

Funding needs for the US Fish and Wildlife Service endangered species program, FY 2020

Center for Conservation Innovation

The goals of the Endangered Species Act (ESA) are to prevent extinction and recover species, but these goals can only be met if the law is fully funded. Unfortunately, Congress has appropriated only a small portion of the \$1.21 billion per year scientists say is needed for recovery¹. This shortfall means, for example, that ¼ of listed species received less than \$7,500 each year from 2000-2015² when the average need is closer to \$750,000 per year³. Here, we review decades of data on ESA implementation to develop informed recommendations for the funding that the ESA needs to succeed in its urgently important mission.

We recommend that Congress fund the U.S. Fish and Wildlife Service (FWS) at \$486,145,000 for FY 2020 to properly implement the ESA. This includes \$51 million for Listing; \$196.7 million for Recovery; \$130.05 million for Planning and Consultation; \$8.395 million for Conservation and Restoration; and \$100 million for the Cooperative Endangered Species Conservation Fund for non-federal conservation partners. These are substantial increases above the appropriations and budgets of past years; for example, the FY 2017 budget request was just \$252 million and by FY 2019⁴, the request had dropped to just \$212 million. Rather than being an extravagance, this cost highlights the severe past underfunding of the ESA and what is truly needed to meet our obligations to conserving listed species.

LISTING: \$51,000,000

Item	Amount	Quantity	Extended
New listings	\$280K	155	\$43.4M
Reclassification	\$100K	76	\$7.6M
Total			\$51M

FWS's listing program covers all listing status changes (listing species as threatened or endangered, downlisting or uplisting species, or delisting species) and designating critical habitat. Under the FWS's new Recovery Planning and Implementation framework (RPI; see further discussion below), the creation of Species Status Assessments (SSAs) is included as species are newly listed. The FWS seven-year listing workplan⁵ details how the agency will prioritize the evaluation of over 350 species for listing and is supported by many stakeholders.

¹ Gerber, 2016, *PNAS*. Available at <https://goo.gl/EYbKsq>

² Analysis by CCI of annual expenditure reports from FWS, 2001-2015.

³ This encompasses all costs of recovery, not just those to be borne by FWS.

⁴ We compare fiscal years 2017 and 2019 because 2017 was the last budget request of the Obama administration and was good starting point for wildlife, while 2019 is the most recent request of the Trump administration and features large, damaging cuts to the endangered species program.

⁵ Available at <https://goo.gl/ErD7TY>

The FY 2017 budget request for listing was \$22.9 million, but had dropped in the FY 2019 budget request to less than half of that at \$10.9 million dollars. As a result of the cuts to the listing budget for FY 2018 and FY 2019, FWS now has a backlog of 77 species that should have had listing decisions per the workplan⁶. Combined with 78 species in the workplan for FY 2020, funding is needed to evaluate at least 155 species for listing. In addition to evaluating species for listing, we expect some species need to be evaluated for delisting or status changes. The FY 2013-2014 biennial recovery report to Congress⁷ is out-of-date but offers the most recent data available, and the summary of five-year review recommendations included 76 species with status change recommendations.

With an estimated cost of \$280,000 per species for a final listing with critical habitat and the underlying SSA development⁸ and assuming \$100,000 per status change determination, **we recommend \$51,000,000 for listing in FY 2020 so FWS can meet its obligations.**

RECOVERY: \$196,700,000

Item	Amount	Quantity	Extended
Recovery planning (new)	\$300K	480	\$28.8M
Recovery planning (revisions)	\$225K	500	\$22.5M
Recovery implementation (per-spp. avg.)	\$82.9K	1662	\$137.9M
Five-year review	\$15K	500	\$7.5M
Total			\$196.7M

The recovery program in the FWS budget includes development and revision of recovery plans, implementing recovery actions, and tracking recovery progress. Because recovery progress is strongly correlated with funding⁹, it is essential to provide adequate funding for the recovery program, enabling FWS to ensure threats are minimized or removed to ensure species are conserved and, ultimately, delisted. In FY 2017, FWS requested \$89.2M for Recovery, but as outlined below, this is significantly lower than what is needed; the funding needs to support recovery of listed species needs more than double the amount of what is currently being spent.

Recovery planning: \$51,300,000 / year (FY 2020 - FY 2025)

Recovery plans are a key part of the purpose and strength of the ESA, detailing species biology, the threats they face, and the actions needed to prevent extinction and recover species¹⁰. FWS is currently shifting to a new model for recovery planning--the Recovery Planning and Implementation (RPI) framework--which will likely improve the effectiveness and efficiency of

⁶ Analysis available at <https://goo.gl/d1P8fn>

⁷ https://www.fws.gov/endangered/esa-library/pdf/Recovery_Report_FY2013-2014.pdf

⁸ This estimate is based on information presented in the 2016 Candidate Notice of Review ([81 FR 87246](https://www.federalregister.gov/d/2016-08-24)) and in-person meetings Defenders had with FWS in late 2016.

⁹ Male and Bean, 2005, *Ecology Letters*. Available at <https://goo.gl/sLVHMn>

¹⁰ Malcom and Li, 2015, *Conservation Letters*. Available at <https://goo.gl/4xSMn3>

recovery planning. The bulk of work for recovery planning under RPI, the Species Status Assessment (SSA), is completed during the listing process for newly protected species and is used in other parts of the endangered species program to track species status (e.g., consultations).

Under RPI, FWS estimates 1 FTE for two years, or \$300,000, are required per recovery plan. As of mid-2018, more than 480 listed species lacked final recovery plans¹¹; developing recovery plans for just these species will require \$144M. Further, because the median recovery plan is now over 21 years old, there are hundreds of species' plans in need of updating. We assume here that 500 plans will need to be updated in the coming five years and that recovery plan updates are 3/4 the cost of new plans (that is, an average of \$225K per plan), totaling \$112.5M.

The combination of costs and numbers of plans results in an unmet need of at least \$256,500,000 for recovery planning. Assuming this cost is spread over the next five years, **we recommend that Congress fund FWS at \$51,300,000 per year, starting in FY 2020, to close the recovery planning gap that has emerged over the past decades and meet the requirements of the ESA.**

Recovery implementation: \$137,900,000

Preventing extinction, stabilizing species' status, and recovering listed species requires taking actions to change the factors that led to a species' listing under the ESA. Implementing recovery actions requires collaboration across numerous sectors and coordinating with diverse stakeholders, and FWS has the lead responsibility for coordinating efforts and ensuring the identified actions occur. In 2016, FWS estimated the over 4,000 tier 1 recovery actions for which it has primary responsibility would cost over \$10.7 billion to implement¹². Congress and conservation partners across all sectors of society must find a way to close this gap or else species listed as threatened or endangered will not have a chance of recovering and regaining their role in the ecosystems where they reside.

Given the serious lack of funding support, a significant number of endangered species are on the edge of existence. Substantial investment is needed now to ensure species are not lost forever. One analysis¹³ identified four focal areas where investment will have particularly big payoffs for preventing extinction, including Hawaiian plants and snails; Southwestern fishes; Southeastern mussels; and North American butterflies. In addition to targeted extinction prevention programs, there are thousands of documented recovery actions waiting to be carried out for ESA-listed species. In FY 2017, FWS requested \$89,000,000 for implementing recovery actions. However, given the continued decline or mere stabilization of many threatened and endangered species¹⁴,

¹¹ Malcom and Li, 2015, *Conservation Letters*. Available at <https://goo.gl/4xSMn3>

¹² This estimate was provided to Defenders by FWS in 2016, but does not specify the time horizon over which these actions will be carried out (that is, the time horizon for recovery) or whether 'primary responsibility' means coordination but not necessarily funding.

¹³ Greenwald et al., 2016, whitepaper. Available at <https://goo.gl/feHIRi>

¹⁴ Evans et al., 2016, *Ecological Applications*. Available at <https://goo.gl/bwoQmy>

and the strong relationship between funding and status improvement¹⁵, it is clear that additional resources are required for recovery.

Congress should make a bold statement on its dedication to preventing extinction and a down payment on recovery through recovery appropriations. This would include a minimum of \$50,000 per year¹⁶ for FWS for each of the 974 listed species that have received less than that per year over the past 15 years¹⁷. When combined with the “baseline” request of \$89.2M from FY 2017, **we recommend that Congress invest at least \$137,900,000 per year for recovery action implementation to prevent extinction and recover species.**

Five-year reviews: \$7,500,000 FY 2020 (\$5.25M / year thereafter)

The ESA requires a systematic review of listed species status be conducted once every five years, which both ensures species conservation remains on-track and that species protected under the ESA are correctly classified (that is, threatened, endangered, or not listed). One consequence of the long-term and severe underfunding of the endangered species program was that by late 2017, five-year reviews were out of date for over 900 species¹⁸. Starting late in the Obama administration, FWS prioritized closing the backlog of delayed reviews, which continues today, but that focus requires substantial investment to update species status information and close the gap.

Firm numbers of reviews in-progress are unknown at this time, so we assume 500 outstanding reviews, and FWS estimates an average of \$15,000 per review¹⁹. Therefore, **FWS requires \$7,500,000 for FY 2020 to close the gap of outstanding five-year reviews.** Further, because five-year reviews are a recurring expense, Congress should be prepared to appropriate at least \$5.25 million per year for the approximately 350 five-year reviews that must be completed each year to avoid again falling behind schedule.

PLANNING AND CONSULTATION: \$130,050,000

Item	Amount	Quantity	Extended
Consultation (FTEs)	\$150K	800	\$120M
Pesticide (FTEs)	\$150K	5	\$750K
IPaC (FTEs)	\$150K	3	\$450K
Voluntary Conservation (FTEs)	\$150K	50	\$7.5M
Compliance (FTEs)	\$150K	9	\$1.35M
Total			\$130.05M

¹⁵ Male and Bean, 2005, *Ecology Letters*. Available at <https://goo.gl/sLVHMn>

¹⁶ Greenwald et al., 2016, whitepaper. Available at <https://goo.gl/feHIRi>. Note this is not an empirical requirement, but a statement about valuing all species.

¹⁷ Per an analysis of ESA expenditure data, 2001-2015, by CCI.

¹⁸ Based on an analysis by CCI of data available on FWS’s ECOS website in 2018.

¹⁹ Based on conversation with FWS in November, 2016.

The Planning and Consultation element of the ES budget includes several key conservation components, including consultations under section 7 of the ESA and private lands conservation work permitted under section 10.

Base consultation needs: \$120,000,000

Section 7 of the ESA directs federal agencies to use their authorities to conserve listed species, which includes basic protections afforded through the interagency consultation process to ensure their actions do not jeopardize the continued existence of or destroy or adversely modify designated critical habitat. Despite common misperceptions, no agency actions have been stopped by FWS's conclusion in consultations since 2008²⁰, and the majority of consultations occur well within required timelines²¹. While the consultation program has functioned reasonably well overall, it is strained by resource limitations. In FY 2017, 159 formal consultations out of a total of 876 (18.6%) exceeded the 135-day statutory deadline. Further, FWS has a high load of informal consultations—10,629 completed in 2017—that must be managed and contribute to the overall heavy workload. Additional personnel, especially in overloaded offices, will allow FWS to be closer to full staffing and reduce already short average wait times. **We recommend a 13% increase in consultation funding for FWS, which equates to an additional 91 FTEs above the FY 2017 request and totals \$120,000,000.** In combination with the efficiency increases through the IPaC program (see below), we anticipate the additional investment in consultation personnel will help ensure species protection while allowing federal projects and those of permittees to move forward.

Pesticide consultations: \$750,000 additional

One of the biggest challenges for the section 7 consultation program is evaluating whether Environmental Protection Agency registration of pesticides will jeopardize ESA-listed species or harm critical habitat. This will require analyzing the effects of some 736 pesticides with 1,155 active ingredients on >1,600 ESA-listed species. Because ecotoxicology is highly technical, the consultation on the effects of just three organophosphates on 77 species was more than 3,700 pages long²². At a bare minimum, FWS requires a senior ecotoxicologist and a policy liaison for broader process improvements. However, a more reasonable staffing level would include another 3 ecotoxicologists in the pesticides branch. **We recommend an additional \$750,000 for five new FTEs dedicated to FWS pesticide consultations.** Importantly, this investment is consistent with the 2018 Farm Bill, which established a framework for administrative improvements to the pesticide consultation process.

²⁰ Malcom and Li, 2015, *PNAS*. Available at <https://goo.gl/wkPtuf>

²¹ The median duration for approval by the USFWS for formal and informal consultations is 61 days and 13 days, respectively, well within the 135 day statutory limit for consultation approval. Data available at https://cci-dev.org/shiny/open/section7_explorer/

²² Available at <https://goo.gl/j91tSo>

IPaC: \$450,000 additional

The Information for Planning and Consultation (IPaC) system is a web-based tool being developed by FWS that dramatically improves the efficiency of the consultation process for specific, well-understood types of actions such as road-widening effects on Indiana bats. For example, just in 2015, FWS estimated IPaC saved 4.5 FTE per month (\$690,000 / month) in costs, and the savings are likely much higher today. Because of IPaC's efficiency and ease of use for anyone needing information on how their activities may affect natural resources, it is being more widely adopted. Furthermore, development plans include the resources to expand into areas like e-reporting and e-monitoring. Despite this, IPaC is currently limited by insufficient staff in order to add more capabilities and capacity to the system. To rapidly expand the utility of the system and meet the growing demand, **we recommend an additional \$450,000 for FY 2020 (and beyond) to fund 3 full time software developers for IPaC.**

Voluntary conservation: \$7,500,000

Section 10(a)(1)(B) of the ESA provides the framework for voluntary conservation on non-federal lands, including Habitat Conservation Plans (HCPs) and Safe Harbor Agreements (SHAs). Holders of HCPs and SHAs receive permits to harm ESA-listed species in one area in return for taking conservation measures. Over half of ESA-listed species--and higher proportions in regions such as the Southeast--spend at least some portion of their lifecycle on non-federal lands.

To determine needs, we need to know the demand for voluntary conservation agreements and the details of the development of those agreements for both permittees and FWS. Unfortunately, we lack data to clarify the demand; the best we can say is that nearly 1,500 HCPs and SHAs have been developed since 1995, and these vary widely in size and complexity²³. The data show a recent decline in such agreements and the need to reinvigorate voluntary conservation under the ESA²⁴. **We recommend \$7,500,000 for FY 2020 and subsequent years to fund six FTEs in each of the eight FWS regions and two in HQ for voluntary conservation planning.**

Compliance monitoring: \$1,350,000

Compliance monitoring and enforcement are integral parts of ensuring any law--including the ESA--is implemented as designed. Unfortunately, the dramatically insufficient funding has meant that monitoring ESA compliance has been left "on the backburner." A 2009 Government Accounting Office report found that 63% of consultations surveyed did not have all of the required monitoring reports available, and 40% had no reports at all.²⁵ Currently, almost all ESA compliance is trust-based: FWS assumes that agencies and permittees are carrying out their actions as required, but rarely have time to follow up. The emergence of new data sources and

²³ Analysis of FWS section 10 data available at https://cci-dev.org/working_papers/agreements_overview.html

²⁴ For example, the peak of HCPs and SHAs in the 2000's, which dropped off after 2010 and the sequestration cuts.

²⁵ Available at <https://www.gao.gov/new.items/d09550.pdf>

basic tools such as Google Earth²⁶, Earth Engine²⁷, and electronic permit reporting all offer new ways to monitor compliance, but only if staff are available to follow up.

A simple, initial solution²⁸ to this issue is to fund one FTE to work solely on ESA compliance in each of the eight FWS Regions and one staffed at headquarters, for a total of 9 FTEs. **We recommend \$1,350,000 in FY 2020 and subsequent years to ensure staff are available for basic compliance monitoring across the country.** These full-time employees would be solely dedicated to working on issues of compliance with ESA sections 6, 7 and 10.

CONSERVATION AND RESTORATION: \$8,395,000 FY 2020

Item	Amount	Quantity	Extended
Candidate species	\$365K	23	\$8.395M
Total			\$8.395M

Candidate Conservation: \$8,395,000 / year (FY 2020 – FY 2025)

The Candidate Conservation element in the Conservation and Restoration program of the FWS budget includes collaborative species conservation efforts and protecting and restoring habitats, several components of which extend beyond threatened and endangered species. In the domain of the ESA, the central role of this component is funding candidate conservation, that is, funding to address the threats to and protect species that are candidates for listing under the ESA and potentially preclude the need to list.

There are currently 23 candidate species for FWS²⁹. Assuming that conserving candidate species is less expensive than recovering listed species³⁰ and that proactive work is ½ the cost of recovery, we use half of the estimated per-species cost of recovery³¹ to calculate the expense of conserving candidate species and preventing listing. At \$365,000 per species for each of the 23 candidates, the **FWS needs \$8.395M for FY 2020 through FY 2025.**

COOPERATIVE ENDANGERED SPECIES CONSERVATION FUND: \$100,000,000

Congress recognized the important need for the federal government to cooperate with the states and others to conserve species. Section 6 creates the framework of that cooperation, including federal-state agreements and funding (section 6(b)). The Cooperative Endangered Species

²⁶ Malcom et al., 2017, *bioRxiv*. Available at <https://goo.gl/jUxhbt>

²⁷ Introduction to automated habitat change detection developed at Defenders is available at https://cci-dev.org/analysis/LPC_delisting/

²⁸ We recommend a long-term goal of one FTE dedicated to compliance in each of the 77 FWS Field Offices, but one FTE per region is an essential start to closing the compliance monitoring gap.

²⁹ <https://ecos.fws.gov/ecp/report/table/candidate-species.html>, accessed 11 Feb 2019.

³⁰ See, for example, Dreschler et al., 2011, *Biodiversity and Conservation*. Available at <https://goo.gl/eD3GM9>

³¹ Recovery needs calculated from Gerber (2016) as an average \$730,000 per year (\$1.21B / 1660 spp).

Conservation Fund (CESCF) is a significant source of funding for states and conservation on private lands. The latter is particularly important because at least half of all listed species complete at least part of their life cycle on private lands³². Unfortunately, key funding has fallen drastically in recent decades (37% from the peak of \$70.6M in 2003): grants for Habitat Conservation Plan land acquisition decreased by 57% between 2003 and 2016 (from \$51.1M to just \$22M), and habitat conservation planning grants to states, counties, and private landowners declined by 16% (from \$6.6M to \$5.6M)³³. Worse still, the Trump administration FY 2019 budget request zeroed out CESCF.

For states and private landowners to be partners in carrying out threatened and endangered species conservation on their lands, the gap that has emerged from past funding must be reversed, and then the program funded at levels commensurate with the need. **We recommend Congress provide FWS with funding of at least \$100,000,000 for FY 2020 for CESCF**, which is slightly higher than if funding had just kept up with inflation since 2003 (~ \$95.972M in 2018 dollars) and equates to just \$2M per state on average³⁴. Further, Congress should be prepared to appropriate at least as much per year after FY 2020 to facilitate state, tribal, and private lands conservation.

³² Stein et al., 2000, *Precious heritage*, Oxford University Press.

³³ Based on a CCI analysis of grants data available at <https://www.fws.gov/endangered/grants/>

³⁴ For comparison, this is approximately 2 / 100ths of 1% of federal grants to states in 2017; see Center for Budget and Policy Priorities, <https://goo.gl/gcJBac>