No. 17-71

In The Supreme Court of the United States

WEYERHAEUSER COMPANY,

Petitioner,

v.

UNITED STATES FISH AND WILDLIFE SERVICE, et al.,

Respondents.

On Writ of Certiorari to the United States Court of Appeals for the Fifth Circuit

AMICUS CURIAE BRIEF OF ECONOMISTS AND LAW PROFESSORS IN SUPPORT OF RESPONDENTS

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QUESTIONS PRESENTED

1. Whether the Endangered Species Act prohibits designation of private land as unoccupied critical habitat that is neither habitat nor essential to species conservation.

2. Whether an agency decision not to exclude an area from critical habitat because of economic impact of designation is subject to judicial review.

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INTEREST OF AMICI CURIAE[1]

Amici Curiae are economists and law professors with expertise in economic theory, cost-benefit analysis, the valuation of environmental goods, and environmental law and regulation. They teach and have published extensively on these topics in leading journals and with leading academic presses.

Amici have a particular interest in this case in the proper administration by the U.S. Fish and Wildlife Service (FWS) of its duties and authorities under the Endangered Species Act. They agree that FWS's critical habitat designation accords with both the requirements of law and fundamental principles of economics and therefore urge this Court to affirm the judgment below.

STATEMENT OF THE CASE

In 2011, based on a unanimous assessment by FWS's six peer reviewers that its initial critical habitat designation was "inadequate for the conservation of the dusky gopher frog," 77 Fed. Reg. 35,118, 35,123–24 (June 12, 2012), the FWS issued a revised proposed

[1] The parties' consent to the filing of this brief was filed with the Clerk of this Court in accordance with Supreme Court Rule 37. In addition, in accordance with Supreme Court Rule 37.6, Amici Curiae certify that no counsel for any party in this case authored this brief in whole or in part, and furthermore, that no person or entity, other than Amici Curiae, has made a monetary contribution specifically for the preparation or submission of this brief.

designation. 76 Fed. Reg. 59,774, 59,783 (Sept. 27, 2011). This revised designation included Unit 1, with its rare ephemeral ponds, to address the peer reviewers' concern that without potential habitat outside Mississippi, the frog was "at high risk of extirpation" from "local catastrophic events," "such as disease or drought." 77 Fed. Reg. at 35,121, 35,125.

FWS considered the "economic impact" of this proposed critical habitat designation as required under ESA Section 4(b)(2). 16 U.S.C. § 1533(b)(2). It elected to hire an economics consulting firm, "Industrial Economics," to perform an economic analysis of the designation, including the inclusion of Unit 1. See INDUSTRIAL ECONOMICS, INC., ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR THE DUSKY GOPHER FROG (2012) [hereinafter EA], https://www.regulations.gov/contentStreamer?documentId=FWS-R4-ES-2010-0024-0157&contentType=pdf . That analysis concluded that uncertainties precluded any quantification of benefits, making it impossible to know whether the designation would impose any cost at all on the landowners. The sources of this uncertainty include whether any potential development plans would be pursued, and if so, whether those plans would be subject to federal regulatory oversight requiring consultation procedures and development restrictions under Section 7 of the ESA. See 16 U.S.C. § 1536(a)(2).

With this uncertainty understood, the analysis identified three possible scenarios—with costs ranging from $0 to $34 million—that could occur *if* the landowners follow through with potential plans to pursue

residential development in Unit 1 in in the future. If they do not pursue residential development, but instead continue to use the land for timber production, as it has been for the last 100 years, or if proposed development proceeds without a federal nexus, the analysis estimated costs at or near $0. The analysis was unable to estimate the relative probabilities of the three scenarios.

On the benefits side, the analysis followed FWS's ordinary practice of concluding that benefits "are best expressed in biological terms." 77 Fed. Reg. at 35,141; EA at 2–18. Accordingly, the analysis described the various expected benefits of the designation wholly qualitatively, including increased potential for future conservation and recovery of the gopher frog; recreational and aesthetic values; existence values; and values to future generations. EA at 2–18, 5–1 to 5–2. It also discussed values stemming from the preservation and enhancement of ecosystem services, biodiversity, and increases in property values on nearby parcels due to open space preservation. *Id.* at 2–18, 5–2 to 5–3.

After soliciting additional rounds of public comment on its revised designation and accompanying Economic Analysis, the FWS issued its final critical habitat designation for the dusky gopher frog—including Unit 1—in 2012. 77 Fed. Reg. at 35,118–19. Because the Economic Analysis was inconclusive as to whether the benefits of Unit 1's inclusion outweighed the costs, or vice versa, the FWS did not exercise its discretion to exclude Unit 1 or any other areas

from the designation. *Id*. at 35,141. This challenge followed.

SUMMARY OF ARGUMENT

The FWS's Economic Analysis of the critical habitat designation for the dusky gopher frog was reasonable and should be upheld. It conforms with statutory requirements, with well-established standards for cost-benefit analysis across the federal government, and with widely-recognized principles of textbook economics.

This brief responds to two critical points regarding the reasonableness of the FWS's conclusion. First, petitioner mischaracterizes FWS's Economic Analysis as finding $34 million in costs and no benefits, and asserts on that basis that FWS's finding of no disproportionate costs was an abuse of discretion. See, e.g., Markle Merits Br. 18. Second, petitioner wrongly maintains that FWS's cost-benefit analysis was methodologically flawed. Both contentions are without merit.

The FWS's Economic Analysis of its critical habitat designation illustrates the inherent difficulties in quantifying the costs and benefits of critical habitat exclusion decisions and the wisdom of Congress's decision not to require formal, quantitative cost-benefit analysis in this context. FWS was unable to precisely quantify the costs of including petitioner's land in the designation, reporting instead three possible "scenarios," with costs ranging from $0 to $34 million. FWS

also could not quantify the relative probabilities of the scenarios but the practical circumstances of the case indicate that the low cost scenarios are more likely.

As a result of these uncertainties, the analysis followed the agency's usual practice of estimating benefits in entirely qualitative terms. Thus, FWS's Economic Analysis did not show a disproportion between costs and benefits; rather, it was inconclusive as to whether benefits outweigh costs or vice versa.

FWS's Economic Analysis was consistent with congressional intent as expressed in the plain language of Section 4(b)(2), 16 U.S.C. § 1533(b)(2), and the legislative history of the Endangered Species Act (ESA). Because Congress viewed the value of endangered species as "incalculable," it intended economic analysis under that section to be a broad, flexible weighing of often unquantifiable values. It also did not make the economic analysis decisive in the decision whether to exclude; rather it is one of a broad range of factors Section 4(b)(2) directs the wildlife agencies to weigh.

FWS's Economic Analysis was also consistent with the broader application of cost-benefit analysis throughout federal government and with well-accepted fundamentals of economic theory. The executive orders and accompanying guidance documents governing federal agencies' use of cost-benefit analysis emphasize the importance of qualitative descriptions of unquantifiable costs and benefits, as do classic texts in the economics literature.

ARGUMENT

I. Congress Intended the Section 4(b)(2) Economic Analysis to Be a Broad, Flexible Weighing of Often Unquantifiable Values.

The language and legislative history of ESA Section 4(b)(2) makes clear that Congress sought above all else to give flexibility and discretion to the FWS and the National Marine Fisheries Service (collectively, the wildlife agencies) in considering economic impacts and making exclusion decisions regarding critical habitat. Congress viewed the value of endangered species as "incalculable." *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 187–88 (1978). It therefore directed the wildlife agencies to conduct a rough, informal, apples-to-oranges comparison of costs and benefits. It also made that analysis one of a broad range of factors the wildlife agencies are to consider.

a. Congress Did Not Require a Formal, Quantitative Analysis of Costs and Benefits Because It Viewed the Value of Endangered Species as "Incalculable."

The parties to this litigation all agree that Section 4(b)(2) vests the wildlife agencies with enormous discretion and flexibility in making critical habitat exclusion decisions. The statute requires the agencies to "*consider*" economic impact, 16 U.S.C. § 1533(b)(2) ("[t]he Secretary shall designate critical habitat . . . after taking into consideration the economic impact"), and suggests that such consideration should take the

form of a comparison of costs to benefits. *Id.* (referencing the Secretary's "determin[ation] that the benefits of [excluding any area from critical habitat] outweigh the benefits of specifying such area"). When it comes to making a substantive decision on the basis of that economic analysis, the statute makes a conspicuous shift from "shall" to "may." *Id*. ("[t]he Secretary *may* exclude").

This shift in the plain language of the statute from mandate to discretion makes sense when one considers the kind of informal, intuitive weighing process Congress envisioned in adding this provision to the statute in 1978. Because Congress viewed the value of endangered species as unquantifiable, it did not require the agencies to perform formal cost-benefit analyses, in which each side of the balance is assigned a monetized value and compared with mathematical precision. Rather, Congress understood that these analyses would inevitably be inexact, apples-to-oranges comparisons necessarily requiring the grant of substantial discretion to the agency. See Amy Sinden, *The Economics of Endangered Species: Why Less is More in the Economic Analysis of Critical Habitat Designations*, 28 HARV. ENVTL. L. REV. 129, 194–96 (2004) [hereinafter Sinden, *Economics of Endangered Species*].

When it first passed the statute in 1973, Congress saw the value of endangered species as literally "incalculable." *Tenn. Valley Auth.*, 437 U.S. at 177–78 (quoting H.R. REP. NO. 93-412, at 4–5 (1973)). And when it amended the statute five years later, Congress's views in that regard had not changed. H. COMM. ON RULES,

PROVIDING FOR THE CONSIDERATION OF H.R. 14104, H.R. REP. NO. 95-1757 (1978), *reprinted in* CONG. RESEARCH SERV., LEGISLATIVE HISTORY OF THE ENDANGERED SPECIES ACT OF 1973, at 820 (1982) [hereinafter H.R. REP. NO. 95-1757, LEG. HISTORY] (statement of Rep. Murphy) ("[M]any species have a tremendous esthetic value which is difficult if not impossible to quantify.").

Congress's skepticism about the ability to quantify the benefits of protecting endangered species arose from two distinct concerns. The first was that we simply lack adequate scientific knowledge to fully understand a species' value. Accordingly, "[e]ach species is a perishable resource of unpredictable value," *Endangered Species Conservation Act of 1972*: *Hearings on S. 249, S. 3199, and S. 3818 Before the Subcomm. on the Env't of the S. Comm. on Commerce*, 92d Cong. 65 (1972) (statement of Sen. Mark Hatfield), and "we may never fully comprehend what we have lost." H.R. REP. NO. 95-1757, LEG. HISTORY, at 820 (statement of Rep. Murphy).

The second concern is that certain aspects of the value of endangered species—aesthetic and spiritual values, for example—may simply be incommensurable with dollars and therefore "impossible to quantify." H.R. REP. NO. 95-1757, LEG. HISTORY, at 820 (statement of Rep. Murphy); see also S. COMM. ON COMMERCE, ENDANGERED SPECIES ACT OF 1973, H.R. REP. NO. 93-307, *reprinted in* CONG. RESEARCH SERV., LEGISLATIVE HISTORY OF THE ENDANGERED SPECIES ACT OF 1973, at 374 (1982) (statement of Sen. Williams) ("Most animals are worth very little in terms of dollars and cents.

However, their esthetic value is great indeed. The pleasure of simply observing them . . . is unmeasurable."). That skepticism has been borne out in the subsequent practice of the wildlife agencies, which, in the decades since, have rarely made any attempts to quantify the benefits of critical habitat designations in their economic analyses. See Sinden, *Economics of Endangered Species*, at 180–83.

Congress's efforts to streamline the designation process in 1978 further demonstrate its intent that the agencies' Section 4(b)(2) economic analyses be quick and informal. In addition to giving the wildlife agencies flexibility to consider economic impacts, Congress was also concerned about the extended delays that had plagued critical habitat designation in the early years of the ESA's implementation. Accordingly, a number of the 1978 amendments aimed at speeding up the designation process by, for the first time, setting deadlines for the designation of critical habitat. 16 U.S.C. § 1533(b)(6)(C). This concern with streamlining provides further support for the idea that Congress had in mind a rough-cut economic analysis that would simply describe benefits in qualitative terms, rather than going to elaborate lengths to quantify and monetize. See Sinden, *Economics of Endangered Species*, at 194 ("Congress did not anticipate that the economic analysis would be an elaborate or time-consuming process.").

Indeed, Congress went so far as to specify that, once the final deadline arrives, the agency "must publish a final regulation, *based on such data as may be available at that time*." 16 U.S.C. § 1533(b)(6)(C)(ii)

(emphasis added). This is precisely the kind of language that courts have frequently cited as evidencing Congress's conscious decision to choose prompt agency action over regulatory perfection, particularly when scientific uncertainty precludes quantification of all relevant variables. See, e.g., *Indus. Union Dep't, AFL-CIO v. Am. Petrol. Inst.*, 448 U.S. 607, 656 (1980) (plurality opinion) (under the "best available evidence" standard, an agency "is not required to support its finding that a significant risk exists with anything approaching scientific certainty"); *United Steelworkers of Am. v. Marshall*, 647 F.2d 1189, 1266 (D.C. Cir. 1980) (construing "best available evidence" as requiring agency to set standards promptly rather than "await[ing] the Godot of scientific certainty").[2]

b. Congress Did Not Make the Economic Analysis Decisive in the Decision Whether to Exclude.

Three aspects of the plain language of Section 4(b)(2) make clear that the economic analysis is not the sole driver when deciding whether to exclude an area from critical habitat. First, Section 4(b)(2) lists "economic impact" as simply one in a list of factors the

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[2] *Bennett v. Spear*'s reading of the phrase "best scientific and commercial data available" in Section 7 of the ESA is not to the contrary. 520 U.S. 154, 176-77 (1997). The *Bennett* Court noted that this phrase is "intended, at least in part, to prevent" "needless economic dislocation" caused by erroneous jeopardy determinations. *Id*. This is consistent with reading the phrase "based on such data as may be available at that time," 16 U.S.C. § 1533(b)(6)(C)(ii), as demonstrating a preference for promptness over perfection.

agency is to consider, with the list also including "the impact on national security" and the broad catch-all, "any other relevant impact." This catch-all phrase potentially encompasses a whole range of impacts, including positive impacts of designation for the species as well as other beneficial environmental, historical, or cultural impacts. Most importantly, this phrase makes clear Congress's intent that the agency's decision-making process on critical habitat exclusion encompass values other than quantifiable, economic ones. See Sinden, *Economics of Endangered Species*, at 193.

Second, the statute's use of the term "may" rather than "shall" in connection with the agency's decision to exclude any particular area requires an inference that there are at least some circumstances in which it would be reasonable for the agency to decline to exclude even where "the benefits of exclusion outweigh the benefits of [inclusion]." *Id*. at 149, 196 n. 295. This means that there must be some other factors, outside the economic cost-benefit analysis, that can, at least in some instances, drive the agency's ultimate decision whether to exclude.

Third, the same sentence goes on to explicitly name at least one such external, non-economic consideration that might sometimes trump an economic analysis: the survival of the species. Specifically, the last clause of Section 4(b)(2) makes clear that if the FWS determines a particular exclusion "will result in the extinction of the species concerned," the agency cannot exclude, even if the cost-benefit analysis otherwise warrants it. 16 U.S.C. § 1533(b)(2). A less definitive

concern—i.e., that an exclusion *might* result in extinction—might be precisely the sort of factor Congress intended FWS to weigh in making a discretionary decision not to exclude.

The legislative history confirms that Congress did not intend economic impact to be the determinative factor. The House Report made this explicit: "The Secretary is not required to give economics or any other 'relevant impact' predominant consideration in his specification of critical habitat. . . . The consideration and weight given to any particular impact is *completely within the Secretary's discretion*." H.R. REP. NO. 95-1625, at 741 (1978) (emphasis added). The word "flexibility" shows up again and again in the legislative history accompanying Section 4(b)(2). See, e.g., *id.* (noting Section 4(b)(2) provides "increased flexibility on the part of the Secretary in determining critical habitat"); H.R. REP. NO. 95-1757, LEG. HISTORY, at 819 (statement of Rep. Murphy) ("This bill introduces some needed flexibility into the [ESA]"); 124 CONG. REC. 21,334 (1978), *reprinted in* CONG. RESEARCH SERV., LEGISLATIVE HISTORY OF THE ENDANGERED SPECIES ACT OF 1973, at 1016 (1982) (statement of Sen. McClure) (noting "need to have some flexibility on the designation of the critical habitat").

II. Congress's Vision of Section 4(b)(2) Is Consistent With the Broader Application of Cost-Benefit Analysis and With Well-Accepted Fundamentals of Economic Theory.

Congress's vision of economic analysis under Section 4(b)(2) is entirely consistent with the broader application of cost-benefit analysis throughout the federal government. The executive orders that generally require federal agencies to conduct cost-benefit analysis in connection with major federal regulations consistently emphasize the importance of weighing unquantifiable impacts. Well-accepted fundamentals of economic theory likewise emphasize the importance of unquantifiable variables.

a. Executive Order 12,866 and Accompanying Guidance Documents Emphasize the Importance of Qualitative Descriptions of Unquantifiable Costs and Benefits in Cost-Benefit Analysis.

The use of cost-benefit analysis is widespread throughout the agencies of the federal government. Beginning with a series of executive orders dating back to the Reagan administration, federal agencies are required to prepare and submit to the Office of Management and Budget cost-benefit analyses in connection with all "significant" rulemakings (primarily those costing over $100 million).[3] Exec. Order No. 12,866

[3] Statutory requirements to conduct cost-benefit analysis, like Section 4(b)(2), are rare, especially in environmental statutes. The FWS did not deem its critical habitat designation for the

§§ 3(f), 6(a), 3 C.F.R. 638 (1994), *reprinted as amended in* 5 U.S.C. § 601 app. at 96, 97 (2016). Congress's intent that Section 4(b)(2) economic analyses take into account unquantifiable impacts is consistent with the approach taken in these executive orders, which emphasize that (1) both costs and benefits may be impossible to quantify, and (2) the importance of nonetheless considering such unquantifiable impacts. See Exec. Order No. 12,866 § 1(a) ("Costs and benefits shall be understood to include . . . qualitative measures of costs and benefits that are difficult to quantify, but nonetheless essential to consider."); *id.* at § 1(b)(6) (similar); Exec. Order No. 13,563, § 1, 3 C.F.R. 215 (2012), *reprinted as amended in* 5 U.S.C. § 601 app. at 109 (2016) (similar).

These requirements have been further refined and clarified in various guidance documents. See OFFICE OF MGMT. & BUDGET, CIRCULAR A-4, REGULATORY ANALYSIS 9–10 (2003) [hereinafter Circular A-4]; OFFICE OF INFO. & REGULATORY AFFAIRS, REGULATORY IMPACT ANALYSIS: A PRIMER, https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/regpol/circular-a-4_regulatory-impact-analysis-a-primer.pdf (last visited June 28, 2018) [hereinafter Primer]. These documents also stress the importance of unquantifiable costs and benefits. For example, the Office of Management and Budget's

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gopher frog a "significant" regulation, and therefore it was not technically subject to the executive orders. See 77 Fed. Reg. at 35,141-42. Nonetheless, the Economic Analysis for the gopher frog specifically referenced Executive Order No. 12,866, EA at 2-4, 2-18, as well as Circular A-4. EA at 2-2, 2-5, 2-18; see also 77 Fed. Reg. at 35,127, 35,141.

(OMB's) Circular A-4 states, "[i]t will not always be possible to express in monetary units all of the important benefits and costs." Circular A-4 at 2. Similarly, the Office of Information and Regulatory Affairs' Primer states that "some important benefits and costs . . . may be difficult or impossible to quantify or monetize given current data and methods." Primer at 12. In such circumstances, "[a]gencies should carry out a careful evaluation of non-quantifiable and non-monetized benefits and costs," *id.* at 12, "exercise professional judgment in determining how important the non-quantified benefits or costs may be," and perform a break-even analysis if they are determined to be "important." Circular A-4 at 2. Break-even analysis subtracts the incomplete benefits estimate from the (complete) costs estimate and then asks the analyst to make an intuitive judgment whether the remaining unquantifiable benefits are likely large enough to make up the difference. See Cass R. Sunstein, *The Limits of Quantification*, 102 CAL. L. REV. 1369 (2014).

Even when some degree of quantification is possible, quantitative estimates of both costs and benefits can also be subject to profound uncertainty, requiring agencies to express them in ranges or as a series of scenarios. OMB's guidance notes that "[i]n some cases, the level of scientific uncertainty may be so large that you can only present discrete alternative scenarios without assessing the relative likelihood of each scenario quantitatively." Circular A-4 at 39.

b. Well-Accepted Fundamentals of Economic Theory Also Emphasize the Importance of Taking into Account Qualitative Descriptions of Unquantifiable Variables in Cost-Benefit Analysis.

The federal government's broad approach to cost-benefit analyses mirrors the academic literature in economics,[4] which routinely recognizes that "not all impacts can be quantified, let alone be given a monetary value," and warns that "care should be taken to assure that quantitative factors do not dominate important qualitative factors in decision-making." Kenneth Arrow et al., *Is There a Role for Benefit-Cost Analysis in Environmental, Health, and Safety Regulation?*, 272 SCIENCE 221, 222 (1996); see also ANTHONY E. BOARDMAN ET AL., COST-BENEFIT ANALYSIS: CONCEPTS AND PRACTICE 42 (4th ed. 2011) (noting that "technical limitations may make it impossible to quantify and then monetize all relevant impacts as costs and benefits" and urging the use of qualitative analyses in such instances); E. J. MISHAN & EUSTON QUAH, COST-BENEFIT ANALYSIS 241 (5th ed. 2007) (similar); EDWARD M. GRAMLICH, A GUIDE TO BENEFIT-COST ANALYSIS 136 (2d ed. 1997) (similar).

Indeed, the preservation (or loss) of an endangered species is perhaps the prototypical example of an impact that's difficult or impossible to quantify. See, e.g., GRAMLICH, *supra* at 136 (citing "loss of an endangered

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[4] See Circular A-4 at 21, 23 (noting that agency use of cost-benefit analysis should be "consistent with economic theory").

species" as an impact that "cannot easily be quantified"); Daniel H. Cole, *Law, Politics, and Cost-Benefit Analysis*, 64 ALA. L. REV. 55, 60–61 (2012) (similar).

Although several respected thinkers argue that any attempt to monetize environmental values is misguided because they are fundamentally incommensurable with money, see generally ELIZABETH ANDERSON, VALUE IN ETHICS AND ECONOMICS (1993); Cass R. Sunstein, *Incommensurability and Valuation in Law*, 92 MICH. L. REV. 779, 785–86 (1994), economists have developed a number of techniques for trying to assign monetary sums to impacts like these. See generally DAVID W. PEARCE & ANIL MARKANDYA, ENVIRONMENTAL POLICY BENEFITS: MONETARY VALUATION (1989). "Revealed preference" techniques attempt to infer a dollar value for nonmarket goods by observing things that *are* traded in markets and are thought to reflect (or "reveal") the unpriced value. See generally David S. Brookshire et al., *Valuing Public Goods: A Comparison of Survey and Hedonic Approaches*, 72 AM. ECON. REV. 165 (1982); see also BOARDMAN ET AL., *supra*, at 353–57; Philip E. Graves, *Benefit-Cost Analysis of Environmental Projects: A Plethora of Biases Understating Net Benefits*, 3 J. BENEFIT-COST ANALYSIS 1, 12–19 (2012).

These techniques often take the form of hedonic valuation methods, which attempt to disaggregate environmental attributes from other goods with which they are bundled in the market in order to infer the value people place on them. See BOARDMAN ET AL., *supra*, at 353–57. For example, economists try to measure

how much value people attach to unspoiled open space by comparing the prices of properties located adjacent to such areas with those that are not. See, e.g., Elena G. Irwin, *The Effects of Open Space on Residential Property Values*, 78 LAND ECON. 465 (2002). The other primary revealed preference technique aimed at environmental and natural resource values—the travel cost method—involves inferring the value of environmental amenities from the costs people incur to travel to them. See BOARDMAN ET AL., *supra*, at 358–65.

Alternatively, where values cannot be "revealed" through actual market transactions, economists turn to "stated preference" methods. "Contingent valuation" or "willingness-to-pay" surveys, for example, attempt to measure people's willingness to pay for nonmarket goods by simply asking them. See BOARDMAN ET AL., *supra*, at 372–05; Thomas H. Stevens et al., *Measuring the Existence Value of Wildlife: What Do CVM Estimates Really Show?*, 67 LAND ECON. 390, 392–97 (1991). These are essentially sophisticated public-opinion polls that give respondents information about a particular natural resource and then ask them how much they would be willing to pay to preserve the resource or avoid the disease.

Such willingness-to-pay studies are usually designed to capture both what economists call "use values" and "non-use values" or "existence values." "Use values" reflect benefits people gain by actually making use of natural amenities—by, for example, hunting, fishing, hiking, or enjoying a scenic view. See BOARDMAN ET AL., *supra*, at 224. "Existence values," in contrast,

reflect benefits people gain by "the very existence of [natural amenities] that they neither visit, nor ever anticipate visiting." *Id.* at 224 (quoting John V. Krutilla, *Conservation Reconsidered*, 57 AM. ECON. REV. 777, 784 (1967)).

All of these methods are controversial and produce highly contestable results. See DAVID W. PEARCE & R. KERRY TURNER, ECONOMICS OF NATURAL RESOURCES AND THE ENVIRONMENT 141–58 (1990); Leonard Shabman & Kurt Stephenson, *Environmental Valuation and Its Economic Critics*, 126 J. WATER RESOURCES PLAN. & MGMT. 382, 382–84 (2000); Douglas R. Williams, *Valuing Natural Environments: Compensation, Market Norms, and the Idea of Public Goods*, 27 CONN. L. REV. 365, 401–07 (1995). Samples may be insufficiently large or insufficiently representative to produce meaningful results. In hedonic surveys, it may be difficult to control for all variables other than the presence or absence of the non-market good being valued. Many analysts regard willingness-to-pay surveys as unreliable because (1) the results depend heavily on how information is presented, and (2) respondents' answers are untethered to accurate knowledge of the resource at issue or any requirement to actually spend money. See, e.g., Stevens et al., *supra*, at 399. Finally, they are typically under-inclusive, measuring only a narrow swath of the full scope of species and/or ecosystem impacts, so that qualitative descriptions of benefits must supplement any numbers produced. See GRAMLICH, *supra*, at 136 (noting that hedonic valuation methods provide only "a lower-bound estimate"). For all these reasons,

the U.S. Environmental Protection Agency (EPA), often praised around the world as the gold-standard for sophisticated cost-benefit analysis, has shied away from using contingent valuation studies to generate specific estimates of regulatory benefits. See Amy Sinden, *Cost-Benefit Analysis, Ben Franklin, and the Supreme Court*, 4 U.C. IRVINE L. REV. 1175, 1203–07 (2014).

Such studies are also expensive and time consuming to conduct. As a result, it is rare for FWS to have a willingness-to-pay study available for the particular species at issue in a critical habitat designation. Sinden, *Economics of Endangered Species*, at 180–83.

Given these limitations, economists and other proponents of the use of cost-benefit analysis in agency decision making advise that cost-benefit analysis should not be the sole driver for all decision making, but rather should be one among a range of inputs. See Arrow et al., *supra*, at 122 ("[A]gencies should not be bound by strict benefit-cost tests."); BOARDMAN, *supra*, at 15 ("[cost-benefit analysis] is only one input to [the] political decision making process"). Professor Cass Sunstein, a prominent proponent of the use of cost-benefit analysis in agency decision making, has suggested that where endangered species are at issue, cost-benefit analysis may not be an appropriate decision tool at all. CASS R. SUNSTEIN, THE COST-BENEFIT STATE: THE FUTURE OF REGULATORY PROTECTION 68–69 (2002).

III. The FWS's Economic Analysis in This Rulemaking Complied with the Requirements of the ESA.

The Economic Analysis in this case emphasized the large uncertainties involved in attempting to predict the costs and benefits of the critical habitat designation for the gopher frog. It expressed benefits in purely qualitative terms and took a scenario approach to cost estimation, describing three potential scenarios in which costs range from $0 to $34 million. This approach was entirely consistent with both OMB guidance and good economics. The result was an inconclusive analysis. See 77 Fed. Reg. at 35,141 ("Our economic analysis did not identify any disproportionate costs that are likely to result from the designation. Consequently, the Secretary is not exercising his discretion to exclude. . . . "). This analysis fully complied with the requirements of the ESA.

a. FWS's Economic Analysis for the Gopher Frog Designation Was Unable to Quantify the Costs, Reporting Instead Three Possible "Scenarios" of Unknown Probability, With Costs Ranging From $0 to $34 million.

i. Designation Involves a Crystal Ball Inquiry That Is Inherently Fraught With Uncertainty

Estimating the costs of critical habitat designation, particularly the incremental costs associated with the inclusion of any particular area, is always fraught with uncertainty. The crux of the problem is that estimating critical habitat costs "essentially involve[s] predicting the future." See Sinden, *Economics of Endangered Species*, at 200.

These uncertainties are particularly acute where private land is at issue. The designation of critical habitat does not produce any regulatory restrictions on a private landowner's activities. The only duty the statute triggers with respect to critical habitat is the Section 7 duty to avoid "adverse modification," and that duty applies solely to federal agency actions. 16 U.S.C. § 1536(a)(2). Accordingly, regulatory restrictions on private landowners, along with attendant costs, only occur if the landowner engages in some activity with a federal nexus (e.g., federal permitting or funding). In such instances, the federal nexus triggers the relevant federal agency's duty under Section 7 to consult with the wildlife agencies to "insure" that the agency avoids "adversely modifying" critical habitat. *Id.* Even then,

the wildlife agencies often reach a compromise during consultation that allows the landowner's development project to go forward with minimal restrictions, and therefore minimal costs.

Indeed, empirical studies of the Section 7 consultation process have repeatedly shown that consultation hardly ever prevents projects from going forward, and indeed, very rarely produces a jeopardy or adverse modification finding at all. See Jacob W. Malcom & Ya-Wei Li, *Data Contradict Common Perceptions About a Controversial Provision of the Endangered Species Act*, 112 PNAS 15844 (2015); Dave Owen, *Critical Habitat and the Challenge of Regulating Small Harms*, 64 FLA. L. REV. 141 (2012); DONALD BARRY ET AL., FOR CONSERVING LISTED SPECIES, TALK IS CHEAPER THAN WE THINK (1992), www.nativefishlab.net/library/textpdf/15635.pdf; U.S. GENERAL ACCOUNTING OFFICE, GAO-92-131BR, ENDANGERED SPECIES ACT: TYPES AND NUMBER OF IMPLEMENTING ACTIONS 31–32 (1992); H.R. REP. NO. 97-567, pt. 1 (1982).

The most recent of these studies analyzed 88,000 formal and informal consultations conducted between 2008 and 2015, and found that "no project was stopped or extensively altered as a result of FWS finding jeopardy or destruction/adverse modification." Malcom & Li, *supra*, at 15,845. Indeed, only two of the consultations analyzed produced a jeopardy and/or adverse modification finding at all—and a court overturned one of those, leaving only one jeopardy finding in place. *Id.* In that case, FWS allowed the project to proceed

with measures in place to minimize and partially offset the adverse effect on the species. *Id*.

Moreover, because consultations occur even in the absence of critical habitat designation (to ensure federal agencies do not "jeopardize" listed species), only some small portion, if any, of the already small percentage of consultations that result in significant development restrictions can actually be attributed to critical habitat designations. See Owen, *supra*, at 165–67 ("[C]ritical habitat designations had little effect on regulatory outcomes."). In short, even when a critical habitat designation triggers Section 7 consultation, it rarely imposes significant costs. See Erik Nelson et al., *Identifying the Impacts of Critical Habitat Designation on Land Cover Change*, 47 RESOURCE & ENERGY ECON. 89 (2016) (finding no significant difference in rate of land cover change between lands with and without critical habitat designations).

Accordingly, estimating the costs of including any particular area of privately owned land in a critical habitat designation requires (1) predictions about the kinds of development activities landowners are likely to pursue in the future; (2) predictions about the likelihood that such activities will involve a federal nexus; and (3) predictions about the likelihood, nature, and cost of any development restrictions that any resulting Section 7 consultations might impose. Thus, "the seemingly scientific numbers produced by such analyses actually rest on multiple layers of guesses and simplifying assumptions, each of which is subject to challenge. And errors in the early layers multiply as each

subsequent layer is added." Sinden, *Economics of Endangered Species*, at 200.

ii. The Economic Analysis for the Gopher Frog Designation, Which Found Costs Unquantifiable, Illustrates These Difficulties

The Economic Analysis of the designation of critical habitat for the gopher frog provides an illustration of these difficulties. The authors of the Economic Analysis judged the uncertainties associated with the cost calculation for Unit 1 so significant as to preclude a single quantitative estimate. Instead, the analysis developed three separate cost estimates based on three possible "scenarios" of how future events might unfold, even assuming the owners pursue residential development of the land (another source of considerable uncertainty).[5] Those three scenarios generated three highly disparate cost estimates—$0, $20 million, and $34 million—but the analysts were unable to quantify (or estimate in any way) their relative probabilities. EA at 4–15.

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[5] This scenario approach is entirely consistent with OMB guidance. See Circular A-4 at 18 ("When . . . benefit and cost estimates are uncertain . . . you should report benefit and cost estimates that reflect the full probability distribution of potential consequences. . . . If . . . lack of knowledge prevents construction of a scientifically defensible probability distribution, you should describe benefits or costs under plausible scenarios and characterize the evidence and assumptions underlying each alternative scenario.").

As noted above, the first step in generating a cost estimate requires predicting the kind of development the owners are likely to pursue. The Economic Analysis explained that Unit 1 is comprised of 1,544 forested acres that have been managed for timber harvest for the past 100 years. EA at 4–11. It covers only a small portion (3.5 percent) of much larger land holdings owned by six private landowners. EA at 4–6. One of those landowners is Weyerhaeuser; the other five have been leasing their land to Weyerhaeuser (or its corporate predecessor) since 1953. The current lease is set to expire in 2043. EA at 4–1.

In 2006, the five landowners "entered into an understanding with the Weyerhaeuser Real Estate Development Company (WREDCO)" to pursue a joint venture for residential development of the land "when market conditions are amenable." EA at 4–2. The current timber lease would be "released once [such] development occurs," and if the land is sold to a third party, the landowners and WREDCO have agreed on a division of the profits. *Id.*

While the area is fast growing and considered attractive for development, according to the Economic Analysis, "[d]evelopment plans for [unit 1] are currently delayed due to the recession and the negative real estate bank-lending environment. Recently, the landowner indicated that development may not occur until 2043. . . ." EA at 4–3; see also *id.* at 4–2, n. 68 ("There remains significant uncertainty regarding the timing of potential development activities within Unit 1."); AR 3564 (similar).

Designation only triggers regulatory action on private land *if* some development activity involves a "federal nexus," *if* that nexus triggers formal consultation under Section 7, and *if* that consultation then imposes development restrictions. Filling the ephemeral pools or other wetlands on Unit 1 in connection with residential development would only create a federal nexus if a Section 404 Clean Water Act permit, 33 U.S.C. § 1344(a), was required. It is unlikely that continued timber production would create such a federal nexus, because of a specific grandfathering exemption for existing timber operations in Section 404 of the Clean Water Act. 33 U.S.C. § 1344(f)(1)-(2).

Accordingly, if the landowners continue to manage the land for timber production, there will likely be no significant costs. The critical habitat designation will only trigger Section 7 consultation *if* the landowners pursue residential development, *if* those development plans require filling of pools, and *if* the pools turn out to be subject to Clean Water Act jurisdiction.[6] Even then, as discussed above, the costs of designation might well remain low because consultation rarely results in significant restrictions on development. Only *if* the landowners and the U.S. Army Corps of Engineers (Corps) are unable to negotiate reasonable and prudent alternatives that allow the development to go

[6] It should be noted that any resulting development restrictions can only be attributed to the critical habitat designation if they would *not* have occurred under the jeopardy standard in the absence of the designation.

forward without undue harm to the frog habitat will there be significant costs.[7]

In short, if the landowners continue the land's current use for timber production, no regulatory activity under the ESA will likely be triggered, resulting in a cost of zero or close to it.[8] To the extent the landowners do pursue residential development on Unit 1, those plans are likely decades off and thus relatively speculative. The Economic Analysis notes that 2043, the predicted development date, "is beyond the 20-year timeframe of this analysis." EA at 4–3. Arguably these plans are too far out in the future and too speculative to be accounted for in the Economic Analysis at all. Nonetheless, all three scenarios in the analysis proceeded on the (conservative) assumption that the landowners would eventually pursue plans for residential development of lands within Unit 1. EA at 4–6.

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[7] The Analysis also discussed other potential costs that it concluded were too uncertain and speculative to quantify, including the possibility of oil and gas development on Unit 1, see EA at 4-5 to 4-6, the possibility of stigma effects, see *id.* at 2-17, and prescribed burns necessary "in order to properly manage the breeding sites within Unit 1." *Id.* at 4-3.

[8] The Economic Analysis notes that even if critical habitat designation does not actually result in any actual regulatory restriction on use of the land, "[p]ublic attitudes about the limits or restrictions that critical habitat may impose can cause real economic effects to property owners. . . ." EA at 2-17. It also observes that such "stigma effects" are likely to decrease over time: "As the public becomes aware of the true regulatory burden imposed by critical habitat, the impact of the designation on property markets may decrease." *Id.*

Based on that assumption, the Economic Analysis described the three possible scenarios like this:

- Scenario 1 . . . assumes that development occurring within [Unit 1] avoids impacts on jurisdictional wetlands, [such that] there is no Federal nexus . . . triggering section 7 consultation[, generating an estimated cost of $0]. . . .[9]
- Scenario 2 . . . assumes the proposed development of Unit 1 requires a Corps CWA Section 404 permit . . . subject to section 7 consultation . . . [and] further assumes that [negotiations between the landowners and the Service] result[ ] in 40 percent of the Unit being developed[, generating an estimated cost of $20 million]. . . .
- Scenario 3 . . . again assumes that the proposed development of Unit 1 requires a Section 404 permit and therefore is subject to section 7 consultation . . . [and further] assumes that . . . the Service recommends that no development occur within the unit[, generating an estimated cost of $34 million].

EA at 4–4. The analysis did not explicitly list a fourth possibility—what we might call "scenario #0"—in which no residential development occurs on Unit 1 at all.

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[9] This scenario could occur in two different ways: First, the Corps might decide that the pools are not within its jurisdiction. Second, the design for development might avoid the pools.

The analysis generated the dollar figures for each scenario by multiplying the number of acres on which development would be prohibited by $23,500, the price per acre at which "adjacent land with comparable zoning has been proposed for sale." EA at 4–6. Because the adjacent lands are also subject to Weyerhaeuser leases, the analysis inferred that this per acre price did "not include the value of the standing timber," but rather reflected only the value of the land for future development.[10] *Id*.

The analysis made no effort to characterize the relative probabilities of the three scenarios, but the existence of a fourth plausible scenario means that the probabilities of the three named scenarios likely sum to less than 100 percent. There is good reason to suggest that Scenarios 1 and 2 are more likely. First, FWS has a legal obligation to work with the landowners to identify "reasonable and prudent alternatives" that will allow development to go forward without causing jeopardy or adverse modification, 16 U.S.C. § 1536(b)(3), and those alternatives must be both economically and technologically feasible. 50 C.F.R. § 402.02 (definition

[10] The analysis concedes that this per-acre price "is not a perfect proxy for development value of the critical habitat acres," but notes that it "represents the best available information." EA at 4-7. It is also worth noting that this price also potentially over-estimates the portion of the land's value attributable to future residential development potential because it presumably includes not just future residential development potential, but all future development potential, including future timber harvest (beyond the currently standing timber), which the critical habitat designation does not impair.

of "reasonable and prudent alternatives"). In this case, FWS's repeated statements that it "hope[s] to work with the landowners to develop a strategy that will allow them to achieve their objectives for the property and protect the isolated, ephemeral ponds," indicate that Scenarios 1 and 2 are more likely than Scenario 3. 77 Fed. Reg. at 35,123; see also EA at 4–3 to 4–4 (noting that, as between Scenarios 2 and 3, FWS has called Scenario 2 "the most likely").

In addition, with respect to Scenario 1, it is significant that the FWS has described the pools at issue as "isolated." 77 Fed. Reg. at 35,123–24. Although the rules governing the Corps' Section 404 jurisdiction are currently in flux, even on the most liberal reading, the Corps' jurisdiction excludes "isolated" ponds that occur within one state's boundaries. See *Solid Waste Agency of N. Cook Cty. v. U.S. Army Corps of Eng'rs*, 531 U.S. 159 (2001). Accordingly, there is a high likelihood that the Corps would find the ephemeral pools on Unit 1 to fall outside its jurisdiction such that even a residential development plan that required complete destruction of the pools would have no impact on *jurisdictional* waters and would therefore fall within Scenario 1. Even if the federal government were to assert jurisdiction under Section 404, Scenario 1 might still come to pass if the development was designed to avoid impacts to jurisdictional waters.

Finally, an understanding of the empirical literature on the Section 7 consultation process described above suggests that Scenario 3 is quite unlikely. See AR 3563 ("During section 7 consultations, the Service

works with our Federal partners to minimize the impacts of a particular action to designated critical habitat. Therefore, the likelihood of scenario 3 . . . is low.").

b. FWS's Economic Analysis for the Gopher Frog Estimated Benefits in Entirely Qualitative Terms.

i. The Enormous Challenges in Estimating the Benefits of Critical Habitat Designation Mean the Wildlife Agencies Typically Do Not Quantify These Estimates

The wildlife agencies rarely produce monetary estimates of benefits in their economic analyses of critical habitat designations. See Sinden, *Economics of Endangered Species*, at 180–83. Although there is a substantial literature showing the public's willingness to pay for the preservation of endangered species in general, it is rare for there to be willingness-to-pay studies on any particular listed species. Even rarer are studies that quantify the incremental value attributable to designating any particular area as critical habitat. See *id.*

Further exacerbating these economic valuation problems is the fact that virtually all of the sources of uncertainty described above for cost estimation also plague the benefits side of the balance. It is an inherently probabilistic enterprise—and one for which the necessary information to allow quantification, or even qualitative description of the relevant probabilities, is

usually lacking. It is thus no surprise that the long-running and widespread practice of the wildlife agencies is to describe these benefits in qualitative terms.

ii. The Economic Analysis for the Gopher Frog Designation, Which Found Benefits Unquantifiable, Illustrates These Difficulties

FWS's Economic Analysis of the critical habitat designation for the gopher frog was no exception. It discussed the fact that willingness-to-pay studies can generate quantified estimates of some of these benefits, but noted that no such studies exist for the gopher frog. See EA at 5–1 (citing J.B. Loomis & Douglas S. White, *Economic Benefits of Rare and Endangered Species: Summary and Meta-Analysis*, 18 ECOL. ECON. 197 (1996). Even if such studies did exist for the gopher frog generally (or for a sufficiently similar species), translating those general estimates into a specific estimate of "the incremental change in the probability of gopher frog conservation that is expected to result from [this particular] designation," or from the inclusion of any particular unit of critical habitat within the designation, would require even more granular studies. EA at 5–1.

Such studies would have to evaluate inherently uncertain and stochastic factors. FWS's whole purpose in adding Unit 1 was to provide a hedge against uncertain but potentially catastrophic events. The six peer reviewers were unanimous in their assessment that

without Unit 1, there was a "high risk" that "local catastrophic events" like "disease or drought" could eradicate the existing population of gopher frogs and their habitat in Mississippi. 77 Fed. Reg. at 35,121, 35,134–35. Thus, a study quantifying the additional benefits provided by the inclusion of Unit 1 would have to put a number on the probability of such stochastic events occurring. Not surprisingly, "[n]o [such] studies exist." EA at 5–1. They never do. Accordingly, the Analysis described the benefits of designation generally, and the inclusion of Unit 1 specifically, in entirely qualitative terms. See EA at 2–18.

This qualitative description of benefits was wide ranging, including both direct and ancillary benefits. The direct benefits described in the Analysis included "the maintenance or enhancement of the use and non-use value (e.g., existence value) that the public may hold specifically for the gopher frog." EA at 5–2. The use values included "wildlife-viewing opportunities [and] option[s] for seeing or experiencing the species in the future." EA at 5–1. The non-use values included "assur[ing] that the species will exist for future generations, and simply knowing a species exists, among other values." *Id*.

The Analysis also discussed ancillary benefits, noting that "critical habitat designation can result in maintenance of particular environmental conditions that may generate other social benefits aside from the preservation of the species." EA at 2–18. These include "the public's willingness to pay to preserve wilderness areas, for wildlife management and preservation

programs[;] protection of open space[;] and ecosystem maintenance." *Id*. at 5–1. As it did with respect to direct benefits, the Analysis indicated that, while such benefits likely exist, studies have not been done at a sufficient level of granularity to permit quantification of "the incremental values associated with this . . . critical habitat designation." *Id.*

The Analysis then went on to discuss a number of additional ancillary benefits that can be anticipated to occur in connection with "the avoidance of development in Unit 1." *Id.* at 5–2. These included increases in property values for neighboring or nearby parcels that may occur as a result of "open space or decreased density of development resulting from gopher frog conservation." *Id*. Economic modeling demonstrates that these impacts can be substantial, even outweighing the negative impacts to the value of the land designated. See John M. Quigley et al., *The Urban Impacts of the Endangered Species Act: A General Equilibrium Analysis*, 61 J. URBAN ECON. 299 (2007).

Ancillary benefits discussed by the Analysis also include "social welfare gains . . . associated with enhanced aesthetic quality of [the] habitat," EA at 5–2; "[t]he maintenance or enhancement of use and non-use values for these other species" in the same ecosystem, EA at 5–3; a variety of ecosystem service benefits, including "protection and improvement of water quality and preservation of natural habitat for other species," as well as "improvements to ecosystem health that are shared by other, coexisting species," EA at 5–2 to 5–3;

and, finally, "[t]he maintenance or enhancement of . . . biodiversity in general." EA at 5–3.

The inclusion in cost-benefit analysis of "ancillary benefits"—i.e., those that are not the primary goal of the regulatory action but can nonetheless be expected to result from it—is basic, uncontroversial, textbook economics and is, in fact, required by OMB guidance. See, e.g., Boardman, *supra*, at 2 ("In CBA we try to consider *all of the costs and benefits to society as a whole.*") (emphasis added); Circular A-4 at 26 ("Your analysis should look beyond the direct benefits and direct costs of your rule and consider any important ancillary benefits and countervailing risks.").

c. The Cost-Benefit Analysis Was Inconclusive as to Whether Benefits Will Ultimately Outweigh Costs or Vice Versa.

Petitioners have raised a number of objections about the methods employed in FWS's Economic Analysis. See Weyerhaeuser Merits Br. 53–55. These objections were not raised with specificity before the court of appeals, see *Markle Interests, L.L.C. v. U.S. Fish & Wildlife Serv.*, 827 F.3d 452, 475 (5th Cir. 2016) ("the Landowners do not challenge the methodology that the Service used when analyzing the economic impact on Unit 1"), nor were they included in the questions on which this Court granted certiorari. Accordingly, these objections are in contravention of Rule 24.1(a) and should be deemed forfeited. See *Taylor v. Freeland & Kronz*, 503 U.S. 638, 646 (1992) ("[T]his Court does not

decide questions not raised or resolved in the lower court[s].") (second alteration in original) (quoting *Youakim v. Miller*, 425 U.S. 231, 234 (1976) (*per curiam*)).

In any event, the petitioner's objections to the Economic Analysis lack merit. The Economic Analysis properly emphasized the many layers of uncertainty on both sides of the balance, and ultimately, produced inconclusive results. Noting that the "benefits of the proposed rule are best expressed in biological terms," EA at 2–18 (emphasis omitted), the analysis described the benefits of the critical habitat designation in wholly qualitative terms. This does not mean that the benefits were zero. Nowhere did the Economic Analysis state that the designation would produce "no benefits." Rather, it identified and described a whole range of expected benefits in qualitative terms. In addition to the increased potential for future conservation and recovery of the gopher frog, these include recreational and aesthetic values; existence values; values to future generations, and values stemming from the preservation and enhancement of ecosystem services, biodiversity, and increases in property values of nearby parcels due to open space preservation.[11] On the other side of the balance, the analysis was also unable to quantify costs, instead outlining a series of three possible "scenarios," each of unknown probability.

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[11] Ironically, these enhancements in property value may in many instances accrue to the petitioners themselves, who own far more land in the vicinity than just the relatively small parcel that constitutes Unit 1.

As noted above, the same sources of uncertainty plague both the cost side and the benefit side of the analysis—in particular, uncertainty about the extent to which critical habitat designation will ultimately result in on-the-ground development restrictions. Because both costs and benefits are linked at least in part to development restrictions, they may fluctuate in concert. Where significant development restrictions impose high costs, those same restrictions may well provide significant environmental benefits.

Petitioners' assertion that costs will simultaneously be at their peak while benefits are zero is untenable as a matter of both law and fact. First, the argument that the designated critical habitat's value to the species is zero because the land is currently unoccupied flies in the face of the clear statutory text. Congress would not have made specific provision in the statute for the designation of unoccupied habitat if it did not believe that such habitat could provide significant potential value—or a kind of "option value"—for imperiled species. Second, as noted above, in the unlikely event that Section 7 consultation occurs and results in significant development restrictions (Scenario 2 or 3), it is also likely that the FWS and the landowners would find a "reasonable and prudent alternative" that would allow at least some development to go forward in exchange for management of the land to allow reintroduction of the frog. It is also possible that habitat protections under such a scenario would incentivize the landowners to sell to a land trust or other buyer interested in managing the land as frog habitat. In

that instance—where landowners' costs would likely be at their highest—biological and other benefits would also likely be at their highest point because frogs and the ecosystem would receive more protection.

In short, if substantial development restrictions do occur on the land, those restrictions will impose costs on the landowners. They will also generate benefits in the form of protections for the species, open space preservation, ecosystem services, and the many other benefits described in the Analysis.

CONCLUSION

The judgment of the court of appeals should be affirmed.

Respectfully submitted,

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