwaters.[4] Specifically, juvenile coho rear and overwinter extensively in the deep, slow, and complex pool habitats that beaver dams create.[5] Unfortunately, humans continue to remove beaver dams and beaver (*Castor canadensis*) from many coastal rivers to facilitate logging operations, agriculture, and real estate development, depriving juvenile coho of this important source of rearing habitat and ultimately reducing the number of juvenile coho that survive to adulthood.[6]

Partly in response to the extensive degradation of coho habitat in Western Oregon, the National Marine Fisheries Service ("NMFS") listed the Oregon Coast Coho Evolutionarily Significant Unit ("ESU")[7] as a

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1. OR. DEP'T OF FISH & WILDLIFE, THE IMPORTANCE OF BEAVER (CASTOR CANADENSIS) TO COHO HABITAT AND TREND IN BEAVER ABUNDANCE IN THE OREGON COAST COHO ESU 5–6 (2005) *available at* http://www.nativefishsociety.org/conservation/misc/documents/Beavers/ODFWBeaverFinalReport5-6-05.pdf.

2. OR. DEP'T OF FISH & WILDLIFE, ESTIMATED NUMBERS OF NATURALLY PRODUCED ADULT COHO IN THE OREGON COAST COHO ESU (RUN YEARS 1950 TO 2013) (2013), *available at* http://oregonstate.edu/dept/ODFW/spawn/pdf%20files/coho/CoastalCohoESUSpawnHarvestChart.pdf.

3. NAT'L MARINE FISHERIES SERV., UPDATED STATUS OF FEDERALLY LISTED ESUS OF WEST COAST SALMON AND STEELHEAD 311 (Thomas P. Good, Robin S. Waples & Pete Adams eds., 2005), *available at* http://swfsc.noaa.gov/publications/fed/00749.pdf.

4. Final Threatened Listing Determination, Final Protective Regulations, and Final Designation of Critical Habitat for the Oregon Coast Evolutionarily Significant Unit of Coho Salmon, 73 Fed. Reg. 7,816, 7,827 (Feb. 11, 2008) (codified at 50 C.F.R. pts. 223 and 226) [hereinafter Listing Determination]; GORDON H. REEVES ET AL., U. S. FOREST SERV., IDENTIFICATION OF PHYSICAL HABITATS LIMITING THE PRODUCTION OF COHO SALMON IN WESTERN OREGON AND WASHINGTON 3 (1989); NAT'L MARINE FISHERIES SERV., *supra* note 3.

5. Reeves et al., *supra* note 4; NAT'L MARINE FISHERIES SERV., *supra* note 3.

6. Michael M. Pollock et al., *The Importance of Beaver Ponds to Coho Salmon Production in the Stillaguamish River Basin, Washington, USA*, 24 N. AM. J. FISHERIES MGMT. 749, 751, 756 (2004), *available at* http://duff.ess.washington.edu/grg/publications/ pdfs/ Pollock.pdf.

7. A pacific salmon stock will be considered a distinct population, "and hence a species under the ESA, if it represents an evolutionary significant unit (ESU) of [its] species. The stock must satisfy two criteria to be considered an ESU: (1) It must be substantially reproductively isolated from other nonspecific population units; and (2) it must represent an important component in the evolutionary

threatened species under the Endangered Species Act ("ESA").[8] The Oregon Coast Coho ESU includes the coho populations in every watershed on the Oregon Coast south of the Columbia River and north of Cape Blanco.[9] NMFS also designated "critical habitat," which encompasses most of the accessible freshwater habitat in this region.[10] Finally, because ESA section 9's prohibition on "take"[11] does not automatically attach to threatened species,[12] NMFS also promulgated a rule making it illegal to take Oregon coast coho under most circumstances.[13]

Despite the Oregon coast coho's threatened status and NMFS's protective regulations, many land-use practices continue to degrade Oregon's coastal rivers. This is because the Oregon Coast Coho ESU's freshwater habitat exists mostly on private and state land.[14] Private entities and states, unlike federal agencies, are not required to formally analyze the impacts of their actions on listed species and critical habitat.[15] Rather, non-federal entities—like private timber companies, developers, and state resource management agencies—are only prohibited from taking listed species.[16] Even though NMFS defines take to include "harm," meaning habitat degradation that kills or injures wildlife by impairing breeding, feeding, or sheltering,[17] private plaintiffs have only occasionally attempted to use the ESA's prohibition against take and harm to protect coho salmon habitat.[18] Thus far, the threatened listing, the critical habitat designation, and the take prohibition have done little to protect Oregon coast coho from

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legacy of the species." Policy on Applying the Definition of Species Under the Endangered Species Act to Pacific Salmon, 56 Fed. Reg. 58,612, 58,612 (Nov. 20, 1991).

8. Listing Determination, *supra* note 4, at 7,816.

9. *Id.* at 7,817; *see also* HABITAT CONSERVATION DIV., NAT'L MARINE FISHERIES SERV., NAT'L OCEANIC & ATMOSPHERIC ADMIN., [MAP OF] OREGON COAST COHO SALMON ESU (1999), *available at* http://www.nwfsc.noaa.gov/trt/maps/map_cohoorc.pdf.

10. Listing Determination, *supra* note 4, at 7,844–59.

11. 16 U.S.C. § 1532(19) (2012) (explaining that "take," within the ESA, "means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.").

12. 16 U.S.C. § 1533(d) (2012).

13. 16 U.S.C. § 1538(a)(1)(B) (2012); Listing Determination, *supra* note 4, at 7,829–30.

14. *See* HABITAT CONSERVATION DIV., *supra* note 9.

15. 16 U.S.C. § 1536 (2012) (requiring federal agencies to consult with U.S. Fish and Wildlife Service or NMFS whenever a listed species is "likely to be affected" by a federal action, to ensure that the federal actions will not "jeopardize" the listed species or "destroy or adversely modify" its critical habitat).

16. 16 U.S.C. § 1538(a)(1)(B) (making it "unlawful for *any person*" to take any take-protected species) (emphasis added).

17. 50 C.F.R. § 17.3 (2011).

18. *See generally* Pac. Rivers Council v. Brown, No. CV 02-243-BR, 2002 WL 32356431, at *11 (D. Or. Dec. 23, 2002) (discussing plaintiff's attempt to use the ESA's prohibition against take and harm to protect Coho salmon habitat); Coho Salmon v. Pac. Lumber Co., 61 F. Supp. 2d 1001, 1004 (N.D. Cal. 1999) (suing to permanently enjoin Pacific Lumber Co. from causing a "take" of Coho salmon through its timber harvesting operations in various watersheds).

harmful land-use practices occurring on non-federal lands, such as the removal of beaver and beaver dams from coho streams.

The limited use of the ESA's harm prohibition to challenge habitat destruction stems, at least partly, from some uncertainty as to what harm actually means and when habitat modification constitutes harm.[19] One reason that plaintiffs hesitate to bring take-through-harm claims is what this paper refers to as the "actually kills or injures" requirement.[20] The U.S. Fish and Wildlife Service ("FWS") and NMFS define harm to exist only when a member of a take-protected species has been killed or injured,[21] and the Supreme Court specifically emphasized the "actually kills or injures" requirement by stating that the entire "definition of 'harm' is subservient to the phrase 'an act which actually kills or injures wildlife.'"[22] Some commentators, and potential plaintiffs, have understood the "actually kills or injures" requirement to require nothing less than death or direct physical injury to a member of a protected species.[23] Because finding a dead or maimed member of a protected species is often impractical or impossible, potential plaintiffs who believe that such a showing is necessary may hesitate to bring take-through-harm claims.

Another area of confusion in take-through-harm litigation is whether the harm provision prohibits injury to members of protected species (hereinafter referred to as "individual protected organisms") or to populations and entire species. Some courts have held that the harm provision prohibits harm to entire species (i.e., driving a species to

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19. When the causal link between a defendant's action and harm to a member of a protected species is severely attenuated, the proper causation standard may also become a legitimate concern for litigants. In *Babbitt v. Sweet Home Chapter of Communities for a Great Oregon* (*Sweet Home*), six out of nine Supreme Court justices agreed, in dicta, that the harm prohibition was subject to familiar tort principles of proximate causation and foreseeability. 515 U.S. 687, 696 n. 9, 700 n.13, 712–13 (1995). Nevertheless, the requisite level of causation remains murky for two reasons. First, proximate causation and foreseeability are inherently difficult to define. *Id.* at 713 (O'Connor, J., concurring) ("Proximate causation is not a concept susceptible of precise definition."). Second, few courts since *Sweet Home* have actually considered the question of causation in take claims; fewer still have stated the test for causation in terms of proximate causation and foreseeability. *See, e.g.*, Strahan v. Coxe, 127 F.3d 155, 163–64 (1st Cir. 1997); Seattle Audubon Soc'y v. Sutherland, No. CV06-1608MJP, 2007 WL 1300964, at *11–12 (W.D. Wash. May 1, 2007); *Pac. Rivers Council*, 2002 WL 32356431, at *5. Because courts do not seem overly concerned with causation in the take context, and because discussions about the meaning of proximate causation and foreseeability already abound, this paper does not examine causation.

20. *See* 50 C.F.R. § 17.3; 50 C.F.R. § 222.102 (2013) ("Harm in the definition of 'take' in the [ESA] means an act which actually kills or injures fish or wildlife.").

21. *Id.*

22. *Sweet Home*, 515 U.S. at 700 n.13.

23. Andrew J. Doyle, *Sharing Home Sweet Home with Federally Protected Wildlife*, 25 STETSON L. REV. 889, 917–20 (1996) ("[B]y requiring proof that an individual, specific animal has been killed, Justice O'Connor practically requires ESA plaintiffs and prosecutors to bring a carcass to court!").

extinction),[24] while other courts have held that it forbids harm to individual protected organisms.[25] Still other courts would require a showing of injury to individual protected organisms *and* the entire species before harm-through-habitat-modification can be considered a take.[26] Not surprisingly, this uncertainty makes it difficult for prospective plaintiffs to plead and argue take-through-harm claims.

This paper points the way towards using a take-through-harm lawsuit to curtail the removal of beaver from Oregon coast coho habitat, and along the way discusses some of the legal issues that may discourage litigants from bringing such claims. Part I outlines the scientific evidence establishing how juvenile coho in coastal streams use, and in fact rely upon, beaver dams for rearing and sheltering. Additionally, this part describes how trapping and removing beavers from these streams causes the loss of existing beaver dams, reducing available coho habitat. Part II briefly explains ESA section 9's take prohibition, including the regulatory definition of harm, which prohibits habitat destruction that injures individual protected organisms.[27] Part III explains that injury within the definition of harm is not limited to instances of bodily injury or maiming to individual protected organisms.[28] Instead, injury occurs whenever an "essential behavior pattern" of a protected organism, such as rearing, spawning, or sheltering, is significantly impaired.[29] Part VI explains why and how the take and harm prohibitions apply to individual organisms rather than populations or entire species. First, this part explains why alleging harm to an entire population is unwise and suggests how plaintiffs can tailor their take-through-harm claims to instead focus on harm to individual protected organisms. Next, this part argues that it is unnecessary to show population- or species-level effects in addition to harm to individual protected organisms in order to establish take-through-harm. Finally, this part explains why plaintiffs and courts need not specify which exact individual organisms will be injured in order to establish that injury to individual protected organisms will occur. Part V applies the facts in the beaver/coho scenario to the legal issues discussed in Parts III and VI and

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24. *See, e.g.*, Palila v. Haw. Dep't of Land & Natural Res. (*Palila II*), 852 F.2d 1106, 1107 (9th Cir. 1988) (defining "harm" as causing habitat degradation that could result in extinction).

25. *See, e.g.*, Forest Conservation Council v. Rosboro Lumber Co., 50 F.3d 781, 788 (9th Cir. 1995) (holding that "harm" would occur even where just two northern spotted owls would be injured).

26. *See, e.g.*, Coal. for a Sustainable Delta v. McCamman, 725 F. Supp. 2d 1162, 1170 (E.D. Cal. 2010) (suggesting that a population-level impact is required for habitat modification to be considered a take).

27. 50 C.F.R. § 17.3 (2011).

28. *Id.* (explaining that the term "injury" is part of the regulatory definition of "harm").

29. 50 C.F.R. § 222.102.

briefly explains why removing beaver from Oregon coast coho habitat could constitute harm. The paper concludes by discussing how take claims function within the ESA's larger framework for protecting listed species' habitat, and highlighting the importance of take claims for protecting habitat when that habitat exists largely or entirely on private or state-owned land.

I. KILLING BEAVER NEGATIVELY IMPACTS JUVENILE OREGON COAST COHO

Beaver dams and ponds alter stream morphology and in-stream habitat in a variety of ways. First, beaver dams create areas of deeper water than would typically be found in small streams.[30] Second, dams decrease current velocity, creating areas of slow or still water in an otherwise moving-water environment.[31] Third, beaver ponds actually expand the amount (not just the quality) of available salmon habitat; the impounded waters upstream of a beaver dam cover a much greater area than the pre-existing stream channel.[32] Fourth, beaver ponds and dams create complex shorelines and in-stream habitats.[33] Finally, beaver ponds and dams dissipate stream energy during floods or high flow events.[34] The presence or absence of beaver activity in a stream or watershed has a strong impact on the stream hydrology and in-stream habitat.

All the effects of beaver dams and ponds on stream hydrology and in-stream habitat described above benefit juvenile Oregon coast coho. Juvenile coho rear, feed, and shelter most successfully in deep, complex pools and other off-channel habitats with low gradients and low water velocities—precisely the types of habitats created by beaver dams and ponds.[35] Various scientific studies conducted in coastal rivers from Oregon to Southeast Alaska all concluded that juvenile coho salmon used beaver dams more than other habitat types (especially during the winter, when

30. OR. DEP'T OF FISH & WILDLIFE, *supra* note 1, at 2–3.

31. *Id.*

32. Robert J. Naiman et al., *Ecosystem Alteration of Boreal Forest Streams by Beaver (Castor canadensis)*, 67 ECOLOGY 1254, 1258, 1266 (1986).

33. Robert J. Naiman, Carol A. Johnston & J.C. Kelley, *Alteration of North American Streams by Beaver*, 38 BIOSCIENCE 753, 753–62 (1988).

34. Ming-Ko Woo & James M. Waddington, *Effects of Beaver Dams on Subarctic Wetland Hydrology*, 43 ARCTIC 223, 229–30 (1990), *available at* http://pubs.aina.ucalgary.ca/arctic/Arctic43-3-223.pdf.

35. Listing Determination, *supra* note 4, at 7,827; REEVES ET AL., *supra* note 4; NAT'L MARINE FISHERIES SERV., *supra* note 3.

shelter from high flows may be critical to juvenile coho survival),[36] and occurred at greater densities and grew faster in beaver ponds than in other habitat types.[37] Overall, stream reaches with beaver dams produced more and larger juvenile coho than stream reaches where beaver dams were absent.[38]

Killing beaver means that fewer dams will be built in the future, but also that existing beaver dams will quickly be destroyed and stop providing quality coho habitat. In coastal Oregon rivers, beaver dams in small streams often wash out during high winter flows and beaver rebuild them the following summer.[39] Accordingly, killing the beaver that would otherwise repair and rebuild existing dams causes the destruction of dams that currently provide rearing habitat for juvenile coho.

Unfortunately, it is difficult to know just how many beaver are being removed from coho habitat in Oregon, or even where beaver trapping is happening. Oregon law authorizes private land owners to kill beaver on their land without any limitation on the means of killing or the number of beaver they can kill.[40] On private land, which constitutes the majority of Oregon coast coho critical habitat, land owners are not required to inform the Oregon Department of Fish and Wildlife before killing beaver, or report the number or location of beaver killed.[41] Because beavers' propensity for cutting trees and impacting roads and agricultural land by redirecting streams makes these animals a nuisance to timber companies and landowners, some level of beaver eradication undoubtedly occurs in coho habitat.[42]

II. EFFECTS OF THE ESA'S TAKE PROHIBITION ON OREGON COAST COHO

Congress' goal of preventing extinctions and preserving endangered species—regardless of cost—is reflected throughout the ESA.[43] To those

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36. Thomas E. Nickelson et al., *Seasonal Changes in Habitat use by Juvenile Coho* (Oncorhynchus kisutch) *in Oregon Coastal Streams*, 49 CANADIAN J. FISHERIES AND AQUATIC SCI. 783, 785–788 (1992).

37. OR. DEP'T OF FISH & WILDLIFE, *supra* note 1, at 3.

38. *Id.*

39. *Id.* at 2.

40. *See* OR. REV. STAT. ANN. § 610.002 (West 2011); OR. REV. STAT. ANN. § 610.105 (West 2011).

41. OR. DEP'T OF FISH & WILDLIFE, *supra* note 1, at 6.

42. *See* WILDLIFE SERV., BEAVER DAMAGE MANAGEMENT FACTSHEET 1–3 (2011), *available at* http://www.aphis.usda.gov/publications/wildlife_damage/content/printable_version/fs_beaver.pdf.

43. Tenn. Valley Auth. v. Hill, 437 U.S. 153, 184 (1978).

ends, section 9 of the ESA broadly prohibits any person[44] from taking any organism that is a member of an endangered species within United States territory or on the high seas.[45] To "take" an organism "means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" that organism.[46] As the Senate report on the ESA explained, take is defined in "the broadest possible manner to include every conceivable way in which a person can 'take' or attempt to 'take' any fish or wildlife."[47]

The term "take" and its statutory definition may call to mind acts done directly and intentionally to particular animals, such as hunting or harvesting.[48] Nevertheless, FWS and NMFS have interpreted the word harm in the definition of take in a way that somewhat expands upon this traditional meaning. FWS was the first agency to define "harm"—and therefore "take"—to encompass "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."[49] In 1995, the Supreme Court upheld the legality of FWS's regulatory definition of harm in *Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*, but cautioned that the whole definition was subservient to the phrase "actually kills or injures" wildlife.[50] While FWS's definition of harm expanded the range of actions that could constitute take, habitat destruction that does not kill or injure an endangered organism does not violate ESA section 9.

Following the validation of FWS's rule, NMFS adopted a similar regulation defining harm to include members of endangered species under NMFS's jurisdiction, including Oregon coast coho.[51] The major difference between FWS's and NMFS's regulations is that NMFS specifically added "spawning, rearing, [and] migrating" to the list of "essential behavior patterns" which when disrupted could constitute harm.[52] Additionally, the preamble to NMFS's rule identifies several examples of habitat-modifying

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44. 16 U.S.C. § 1532(13) (explaining that for the purposes of the ESA, the term "person" means any "individual, corporation, partnership, trust, association, or any other private entity; or any officer, employee, agent, department, or instrumentality of the Federal Government, of any State, municipality, or political subdivision of a State, or of any foreign government; any State, municipality, or political subdivision of a State; or any other entity subject to the jurisdiction of the United States.").

45. 16 U.S.C. § 1538(a)(1)(B) & (C) (2012).

46. 16 U.S.C. § 1532(19).

47. S. REP. NO. 93-307, at 7 (1973).

48. *Sweet Home*, 515 U.S. at 718 (Scalia, J., dissenting).

49. 50 C.F.R. § 17.3 (2011).

50. *Sweet Home*, 515 U.S. at 697, 700 n. 13.

51. Endangered and Threatened Wildlife and Plants; Definition of Harm, 64 Fed. Reg. 60,727, 60,727 (Nov. 8, 1999) (codified at 50 C.F.R. pt. 222) [hereinafter NMFS Definition of Harm].

52. *Compare* 50 C.F.R. § 222.102 (2009) (NMFS's rule), *and* 50 C.F.R. § 17.3 (FWS's rule).

activities that could constitute harm.[53] These activities include "[r]emoving . . . plants, fish, *wildlife*, or other biota required by the listed species for feeding, sheltering, or other essential behavioral patterns" or "[r]emoving or altering . . . *physical structures* that are essential to the integrity and function of a listed species' habitat."[54] Clearly, this guidance could encompass removing beaver and beaver dams from coho streams. However, the preamble to NMFS's rule also reiterates that "a causal link must be established between the habitat modification and the injury or death of listed species" before a take can be found.[55]

Oregon coast coho are protected from take, including death or injury caused by habitat modification. While take protection automatically applies to all endangered species,[56] NMFS may promulgate regulations protecting threatened species under NMFS's jurisdiction from take.[57] NMFS has extended take protection to Oregon coast coho and all other threatened anadromous salmonids.[58] Accordingly, modifying Oregon coast coho habitat in any way that causes death or injury to these fish by significantly impairing their rearing, sheltering, or feeding is illegal.

III. INJURY WITHIN THE DEFINITION OF HARM IS NOT LIMITED TO DIRECT PHYSICAL INJURY

Injury, within the definition of harm, should be interpreted broadly and not limited to direct physical injury to protected organisms. In *Sweet Home*, the Supreme Court noted that the entire definition of harm is subservient to the phrase "actually kills or injures," meaning that no matter how much habitat modification occurs, there is no harm, and therefore no take, until a protected organism is actually killed or injured.[59] However, the *Sweet Home* majority never explored the meaning of "injury" within the definition of harm.[60] Because of the misperception that "injury" means only "direct physical injury" to an organism,[61] proving that a protected organism will be injured often appears to pose an insurmountable hurdle to showing that

53. NMFS Definition of Harm, *supra* note 51.
54. *Id.* at 60,730 (emphasis added).
55. *Id.*
56. 16 U.S.C. § 1538(a)(1) (2012).
57. 16 U.S.C. § 1533(d).
58. 50 C.F.R. § 223.203 (2014); *See also* Listing Determination, *supra* note 4, at 7,843–44.
59. *Sweet Home*, 515 U.S. at 700 n.13.
60. Marbled Murrelet v. Babbit, 83 F.3d 1060, 1067 (9th Cir. 1996).
61. Endangered and Threatened Wildlife and Plants; Final Redefinition of Harm, 46 Fed. Reg. 54,748, 54,748 (Nov. 4, 1981) (codified at 50 C.F.R. pt. 17) [hereinafter FWS Definition of Harm].

habitat modification caused a take.[62] Fortunately for plaintiffs and endangered species, the definition of injury is not nearly so narrow.

A. Significant Impairment of Essential Behavior Patterns Constitutes Injury

The significant impairment of an organism's essential behavior patterns, in and of itself, constitutes injury.[63] The preambles to FWS's and NMFS's rules defining harm make clear that this is how the agencies interpreted the word "injury" within their own definitions of harm.[64] NMFS explicitly rejected suggestions "that impairment of essential behavior patterns is not 'injury' in and of itself but a means to injury" and that impairment of essential behavior patterns and injury "are two separate elements in establishing harm."[65] In response to such comments, NMFS clarified that "[a]n injury is demonstrated if the habitat modification significantly impairs the listed species' ability to feed, breed, rear, migrate or any other behavior essential to its biological processes and behavioral patterns."[66] For its part, FWS stated that injury within the definition of harm was not limited "to direct physical injury" to an organism, but rather that "injury . . . may be caused by impairment of essential behavioral patterns."[67] FWS and NMFS both interpreted injury to include significant impairment of essential behavioral patterns such as sheltering and rearing.

FWS's and NMFS's shared interpretation of injury as including significant impairment of essential behavioral patterns is controlling. When an agency interprets its own legally-promulgated regulations, and the interpretation reflects the agency's "fair and considered judgment," courts must defer to the agency's interpretation unless it is "plainly erroneous or inconsistent with the regulation."[68] In this instance, NMFS and FWS

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62. Doyle, *supra* note 23, at 917–920 ("[B]y requiring proof that an individual, specific animal has been killed, Justice O'Connor practically requires ESA plaintiffs and prosecutors to bring a carcass to court!").

63. FWS Definition of Harm, *supra* note 61, at 54,750; NMFS Definition of Harm, *supra* note 51, at 60,728 ("'Significant' impairment of essential behavioral patterns constitutes injury."); *see also* Swinomish Indian Tribal Cmty. v. Skagit Cnty. Dike Dist. No. 22, 618 F. Supp. 2d 1262, 1269 (W.D. Wash. 2008) ("NMFS has . . . explained that habitat modification that significantly impairs essential behaviors constitutes injury and a prohibited 'take.'").

64. NMFS Definition of Harm, *supra* note 51, at 60,727.

65. *Id.* at 60,728.

66. *Id.*

67. FWS Definition of Harm, *supra* note 61, at 54,748, 54,749 ("Significant modification or destruction of such habitat, where an actual injury occurs, including impairment of essential behavioral patterns, will still be viewed as being subject to section 9 of the Act.").

68. Auer v. Robbins, 519 U.S. 452, 461–62 (1997) (citing Bowles v. Seminole Rock & Sand Co., 325 U.S. 410, 416–18 (1945)) (internal quotations omitted).

interpreted the word "injury" in their own regulatory definitions of harm,[69] which the Supreme Court has upheld as legally promulgated.[70] In light of the broad meaning of the word "injury," the ESA's objective of protecting imperiled species and the ecosystems they need to survive,[71] and Congress' intent that take be defined as broadly as possible,[72] NMFS's and FWS's interpretation of injury to include significant impairment of essential behavioral patterns is not plainly erroneous or inconsistent with the regulation defining harm. Nowhere would NMFS or FWS be expected to exercise their fair and considered judgment on the meaning of injury within the harm regulations more than in the preambles that the agencies wrote to explain what the harm regulations mean. Accordingly, the agencies' interpretation that injury includes the significant impairment of essential behavior patterns controls.

Several court opinions buttress the agencies' interpretation. Even though the *Sweet Home* majority did not address the definition of injury,[73] Justice O'Connor's concurrence explained that she understood that impairing breeding—an essential behavior pattern—injures individual animals.[74] The Ninth Circuit, both before and after *Sweet Home*, held that significant interference with breeding or other essential behavior patterns constituted injury within the definition of harm, without any showing of direct physical injury to a protected organism.[75] As recently as 2009, a district court acknowledged that this definition of injury remains valid in the Ninth Circuit.[76] The persistent idea that proving harm requires showing that a take-protected organism will be killed or maimed is incorrect; significant impairment of essential behavior patterns is the only injury necessary to prove harm.

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69. NMFS Definition of Harm, *supra* note 51, at 60,727; FWS Definition of Harm, *supra* note 61, at 54,750.

70. *Sweet Home*, 515 U.S. at 697.

71. 16 U.S.C. § 1531(b) (2012).

72. S. REP. NO. 93-307, at 7 (1973) ("'Take' is defined . . . in the broadest possible manner to include every conceivable way in which a person can 'take' or attempt to 'take' any fish or wildlife.").

73. *Marbled Murrelet*, 83 F.3d at 1067.

74. *Sweet Home*, 515 U.S. at 709–10 (O'Connor, J., concurring).

75. *See Marbled Murrelet*, 83 F.3d at 1067 (holding that "'[h]arm' under the ESA, therefore, includes the threat of future harm").

76. Grand Canyon Trust v. U.S. Bureau of Reclamation, 623 F. Supp. 2d 1015, 1041 (D. Ariz. 2009); *but see* Swan View Coal. Inc. v. Turner, 824 F.3d 923, 938–39 (D. Mont. 1992) (a much older, pre-*Sweet Home* decision to the contrary holding that habitat modifications must "actually kill or injure grizzly bears and gray wolves").

B. Significant Impairment of an Essential Behavior Pattern is a Take

To prove a take, a plaintiff need only show that a habitat-modifying activity will significantly impair an essential behavior pattern such as breeding, rearing, or sheltering. Agencies define "harm," in pertinent part, as "significant habitat modification or degradation where it actually kills or injures wildlife."[77] When an injury (e.g., the significant impairment of essential behavior patterns) to a take-protected organism occurs, harm exists if that injury was caused by significant habitat modification. As the Ninth Circuit succinctly stated, "habitat modification which significantly impairs the breeding and sheltering of a protected species amounts to 'harm' under the ESA."[78] Because ESA section 3 defines "take" to include harm, any activity constituting harm is a take within the meaning of ESA section 9.[79] Accordingly, a take occurs whenever a significant habitat modification significantly impairs an essential behavior pattern of a take-protected organism.

C. Ramifications

The main benefit of this approach is that it allows environmental plaintiffs to bring take claims without proving that a protected organism has suffered direct physical injury or death as the result of habitat modification. This is important. Sometimes habitat modification, however destructive, simply does not cause direct physical injury or death. Even if direct physical injury or death results, it may be difficult or impossible to find the dead or damaged organism; imagine trying to locate an injured 50 millimeter-long juvenile coho in a fast-flowing river. Finally, even when there has been habitat modification and a dead or physically injured organism can be located, it may be difficult or impossible to satisfy a court that the habitat-modifying activity caused the death or direct physical injury. Often, it is simply not practical to prove that habitat modification resulted in the direct physical injury or death of a protected organism. However, when injury can also mean significant impairment of essential behavior patterns, these difficulties need not spell the end of a take claim.

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77. NMFS Definition of Harm, *supra* note 51; FWS Definition of Harm, *supra* note 61, at 54,750.

78. *Marbled Murrelet*, 83 F.3d at 1067; s*ee also* NMFS Definition of Harm, *supra* note 51, at 60,728 ("'Significant' impairment of essential behavioral patterns constitutes injury; therefore, establishing the former with respect to listed species establishes harm.").

79. 16 U.S.C. § 1532(19).

This is not to suggest that proving take-through-harm where the injury is impairment of an essential behavior pattern would be easy; merely that it might be possible where a dead or maimed member of a protected species could not be produced. Several issues would still need to be litigated. First, questions about the proper definition of "significant impairment" and which behavior patterns are "essential" would doubtless arise. Second, the evidentiary challenges to establishing how a particular habitat modification causes the impairment of a protected organism's essential behavior patterns would be substantial. Take-through-harm litigation would present a variety of legal and evidentiary challenges, but could succeed in proving harm without showing death or direct physical injury to protected organisms.

IV. THE ESA'S PROHIBITIONS ON TAKE AND HARM APPLY TO INDIVIDUAL ORGANISMS

The ESA exists to prevent species, and populations of species, from going extinct.[80] ESA section 9 helps effectuate that goal by prohibiting people from taking the individual organisms that comprise those species and populations. While the take—by harm or otherwise—of individual protected organisms usually impacts the overall population of a protected species, it is the taking of individual members of the protected species, and not the corresponding decline in population levels, that ESA section 9 illegalizes.[81] Unfortunately, courts analyzing take-through-harm claims occasionally confuse harm to individual members of a protected species with impacts to the population or the entire species.[82]

Such confusion is understandable, perhaps, because the language of ESA section 9 uses the word "species" as a stand-in for the phrase "individuals of a protected species." ESA section 9(a) states in pertinent part:

> (1) . . . with respect to any endangered species of fish or wildlife . . . it is unlawful for any person . . . to—
> (A) import any such species into, or export any such species from the United States;

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80. *Sweet Home*, 515 U.S. at 715 (Scalia, J., dissenting).

81. 16 U.S.C. § 1538 (2012). *See also* FWS Definition of Harm, *supra* note 61, at 54,750 (explaining the term wildlife can refer to as few as one member of a species).

82. *See* Doyle, *supra* note 23, at 917–20; Palila v. Haw. Dep't of Land and Natural Res. (*Palila I*), 649 F. Supp. 1070, 1077 (D. Haw. 1986) ("Until the bird has reached a sufficiently viable population to be delisted, it should not be necessary for it to dip closer to extinction before the prohibitions of section 9 come into force.").

> (B) take any such species within the United States or the territorial sea of the United States;
> (C) take any such species upon the high seas;
> (D) possess, sell, deliver, carry, transport, or ship, by any means whatsoever, any such species taken in violation of subparagraphs (B) and (C);
> (E) deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of a commercial activity, any such species.[83]

Even a cursory reading of the above text makes it clear that Congress used "species" when it actually meant individuals of a protected species; Congress did not intend ESA Section 9 to illegalize only taking an *entire* species "upon the high seas" or illegalize shipping an *entire* species "in interstate or foreign commerce." The only reasonable way to read ESA section 9 is that Congress intended the section's prohibitions to apply to each individual member of an endangered species (i.e. individual protected organisms), and simply used the word "species" as a stand-in.

Because FWS's and NMFS's regulations defining harm merely describe one category of take, it should follow that harm (a type of take) also focuses on individual protected organisms rather than species. Nevertheless, the language of the harm regulations is worth examining because it reinforces the conclusion that take, including harm, focuses on individual members of protected species rather than populations or entire species.[84] NMFS defines harm to "include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns."[85] In turn, NMFS defines "wildlife" to mean "*any member* of the animal kingdom."[86] By using the phrase "any member," NMFS made clear that "wildlife" refers to individual organisms, and when the word "wildlife" appears as the subject of the harm regulation, it means that the harm regulation pertains to

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83. 16 U.S.C. § 1538(a)(1) (2012).

84. Nevertheless, many courts speak of impairment, injury, or harm to an entire species rather than to individual organisms. *See, e.g.*, Nat'l Wildlife Fed'n v. Burlington N.R.R., 23 F.3d 1508, 1513 (9th Cir. 1994) (holding that in order to show harm, plaintiffs "would have to show significant impairment of the *species'* breeding or feeding habits and prove that the habitat degradation prevents, or possibly, retards, recovery of the *species*.") (emphasis added). While it may make grammatical sense to refer to impairing, harming, or injuring an entire species, the word "kills" in the definition of harm gives these courts away; populations and entire species cannot be "killed," they can only be extirpated or go extinct. Accordingly, only individual protected organisms, which can be both killed *and* injured, are what the harm regulation protects.

85. 50 C.F.R § 222.102.

86. *Id.* (emphasis added).

individual members of protected species, not to populations or species in general.

Other authorities support the idea that take and harm directly protect individual organisms rather than populations or species. In *Sweet Home*, Justice O'Connor's concurrence explained that the harm regulation only prohibits killing or injuring individual protected organisms, but not injuring populations of protected species, as the dissent feared.[87] Additionally, FWS, in the preamble to its regulation defining harm, declared that "section 9's threshold [focuses] on individual members of a protected species," not populations.[88] These authorities agree that the inquiry over whether a take or harm has occurred focuses on the effects on individual protected organisms. The remainder of this part explores some of the issues that arise when courts, and plaintiffs, conflate harm to individual protected organisms with damage to populations or species.

A. Future Harm to Individual Protected Organisms

One major difficulty with the idea that the harm prohibition relates only to "individual members of [a] protected species" arises when plaintiffs attempt to enjoin habitat-modifying activities that will harm protected organisms only in the future, perhaps even the distant future.[89] Courts can enjoin habitat-modifying activities that will harm protected organisms in the future.[90] However, when the harm of which plaintiffs complain will not impact any living members of a protected species, but rather will be felt many years hence, perhaps only by future generations of protected organisms, it becomes more difficult to explain how an activity will harm individual protected organisms. Some courts, particularly in the Ninth Circuit, responded to this difficulty by allowing plaintiffs to establish harm by showing that the habitat-modifying activity would cause extinction or other population-level effects.[91] This approach may be an invalid application of the harm provision because it forsakes any nexus to the injury of individual animals. To avoid such uncertain legal ground, and the unfortunate possibility of losing a take-through-harm suit, plaintiffs should carefully explain how the habitat modification at issue will injure individual protected organisms in the future.

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87. *Sweet Home*, 515 U.S. at 709–10 (O'Connor, J., concurring).

88. FWS Definition of Harm, *supra* note 61, at 54,749.

89. *Sweet Home*, 515 U.S. at 711 (O'Connor, J., concurring).

90. *See Marbled Murrelet*, 83 F.3d at 1064–66 (concluding that a court may issue an injunction when a "reasonably certain threat of imminent harm to a protected species" exists).

91. *See Palila II*, 852 F.2d at 1107 (holding that the definition of harm includes causing habitat degradation that could result in extinction).

The following case illustrates why using population decline as a stand-in for injury to individual protected organisms is a risky legal proposition and how plaintiffs can re-phrase their arguments to satisfy the requirement of injury to individual protected organisms, even if harm to individuals will only occur in the distant future. In *Palila II*, environmental groups sued the Hawai'i Department of Land and Natural Resources for maintaining a herd of non-native mouflon sheep. Overgrazing by the mouflon inhibited the regeneration of mamane trees that endangered palila birds depended on for food.[92] Because the mouflon sheep prevented new mamane trees from growing, the existing trees were dying of old age; unless the grazing regime changed, the mamane forest would eventually be extirpated and the endangered palila would go extinct.[93] The district court held that the Hawai'i Department of Land and Natural Resources' destruction of the palila's habitat constituted harm because it forced the palila, as a *species*, toward extinction.[94] The Ninth Circuit affirmed the judgment and agreed with the district court's reasoning on this point.[95]Justice O'Connor, in her *Sweet Home* concurrence, pointed out that *Palila II* was an illegal application of the harm prohibition because the Ninth Circuit and the district court based their decisions on injury to the palila *population* (what Justice O'Connor called "hypothetical" animals) rather than describing how individual palila birds would ultimately be injured.[96]

While the reasoning in *Palila II*—that habitat modification leading to population decline and extinction of a species constitutes harm—may have been erroneous, the facts of the case also support a finding that Hawai'i's grazing management would harm actual, individual palila birds in the future. Instead of focusing on the "hypothetical" palilas that would never be born as a consequence of the habitat modification, or the fact that the palila species faced extinction as a consequence of the habitat modification, the plaintiffs should have focused their harm claim on the individual palila birds that would, in the future, inhabit the mamane forests.[97] The plaintiffs'

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92. *Palila I*, 649 F. Supp. at 1071, 1073.

93. *Palila II*, 852 F.2d at 1107.

94. *Palila I*, 649 F. Supp. at 1075, 1077 ("The key to the Secretary's definition is harm to the species as a whole through habitat destruction or modification. If the habitat modification prevents the population from recovering, then this causes injury to the species and should be actionable under section 9.").

95. *Palila II*, 852 F.2d at 1110.

96. *Sweet Home*, 515 U.S. at 709, 713–14 (O'Connor, J., concurring). Justice O'Connor's concern about the harm prohibition protecting hypothetical animals is essentially a restatement of FWS's concern that habitat modification should never be sufficient to prove harm. This concern ultimately prompted FWS to re-define "harm." *See* FWS Definition of Harm, *supra* note 61, at 54,749–50 (explaining that Congress did not intend for habitat modification alone to prove a harm).

97. *Sweet Home*, 515 U.S. at 709 (O'Connor, J., concurring).

argument could have gone something like this: left unchecked, the mouflon would prevent the mamane forest from regenerating and the mature trees would eventually begin to die, causing the mamane forest to shrink or disappear entirely. At that point, be it in 5 or 50 years, the individual palilas that would be alive at that time and relying on the remaining mature mamane trees for feeding (an essential behavior pattern) would be injured by Hawai'i's decision to graze mouflon in palila habitat.

One possible criticism of this approach is that courts may balk at the idea of enjoining an activity that may not injure a protected organism until some indeterminate future time. After all, any number of intervening events occurring between the lawsuit and the ultimate injury to palilas could destroy the scenario set forth above. What if someone planted other mamane trees? What if the entire palila or mouflon population was wiped out by disease before the mamane forest died? While there is inherent uncertainty whenever plaintiffs allege that harm to individual protected organisms will manifest in the future, such arguments are not necessarily too speculative to succeed. First, and most relevantly, the *Palila II* court was unfazed by such concerns. While that court considered harm to a population rather than harm to individuals, the harm that provoked the *Palila II* court to enjoin grazing (extinction of the palila as a species) was not imminent by any stretch of the imagination.[98] The fact that *something* could happen in the indeterminate amount of time before the harm materialized that might change the existing dynamic between mouflon, mamane, and palilas did not discourage the Ninth Circuit from finding harm, and take, through habitat modification and upholding the district court's injunction.[99] Second, when plaintiffs seek to enjoin activities that may cause harm in the future, there is almost always the possibility that intervening events could ultimately stop the harm from occurring. In most such instances, the defendant has the power to stop the habitat modification or otherwise mitigate the harm. Thus, courts assessing take claims require only that harm is "reasonably certain" to occur, not that harm is inevitable.[100]

There may be situations where the impacts on individual protected organisms cannot be neatly explained, even when there is strong evidence that the habitat modification at issue will cause population decline. And even when a clear connection between habitat modification and injury to individual protected organisms can be articulated, such claims may fail if

98. *Palila II*, 852 F.2d at 1108–11.
99. *Id.*
100. *Marbled Murrelet*, 83 F.3d at 1066; Sierra Club v. Babbitt, 65 F.3d 1505, 1512 (9th Cir. 1995); *Coho Salmon*, 61 F. Supp. 2d at 1006.

the alleged harm would occur so far in the future that courts find the claim of harm speculative. However, given the uncertainty as to whether population-level impacts, even extinction, are sufficient to prove injury in take-through-harm cases, plaintiffs attempting to establish that harm will occur in the future should do their utmost to articulate how the habitat modification at issue will injure individual protected organisms rather than populations.[101]

B. Population Decline is Not an Element of Harm-Through-Habitat-Modification

Injury to a single individual protected organism as a result of habitat modification is harm and, therefore, a prohibited take under ESA section 9; there is no additional requirement to prove an impact on the population of the protected species to which the organism belongs.[102] Unfortunately, the District Court for the Eastern District of California, in *Coalition for a Sustainable Delta v. McCamman*, held that the Ninth Circuit's case law imposes such an additional requirement.[103] In that case, an environmental group brought a harm-through-habitat-modification claim against the California Department of Fish and Game for enforcing sport fishing regulations designed to increase the population of nonnative striped bass in the Sacramento–San Joaquin delta even though the bass prey upon ESA-listed fish species including Chinook salmon.[104] After deciding that state regulations increasing the number of predators in a listed species' habitat could constitute harm through habitat modification, the district court concluded that plaintiffs *also* needed to show that California's regulations were causing the entire population of listed Chinook in the delta to decline before that harm could constitute a take.[105] This erroneous requirement would place an unwelcome additional hurdle in the path to proving take. Moreover, a showing of population decline is redundant because the responsible agency has, by listing the species and granting its members take-protection, already concluded that its population is dangerously low.[106] This section explains why the *Coalition for a Sustainable Delta* court's

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101. Doyle, *supra* note 23.

102. 16 U.S.C. § 1538 (2012).

103. 725 F. Supp. 2d 1162, 1170 (E.D. Cal. 2010) ("The balance of the authority suggests that a population level effect is necessary for harm resulting from habitat modification to be considered a take.").

104. *Id.* at 1164.

105. *Id.* at 1170.

106. *Palila I*, 649 F. Supp. at 1077 ("Until the bird has reached a sufficiently viable population to be delisted, it should not be necessary for it to dip closer to extinction before the prohibitions of section 9 come into force.").

conclusion was incorrect and why no showing of population decline is necessary for harm through habitat modification to constitute a take.

1. NMFS's Harm Regulation Focuses on Individuals, Not Populations

The *Coalition for a Sustainable Delta* court ignored the plain language of NMFS's regulations, which protect "*any* member of a threatened or endangered species."[107] As explained above, NMFS's harm regulations expressly protect "wildlife" which is defined to mean "any member of the animal kingdom."[108] The Supreme Court has consistently read the word "any" expansively, noting that "any" means "one or some indiscriminately of whatever kind."[109] Accordingly, by protecting "any member" of a threatened or endangered species, NMFS's harm regulation prohibits harm to even one individual protected organism. By requiring a showing that an entire population will be impacted, the *Coalition for a Sustainable Delta* court read "any" out of NMFS's regulations because the effect of this additional showing is that wildlife would be protected only when all or many of the individuals in a population—rather than "any" of those individuals—face harm.

Moreover, if FWS and NMFS had interpreted their own definitions of harm to require a decrease in an entire protected species' population, FWS and NMFS would almost certainly have mentioned such a requirement in the preambles to their rules defining harm. However, neither FWS's nor NMFS's preambles to their rules defining harm indicate that a decline in a protected species' population is an element of proving take in a harm-through-habitat-modification claim.[110] In fact, FWS's preamble acknowledges that "section 9's threshold [focuses] on individual members of a protected species," not populations.[111] Because neither agency mentions such a substantial additional requirement, it must be assumed that neither agency interpreted its definition of harm to include this requirement. As discussed above, FWS's and NMFS's interpretations of their own regulations defining harm are entitled to strong deference.[112] Accordingly, courts must accept the agencies' interpretation of their own rules and refuse

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107. 50 C.F.R § 222.102.

108. *Id.* (emphasis added).

109. United States v. Gonzales, 520 U.S. 1, 5 (1997); Dep't of Housing & Urban Dev. v. Rucker, 535 U.S. 125, 131 (2002); Massachusettes v. Envtl. Prot. Agency, 549 U.S. 497, 529 n. 25 (2007).

110. FWS Definition of Harm, *supra* note 61, at 54,748; NMFS Definition of Harm, *supra* note 51, at 60,727.

111. FWS Definition of Harm, *supra* note 61, at 54,749.

112. Bowles v. Seminole Rock & Sand Co., 325 U.S. 410, 416–18 (1945); *Auer*, 519 U.S. at 461–62.

to create an additional impediment to proving harm through habitat modification.

2. Case Law Does Not Support the Conclusion that Population Decline is an Element of Take in a Harm-Through-Habitat-Modification Claim

The *Coalition for a Sustainable Delta* court fundamentally misread the authority it relied upon to support the additional requirement of showing population-level effects in order for harm-through-habitat-modification to constitute take. *Palila II* created a new way to meet the injury requirement in the definition of harm: if a plaintiff could not prove injury to individual protected organisms, the plaintiff could still succeed in proving injury by showing that the entire species would go extinct (or possibly have its recovery impaired) by the habitat-modifying activity.[113]

The *Coalition for a Sustainable Delta* court cited three harm-through-habitat-modification cases that allegedly required a showing of population-level impact *in addition to* injury to individual protected organisms.[114] However, those decisions did not require population-level impact *in addition to* injury to individual protected organisms; following *Palila II*, those decisions allowed a showing of population-level impacts *instead of* proof of injury to individual protected organisms.[115] None of the three cases cited by the *Coalition for a Sustainable Delta* court considered the effects of harm-through-habitat-modification on individual protected organisms, they *only* considered the population-level impacts on the protected species.[116] Therefore, these cases did not require population-level effects *in*

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113. *Palila II*, 852 F.2d at 1108–09 (holding that harm includes (but is not limited to) instances where habitat modification leads to the extinction of a protected species); *see also Forest Conservation Council*, 50 F.3d at 788 (explaining that it was immaterial that plaintiffs had not shown that the habitat modification at issue would retard recovery or cause extinction because the plaintiffs had shown that the habitat modification would injure individual protected organisms). However, the legality of this application of the harm provision is questionable, as discussed in Part V, Section A.

114. *Palila II*, 852 F.2d at 1108–09; *Nat'l Wildlife Fed'n*, 23 F.3d at 1513; Greenpeace Found. v. Mineta, 122 F. Supp. 2d 1123, 1134 (D. Haw. 2000).

115. *Coal. for a Sustainable Delta*, 725 F. Supp. 2d at 1170 ("The balance of the authority suggests that a population level effect is necessary for harm resulting from habitat modification to be considered a take.").

116. *Palila II*, 852 F.2d at 1108–09 (holding that habitat destruction that caused the ultimate form of population decline—extinction of the species—would constitute harm, but not discussing how individual palilas would be harmed or injured); *Nat'l Wildlife Fed'n*, 23 F.3d at 1513 (holding that a valid harm-through-habitat-modification claim would exist where plaintiffs could show that "the habitat degradation [at issue] prevents, or possibly, retards recovery of the species," but never discussing how habitat modification harmed individual grizzly bears); *Greenpeace*, 122 F. Supp. 2d at 1133–34 (denying Plaintiffs' harm-through-habitat-modification claim for lack of evidence of a "causal link between lobster fishing," the habitat modification at issue, "and the monk seal population" without considering how lobster fishing injured individual endangered Hawaiian monk seals).

addition to injury to individual protected organisms; rather, these cases merely used the alternative means of showing injury that was created (possibly erroneously) by *Palila II*.[117] Unfortunately, the *Coalition for a Sustainable Delta* court read those decisions inquiring into whether habitat modification would impact recovery or cause extinction to require—in every instance—proof of population-level effects before harm through habitat modification could equal a take.[118] Essentially, the *Coalition for a Sustainable Delta* court looked at the "either-or" standard for proving injury created by *Palila II* and followed by later decisions and mistakenly decided that both showings, rather than just one, were required.[119] While it is now questionable whether population decline can be an injury sufficient to satisfy harm, an injury to an individual protected organism from habitat modification still, without more, constitutes both harm and a take.

3. Many Courts have Found Harm-Through-Habitat-Modification without Requiring Proof of Population Decline

Contrary to the *Coalition for a Sustainable Delta* court's assertion, courts in the Ninth Circuit do not require population decline in order for harm-through-habitat-modification to constitute take.[120] In fact, numerous cases (even some cited for other purposes by the *Coalition for a Sustainable Delta* court) have found that harm-through-habitat-modification constitutes take without considering the population-level impacts to the protected species. In *Forest Conservation Council v. Rosboro Lumber Company*, the Ninth Circuit held that habitat modification which would impair the essential behavior patterns of just two individual spotted owls would constitute harm, and therefore a take.[121] Likewise, in *Marbled Murrelet v. Babbitt*, the Ninth Circuit enjoined logging that would impair the breeding of some marbled murrelets; the Ninth Circuit decided that this habitat modification caused harm, and therefore a take, without considering the impact to the overall population of marbled murrelets.[122] Several district courts in the Ninth Circuit have also decided that harm through habitat modification constituted a take without considering population-level

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117. *Coal. for a Sustainable Delta*, 725 F. Supp. 2d at 1170.
118. *Id.*
119. *Id.*
120. *Id.* ("The balance of the authority suggests that a population level effect is necessary for harm resulting from habitat modification to be considered a take.").
121. 50 F.3d at 788 (failing to discuss the potential impact of the taking of the two owls on the overall northern spotted owl population).
122. *Marbled Murrelet*, 83 F.3d at 1068.

effects.[123] The weight of authority in the Ninth Circuit does not require plaintiffs to show injury to individual protected organisms *and* population-level effects for harm through habitat modification to constitute a take. Injury to even one individual protected organism from habitat modification is an illegal take.

C. Plaintiffs Need Not Specify Which Organisms will be Injured

Even though the ESA's harm and take prohibitions relate to individual protected organisms rather than populations, these prohibitions should not be construed to require plaintiffs to point to *the* particular individual organisms that were or will be injured by the habitat-modifying activity in order to prove harm.[124] Fortunately, courts have not taken this approach, especially when granting forward-looking injunctions against habitat-modifying activities. In *Marbled Murrelet v. Babbitt*, the Ninth Circuit upheld an injunction against logging a stand of old growth timber used as a nesting area by a population of protected marbled murrelets.[125] While the court concluded that some individual murrelets would be injured by the logging, neither the Ninth Circuit nor the trial court required the plaintiffs to identify the individual birds that would ultimately be harmed.[126] Similarly, in *Loggerhead Turtle v. County Council of Volusia County, Florida*, the Eleventh Circuit held that a regulation which would injure juvenile sea turtles made the county liable for a take without requiring any showing as to which individual turtles would be harmed.[127] For these courts, it was sufficient that "actual, individual members of [a] protected species" would be injured by the habitat modifying activity, even if the plaintiffs or the court could not point to the exact organisms that would suffer.[128]

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123. *See* Alliance for the Wild Rockies v. Bradford, 720 F. Supp. 2d 1193, 1210–11 (D. Mont. 2010) (holding that road construction that would cause harm through habitat modification was take without considering how the road construction would impact the entire population of protected grizzly bears); Or. Natural Desert Ass'n v. Tidwell, 716 F. Supp. 2d 982, 1005–06 (D. Or. 2010) (explaining defendant would be liable for take if plaintiff proved that habitat modification harmed "one or more" protected organisms); *Swinomish Indian Tribal Cmty.*, 618 F. Supp. 2d at 1269–71 (concluding that a tidegate that adversely modified juvenile Chinook salmon rearing habitat caused take, without considering the impacts to the Chinook salmon population).

124. *See* Doyle, *supra* note 23 (raising this concern).

125. *Marbled Murrelet*, 83 F.3d at 1067–68.

126. *Id.*; Marbled Murrelet v. Pacific Lumber Co., 880 F. Supp. 1343, 1366 (N.D. Cal. 1995).

127. 148 F.3d 1231, 1249 (11th Cir. 1998).

128. *Sweet Home*, 515 U.S. at 709–10 (O'Connor, J., concurring).

V. KILLING BEAVER IN OREGON COAST COHO HABITAT COULD CAUSE A TAKE

Private land owners kill an unknown and unlimited number of beaver in Oregon coast coho habitat[129] in order to protect forest products, agricultural lands, and infrastructure such as roads and culverts.[130] In some instances, the removal of beaver from streams and rivers harms Oregon coast coho and constitutes a take within the meaning of ESA section 9. As discussed above, in order to establish that harm will occur, plaintiffs must show that (1) the habitat-modifying activity at issue will (2) injure (by significantly impairing an essential behavior pattern) (3) one or more individual protected organisms.[131] Removing beaver from coho streams often satisfies these three elements.

First, removing beaver modifies coho habitat because, as explained in Part I, streams without beaver dams (and beaver to maintain those dams) have markedly different hydrology and in-stream habitat than streams where beaver are present and allowed to construct and maintain dams.[132] Additionally, the preamble to NMFS's rule defining harm explains that "[r]emoving . . . *wildlife* . . . required by the listed species for feeding, sheltering, or other essential behavioral patterns" or "[r]emoving or altering . . . *physical structures* that are essential to the integrity and function of a listed species' habitat" are habitat-modifying activities within the definition of harm.[133] Beaver and their dams are wildlife and physical structures, respectively, that are extremely important to coho; removing them is, by NMFS's own definition, habitat modification.[134]

Second, the injury suffered by Oregon coast coho salmon is the significant impairment of juvenile coho's ability to rear and shelter without the habitat provided by beaver dams.[135] Numerous studies outlined in Part I document that juvenile coho survive at higher rates and rear more successfully in stream reaches containing beaver dams.[136] Removing beaver, and therefore beaver dams, from coho streams has a strong negative impact on the ability of coho to rear and shelter effectively. As explained in

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129. OR. REV. STAT. ANN. § 610.002 (West 2011); OR. REV. STAT. ANN. § 610.105 (West 2011); OR. DEP'T OF FISH & WILDLIFE, *supra* note 1, at 6.

130. *See* WILDLIFE SERV., *supra* note 42.

131. *Supra* section IV. A.

132. OR. DEP'T OF FISH & WILDLIFE, *supra* note 1, at 2–3.

133. NMFS Definition of Harm, *supra* note 51, at 60,730 (emphasis added).

134. *Id.*

135. Listing Determination, *supra* note 4, at 7,827; REEVES ET AL., *supra* note 4; NAT'L MARINE FISHERIES SERV., *supra* note 3.

136. OR. DEP'T OF FISH & WILDLIFE, *supra* note 1, at 3.

Part III, there is no need to show that coho have been killed or maimed; significant impairment of essential behavior patterns, such as rearing and sheltering, is injury enough to satisfy this element of harm.[137]

Third, killing beaver and the consequent destruction of beaver dams will injure individual coho salmon. While strong scientific evidence shows that removing beaver dams can dramatically impact coho populations, such habitat modification also injures individual juvenile coho.[138] When a beaver (or several beaver) that have maintained a dam and pond where juvenile coho rear and shelter are killed, that beaver dam and pond are likely to wash out and be destroyed in the near future.[139] When a dam fails, and the habitat it created is lost, the individual juvenile coho salmon that were using that dam and pond suffer the impairment of their ability to rear and shelter there. In this way, individual coho are injured by the killing of beaver and the consequent destruction of beaver dams and ponds. Because research shows that many beaver dams fail relatively quickly without beaver present to repair them, the problems with alleging harm to individuals that may only materialize decades in the future (discussed in Part IV(A)) would be minimal. [140] As explained in Part V, no demonstration of population-level effects is required and plaintiffs have no burden to specify which individual fish will be injured. Removing beaver from coho streams may, in many circumstances, harm Oregon coast coho and consequently violate ESA section 9.[141]

CONCLUSION

The Congress that enacted the ESA understood that imperiled species do not exist in isolation; they need adequate habitat to survive, grow, and reproduce. To this end, the stated purpose of the ESA is not merely to protect imperiled species, but "to provide a means whereby the ecosystems"—the habitat and ecological relationships—"upon which

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137. FWS Definition of Harm, *supra* note 61, at 54,750; NMFS Definition of Harm, *supra* note 51, at 60,728 ("'Significant' impairment of essential behavioral patterns constitutes injury."); *see also Swinomish Indian Tribal Cmty.*, 618 F. Supp. 2d at 1269 (W.D. Wash. 2008) ("NMFS has . . . explained that habitat modification that significantly impairs essential behaviors constitutes injury and a prohibited 'take.'").

138. Pollock et al., *supra* note 6, at 749, 756–758 (attributing a 94% reduction in smolt production potential in a western Washington basin to the loss of beaver pond habitat); Nickelson, *supra* note 36, at 785–788 (concluding that availability of beaver dams and similar off-channel habitats was a limiting factor in juvenile coho production in Oregon coastal streams).

139. OR. DEP'T OF FISH & WILDLIFE, *supra* note 1, at 2.

140. *Id.*

141. *Sweet Home*, 515 U.S. at 709–10 (O'Connor, J., concurring).

endangered species and threatened species depend may be conserved."[142] The ESA provides several mechanisms for protecting habitat, such as designating critical habitat for protected species[143] and requiring that federal agencies not destroy or adversely modify critical habitat,[144] empowering federal agencies to purchase public lands that are important habitat for protected species,[145]and creating habitat conservation plans to offset incidental take.[146] When compared to the ESA's other programs that are specifically tailored to protect imperiled species' habitat, harm-through-habitat-modification claims may appear to be an inefficient, back-door approach.

In fact, harm-through-habitat-modification claims are probably not as efficient at protecting habitat as some of the ESA's other programs, and in many instances these cases will be difficult to litigate and require extensive (and expensive) evidentiary support. Unfortunately, such claims are often the only vehicle for bringing the ESA to bear on private and state-owned lands that are home to protected species. Although agencies designate critical habitat for protected species on private lands,[147] the ESA does not generally prevent private and state actors from destroying or adversely modifying designated critical habitat.[148] While purchasing private land for conservation purposes may be critical in some instances, where protected species have large ranges or are widely distributed it may never be feasible for the federal government to purchase enough private land to make a difference to the conservation of these species. Finally, though habitat conservation plans on private and state lands may provide some level of habitat protection,[149] it is only the threat of viable take claims that encourages landowners to implement habitat conservation plans.[150] Harm-through-habitat-modification claims may be an unwieldy and imperfect tool for protecting habitat, but on private and state-owned land, these claims are

142. 16 U.S.C. § 1531(b).
143. 16 U.S.C. § 1533(a)(3) (2012).
144. 16 U.S.C. § 1536(a)(2) (2012).
145. 16 U.S.C. § 1534 (2012).
146. 16 U.S.C. § 1539(a) (2012).
147. *See* HABITAT CONSERVATION DIV., *supra* note 9.
148. 16 U.S.C. § 1536(a)(2) (prohibiting federal agencies from destroying or adversely modifying designated critical habitat only).
149. Whether these plans actually benefit protected species is debatable and probably highly dependent on the language of the individual plans. *See generally* Patrick Duggan, *Incidental Extinction: How the Endangered Species Act's Incidental Take Permits Fail to Account for Population Loss*, 41 ENVTL. L. REP. NEWS & ANALYSIS 10,628, 10,632, 10,640 (2011).
150. 16 U.S.C. § 1539(a) (providing private and state landowners limited indemnity from take claims, in the form of an Incidental Take Permit, in exchange for implementing a habitat conservation plan on their land).

often the only tool available. Sharpening this tool will help fulfill the ESA's promise of protecting the ecosystems on which Oregon coast coho rely.