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"Whatever the Cost" of the Endangered Species Act, It's Huge

By Robert Gordon[*]

For years, the snail darter, a little fish found in the upper Tennessee River basin, has been a symbol of the extraordinary regulatory power of the Endangered Species Act (ESA) of 1973. This fish, which typically measures two to three inches in length, was invoked by environmental activists to stop construction of a nearly completed dam. In fact, much of the ESA's vast regulatory power stems from the Supreme Court's 1978 ruling stalling the Tennessee Valley Authority dam's construction. In that case, the court ruled that Congress intended for federally endangered species to be saved "whatever the cost."[1] While the snail darter turned out to be both more numerous and occupy other areas—an all too common occurrence under the ESA—the ruling demonstrated the enormous power of the then-young law.

"Whatever" is hardly a standard that encourages fiscal responsibility, and as any bureaucrat knows, unquantified costs cannot be used as a yardstick to judge the effectiveness of a program. Four decades later, "whatever the cost" is, it is far greater than generally recognized, and the ultimate price of the program easily reaches up into the tens and more likely hundreds of billions of dollars. For landowners whose property becomes designated as habitat for endangered species, the costs include possibly substantial property devaluation.

The costs for paperwork, federal and state agency expenditures, and recovery costs, which are often poorly estimated and tracked, still amount to tens of billions of dollars. Economic impacts are even greater. Inconsistent economic assessments, combined with such analyses' frequent omission of "baseline" costs and the absence of economic impact assessments in many cases, stymies efforts to arrive at a detailed assessment of the ESA's overall economic impact. Worse, the ESA's demonstrably poor record in recovering species suggests we are not getting much for all that.[2]

Bureaucratic Process Costs. The costs imposed by ESA begin with the paperwork regulating a species and its habitat. In 2014, the U.S. Fish and Wildlife Service (FWS) reported that the "median cost for preparing and publishing a 90-day finding is $39,276; for a 12-month finding, $100,690; for a proposed rule with critical habitat, $345,000; and for a final listing rule with critical habitat, $305,000."[3] These are just the bureaucratic costs of listing species. They do not account for revisions such as changing a species from endangered to threatened or vice versa, expanding critical habitat designations, or the dollar costs associated with the regulations necessary to throw the process into reverse and remove the species from the list when and if it is ever recovered.

It also does not address the cost of litigation, much of which is centered around challenges to rules, often on the basis that a statutory deadline was missed. According to U.S. Government Accountability Office (GAO) data, some environmental advocacy groups have enjoyed an 80 or even 90 percent success rate in such suits, which presumably entitle them to attorney's fees.[4] With over 1,641 listed species, these bureaucratic costs alone can add up to hundreds of millions of dollars over time.

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[*] *Rob Gordon is a Competitive Enterprise Institute Adjunct Fellow focused on wildlife and habitat, particularly the Endangered Species Act.*

Annual Expenditures. The bureaucratic paperwork costs are just the beginning. In the most recent statutorily required report on annual ESA expenditures, for fiscal year 2016, the two agencies primarily charged with ESA implementation, FWS and the Commerce Department's NOAA Fisheries—within the National Oceanic and Atmospheric Administration—reported total ESA expenditures of $467 million.[5] When some 22 other federal agencies and state agencies' reporting are included, the total rises to about $1.5 billion.[6]

A quick review of the reported expenditures makes clear that the accounting would not pass muster under an IRS audit. For example, the Forest Service implausibly reported spending only $1.1 million on a single species in FY2016, while just the year before it reported $140 million in expenditures on about 150 species.[7] Likewise, over many reports billions, of dollars in lost power generation have not been reported for the Bonneville Power Administration, which generates and distributes power from the federal dams on the Columbia River.[8] Further, 21 states reported no expenditures whatsoever for FY2016, including many states that likely make some of the largest expenditures, including California, Hawaii, New Mexico, Tennessee, and Texas.[9]

"Recovery" Costs. Essentially, all ESA expenditures are made to achieve the rarely reached goal of recovering a species so it can be removed from the federal endangered list. To guide federal efforts in this endeavor, the FWS and NOAA Fisheries generally prepare recovery plans to recover one or sometimes multiple species. However, a plausible estimate of the range of recovery costs is as elusive as the ivory-billed woodpecker, a bird some think still survives deep within a few southern swamps.

Typically, recovery plans may include a listing of planned activities with estimated associated costs. While this may seem reasonable, a reader will often find the plans do not even bother to total those costs that are identified. Accepting the numbers presented in the FWS's most recent annual Report to Congress on the Recovery of Endangered and Threatened Species, the FWS' "estimated cost for recovery" for less than a third of currently listed species is well over $9 billion.[10] This number is based on costs identified in recovery plans that are highly suspect.

For example, one of the least expensive plans is that for the Iowa Pleistocene snail. The 1984 plan lists $84,000 in costs but only covers the three-year period FY1984-FY1987 and allots only $2,000 for measures to protect habitat on private property that "include fee acquisition, easement, cooperative agreement or lease."[11] While expenditure reports for the nearly two decades following the snail's listing are not available online, reports covering the later period FY1996—FY 2016 indicate 10 times the expenditures anticipated in the recovery plan.[12] The snails were believed to number fewer than 100 at a single site when it was listed but was subsequently discovered to number perhaps in the hundreds of thousands and to occupy almost 40 sites.[13] If not invalidating the very notion that the snail is endangered, one would expect the additional discoveries to reduce the challenge of recovery and hence the cost.

At the other end of the scale is a 414-page plan for a bird called the California clapper rail, the salt marsh harvest mouse, and three plants with a "total estimated cost of recovery through 2063 [of] $1,242,501,640 + *additional costs that could not be estimated at this time*." [Emphasis added][14] The "plus" costs include items such as "acquire/protect currently unprotected habitat."[15]

In short, the over $9 billion in recovery costs for less than a third of listed species is likely a substantial underestimation. For the majority of listed species covered by the FWS 2014 Report to Congress' recovery costs are not reported.[16]

The loggerhead turtle is one species with an "unknown" recovery cost. The most up-to-date loggerhead recovery plan reveals pages of activities with estimated associated costs but no total.[17] The plan reports that its best-case scenario is for the turtle to be recovered in 50 years.[18] It also states that the lowest cost to recovery is derived by multiplying the plan's estimated five-year costs by 10 to get to the lower end of the range of estimated years to recovery.[19] While the plan offers this equation to determine the total, the actual total—over $1 billion—is obscured if it is included within the plan at all.[20] Further, not only is the billion-plus price tag the best case scenario, the costs for over 30 activities are "to be determined" with a number of them beginning with the exceedingly expensive words "acquire additional beachfront."[21] Clearly, recovery costs are well into the tens of billions of dollars.

Economic Impact. While the government's own often uninformative estimates clearly indicate tens of billions in recovery costs, these are not the lion's share of ESA costs. Those come in the form of regulatory costs imposed upon private parties as well as various federal agencies and states through the ESA's two primary regulatory mechanisms—the prohibition against "take" and the requirement for consultation. There is no reliable tracking of these costs.

Take. The general prohibition against "taking" an endangered animal prohibits activities like catching, trapping, killing, or harming the listed animal.[22] This prohibition does not apply to plants and may only be applied to a threatened animal if FWS or NOAA Fisheries promulgated a specific regulation for that animal. However, contrary to the law's design, the agencies have applied the take prohibition to all threatened species with a single "blanket" rule and thereby erased much of the distinction between endangered and threatened.[23] More importantly, the agencies have interpreted the term "harm" broadly to include activities that modify a species' habitat in a manner that somehow harms the species.[24]

Consultation and Critical Habitat. Officially designated critical habitat is a central component of the other primary regulatory mechanism, the requirement for federal agencies to consult with the FWS or NOAA fisheries if the agency is undertaking an action that may affect a species.[25] The federal "action" may include administrative acts such as issuing a permit that allows a private person to build something on ground the average individual would consider reasonably dry but which the government considers a regulated "wetland." Consequently, this requirement can have consequences far beyond the actions of federal agencies.

As part of the consultation process, there is a specific prohibition against adversely modifying officially designated "critical habitat."[26] While the regulatory agencies can and have designated areas even where the species does not exist as "critical habitat," critical habitat generally must not "include the entire geographical area which can be occupied."[27] Clearly, the law anticipates endangered and threatened species occurring in areas beyond their official critical habitat. In fact, the FWS Environmental Conservation Online System (the ECOS database) only lists some 756 records for critical habitat, while it indicates more than double that number, 1,661, of domestically listed species.[28]

A rough estimate using the ECOS database indicates about 250 million acres of designated critical habitat as well as over 60,000 "river miles"—a measurement of the length of a river or river segment in miles with the mouth of the river being zero—designated as critical habitat.[29] While a large amount of this includes overlapping designations, the acres—predominately land but also including vast ocean areas—and river miles are equivalent to, respectively, an area substantially larger than Texas and 26 times the 2,300-mile length of the Mississippi River.

While the law prohibits taking economics into consideration when determining whether a species is officially "endangered" or "threatened," it requires economic impacts to be assessed when critical habitat is designated.[30] The law then allows some areas to be excluded if the benefits "outweigh the benefits of specifying such area as part of the critical habitat" and if doing so will not result in the extinction of the species.[31]

Often it seems as if regulations have been written to obscure the full economic impacts of ESA regulations when designating critical habitat. For example, as regards the black warrior water dog, an aquatic salamander inhabiting Alabama's Black Warrior River Basin, the FWS argued that there would be no economic impact because the amphibian's habitat was already so heavily regulated for 26 other endangered species that there would be no significant additional impact.[32]

There is a particularly specious argument that FWS has made on several occasions that requires special attention. The agency has asserted that it is the prohibition against "take" of an endangered or threatened animal—primarily the prohibition against "harm"—not the subsequent designation of its critical habitat, that causes the economic impact. Consequently, the FWS has argued that a critical habitat designation has little additional economic impact.

This argument is usually applied to animals and is even more suspect when applied to plants. For example, when designating critical habitat for the Fickheisen plains cactus, FWS argued there was little "incremental" economic impact, because the economic impact that did occur resulted from the species being listed, not from when critical habitat was subsequently designated.[33]

The Fish and Wildlife Service's analysis is confusing, as the prohibition against take does not apply to plants even if critical habitat is designated. As take does not apply, the major prohibition applicable to plants prior to designation of critical habitat is the prohibition against jeopardizing the continued existence of the species. A prohibition against harming a single specimen (take) and a prohibition against jeopardizing an entire species are hardly equivalent in terms of regulatory burden.

In the case of the Fickheisen plains cactus, the baseline prohibition against jeopardizing the species is a much lower regulatory bar than a prohibition against adverse modification of its critical habitat. The designated critical habitat for this cactus includes a 3,280-foot buffer radius around each individual specimen to protect the plant's pollinators.[34] Simply put, potentially prohibiting the adverse modification of the "critical habitat" within the 3,280-foot radius of a single cactus is a much greater restriction than prohibiting jeopardizing the entire species. Consequently, the incremental economic impact of designating critical habitat is likely to be substantial compared to the economic impact of listing the cactus.

During the George W. Bush administration, an altogether different approach had been pursued in assessing economic impacts in many instances. In a number of critical habitat designations, every effort was made to document the economic impact, often specifying those costs resulting from listing and the automatic prohibition against take (baseline costs), as well as those costs stemming from the designation of critical habitat itself.

The methodology for economic impact analyses conducted in association with critical habitat designation varies wildly. Some include baseline costs that are triggered simply by listing a species. Some only look at the impact of the critical habitat designation and assert that there is little economic impact, as all the costs were a result of uncalculated baseline costs. Some are for 10 years, while others are for 20 or even 22 years. Rarely are they longer but the FWS includes a substantial

number of species in its Report to Congress on the Recovery Program that it indicates are anticipated to require decades longer to recover.[35]

The economic analyses conducted in association with designating critical habitat can be sobering, as is illustrated with just the few examples below.

Species	**Economic Impact (Language Verbatim from Critical Habitat Designations or Listings, Emphases Added for All)**
Alameda whipsnake – California	The May 4, 2006, notice ... provides a detailed economics section that estimates an economic impact of the proposed designation on land development of $531,775,546, or $46,912,009 annualized over 20 years...The total revised cost of the proposed designation is **$***532,300,518*.
Arkansas shiner (a fish) – Arkansas, Kansas, New Mexico, Oklahoma, Texas	The total conservation costs from reported efficiency effects associated with the designation of critical habitat in this rule are *approximately $17 to $36 million on an annualized basis*.
Bexar County invertebrates – Texas (includes: *Rhadine exilis* and *R. infernalis* (small, essentially eyeless ground beetles); Helotes mold beetle; Cokendolpher cave harvestman (small, eyeless harvestman (daddy-longlegs)); Robber Baron Cave meshweaver, Madla Cave meshweaver, Braken Bat Cave meshweaver, Government Canyon Bat Cave meshweaver, and Government Canyon Bat Cave spider (all small, eyeless or essentially eyeless spiders.	The economic impact associated with section 7 consultations for the invertebrates is anticipated to be *approximately $33.4 million over the next 10 years,* $23.4 million when discounted to present value using a rate of 7 percent. Approximately 87 percent of these total costs are expected to result specifically from designation of critical habitat while the remainder are coextensive with the listing of these species.

California tiger salamander – California	Based on the more certain lower scenario, the *annualized economic effects of this designation are estimated to be $8,962,250; the estimate for the upper scenario is $35,369,906*. We have excluded 2,740 ac (1,109 ha) of privately owned lands analyzed in the draft economic analysis based on non-economic considerations so the direct economic impacts of the final designation is likely to be lower than this estimate. *This is based on 26-year estimates*.
Dusky gopher frog – Alabama, Mississippi	The [economic assessment] estimates present value incremental impacts of critical habitat designation of *$102,000, $20.5 million, or $34.0 million according to three scenarios…*
Gila chub (a fish) – Arizona, New Mexico	Our draft economic analysis found that the total post-designation costs associated with the seven proposed critical habitat areas are forecast to *range from $11.3 million to $28.1 million in constant dollars over 20 years*, or $0.8 million to $1.9 million annually…
Hines emerald dragonfly – Illinois, Michigan, Missouri, Wisconsin	The draft economic analysis forecasts the costs associated with conservation activities for the Hine's emerald dragonfly would *range from $16.8 million to $46.7 million in undiscounted dollars over the next 20 years…* In annualized terms, potential costs are expected to range from $0.8 to $2.3 million annually (annualized at 3 percent) and $0.9 to $2.4 million annually (annualized at 7 percent).
Pacific salmon and steelhead – California	***The annual net economic impacts of changes to Federal activities*** as a result of the critical habitat designations (regardless of whether those activities would also change as a result of the ESA's jeopardy requirement) are estimated to be *approximately $81,647,439*.

Quino checkerspot butterfly – California	The total estimated cost for implementing these measures is estimated to *range between $3.9 and $38.1 million dollars over a 10-year period* within critical habitat.
Red-legged frog – California	The pre-critical habitat designation (*baseline*) (1996–2008) costs associated with species conservation activities are estimated at *$44 to $113 million on an annualized basis* discounted at 7 percent. The EA estimated the total potential incremental *economic impacts likely to result from the designation over the next 22 years (2009 to 2030) to be $159 million to $500 million* ($14.4 to $45.2 million annualized) in present value terms using a 7 percent discount rate.
Vernal pool fairy shrimp and plants – California and Oregon (Includes: Conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp and 11 plants: Butte County meadowfoam, Contra Costa goldfields, Hoover's spurge, fleshy (or succulent) owl's-clover, Colusa grass, Greene's tuctoria, hairy Orcutt grass, Sacramento Orcutt grass, San Joaquin Valley Orcutt grass, slender Orcutt grass, and Solano grass.)	In the base scenario where critical habitat reduces the amount of new housing, designation of vernal pool critical habitat *results in nearly $1.0 billion in losses* to consumers and producers between the present and 2025. In the event that on-site avoidance can be accomplished through density increases alone, welfare losses from vernal pool critical habitat would be $820 million over the same time period.

The economic assessment for the California gnatcatcher reveals how economic assessment design can dramatically reduce the ESA's projected economic impacts. FWS' rule revising critical habitat for the coastal California gnatcatcher states:

> The [California Resource Management Institute (CRMI)] study calculates a total economic impact due to the critical habitat designation of ***$4.6 billion, compared to $880 million*** in the [Draft Economic Analysis (DEA)], a difference of approximately $3.7 billion. ***Differences in the magnitude of these estimates of total impact are primarily due to differences in the scope of the impacts measured***. Despite the use of different economic models of regulatory impact, when CRMI's analysis is adjusted to

> address the same question as the DEA (i.e., the economic impact of section 7 of the Act), the estimated total economic impacts and ranking of proposed units by cost are relatively comparable, as discussed further below.[36] [Emphasis added]

That the $4.6 billion dollar economic impact analysis for the California gnatcatcher traps costs that are not included within the FWS's analysis does not make them any less real. Clearly, the economic impact for the dozen critical habitat designations addressed above reaches well into the billions of dollars. These are economic impacts identified from analyses done in association with critical habitat designations covering about 40 species, just a fraction of the 1,661 federally endangered and threatened species.

Economic Impact of Take's Harm Prohibition Reaches beyond Critical Habitat. Some of the economic analyses done for critical habitat designations provide a glimpse into the law's economic impact. There is a vast amount of habitat that has not been designated as "critical" but is nonetheless subject to regulation through the ESA prohibition against "take," and, particularly, the prohibition against "harm" as interpreted by FWS and NOAA Fisheries. These costs are perhaps the least reliably quantified.

For example, the designated critical habitat of the Indiana bat is limited to caves and mines in six states where the bat hibernates.[37] However, according to FWS, the federally endangered bat is "known to or is believed to occur" in 975 counties in 23 states.[38] In 2013, *The Atlanta Journal Constitution* reported that the discovery of a single bat in a northern Georgia county where there is no critical habitat triggered the need for studies that "may cost $8 million or more. That's if no other such bats—the Indiana Bat—are found. If they are, more delays and costly work may occur, as the state is required to take conservation measures to protect the habitat if the project will "*harm, kill or harass*" the bats, said DOT Chief Engineer Russell McMurry."[39] [Emphasis added]

More recently, in May 2018 the environmental news site EcoWatch reported that construction along 100 miles of a $6.5 billion pipeline in Virginia and West Virginia was delayed because it "could pose risks for a rare bumblebee, the Roanoke logperch and Indiana and Northern long-eared bats and other threatened or endangered species." The delay would reportedly last "until the U.S. Fish and Wildlife Service (FWS) issues a revised "*incidental take statement*," which limits the number of threatened or endangered species that might *be accidentally killed or harmed* during development activities."[40] [Emphasis added]

The ESA's economic impacts on non-critical habitat include opportunity costs and reductions in property values. As an economic analysis for the willow flycatcher—which predicts annual economic costs of $32.7 to $38.0 million—explains:

> Economic efficiency effects generally reflect *"opportunity costs"* associated with the commitment of resources required to accomplish species and habitat conservation. For example, if activities that can take place on a parcel of land are limited as a result of the designation *or the presence of the species*, and thus *the market value* of the land is reduced, this reduction in value represents one measure of opportunity cost or change in economic efficiency."[41] [Emphases added]

One metric that may provide some insight into other such economic impacts is the volume of land set aside for conservation easements. The National Conservation Easement Database estimates that its records account for nearly half—49 percent—of federal, state, regional, and local government-held easements and 75 percent of nonprofit-held easements across the United States (including land

trust and conservation organizations).[42] This *partial* record covers 25.7 million acres, a land area larger than Virginia.[43] Undoubtedly, a significant amount of land outside of designated critical habitat has been restricted through easements of other similar mechanisms in whole or in part for endangered species.

For example, regarding the Louisiana black bear, FWS highlights that various mechanisms such as easements of over 148,000 acres of private lands are now available for the bear.[44] This includes lands enrolled in the Wetland Reserve Program (WRP) administered by the U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS). When excluding some 50,000 acres of these lands from its critical habitat designation, the FWS found that "permanent easements under the WRP provide substantial protection and management for the Louisiana black bear and its essential habitat features.[45] FWS noted that a landowner enrolled in the program controls access to the land and has the right to pursue "undeveloped recreational uses provided such use does not impact other prohibitions listed in the warranty easement deed." FWS goes on to state that, while "landowners may request other prohibited uses such as haying, grazing, or harvesting timber," the NRCS would determine if the requested activity would "adversely affect habitat for ... threatened and endangered species."[46]

On a smaller scale, restrictions sought by FWS on one 15-acre parcel for a water snake reveal the potentially large costs borne by landowners. In turn for providing an incidental take statement that would allow the taking (harm for example) of individual snakes, FWS sought one acre be donated to a non-profit for every two developed – one-third of the property—in addition to the imposition of numerous other restrictions imposed on the remaining private property.[47]

Landowners, who as a whole own millions of acres of habitat supporting endangered species outside of designated critical habitat, clearly face large opportunity costs including the devaluation of property from regulation under the ESA's prohibition against take and, in particular, harm.

Conclusion. The economic impact of the Endangered Species Act is so large that states often impose regulations and management regimes as part of an effort to prevent species from being added to the endangered species list. The most current example is the sage grouse. Why states would engage in such efforts is clear. NBC reported in September 2015 one "well-regarded study ... claims declaring the sage grouse as endangered would cost the U.S. more than *$5.6 billion in annual economic output*."[48] [Emphasis added] At even a fraction of this estimate, the economic costs are clearly huge.

Clearly, the bureaucratic paperwork, annual agency expenditures, and anticipated costs for recovery, while often poorly estimated and tracked, amount to tens of billions of dollars alone. Economic impacts are clearly far larger. The inconsistency of economic assessments done in association with critical habitat designations, combined with the fact that such analyses often omit "baseline" costs, clearly hinders efforts to arrive at a detailed assessment of the ESA's overall economic impact. Further, the fact that many species have no designated critical habitat and therefore no such analysis (which should not be interpreted as an argument in favor of more critical habitat) makes it even tougher. Additionally, there are unaccounted large and small economic impacts outside of designated critical habitat for a vast majority of 1,661 listed species. Whatever the ESA's cost is, it is much larger than generally acknowledged, and likely measured in the hundreds of billions of dollars. Unfortunately, the ESA's poor record of recovering species does not indicate that we are getting what we pay for.

Several measures would improve transparency and accountability regarding ESA expenditures and economic impact analyses reporting. These include:

- Suggestions for improving expenditure reporting included in my April 2018 Heritage Foundation study, "Correcting Falsely 'Recovered' and Wrongly Listed Species and Increasing Accountability and Transparency in the Endangered Species Program," including that states should be encouraged by FWS to fully report ESA annual expenditures.[49] Participation in Section 18 expenditure reporting could be taken into consideration when reviewing Section 6 (Cooperative Endangered Species Conservation Fund) grants to states.[50]

- FWS and NOAA Fisheries should conduct standardized analysis of the economic impact of listing. While such analysis cannot be taken into consideration during listing determinations, the ESA does not preclude conducting such analyses and presenting the data within a regulation when adding a species to the list. This analysis can then be used during critical habitat designations.

- FWS and NOAA Fisheries should also should seek to standardize economic analysis conducted for critical habitat designations as much as possible. This would include using uniform time horizons, terms, and discount rates to the degree possible so that analyses can be more easily compared and summed.

- The basic conclusions of economic analyses referenced within regulations listing species or designating critical habitat should consistently be presented up front under a readably identifiable header such as "Economic Impact."

Notes

[1] *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 184 (1978).
[2] For a discussion of the ESA's poor record of identifying and recovering endangered and threatened species, see Robert Gordon, "Correcting Falsely 'Recovered' and Wrongly Listed Species and Increasing Accountability and Transparency in the Endangered Species Program," The Heritage Foundation, Washington, DC, April 16, 2018, https://www.heritage.org/sites/default/files/2018-04/BG3300_0.pdf.
[3] U.S. Fish and Wildlife Service, "Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions," *Federal Register*, Vol. 79, No. 234 (December 5, 2014), p. 71496, https://www.gpo.gov/fdsys/pkg/FR-2014-12-05/pdf/2014-28536.pdf.
[4] Robert Gordon and Hans A. Von Spakovsky, "Scott Pruitt Ends an Obama Administration Abuse of Power," National Review Online, October 21, 2017, https://www.nationalreview.com/2017/10/scott-pruitt-ends-epa-sue-settle-scheme-obama-administration-abuse-power/.
[5] U.S. Fish and Wildlife Service, "Federal and State Endangered and Threatened Species Expenditures, Fiscal Year 2016," https://www.fws.gov/endangered/esa-library/pdf/2016_Expenditures_Report.pdf.
[6] Ibid.
[7] Ibid. U.S. Fish and Wildlife Service, "Federal and State Endangered and Threatened Species Expenditures, Fiscal Year 2015," https://www.fws.gov/endangered/esa-library/pdf/2015_Expenditures_Report.pdf.
[8] House Committee on Resources, "Implementation of the Endangered Species Act of 1973, May 2005," http://www.eswr.com/docs/505/esaimplrprtresources.pdf.
[9] U.S. Fish and Wildlife Service, "Federal and State Endangered and Threatened Species Expenditures," Fiscal Year 2016.
[10] U.S. Fish and Wildlife Service, "Report to Congress on the Recovery of Threatened and Endangered Species: Fiscal Years 2013-2014," June 2016, https://www.fws.gov/endangered/esa-library/pdf/Recovery_Report_FY2013-2014.pdf. Reported "estimated cost for recovery" figures were summed with duplicate costs for plans covering multiple species eliminated.

[11] U.S. Fish and Wildlife Service, "National Recovery Plan for the Iowa Pleistocene Snail, 1984," https://ecos.fws.gov/docs/recovery_plan/840322.pdf.
[12] U.S. Fish and Wildlife Service, "Federal and State Endangered and Threatened Species Expenditures, for fiscal years 1996–2016," https://www.fws.gov/endangered/esa-library/index.html.
[13] Robert Gordon, "Correcting Falsely 'Recovered' and Wrongly Listed Species and Increasing Accountability and Transparency in the Endangered Species Program."
[14] U.S. Fish and Wildlife Service, "Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California," August 27, 2013, https://ecos.fws.gov/docs/recovery_plan/TMRP/20130923_TMRP_Books_Signed_FINAL.pdf.
[15] Ibid, p.335-7.
[16] U.S. Fish and Wildlife Service, "Report to Congress on the Recovery of Threatened and Endangered Species: Fiscal Years 2013-2014," June 2016, https://www.fws.gov/endangered/esa-library/pdf/Recovery_Report_FY2013-2014.pdf.
[17] National Marine Fisheries Service and U.S. Fish and Wildlife Service, "Recovery Plan for the Northwest Atlantic Population of the Loggerhead Sea Turtle, Second Revision," December 31, 2008, https://ecos.fws.gov/docs/recovery_plan/090116.pdf.
[18] Ibid, p. III-1.
[19] Ibid.
[20] Ibid.
[21] Ibid, P.III-13-14.
[22] ESA Sec. 3(19).
[23] Robert Gordon, "Take It Back: Extending the Endangered Species Act's 'Take' Prohibition to All Threatened Animals Is Bad for Conservation," The Heritage Foundation, December 7, 2017, p.4, https://www.heritage.org/government-regulation/report/take-it-back-extending-the-endangered-species-acts-take-prohibition.
[24] Ibid, p5.
[25] Robert Gordon, "Take It Back," p.3.
[26] Ibid, p.3.
[27] John-Michael Seibler and Rob Gordon, "Federal Overreach on Frogs' Habitat Is Threatening This Company's Private Property," Daily Signal, January 30, 2018. ESA Sec. 3(5)(C).
[28] U. S. Fish and Wildlife Service, Environmental Conservation Online System, All Species with Critical Habitat, https://ecos.fws.gov/ecp/report/table/critical-habitat.html. Listed Species Summary (Boxscore), accessed June 28, 2018, https://ecos.fws.gov/ecp0/reports/box-score-report.
[29] Figures derived by summing USFWS reported acres or river miles. When multiple records had matching regulation dates and reported matching acres or river miles, only one record was included in the tally.
[30] ESA Sec. 4(b)(2)
[31] Ibid.
[32] U.S. Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants; Endangered Species Status for Black Warrior Waterdog and Designation of Critical Habitat, *Federal Register*, Vol. 83, No. 2, January 3, 2018, p. 259, https://www.gpo.gov/fdsys/pkg/FR-2018-01-03/pdf/2017-28386.pdf.
[33] U.S. Fish and Wildlife Service, Designation of Critical Habitat for the Acuna Cactus and the Fickeisen Plains Cactus; Final Rule, *Federal Register*, Vol. 81, No. 160, August 18, 2016, pp. 55269-55271, https://www.gpo.gov/fdsys/pkg/FR-2016-08-18/pdf/2016-19159.pdf.
[34] Ibid, p. 55280.
[35] U.S. Fish and Wildlife Service, Report to Congress on the Recovery of Threatened and Endangered Species: Fiscal Years 2013-2014. Many species have an estimated time to recovery of 30, 40, 50, or more years.
[36] U.S. Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Coastal California Gnatcatcher (*Polioptila californica californica*); Final Rule, *Federal Register*, Vol. 72, No. 243, December 19, 2007, p. 72021, https://www.gpo.gov/fdsys/pkg/FR-2007-12-19/pdf/07-6003.pdf#page=2.
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