

MEMORANDUM | October 23, 2013

TO U.S. Fish and Wildlife Service (Service)
FROM Industrial Economics, Incorporated (IEc)
SUBJECT Screening Analysis of the Likely Economic Impacts of Critical Habitat Designation for the Western Distinct Population Segment of the Yellow-billed Cuckoo

The Service intends to publish a proposed rule to designate critical habitat for the western distinct population segment of the yellow-billed cuckoo (*Coccyzus americanus*, hereafter referred to as the “cuckoo”). As part of the rulemaking process, the Service must consider the economic impacts, including costs and benefits, of the proposed rule in the context of two separate requirements:¹

- **Executive Order (EO)12866 *Regulatory Planning and Review***, which directs Agencies to assess the costs and benefits of regulatory actions and quantify those costs and benefits if that action may have an effect on the economy of \$100 million or more in any one year; and
- **Section 4(b)(2) of the Endangered Species Act (the Act)**, which requires the Secretary of the Interior to consider economic impacts prior to designating critical habitat.²

This memorandum provides information to the Service on the potential for the proposed critical habitat rule to result in costs exceeding \$100 million in a single year. If costs do not exceed this threshold, EO 12866 suggests that a qualitative assessment may be sufficient. This memorandum also identifies the geographic areas or specific activities that could experience the greatest impacts, measured in terms of changes in social welfare, to inform the Secretary’s decision under section 4(b)(2).³

To prepare this assessment, we rely on: (1) the draft proposed rule and associated geographic information systems (GIS) data layers; (2) the Service’s incremental

¹ Additional laws and executive orders require the consideration of the distribution of impacts on vulnerable subpopulations, such as small entities and state or local governments. These requirements for distributional analysis are beyond the scope of this memorandum.

² Published September 20, 1993. As affirmed by *Executive Order 13563: Improving Regulation and Regulatory Review*. January 18, 2011.

³ The discipline of welfare economics focuses on maximizing societal well-being. (Just, R.E., D.L. Hueth, and A. Schmitz. 2004. *The Welfare Economics of Public Policy: A Practical Approach to Project and Policy Evaluation*. Edward Elgar Publishing: Northampton, MA.) It measures costs and benefits in terms of the opportunity costs of employing resources for the conservation of the species and individual willingness to pay to conserve those species. Opportunity cost is the value of the benefit that could have been provided by devoting the resources to their best alternative uses. Opportunity costs differ from the measurement of accounting costs (e.g., actual expenses). Welfare economics is recognized by the U.S. Office of Management and Budget (OMB) as the appropriate tool for valuing the costs and benefits of proposed regulatory actions. (U.S. Office of Management and Budget. 2003. *Circular A-4*.)

effects memorandum described in greater detail later in this memorandum; (3) the results of the Service's outreach efforts to other Federal agencies concerning the likely effects of critical habitat; and (4) limited interviews with relevant stakeholders.

FINDINGS OF THE SCREENING ANALYSIS

Critical habitat designation for the cuckoo is unlikely to generate costs exceeding \$100 million in a single year. Data limitations prevent the quantification of benefits.

Section 7 Costs

The economic cost of implementing the rule through section 7 of the Act will most likely be limited to additional administrative effort to consider adverse modification. This finding is based on the following factors:

- Except in limited instances, which the Service cannot predict at this time, project modifications requested to avoid adverse modification are likely to be the same as those needed to avoid jeopardy in occupied habitat;
- All proposed units are considered occupied, providing significant baseline protection;
- The proposed designation also receives baseline protection from the presence of additional listed species with similar habitat needs, such as the flycatcher and vireo, in 43 of the 80 proposed units; and
- The designation of critical habitat for the flycatcher and vireo in those same units provides a third layer of baseline protection.

According to a review of consultation records and discussions with multiple Service field offices, the additional administrative cost of addressing adverse modification during the section 7 consultation process ranges from approximately \$410 to \$9,000 per consultation. Based on the project activity identified by relevant action agencies and comparison to the consultation history for the flycatcher, the number of future formal consultations is likely to be under 100 per year. The number of all consultation efforts, including informal consultations and technical assistance, is likely to be under 1,500 per year. Thus, the incremental administrative burden resulting from the designation is likely to be less than \$3.2 million in a given year.

Other Costs

- The designation of critical habitat is not expected to trigger additional requirements under state or local regulations. This conclusion is based on the awareness of state agencies of the presence of the species, the likelihood that activities in riparian areas will require Federal permits and therefore section 7 consultation, and the results of analysis conducted for a similar species in the region.
- The designation of critical habitat may cause developers or landowners to perceive that private lands will be subject to use restrictions, resulting in costs. Such costs, if they occur, are unlikely to reach \$100 million in a given year based on the number of acres most likely to be affected and land values in the vicinity of those acres.

Section 7 and Other Benefits

Additional section 7 efforts to conserve the cuckoo are not predicted. If, public perception of the effect of critical habitat causes changes in future land use, benefits to the species and environmental quality may occur. Due to existing data limitations, we are unable to assess the likely magnitude of such benefits.

Geographic Distribution of Costs

Given available data, we identified the units likely to incur the largest incremental costs. Because we do not forecast costs associated with project modifications, the magnitude of section 7 costs correlates to the number of projected consultations within each unit. Thus, the highest quantified costs are generally anticipated in the largest units or those in more developed areas (see Appendix C). Costs resulting from public perception of the impact of critical habitat, if they occur, are more likely in Units 6, 7, 15, 17, 46, 52, 54, 55, 57, 68, 73, or 76.

SECTION 1. BACKGROUND

The western distinct population segment of the yellow-billed cuckoo (hereafter, cuckoo) is a bird species that winters in South America but breeds in North American riparian habitat west of the Rocky Mountains and into southwestern British Columbia, Canada, and northwestern Mexico. The cuckoo is primarily insectivorous and relies on willow and cottonwood woodlands for nesting and foraging.⁴ The Service intends to list the species as threatened under the Act and designate critical habitat for the species.⁵

The proposed critical habitat rule would designate approximately 559,945 acres (226,602 hectares) of critical habitat across 80 units in the United States. All units are occupied by the species. The designation spans nine western states: Arizona, California, Colorado, Idaho, Nevada, New Mexico, Texas, Utah, and Wyoming. Approximately 32 percent of the total proposed designation is located on Federal lands, nine percent on State land, 46 percent on private lands, and 13 percent on Tribal lands. Of the proposed acreage, approximately 193,691 acres in 29 units are being considered for exclusion under section 4(b)(2) of the Act.⁶ Exhibit 1 provides an overview of the proposed critical habitat units, including the percent Federal land, the presence of other listed species, and whether the unit is being considered for exclusion from the designation. Exhibit 2 provides an overview map of the proposed designation.

EXHIBIT 1. SUMMARY OF PROPOSED CRITICAL HABITAT UNITS FOR THE CUCKOO

UNIT NUMBER	UNIT NAME	SIZE OF UNIT IN ACRES (HA)	PERCENT FEDERAL	OTHER ENDANGERED SPECIES	EXCLUSION CONSIDERED
Unit 1	CA-1 Eel River	4,440 (1,797)	0%		
Unit 2	CA-2 Sacramento River	36,995 (14,971)	5%		
Unit 3	CA-3 Sutter Bypass	2,758 (1,116)	80%		
Unit 4	CA-4 South Fork Kern River Valley	2,870 (1,161)	43%	SWFL	Yes
Unit 5	CA-5 Owens River	1,598 (647)	<1%	SWFL	Yes
Unit 6	CA-6 Prado Flood Control Basin	4,406 (1,783)	30%	SWFL, LBEVI	Yes
Unit 7	CA/AZ-1 Colorado River 1	78,961 (31,954)	41%	SWFL	Yes
Unit 8	CA/AZ-2 Colorado River 2	23,451 (9,490)	65%	SWFL	Yes
Unit 9	AZ-1 Bill Williams River	3,390 (1,372)	78%	SWFL	Yes
Unit 10	AZ-2 Alamo Lake	2,794 (1,131)	66%	SWFL	Yes
Unit 11	AZ-3 Lake Mead	6,735 (2,726)	100%	SWFL	Yes

⁴ U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Yellow-billed Cuckoo (*Coccyzus americanus*). June 6, 2013. (p. 2- 6)

⁵ Draft Proposed Critical Habitat Designation Rule, July 2013.

⁶ U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Yellow-billed Cuckoo (*Coccyzus americanus*). June 6, 2013. (p. 2-7)

UNIT NUMBER	UNIT NAME	SIZE OF UNIT IN ACRES (HA)	PERCENT FEDERAL	OTHER ENDANGERED SPECIES	EXCLUSION CONSIDERED
Unit 12	AZ-4 Lower Gila River	12,047 (4,875)	62%		Yes
Unit 13	AZ-5 Upper Santa Maria River	1,636 (662)	35%	SWFL	
Unit 14	AZ-6 Hassayampa River	2,838 (1,148)	21%	SWFL	
Unit 15	AZ-7 Gila and Salt Rivers	17,585 (7,116)	27%	SWFL	Yes
Unit 16	AZ-8 Agua Fria River	3,337 (1,350)	54%		
Unit 17	AZ-9 Upper Verde Creek	4,531 (1,834)	49%	SWFL	
Unit 18	AZ-10 Oak Creek	1,323 (535)	33%		
Unit 19	AZ-11 Beaver Creek and tributaries	2,082 (831)	72%		Yes
Unit 20	AZ-12 Lower Verde River and West Clear Creek	2,053 (831)	22%	SWFL	Yes
Unit 21	AZ-13 Horseshoe Dam	626 (253)	100%	SWFL	Yes
Unit 22	AZ-14 Tonto Creek	3,670 (1,485)	69%	SWFL	Yes
Unit 23	AZ-15 Pinal Creek	419 (170)	7%	SWFL	
Unit 24	AZ-16 Bonita Creek	929 (376)	89%		
Unit 25	AZ-17 San Francisco River 1	1,327 (537)	90%	SWFL	
Unit 26	AZ-18 Upper San Pedro River	21,796 (8,821)	52%	SWFL	
Unit 27	AZ-19 Hooker Hot Springs	375 (152)	43%		
Unit 28	AZ-20 Lower San Pedro and Gila Rivers	23,399 (9,469)	13%	SWFL	Yes
Unit 29	AZ-21 Picacho Reservoir	2,590 (1,048)	12%		
Unit 30	AZ-22 Peritas Wash	894 (362)	19%		Yes
Unit 31	AZ-23 Arivaca Wash and San Luis Wash	5,765 (2,333)	81%		Yes
Unit 32	AZ-24 Sonoita Creek	1,610 (652)	0%		
Unit 33	AZ-25 Upper Cienega Creek	5,204 (2,106)	89%		Yes
Unit 34	AZ-26 Santa Cruz River	3,689 (1,493)	0%	SWFL	
Unit 35	AZ-27 Black Draw	890 (360)	46%		
Unit 36	AZ-28 Gila River 1	20,726 (8,388)	4%	SWFL	Yes
Unit 37	AZ-29 Salt River	2,590 (1,048)	95%	SWFL	Yes
Unit 38	AZ-30 Lower Cienega Creek	2,360 (955)	0%	SWFL	Yes
Unit 39	AZ-31 Blue River	1,025 (415)	100%		
Unit 40	AZ-32 Pinto Creek South	373 (151)	99%	SWFL	
Unit 41	AZ-33 Aravaipa Creek	1,209 (489)	39%		
Unit 42	AZ-34 Lower Verde River	1,079 (437)	99%	SWFL	Yes
Unit 43	AZ-35 Gila River 3	2,194 (888)	51%	SWFL	
Unit 44	AZ-36 Pinto Creek North	427 (173)	97%	SWFL	
Unit 45	AZ-37 Florida Wash	188 (76)	60%		Yes
Unit 46	NM-1 San Juan River	6,354 (2,571)	11%	SWFL	Yes
Unit 47	NM-3 San Francisco River 2	2,039 (825)	36%	SWFL	

UNIT NUMBER	UNIT NAME	SIZE OF UNIT IN ACRES (HA)	PERCENT FEDERAL	OTHER ENDANGERED SPECIES	EXCLUSION CONSIDERED
Unit 48	NM-4 Gila River 2	4,179 (1,691)	23%	SWFL	
Unit 49	NM-5 Mimbres River	260 (105)	0%	SWFL	
Unit 50	NM-6 Upper Rio Grande 1	1,830 (741)	0%	SWFL	
Unit 51	NM-7 Middle Rio Grande 2	1,173 (475)	0%	SWFL	Yes
Unit 52	NM-8 Middle Rio Grande 1	71,511 (28,940)	11%	SWFL	Yes
Unit 53	NM-9 Upper Gila River	4,614 (1,867)	21%	SWFL	
Unit 54	CO-1 Yampa River	6,938 (2,808)	0%		
Unit 55	CO-2 Colorado River 3	4,002 (1,620)	1%		
Unit 56	CO-3 North Fork Gunnison River	2,326 (941)	5%		
Unit 57	CO-4 Uncompahgre River	4,506 (1,824)	<1%		
Unit 58	CO-5 Gunnison River	937 (379)	2%		
Unit 59	CO-6 Rio Grande 3	9,765 (3,952)	<1%	SWFL	Yes
Unit 60	CO-7 Conejos River	8,986 (3,637)	4%	SWFL	Yes
Unit 61	UT-1 Green River 1	17,256 (6,983)	27%		
Unit 62	UT-2 Pigeon Water Creek and Lake Fork River	3,041 (1,231)	0%		
Unit 63	UT-3 Colorado River 4	578 (234)	55%		
Unit 64	UT-4 Dolores River	401 (162)	28%		
Unit 65	UT-5 Green River 2	4,657 (1,885)	100%		
Unit 66	UT-6 San Juan River 2	2,198 (890)	100%	SWFL	
Unit 67	UT-7 San Juan River 3	9,692 (3,922)	16%	SWFL	
Unit 68	UT-8 Virgin River 2	1,390 (563)	2%	SWFL	
Unit 69	ID-1 Snake River 1	10,726 (4,341)	35%		
Unit 70	ID-2 Snake River 2	11,439 (4,629)	51%		
Unit 71	ID-3 Big Wood River	1,129 (457)	8%		
Unit 72	ID-4 Henry's Fork and Teton Rivers	3,449 (1,396)	11%		
Unit 73	NV-1 Upper Muddy River	1,472 (596)	89%	SWFL	
Unit 74	NV-3 Lower Muddy River	437 (177)	0%	SWFL	
Unit 75	NV-4 Carson River	5,210 (2,108)	39%		
Unit 76	NV/AZ-1 Virgin River 1	11,265 (4,559)	63%	SWFL	
Unit 77	WY-1 Green River 3	8,969 (3,630)	64%		
Unit 78	WY/UT-1 Henry's Fork Green River	7,808 (3,160)	18%		
Unit 79	TX-1 Arroyo Caballo / Rio Grande	1,261 (510)	0%		
Unit 80	TX-2 Terlingua Creek / Rio Grande	7,792 (3,153)	100%		

Notes: SWFL - Southwestern willow flycatcher; LBEVI - Least Bell's vireo

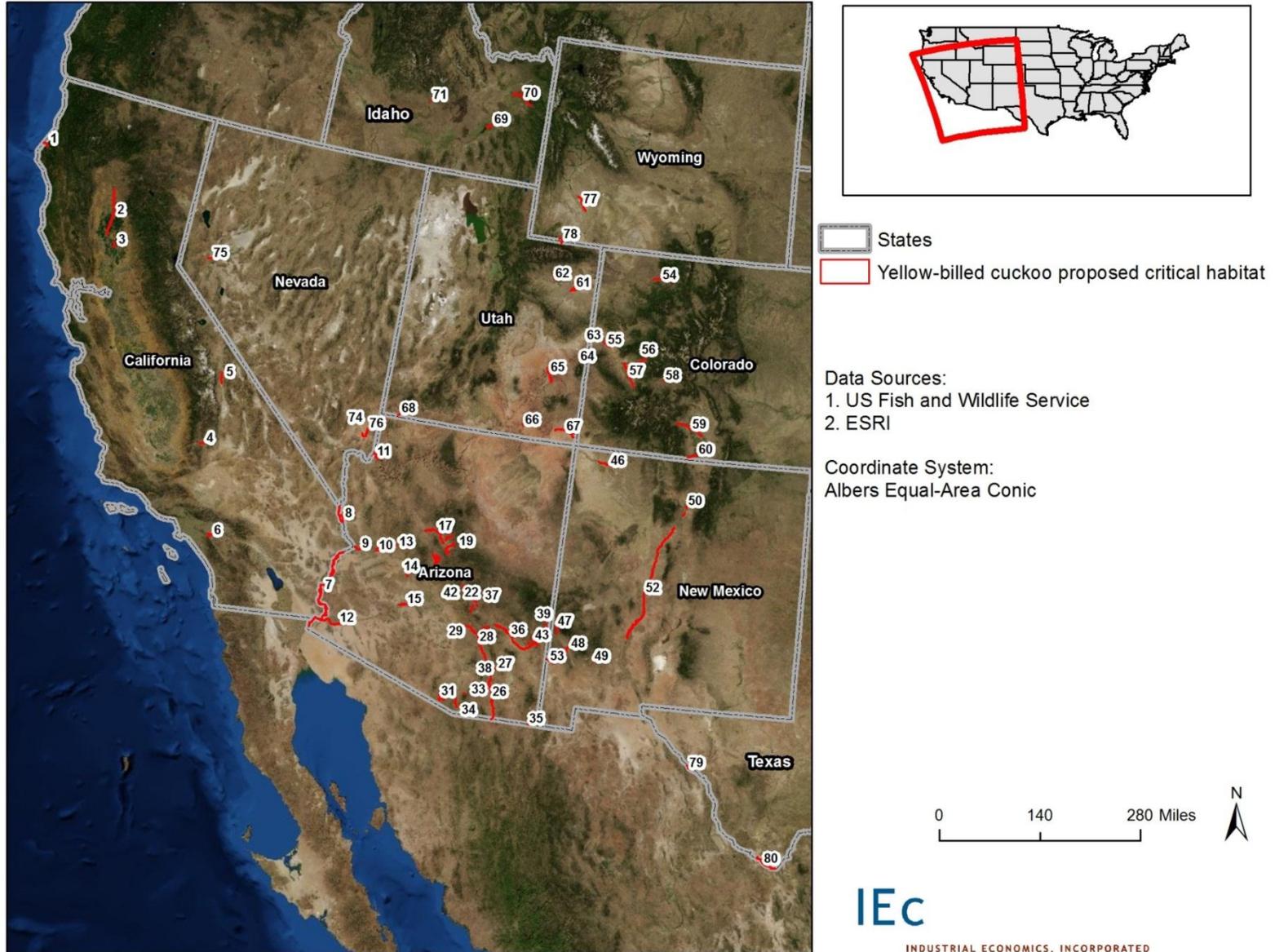
Source: U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Yellow-billed Cuckoo (*Coccyzus americanus*). June 6, 2013.

Because the cuckoo is not yet listed under the Act, no consultations have been conducted for the species. However, review of the draft proposed rule and the Service's incremental effects memorandum identified the following economic activities that may affect the cuckoo and its habitat:

- (1) Water management, including hydropower operations;
- (2) Restoration and conservation projects;
- (3) Fire management;
- (4) Transportation activities, including bridge construction;
- (5) Recreational activities;
- (6) Livestock grazing and agriculture;
- (7) Mining;
- (8) Residential and commercial development; and
- (9) Border protection activities.⁷

⁷ U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Yellow-billed Cuckoo (*Coccyzus americanus*). June 6, 2013; and Draft Proposed Critical Habitat Designation Rule, July 2013.

EXHIBIT 2. OVERVIEW OF PROPOSED CUCKOO CRITICAL HABITAT



SECTION 2. FRAMEWORK

Guidelines issued by the U.S. Office of Management and Budget (OMB) for the economic analysis of regulations direct Federal agencies to measure the costs and benefits of a regulatory action against a baseline (i.e., costs and benefits that are “incremental” to the baseline). OMB defines the baseline as the “best assessment of the way the world would look absent the proposed action.”⁸ In other words, the baseline includes any existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users affected by the designation of critical habitat. The baseline includes the economic impacts of listing the species under the Act, even if the listing occurs concurrently with critical habitat designation. Impacts that are incremental to the baseline (i.e., occurring over and above existing constraints) are those that are solely attributable to the designation of critical habitat. This screening analysis focuses on the likely incremental effects of the critical habitat designation.

We consider incremental effects of the designation in two key categories: 1) those that may be generated by section 7 of the Act; and 2) other types of impacts outside of the context of section 7:

- **Incremental section 7 impacts:** Activities with a Federal nexus that may affect listed species are subject to section 7 consultation to consider whether actions may jeopardize the existence of the species, even absent critical habitat.⁹ As part of these consultations, critical habitat triggers an additional analysis evaluating whether an action will diminish the recovery potential or conservation value of the designated area. Specifically, following the designation, Federal agencies must also consider the potential for activities to result in the destruction or adverse modification of critical habitat. These consultations are the regulatory mechanism through which critical habitat rules are implemented. Any time and effort spent on this additional analysis, as well as the costs and benefits of implementing any recommendations resulting from this review, are economic impacts of the critical habitat designation.
- **Other incremental impacts:** Critical habitat may also trigger additional regulatory changes. For example, the designation may cause other Federal, state, or local permitting or regulatory agencies to expand or change standards or requirements. Regulatory uncertainty generated by critical habitat may also have impacts. For example, landowners or buyers may perceive that the rule will restrict land or water use activities in some way and therefore value the use of the land less than they would have absent critical habitat. This is a perceptual, or stigma, effect of critical habitat on markets.

⁸ OMB, “Circular A-4,” September 17, 2003, available at http://www.whitehouse.gov/omb/circulars_a004_a-4. Circular A-4 provides “guidance to Federal Agencies on the development of regulatory analysis as required under Section 6(a)(3)(c) of Executive Order 12866...” (p. 1)

⁹ A Federal nexus exists for activities authorized, funded, or carried out by a Federal agency.

SECTION 3. SECTION 7 COSTS OF THE CRITICAL HABITAT RULE

In this section, we discuss the likelihood that the designation of critical habitat will result in incremental costs through the section 7 consultation process. In the baseline, section 7 of the Act requires Federal agencies to consult with the Service to ensure that their actions will not jeopardize the cuckoo. Once critical habitat is designated, section 7 also requires Federal agencies to ensure that their actions will not adversely modify critical habitat. Thus, a key focus of this screening analysis is whether the designation of critical habitat would trigger project modifications to avoid adverse modification that would be above and beyond any modifications triggered by adverse effects to the species itself.

Incremental costs associated with section 7 consultations for the cuckoo are likely limited to administrative costs. This conclusion is based on multiple factors:

- **The concurrent listing of the cuckoo provides substantial baseline protection.**
 - **All projects with a Federal nexus will be subject to section 7 requirements regardless of whether critical habitat is designated.** All proposed units are considered occupied. Therefore, any activities with a Federal nexus will be subject to section 7 consultation requirements regardless of critical habitat designation.
 - **Section 7 consultations are unlikely to proceed due solely to critical habitat.** Based on its past experience, the Service believes it is highly unlikely that any project would result in adverse effects to critical habitat without also adversely affecting the species. As a result, critical habitat is not expected to result in additional consultations beyond those required due to the presence of the species.¹⁰
 - **Possible project modifications are unlikely to be affected by the designation of critical habitat.** The Service also believes that it is highly unlikely that a project could result in a finding of adverse modification without also resulting in a jeopardy finding. In other words, the Service does not expect that a consultation for the cuckoo would result in a biological opinion requesting reasonable and prudent measures to minimize incidental take of the species and, at the same time, requesting a unique set of reasonable and prudent alternatives to avoid adverse modification.¹¹ Therefore, the Service expects that it is highly likely that any project resulting in a determination of adverse modification would also result in a determination of jeopardy for the species.¹²

The Service anticipates that, except in cases that cannot be predicted at this time, project modifications recommended to avoid adverse modification will be the same as those needed to avoid jeopardy. Specifically, the Service states: “We anticipate that the measures to

¹⁰ U.S. Fish and Wildlife Service. Personal communication on October 21, 2013.

¹¹ U.S. Fish and Wildlife Service. Personal communication on October 21, 2013.

¹² U.S. Fish and Wildlife Service. Personal communication on October 21, 2013.

remove jeopardy and adverse modification would likely have some overlap because the impacts in either case will most likely be affecting the persistence, development, and recycling of habitat. In a scenario where a section 7 consultation may result in both jeopardy and adverse modification findings under each different standard, it is difficult to predict what different conservation measures by the Federal agency might be required to avoid both jeopardy and adverse modification.”¹³ For purposes of this analysis, we assume no new or additional project modifications result from critical habitat.

- **The presence of other listed species provides additional baseline protection.** Other listed riparian bird species with similar habitat needs occupy the proposed critical habitat. These species include the endangered southwestern willow flycatcher (flycatcher) and the least Bell’s vireo (vireo). Of the 80 proposed units for the cuckoo, 43 are occupied by the flycatcher, and one is occupied by both the flycatcher and vireo.¹⁴ Protection provided to these species will also benefit the cuckoo.
- **Designated critical habitat already exists in many of the proposed areas.** Finally, 43 of the proposed units for the cuckoo overlap with designated flycatcher critical habitat, and one unit overlaps with designated critical habitat for both flycatcher and vireo.¹⁵ Efforts to protect these species’ critical habitat will also benefit the cuckoo.

Thus, based on the substantial baseline protections afforded the cuckoo and the close relationship between adverse modification and jeopardy in occupied habitat, we do not forecast any incremental costs associated with project modifications. When section 7 consultations occur, costs are likely to be limited to the additional administrative effort to consider adverse modification during the consultation process.¹⁶

MAGNITUDE OF ADMINISTRATIVE COSTS

In the following sections, we provide information on the likely intensity of consultation activity to gauge the likely magnitude of administrative costs. We consider multiple data sources in this evaluation. First, we consider information provided by Federal agencies to the Service regarding specific projects that may require future consultation. Next, we consider the historical consultation rate for a similar species in the region, the flycatcher. Finally, we evaluate detailed information on project permitting rates provided by the Corps, a key Federal agency likely to initiate a substantial portion of the consultation activity. We find that incremental administrative costs are likely to range from approximately \$1.4 million to \$3.2 million in a given year.

¹⁴ U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Yellow-billed Cuckoo (*Coccyzus americanus*). June 6, 2013. (p. 3)

¹⁵ Critical habitat designations may be subject to litigation. As a result, we consider the baseline protection provided by these designations as only one of multiple factors affecting the cuckoo and its habitat.

¹⁶ As discussed in the next section, our research suggests the additional per-consultation administrative effort is likely to be minor. Thus, these efforts are unlikely to result in measurable time delays.

Results of Federal Agency Outreach

In the process of developing the proposed rule, the Service requested information from Federal agencies that manage land within the proposed designation regarding ongoing and planned activities. We use this information to develop a consultation forecast. Federal agencies providing data are listed in Appendix A. Because, in many cases, Federal agencies did not provide information on the expected year of consultation, we conservatively assign all consultations to the year the final critical habitat rule takes effect. The Service anticipates that “the number of consultations for the yellow-billed cuckoo would be greatest just after listing and reduce as time passes.”¹⁷ Therefore, this consultation forecast is more likely to overestimate than underestimate the number of consultations occurring in a given year.

The information provided by Federal agencies identifies 100 projects likely to require formal consultation and one project likely to require programmatic consultation. The Service also frequently responds to requests for technical assistance and informal consultation. To account for these efforts, we use data provided by the Ventura office in California and Region 2 office of the Service for the economic analysis of flycatcher critical habitat designation to estimate ratios of informal consultations and technical assistance requests to formal consultations.

The ratio of informal to formal consultations ranges from nine to one in the Ventura office to 11 to one in Region 2.¹⁸ We apply these same ratios to future cuckoo consultation activity. To avoid understating the likely number of consultations, we adopt the higher estimate of 11 informal consultations to one formal consultation.

Similarly, the ratio of technical assistance requests to formal consultations ranges from 0.3 to one (Region 2) to three to one (Ventura office).¹⁹ Again, we adopt the higher estimate of three technical assistance requests to one formal consultation. Importantly, we recognize that offices conducting more informal consultations may provide fewer technical assistance responses, and offices that provide more technical assistance may conduct fewer informal consultations. Thus, by selecting the higher ratio from two different offices for each consultation category, we are more likely to overstate than understate total consultation activity.

The results of this analysis suggest that, in a given year, the Service could conduct up to approximately 1,100 informal consultations and respond to approximately 300 technical assistance requests. Overall, approximately 1,500 projects may require either formal, informal, or programmatic consultation or technical assistance annually. The administrative costs of these consultations are likely to vary depending on the specifics of the project. We previously reviewed consultation records and participated in discussions with multiple Service field offices to identify a range of estimated administrative costs of consultation.

¹⁷ U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Yellow-billed Cuckoo (*Coccyzus americanus*). June 6, 2013. (p. 24)

¹⁸ Industrial Economics, Incorporated. *Economic Analysis of critical Habitat Designation for the Southwestern Willow Flycatcher: Final Report*. Prepared for the U.S. Fish and Wildlife Service. December 14, 2012. (p. 231)

¹⁹ Industrial Economics, Incorporated. *Economic Analysis of critical Habitat Designation for the Southwestern Willow Flycatcher: Final Report*. Prepared for the U.S. Fish and Wildlife Service. December 14, 2012. (p. 231)

Exhibit 3 presents the average costs used in this analysis.²⁰ It suggests that the incremental costs to consider adverse modification during technical assistance totals approximately \$410 across all parties (2013 dollars). Similarly, the incremental costs for informal, formal, and programmatic consultations total \$2,400, \$5,000, and \$9,000, respectively. These estimates assume that consultations would occur even in the absence of critical habitat due to the presence of the listed species, and the amount of administrative effort needed to address critical habitat during this process is relatively minor.

Applying these unit cost estimates, this analysis conservatively estimates that considering adverse modification in section 7 consultation will result in incremental costs of up to \$3.2 million (2013 dollars) in a given year. Because we use high-end ratios of informal consultations and technical assistance, and because we assign all consultations on planned projects to the first year the rule takes effect, this estimate is more likely to overstate than understate actual incremental costs.

EXHIBIT 3. RANGE OF INCREMENTAL ADMINISTRATIVE CONSULTATIONS COSTS (2013\$)

CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRD PARTY	BIOLOGICAL ASSESSMENT	TOTAL COSTS
ADDITIONAL EFFORT TO ADDRESS ADVERSE MODIFICATION IN A NEW CONSULTATION					
Technical Assistance	\$140	n/a	\$260	n/a	\$410
Informal	\$610	\$780	\$510	\$500	\$2,400
Formal	\$1,400	\$1,600	\$880	\$1,200	\$5,000
Programmatic	\$4,200	\$3,500	n/a	\$1,400	\$9,000
<p>Source: IEC analysis of administrative costs is based on data from the Federal Government Schedule Rates, Office of Personnel Management, 2013, and a review of consultation records from several Service field offices across the country conducted in 2002.</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. Estimates are rounded to two significant digits and may not sum due to rounding. 2. Estimates reflect average hourly time required by staff. 					

Estimation Using Flycatcher Consultation History

In its incremental effects memorandum, the Service provides data on the historical consultation rate for the flycatcher. Because of the overlap in flycatcher and cuckoo habitat, the Service considers this rate a reasonable approximation of the likely future rate for the cuckoo.²¹ The Service notes that 223 consultations for the flycatcher have occurred during the 19 years since the listing of the species. On average, the Service conducted approximately 12 formal consultations per year, with a high of 30

²⁰ Additional information on expenditures associated with the Act was provided by the Corps for this analysis. Because the data are not available on a per-consultation basis, we do not use those values here. However, Appendix B describes the data in more detail for comparison with cost estimates presented in this memorandum.

²¹ U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Yellow-billed Cuckoo (*Coccyzus americanus*). June 6, 2013. (p. 24)

consultations in one year shortly after listing.²² For purposes of this bounding analysis, we use the higher value of 30 formal consultations per year.

To account for geographic differences in the size of flycatcher and cuckoo habitat, we scale this number of consultations based on the number of acres proposed for critical habitat designation for the two species. We use the proposed critical habitat designation for the flycatcher as a proxy for the geographic area occupied by the species that would be required to consult even absent the designation of critical habitat. Approximately 376,095 acres were proposed as flycatcher critical habitat in 2004, compared to the 559,176 acres currently proposed as cuckoo critical habitat designation.^{23,24} Scaling 30 flycatcher consultations per year by the ratio of these acreages, we estimate up to 45 formal consultations per year for the cuckoo.

To develop a cost estimate, we apply the same multipliers described above for informal consultations and technical assistance requests. The results of this analysis suggest that, in a given year, the Service could conduct approximately 490 informal consultations and respond to 130 technical assistance requests. Overall, up to 670 projects may require either consultation or technical assistance annually. Considering adverse modification in these efforts would result in incremental costs of up to \$1.4 million in a given year.

While we cannot, at this time, predict the precise number of anticipated future consultations, we find that the annual number of future formal consultations is likely to be fewer than 100, according to both the project information from Federal agencies and the historical flycatcher consultation rate. The results of both consultation forecast methods are presented in Exhibit 4. As shown in the exhibit, the historical consultation rate for the flycatcher generates lower cost estimates than conservatively assuming that all planned projects undergo consultation in a single year.

²² U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Yellow-billed Cuckoo (*Coccyzus americanus*). June 6, 2013. (p. 24)

²³ U.S. Fish and Wildlife Service. 2004. "Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for Southwestern Willow Flycatcher (*Empidonax Traillii extimus*). 69 FR 60706.

²⁴ We note that in 2011, the Service proposed to revise critical habitat for the flycatcher to include 2,090 stream miles, with the lateral extent including the riparian areas and streams that occur within in the 100-year floodplain or flood-prone areas, totaling nearly 535,000 acres (U.S. Fish and Wildlife Service. 2011. "Endangered and Threatened Wildlife and Plants; Designation of Revised Critical Habitat for Southwestern Willow Flycatcher." 76 FR 50542). Most of these acres are known to be occupied by the flycatcher. Thus, the total habitat reflected in the flycatcher consultation history may be greater than 376,095 acres. In scaling the historical rates of consultation upwards, we may overstate likely consultation activity for the cuckoo.

EXHIBIT 4. FORECAST ANNUAL INCREMENTAL ADMINISTRATIVE COSTS (2013\$)

ANALYTIC METHOD	FORECAST CONSULTATIONS IN A SINGLE YEAR	ANNUAL INCREMENTAL COST	KEY LIMITATIONS
Planned Projects	1,500	\$3,200,000	<ul style="list-style-type: none"> • Conservatively assigns consultations on all known projects to the first year the rule takes effect. • Uses high-end multipliers for informal and technical assistance requests.
Flycatcher Consultation Rate	670	\$1,400,000	<ul style="list-style-type: none"> • Applies same consultation rate per acre of habitat for cuckoo and flycatcher. • Use highest annual number of consultations from flycatcher consultation history. • Use high-end multipliers for informal and technical assistance requests.
<p>Note: Forecast consultations include programmatic, formal, and informal consultations as well as technical assistance requests.</p>			

Evaluation of Corps Permit History

As part of the Service’s outreach to Federal agencies, the Corps provided data on its permitting history for the five years between 2008 and 2012. These data cover the South Pacific Division of the Corps, which encompasses all of the proposed designation except the four units in Idaho.²⁵ Because of the location of cuckoo habitat in riparian areas, Corps permits could be required for many activities occurring in the proposed designation. We therefore evaluate the Corps’ historical permitting rates within the proposed designation for comparison with the consultation forecasts described above.

Using the geographic coordinates provided for each permitted action, we limit our analysis to actions located within one half-mile of critical habitat.²⁶ This assumption results in approximately 1,100 actions over the five-year period, or approximately 210 actions per year.²⁷ Following the designation of critical habitat, these types of actions could result in formal consultation, informal consultation, or technical assistance requests between the Corps and the Service. A key limitation of this analysis includes missing data for some areas proposed as critical habitat that are outside the Corps’ South Pacific Division. Because information on the distribution among formal consultations, informal consultations, and technical assistance requests for these actions is also not available, we are not able to develop a cost estimate. However, the annual permitting rate implied by the Corps data suggests the consultation forecasts presented in Exhibit 4 are reasonable, considering that the Corps is only one likely action agency within the proposed designation.

²⁵ Eakle, Wade. U.S. Army Corps of Engineers. Permit history data provided via personal communication on July 16, 2013.

²⁶ We apply this buffer distance to account for the fact that the database represents projects as a single geographic point rather than a geographic area. To the extent that projects included in the buffer area did not overlap the proposed designation, we may overstate the permitting rate.

²⁷ This estimate may overstate the number of consultations due to the fact that individual projects may be listed multiple times in the database provided by the Corps.

GEOGRAPHIC DISTRIBUTION OF ADMINISTRATIVE COSTS

Using available data on consultation and project frequency, we identify the units likely to incur the largest incremental costs. Because we do not forecast costs associated with project modifications, the magnitude of section 7 costs is tied to the number of projected consultations. Thus, the highest costs are generally anticipated in the largest units or those in more developed areas. Appendix C provides a map highlighting the units identified as having five or more projects in a given year, using data from Federal agencies on planned projects and historical permitting data from the Corps.

SECTION 4. OTHER COSTS OF THE CRITICAL HABITAT RULE

This section discusses the potential for incremental costs to occur outside of the section 7 consultation process. These types of costs include triggering additional requirements or project modifications under state laws or regulations, and perceptual effects on markets. These types of costs may occur even when activities do not have a Federal nexus for consultation.

ADDITIONAL STATE REGULATION

Indirect incremental impacts may occur if the designation of critical habitat increases awareness of the presence of the species or the need for protection of its habitat. As shown in Exhibit 5, the cuckoo is currently afforded conservation status in every state where critical habitat is proposed, except New Mexico. Although this status for the species may not require implementation of conservation efforts sufficient to protect the species and its habitat, these designations demonstrate that state agencies are aware of the presence of the species. Because the Service is not proposing any unoccupied habitat for critical habitat designation, we assume that the designation of critical habitat will not provide new information to states about the need to conserve the species and its habitat. As a result, the designation is not expected to trigger state-level impacts as a result of increased awareness of the species and its habitat in states where the cuckoo is afforded some conservation status.

EXHIBIT 5. STATE-LEVEL CONSERVATION STATUS FOR THE CUCKOO

STATE	PROTECTIVE STATUS
Arizona	Species of Concern
California	Endangered Species
Colorado	Species of Concern
Idaho	Species of Greatest Conservation Need
Nevada	Critically Imperiled
New Mexico	None
Texas	Species of Concern
Utah	Species of Concern
Wyoming	Species of Concern
Source: U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Yellow-billed Cuckoo (<i>Coccyzus americanus</i>). June 6, 2013.	

This conclusion is supported by the results of the economic analysis of critical habitat designation for the flycatcher. In that analysis, incremental impacts associated with triggering additional state or local regulation were forecast only for areas not known to be occupied by the flycatcher, due to the potential for increased awareness in those areas.²⁸ The Service did not receive any public comments suggesting this conclusion was incorrect. In New Mexico, the one state where the species is not afforded conservation status, all proposed critical habitat units for the cuckoo overlap occupied flycatcher habitat.²⁹ As a result, based on the conclusions of the flycatcher analysis, additional state regulation is unlikely to occur in those units.

Additionally, most activities occurring within cuckoo critical habitat could have a nexus for section 7 consultation. For activities not occurring on Federal land, the location of the proposed designation in riparian areas is likely to require a section 404 permit from the Corps. Review of data on Corps permits from 2008 through 2012 indicates that the economic activities of concern for the cuckoo are represented in the Corps permit history.³⁰ Therefore, impacts associated with the designation of critical habitat are most likely to occur within the section 7 consultation process. As a result, we do not forecast incremental impacts associated with triggering additional requirements outside of the Act.

²⁸ Industrial Economics, Incorporated. *Economic Analysis of critical Habitat Designation for the Southwestern Willow Flycatcher: Final Report*. Prepared for the U.S. Fish and Wildlife Service. December 14, 2012. (pp. 164-166)

²⁹ U.S. Fish and Wildlife Service. Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Yellow-billed Cuckoo (*Coccyzus americanus*). June 6, 2013. (pp. 5-6); and GIS analysis of cuckoo and flycatcher critical habitat.

³⁰ Eakle, Wade. U.S. Army Corps of Engineers. Permit history data provided via personal communication on July 16, 2013.

POSSIBLE IMPACTS OF PUBLIC PERCEPTION

Comments received regarding proposed designations of critical habitat in various locations throughout the United States indicate that the public perceives critical habitat designation as potentially resulting in incremental changes to private property values, above and beyond those associated with specific forecast project modifications under section 7 of the Act.³¹ These commenters believe that, all else being equal, a property that is inhabited by a threatened or endangered species, or that lies within a critical habitat designation, will have a lower market value than an identical property that is not inhabited by the species or that lies outside of critical habitat. This lower value results from the perception that critical habitat will preclude, limit, or slow development, or somehow alter the highest and best use of the property. Public attitudes about the limits and costs that the Act may impose can cause real economic effects to the owners of property, regardless of whether such limits are actually imposed. Over time, as public awareness grows of the regulatory burden placed on designated lands, particularly where no Federal nexus compelling section 7 consultation exists, the effect of critical habitat designation on properties may subside.

To evaluate the possible magnitude of such costs, we conduct a bounding analysis. We estimate per acre land values for undeveloped properties within the designation that may be subject to development pressure in the foreseeable future. Public perception may diminish land values by some percent of these total values. Data limitations prevent us from estimating the size of this percent reduction. Assuming the entire value of the parcel is lost would likely overstate impacts. In addition, these properties may be affected in the baseline as a result of the presence of the listed cuckoo, reducing the incremental portion of the impact attributable to critical habitat. Thus, the total value of the properties represents the upper bound on possible costs rather than a best estimate of likely costs.

To identify acres of proposed critical habitat that may be subject to development pressure in the foreseeable future, we consider the physical characteristics of proposed critical habitat. The cuckoo uses riparian areas including broad floodplains along rivers and streams.³² Generally, the Federal Emergency Management Agency (FEMA) regulates real estate development in floodplains, and additional restrictions may be imposed by individual, local jurisdictions. These regulations may require flood control facilities or other special engineering, often making development in floodways impractical and prohibitively expensive. Due to these restrictions and challenges, land areas within critical habitat that can be feasibly developed are likely limited to areas where real estate demand is high enough to justify the costs associated with undertaking projects in the floodplain. We identify approximately 1,432 acres of

³¹ See, for example, public comments on the potential impact of designating private lands as critical habitat for the Northern spotted owl (as summarized in Industrial Economics, Incorporated. *Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl: Final Report*. Prepared for the U.S. Fish and Wildlife Service. November 20, 2012. (p. 5-21) and the cactus ferruginous pygmy owl (as summarized in Industrial Economics, Incorporated. *Economic Analysis of Critical Habitat Designation for the Cactus Ferruginous Pygmy-Owl*. Prepared for the U.S. Fish and Wildlife Service. June 1999. p. 44)).

³² “The moist conditions that support riparian plant communities that provide western yellow-billed cuckoo habitat typically exist in lower-elevation broad floodplains, as well as where rivers and streams enter impoundments. The species does not use narrow or steep-walled canyons.” (U.S. Fish and Wildlife Service. *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-billed Cuckoo; Draft Proposed Rule*. July 8, 2013. p. 18.)

private, developable land in 13 counties overlapping proposed critical habitat that may be experience diminished values as a result of public perception of the effect of the regulation.

Using data on recent sales transactions for vacant and agricultural land located near proposed critical habitat in the relevant counties, we conclude that the total value of these 1,432 acres is unlikely to exceed \$100 million. Because costs resulting from public perception of the effect of critical habitat designation would likely represent some fraction of this total value, such perceptual effects are unlikely to exceed a threshold of \$100 million in a given year.³³

SECTION 5. SECTION 7 AND OTHER ECONOMIC BENEFITS

The primary intended benefit of critical habitat is to support the conservation of threatened and endangered species, such as the cuckoo. Quantification and monetization of species conservation benefits requires information on: (1) the incremental change in the probability of cuckoo conservation that is expected to result from the designation; and (2) the public's willingness to pay for such beneficial changes.³⁴

As described in this memorandum, additional efforts to conserve the cuckoo are not predicted. If, however, perceptual effects cause changes in future land use, benefits to the species and environmental quality may occur. Due to existing data limitations, we are unable to assess the possible magnitude of such benefits.³⁵

SECTION 6. SUMMARY

In conclusion, the section 7-related costs of designating critical habitat for the cuckoo are likely to be limited to additional administrative effort to consider adverse modification in consultation. This finding is based on several factors, including:

1. Except in limited instances, which the Service cannot predict at this time, project modifications requested to avoid adverse modification are likely to be the same as those needed to avoid jeopardy in occupied habitat;
2. All proposed units are considered occupied, providing significant baseline protection; and
3. The proposed designation also receives baseline protection from the presence of additional listed species with similar habitat needs, such as the flycatcher

³³ For additional detail describing our identification of acres most likely to be subject to development pressure in the foreseeable future and the value of these acres, see Industrial Economics, Incorporated. Memorandum to the U.S. Fish and Wildlife Service on "Supplemental Information on Land Values - Critical Habitat Designation for the Western Distinct Population Segment of the Yellow-billed Cuckoo." October 11, 2013.

³⁴ The actions undertaken to achieve conservation can also generate other types of environmental improvements. Estimation of the value of these additional benefits requires quantification of the physical changes and information about the public's willingness to pay for such improvements.

³⁵ For a detailed discussion of these data limitations, see Flight, M. and R. Unsworth, Industrial Economics, Incorporated. 2011. *Quantifying Benefits of Critical Habitat Designation for Listed Species*. Memorandum to Douglas Krofta, U.S. Fish and Wildlife Service.

and vireo, and the designation of critical habitat for these species in 43 of the 80 proposed units.

The incremental administrative burden resulting from the designation will not reach \$100 million in a given year based on the number of anticipated consultations and per-consultation costs. Furthermore, based on state-level conservation status for the cuckoo throughout most of the proposed designation, and previous analysis conducted for the designation of flycatcher critical habitat, the designation of cuckoo critical habitat is unlikely to trigger additional requirements under state or local regulations. Finally, costs resulting from public perception of the effect of critical habitat will not reach \$100 million in a given year, based on the value of developable land in the vicinity of the proposed designation.

Additional efforts to conserve the cuckoo are not predicted. If, however, perceptual effects cause changes in future land use, benefits to the species and environmental quality may occur. Due to existing data limitations, we are unable to assess the possible magnitude of such benefits.

In summary, critical habitat for the cuckoo will not generate costs exceeding \$100 million in a single year. The magnitude of benefits is highly uncertain, and quantification would require primary research and the generation of substantial amounts of new data, which is beyond the scope of this memorandum and Executive Order 12866.³⁶

³⁶ Executive Order 12866 directs agencies to base regulatory decisions on “the best reasonably obtainable scientific, technical, economic, and other information concerning the need for, and consequences of, the intended regulation” (58 FR 51736). For a detailed discussion of data limitations associated with the estimation of critical habitat benefits, see Flight, M. and R. Unsworth, Industrial Economics, Incorporated. 2011. *Quantifying Benefits of Critical Habitat Designation for Listed Species*. Memorandum to Douglas Krofta, U.S. Fish and Wildlife Service.

APPENDIX A | PLANNED PROJECTS BY CRITICAL HABITAT UNIT

EXHIBIT A-1. PLANNED PROJECTS BY CRITICAL HABITAT UNIT

UNIT NUMBER	UNIT NAME	PROJECT DESCRIPTION	ACTION AGENCY (IF KNOWN) ¹
Unit 1	CA-1 Eel River	Transwest Express Transmission Project	Corps
Unit 2	CA-2 Sacramento River	M&T Ranch Flood Project	
		Kopta Slough Flood Project	
		Sacramento River Bank Protection Project ²	
		Upper/Mid Sacramento River Regional Flood Management Project	
		South Fork Channel Maintenance Project	
		Operations and maintenance at the Sacramento National Wildlife Refuge Complex	Service
		Comprehensive Conservation Plans at the Sacramento National Wildlife Refuge Complex	Service
Unit 3	CA-3 Sutter Bypass	Integrated Pest Management Plan/pesticide use/mosquito control at the Sacramento National Wildlife Refuge Complex	Service
		Channel and Levee Maintenance	
		Sacramento Basin Feasibility Study	
		Channel Widening	
Unit 4	CA-4 South Fork Kern River Valley	Sacramento River Bank Protection ²	
		Lake Isabella Dam Safety Project	
Unit 6	CA-6 Prado Flood Control Basin	South Fork Channel Maintenance Project	
		Sediment removal demonstration project	
		Orange County Water District water diversion project	
		WW067 Water treatment plant selling treated wastewater	
		Inland Empire Utilities Agency groundwater monitoring	
Unit 7	CA/AZ-1 Colorado River 1	Mill Creek Wetlands water diversion	
		Colorado Big-Thompson Project ²	USBR
		Windy Gap Reservoir ²	
		Windy Gap Firming Project ²	
		Shoshone Power Plant Diversion ²	
		Grand Valley Project ²	USBR
		Grand Valley Canal ²	
		Orchard Mesa Canal ²	
		Cibola National Wildlife Refuge Operations	Service
		Vegetation removal and off-site revegetation	BLM, CBP
		North Gila to Imperial Valley transmission line	BLM
Unit 8	CA/AZ-2 Colorado River 2	Lower Colorado River Multi-Species Conservation Program ²	USBR
		Colorado Big-Thompson Project ²	USBR
		Windy Gap Reservoir ²	
		Windy Gap Firming Project ²	
		Shoshone Power Plant Diversion ²	

UNIT NUMBER	UNIT NAME	PROJECT DESCRIPTION	ACTION AGENCY (IF KNOWN) ¹
		Grand Valley Project ²	USBR
		Grand Valley Canal ²	
		Orchard Mesa Canal ²	
		Lower Colorado River Multi-Species Conservation Program ²	USBR
Unit 9	AZ-1 Bill Williams River	Lower Colorado River Multi-Species Conservation Program ²	USBR
Unit 10	AZ-2 Alamo Lake	Lower Colorado River Multi-Species Conservation Program ²	USBR
Unit 11	AZ-3 Lake Mead	Lower Colorado River Multi-Species Conservation Program ²	USBR
Unit 12	AZ-4 Lower Gila River	Lower Colorado River Multi-Species Conservation Program ²	USBR
Unit 15	AZ-7 Gila and Salt Rivers	Vegetation removal and restoration under the Water Resource Development Act	Corps
		Tres Rios Safe Harbor Agreement	Service
Unit 17	AZ-9 Upper Verde Creek	Non-native plant removal and revegetation with natives	Service, USFS, NPS
Unit 19	AZ-11 Beaver Creek and tributaries	Non-native plant removal and revegetation with natives	Service, USFS, NPS
Unit 20	AZ-12 Lower Verde River and West Clear Creek	Non-native plant removal and revegetation with natives	Service, USFS, NPS
Unit 21	AZ-13 Horseshoe Dam	Horseshoe and Bartlett Habitat Conservation Plan	Service, USFS, USBR
Unit 22	AZ-14 Tonto Creek	Roosevelt Habitat Conservation Plan ²	Service, USFS, USBR
		New bridge construction	USFS
Unit 23	AZ-15 Pinal Creek	Freeport McMoRan - Miami mine	
		Freeport McMoRan - Pinal Creek Management Plan	
Unit 25	AZ-17 San Francisco River	Freeport McMoRan - Morenci Mine ²	BLM, USFS
Unit 26	AZ-18 Upper San Pedro River	Ft. Huachuca operations, including mesquite removal	DOD, BLM
		Border patrol operations	CBP
		Sunzia transmission line	BLM
		Southline transmission line	
Unit 28	AZ-20 Lower San Pedro and Gila Rivers	Roosevelt Habitat Conservation Plan ²	Service, USFS, USBR
		Arizona Game and Fish Dept conservation properties management plan	Service
		Asarco Ray Mine	BLM, USBR
Unit 33	AZ-25 Upper Cienega Creek	Augusta Resource Corporation - Rosemont Copper Mine ²	USFS
Unit 34	AZ-26 Santa Cruz River	Border patrol operations	CBP
Unit 35	AZ-27 Black Draw	Border patrol operations	CBP
Unit 36	AZ-28 Gila River 1	Gila River Safe Harbor Agreement ²	Service
Unit 37	AZ-29 Salt River	Roosevelt Habitat Conservation Plan ²	Service, USFS, USBR
Unit 38	AZ-30 Lower Cienega Creek	Augusta Resource Corporation - Rosemont Copper Mine ²	USFS

UNIT NUMBER	UNIT NAME	PROJECT DESCRIPTION	ACTION AGENCY (IF KNOWN) ¹
Unit 43	AZ-35 Gila River 3	Freeport McMoRan - Morenci Mine ²	
		Gila River Safe Harbor Agreement ²	Service
Unit 46	NM-1 San Juan River	BHP Pinabete Mine mitigation	Corps
		Navajo Gallup Water Supply intake	Corps
Unit 48	NM-4 Gila River 2	Arizona Water Acts Settlement	
		8 Bridge Replacement Biological Assessment	USFS
		Replacement of Whitewater Creek Bridge	NMDOT
		Trail over Magnus Creek	BLM, USFS
Unit 50	NM-6 Upper Rio Grande 1	Continental Reservoir ²	
		Rio Grande Reservoir ²	
		Santa Maria Reservoir ²	
		Platoro Reservoir ²	
		Pojaque Basin USBR	Corps
Unit 51	NM-7 Middle Rio Grande 2	Continental Reservoir ²	
		Rio Grande Reservoir ²	
		Santa Maria Reservoir ²	
		Platoro Reservoir ²	
		Rio Grande Low Flow Conveyance Channel	Corps
Unit 52	NM-8 Middle Rio Grande 1	Continental Reservoir ²	
		Rio Grande Reservoir ²	
		Santa Maria Reservoir ²	
		Platoro Reservoir ²	
		Mid Rio Grande and South of Elephant Butte Water Operations	USBR, Corps
		San Acacia Levee Construction	Corps
		Pueblo of Isleta Island Removal	
		Santa Ana Pueblo Habitat Restoration	
		Santo Domingo Habitat Restoration	
Rio Grande Low Flow Conveyance Channel	Corps		
Unit 54	CO-1 Yampa River	Moffat Collection System	
		Moffat Collection System Expansion Project	
		Stagecoach Reservoir	
		Yamcolo Reservoir	
		Catamount Lake	
		Steamboat Lake (Elk Reservoir)	
		Elkhead Reservoir	
		Trout Creek Reservoir	
Unit 55	CO-2 Colorado River 3	Frying Pan/Arkansas Water Diversion Project (Roaring Fork River)	
		Independent Pass Water Diversion Project (Roaring Fork River)	
		Homestake Project (Eagle River)	
		Colorado Big-Thompson Project ²	USBR

UNIT NUMBER	UNIT NAME	PROJECT DESCRIPTION	ACTION AGENCY (IF KNOWN) ¹
		Windy Gap Reservoir ²	
		Windy Gap Firming Project ²	
		Shoshone Power Plant Diversion ²	
		Grand Valley Project ²	USBR
		Grand Valley Canal ²	
		Orchard Mesa Canal ²	
Unit 58	CO-5 Gunnison River	Curecanti Project	USBR
		Redlands Power Canal	USBR
		Taylor Peak Reservoir (Taylor River)	
		Ridgeway Reservoir (Uncompahgre River)	
		Recreation operations	BLM
Unit 59	CO-6 Rio Grande 3	Continental Reservoir ²	
		Rio Grande Reservoir ²	
		Santa Maria Reservoir ²	
		Platoro Reservoir ²	
		San Luis Valley Field Office operations ²	BLM
Unit 60	CO-6 Rio Grande 3	San Luis Valley Field Office operations ²	BLM
Unit 61	UT-1 Green River 1	Lake Powell Pipeline ²	
		Blue Castle Nuclear Plant Project - Green River ²	
		Oil Shale and Tar Sands Development Project ²	
		Oil Shale Demonstration Project	
Unit 62	UT-2 Pigeon Water Creek and Lake Fork River	Lake Powell Pipeline ²	
		Blue Castle Nuclear Plant Project - Green River ²	
		Oil Shale and Tar Sands Development Project ²	
Unit 63	UT-3 Colorado River 4	Lake Powell Pipeline ²	
		Colorado Big-Thompson Project ²	USBR
		Windy Gap Reservoir ²	
		Windy Gap Firming Project ²	
		Shoshone Power Plant Diversion ²	
		Grand Valley Project ²	USBR
		Grand Valley Canal ²	
		Orchard Mesa Canal ²	
Unit 64	UT-4 Dolores River	Lake Powell Pipeline ²	
Unit 65	UT-5 Green River 2	Lake Powell Pipeline ²	
		Blue Castle Nuclear Plant Project - Green River ²	
		Oil Shale and Tar Sands Development Project ²	
Unit 66	UT-6 San Juan River 2	Lake Powell Pipeline ²	
Unit 67	UT-7 San Juan River 3	Lake Powell Pipeline ²	
Unit 68	UT-8 Virgin River 2	Anderson Junction Reservoir	
Unit 69	ID-1 Snake River 1	BLM Programmatic Consultation (recreation, livestock grazing, weed control, realty activities) ²	BLM
		Gateway West Transmission Line ²	

UNIT NUMBER	UNIT NAME	PROJECT DESCRIPTION	ACTION AGENCY (IF KNOWN) ¹
Unit 70	ID-2 Snake River 2	BLM Programmatic Consultation (recreation, livestock grazing, weed control, realty activities) ²	BLM
Unit 72	ID-4 Henry's Fork and Teton Rivers	BLM Programmatic Consultation (recreation, livestock grazing, weed control, realty activities) ²	BLM
Unit 73	NV-1 Upper Muddy River	Previously granted groundwater permits (totaling 5,813 afy)	
Unit 74	NV-3 Lower Muddy River	Kane Springs groundwater development project	
		Coyote Springs Residential Development	
		Southern Nevada Water Authority Coyote Springs Pipeline	
		Clark, Lincoln, White Pine Counties Water Development Project	
		Development of additional permitted groundwater rights	
Unit 75	NV-4 Carson River	Lahontan State Recreation Area and Lahontan Dam Operations	USBR
Unit 76	NV/AZ-1 Virgin River 1	Lincoln County Land Act Groundwater Development Project	
		Toquop Power Plant	
		Virgin River HCP	
Unit 77	WY-1 Green River 3	Gateway West Transmission Line	
Unit 78	WY/UT-1 Henry's Fork Green River	NRCS Salinity Projects	NRCS
Unit 79	TX-1 Arroyo Caballo / Rio Grande	Continental Reservoir ²	
		Rio Grande Reservoir ²	
		Santa Maria Reservoir ²	
		Platoro Reservoir ²	
Unit 80	TX-2 Terlingua Creek / Rio Grande	Continental Reservoir ²	
		Rio Grande Reservoir ²	
		Santa Maria Reservoir ²	
		Platoro Reservoir ²	

Notes:

- Information on the action agency for many of the projects was not available. For projects where an action agency is not listed, information was provided by the Service.
- Some projects may apply to multiple units.
- No projects were identified for units not listed in this table.

Acronyms:

BLM: Bureau of Land Management; CBP: Customs and Border Protection; Corps: U.S. Army Corps of Engineers; DOD: Department of Defense; NMDOT: New Mexico Department of Transportation; NRCS: Natural Resources Conservation Service; Service: U.S. Fish and Wildlife Service; USBR: U.S. Bureau of Reclamation; USFS: U.S. Forest Service

APPENDIX B | EVALUATION OF CORPS COST DATA

The Corps provided detailed information on its historical expenditures associated with the Act for this analysis. Because the data are not available on a per-consultation basis, we are not able to use the values to directly estimate the likely magnitude of costs of the proposed rulemaking. However, this appendix summarizes the data and presents a comparison to the results of our analysis.

As part of its compliance with the Act, the Corps closely tracks expenditures related to the Act by species, office, and expenditure type. The data provided by the South Pacific Division of the Corps cover four district offices: Albuquerque, San Francisco, Los Angeles, and Sacramento. The South Pacific Division encompasses nearly all of the proposed designation, except for the four units in Idaho.

Because we do not forecast incremental costs associated with project modifications (see Section 3 of this memorandum), we are most interested in the magnitude of administrative expenditures per year. The Corps was able to sort expenditure data for fiscal year 2012 into several broad categories.³⁷ These categories include Effects Determination, ESA Protection and Conservation Measures, Equipment Costs, and Other. In general, the Effects Determination category encompasses costs associated with section 7 consultations and other administrative effort.³⁸ The Effects Determination category is organized into six types of costs: Coordination and Determination, Site Visits and Inspections, Litigation and Office of Counsel Review, Funding Transfers to Other Agencies, Funding Transfers for Cooperative Studies or Research, and In-house Research. The Corps tracks both in-house and contractor costs for each category and type of expenditure.³⁹

For fiscal year 2012, the four districts of the South Pacific Division spent approximately \$440,000 on Effects Determination related to the southwestern willow flycatcher. We expect that these costs will be similar to future expenditures for the cuckoo based on similarities between the riparian bird species and their habitats. Exhibit B-1 shows the value of 2012 expenditures for the flycatcher by office. In section 3 of this memorandum, we scale flycatcher administrative consultation costs by the relative size of flycatcher and cuckoo habitat. Applying the same scaling factor suggests similar Corps efforts for the cuckoo could total \$660,000 in a single year.

³⁷ U.S. Army Corps of Engineers. Threatened and Endangered Species Expenditures Reporting - Costs Template. FY12 Detailed Report - By Expenditure & Species. Data provided by Wade Eakle on August 2, 2013.

³⁸ U.S. Army Corps of Engineers. User Guide to the Threatened and Endangered Species Costs Template - Fiscal Year 2012 Reporting. November 2012. Provided via personal communication with Wade Eakle on August 2, 2013; and Eakle, Wade. U.S. Army Corps of Engineers. Personal communication on August 2, 2013.

³⁹ U.S. Army Corps of Engineers. Threatened and Endangered Species Expenditures Reporting - Costs Template. FY12 Detailed Report - By Expenditure & Species. Data provided by Wade Eakle on August 2, 2013.

EXHIBIT B-1. 2012 EXPENDITURES BY THE SOUTH PACIFIC DIVISION OF THE CORPS FOR THE FLYCATCHER

DISTRICT	EXPENDITURES
Albuquerque	\$390,000
Los Angeles	\$38,000
Sacramento	\$18,000
San Francisco	\$440
Total	\$440,000

One key limitation of the Corps data is the inability to assess what portion of these expenditures were triggered by the listing of the species compared to the designation of critical habitat. As a result, we are unable to use these data to confirm the reasonableness of our per-consultation administrative costs. However, scaling the Corps' total administrative expenditures for the flycatcher in 2012 to the acreage of proposed cuckoo critical habitat results in costs that are approximately 25 to 46 percent of the incremental costs estimated in this memorandum, depending on the cuckoo consultation forecast used. The Corps is only one of multiple Federal agencies that will be required to consult with the Service regarding the cuckoo and its habitat; therefore, we expect Corps expenditures to be lower than the total estimated in this memorandum. However, Corps expenditure data also include baseline costs and therefore likely overstate the incremental administrative costs of critical habitat designation. Evaluation of the Corps data suggests that our estimate of likely administrative costs is reasonable.

APPENDIX C | GEOGRAPHIC DISTRIBUTION OF COSTS

EXHIBIT C-1. PROPOSED CRITICAL HABITAT UNITS WITH HIGHEST LEVELS OF FORECAST CONSULTATION ACTIVITY

