

WHEN SCIENCE AND THE STATUTE DON'T PROVIDE AN ANSWER: HYBRID SPECIES AND THE ESA

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I. INTRODUCTION

One of the great strengths of the Endangered Species Act (ESA) is that the decision to list a species may only be made using the “best scientific and commercial data available.”¹ Accounting for economic considerations in the listing process is forbidden: only the best science may guide the agencies charged with deciding which species will receive protection under the ESA and which will not.² The plain language of the ESA, its purposes, and its legislative history all suggest that this system was designed to ensure that truly endangered species would receive protection at any cost.³ This is certainly commendable, but in using the language “best scientific and commercial data available,” Congress assumed that the best scientific and commercial data available would always point wildlife agencies to the correct answer. In reality, however, the best scientific and commercial data often point to the lack of a single, direct answer to the questions these agencies must answer.

The best scientific and commercial data available often reflect a series of studies that inherently contain assumptions, rates of error, and extrapolations, among other uncertainties.⁴ This is especially true

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1. 16 U.S.C. § 1533(b)(1)(A) (2012).

2. *See id.* (“The Secretary shall make determinations required by [16 U.S.C. § 1533(a)(1)] solely on the basis of the best scientific and commercial data available to him . . .”).

3. *See Tennessee Valley Authority v. Hill*, 437 U.S. 153, 184 (1978) (“The plain intent of Congress in enacting [the ESA] was to halt and reverse the trend toward species extinction, whatever the cost.”).

4. *See generally* H. Charles Romesburg, *Wildlife Science: Gaining Reliable Knowledge*, 45 J. WILDLIFE MGMT. 293 (1981); C. Margules & M. B. Usher, *Criteria Used in Assessing Wildlife Conservation*, 21 BIOLOGICAL CONSERVATION 79 (1981).

in the field of wildlife sciences.⁵ Species' ranges, population numbers, and population densities are extremely hard to study. Estimates of these indicators are produced using complex survey techniques and formulas, and the estimates can be called into question by minor changes in natural conditions.⁶ Additionally, wildlife is a moving target: animals migrate, they reproduce, they die, and species themselves evolve over time, splinter into subspecies, or disappear entirely. These complications present even greater problems for the study of endangered species because these species are hard to find. Therefore they are hard to study, and are susceptible to significant population fluctuations and crashes.⁷

For these reasons, when it comes to wildlife, it is often the case that the best available science is truly unclear. It appears that Congress did not anticipate this problem because the ESA provides no guidance as to how agencies should proceed when the best available science is unclear.⁸ Without guidance as to how to proceed in the face of unclear science, agencies may either consciously or subconsciously allow forbidden economic considerations to creep into their analysis or merely choose the path of least resistance, which is normally to maintain the status quo. Neither of these solutions advances the underlying purposes of the ESA.

An example of this dilemma is the question of whether or not to list hybrid species under the ESA. "Hybridization is generally considered to be interbreeding of parental individuals from genetically distinct populations, regardless of the taxonomic status of populations."⁹ The parent species in question may be two different subspecies or two different species entirely.¹⁰ This phenomenon raises serious questions for the Fish and Wildlife Service (FWS), the agency

5. See Romesburg, *supra* note 4, at 293 ("[P]art of wildlife science's knowledge bank has become grossly unreliable owing to the misuse of scientific methods.").

6. See *generally id.* (suggesting that minor changes in natural conditions may render induction and retroduction based research techniques inaccurate).

7. See Margules & Usher, *supra* note 4, at 86-87 (indicating that rare species are "more likely to succumb to exploitation by man or to man-induced changes to the environment" and "are more susceptible to catastrophes").

8. See 16 U.S.C. § 1531 *et seq.* (providing no alternative to "best available science").

9. Fred W. Allendorf et al., *Intercrosses and the U.S. Endangered Species Act: Should Hybridized Populations be Included as Westslope Cutthroat Trout?*, 18 CONSERVATION BIOLOGY 1203, 1204 (2004).

10. *Id.*

charged with implementing the ESA.¹¹ What if a listed species breeds with an unlisted species? Do the hybrid offspring receive the protection of the ESA? What if two listed species breed, but their hybrid offspring threaten the survival of one or both of the parent species? These questions should turn on the ESA's definition of species and the best available science. Unfortunately, in the case of hybrids, these statutorily required guides are often unhelpful to the FWS.

Section two of this paper advances the argument that the FWS needs regulatory guidance for hybrid listing decisions because the ESA definition of species and the best science available mandate are insufficient guides. Section three describes two real world examples of potential hybrid species causing problems for the FWS— red wolves and westslope cutthroat trout (WCT)—which act to reinforce the arguments made in section two. Section four argues that a blanket approach to hybrid species is not advisable, and proposes the use of a flexible framework to guide hybrid listing decisions. Section five analyzes the proposed flexible framework as applied to the cases of red wolves and WCT to demonstrate that a flexible framework will produce outcomes consistent with the underlying purposes of the ESA. Section six provides concluding thoughts.

II. THE INTERSECTION OF LAW AND SCIENCE: THE ESA AND TAXONOMY

The two primary conservation mechanisms in the ESA are the take prohibition and the consultation requirement. The take prohibition, located in Section 9, prohibits government actors and private parties from taking endangered species.¹² Take is a broad term that includes harm to species—even indirect harm that results from habitat modification.¹³ The consultation requirement, located in Section 7, requires federal agencies to consult with the FWS to ensure that no federal actions jeopardize the continued existence of endangered or threatened species or adversely modify their critical

11. Both the FWS and the National Marine Fisheries Service (NMFS) implement the ESA. FWS is used throughout this paper because it is the agency responsible for the species used here as examples; however, the arguments advanced in this paper are applicable to NMFS as well.

12. 16 U.S.C. § 1538(a)(1)(B) (2012).

13. *Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*, 515 U.S. 687, 687 (1995).

habitat.¹⁴ These two primary conservation mechanisms of the ESA only apply to listed species. As a result, listing is the gateway to protection under the ESA.¹⁵

In order to be listed as endangered or threatened,¹⁶ wildlife must be a “species.”¹⁷ The ESA’s definition of species includes “any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.”¹⁸ The “term ‘endangered species’ means any species which is in danger of extinction throughout all or a significant portion of its range.”¹⁹ Threatened species are species that are “likely to become endangered species within the foreseeable future throughout all or a significant portion of their range.”²⁰ While the ESA clearly states that “species” includes both “subspecies” and “distinct population segments,” it does not define the term species in the first place. The ESA does state, however, that “the Secretary shall make determinations required by subsection (a)(1) [listing of endangered species] of this section solely on the basis of the best scientific and commercial data available to him.”²¹ This “best science available” requirement is used to fill the void left by the lack of a definition of species. As a result, the FWS uses the scientific definition of the word “species” to inform its listing decisions.²²

In theory, using the “best science available” as a placeholder for the lack of a statutory definition of species seems appealing. The FWS’s official policy is that “[i]n determining whether a particular taxon or population is a species for the purposes of the Act, the Secretary shall rely on standard taxonomic distinctions and the biological expertise of the Department and the scientific community

14. 16 U.S.C. § 1536(a)(2) (2012).

15. See 16 U.S.C. §§ 1536, 1538 (2012) (indicating that a species must be listed pursuant to 16 U.S.C. § 1533 to benefit from the “take” prohibition and consultation requirement).

16. Endangered and threatened species receive different protections under the ESA. Threatened species are protected by Section 7’s consultation requirement and any specific rules FWS promulgates for individual threatened species under Section 4(d). Endangered species are protected by both the consultation requirement and the take prohibition in Section 9.

17. See 16 U.S.C. §§ 1536, 1538 (referring specifically to “any endangered species of fish or wildlife”).

18. 16 U.S.C. § 1532(16) (2012).

19. 16 U.S.C. § 1532(6) (2012).

20. 16 U.S.C. § 1532(20) (2012).

21. 16 U.S.C. § 1533(b)(1)(A) (2012).

22. 50 C.F.R. § 424.11(a) (2014).

concerning the relevant taxonomic group.”²³ Unfortunately, reliance on “standard taxonomic distinctions” and “the expertise of the scientific community” has not translated well into making bright line rules that divide wildlife.

The practice of identifying and naming discrete species is called taxonomy, and is an inexact and constantly evolving field of science.²⁴ Taxonomists generally define species as “a reproductive community of populations (reproductively isolated from others) that occupies a specific niche in nature.”²⁵ However, taxonomists recognize that reproductive isolation is not “infallible,” so hybrids do naturally occur between species.²⁶ Furthermore, taxonomists recognize that “species” is both a temporary and arbitrary label because species are constantly evolving and individual animals exist on a genetic spectrum between closely related species.²⁷ The term “subspecies,” an important term in the ESA, is yet another scientifically ambiguous concept.²⁸ There is no scientific consensus as to what subspecies truly means²⁹, but a common theme that exists when scientists use the term is physical variation within a species related to geographic variation within the species.³⁰

Species and subspecies are human constructs that draw lines between groups of wildlife based on breeding patterns, geographic location, and appearance.³¹ In overly broad terms, animals that breed together are part of the same species, and members of the species that look slightly different or occupy a separate geographic area are a subspecies.³² In nature, these lines are blurry and constantly changing,³³ but under the ESA they are used to create hard rules that

23. 50 C.F.R. § 424.11(a) (2014); *see also* 50 C.F.R. § 424.11(b) (2014).

24. Kevin D. Hill, *The Endangered Species Act: What Do We Mean by Species?*, 20 B.C. ENVTL. AFF. L. REV. 239, 247–50 (1993).

25. *Id.* at 250.

26. *Id.* at 250–51.

27. *Id.* at 249–52.

28. *Id.* at 252.

29. *See* Susan M. Haig et al., *Taxonomic Considerations in Listing Subspecies Under the U.S. Endangered Species Act*, 20 CONSERVATION BIOLOGY 1584, 1586 (2006) (“Among taxonomists, definitions of subspecies are a source of considerable disagreement.”).

30. Hill, *supra* note 24, at 252.

31. *See id.* (“Taxonomy is arguably the oldest of the biological disciplines . . . [H]umans, beginning with Aristotle and continuing to the present, have created, developed and discarded a myriad of systems to classify plants and animals.”).

32. Haig et al., *supra* note 29, at 1585–86.

33. *See id.* (recognizing that evolutionary divergence is a gradual process).

divide species receiving protection from those that do not.

An obvious example of the limitations of the term species in nature is hybrids. If species was a reliable and precise term, hybrids would not exist because two separate species would not be able to interbreed. Scientists recognize the limitations of the term species and only use it to the extent that it is helpful and applicable.³⁴ The ESA, in contrast, relies on the term species as a precise dividing line that can be used to separate wildlife that will receive the ESA's protection from wildlife that will not.³⁵ This places the burden of determining which animals should be protected in part on taxonomists as they are the ones who are responsible for drawing lines between species.³⁶ The dilemma is that Congress requires FWS to use lines that are recognized by those who draw them as fuzzy, temporary, human constructs as the basis for bright line legal rules with significant ecological and economic consequences.

Thus, the ESA listing process relies on the flawed premise that all wildlife can be accurately divided into groups known as species. It requires taxonomy to do more than it is able to. This both influences the science itself and creates confusion when the limitations of the science become apparent.

III. ESA SPECIES DILEMMA IN REAL LIFE: WOLVES AND TROUT

Hybrids are an example of taxonomic limitations complicating the implementation of the ESA. As mentioned previously, hybrids result from “interbreeding of parental individuals from genetically distinct populations, regardless of the taxonomic status of populations.”³⁷ The ESA does not address hybrids, and the FWS has no official policy on hybrids.³⁸ The FWS has a regulation dictating that they rely on taxonomic distinctions and the biological expertise of the scientific community in determining whether wildlife is a species.³⁹

34. *See id.* at 1590 (recognizing that “the scientific community has some level of comfort with the subject nature of subspecies classification”).

35. Robin S. Waples, *Pacific Salmon and the Definition of Species under the Endangered Species Act*, 53 MARINE FISHERIES REV. 11, 12 (1991).

36. *See* Haig et al., *supra* note 29, at 1592 (“The ESA’s protection of biodiversity through listing at the level of taxonomic species and subspecies provides taxonomists with a unique and challenging opportunity.”).

37. Allendorf et al., *supra* note 9, at 1204.

38. Hill, *supra* note 24, at 243.

39. *See* 50 C.F.R. § 424.11(a) (2015) (directing the Secretary to make the determination based on “best available scientific and commercial information”).

Hybrids are not traditionally understood by taxonomists to be a species, subspecies, or distinct population segment.⁴⁰ As a result, there is a strong argument that hybrids are not species, and are therefore not eligible for listing under the ESA.

However, several ESA provisions indicate that listing of hybrids under the ESA may be permissible. The ESA's definition of species, "[t]he term 'species' includes any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature," uses the phrase "any species of vertebrate fish or wildlife."⁴¹ This shows that the ESA treats species as being comprised of fish or wildlife. The ESA's definition of "fish or wildlife" reads as follows:

The term "fish or wildlife" means *any member of the animal kingdom, including without limitation any mammal, fish, bird (including any migratory, nonmigratory, or endangered bird for which protection is also afforded by treaty or other international agreement), amphibian, reptile, mollusk, crustacean, arthropod or other invertebrate, and includes any part, product, egg, or offspring thereof, or the dead body or parts thereof.*⁴²

The use of the phrases "any member of the animal kingdom," "without limitation," and "or offspring thereof," when considered alongside the inclusion of subspecies and distinct population segments as entities that may be listed, suggest that the text of the ESA clearly contemplates a broad definition of species. Furthermore, because species are comprised of fish and wildlife,⁴³ and fish and wildlife include any member of the animal kingdom without limitation,⁴⁴ species under the ESA should theoretically include hybrids because they are certainly members of the animal kingdom.

Since the statutory language does not clearly dictate whether hybrids are eligible for protection under the ESA, the decision as to whether hybrids may be listed should rest with the FWS.⁴⁵ As noted

40. See Allendorf et al., *supra* note 9, at 1204 (indicating that hybridization does not fall into any category of species, subspecies, or distinct population segment).

41. 16 U.S.C. § 1532(16) (2012).

42. 16 U.S.C. § 1532(8) (2012) (emphasis added).

43. See 16 U.S.C. § 1532(16) (referring to "species of vertebrate fish or wildlife"); 16 U.S.C. § 1531(a)(4) (2012) (referring to "the various species of fish or wildlife").

44. See 16 U.S.C. § 1532(8) (2012) (referring to "any member of the animal kingdom . . . without limitation").

45. Under *Chevron, U.S.A., Inc. v. Natural Res. Def. Council*, 467 U.S. 837, 842–43 (1984), in the face of unclear statutory language, an agency's reasonable decision will be upheld by a

previously, the FWS has no official policy on hybrids, but that has not always been the case.⁴⁶ In 1977, the Department of the Interior interpreted “wildlife” under the ESA to include hybrids.⁴⁷ However, later that year, the FWS responded to the Department of the Interior’s interpretation and argued that protection of hybrids undermined the purposes of the ESA.⁴⁸ In 1983, it was the policy of the FWS not to list hybrids produced by interbreeding between red wolves and gray wolves—hybrids which were the offspring of two listed species.⁴⁹ In theory, if any hybrid was deserving of protection it would be the offspring of two listed species; however, the FWS reasoned that preserving the genetic makeup of these hybrids would not further the FWS’s goal of preserving the two independent species.⁵⁰ By 1990, the FWS’s stance on hybrids had softened, and they agreed to revisit their “rigid standards”— a decision that was met favorably by the scientific community at the time.⁵¹

Finally, in 1996, the FWS and NMFS introduced an “intercross policy” that would allow for the listing of hybrids when they “more closely resemble a parent belonging to a listed species than they resemble individuals intermediate between their listed and unlisted parents.”⁵² This “intercross policy” was never passed; however, it was never formally withdrawn either.⁵³ As such, it is still pending nearly twenty years later. According to a personal communication between Haig and Allendorf, two prominent scholars in the field of hybrids, and a representative from the FWS, the current understanding of the FWS is that hybrids may be eligible for listing under the ESA if they are stable and self-sustaining and the hybridization is natural, as

court. In this case, the statutory language is unclear as to whether hybrids may be listed, and a court would likely find either reading of the statute – that it allows for the protection of hybrids or that it does not – to be reasonable; *see* discussion *infra* pp. 196–97.

46. Susan M. Haig & Fred W. Allendorf, *Hybrids and Policy*, *THE ENDANGERED SPECIES ACT AT THIRTY, VOLUME 2: CONSERVING BIODIVERSITY IN HUMAN-DOMINATED LANDSCAPES* 150, 151–55 (J. Michael Scott et al. eds., 2006).

47. *Id.* at 151.

48. *Id.*

49. Memorandum from Donald J. Barry, Assistant Solicitor, Fish and Wildlife, U.S. Dep’t of the Interior, to the Regional Solicitor, Northeast Region (Sept. 21, 1983).

50. Haig & Allendorf, *supra* note 46, at 151–52.

51. *Id.*

52. *Id.* at 153–54 (citing Proposed Policy on the Treatment of Intercrosses and Intercross Progeny, 61 Fed. Reg. 4709, 4710 (Feb. 7, 1996) (to be codified at 50 C.F.R. Part 424)).

53. *Id.* at 154.

opposed to the result of human influence.⁵⁴ Unfortunately, this clarification does not amount to formal guidance or a policy, and as a result does not provide the reliability and transparency in decision-making that a formal policy would provide. Furthermore, it does not contemplate a situation in which protecting a hybrid would undermine the conservation of a listed parent species.

The phenomenon of a hybrid species is relatively common in nature, and causes problems for the FWS in three situations: first, when a listed species breeds with an unlisted species and the FWS must determine whether the “half-endangered” offspring will receive the ESA’s protection; second, when the FWS is petitioned to list a species and the science is unclear as to whether the wildlife in question is a discrete species or is a hybrid; and third, whether hybrids should be listed if they threaten the survival of a listed parent species through outbreeding depression. Red wolves and WCT provide excellent examples of these dilemmas.

A. Red Wolves

Red wolves are medium sized canids known for reddish fur along their neck and legs.⁵⁵ Red wolves originally roamed the Southeastern U.S., but were nearly driven to extinction by loss of habitat, predator control, and extensive hybridization with coyotes.⁵⁶ Red wolves were declared extinct in the wild in 1980, but due to aggressive conservation efforts by the FWS and the use of experimental reintroductions, they now exist in the wild along North Carolina’s coastal plain.⁵⁷

Red wolves are listed as endangered by the FWS, but this listing is controversial due to the fact that a significant portion of the scientific community does not believe that red wolves are a “species.”⁵⁸ This taxonomic dilemma remains unsettled despite numerous studies.⁵⁹ In 1937, a taxonomist determined that red wolves

54. *Id.* at 156.

55. U.S. FISH & WILDLIFE SERV., ENVTL. CONSERVATION ONLINE SYS.: RED WOLF (CANIS RUFUS) (2015), <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=A00F> [hereinafter Fish & Wildlife Service]; Hill, *supra* note 24, at 253–57.

56. Hill, *supra* note 24, at 256.

57. *Id.*

58. See NAT’L CTR. FOR ECOLOGICAL ANALYSIS AND SYNTHESIS, REVIEW OF PROPOSED RULE REGARDING STATUS OF THE WOLF UNDER THE ENDANGERED SPECIES ACT (2014), <http://www.fws.gov/science/pdf/Peer-Review-Report-of-Proposed-rule-regarding-wolves.pdf>.

59. *Id.*

were a discrete species,⁶⁰ and the FWS operated under this assumption when it first listed the species in 1967.⁶¹ Over the years, the 1937 decision has been called into question repeatedly. Some studies do maintain that the red wolf is its own species,⁶² others argue that the red wolf is a subspecies of the gray wolf,⁶³ others argue that the red wolf is a subspecies of coyote,⁶⁴ and still others argue that red wolves are a gray wolf-coyote hybrid.⁶⁵ Despite rigorous DNA analysis, there is still no scientific consensus on the status of the red wolf.⁶⁶

A 2014 FWS peer review report conceded that there was no scientific consensus on the status of the red wolf. Yet, FWS maintained the status quo of listing the red wolf as endangered.⁶⁷ After examining the ESA implications of the various taxonomic possibilities, this decision makes the most practical sense in light of the purposes of the ESA. However, it is unclear how the FWS arrived at this decision, which undermines the transparency of the decision. Furthermore, the lack of an identified, generally applicable process for making this type of decision raises questions about the validity and consistency of future FWS decisions regarding hybrids.

If the red wolf is in fact a discrete species, it certainly warrants listing under the ESA. The FWS currently operates under the assumption that the red wolf is a “species,” and therefore has listed the red wolf as endangered due to its extreme risk of extinction in the wild.⁶⁸ Currently, the red wolf exists only in isolated populations as the progeny of experimental reintroductions conducted by the FWS, so both its range and population numbers are extremely limited.⁶⁹ Red wolves face numerous threats, such as habitat loss and outbreeding depression due to hybridization with coyotes, and fill a

60. Hill, *supra* note 24, at 255.

61. Fish & Wildlife Service, *supra* note 55.

62. See Steven M. Chambers et al., *An Account of the Taxonomy of North American Wolves From Morphological and Genetic Analyses*, 77 NORTH AM. FAUNA 1, 19 (2012).

63. See generally Bridget M. vonHoldt et al., *A Genome-Wide Perspective on the Evolutionary History of Enigmatic Wolf-like Canids*, 21 GENOME RESEARCH 1294 (2011); Hill, *supra* note 25, at 255–56.

64. Hill, *supra* note 24, at 255.

65. vonHoldt, *supra* note 63, at 1301; Hill, *supra* note 24, at 255.

66. Hill, *supra* note 24, at 256.

67. NAT'L CTR. FOR ECOLOGICAL ANALYSIS AND SYNTHESIS, *supra* note 58.

68. Fish & Wildlife Service, *supra* note 55.

69. *Id.*; NAT'L CTR. FOR ECOLOGICAL ANALYSIS AND SYNTHESIS, *supra* note 58.

unique ecological niche as predators in the eastern U.S.⁷⁰ If the red wolf is a species, it is the perfect example of a species that the ESA was enacted to protect and preserve.

If the red wolf is a subspecies of the gray wolf, it would also warrant listing under the ESA. The ESA specifically identifies subspecies as entities that may be eligible for listing.⁷¹ The listing status of a subspecies is not dependent on the listing status of the broader species, in this case the gray wolf. However, listing of red wolves as a subspecies of gray wolf would theoretically be supported by the fact that gray wolves are also listed as an endangered species.⁷² Red wolves could also be listed as a distinct population segment of gray wolves because red wolves are geographically isolated from gray wolves.⁷³ Essentially, whether the red wolf is recognized as a species itself or as a subspecies is irrelevant to its listing status—this group of wildlife faces a serious threat of extinction, and thus warrants listing either as a species or as a subspecies.

The same holds true if the red wolf is a subspecies of coyote. Although coyotes are not listed under the ESA, subspecies of coyotes may be independently listed.⁷⁴ It is unlikely that red wolves could be listed as a distinct population segment of coyotes because their ranges overlap, so as a result only a subspecies listing would be appropriate. As mentioned previously, the best science available regarding the population numbers of red wolves and the threats they face dictate they should be listed under the ESA if their listing is legally permissible,⁷⁵ and it is legally permissible to list red wolves if they are in fact a subspecies of coyote.

However, if red wolves are hybrids produced by coyotes and gray wolves, it is unclear whether it is legally permissible to list red wolves

70. WILDLIFE MGMT. INSTL., INC., A COMPREHENSIVE REVIEW AND EVALUATION OF THE RED WOLF (*CANIS RUFUS*) RECOVERY PROGRAM (2014) 2, 167–69, <https://www.fws.gov/redwolf/reviewdocuments/WMI-Red-Wolf-Review-FINAL-11142014.pdf>.

71. 16 U.S.C. § 1532(16) (2012).

72. See U.S. FISH & WILDLIFE SERV., ENVTL. CONSERVATION ONLINE SYS.: GRAY WOLF (*CANIS LUPUS*) (2015), <http://ecos.fws.gov/speciesProfile/profile/speciesProfile?spcode=A00D> (noting that gray wolves are on the endangered species list).

73. See 16 U.S.C. § 1532(16) (“[S]pecies’ includes any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife that interbreeds when mature.”).

74. *Id.*

75. See Fish & Wildlife Service, *supra* note 55; NAT’L CTR. FOR ECOLOGICAL ANALYSIS AND SYNTHESIS, *supra* note 58.

under the ESA because they may not qualify as a species, subspecies, or distinct population segment. Thus, when analyzing the case of red wolves, the FWS has no official policy for how it evaluates a potential hybrid species; the ESA provides no guidance other than to look to the best available science; and the best available science indicates that the taxonomic status of the red wolf is unclear. Under three of the four taxonomic possibilities—red wolves as a distinct species, red wolves as a subspecies of gray wolves, and red wolves as a subspecies of coyotes—an endangered listing is warranted given the status of red wolves. Under the remaining taxonomic possibility—red wolves as a hybrid between gray wolves and coyotes—listing may be permissible under the ESA, and, if permissible, listing is warranted given the status of red wolves.

The FWS chose to list red wolves as endangered, an outcome that is correct in light of the purposes of the ESA, but it is unclear how the FWS arrived at the decision that red wolves are a distinct species and whether the hybrid offspring of red wolves and coyotes, which occur commonly in nature,⁷⁶ are protected. While this listing outcome is desirable in the sense that red wolves are receiving protection under the ESA, it does not inspire confidence in the notion that future outcomes for hybrid species and potential hybrid species will also be correct in light of the purposes of the ESA.

B. Westslope Cutthroat Trout

The FWS's hesitancy to protect hybrids likely stems from the fact that in some cases hybrids threaten the continued existence of their listed parent species and make it difficult to determine population numbers for the listed parent species.⁷⁷ This process is known as “outbreeding depression,” and is a common problem associated with

76. vonHoldt, *supra* note 63, at 1301. The range of wild red wolves overlaps with that of coyotes, so red wolf-coyote hybrids are common in nature. In fact, one of the threats to red wolves is that they will essentially breed themselves out of existence because hybridization with coyotes is so common.

77. Allendorf et al., *supra* note 9, at 1204–10; *see generally* Nathaniel P. Hitt et al., *Spread of Hybridization Between Native Westslope Cutthroat Trout and Nonnative Rainbow Trout*, 60 CANADIAN J. OF FISHERIES & AQUATIC SCI. 1440 (2003) (discussing hybridization between Westslope Cutthroat Trout and Rainbow Trout); *see* Donald E. Campton & Lynn R. Kaeding, *Westslope Cutthroat Trout, Hybridization, and the U.S. Endangered Species Act*, 19 CONSERVATION BIOLOGY 1323 (2005) (discussing hybridization of the Westslope Cutthroat Trout and its status under the ESA).

hybrid species.⁷⁸ For instance, the Westslope Cutthroat Trout (“WCT”) subspecies is currently facing an outbreeding depression problem.⁷⁹ The WCT is a subspecies of the cutthroat trout native to the Pacific Northwest and Canada.⁸⁰ Genetically pure WCTs are extremely rare and only exist in isolated populations, and as such they are a species that the FWS considered for listing.⁸¹ This process was complicated by the fact that WCT interbreed with non-native rainbow trout and this leads to extreme difficulty distinguishing the hybrids from the genetically pure individuals.⁸² However, this distinction is important, because the presence of the hybrids threatens the continued existence of the purebred stock.⁸³ Not only are the hybrids outcompeting the purebred WCT, they are diminishing the population by continuing to interbreed with the WCT.⁸⁴ As a result, each year there are fewer WCT and more hybrids.⁸⁵

The FWS assessed the status of WCT in 1997 in response to a listing petition and determined that WCT stocks were healthy enough to not warrant listing.⁸⁶ However, conservation groups filed suit against the FWS claiming that it included WCT-rainbow trout hybrids in its WCT population estimates.⁸⁷ The District Court for the District of Columbia sided with the conservation groups and remanded the matter to the FWS for reconsideration.⁸⁸

Current science suggests that WCT-rainbow trout hybridization is extensive, and that almost no purebred WCT exist.⁸⁹ However, the WCT-rainbow trout hybrids exhibit a spectrum of genetic makeup ranging from those that are nearly purebred WCT to those that are nearly purebred rainbow trout, and every possible combination in

78. Hill, *supra* note 24, at 244–45.

79. Allendorf et al., *supra* note 9, at 1205–09.

80. *Id.* at 1204.

81. *See id.* at 1204–05 (stating that WCT can be found in 20% of their historic range and the FWS received a formal petition to list the species as threatened).

82. *See id.* at 1205–07 (stating that identifying this type of hybrid via morphological characteristics is “unreliable”).

83. *Id.* at 1205.

84. *Id.* at 1204–09.

85. *Id.* at 1205.

86. Allendorf et al., *supra* note 9, at 1204.

87. *American Wildlands v. Norton*, 193 F. Supp. 2d 244, 244–48 (D.D.C. 2002).

88. *Id.* at 248.

89. Allendorf et al., *supra* note 9, at 1204–06 (stating that hybridization is widespread throughout the range of the WCT and that WCT populations exist in 20% of the stream miles of their historic range).

between.⁹⁰ The problem the FWS faces is that it cannot tell which fish are WCTs and which are hybrids without sophisticated genetic analysis. And protecting the hybrids hurts the WCT because of the ongoing outbreeding depression. It may be valuable to preserve the near-pure WCT hybrids, but it is unclear whether preserving a hybrid at the expense of a purebred species that may warrant listing is permissible under the ESA. The consultation requirement in Section 7 dictates that federal agencies may not jeopardize the continued existence of an endangered species, and listing the WCT hybrids may jeopardize the purebred WCT.⁹¹

In an extensive notice in the federal register, the FWS announced its ultimate decision not to list WCT as threatened or endangered under the ESA.⁹² The FWS stated that the “intent and purpose of the [ESA] was to be inclusionary, not exclusionary” in terms of what constituted a species, in this case the WCT.⁹³ Based on this rationale, the FWS concluded that “any natural population conforming to the scientific taxonomic description of WCT, as conditioned by the criteria stated previously, will be considered WCT under the Act. The Service also has concluded that alternative approaches would either be arbitrary and capricious (e.g., 90 percent genetic ‘purity’ required for inclusion) or inconsistent with the intent and purpose of the Act (e.g., 100 percent genetic ‘purity’ required for inclusion).”⁹⁴ As a result, any fish that looked like WCT were considered WCT, regardless of their actual genetic makeup. Unsurprisingly, under this approach, the FWS found that there were plenty of WCT, and that therefore there was no need to list WCT.⁹⁵

Despite the FWS’s assertion that this decision was consistent with the intent and purpose of the ESA, it is troubling because it essentially sentences purebred WCT to extinction—the exact opposite of the ESA’s stated intent of preventing extinction. It may be comforting to know that fish that look like WCT will endure. However, with no protection whatsoever under the ESA, purebred

90. *Id.* at 1206.

91. 16 U.S.C. § 1536(a)(2) (2012).

92. Endangered and Threatened Wildlife and Plants: Reconsidered Finding for an Amended Petition to List the Westslope Cutthroat Trout as Threatened Throughout Its Range, 68 Fed. Reg. 46989, 46989 (Aug. 7, 2003).

93. *Id.* at 46995.

94. *Id.*

95. *Id.* at 47006.

WCT will eventually fall victim to outbreeding depression and over time the WCT-rainbow trout gene pool will weigh heavily in favor of the rainbow trout. Thus, eventually the presence of WCT genes in the population will become negligible.

IV. A PROPOSED ANALYTICAL FRAMEWORK TO SOLVE THESE PROBLEMS: WHEN IN DOUBT, LOOK TO THE PURPOSES OF THE ESA

A. The Proposed Framework

When faced with potential hybrid species in cases where the science is truly unclear, the FWS should look to the best science available in light of the underlying purposes of the ESA to inform its regulatory decision. This provides the FWS with the flexibility needed to protect hybrids in cases where their preservation does not undermine the conservation of their listed parent species and to not protect hybrids in cases where their preservation does undermine the conservation of their listed parent species.

The FWS almost had it right in their WCT decision—they looked to the purposes of the ESA to inform their interpretation of the word “species” in the case of hybrids to conclude that an individual need not be 100% purebred to be considered a member of a species—but they did not look to the purposes of the ESA to inform their final regulatory decision.⁹⁶

The broad purpose of the ESA is to preserve plant and animal species and to prevent extinction when possible.⁹⁷ The ESA states: “[t]he purposes of this chapter are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in subsection (a) of this section.”⁹⁸ Subsection (a), referenced in the previous passage, states: “the United States has pledged itself as a sovereign state in the international community to conserve to the extent practicable the various species of fish or wildlife and plants facing extinction.”⁹⁹

96. *Id.* at 46995.

97. *See* 16 U.S.C. § 1531(b) (2012).

98. *Id.*

99. 16 U.S.C. § 1531(a)(4).

To accomplish these purposes in the case of hybrids, the FWS needs to promulgate a regulation that will guide how they handle future hybrid situations. A bright line rule, either that hybrids will or will not be listed, is not advisable in this situation because in some cases listing hybrids will advance the purposes of the ESA and in some cases it will not—this is demonstrated by the examples of the red wolf and the WCT. Instead, the FWS should look to the purposes of the ESA to guide their regulatory decisions when it comes to hybrids. If providing ESA protection to a hybrid species or potential hybrid species will undermine the conservation of the listed parent species, the hybrid or potential hybrid will not receive protection. However, if protecting a hybrid or potential hybrid will not undermine the conservation of the listed parent species and protection is warranted under traditional listing analysis, the hybrid or potential hybrid will receive protection. This regulation is flexible enough to consistently produce outcomes that advance the purposes of the ESA.

In the case of potential hybrids, such as the red wolf, research should continue as to the genetic makeup of the population in order to make an accurate taxonomic classification when possible. This hybrid policy should only be used in cases where a species is truly a hybrid or where it is truly unclear whether a species is a hybrid or not—legitimately distinct species, subspecies, and distinct population segments should be listed pursuant to the normal statutory requirements.

B. Legal Validity of the Proposed Framework

A regulation of this kind is likely permissible under *Chevron* because it involves a reasonable interpretation of ambiguous statutory language.¹⁰⁰ The language of the ESA is unclear as to whether hybrids may be listed. The statute allows for listing of species, and includes subspecies and distinct population segments in its definition of species.¹⁰¹ Whether hybrids are species is debatable. Some argue that all wildlife must belong to a “species;” so hybrids, as wildlife, are necessarily species.¹⁰² Others argue that hybrids are

100. *Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 842–43 (1984).

101. 16 U.S.C. § 1532(16) (2012).

102. See Anna L. George & Richard L. Mayden, *Species Concepts and the Endangered Species Act: How a Valid Biological Definition of Species Enhances the Legal Protection of Biodiversity*, 45 NATURAL RES. J. 369, 388 (2005) (“Theoretical concepts assume that species

neither their own species unless they are recognized as such by taxonomists, nor do they belong to either of their parent species.¹⁰³ As a result, whether the word “species” in the ESA includes hybrids is unclear from the text alone. *Chevron* asks whether Congress has spoken directly to the precise question at issue,¹⁰⁴ and here Congress did not speak directly to whether or not hybrids are species.

In the face of unclear language, courts applying *Chevron* are deferential to the agency’s interpretation of the statute.¹⁰⁵ Courts ask only whether the agency’s interpretation is “permissible.”¹⁰⁶ There is sufficient evidence in the text of the ESA to indicate that Congress intended for all wildlife to be eligible for listing under the ESA, including hybrids, and that therefore it would be permissible for the FWS to interpret the statute in a way that allows for listing of hybrids.¹⁰⁷ First, the ESA’s definition of species is broad in that it includes both subspecies and distinct population segments,¹⁰⁸ and both the plain meaning of the word “species” and its meaning in taxonomy arguably include hybrids that are able to breed with their parent species.¹⁰⁹ Second, the ESA allows for listing of species that look like listed species under the “similarity of appearance provision.”¹¹⁰ This provision uses the term “species” in the same way as the listing provision, and is designed to reduce accidental taking of listed species that occurs when a listed animal is mistaken for a similar looking unlisted animal.¹¹¹ The purpose of the similarity of appearance provision would be frustrated if hybrids were not eligible for a similarity of appearance listing. Therefore, it is likely that Congress intended the term species to include hybrids. Third, because species

exist in nature regardless of our understanding of them or our ability to recognize it.”).

103. See *id.* at 387 (“[S]pecies as described and named through the taxonomic process are human-imposed groupings.”); Hill, *supra* note 24, at 256–57 (discussing whether the red wolf is a hybrid, subspecies, or species).

104. *Chevron*, 467 U.S. at 842–43.

105. *Id.*

106. *Id.*

107. See discussion *supra* pp. 191–94.

108. 16 U.S.C. § 1532(16) (2012).

109. See generally Hill, *supra* note 24, at 247–53; Allendorf et al., *supra* note 9, at 1204; Daniel J. Rohlf, *There’s Something Fishy Going on Here: A Critique of the National Marine Fisheries Service’s Definition of Species Under the Endangered Species Act*, 24 ENVTL. L. 617 (1994).

110. 16 U.S.C. § 1533(e) (2012).

111. See *id.* (“[T]he effect of this substantial difficulty is an additional threat to an endangered or threatened species.”).

are comprised of fish and wildlife,¹¹² and fish and wildlife includes any member of the animal kingdom without limitation,¹¹³ species under the ESA should theoretically include hybrids because they are members of the animal kingdom.

On the other hand, Congress can address this ambiguity by amending the ESA to clarify if and under what circumstances hybrids may be listed. But, this is unlikely to happen for political reasons and is inadvisable because Congress does not have the expertise necessary to make an informed decision on this matter.¹¹⁴ Congress delegated the implementation of the ESA to the Department of the Interior and subsequently to the FWS because it recognized that these difficult policy questions require expertise.¹¹⁵ As such, the FWS is the party best situated to make this type of decision.

C. Similar Proposals and Potential Criticisms in Academia

The notions that the FWS is able to implement a hybrid policy and that any such policy must be flexible are generally consistent with what scholars have suggested regarding hybrids and the ESA.¹¹⁶ Many scholars have identified that the use of the word “species” in the ESA creates problems in the context of hybrids.¹¹⁷ Some of these scholars advocate for a regulatory resolution to the problem, such as adopting a better definition of “species.”¹¹⁸ While a regulatory resolution to the problem may be the best approach, redefining the term “species” is not the best resolution. As mentioned previously, the scientific community has been unable to agree on a single definition of species, so choosing any one definition will be very difficult. Furthermore, choosing any one definition of species will likely carry its own risks. The definition of species would either include hybrids as species or

112. See 16 U.S.C. § 1532(16) (2012) (referring to “species of vertebrate fish or wildlife”); 16 U.S.C. § 1531(a)(4) (2012) (referring to “the various species of fish or wildlife”).

113. See 16 U.S.C. § 1532(8) (referring to “any member of the animal kingdom . . . without limitation”).

114. Cf. *Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 865 (1984) (“[I]t is entirely appropriate for . . . [agencies] to make such policy choices.”).

115. 16 U.S.C. § 1537(a) (2012).

116. See Allendorf et al., *supra* note 9, at 1211 (“Any policy that deals with hybrids must be flexible and account for the fact that nearly every situation is different so that general rules are not likely to be effective.”).

117. George & Mayden, *supra* note 102, at 370–71; Haig & Allendorf, *supra* note 46, at 162–63; Rohlf, *supra* note 109, at 623–26; Hill, *supra* note 24, at 247–55, 261–63.

118. George & Mayden, *supra* note 102, at 370–72; Hill, *supra* note 24, at 261–63.

would not. As demonstrated previously, this type of bright line rule would inevitably undermine the purposes of the ESA in certain circumstances.

Fred Allendorf and Susan Haig advocate for a flexible regulatory approach to the hybrid dilemma under the ESA, which in principle is similar to the policy proposed here.¹¹⁹ As opposed to a flexible policy grounded in the underlying purposes of the ESA, Allendorf and Haig's proposal is grounded in biological justifications for listing.¹²⁰ It is unclear whether this policy would include analysis of the effect of listing hybrids on the conservation of the listed parent species.¹²¹ These scholars also identify the similarity of appearance provision as a potential hook for listing hybrids, which would be effective in some cases and would require no new regulations.¹²² This approach, however, will only be effective in cases where the hybrids are similar in appearance to the listed parent species (admittedly, this would cover most hybrids), and is merely a proposal for how hybrids *could* be listed, not a framework to determine whether they *should* be listed.

A criticism of this note's approach is that there is potential for the FWS to abuse its discretion by labeling a species as a hybrid or a potential hybrid in order to gain flexibility in listing decisions that was never intended under the ESA. However, the FWS is still bound by the best science available requirement, so in a situation where the taxonomic status of a species is relatively clear the FWS will be bound by that classification. Additionally, because there is currently no guidance at all for how the FWS should handle hybrids, they already have wide discretion in listing. In the face of unclear science as to the taxonomic status of a species, the FWS can essentially pick the science that dictates the listing decision they want to make because they receive deference in determining what science is the best available science.¹²³

Another potential criticism is that this policy expands the ESA

119. Haig & Allendorf, *supra* note 46, at 162–63; *see also* Allendorf et al., *supra* note 9, at 1209–12.

120. Haig & Allendorf, *supra* note 46, at 162–63.

121. *See generally id.*

122. *Id.* at 158.

123. *See San Luis & Delta-Mendota Water Auth. v. Jewell*, 747 F.3d 581, 601–02 (9th Cir. 2014) (finding that agencies receive deference on determinations of what constitutes the best science available).

definition of species to include hybrids. However, this regulation does nothing to change the scope of the meaning of species under the ESA. Currently, it is unclear whether hybrids fall within the meaning of species in the ESA. Because there is no formal guidance as to hybrids, the FWS is free to list or not list hybrids as it chooses. In some cases, this policy will direct the FWS to not list hybrids because doing so will undermine the conservation of a listed parent species. In others, it will direct the FWS to list hybrids if their conservation does not undermine the conservation of their listed parent species and they would otherwise qualify for listing.

In fact, the proposed guidance is more restrictive than current practice because it forces the FWS to determine whether wildlife is a species, a hybrid, or a potential hybrid, and only permits a potential hybrid determination in the face of truly unclear science. The guidance then places restrictions on the ability of the FWS to list hybrids. As a result, it limits the discretion of the FWS and provides a reliable framework for decision-making. Therefore, this result is more restrictive than the current status quo of no guidance whatsoever.

Furthermore, there is adequate judicial oversight for all FWS listing decisions under the proposed policy to ensure that each one is a correct application of the ESA. All listing decisions may be challenged under the citizen suit provision of the ESA¹²⁴ or under the Administrative Procedure Act.¹²⁵ The listing decision may be blocked by the “God Squad” provision of the ESA.¹²⁶ Also, aggrieved parties may seek permits for incidental taking of the species in the event that listing prevents them from engaging in otherwise lawful activities that result in the incidental taking of the species.¹²⁷

V. ANALYSIS OF THE PROPOSED FRAMEWORK AS APPLIED TO THE WOLF AND TROUT DILEMMAS

As applied to the case of red wolves, this proposed regulatory guidance would confirm that red wolves should be listed under the ESA.¹²⁸ However, the guidance would preclude listing of red wolf-coyote hybrids because they are a direct threat to the survival of red

124. 16 U.S.C. § 1540(g) (2012).

125. 5 U.S.C. § 706 (2012).

126. 16 U.S.C. § 1539(e) (2012).

127. 16 U.S.C. § 1539(a)(1)(B) (2012).

128. See discussion *supra* p. 189 (justification for listing of the red wolf).

wolves. As potential hybrids between gray wolves and coyotes, red wolves would only be protected if their conservation does not undermine the conservation of the listed parent species. In this case, red wolves and gray wolves currently have no overlapping range, so there is no danger of outbreeding depression. Furthermore, if red wolf conservation is successful to the point where red wolf and gray wolf populations eventually overlap, red wolves living in isolation from gray wolves in the eastern U.S. could be listed as a distinct population segment so that they receive protection while red wolves that may interbreed with gray wolves do not. In terms of red wolf-coyote hybrids, the conservation of these hybrids undermines the conservation of the listed parent species, the red wolf. Therefore, these hybrids do not warrant protection under the ESA because their existence threatens the future survival of the red wolf in the wild.¹²⁹

As applied to the case of WCT, the WCT-rainbow trout hybrids would not receive protection under the ESA because they threaten the conservation of the listed parent species, the WCT.¹³⁰ Because hybridization is so extensive in this case, serious scientific questions remain, such as where the line is drawn between WCT and WCT-rainbow trout hybrids. Despite this, WCT would warrant listing as a discrete species.¹³¹ While the fact that WCT and WCT hybrids are extremely difficult to distinguish will likely make enforcement difficult if WCT are listed, difficulty of enforcement is not a valid consideration in the listing process,¹³² so this concern should not prohibit listing.¹³³

129. See discussion *supra* p. 189 (stating that coyote hybridization is threatening red wolves via outbreeding depression).

130. See discussion *supra* p. 193 (stating that rainbow trout hybridization is threatening WCT via outbreeding depression); Allendorf et al., *supra* note 9, at 1204–05.

131. See discussion *supra* p. 193 (justification for listing of WCT).

132. See 16 U.S.C. § 1533(b)(1)(A) (2012).

133. Additionally, although it may be difficult to enforce the take prohibition in the case of WCT when arguments arise as to whether individual fish are WCT or hybrids, enforcement of the consultation requirement and the take prohibition in the context of habitat modification should not be frustrated by difficulty in distinguishing WCT from hybrids. It may not matter which individual fish are WCT and which are hybrids when analyzing the impacts of an action on their habitat. In some situations, as long as the FWS is aware that WCT are present, they will be able to appropriately assess the impact that any habitat modification will have on the species. See generally U.S. FISH AND WILDLIFE SERV., CRITICAL HABITAT (2015), https://www.fws.gov/endangered/esa-library/pdf/critical_habitat.pdf (discussing “critical habitat designation” for listed species). In others, the FWS will need to understand how many WCT are present to determine whether a particular action will jeopardize the continued existence of the WCT. See generally 16 U.S.C. § 1536(a)(2) (2012). While this may be difficult, it is far from

Admittedly, applying these protections becomes complicated in the context of WCT because any protection afforded to WCT habitat will also likely benefit the WCT-rainbow trout hybrids that co-exist with the WCT and threaten WCT's continued survival. However, the FWS has previously developed and implemented creative solutions to deal with enforcement problems presented by hybrids. For example, in the case of red wolf-coyote hybridization, the FWS uses the "placeholder theory" to limit hybridization in areas where red wolves and coyotes overlap.¹³⁴ This process involves surgically sterilizing individual coyotes that defend territory within the red wolves' range.¹³⁵ These coyotes cannot breed with the red wolves, but continue to defend their territory against other coyotes, thus driving away coyotes that could interbreed with red wolves and limiting opportunities for hybridization.¹³⁶ As a result, the ESA provides full protection for the red wolves in the area without the risk of providing unwarranted protection to red wolf-coyote hybrids.

It is unlikely that the placeholder theory could be implemented to prevent hybridization between WCT and rainbow trout because these species are not territorial. This example merely demonstrates that the FWS is willing and able to take on the difficult task of enforcing the ESA in situations involving hybrids.

VI. CONCLUSION

The FWS needs to implement a policy to guide listing decisions for hybrid species that produces outcomes consistent with the underlying purposes of the ESA—to prevent extinction, preserve biodiversity, and protect ecosystems on which endangered species depend.¹³⁷ These purposes are best served by protecting hybrids and potential hybrids when their existence does not undermine the

impossible. Population densities are based on extrapolations, so the FWS will only need to accurately distinguish between WCT and hybrids in a small sample of fish, and then use that sample to generate a population estimate for the broader area. *Cf.* Romesburg, *supra* note 4, at 294 (discussing induction as the prevalent scientific research method). It is not impractical in terms of cost or technology to perform DNA analysis on a small sample of fish, so difficulty in distinguishing between WCT and hybrids will not prohibit enforcement of the ESA's consultation requirement as applied to WCT.

134. U.S. FISH & WILDLIFE SERV., RED WOLF RECOVERY PROGRAM, RED WOLVES AND COYOTES (2015), <http://www.fws.gov/redwolf/wolvesandcoyotes.html>.

135. Wildlife Mgmt. Insti., Inc., *supra* note 70, at 20–22.

136. *Id.*

137. *See generally* 16 U.S.C. § 1531 (2012).

survival of their listed parent species, and by not protecting hybrids when their existence does undermine the survival of their listed parent species. Such a policy will establish a transparent and consistent process for hybrid listing decisions, which will add legitimacy to a controversial and mysterious process.

The examples of the red wolf and the WCT show that a blanket approach to hybrids—either that hybrids will or will not be eligible for listing—will not achieve results that advance the underlying purposes of the ESA. The two examples used here demonstrate one situation where a potential hybrid should be listed, the red wolf, and two situations where hybrids should not be listed, red wolf-coyote hybrids and WCT-rainbow trout hybrids. Under either blanket approach, at least one of these decisions would be incorrect. A flexible rule is preferable because it allows the FWS to evaluate the hybrid's impact on listed parent species and use this information in the listing process in order to ensure that listing a hybrid species will not contribute to the decline of one or both parent species.

This approach does not solve all of the problems associated with hybrids. The threshold matter of determining whether wildlife is a hybrid, a potential hybrid, or a discrete species will remain a challenge in many cases, and determining whether hybrids pose a threat to their listed parent species can be a difficult task. In addition, individual listing decisions under this policy may be controversial. However, the recommended guidance is preferable to no guidance at all in terms of providing consistency and transparency in hybrid listing decisions and producing outcomes that advance the purposes of the ESA.

Discussion of hybrids and the ESA also raises several interesting questions not addressed here. First, whether we should embrace the role of natural hybridization as part of the evolutionary process and thus not use the ESA as a tool to prevent or limit hybridization, even if the hybridization threatens the survival of a listed species. This question will likely involve consideration of whether the hybridization in question is natural or caused by human influence, and to what extent we can ever know whether hybridization is natural in a world where human influence is so extensive. Second, in situations where hybridization jeopardizes the continued existence of a listed parent species, whether applying ESA protection to the hybrids in question would violate Section 7 of the ESA. The decision to list a hybrid as endangered or threatened is an agency action within the meaning of

Section 7. So, if listing a hybrid would jeopardize the continued existence of the hybrid's listed parent species, doing so would theoretically be impermissible under Section 7. The idea that listing one group of animals under the ESA could prohibit the future listing of another group of animals is a dilemma that warrants further investigation.