Draft Environmental Impact Statement

Regulations Governing Take of Migratory Birds

Prepared by

U.S. Department of the Interior

Fish and Wildlife Service

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Estimated Lead Agency Total Costs Associated with Developing and Producing this EIS:

$99,000

May 2020

The U.S. Fish and Wildlife Service (Service) and its mission

"Our mission is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."

The Service was established in the Department of the Interior (DOI) in 1940 through the consolidation of bureaus then operating in several federal departments. The primary precursor agency was the Bureau of Biological Survey in the U.S. Department of Agriculture (USDA). Today, the Service enforces federal wildlife laws, manages migratory bird populations, restores nationally significant fisheries, conserves and restores vital wildlife habitat, protects and supports recovery of endangered species, and helps other agencies and governments with conservation efforts. In addition, it administers the distribution of over one billion dollars of excise taxes paid by the hunting, shooting, boating, and angling industries. These funds are distributed to states for fish and wildlife restoration, boating access, hunter education, and related programs.

Summary

The Migratory Bird Treaty Act (MBTA) was enacted in 1918 to help fulfill the United States' obligations in the 1916 "Convention between the United States and Great Britain for the protection of Migratory Birds." The goal of the MBTA was to stop the unregulated killing of migratory birds. Under the MBTA, "taking" of listed migratory birds is subject to authorization from the U.S. Fish and Wildlife Service (Service). "Take" is defined in the Service's general wildlife regulations as "to pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR 10.12).

Background

For most of its history, the MBTA has generally been interpreted through the lens of strict liability. The strict liability standard makes any unauthorized taking of migratory birds an illegal action, regardless of intent. Historically, the judicial system has interpreted the MBTA inconsistently, both by creating different exceptions to strict liability and in its application to incidental take (take of migratory birds that results from an activity but is not the purpose of that activity), which has created a patchwork system of enforcement across the country and creating legal uncertainty for the American people.

On December 22, 2017, the Principal Deputy Solicitor of the Department of the Interior, exercising the authority of the Solicitor pursuant to Secretary's Order 3345, issued a legal opinion, M-Opinion 37050, "The Migratory Bird Treaty Act Does Not Prohibit Incidental Take." M-Opinion 37050 concluded that the MBTA's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to actions intentionally or purposefully "taking" migratory birds, their nests or their eggs. The Opinion is based upon a thorough analysis of the statutory text, legislative history, and numerous court decisions. The purpose of M-Opinion 37050 is to provide the Solicitor's view of the correct legal interpretation of the MBTA and thus provide legal certainty on the application of the MBTA to incidental take.

The Service prepared this draft Environmental Impact Statement (EIS) following the Council of Environmental Quality regulations, which implement the National Environmental Policy Act (NEPA). We have identified a purpose and need for this action, provided reasonable alternatives, defined the affected environment, and analyzed the consequences of each alternative on the human environment.

Purpose and Need for Action

The Service proposes to develop a regulation in 50 CFR part 10 that defines the scope of the MBTA as it relates to incidental take. This regulation would provide legal certainty for the public regarding what actions are prohibited under the MBTA. The purpose of this action is to provide an official regulatory definition of the scope of the statute as it relates to incidental take of migratory birds. The Service believes this action is necessary to improve consistency in enforcement of the MBTA's prohibitions across the country and inform the public, businesses, government agencies, and other entities what is and is not prohibited under the MBTA.

Public Scoping

On February 3, 2020, the Service published a Notice of Intent (NOI) to prepare a draft environmental review pursuant to the NEPA. The Service used this NOI to notify federal and state agencies, tribes, and the public of our intentions to evaluate the potential environmental impacts of the proposed action. Concurrently, the Service also published a Proposed Rule using the preferred alternative from this draft EIS. We invited input from other federal and state agencies, tribes, nongovernmental organizations, and members of the public on the scope of the proposed environmental review including any pertinent issues we should address, and alternatives to our proposed approach for authorizing incidental take as well as input on the proposed rule to define the scope of the MBTA. The public comment period on both documents was open until March 19, 2020.

Five public scoping webinars were convened between March 3 and March 16, 2020. Additionally, one webinar was conducted strictly for members of federally recognized tribes. During these webinars, Service biologists gave presentations that were streamed live and recorded. These presentations described the process for creating the draft EIS that included the purpose and need for the action, most of the alternatives being initially considered, and reiterated the need for specific information for the analysis of the alternatives. The participants were given opportunities ask questions and seek clarity on the process.

During the public comment period on the Proposed Rule and the NOI, we received a total of 8,398 comments. Many comments included additional attachments (e.g., scanned letters, photographs, and supporting documents). These comments represented the views of multiple state and local government agencies, private industries, non-governmental organizations, and private citizens. In addition to the individual comments received, ten organizations submitted attachments representing individuals' comments, form letters, and signatories to petition-like letters representing almost 180,000 signers.

Alternatives

The Service proposes a no action and two action alternatives to be analyzed in this draft EIS. We also considered two alternatives that we have determined do not meet the purpose and need, which will not be carried forward for further review.

Action Alternatives

The No Action Alternative, Action Alternatives A and B, and two alternatives that were considered but not carried forward are described below.

No Action Alternative

Under the No Action Alternative, the Service would continue to implement the MBTA consistent with the direction given in M-Opinion 37050, which defines the scope of the MBTA to exclude incidental take. In accordance with M-Opinion 37050, the Service's enforcement of the MBTA is currently focused on purposeful actions directed at migratory birds. A legal opinion of the Department of the Interior does not provide the public or other federal departments and agencies

with the certainty of a codified regulation. Under the No Action Alternative, the Service would still enforce the MBTA in cases of purposeful take for actions directed at migratory birds and provide technical assistance to industry, the public, and partners seeking to reduce impacts to migratory birds voluntarily or to comply with other federal, state, local, or tribal laws and regulations.

Alternative A - Promulgate regulations that define the scope of the MBTA to exclude incidental take

Under Alternative A, the Service would promulgate a regulation that defines the scope of the MBTA take prohibitions to include only actions directed at migratory birds. This regulatory change is not expected to change current implementation or enforcement of the MBTA (parties are not currently subject to enforcement for the incidental take of birds).

Promulgating this regulation would be consistent with the M-Opinion's conclusion that the MBTA's prohibitions for misdemeanor violations, as reflected in the Act's legislative history, which are limited to intentional actions directed at migratory birds, their nests, or their eggs. This is the Service's preferred alternative because it complies with the Solicitor's legal analysis of the scope of the MBTA and reduces the regulatory burden on the public and the enforcement burden on the Service's law enforcement officers.

Alternative B: Withdraw M-Opinion 37050 and promulgate regulations that define the scope of the MBTA to include incidental take

Under this alternative, M-Opinion 37050 would be withdrawn and the Service would promulgate a regulation to implement the MBTA as it applies to incidental take under the prior interpretation outlined in M-Opinion 37041. By reverting to the prior interpretation, the Service would view the incidental take of migratory birds as a violation of the MBTA.

The Service's Office of Law Enforcement would investigate incidental take at a particular site or project if they receive a complaint and/or have reason to believe that unlawful take occurred. The Service would consider good faith attempts to meet voluntary standards when making enforcement decisions under the MBTA to provide an incentive to implement those voluntary measures. There would be no initial regulatory framework to authorize incidental take under this alternative; the Service would simply rely on law enforcement discretion in determining when to pursue alleged incidental take violations. There would be a greater burden on regulated entities and the Service's law enforcement officers and uncertainty would remain regarding whether a specific activity that incidentally takes birds could be subject to enforcement, but there would also be greater legal certainty achieved by informing the public, businesses, government agencies, and other entities what is and is not prohibited under the MBTA in a regulation. The Service would have the option of developing a system of regulatory authorization in the future.

Alternatives Considered but Not Carried Forward for Further Review

We considered the two alternatives below but determined not to carry them forward for further analysis because they do not meet the purpose and need for the proposed action.

Develop a general-permit framework to regulate incidental take

We considered an alternative under which M-Opinion 37050 would be withdrawn, the Service promulgates a regulation defining what constitutes incidental take of migratory birds, and subsequently establishes a regulatory general-permit framework. Under this framework, the Service could create general permits that provide legal coverage for a variety of activities that commonly incidentally take migratory birds. This general-permit system could take many forms, but one possibility would be to use a risk-management approach that identifies specific hazards associated with particular activities and establishes best practices as permit conditions to reduce or avoid those hazards. A general-permit framework could require a nominal application fee and potentially an in-lieu fee to compensate for any remaining take after implementation of avoidance and minimization measures. Any incidental take occurring under a general permit would be authorized and not subject to enforcement. The Service would continue to use enforcement discretion for activities not covered by a general permit and large-scale, incidental-take incidents, such as oil spills.

The Service eliminated this alternative from further review at this time because developing a general-permit system would be a complex process and better suited to analysis in a separate subsequent proposal if we were to select Alternative B. This alternative goes beyond the current purpose and need of simply providing regulatory certainty regarding the Service's interpretation of the MBTA as it relates to incidental take. For these reasons, it would be premature to discuss this alternative in detail under this proposed action. Thoroughly evaluating this alternative would instead require a separate detailed process to adequately define the parameters of such a permit system. Developing a general permit system would likely require the following at a minimum: determining reasonable and adequate conservation measures for different industries and activities that effectively reduce the impacts of the actions of private parties and government entities on over 1,000 bird species, whether a separate rulemaking would be required for each individual general permit, and how to authorize actions that do not fit within a general-permit category.

Develop an enforcement system to address gross negligence

We also considered an alternative where M-Opinion 37050 would be withdrawn and the Service would promulgate a regulation defining what constitutes incidental take of migratory birds and develop an enforcement policy requiring gross negligence to establish a misdemeanor violation of the MBTA. Gross negligence would be defined as carelessness or reckless disregard of the consequences of an action, especially when a reasonable person should have anticipated and guarded against it. Establishing the *mens rea* (mental state requirement) of gross negligence for a violation would allow the Service to focus its law enforcement resources on activities known to incidentally take birds, for which reasonable best practices that have been developed to avoid or minimize the take are not being implemented.

The Service eliminated this alternative from further review because it rests on an uncertain legal premise, potentially reducing legal certainty and thereby failing to meet the purpose and need of this proposal. This alternative would have established a minimum *mens rea* of gross negligence before the Service could enforce the statute's misdemeanor provision, despite significant

inconsistent case law. Most federal courts have concluded this provision has no minimum *mens rea* requirement and should, therefore, be treated as a strict liability violation—albeit with significant caveats in most cases. Any improvement in legal certainty under this alternative gained by codifying the Service's interpretation of the scope of the MBTA as it relates to incidental take is thus likely to be tempered by the potential conflict with the views of most federal courts.

Affected Environment

The affected environment, or existing condition, provides an environmental baseline for the analysis of alternatives. The geographic scope applicable to all alternatives in this draft EIS is the entire United States and its territories and possessions. These resources are located on the North American continent and in the Atlantic and Pacific Oceans. The following resources are included in the analysis:

- Migratory Bird populations; including hazards affecting birds, the management of birds, and authorized intentional take
- Best practices to protect migratory birds
- Ecosystem services and socioeconomic effects from migratory birds
- Other biological resources affected, including vegetation and wildlife
- Affected cultural and tribal resources; and
- Environmental justice.

What Happens Next?

The draft EIS will be available for public review for a minimum of 45 days. The alternatives, the impact analysis, or other features may be changed as a result of the comments received during the review. After the draft document has been revised, we will draft a final EIS, which will identify the preferred alternative and any environmentally preferred alternatives, if appropriate. The Service will submit the final EIS to the U.S. Environmental Protection Agency ("EPA"), which will publish a Notice of Availability for the final EIS in the Federal Register. No sooner than 30 days after publication of the final EIS, the Service will document its final determination in a record of decision that we will publish in the Federal Register.

Table S1. Summary of Effects of the Alternatives.

This table presents a comparative assessment of the individual impacts of the alternatives to this proposed action. The three alternatives, including no action, are predicted to have incremental effects on current environmental conditions. The table compares the relative magnitude of impact for each alternative on the affected environment where possible, allowing a direct comparison between alternatives for each impact.

Effect or Impact	No Action	A: Proposed Rule to codify M-Opinion 37050	B: Withdraw M-37050 and promulgate regulations to codify prior approach
Improve Legal Certainty	No. The M-Opinion is only binding on DOI and does not have the same legal effects as agency policies, guidance, and regulations, leaving uncertainty for regulated entities.	Yes. Creates a regulatory clarification of MBTA implementation.	Yes, but less than Alternative A. Creates a regulatory clarification of the scope of the MBTA, but it still leaves entities with some uncertainty over enforcement discretion. Removes uncertainty regarding legal effect on non-DOI regulatory agencies.
Implementation of Best Practices and Industry Standards	Potential decrease over time. Some entities may continue to implement due to other federal, state, local regulations, legal uncertainty, industry best practices, or public concern. As entities become more confident of the permanence of M-37050, there would likely be a reduction in the implementation of best practices due to increased legal uncertainty.	Likely decrease. Some entities would likely reduce implementation with legal certainty of no enforcement. Some may continue implementation because they are industry best practices, are compelled by other federal, state, local regulations, or due to public concern	Likely increase. All entities are subject to enforcement of incidental take. The threat of enforcement would likely incentivize more entities to implement best practices based on past history. However, the means to avoid prosecution would be unclear in some circumstances.
Effects on Migratory Birds	Likely Negative. Over time as entities become more confident of the continued implementation of M-37050, there would likely be a reduction in the number of best practices implemented.	Likely negative. As the legal certainty increases, fewer entities would likely implement best practices compared to the No Action Alternative, resulting in increased bird mortality (although this effect is reduced where best practices are required by other State and federal laws to protect migratory birds).	Likely positive. More entities would likely implement best practices to avoid the threat of enforcement. Therefore, there is likely to be a decrease in bird mortality compared to the No Action alternative. Likely increase in fines and other adjudications used to benefit migratory birds as a result of enforcement.

Effects on Other Biological Resources	Likely negative. Many best practices provide benefits to taxa other than birds. Anticipated decrease in implementation of best practices, would likely result in negative effects.	Likely negative. Many best practices provide benefits to taxa other than birds. Anticipated decrease in implementation of best practices, would likely result in greater negative effects than the No Action Alternative.	Likely positive. Many best practices provide benefits to taxa other than birds. Anticipated increase in implementation of best practices would likely result in positive effects on other taxa. Habitat protection and restoration from use of fines would likely benefit vegetation and wildlife.
Effects on Cultural Resources	Likely negative. Any increase in the incidental take of migratory birds and associated impacts with other biological resources could impact species that are culturally important to native peoples.	Likely negative. Any increase in the incidental take of migratory birds and associated impacts with other biological resources could impact species that are culturally important to native peoples.	Likely positive. An increase in implementation of best practices would likely benefit both birds and other biological resources that are culturally important to native peoples.
Effects on Ecosystem Services	Likely reduction in ecosystem services provided by birds due to potential increase in take from reduced implementation of best practices.	Likely reduction in ecosystem services provided by birds due to potential increase in take from reduced implementation of best practices.	Likely increase in ecosystem services provided by birds as take is potentially reduced by greater implementation of best practices. Additional ecosystem service benefits from use of fines.
Economic Effects	No change likely in legal and financing costs from current implementation under M-Opinion 37050. Likely decrease in the costs of implementing best practices over time as entities become more confident in the continued implementation of M-37050. May decrease revenue for businesses directly dependent on birds (hunting, bird watching, guides, and ecotourism). May increase costs for businesses dependent on ecosystem services provided by birds (seed dispersal and pollination, etc.)	Likely reduced legal and financing costs with improved legal certainty of regulation. Likely decrease in the costs of implementing best practices when not required by other federal, state, tribal or local laws and regulations. May decrease revenue for businesses directly dependent on birds (hunting, bird watching, guides, and ecotourism). Likely increased costs for businesses dependent on ecosystem services provided by birds (seed dispersal and pollination, etc.)	Likely net increase in legal and financing costs. A regulation will improve certainty in one respect, but uncertainty will increase regarding whether an activity is subject to enforcement. Likely increased costs for implementing best practices for industries that impact birds to reduce the likelihood of potential enforcement. May benefit businesses directly dependent on birds, if opportunities to see birds increases. May decrease costs to businesses that depend on ecosystem services provided by birds (seed dispersal and pollination, etc.)

Effects on Environmental Justice	No disproportionate effect on minority or low-income populations.	No disproportionate effect on minority or low-income populations.	No disproportionate effect on minority or low-income populations.
Cumulative Effects	May increase rate and severity of cumulative anthropogenic effects on birds.	May increase rate and severity of cumulative anthropogenic effects on birds. Likely greater increase than No Action.	May decrease cumulative anthropogenic effects on birds if best practices are broadly implemented.

1 BACKGROUND AND PURPOSE AND NEED

1.1 Implementing the Migratory Bird Treaty Act

The U.S. Fish and Wildlife Service (Service) is the federal agency delegated the primary responsibility for managing migratory birds consistent with four international migratory bird treaties (Canada, Mexico, Japan, and Russia) and the implementing legislation: the Migratory Bird Treaty Act (MBTA; 16 U.S.C. §§ 703–712). The MBTA was enacted in 1918 to help fulfill the United States' obligations under the 1916 "Convention between the United States and Great Britain for the protection of Migratory Birds." The goal of the MBTA was to stop the unregulated killing of migratory birds at the federal level.

The MBTA makes it unlawful to, among other things, take individuals of most bird species found in the United States, unless that taking is authorized by a regulation promulgated under 16 U.S.C. § 704. "Take" is defined in the Service's general wildlife regulations as "to pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR 10.12).

Federal courts have adopted different views on whether the MBTA prohibits the "incidental take" of migratory birds, and, if so, to what extent. Incidental take of migratory birds is take that results from an activity, but is not the purpose of that activity (also sometimes referred to as accidental, unintentional, or non-purposeful taking). Some federal appellate and district courts have held that the MBTA criminalizes certain activities that incidentally take migratory birds, generally with some form of limiting construction, while others have indicated that it does not. The result is an inconsistent patchwork of legal standards, all purporting to apply the same underlying law, which, in turn, has resulted in legal uncertainty for the public as to whether their actions may or may not violate the MBTA. The Service believes that it is in the public interest to apply a national standard that sets a clear, consistent and articulable rule for when a person or operator commits a criminal misdemeanor violation of the MBTA.

To provide legal certainty on the application of the MBTA to incidental take, the Principal Deputy Solicitor of the Department of the Interior, exercising the authority of the Solicitor pursuant to Secretary's Order 3345, issued a legal opinion on December 22, 2017. M-Opinion 37050, "The Migratory Bird Treaty Act Does Not Prohibit Incidental Take" (M-37050 or M-Opinion 37050). Based upon the Solicitor's reading of the plain language of the Act, its legislative history, and considering that some courts have concluded the MBTA does not prohibit incidental take, the opinion concluded that the MBTA's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to actions directed at migratory birds, their nests or their eggs. This marked a change from prior Service interpretations and an earlier Solicitor's Opinion, M-Opinion 37041, "Incidental Take Prohibited Under the Migratory Bird Treaty Act."

1.2 Purpose and Need for Action

The Service interprets the MBTA to prohibit only actions directed at migratory birds, their nests, or their eggs, clarifying that incidental take is not prohibited (see M-Opinion 37050). Prior to M-Opinion 37050, the Service relied on enforcement discretion alone to apply the MBTA's

criminal misdemeanor provision. The purpose of this action is to provide an official regulatory definition of the scope of the statute as it relates to incidental take of migratory birds. The Service needs to conduct this action to improve consistency in enforcement of the MBTA's prohibitions across the country and thereby eliminate public uncertainty caused by the current patchwork of legal standards across the different Circuit Courts of Appeal, which have reached different conclusions on the central question of whether the MBTA prohibits incidental take.

1.3 Proposed Action

The Service proposes to develop a regulation in 50 CFR part 10 that defines the scope of the MBTA to exclude incidental take. This regulation would provide legal certainty for the public regarding what actions are prohibited under the MBTA. By taking action to clarify legal standards under the MBTA, the public, businesses, government agencies, and other entities are afforded legal clarity and certainty regarding what is and is not prohibited under the MBTA. If the proposed rule were finalized, individuals, businesses, and other entities would not be financially or criminally liable under the authority of the MBTA for incidental take of migratory birds.

1.4 Purpose of the Environmental Impact Statement

The National Environmental Policy Act (NEPA; 42 U.S.C. §§ 4321–4347) requires that federal agencies consider the effects of a proposed action and any reasonable alternatives on the human environment. An Environmental Impact Statement (EIS) evaluates and discusses potential environmental impacts that would occur as a result of an agency taking an action. It details the process through which a project is developed, includes consideration of a range of reasonable alternatives, analyzes the potential impacts resulting from the alternatives, and demonstrates compliance with other applicable environmental laws and executive orders.

The purpose of this draft Environmental Impact Statement (EIS) is to evaluate the impacts (both positive and negative) that the proposed action, a no action alternative, and other reasonable alternatives may have on the human environment. Alternatives we considered are listed here:

- No Action – Use M-Opinion 37050 to define the scope of the MBTA
- Promulgate regulations that defines the scope of the MBTA to exclude incidental take (preferred alternative)
- Withdraw M-Opinion 37050 and promulgate regulations to define the scope of the MBTA to include incidental take
- Develop a permit system to regulate incidental take (not carried forward for further review)
- Develop an enforcement policy to address gross negligence (not carried forward for further review)

Following the environmental review process as directed by NEPA, the Service will decide whether to proceed with the proposed action (promulgating regulations) or choose one of the alternatives.

1.5 Public Participation and Consultation

The Council for Environmental Quality (CEQ) requires that federal agencies invite federal and state agencies, the public, private entities, and Tribes to participate in the environmental review process (40 CFR 1501.7). This participation is considered scoping.

1.5.1 Scoping

To ensure an open and transparent public scoping process, the Service offered other federal agencies, states, tribes, the general public, and private entities the opportunity to review and comment on a Notice of Intent (NOI) to prepare an EIS and a Proposed Rule and participate in live scoping webinars that focused on our initial approach to developing this draft EIS. The comment period for both documents was 45-days and all comments were required to be submitted via hard copy or via the regulations.gov portal to dockets FWS-HQ-MB-2018-0090-0001 (NOI) and FWS-HQ-MB-2018-0090-0002 (Proposed Rule). The public comment period closed on March 19, 2020.

1.5.1.1 Notice of Intent

On February 3, 2020, the Service published the NOI to prepare a draft environmental review pursuant to NEPA. The Service used this NOI to notify federal and state agencies, tribes, nongovernmental organizations, industry representatives, the general public, and any other interested entities of our intentions to evaluate the potential environmental impacts of the proposed action. We invited input from these entities on the scope of the proposed NEPA analysis, the pertinent issues we should address, and alternatives to our proposed approach for authorizing incidental take.

Specific information sought included:

(1) The avoidance, minimization, and mitigation measures entities employed to address incidental take of migratory birds (prior to M-Opinion 37050);

(2) The direct costs associated with implementing these measures;

(3) Indirect costs that entities have incurred related to the legal risk of prosecution for incidental take of migratory birds (e.g., legal fees, increased interest rates on financing, insurance, opportunity costs);

(4) The extent that avoidance, minimization, and mitigation measures continue to be used (after issuance of M-Opinion 37050);

(5) Any quantitative information regarding the economic benefits and/or ecosystem services (e.g., pollination, pest control, etc.) provided by migratory birds;

(6) Information regarding resources that may be impacted by the proposal; and

(7) Species having religious or cultural significance for tribes, and species having cultural significance for the general public and impacts to cultural values from the actions being considered.

1.5.1.2 Proposed Rule

The Service also published a Proposed Rule using the preferred alternative from this draft EIS on February 3, 2020. We invited input from other federal and state agencies, tribes, nongovernmental organizations, and other interested members of the public on the proposal to define the scope of the MBTA and provide specific information that would assist in the development of the draft EIS. The Proposed Rule solicited the same seven areas of information as requested in the NOI. Because the Proposed Rule and NOI were issued contemporaneously and specifically solicited the same information, comments on both documents were considered in developing this draft EIS.

1.5.1.3 Draft EIS Scoping Webinars

The Service held six public scoping webinars open to any member of the public, including members of federal and state agencies, tribes, non-government organizations, private industries, and American citizens. One webinar was conducted strictly for members of federally recognized tribes. These webinars were held between March 3 and March 16, 2020.

During these webinars, Service biologists gave presentations that were streamed live and recorded. These presentations described the process for creating the draft EIS that included the purpose and need for the action, the initial alternatives being considered, and reiterated the need for specific information for the analysis of the alternatives being considered and any other potential reasonable alternatives. The participants were given opportunities to ask questions and seek clarity on the process.

1.5.2 Summary of Public Comments

During the public comment period on the Proposed Rule and the NOI, we received a total of 8,398 comments. Many comments included additional attachments (e.g., scanned letters, photographs, and supporting documents). These comments represented the views of multiple state and local government agencies, private industries, non-governmental organizations, and private citizens. In addition to the individual comments received, ten organizations submitted attachments representing individuals' comments, form letters, and signatories to petition-like letters representing almost 180,000 signers.

1.5.3 Effect of the Scoping Process on the Proposed Rule and the DEIS

The Service reviewed every comment from all participants in the process. The comments were used to help refine and develop the Purpose and Need, Alternatives, and Consequences Analysis. The most useful and pertinent comments were those that provided information per the request for more information based on the seven questions posed in the NOI and the Proposed Rule.

1.5.4 Tribal Outreach

On March 16, 2020, the Service held a webinar that was restricted in attendance to only allow tribal members to attend, with the sole purpose of informing tribes of the proposed action. Similar to the other webinars, tribal representatives were allowed to ask questions and seek clarifications. In addition, a letter was sent through our regional offices to invite tribes to engage in this proposed action via the government-to-government consultation process. To date, the only tribe to request government-to-government consultation is the Curyung Tribal Council in Alaska.

2 THE ALTERNATIVES

2.1 Introduction

The Service is proposing to promulgate a rule that provides legal certainty for the public regarding what actions are prohibited as criminal misdemeanor violations under the MBTA. NEPA requires that a federal agency consider a reasonable range of alternatives, including a No Action Alternative (40 CFR 1502.14). The action alternatives describe two approaches that the Service could take to provide increased regulatory certainty regarding incidental take of migratory birds. The intent of this analysis is to provide decision-makers with a meaningful range of reasonable alternatives to foster informed decisions and public participation. The Service is considering the No Action Alternative and two action alternatives for achieving greater regulatory certainty.

The Service's preferred alternative is to promulgate regulations defining the scope of the MBTA to not prohibit incidental take. The Service believes that this approach provides regulatory certainty for industries and agencies, is feasible to implement using current Service resources, and is consistent with the purpose and need for the proposed action. The No Action Alternative describes how the incidental take of migratory birds would be regulated without the Service taking an action to codify into regulations the Solicitor's opinion on the scope of the MBTA's prohibitions regarding incidental take. None of these alternatives directly affect the implementation and enforcement of the Endangered Species Act (ESA, 16 U.S.C. § 1531 et seq.) or the Bald and Golden Eagle Protection Act (Eagle Act, 16 U.S.C. §§ 668-668d).

2.1.1 Considerations Common to All Alternatives

For the analysis of each of the alternatives below, the Service reasoned that there are many factors that influence an entity's decision to implement measures that may protect migratory birds from incidental take. In some cases, there are other Federal, state, tribal, or local laws and regulations that directly or indirectly require actions to benefit or otherwise reduce impacts on migratory birds. Federal statutes such as the Endangered Species Act and the Bald and Golden Eagle Protection Act require entities to take steps to reduce incidental take and protect habitat, which may in turn benefit migratory birds and other wildlife. For example, the Federal Aviation Administration approved new lighting standards that require flashing lighting on most communication towers greater than 350 feet above ground level. Additionally, 13 states have regulations governing netting of oil pits (see p13, USFWS 2009). These federal and state regulations and guidelines reduce the risk of incidental take of migratory birds.

In addition, Federal agencies are required to evaluate their impacts to the environment under NEPA. NEPA compliance requires federal entities to identify impacts to the environment affected by a proposal, including impacts to migratory birds and socioeconomic impacts if they are likely to occur. NEPA also requires federal entities to assess potential mitigation of unavoidable adverse environmental impacts, which may include analysis of project design or

mitigation measures that reduce potential impacts to migratory birds. Some states have NEPA equivalent statutes (e.g., California Environmental Quality Act) and a variety of provisions regulating some form of incidental, indirect, or accidental take, or potentially allowing commissions or agencies to make applicable rules. In 2019, in response to M-Opinion 37050, California passed the Migratory Bird Protection Act, which makes it unlawful to take or possess any migratory nongame bird protected under the MBTA. It is expected that some additional states will craft new regulations to clarify that they have jurisdiction to regulate or otherwise oversee incidental take of migratory birds (AFWA 2019).

Additional reasons that may factor into an entity's decision to implement measures that may reduce the risk of incidental take include the following: public perception, size of company, cost of implementation, perceived risk of killing migratory birds, or availability of standard industry practices. Some entities may continue to implement practices that reduce take for any of these reasons or simply to reduce their perceived legal risk due to short- or long-term uncertainty concerning future application of laws and regulations governing take of migratory birds.

2.2 No Action Alternative

Under the No Action Alternative, the Service would continue to implement the MBTA consistent with the direction given in M-Opinion 37050, which defines the scope of the MBTA to exclude incidental take. In accordance with M-37050, the Service's enforcement of the MBTA is currently focused on purposeful actions directed at migratory birds. A legal opinion of the Department of the Interior does not provide the public or other federal departments and agencies with the long-term certainty of a codified regulation.

Under the No Action Alternative, the Service would still enforce the MBTA in cases of purposeful take for actions directed at migratory birds and provide technical assistance to industry, the public, and partners seeking to reduce impacts to migratory birds voluntarily or to comply with other federal, state, local, or tribal laws and regulations. Technical assistance activities include working with industry sectors and federal agencies to develop recommendations that identify best practices or technologies that can be applied to avoid or minimize avian mortality.

2.3 Action Alternatives

The Service is analyzing two action alternatives that would provide the public with greater long-term legal certainty regarding what actions are prohibited under the MBTA. These alternatives provide a reasonable range of alternatives that meet the purpose and need of this action. The two alternatives are discussed below.

2.3.1 Alternative A: Promulgate regulations that define the scope of the MBTA to exclude incidental take (preferred alternative)

Under Alternative A, the Service would promulgate a regulation that defines the scope of the MBTA take prohibitions to apply only to actions directed at migratory birds. Promulgating a

regulation defining the scope of the MBTA to exclude incidental take would increase judicial deference owed to that interpretation. We do not expect this alternative to change the current implementation or enforcement of the MBTA (parties are not currently subject to enforcement for the incidental take of birds).

Promulgating this regulation would be consistent with the M-Opinion's conclusion that the MBTA's prohibitions for misdemeanor violations (as reflected by the Act's language and legislative history), which are limited to actions directed at migratory birds, their nests, or their eggs. This is the Service's preferred alternative because it best fulfills the purpose and need for action by reducing both the regulatory burden on the public and the enforcement burden on the Service's law enforcement officers, and provides the public with a clear, binding rule on what does and does not constitute an MBTA misdemeanor violation.

Under this alternative, incidental take of migratory birds would no longer fall under the purview of the MBTA. Therefore, like the No Action Alternative, the Service would continue to enforce the MBTA in cases of purposeful take, unless authorized under 50 CFR part 21, and provide technical assistance to industry, the public, and partners voluntarily seeking to reduce impacts to migratory birds, or as required to comply with other federal, state, tribal, and local laws and regulations.

Technical assistance activities include working with entities and federal agencies to update current and develop new recommendations that identify best practices or technologies that avoid or minimize incidental take of migratory birds.

2.3.2 Alternative B: Withdraw M-Opinion 37050 and promulgate regulations that define the scope of the MBTA to include incidental take

Under this alternative, the Service would interpret the MBTA to apply to incidental take. Because this interpretation would be inconsistent with the Office of the Solicitor's current view of the law, as stated in M-Opinion 37050, adopting this alternative is dependent on that view changing and the opinion being withdrawn. The Service would promulgate a regulation that defines the scope of the MBTA to include incidental take, which would increase judicial deference owed to that interpretation.

Prior to December 2017, the government viewed any action that directly and foreseeably resulted in the death of a migratory bird as criminal conduct. The Service relied on enforcement discretion to determine when to pursue alleged incidental take violations. Several courts allowed various defenses to this broad authority, including requiring evidence that the activity proximately caused the take. In addition, the government, in accord with one particular judicial decision, required reasonable notice when it was not foreseeable that the specific conduct at issue may result in the death of protected birds, except within the jurisdiction of the Fifth Circuit Court of Appeals, which held that the MBTA does not prohibit incidental take. Thus, the Service did not enforce incidental take of migratory birds within the jurisdiction of the Fifth Circuit court. Promulgating a regulation defining the scope of the MBTA to include incidental take would

increase judicial deference owed to that interpretation and potentially allow the Service to consistently enforce the MBTA in all jurisdictions.

The Service's Office of Law Enforcement would investigate incidental take at a particular site or project if they receive a complaint and/or have reason to believe that unlawful take occurred. The Service would consider good-faith attempts to meet voluntary standards when making enforcement decisions under the MBTA to provide an incentive for potential violators to implement those voluntary measures.

Under the prior interpretation, the Service's Office of Law Enforcement opened investigations into hundreds of activities or hazards that incidentally killed birds. Over 2010-2018 (Table 2-1), the majority of investigations involving incidental take of migratory birds were of electrical or oil and gas businesses (about 47 investigations annually representing 81 percent of the annual total). About 4 percent of average annual incidental take investigations were of wind-energy companies.

Table 2-1. Average Annual Number of Incidental Take Investigations (2010-2018)

Industry	Average Number of Cases Per Year
Electric Distribution and Transmission	30.8
Oil and Gas	15.6
Other activities*	8.5
Wind Energy	2.4
Total	57.3

* "Other" includes communication towers, chemical spills, bridgework, artificial lighting, and solar-energy development.
Source: U.S. Fish and Wildlife Service, 2018a

Over the same 9-year period, criminal fines and civil penalties associated with incidental take cases totaled about $105.8 million[1] (Table 2-2). In addition to fines, there are also adjudications other than criminal fines and collateral forfeited associated with the cases presented in Table 2-1.

Table 2-2. Total Migratory Bird Treaty Act Collections and Other Adjudications, 2010-2018

Source	Fines/Collections (millions)
Migratory Bird Treaty Act Collections[a, b]	$105.8
Other Adjudications[c]	$73.0

[1] In the context of a benefit-cost analysis, fines or penalties are treated as a transfer payment and not a benefit or cost.

9-year Total	$178.8

[a]Source: U.S. Fish and Wildlife Service, 2019a

[b]Total amount includes $100.1 Million in fines related to the BP Deepwater Horizon Gulf Oil Spill. This is the MBTA-related portion of fines levied against BP and represents a portion of the overall fines imposed for the Deepwater Horizon Gulf Oil Spill. All MBTA-related fines were deposited in the North American Wetland Conservation Fund and used to protect or restore wetland habitat for migratory birds.

[c] Other adjudications are costs associated with corrective actions to reduce or eliminate bird take. These typically involve expenditures on practices as outlined in Section 3.13.1. Source: U.S. Fish and Wildlife Service, 2018b.

Fines and other adjudications were used to protect and restore migratory bird habitat and implement corrective actions to reduce or halt incidental take of birds. For example, migratory bird fines from the BP Deepwater Horizon Gulf Oil Spill, leveraged with partner-matched contributions, protected and restored several hundred thousand acres of priority wetland habitat for the conservation of migratory birds and other species as provided by the North American Wetlands Conservation Act.

There would be no regulatory framework to authorize take or official policy on enforcement discretion under this alternative; the Service would simply rely on general law enforcement discretion in determining when to pursue alleged incidental take violations.

In addition to enforcement actions, the Service would work with entities to encourage implementation of best practices with the goal of reducing project-related impacts. Under this approach, an individual or entity can demonstrate they have taken reasonable steps to reduce the take of birds and increase the likelihood that the government would exercise its enforcement discretion and decline to pursue an enforcement action related to any resulting incidental take.

2.4 Alternatives Considered but Not Carried Forward for Further Review

2.4.1 Develop a general-permit framework to regulate incidental take

We considered an alternative under which M-Opinion 37050 would be withdrawn, the Service promulgates a regulation defining what constitutes incidental take of migratory birds, and subsequently establishes a regulatory general-permit framework. Under this framework, the Service could create general permits that provide legal coverage for a variety of activities that commonly incidentally take migratory birds. This general-permit system could take many forms, but one possibility would be to use a risk-management approach that identifies specific hazards associated with particular activities and establishes best practices as permit conditions to reduce or avoid those hazards. A general-permit framework could require a nominal application fee and potentially an in-lieu fee to compensate for any remaining take after implementation of avoidance and minimization measures. Any incidental take occurring under a general permit would be authorized and not subject to enforcement. The Service would continue to use enforcement discretion for activities not covered by a general permit and large-scale, incidental-take incidents, such as oil spills.

The Service eliminated this alternative from further review at this time because developing a general-permit system would be a complex process and better suited to analysis in a separate subsequent proposal if we were to choose Alternative B below. This alternative goes beyond the current purpose and need of simply providing regulatory certainty regarding the Service's interpretation of the MBTA as it relates to incidental take. For these reasons, it would be premature to discuss this alternative in detail under this proposed action. Thoroughly evaluating this alternative would instead require a separate detailed process to adequately define the parameters of such a permit system. Developing a general permit system would likely require the following at a minimum: determining reasonable and adequate conservation measures for different industries and activities that effectively reduce the impacts of the actions of private parties and government entities on over 1,000 bird species, whether a separate rulemaking would be required for each individual general permit, and how to authorize actions that do not fit within a general-permit category.

2.4.2 Develop an enforcement system to address gross negligence

We also considered an alternative where M-Opinion 37050 would be withdrawn and the Service would promulgate a regulation defining what constitutes incidental take of migratory birds and develop an enforcement policy requiring gross negligence to establish a misdemeanor violation of the MBTA. Gross negligence would be defined as carelessness or reckless disregard of the consequences of an action, especially when a reasonable person should have anticipated and guarded against it. Establishing the *mens rea* (mental state requirement) of gross negligence for a violation would allow the Service to focus its law enforcement resources on activities known to incidentally take birds, for which reasonable best practices that have been developed to avoid or minimize the take are not being implemented.

The Service eliminated this alternative from further review because it rests on an uncertain legal premise, potentially reducing legal certainty and thereby failing to meet the purpose and need of this proposal. This alternative would have established a minimum *mens rea* of gross negligence before the Service could enforce the statute's misdemeanor provision, despite significant inconsistent case law. Most federal courts have concluded this provision has no minimum *mens rea* requirement and should, therefore, be treated as a strict liability violation—albeit with significant caveats in most cases. Any improvement in legal certainty under this alternative gained by codifying the Service's interpretation of the scope of the MBTA as it relates to incidental take is thus likely to be tempered by the potential conflict with the views of most federal courts.

3 Affected Environment

3.1 Introduction

The affected environment, or existing condition, is described here to provide an environmental baseline for the analysis of alternatives described in Chapter 2. Accordingly, the following description of the affected environment includes elements of the environment where the proposed alternatives could have an effect, whether directly, indirectly, or cumulatively.

3.2 Description of Project Area

This analysis of the MBTA and its implementation encompasses the entire United States, including its territories. These are located on the North American Continent and in the Atlantic and Pacific Oceans.

3.3 Environmental Resources Not Analyzed in the DEIS

The resources and issues analyzed in the draft EIS are focused on those environmental resources where the proposed action and the action alternatives could have a known effect. Therefore, this draft EIS does not address several resources because either (1) there is insufficient information to determine whether the alternatives have a potential effect on the resource, but we do not expect there to be an effect, or (2) there is sufficient information for us to determine the alternatives would not affect the resource. The Service identified resources analyzed in this draft EIS based on issues raised during internal review, federal agency review, and public scoping. The alternatives considered in this draft EIS represent different approaches to meeting the stated purpose and need. For these reasons, the Service has determined that analysis of the impacts of the alternatives on the following environmental resources would not be meaningful:

- Air quality
- Water resources
- Geology and soils
- Floodplains
- Visual resources
- Land ownership and use

3.4 Environmental Resources of Concern

3.4.1 Migratory Birds

There are 1,093 migratory bird species protected under the MBTA in the United States and its territories (a list of these species in alphabetical and taxonomic order can be found at 50 CFR 10.13). Migratory birds comprise many different guilds (i.e., groups of species that use the same resources) that each have different requirements, use different types of habitat, and face a particular suite of threats that can potentially limit or reduce their populations (Ehrlich et al.

1988). For analyses in this draft EIS, the focus is on four bird guilds that use the six primary habitats identified in the following subsection and also described further in Section 3.12 (Other Biological Resources). These guilds consist of waterfowl (e.g., ducks, geese, swans), waterbirds (e.g., herons, rails, gulls, terns, cormorants), shorebirds (e.g., sandpipers, godwits, plovers, oystercatchers) and landbirds (a large grouping that includes hummingbirds, flycatchers, warblers, sparrows, birds of prey, and many others).

3.4.2 Status of Bird Population Trends

Birds are indicators of environmental health and many species are relatively easy to study (North American Bird Conservation Initiative [NABCI] 2019, Rosenberg et al. 2019). By examining population trends of species and whether they increase, decrease, or remain stable in specific habitats, scientists can determine which habitats and associated avian species require greater conservation focus.

Since 1966, reliable bird-monitoring data have become available that can indicate trends in bird populations for many, but not all, of the species protected by the MBTA (NABCI 2009). It has been documented that many bird species and bird populations as a whole are declining across the nation, and in 2017 there were an estimated 3 billion fewer birds on the landscape in North America, representing a 29% decrease in overall bird numbers when compared to 1970 (NABCI 2019, Rosenberg et al. 2019). The State of the Birds reports published by NABCI discuss the continent-scale decline of birds relating to human activities and changes in the quality of the environment (NABCI 2009, 2019). The reports have noted that some bird species will adapt to changing environmental conditions and succeed, some will struggle and decline, and some may go extinct without appropriate intervention (NABCI 2009, NABCI 2019). This loss occurred despite the MBTA's application to incidental take. There is no analysis or data describing the amount or percentage of this loss that is attributable to enforcement of incidental take under the MBTA.

The MBTA and its regulations apply to the entire U.S., including U.S. territories. Across these areas, birds use many habitat types. For this draft EIS, six primary habitat types (Heinz Center 2008; NABCI 2009) in the continental U.S. are used to describe land cover associated with avian species and the hazards that occur within those land covers: aridlands, coasts, eastern forests, grasslands, wetlands, and western forests. While these six primary habitats are the principal focus in summarizing the status of bird population trends in the U.S., guilds of birds in other habitat types are also discussed in 3.4.2.1. Figure 3-1 and Figure 3-2 show the six primary habitats within the continental U.S. These maps do not show land cover for the U.S. Virgin Islands, Puerto Rico, or Hawaii and other territories in the Pacific Ocean.

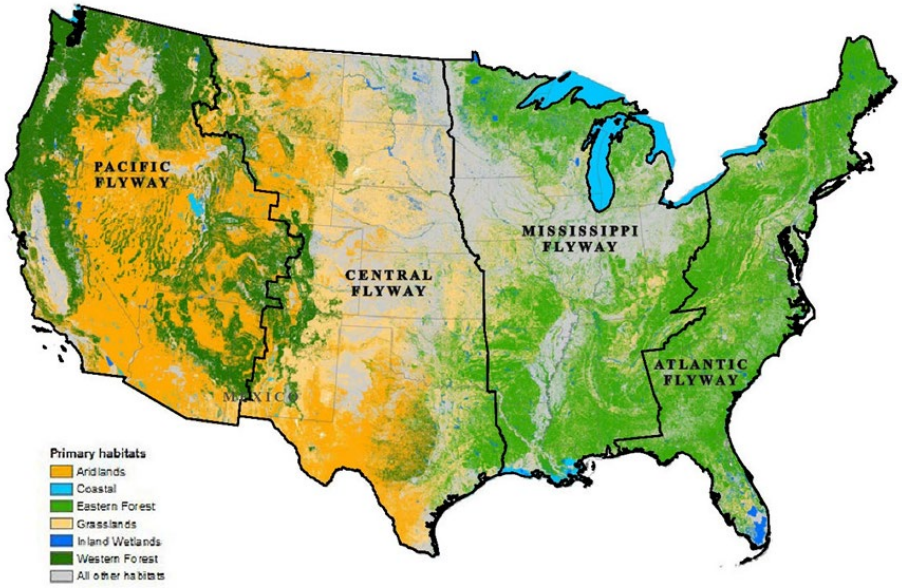

Figure 3-1. Six Primary Habitats and the Four Migratory Flyways within the Contiguous United States (see Figure 3.2 for Alaska).

Source: U.S. Geological Survey, Gap Analysis Program (GAP). 2011. National GAP Land Cover dataset, Version 2.

Figure 3-2. Primary Habitats and Pacific Flyway within Alaska

Source: U.S. Geological Survey, Gap Analysis Program (GAP). 2011. National GAP Land Cover dataset, Version 2.

These primary habitats lie within the four administrative migratory flyways, which are managed by the Service and its partners (USFWS 2016b) and the Service's regional offices (see Management of Migratory Birds below). Although birds do not adhere to administrative boundaries, these migratory flyways are based largely on routes that migrating bird species are known to follow as they migrate between nesting and wintering areas (USFWS 2016b).

The State of the Birds reports use obligate bird species that have been monitored for long-term periods as indicators of habitat health within the six primary habitats mentioned above (NABCI 2014). Obligate bird species are those which use a single habitat for breeding (NABCI 2014). Table 3-1 lists the six primary habitats and population trends of obligate species that occur within them. Obligate species in grasslands have shown the greatest overall decline of 53 percent between 1970-2017 (Rosenberg et al. 2019). Two primary factors affecting this decline include habitat loss and toxic pesticide use (Rosenberg et al. 2019).

Table 3-1. Migratory Bird Species Trajectories 1970-2017 (Rosenberg et al. 2019)

Guild	Decreasing Trajectory
Breeding Habitat Groups	
Aridlands	35
Coasts	19
Eastern Forest	39
Grassland Species	23
Wetland	45
Western Forest	43
Migration Form Groups	
Migrant Species	243

Permanent Resident Species	54
Bird Guild	
Waterfowl	18
Waterbird	40
Shorebird	30
Landbird	209

Eastern forest indicator species have declined by approximately 17 percent and western forest indicator species have declined 29 percent (Rosenberg et al. 2019). Threats to these species are associated primarily with urban development (NABCI 2014). Conservation efforts include forest restoration on federal, state, and privately owned land and following beneficial practices that can mitigate impacts to birds (NABCI 2014, Association of Fish and Wildlife Agencies [AFWA] 2019).

Wetland indicator species have increased 13 percent overall between 1970-2017 (Rosenberg et al. 2019). Within the four migratory flyways, conservation efforts have protected more than 10 million acres of wetland habitats on National Wildlife Refuges, state and local wildlife management areas, and private lands through Wetland Reserve Program projects. Even with conservation efforts, however, more than 17 million acres of wetlands have been lost since the 1950s. While wetland indicator species as a whole are increasing, 47% of the species studied are in decline (Rosenberg et al. 2019).

Coastal indicator species declined 15 percent between 1970-2017 (Rosenberg et al. 2019). Birds in this habitat are affected by coastline development, habitat loss, sea level rise, and disturbance resulting from recreational use (NABCI 2014). Seawalls established along coastlines provide protection to humans when major storms occur, but reduce nesting habitat for beach and tidal-marsh nesting species (NABCI 2014). During high waters, the seawalls hold back the water, causing floodplain-nesting birds and their chicks to drown. Coastal wetland restoration projects are showing that natural habitats offer the best resilience to rising waters. For example, a preserve in New Jersey acted as a natural buffer during Superstorm Sandy in 2012, protecting piping plovers (*Charadrius melodus*) and other at-risk species by holding back the sea surge and floodwaters (NABCI 2014).

3.4.2.1 Other Habitats

Marine indicator species (e.g., auklets, puffins, murres, sulids) are difficult to monitor well in open ocean environments, where they typically occur in the nonbreeding season. However, these

efforts estimate a 31% decline of this species group between 1970-2017 (Rosenberg et al. 2019). Factors that affect this guild include offshore energy development, gas and mineral exploration, oil spills, shifts in availability of prey, sea level rise resulting in the loss of breeding habitat, and plastic pollution in important marine habitat areas (NABCI 2014).

Island indicator species are the most restricted species due to their limited habitats, and those restrictions affect their survival. For example, one-third of bird species listed as threatened or endangered under the ESA occur in Hawaii (NABCI 2014). On U.S. island territories, native and endemic species are threatened by introduced predators, habitat degradation, grazing pressure of domestic ungulates, and climate change (i.e., rising sea levels and warming temperatures allowing disease-carrying mosquitoes to invade higher elevation refugia (cite?)) (NABCI 2014).

3.5 Hazards Affecting Birds

Annually, bird mortality is caused by natural and anthropogenic (i.e., human-induced) sources that contribute to the continental-scale declines in bird populations discussed above. Natural sources of mortality include adverse weather, predation, starvation, and diseases, such as botulism and avian cholera. While natural causes of bird mortality are identified and thought to be widespread, they are not well understood, quantified, or the result of incidental take. Therefore, they are not further considered in this draft EIS.

Anthropogenic sources of bird mortality can either cause immediate injury or death or delayed negative effects to health or productivity, such as by habitat modification. In some instances, anthropogenic bird mortality is intentional, such as hunting waterfowl. In most cases, however, it is unintentional and incidental to the activity that caused the mortality, such as a bird fatally colliding with a building. For this draft EIS, the focus is on immediate bird mortality resulting from direct anthropogenic threats on the landscape, rather than mortality caused by secondary negative effects, such as habitat change. Annually, millions of birds, in every type of habitat, are killed incidentally by direct anthropogenic sources (Longcore et al. 2013, Loss et al. 2015).

3.6 Intentional Take

Intentional take, such as hunting of gamebirds, can affect population numbers greatly if conducted in an unsustainable and exploitive manner. However, the U.S. has tightly regulated hunting seasons and utilizes a combination of funds from hunting licenses, federal appropriations, and other sources for restoring, maintaining, and monitoring healthy populations of hunted species. Funds are used for wildlife research, species management, and habitat acquisition, and these approaches have also been beneficial to many non-hunted species reliant on the same habitats as gamebirds (USFWS 2015). Other forms of intentional take are authorized by federal permits under the authorities of the MBTA and the Bald and Golden Eagle Protection Act for the purposes of scientific collection, religious practices, prevention of depredation, among other purposes.

3.6.1 Gamebird hunting

The Service is responsible for monitoring the annual sport harvest of migratory birds in the U.S. using the Migratory Bird Hunter Survey (MBHS, Raftovich et al. 2019). This survey is based on a sample of approximately 75,000 hunters who have registered to hunt migratory birds in the 49-state Hunter Information Program (HIP). From 2015-2019, the average annual sport harvest of waterfowl (ducks and geese) estimated from the MBHS has been 14,807,000, and the average webless species (combined dove, pigeon, woodcock, snipe, coot, gallinule, and crane) harvest has been 14,776,000.

3.6.2 Permitted take

Under authority of the MBTA, the Service manages regulations and annually issues permits for the intentional take of migratory birds, including those that pose a threat to human health and safety, are damaging private property or agricultural operations, or negatively affect the recovery of imperiled species. From 2015-2019, on average, the Service issued permits authorizing the take of 13,844 eggs/year, 452,555 nests/year, and 784,840 birds/year in the U.S.

The Service also issues permits for scientific collecting and other purposes that are exceptions to the standard permit types, such as for employees of Service regional and field office and state wildlife agencies to conduct their official duties. From 2015-2019 such permits, on average, authorized the take of 78,579 birds/year in the U.S.

3.6.3 Illegal take

Migratory birds are illegally and purposefully shot, poisoned, and killed by other means. The Service does not have comprehensive information on the extent of illegal take; however, it is likely insignificant for most species compared to authorized and incidental take and other forms of mortality. For a limited number of species, illegal take may impact local and regional populations. For example, the Service estimates that approximately 1,000 golden eagles are being illegally shot each year in the U.S., roughly 17% of all golden eagle mortality (USFWS 2016a).

3.7 Incidental Take

Incidental take (take that results from, but is not the purpose of, an activity) is caused by anthropogenic hazards to migratory birds in the environment, such as buildings and power lines. These hazards can then result in stressors to migratory birds, such as the collision of birds with buildings and power lines. For example, birds vulnerable to collisions with communication towers include about 350 species of neotropical migratory-songbirds that breed in North America in the spring and summer and migrate to the southern United States, the Caribbean, or Latin America during the fall and winter. Many of these species generally migrate at night and appear to be most susceptible to collisions with lit towers on foggy, misty, low-cloud-ceiling nights (Kerlinger et al. 2010).

Most mortality estimates were completed prior to issuance of M-37050 and have not been updated since. There are other hazards and stressors for which estimates of incidental take have not been quantified, or are too difficult to quantify, and those are not addressed in this analysis.

Sources of incidental take that have been studied and quantified are outlined in Table 3.2 and include annual estimates of bird mortality. For some hazards, best practices have been developed to reduce the impacts of the potential stressor. These are outlined below in Section 3.13.1, along with the extent to which they are known to reduce negative impacts of the stressor. Best practices are generally provided to entities through technical assistance, but different industries have also developed their own best practices. The Service uses a stressor-management approach to provide technical assistance and guidance. Specific industry guidance was historically developed on an as-needed basis (i.e., industries that required increased project review and consultation prior to M-Opinion 37050). This approach advised that proponents assess their project activities to identify project-related stressors, and implement voluntary best practices that avoid the stressor by managing the hazard producing the stressor (e.g., locating the project outside of known high-risk areas, or minimizing the production of the stressor or exposure of birds to the identified stressors). Available technical assistance includes fact sheets and job aids for understanding responsibilities, recommendations for properly assessing project-related hazards, and voluntary best practices that avoid and minimize avian mortality and stressors on bird resources.

The Service and other entities continue to develop online tools in response to new industry hazards and project needs. Tools such as the Avian Knowledge Network (http://www.birds.cornell.edu/is/research/itr.html) provide access to data and decision-support tools that can be used to make more informed decisions about potential project hazards on migratory birds or their habitats. The online Information for Planning and Consultation (IPaC) tool (https://ecos.fws.gov/ipac/) delivers site- and project-specific information critical to identifying resources at risk and recommendations to reduce potential impacts.

The Service has worked with the following industries to develop and implement voluntary guidance: solar; building glass, and lighting; communication towers; coal-bed methane; commercial fisheries; electric utility lines; fluid mineral practices; mining claim markers; transportation; urban vegetation management; and wind energy.

The objective of the mitigation framework used to reduce incidental take of birds under current guidance and agreements is to:

- Avoid the production of a stressor on birds altogether by not taking a certain action, or locating the project in an alternative location
- Minimize the exposure of birds and their resources to project-related stressors by limiting the degree or magnitude of the action and its implementation
- Rectify the effects of an impact by repairing, rehabilitating, or restoring the affected environment
- Reduce or eliminate the stressor over time, or
- Compensate for the impact by replacing or providing substitute resources or environments.

Table 3.2 Annual Mortality Estimates for Stressors and Hazards Affecting Migratory Birds (Longcore et al. 2012, Loss et al. 2014, Loss et al. 2015)

Hazard/Stressor	Minimum Estimate	Maximum Estimate	Median/ Average Estimated
Building glass/Collisions	365,000,000	988,000,000	599,000,000
Vehicles/Collisions	89,000,000	340,000,000	214,500,000
Poison/Chemicals			72,000,000
Electrical lines/Collisions	8,000,000	57,300,000	25,500,000
Communication towers/Collisions			6,600,000
Power Pole Electrocution	900,000	11,600,000	5,600,000
Oil Pits	500,000	1,000,000	750,000
Open Pipes	100,000	1,000,000	550,000
Wind turbines/Collisions	140,438	327,586	234,012
Total	463,540,438	1,398,227,586	924,184,012

3.8 Birds and Humans

In addition to being affected by human activities, migratory birds can affect humans in beneficial and detrimental ways. Sections 3.9 and 3.10 discusses the benefits derived from migratory birds related to cultural values and practices and socioeconomics and ecosystem services. Detrimental effects derived from migratory birds are discussed in section 3.11.

3.8.1 Native American, Alaska Native, Native Hawaiian, and Pacific Islander Cultural Resources

Many species of birds are culturally significant and important for indigenous cultures. Birds figure prominently in religious practices, oral history, identity, language, and subsistence uses, and are often understood through complex systems of traditional ecological knowledge. Native American tribes, Alaska Natives, and other indigenous groups continue to use many bird species for subsistence as well as cultural and religious purposes. Religious practices of Native Americans, Alaska Natives, and Native Hawaiians are protected by the American Indian Religious Freedom Act of 1978 (Public Law 95-341, 42 U.S.C. § 1996), and many tribes have subsistence and accustomed rights to purposefully take birds through treaty rights.

Bird feathers and parts figure strongly in some indigenous religious traditions and in recent decades, an increasing number of tribes have accessed feathers through federal repositories, which have remains of birds, and Native American-operated aviaries that have live eagles. In the Service's Upper and Lower Colorado Basin and Arkansas-Rio Grande-Texas-Gulf Regions, there are six of these aviaries, located in Arizona, New Mexico, and Oklahoma.

All federally recognized Native American Tribes, Alaska Native communities, Native Hawaiian organizations, and Pacific Islander communities, and the areas they are associated with, are part of the possible affected environment and analysis area. Figure 3-3 shows the contemporary tribal community locations. However, modern tribal boundaries do not necessarily correspond with ancestral domains, areas of contemporary use as subsistence areas (gathering and collecting areas), associated cultural sites, Traditional Cultural Properties, and Sacred Sites. For example, the majority of tribes in Oklahoma are displaced from other states, primarily eastern and midwestern states. Indian Trust Assets and Indian Claim areas should also be considered because they relate to both cultural and biological resources.

Federally sponsored programs and projects require review pursuant to Sections 106 and 110 of the National Historic Preservation Act (NHPA). 36 CFR Part 800 of the NHPA requires federal agencies (and their designees, permittees, licensees, or grantees) to initiate consultation with the State Historic Preservation Officer as part of the Section 106 review process on actions that may affect cultural resources. On tribal lands with a Tribal Historic Preservation Officer (THPO), the THPO is consulted where appropriate. In addition, Executive Order 13175 requires that federal agencies consult with tribes on "policies that have tribal implications." This requirement is commonly referred to as government-to-government consultation. Outreach conducted to federally recognized Native American Tribes is described in Section 1.5.2. The Service anticipates that tribes may wish to consult with the Service once the draft EIS is published. If a request is received, the Service will initiate the consultation process through the Service's regional offices.

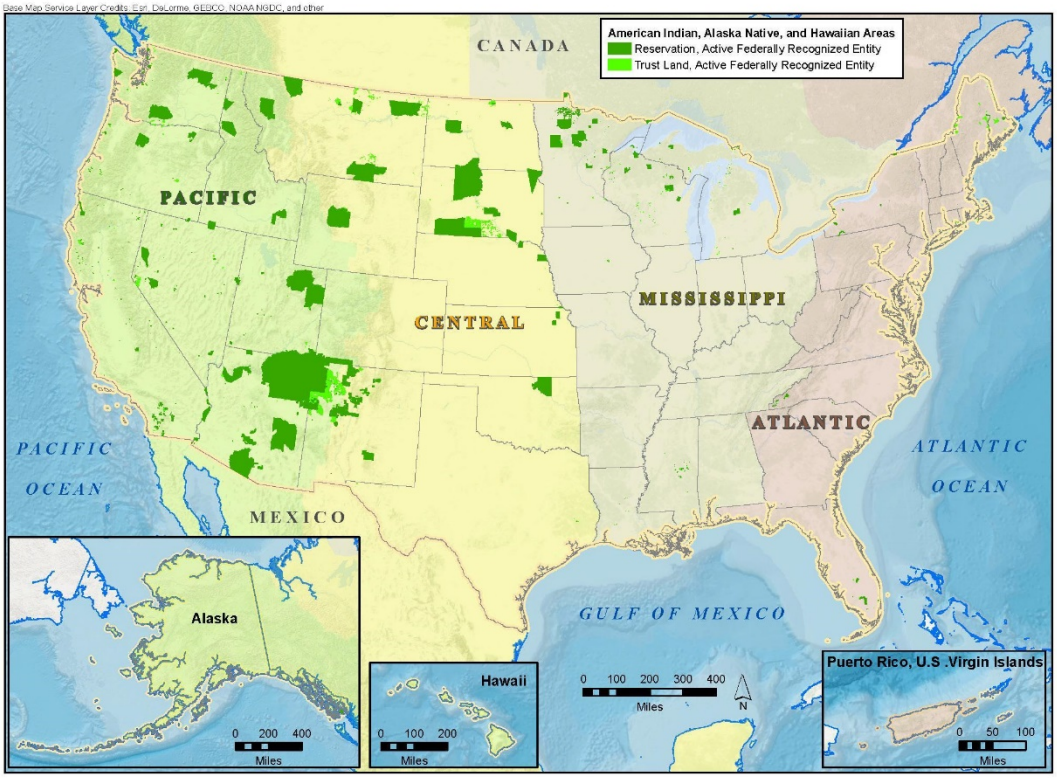

Figure 3-3. Approximate Locations of Federally Recognized Tribal Reservations, Alaska Native, and Native Hawaiian Communities in Relationship to the Four Administrative Flyways

3.8.2 Ecosystem Services and Socioeconomics

Ecosystem services provided by migratory birds support human survival and quality of life (e.g., pest control, recreation) and, in several cases, are a source of economic value to humans (Millennium Ecosystem Assessment 2005). Ecosystem services that are a benefit to humans are derived from the attributes of migratory birds (e.g., diversity, abundance, distribution) and the myriad ecological processes of which they are a part (e.g., complex food webs, nutrient cycling). There are direct ecosystem services clearly linked to human benefits and indirect ecosystem services of which migratory birds play a role but for which humans do not definitively value their role.

Below are several examples in which migratory birds provide ecosystem services to humans.

Cultural Uses—Birds in general have a high level of importance across many cultures (Kresch 2011). Among the important cultural uses for migratory birds in the United States are the use of

feathers as sources of power and for adornment, and the use of bird bones for making beads (DeMeo 1995; Hill 2016).

Valuing cultural benefits in monetary terms is problematic and may not accurately reflect community values (Burgess et al. 1988; Clark et al. 2000; Ervin et al. 2014). Accordingly, this analysis does not assess the economic value of the cultural benefits birds provide. However, the evidence of the significance these benefits have for native communities is suggested by the policies and practices of the Department of the Interior, which issued the Morton policy in 1975, recognizing the cultural importance of bird feathers to native tribes (Morton 1975). The Morton policy created mechanisms for providing tribes access to feathers from birds protected by the ESA and the MBTA. A Department of Justice Memorandum subsequently affirmed the Morton policy and the cultural importance of federally protected birds to tribes (USAG 2012). The memorandum also summarizes the ongoing significance of birds, and especially eagles, to native tribes:

"The Department of Justice recognizes that many Indian tribes and tribal members use, and traditionally have used, federally protected birds, bird feathers, or other bird parts for their tribal cultural and religious expression. Indeed, the eagle plays a unique and important role in the religious and cultural life of many Indian tribes. And in light of the important government-to-government relationship that the United States has with federally recognized tribes, the United States has a strong interest in accommodating the interests of these tribes by protecting the ability of their members to meaningfully practice their religions and preserve their cultures."

Food Provisioning—The hunting of migratory birds provides food for populations in many parts of the United States, and is particularly important for indigenous populations in northern climes (Green and Elmberg 2014). Historically and in present day, indigenous populations in Alaska have relied on the return of migratory waterfowl to supplement their diets. The return of migratory waterfowl in the spring is also part of the cultural heritage of indigenous peoples, when celebrations center around waterfowl harvest.

Recreation (bird watching, hunting)—The recreational value provided by migratory birds is most clearly captured by the time and money that people invest in bird watching and hunting. These two activities provide considerable quality-of-life benefits for those who pursue them (Carver 2013). The 2016 National Survey of Fishing, Hunting, and Wildlife Associated Recreation Report estimated there were 2.4 million migratory bird hunters in the United States who accounted for 16 million migratory bird hunting days and spent an estimated $2.3 billion on trips and equipment (U.S. Department of the Interior et al. 2016). These numbers also do not include the more than $1 billion generated by Migratory Bird Hunting and Conservation Stamps.

In that same year, there were an estimated 45 million bird watchers over the age of 16 in the United States, which is about 18 percent of the population (Carver 2019). These bird watchers spent an estimated $10.3 billion on trips associated with bird-watching activities (Carver 2019). In addition to trip expenditures, it is estimated that equipment-related expenditures in 2016 totaled approximately $29 billion (Carver 2019). The total combined expenditures was approximately $39 billion in 2016 (Carver 2019). The report estimates these expenditures total

approximately $96 billion in direct, indirect, and induced effects on the economy (Carver 2019). Direct effects are the initial impact of the expenditure (e.g. the purchase of goods and services, totaling approximately $39 billion as described above), indirect effects are the secondary impacts of the expenditure (e.g. the purchase of the binoculars by the retailer from the manufacturer), and the combination of direct and indirect effects lead to induced effects, where, for example, expenditures provide the employees of retailers and manufacturers income that is spent on other goods (Carver 2019). Bird watching activities are estimated to have produced 782,000 jobs that provided an employment income of $35 billion. Finally, the report estimates that bird watching activities generated over $16 billion in state and federal taxes (Carver 2019).

Pest Control—Birds provide pest control primarily for insects, but also to a lesser extent for rodents and small mammals (Whelan et al. 2015). Over 50 percent of bird species eat primarily insects, while nearly 75 percent eat insects at least occasionally (Wenny et al. 2011). The reduction of insect pests by birds has been shown to increase fitness, population size, and growth rate for the plants that were being consumed by pests, specifically increasing crop yields for food or fiber. This increase in production can directly increase profits. Where birds provide pest control there is less need for pesticide use, which provides both potential cost savings for the agricultural producer as well as health benefits for society and the environment as a whole.

Illustrative numbers for assessing the economic benefit from pest management were provided by coffee growers in Jamaica. Using experiments where birds were intentionally excluded from an area, researchers determined that having birds on site increased yields and improved production values by $75 per hectare on high-elevation farms and up to $310 on mid-elevation farms (approximately 12% of crop value for mid-elevation farms), when the per capita gross national income was only $3400 (Kellermann et al. 2008 and Johnson et al. 2010). Another example is control of the spruce budworm (*Choristoneura* sp.) by woodpeckers. The budworm is projected to cause $1 billion annually in lost harvest, but studies have shown that woodpeckers are effective in noticeably curbing these losses (Wenny et al. 2011; Whelan et al. 2015). Quantified estimates of the economic benefits of pest control provided by birds across all agricultural and forestry sectors are not available at this time but may be significant. Some of these benefits may be reduced by bird species that depredate on agricultural products. These benefits were recognized by the authors of the 1916 Migratory Bird Treaty with Great Britain on behalf of Canada, and the MBTA, which included insectivorous birds as protected bird species because of their benefits to agriculture.

Seed Dispersal/Pollination—As with pest regulation, there are no available studies that have quantified the total value of seed dispersal by migratory birds. Approximately 33 percent of bird species disperse seeds, and the literature suggests that birds disperse seeds for over 80,000 species of seed-producing plants (Whelan et al. 2015). In addition, birds typically provide pollination for 5 percent of a region's flora and up to 10 percent on islands (Whelan et al. 2008). This contribution to primary productivity is considerable. The ripple effect from this contribution potentially touches nearly every ecosystem service, including climate regulation, oxygen production, food production, erosion control, water-quantity control, air-quality regulation, and many others (Green et al. 2016).

A case study that provides a good example of the value that seed dispersal can provide is the scatter-hoarding by the Clark's nutcracker (*Nucifraga columbiana*) of whitebark pine seeds (*Pinus albicaulis*). Whitebark pine is in severe decline, but Clark's nutcrackers are estimated to benefit the recovery efforts of the U.S. Forest Service by about $800 to $1,000 per acre. That equates to over $11 billion in ecosystem service value across the entirety of the whitebark pine range from a single bird species (Wenny et al. 2011).

Scavenging/Disease regulation—Vultures are the best-known bird scavenger, but many other bird species also fill this important role of removing carrion that can otherwise lead to the spread of disease. Although few studies quantify this benefit, there are examples in the literature of the negative consequences of losing scavenger populations. For example, the decline of the griffon vulture (*Gyps fulvus*) in South Asia led to an increase in rodent and feral dog populations, which in turn led to increases in rabies outbreaks. The estimated cost from the population crash of the vultures was $34 billion from 1993 to 2006 (Markandya et al. 2008; Wenny et al. 2011). Quantified estimates of the economic benefits of avian scavengers across the U.S. are not available at this time.

Insectivorous birds, mentioned earlier, can also help limit the spread of mosquito-borne diseases that affect humans, such as Eastern equine encephalitis and the Zika virus. This natural source of insect control can also have the benefit of reducing the need to use pesticides in the environment.

Nutrient Cycling—Nutrient cycling is the transfer of energy and matter among living organisms and non-living components of the environment. Coastal, colony nesting birds are notably effective at nutrient cycling from the resultant levels of guano by the birds, but birds contribute to nutrient cycling in all habitats (Whelan et al. 2015). Guano has historically been much valued as a source of fertilizer. Modern fertilizers, which were made possible in the early 1900s by the invention of a method for synthesizing nitrogen from air, have reduced the demand for guano. However, there is still a market for guano, particularly for organic farming (Office for Science & Society 2013). Undisturbed, naturally occurring guano is a source of nutrients for primary production in local ecosystems.

3.8.3 Detrimental Impacts of Migratory Birds on Humans

Migratory birds can produce negative social or economic outcomes, such as their role in the spreading of disease or agricultural damage, or causing damage to infrastructure. The collision of a bird with a power-distribution line can not only kill the bird, it can also disrupt power over large areas (creating a safety hazard), sometimes for extended periods. Collisions between vehicles and birds affect tens of millions of birds every year (Loss et al. 2014) while also damaging vehicles and sometimes injuring or even killing vehicle occupants. There is uncertainty and disagreement about the role and extent of migratory birds in producing many of these detrimental impacts. The extent of some of the more prominent detrimental impacts is discussed, and overall estimates of the economic impacts are included where available.

Crop Consumption—Birds consume crops; however, surveys and anecdotal estimates of crop

damage from birds tend to overestimate the extent of damage that occurs based on a study conducted in California (Whelan et al. 2015, Gebhardt et al. 2011). One study of survey estimates for loss of corn crop in Quebec due to bird activities determined that the surveys overestimated the actual crop loss from birds by over 1,000 times (Weatherhead et al. 1982, Whelan et al. 2015). Nonetheless, the economic impacts of crop loss from birds is an ongoing concern, particularly for fruit crops. A 2013 study suggests that Michigan fruit farmers lose $38 million annually to bird-induced crop damage (USDA 2014).surveyed fruit crop farmers across 5 states who grow 4 different fruit crops and determined that bird damage to crops ranged from $104-7267 per hectare with an estimated $189 million in damage across the 5 states and 4 fruit crops (Anderson et al. 2013).

Impacts on Aquaculture—The aquaculture industry estimates that the impacts from migratory birds costs the industry approximately $25 million annually (Craig et al. 2015). These costs are associated with lost product due to bird predation, loss of feed, and the management and hazing costs to protect from bird predation (Craig et al. 2015).

Impacts on Aviation—Collisions between birds and aircraft are a major concern, such as the 2009 emergency landing of U.S. Airways Flight 1549 on the Hudson River in New York that was caused by the plane striking Canada Geese. From 1990 to 2011, along with the increase in airline traffic and incident reporting, aviation strikes with wildlife increased five-fold, from 1,804 in 1990 to 10,083 in 2011, with 97.1% of strikes caused by birds, though from 2000 to 2011 there was a 29% decrease in damaging strikes from wildlife (Federal Aviation Administration and USDA 2012). As a result, public and private airports and airfields incurs costs every year associated with damage from collisions with birds and the costs of wildlife hazard management. While difficult to compile the worldwide annual costs associated with hazards wildlife pose to aviation, it is estimated to exceed $1.28 billion (Allan and Oroz 2001).

Spreading Disease—Birds have been implicated in some instances as being a source for the spread of disease; for example, the H5N1 virus, commonly referred to as the Avian flu. However, this potential detrimental impact is poorly understood, and may often be driven by non-natural conditions and human influence, such as unsanitary cohabitation with birds that can lead to zoonosis, the transfer of infectious disease from animals to humans (Whelan et al. 2015).

3.9 Other Biological Resources

3.9.1 Vegetation/Plant Communities

Encompassing the entire U.S. and its territories, the analysis area for this draft EIS includes many different vegetation types and plant communities, ranging from Arctic tundra to midcontinent grasslands to old-growth coniferous forests. To categorize the various vegetation types, habitat classifications identified in the State of the Bird reports are used (NABCI 2009, 2013). The 2009 State of the Birds report also identified major threats to birds associated with

various habitat types (NABCI 2009)[2]. Many of these threats also apply to vegetation and plant communities in the areas where these habitat types occur. Below are the habitat types along with the threats that have been identified occurring in each:

- Aridlands—deserts, sagebrush, chaparral, and other habitats characterized by low precipitation and a highly variable climate
    - Threats: Habitat loss from urban development; habitat degradation from overgrazing and invasive plants; and climate change
- Grasslands—prairie, pasturelands, and similar
    - Threats: Agricultural practices (overgrazing, ill-timed or too-frequent burning or mowing); conversion from natural landscapes to cropland and/or energy production facilities; and climate change
- Wetlands—open freshwater and saltwater wetlands with vegetation rooted in the aquatic bed or floating on the water's surface
    - Threats: Excessive chemicals, nutrients, and sediments from unsustainable agricultural practices; hydrologic modifications (e.g., stream channelization; construction of levees, dikes, and dams; placement of fill); conversion to cropland and/or energy production facilities; and climate change
- Forests—tropical, subtropical, temperate, and boreal forests; woodlands; and tree savannahs with coniferous or broadleaf trees
    - Threats: Unsustainable logging, intense wildfires following decades of fire suppression; over-browsing by deer; tree pests; and diseases exacerbated by a changing climate
- Coasts—marine shorelines and large inland waterbodies
    - Threats: Unsustainable housing development; pollution; and increased sea temperatures and sea level rise caused by climate change
- Islands—habitats in Hawaii and U.S. overseas territories (including Puerto Rico, Guam, Northern Marianas, U.S. Virgin Islands, and American Samoa), as well as offshore islands and rocks in the continental United States
    - Threats: Invasive plants, wildlife introduced by humans, habitat degradation (e.g., forest clearing for agriculture and urban development), climate change, and sea level rise

3.9.2 Endangered Species and Birds of Conservation Concern

Endangered Species

Of the 1,093 bird species protected under the MBTA, 102 also receive regulatory protection in at least a portion of their range based on their status as species, subspecies, or distinct population segments listed as threatened or endangered under the ESA. There are also six bird species that

[2] The first State of the Birds report was produced in 2009 and established the overall scope and content that has been updated in subsequent years.

are listed domestically under the Endangered Species Act (ESA) but not protected under the MBTA (e.g., Gunnison sage-grouse (*Centrocercus minimus*), and Puerto Rican parrot (*Amazona vittata*)).

Species listed as threatened or endangered under the ESA are protected through a variety of measures. These measures include protection from adverse effects of federal activities; restrictions on taking, transporting, or selling individuals of listed species; development of species recovery plans; and habitat protection. These and related measures contribute to species' survival and assist in achieving the ultimate recovery goals of the ESA: conserving plants and animals and the ecosystems upon which they depend.

Bird species listed as threatened or endangered under the ESA would continue to receive the full protection of the ESA.

Birds of Conservation Concern

The 1988 amendment to the Fish and Wildlife Conservation Act mandates that the Service identify migratory nongame species that have high potential to become candidates for ESA listing without additional conservation measures to protect their populations. This list of species is known as the Birds of Conservation Concern. Of the 1,093 bird species protected by the MBTA, 258, or approximately 24%, are listed in Birds of Conservation Concern 2008 (BCC), including species, subspecies, and populations (USFWS 2008).

Bird taxa considered for the BCC 2020 list include: nongame birds, gamebirds without hunting seasons or where harvest is minimal, and subsistence-hunted nongame birds in Alaska. Excluded from consideration for the BCC 2020 are bird species not protected under the Migratory Bird Treaties; taxa already listed as threatened or endangered under the ESA; or taxa that only occur irregularly or peripherally in the USA.

The BCC list does not necessarily warrant any species for consideration for ESA listing, but instead informs the Service and its conservation partners what species should be a priority for proactive management and conservation actions to ensure their populations are sustained and avoid ESA consideration.

Because the 239 species that appear on the BCC list receive little to no other federal protection aside from the MBTA and are in documented decline, this proposed action has the potential to negatively affect their population sizes and will be further analyzed in Chapter 4.

3.9.3 Overabundant Species

The USFWS maintains a list of migratory bird species protected under the MBTA, Birds of Management Concern (USFWS 2011), that pose management challenges because of documented or apparent population declines, small or restricted populations, dependence on restricted or vulnerable habitats, or overabundance to the point of causing ecological and economic damage. To manage overabundant species, the USFWS utilizes a combination of measures, such as habitat modification and non-lethal deterrents to regulatory approaches that allow for an increase in intentional take through hunting seasons, depredation permits, depredation orders, control orders, or conservation orders (see section 3.6 above).

Overabundant species are overall experiencing population increases, and while some species may be affected by incidental take, it is not causing noticeable long-term negative effects on their populations.

3.10 Management of Migratory Birds

The Service is the principal federal agency charged with protecting and enhancing the populations and habitats for birds that are protected under the MBTA and that spend all or part of their lives in the United States (USFWS 2014). Other federal agencies also have responsibilities to protect migratory birds under Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds, and through other federal mandates. The Service and its partners, including state, regional, national, and international groups, work together to achieve a biologically based, landscape-oriented approach to migratory bird conservation (USFWS 2014). Management activities include steps to avoid and minimize negative impacts on birds and their habitats.

Migratory bird management in North America is one of the most comprehensive and complex wildlife-management programs in the world. No actions have influenced migratory bird management more than the establishment of administrative flyways and their associated management bodies (USFWS 2014). The flyway concept of cooperative management between agencies and partners originated with the intention to maintain populations of game birds for hunting purposes. The concept grew through the recognition that management in any one state or region can affect management in other states and regions within and between flyways. Therefore, it is important to manage species and their associated habitats on broad, regional levels as the Service is able to do across flyways and with international partners, particularly those with which the U.S. has bilateral treaties for the conservation of migratory birds; Canada, Mexico, Russia, and Japan (USFWS 2014).

The Service works closely with flyway councils, which are composed of one representative from each state and province in the respective flyway, to plan, coordinate, implement, and evaluate the scientific management of migratory birds and their habitats (; USFWS 2014). For example, waterfowl breeding populations and wetland conditions are monitored each year in the U.S. and Canada, and then waterfowl are banded post-breeding. The number of hunters is also recorded each year. This information is used to create frameworks for the timing and hunting limits for the following seasons at the flyway level, which states use to set their own hunting rules (USFWS 2015).

Since 2005, the four administrative flyways have developed nongame technical bodies within their structures to coordinate and collaborate across state boundaries. The addition of nongame technical groups within flyways adds synergy to existing nongame bird conservation groups, such as Partners in Flight and the Waterbird and Shorebird conservation initiatives, which are loosely aligned under NABCI and comprise multiple bird conservation partners from agencies, non-governmental organizations, and institutions.

The Service's regional offices (see Figure 3-4 for regional boundaries) oversee regulatory and conservation activities related to migratory birds in each designated region. These activities

include factors relating to migratory bird permit policy developed by the Division of Migratory Bird Management. Permits for raptor propagation, scientific collecting, special purposes (including education), and migratory bird propagation and salvage (including disposal permits) are issued by the Regional Migratory Bird Permit Offices (USFWS 2014). Regional offices also keep records of all other factors that add to intentional take of migratory birds, including subsistence take authorized through MBTA permits for the collection of live or dead birds for their feathers and talons for religious ceremonies (See Section 3.8.3 Native American, Alaska Native, Native Hawaiian and Pacific Islanders/Cultural Resources). Regional migratory bird staff and partners also develop and oversee monitoring and conservation projects for birds of high conservation priority (e.g., Birds of Conservation Concern). They work broadly within the four administrative flyways and with groups affiliated with the NABCI to achieve bird conservation goals locally, regionally, and internationally.

The National Wildlife Refuge System has established more than 200 National Wildlife Refuges specifically to provide breeding or wintering habitat for migratory birds. More than one million acres of wetlands on 356 refuges and more than 3,000 waterfowl production areas are actively managed for the benefit of waterfowl and other birds.

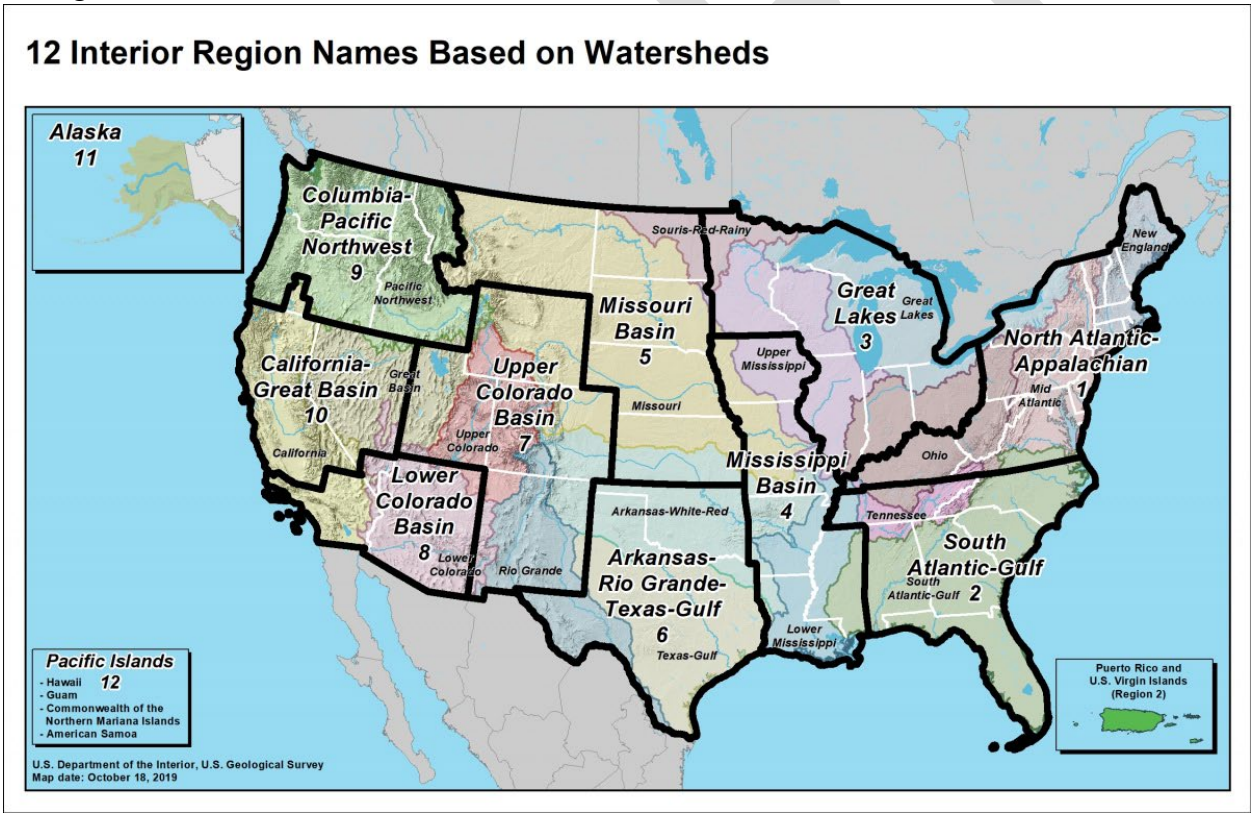

Figure 3-4 The Department of Interior Unified Regions, including the Service.

The Service's Ecological Services (ES) program works collaboratively with other federal agencies, industries, and other stakeholders to achieve infrastructure development goals in ways that are sustainable and compatible with the conservation of fish, wildlife, and their habitats. Field biologists in all 50 states assist project proponents, planners, and personnel in developing plans that accommodate infrastructure needs, such as energy and transportation, while also

protecting the environment and preserving our nation's biological resources. Biologists review and provide recommendations on plans and development designs, craft mitigation plans, provide expertise in wildlife and habitat science, and serve as members on planning teams. Historically ES included migratory bird recommendations to inform project proponents how to reduce incidental take. With the implementation of M-Opinion 37050 recommendations regarding migratory birds are less frequent.

The Office of Law Enforcement investigates wildlife crimes, regulates wildlife trade, helps Americans understand and obey wildlife protections laws, and works in partnership with international, state, and tribal counterparts to conserve wildlife resources. The Office of Law Enforcement enforces compliance with laws and permit conditions. Currently, the Office of Law Enforcement's policy on incidental take is consistent with M-Opinion 37050, which determined incidental take is not prohibited under the Act.

3.10.1 Best Practices

Through partnerships and collaboration, the Service, industry groups, non-government organizations, states, tribes, and other federal agencies have developed many best practices (also known as best management practices, conservation measures, and beneficial practices, and mitigation measures) that are aimed at avoiding and minimizing incidental take of birds. Each set of practices (see Appendix A) has targeted particular hazards and the stressors resulting from those hazards, such as those included in Table 3.2 above. Entities that follow these guidelines and other technical assistance by the Service generally engage in the following types of activities, depending on the industry:

- Consulting with federal and/or state natural resource agencies for technical assistance
- Conducting baseline bird and habitat surveys
- Conducting risk assessments for impacts to migratory birds
- Conducting ongoing or periodic monitoring of migratory birds
- Siting and micro-siting (within project) of projects and infrastructure to reduce risk to birds
- Deploying equipment and other infrastructure to reduce risk of taking birds, such as:
    - changes in lighting
    - installing mono-pole communications towers instead of using guy wires
    - netting of oil-retention ponds to prevent bird entrapment
    - retrofitting power poles to reduce the risk of large bird electrocutions
    - installing nesting structures to attract birds away from infrastructure
- Implementing operational changes to reduce risk of taking birds, such as the following:
    - scheduling vegetation removal, trimming, and grading of vegetated areas outside of the peak bird-breeding season
    - curtailing individual wind turbines under certain conditions
- Developing and implementing systems to detect and report take of birds

- Creating hotlines for the public, agencies, and employees to report bird interactions with infrastructure like power lines

Effective mitigation measures have not been identified for all activities, and not all mitigation measures have been researched sufficiently to accurately determine their effectiveness. For some industries where studies have been completed, mitigation measures have proven substantially effective. Communication towers, for example, have been shown to reduce mortality by about 70 percent by changing to flashing lights and removing guy wires (Gehring et al. 2011). For oil pits, bird mortality can be virtually eliminated if netting is installed and maintained (Trail 2006).

The Service does not have comprehensive estimates of the costs of implementing beneficial practices. Costs vary widely, from simple, low-cost practices like avoiding active nests during vegetation- clearing activities, to practices that have start-up costs but save operators money over the long-term (e.g., installation of blinking lights), to more expensive practices like retrofitting power poles, which can cost thousands of dollars, but also have significant long-term benefits, such as preventing fires and local blackouts. There are also beneficial practices whose primary benefit to the industry is to reduce incidental take of migratory birds with no known financial benefit. One example is feathering wind-turbine blades during periods of peak bird migration, which reduces the risk to birds colliding with the turbine blades but also the electrical output and economic gain for the wind company.

The Service has never directly regulated the use of best practices and technologies under the MBTA and there are no data currently available to determine the extent of their use. Other state or federal regulations also affect construction and operational considerations that interact with birds. For example, the Federal Aviation Administration approved new lighting standards that require flashing lighting on most communication towers greater than 350 feet above ground level. Additionally, 13 states have regulations governing netting of oil pits to varying extent (see p13, USFWS 2009). None of the alternatives affect compliance with the ESA, the Bald and Golden Eagle Protection Act, or state regulations. Therefore, projects that comply with these statutes through mitigation or avoidance measures will likely benefit migratory birds as well. Federal agencies are required to evaluate their impacts to the environment under NEPA. NEPA compliance requires federal entities to identify impacts to the environment affected by a proposal, including impacts to migratory birds if they are likely to occur. NEPA also requires federal entities to assess potential mitigation of unavoidable adverse environmental impacts, which may include analysis of project design or mitigation measures that reduce potential impacts to migratory birds.

3.11 Environmental Justice

Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, requires federal agencies to make environmental justice part of their mission, and to identify and address disproportionately high and adverse human health and environmental effects of federal programs, policies and activities on minority and low-income persons or populations. The mission of the Service is "working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit

of the American people." This mission, combined with the delegation of authority to implement the MBTA, which is founded on the four international treaties with Great Britain (on behalf of Canada), Mexico, Japan, and Russia that were instituted to sustain migratory bird populations for the benefit of humans, means the Service has a responsibility to ensure the sustainability of migratory bird populations for the benefit of the American public.

Migratory birds are, themselves, highly valued by American society, as illustrated in 3.10, and a 2016 analysis by the Service investigating the demographics of bird watchers in the U.S. indicates that low-income and minority Americans also partake in and value migratory birds through bird watching (Carver 2019). Low-income is defined by the U.S. Department of Housing and Urban Development as "80 percent of the median family income for the area", and, based on the 2016 Service analysis, 16-20% of low-income Americans partake in birdwatching, largely around their homes (Carver 2019). The 2016 Service analysis also showed that of those surveyed who identified themselves as birdwatchers, 10% or fewer also identified themselves as minorities, Hispanic, African-American, or Asian (Carver 2019). The importance of migratory birds to tribes is described in section 3.10.

3.12 Summary

Migratory bird species protected by the MBTA are, overall, in decline, with approximately 22% of MBTA protected species in such decline as to warrant inclusion on the Service's BCC list because of concern for their sustainability. Additionally, there are comparatively three billion fewer individual birds estimated to be on the landscape today compared to almost 50 years ago. The loss and continuing decline of North American avifauna has largely been driven by anthropogenic sources that cause both direct and indirect mortality. The extent that this impact is related to any interpretation of the MBTA is unknown and has not been quantified. The detrimental impacts of anthropogenic sources of mortality can be lessened through the adoption of best practices, but the extent of their use and effectiveness has not been quantified in all cases.

Migratory birds provide tremendous value to society and ecosystems. Pest control, seed dispersal, recreation opportunity, nutrient cycling, and all the other services migratory birds provide are being produced wherever migratory birds are located. The socioeconomic value provided by migratory birds is in the billions of dollars. The value from bird watching alone exceeds $92 billion annually, not including the economic benefit provided by supporting over 782,000 jobs (Carver 2019). However, there are insufficient data to derive a total value for most of the direct benefits. Further, many of the benefits provided by migratory birds come from a contribution to the ecological processes that drive ecosystem service production. Although these contributions have not been valued here, the role of birds in fostering primary productivity and the benefits that accrue from that are clearly considerable. Further, migratory birds provide many cultural, psychological, and aesthetic benefits for which economic value is an inadequate measure.

4. Environmental Consequences

4.1 Introduction

This chapter describes the potential environmental consequences of implementing the no action and two action alternatives described in Chapter 2. It is organized by the alternatives, addressing resource areas within each alternative. According to CEQ regulations, NEPA directs the Service to study potential effects to the human environment, as described below (40 CFR 1508.14):

> Human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment. NEPA requires that agencies include in their EISs a detailed statement of, among other things, the environmental impact of the proposed action and a description of unavoidable, adverse, environmental effects should the proposed action be implemented (42 USC 4332).

Potential cumulative effects for the resources presented below, including past, present, or reasonably foreseeable actions that may provide impacts related to the implementation of the preferred alternative, are described individually in the analysis of the effects of each alternative and more generally at the end of this chapter.

Resource impacts are discussed in terms of the context of the intensity, duration, and type of impact. NEPA regulations identify three types of effects: direct, indirect, and cumulative (40 CFR 1508.8).

Direct effects are "caused by the action and occur at the same time and place." Indirect effects are "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable [and] may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR 1508.8). Cumulative effects are those resulting from "the incremental environmental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7).

The Service must follow federal laws, administrative orders, and policies in the development and implementation of management actions and programs. The implementation of any of the alternatives described in this draft EIS would not lead to a violation of these or other mandates, although Alternative B is inconsistent with the Office of the Solicitor's legal interpretation of the scope of the MBTA, as stated in M-37050 (refer to Appendix B).

Chapter 3 describes the state of migratory bird populations, the economic impacts and ecosystem services provided by migratory birds, and the various hazards and stressors that can cause

incidental take of migratory birds. The action alternatives provide different approaches for the Service to provide legal certainty and transparency regarding treatment of incidental take under the MBTA. The hazards would be generally common to all alternatives; therefore, the evaluation focuses on how the alternatives would be implemented. These factors result in meaningful differences among the alternatives in their effects on migratory birds and other resources, which are described in the following sections.

There are currently 1,093 species of migratory birds that are protected under MBTA regulations; refer to 50 CFR §10.13 for the complete list. Some of these species receive additional regulatory protection under the Bald and Golden Eagle Protection Act or according to their status as a federally threatened or endangered species under the ESA. None of the alternatives proposed would change the legal status of birds currently protected by the MBTA.

Executive Orders 12866 Regulatory Planning and Review (U.S. Office of Management and Budget 1993) and 13563 Improving Regulation and Regulatory Review and the OMB Circular A-4 (U.S. Office of Management and Budget, September 17, 2003), identify guidelines or "best practices" for the economic analysis of Federal regulations. With respect to the proposed rule under consideration, an analysis that comports with Circular A-4 would include a full description and estimation of the economic benefits and costs associated with implementation of the proposed rule. However, with specific exceptions, quantitative data on the economic effects to the entities most likely affected by the proposed rule are not generally available. The impacts to those entities most likely affected by the proposed rule will be addressed qualitatively to the extent information is available to do so. Those entities include members of the public, federal, state, tribal, and local agencies, and businesses such as those involved in construction for residential, industrial, and commercial developments; timber harvesting; mining operations; oil and gas extraction; and wind- and solar-energy generation.

Accompanying the proposed rule associated with this draft EIS was a draft Regulatory Impact Analysis (RIA) pursuant to E.O. 12866.[3] The economic analysis presented in this draft EIS further refines the RIA analysis, makes necessary adjustments to be consistent with the analytical framework and alternatives presented in this DEIS, and incorporates information provided by the public on the NOI and the proposed regulations.

As discussed in section 2.1.1 above, we analyzed each alternative with the common assumption that entities may implement measures designed to protect migratory birds from incidental take for a variety of reasons, including: in response to federal, state, tribal, or local statutes, regulations, or guidelines; public perception; size of company; cost of implementation; perceived risk of killing migratory birds; availability of standard industry practices; or perceived legal risk due to uncertainty.

[3] https://www.regulations.gov/document?D=FWS-HQ-MB-2018-0090-0173

4.2 Effects of the Alternatives on the Human Environment

4.2.1 No Action Alternative

On December 22, 2017, the Department of the Interior (DOI), Office of the Solicitor released M-Opinion 37050 (or M-37050) providing a legal interpretation that the MBTA does not prohibit incidental take of migratory birds. Since the release of M-Opinion 37050, the Service has acted in accordance with M- 37050 and limited enforcement of the MBTA to only purposeful actions that have taken or killed migratory birds. Continuing to implement this interpretation and taking no additional action constitutes the No Action alternative. The section below analyzes the impacts of continuing to implement M-Opinion 37050. Continuing to rely on a legal opinion does not provide the public with the same certainty as other action alternatives. However, over time as entities become more confident in the long-term stability of M-37050, there will be a likely reduction in the number of best practices implemented.

Under the No Action Alternative, the Service would continue to enforce the MBTA in cases of unauthorized purposeful take and provide technical assistance to industry, the public, and partners seeking to reduce impacts to migratory birds. The Service would also continue to work with federal agencies to develop and update Memoranda of Understanding under Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds (66 FR 3853) that would avoid or minimize avian mortality from specific hazards of federal actions.

The release of M-Opinion 37050 left many states uncertain as to how to effectively minimize and prevent incidental take of migratory birds. In response, the Association of Fish and Wildlife Agencies (AFWA) conducted an evaluation of state laws that directly address the incidental act of migratory birds and found that 17 states have provisions regulating some form of incidental, indirect, or accidental take of migratory birds (AFWA 2019). Other states have legal language that was made indeterminate or ambiguous by the change in federal interpretation in M-37050, 25 states lack any provisions to regulate incidental take of migratory birds. Of the 17 states regulating incidental take to some degree, the provisions vary substantially in structure and come with unique limitations. There was no evidence that any of these 17 states enforced their provisions specifically regulating the incidental, indirect, or accidental take of migratory birds (AFWA 2019). States may have other regulations that indirectly protect migratory birds.

4.2.1.1 Migratory Birds

The biological effects of the No Action Alternative are in part a result of the effects on the implementation of beneficial practices for migratory birds (see examples in Appendix A). Under the No Action Alternative, there is no regulatory requirement to implement beneficial practices for birds under the MBTA, and no threat of federal criminal prosecution under the MBTA for the incidental take of migratory birds.

Information regarding Service interaction with infrastructure and development projects, as well as information from public comments on the proposed rule and notice of intent for this draft EIS, suggests that some entities that incidentally take migratory birds implement beneficial practices

to reduce take. There are many factors that go into an entity's decision to take actions to reduce incidental take of migratory birds including other federal or state requirements, public perception, size of company, cost of implementation, perceived risk of killing migratory birds, or availability of standard industry practices. Some entities may be continuing to implement practices to reduce take for any of these reasons or simply to reduce their perceived legal risk due to uncertainty, recognizing that a Solicitor's opinion may be changed at any time without requiring a rulemaking process. However, if the No Action Alternative was selected, it is possible that entities, including governmental agencies authorizing actions by private entities, would become more accustomed with the legal interpretation set forth by M-Opinion 37050, resulting in a reduced number of entities that implement best practices over time.

Available information on bird mortality is largely from sources published or compiled prior to the issuance of M-Opinion 37050, when prohibitions of incidental take were enforced under certain circumstances (See Section 3.7). Notwithstanding the other reasons entities implement best practices for birds described above, the level of bird mortality under the No Action Alternative is likely higher than that reported in Section 3.7, particularly for those industries previously subject to enforcement actions under the MBTA. For example, in states that do not require netting over oil pits, fewer pits are covered under this alternative and it is logical to assume that more birds will die in uncovered pits. In addition, recommendations made by the Service such as seasonal avoidance (i.e., practices to clear vegetation outside of the breeding season) are expected to decrease over time for the reasons stated above.

In summary, due to the uncertainty over the long-term status of M-Opinion 37050, some entities would likely continue to implement some best practices to reduce take of migratory birds, hedging their legal compliance on the side of caution. However, over time as entities become more confident of the long-term application of M-37050, there will be a likely reduction in the number of best practices implemented. Therefore, migratory birds will likely experience increasing negative impacts over time as compared to current conditions; these impacts may be significant.

4.2.1.2 Other Biological Resources

Under the No Action Alternative, the Service would continue to rely on voluntary implementation of best practices as the primary means of managing incidental take of migratory birds. As described in 4.2.1.1, the number and geographic distribution of projects implemented with measures designed to avoid or minimize the impacts associated with incidental take would likely be reduced over time. For example, some oil-producing states have regulations requiring netting of oil pits that effectively reduces incidental take of migratory birds whereas other oil-producing states have no regulations or other laws, however, those regulations were not evaluated by AFWA. The lack of legal liability for incidental take under the No Action alternative would likely cause many project proponents to no longer seek or implement guidance from the Service about ways to avoid or minimize adverse effects on migratory birds. Other taxa might also experience negative impacts from reduced implementation of these recommended avoidance and minimization measures.

For example, covering an oil pit not only reduces the mortality of migratory birds, it also may reduce mortality of many other taxa, such as insects, amphibians, and mammals. Birds and bats are at risk for colliding with wind turbines, and typically actions taken at wind facilities to reduce collisions with birds also do so for bats. Measures that are taken to reduce bird electrocutions with powerlines also reduce the risk of wildfires that can imperil local wildlife. In summary, the No Action Alternative would likely result in negative effects on other biological resources such as vegetation and wildlife to the extent that such measures to reduce take are not required by some other statute or regulation.

4.2.1.3 Native American, Alaska Native, Native Hawaiian and Pacific Islanders Cultural Resources

Under current practice, voluntary guidance is provided to industries and agencies to avoid and minimize incidental take of migratory birds. However, tribes are not generally consulted during this process and therefore their concerns may not be adequately addressed on a project-by-project basis. If as described above in section 4.2.1.1, there is an increase in the incidental take of migratory birds and associated impacts with other biological resources, species that are culturally important to native peoples could be impacted.

4.2.1.4 Ecosystem Services and Socioeconomics

Effects on ecosystem services - Many ecosystem services are provided by migratory birds, generating billions of dollars of economic benefits to the U.S. economy (see Section 3.10). As described in 4.2.1.1, the level of incidental take occurring under the No Action Alternative may be higher than that reported in Section 3.7. Increased mortality of birds has a negative effect on the ecosystem services provided by migratory birds. However, data are not readily available to determine the economic value of these changes in ecosystem services.

Economic effects on regulated entities – The economic effects of the No Action Alternative on regulated entities are in part a result of the effects on the implementation of beneficial practices for birds. The No Action Alternative requires no implementation of best management practices, thus does not generate any direct costs associated with these actions. As described in 4.2.1.1, it is anticipated that over time, more entities would reduce implementation of best practices, reducing costs. However, as described in Section 4.2.1.1, while there are a variety of reasons entities implement beneficial practices for birds, there are likely entities that continue to implement these practices due to concerns regarding the uncertainty of the long-term status of M-Opinion 37050 as opposed to a rulemaking. Section 3.13.1 includes information on the types of practices and types of costs associated with implementing best practices. For some industries and practices, there could be costs associated with implementing beneficial practices that entities believe they are compelled to continue to do, due to the regulatory uncertainty.

With no regulatory action, regulated entities participating in projects that have a federal nexus would continue to face impacts caused by potential legal challenges to authorization of those projects in the existing patchwork of inconsistent legal standards caused by different federal

appellate courts reaching different conclusions on whether incidental take is prohibited by the MBTA. Regulated entities may face additional costs in implementing risk-minimizing behaviors in light of the regulatory uncertainty described in the No Action Alternative. For example, entities may incur expenditures used to minimize long-term legal risk and on increased risk premiums on loans, financial capital, and insurance. Similarly, if individual states enact separate incidental take protections for birds in response to the No Action Alternative (see Economic effects on government entities below), as many are now considering, industries doing business across state lines may be faced with an increasingly complex, costly, and inconsistent regulatory environment. However, the primary effect on regulated entities would generally be positive because of the potentially reduced costs resulting from decreased implementation of best practices to avoid incidental take of migratory birds over time.

As birds of conservation concern and other vulnerable bird species face likely negative effects from the No Action Alternative (see 4.2.1.1), some may decline to the point of requiring listing under the ESA. In addition, the lack of legal protection against incidental take for migratory birds under the No Action Alternative may factor into delisting decisions for birds listed under the ESA, which may prolong such decisions. Entities affecting newly listed species or species delayed for delisting as a result of this alternative, may face increased costs of compliance. These impacts are difficult to predict and depend on the specific status of each individual species.

Economic effects on government entities – States manage wildlife within their state borders. Most states have relied on the Service implementing the MBTA and enforcing previously prohibited incidental take of birds and have partnered with the Service's staff and enforcement capabilities to work with regulated entities to meet both federal and state requirements. Under the No Action Alternative, with M-37050 still relatively recent, states are assessing the implications of M-Opinion 37050 on their regulation of migratory birds and how to adjust state policies and capacities. If the No Action Alternative continued indefinitely, this would likely increase costs to at least some states to develop and implement regulatory and policy changes to meet their state mandates to protect birds.

As birds of conservation concern and other vulnerable bird species face likely negative effects from the No Action Alternative (see 4.2.1.1), some may decline to the point of requiring listing under the ESA. In addition, the lack of legal protection against incidental take for migratory birds under the No Action Alternative may factor into delisting decisions for birds listed under the ESA, which may prolong such decisions. Though these impacts are difficult to forecast and depend on the specific status of each individual species, it is reasonable to predict that listing new species or delaying species delisting as a result of this alternative may increase costs to the Service to implement ESA-related actions.

In sum, the impacts on government entities of the No Action Alternative are expected to be negative and may be significant in some individual cases, although the Service's law enforcement program would continue to realize cost savings from not enforcing incidental take under the Act.

4.2.1.5 Environmental Justice

This alternative is not expected to have a disproportionate direct or indirect effect on any minority or low-income populations. Under this alternative the standards would apply equally to all persons, regardless of race or income. Overall, environmental justice effects of the No Action alternative are expected to be minimal.

4.2.2 Alternative A: Promulgate regulations that define the scope of the MBTA to exclude incidental take

Alternative A is the Service's preferred alternative. Under this alternative, the Service will promulgate regulations that define the scope of the MBTA take prohibitions to relate strictly to purposeful take directed at migratory birds, thus excluding incidental take. This regulatory change would not alter the current implementation or enforcement of the MBTA where parties will not be subject to enforcement for the incidental take of birds. By adopting this alternative, the Service would create a greater degree of legal and regulatory certainty compared to the No Action Alternative, which relies on a legal interpretation that can more easily be changed in the future without any public process. Given the greater degree of certainty compared to the No Action alternative, we expect the implementation of best practices to be further reduced over time, resulting in increased environmental impacts in the long-term.

In an effort to mitigate the expected adverse impacts from this alternative, the Service could expand and promote our continued work with appropriate stakeholders and industry to develop and promote best practices for the mitigation of impacts to migratory birds. Other potential mitigation activities we would consider pursuing are increasing training and collaboration with state partners and pursuing additional partnerships for expanding migratory bird monitoring efforts. In addition, the Service will work to provide training to Service staff on current best practices on managing incidental take and continue to advise all Service Offices to provide technical assistance for reducing impacts to migratory birds to any entity that may, either voluntarily or to comply with other federal, state, tribal, or local laws and regulations, seek to avoid or minimize their project's impacts on migratory birds and their habitats.

4.2.2.1 Migratory Birds

In the No Action alternative (given the uncertainty of whether the legal opinion could change, be withdrawn, or judicially vacated), some entities would likely continue to implement beneficial practices to reduce take of migratory birds, guarding for their legal compliance on the side of caution and uncertainty. Under Alternative A, a regulation would create more legal certainty and thus it is likely that fewer entities will implement best practices aimed at reducing incidental take, unless still required to do so under other federal, state, tribal, or local laws and regulations. As a result, compared to the No Action Alternative, the level of bird mortality reported in Section 3.7 would likely be higher, particularly for those industries previously subject to enforcement actions under the MBTA.

There are many factors that may go into an entity's decision to take actions that reduce incidental take of migratory birds, including other federal or state requirements, public perception, size of company, cost of implementation, perceived risk of killing migratory birds, or availability of standard industry practices. However, unlike the No Action Alternative, there would be no legal risk under the MBTA for not implementing best practices due to the regulatory action to codify M-Opinion 37050. For example, as described in 4.2.1.1, reduced incentives for netting oil pits in states that do not require them[4] is likely to result in more birds dying in uncovered pits.

Thus, compared to the No Action alternative, negative impacts on migratory birds are expected to increase over time as more entities react to the certainty that incidental take is not prohibited under the MBTA.

4.2.2.2 Other Biological Resources

Under Alternative A, the Service would continue to rely on voluntary guidance as the means of managing incidental take of migratory birds. The number and geographic distribution of projects implemented with measures designed to avoid or minimize the impacts associated with incidental take would likely be reduced over time. Because Alternative A provides a greater degree of legal certainty, it is likely that fewer entities would seek or implement guidance from the Service about ways to avoid or minimize adverse effects on migratory birds. If the implementation of these measures is reduced, other taxa might also experience increased negative impacts. In summary, Alternative A would likely cause negative impacts to vegetation and wildlife.

[4] Thirteen states have regulations governing netting of oil pits (*see* p.13, USFWS 2009).

4.2.2.3 Native American, Alaska Native, Native Hawaiian and Pacific Islanders Cultural Resources

Under Alternative A, voluntary guidance may be provided to industries and agencies to avoid and minimize the incidental take of migratory birds. However, tribes are not required to be consulted during this process and therefore their concerns may not be adequately addressed on a project-by-project basis. If as described above in section 4.2.2.1, there is an increase in the incidental take of migratory birds and associated impacts on other biological resources, species that are culturally important to native peoples could be negatively impacted.

4.2.2.4 Ecosystem Services and Socioeconomics

Effects on ecosystem services - Many ecosystem services are provided by migratory birds, generating billions of dollars of economic benefits to the U.S. economy (see Section 3.10). As described in 4.2.2.1, Alternative A would likely result in an increase in incidental take of birds above the No Action Alternative, which would result in greater loss of ecosystem services provided by migratory birds compared to the No Action Alternative. However, data are not readily quantifiable and available to determine an accurate economic value of these changes in ecosystem services, but the amount may be significant.

A loss in ecosystem services provided by migratory birds would be expected in market and non-market goods and services. For example, a loss of birds providing pest insect control would increase crop damage to agricultural producers and some producers would likely incur increased costs for pesticides, which could have their own effects on ecosystem services. Similarly, birds help control insects that are vectors for disease, such as eastern equine encephalitis and the Zika virus. Fewer insect-eating birds would be expected to increase public health costs and mosquito control costs. See section 3.10 for more examples of ecosystem services.

Economic effects on regulated entities – The economic effects of Alternative A on regulated entities would largely be a result of its effects on the implementation of beneficial practices for birds. As described in Section 4.2.2.1, with the increased legal certainty associated with codifying what is prohibited by the MBTA into regulations, it is expected that more entities would reduce or eliminate implementing beneficial practices. Section 3.13.1 includes information on the types of practices and types of costs associated with implementing them. For some industries and some practices, there would likely be cost savings from not implementing beneficial practices. For example, one best practice applied to many industries, like highway construction, is to avoid construction and vegetation clearing during migratory-bird nesting season in appropriate habitat. There is a cost to delaying projects until after nesting season, and some operators may choose to avoid such costs with no threat of enforcement under the MBTA.

With the proposed regulatory action, courts would more likely defer to the Service's interpretation of the MBTA, resolving some or all of the inconsistent legal standards caused by the differing views of federal appellate courts on whether incidental take is prohibited by the MBTA. Additional benefits may accrue as more regulated entities adjust risk-minimizing behaviors in light of the increased regulatory certainty provided by the rulemaking described in Alternative A. For example, the Service anticipates that the additional regulatory certainty

provided by a regulation may generate additional cost savings as more entities reduce expenditures previously used to minimize legal risk and decrease risk premiums on loans, financial capital, and insurance. However, if individual states enact separate incidental take protections for birds in response to Alternative A (see Economic effects on government entities below), as many are now considering, industries doing business across state lines may be faced with an increasingly complex, costly, and inconsistent regulatory environment.

As birds of conservation concern and other vulnerable bird species face likely negative effects from Alternative A (see 4.2.2.1), some may decline to the point of requiring listing under the ESA. In addition, the lack of legal protection against incidental take for migratory birds under Alternative A may factor into delisting decisions for birds listed under the ESA, which may prolong such decisions. Entities affecting newly listed species or species delayed for delisting as a result of this alternative, may face increased costs of compliance. These impacts are difficult to predict and depend on the specific status of each individual species.

Economic effects on government entities – States manage wildlife within their state borders. Most states have relied on the Service to implement the MBTA and enforce generally what was previously the prohibited incidental take of birds. States have also partnered with the Service's biological and law enforcement staff to assist regulated entities in meeting both federal and state requirements. Under the No Action Alternative, with M-Opinion 37050 still relatively new, many states are still assessing the implications of M-Opinion 37050 on their state regulation of migratory birds and how to adjust state policies and capacities. Under Alternative A, with the legal certainty provided by a regulation, some states may need to enact changes in their regulatory processes and staffing to meet state laws governing birds (see 4.2.1). This would likely increase costs for states as they work to develop and implement regulatory and policy changes to meet their state mandates to protect birds.

As birds of conservation concern and other vulnerable bird species face likely negative effects from Alternative A (see 4.2.2.1), some may decline to the point of requiring listing under the ESA. In addition, the lack of legal protection against incidental take for migratory birds under Alternative A may factor into delisting decisions for birds listed under the ESA, which may prolong such decisions. Though these impacts are difficult to forecast and depend on the specific status of each individual species, it is reasonable to predict that listing new species or delaying species delisting as a result of this alternative may increase costs to the Service to implement ESA-related actions.

4.2.2.5 Environmental Justice

This alternative is not expected to have a disproportionate direct or indirect effect on any minority or low-income populations. Under this alternative the standards would apply equally to all persons, regardless of race or income. Overall, environmental justice effects of Alternative A are expected to be minimal.

4.2.3 Alternative B: Withdraw M-Opinion 37050 and promulgate regulations that define the scope of the MBTA to include incidental take

In this Alternative, M-Opinion 37050 would be withdrawn and the Service would implement the MBTA as it applies to incidental take under the prior interpretation outlined in M-Opinion 37041. The Service would promulgate a regulation to define the scope of the MBTA as outlined in withdrawn M-Opinion 37041. Although DOI does not believe that this is a correct reading of the legislative history and case law as stated in M-Opinion 37050, by reverting to the prior interpretation, the Service would view the incidental take of migratory birds as a violation of the MBTA. The Service considered the MBTA's misdemeanor provision to have no *mens rea* requirement (strict liability) and relied on enforcement discretion to determine when to pursue alleged incidental take violations.

In addition to the threat of enforcement, the Service previously encouraged compliance by recommending the implementation of voluntary best practices to demonstrate the project proponent took reasonable actions to address bird impacts. Following these guidelines and other technical assistance by the Service helped entities reduce incidental take of migratory birds and was one factor the Service considered in exercising its discretion in pursuing enforcement actions. See Section 3.13.1 for examples of these best practices. This alternative would provide a greater level of legal certainty by creating a regulatory definition of the scope of the MBTA. However, uncertainty would remain in the regulated community regarding what is required to achieve compliance with the MBTA when compared to the No Action Alternative and Alternative A.

4.2.3.1 Migratory Birds

Withdrawing M-Opinion 37050 and interpreting the MBTA as prohibiting incidental take of migratory birds would likely increase the application of best practices to reduce impacts on birds across most industries. Prior to M-Opinion 37050, the Service relied on the combination of technical assistance and enforcement discretion to manage the incidental take of migratory birds. Under this framework, best practices were developed and implemented by many industries. All measures were voluntary and used to demonstrate good faith efforts by a particular entity that reduction of incidental take was being considered in project planning. Application of voluntary measures was also not a guarantee against enforcement. Given the voluntary nature of these measures, there was inconsistent implementation across industries and entities. Migratory birds experienced varying degrees of incidental take by industry and were experiencing widespread population level declines in spite of this approach (as outlined in Chapter 3 of this draft EIS).

It is important to note that enforcement actions for incidental take under this alternative would not be uniform or "automatic." Appellate courts in the Fifth, Eighth, and Ninth Circuits questioned the Department's prior reading of the MBTA to include incidental take and many other courts have argued for various limitations on the application of strict liability for incidental or accidental taking or killing.

Prior to M-Opinion 37050 the Service completed on average 30 investigations of industrial take per year involving the MBTA, as discussed in more detail in section 2.3.2. After M-Opinion 37050, there have been no prosecutorial actions for incidental take under the MBTA initiated by the Service. Assuming the Service has similar capacity as prior to M-Opinion 37050, and would

take a similar approach, it is anticipated that the increased threat of enforcement of incidental take prohibitions under the MBTA would cause more entities to enact beneficial practices than the No Action Alternative and Alternative A.

The Service provides technical assistance to a variety of entities under the laws the Service is charged with administering and implementing, including the MBTA. Since the publication of M-Opinion 37050, the Service has experienced decreased demand for technical assistance associated with migratory birds. Assuming the Service has similar capacity as prior to M-Opinion 37050, and would take a similar approach, it is anticipated that demand for technical assistance provided by the Service would increase, which we would expect to result in greater adoption of beneficial practices compared to the No Action Alternative and Alternative A.

Enforcement of violations of the MBTA would also result in fines and other adjudications for corrective actions to address illegal take. In the past, MBTA-related fines and other adjudications generated millions of dollars that were spent on habitat protection and restoration and other mitigation measures that benefited birds, as referenced in section 2.3.2.

It is reasonable to assume that there would be an increase in implementation of best practices as entities seek enforcement discretion compared to the No Action Alternative or Alternative A. However, there would be greater legal uncertainty for entities regarding what actions would afford them enforcement discretion if take occurred and many occurrences of incidental take would not be enforced or successfully prosecuted. The portion of funds contingent on MBTA-liability resulting from mitigation of enforcement actions would benefit birds through habitat protection and restoration, although incidental take of migratory birds would continue to occur under Alternative B.

4.2.3.2 Other Biological Resources

Under this alternative, the reliance on voluntary guidance to reduce impacts to migratory birds would benefit other resources only to the degree that the measures were implemented. If there was an increase in beneficial practice implementation compared to the No Action alternative, then other biological resources may benefit as measures to reduce threats to birds often reduce threats to other taxa, such as preventing animals other than migratory birds from entering oil pits. Artificial lighting at night, such as obstruction lights on communication towers, has been found to disrupt the circadian rhythms of local insects, so decreasing the amount of lighting can also benefit arthropods, which are an important part of most food chains and functioning ecosystems. Other measures that benefit other resources include seasonal vegetation removal restrictions and siting projects in already degraded habitat compared to undisturbed habitat. While it's unknown the extent to which other biological resources could be affected by Alternative B, it is likely the effect would be beneficial.

4.2.3.3 Native American, Alaska Native, Native Hawaiian and Pacific Islanders Cultural Resources

Under this alternative, voluntary guidance would be provided to industries and agencies to avoid and minimize incidental take of migratory birds. However, tribes are not required to be consulted

during this process and therefore their concerns may not be adequately addressed on a project-by-project basis. There would be more oversight of these projects as law enforcement staff would investigate incidental deaths. Assuming that more best practices are implemented as entities try to complete their due diligence to gain the benefit of enforcement discretion, as described above, both birds and other biological resources would likely benefit. While, some culturally significant species may still be impacted, it is likely to be at a reduced rate or not at all.

4.2.3.4 Ecosystem Services and Socioeconomics

Effects on ecosystem services - Many ecosystem services are provided by migratory birds, generating billions of dollars of economic benefits to the U.S. economy (see Section 3.10). As described in 4.3.3.1, Alternative B is expected to result in a decrease in incidental take of birds relative to the No Action Alternative and Alternative A. This is expected to result in an increase in ecosystem services provided by migratory birds compared to the No Action Alternative and Alternative A. However, data are not readily quantifiable and available to determine the economic value of these changes in ecosystem services.

Habitat restoration from MBTA-related fines as a result of enforcement actions would benefit birds and other ecosystem services provided by that habitat, such as providing clean water, open space, and flood protection. In the past, fine revenue from prosecuting incidental take protected or restored thousands of acres of wetland habitat in priority bird conservation areas (see 2.3.2).

Companies that benefit from ecosystem services, such as certain agricultural producers and eco-tourism companies, would be expected to benefit from any increases in ecosystem services provided by Alternative B.

Economic effects on regulated entities As described in Section 4.2.3.1, the threat of enforcement under the MBTA for incidental take of birds and the increase in Service technical assistance recommendations regarding migratory birds would likely result in more entities adopting or enhancing their implementation of beneficial practices for birds. Section 3.13.1 includes information on the types of practices and types of costs associated with implementing them. It is anticipated that Alternative B would result in increased costs to entities for implementing such beneficial practices compared to the No Action Alternative and Alternative A.

With no regulatory action, regulated entities would likely face additional costs related to differences in enforcement and litigation of projects with a federal nexus across the existing patchwork of inconsistent legal standards caused by different federal appellate courts reaching different conclusions on whether incidental take is prohibited by the MBTA. Additional costs may accrue as more regulated entities adjust risk minimizing behaviors in light of the decreased regulatory certainty provided by Alternative B. For example, the Service anticipates that the reduced regulatory certainty provided by Alternative B may generate additional costs as more entities increase expenditures to minimize legal risk and potentially experience increased risk premiums on loans, financial capital, and insurance.

As birds of conservation concern and other vulnerable bird species face likely positive effects from Alternative B (see 4.2.3.1), some may avoid declining to the point of requiring listing under

the ESA compared to the No Action Alternative and Alternative A. In addition, the legal protection against incidental take for migratory birds under Alternative B may factor into delisting decisions for birds listed under the ESA, potentially increasing the likelihood of delisting. Entities may face decreased costs of compliance as a result of these potential effects. These impacts are difficult to predict and depend on the specific status of each individual species.

Economic effects on government entities – States manage wildlife within their state borders. Most states have relied on the Service to implement the MBTA and enforce the previously prohibited incidental take of birds and have partnered with Service staff and enforcement capabilities to assist regulated entities in meeting both federal and state requirements. Continued reliance on the Service to regulate incidental take prohibitions under the MBTA and to provide technical assistance on birds would avoid the potential costs to states of the No Action Alternative and Alternative A.

The Service would incur increased costs compared to the No Action Alternative to enforce and implement the MBTA under Alternative B. These costs would be required to perform investigations and related law enforcement actions, and also potentially to develop additional technical assistance guidance and increase technical assistance due to the expected increased requests from entities seeking compliance under the MBTA. For example, prior to M-37050, from January 1, 2013, through December 31, 2017, the Service Office of Law Enforcement completed approximately 152 industrial take investigations involving MBTA protected species. These represent approximately 7,906 investigative hours worked by FWS Special Agents and involve industrial take investigations. The total estimated salary cost associated with this enforcement was $2 million.

As birds of conservation concern and other vulnerable bird species face likely positive effects from Alternative B (see 4.2.3.1), some may avoid declining to the point of requiring listing under the ESA compared to the No Action Alternative and Alternative A. In addition, the legal protection against incidental take for migratory birds under Alternative B may factor into delisting decisions for birds listed under the ESA, potentially increasing the likelihood of delisting and reducing long-term management costs for those species. Though these impacts are difficult to forecast and depend on the specific status of each individual species, it is reasonable to predict that the Service may face decreased costs to implement ESA-related actions as a result of these potential effects.

4.2.3.5 Environmental Justice

This alternative is not expected to have a direct or indirect effect on any minority or low-income populations. Under this alternative the standards would apply equally to all persons, regardless of race or income. Overall, environmental justice effects of the Alternative B are expected to be minimal.

4.3 Transboundary Impacts

Agencies must include analysis of reasonably foreseeable transboundary effects of proposed actions in their analysis of proposed actions in the United States (CEQ 1997). Transboundary

impacts are those environmental impacts resulting from a federal action taking place in the U.S. that may affect other countries or jurisdictions. Migratory birds do not adhere to the political boundaries between the U.S. and the neighboring countries of Canada and Mexico or limit their migration patterns according to administrative boundaries. The 1,093 species covered under the MBTA have varying ranges that in some cases extend into many countries around the world. Therefore, the proposed rulemaking has the potential to have impacts not only within the boundaries of the U.S., but throughout the ranges of migratory birds. Migratory birds that spend only a portion of their annual life cycle in the U.S. may be exposed to a multitude of hazards that cause incidental take. The magnitude of this exposure would change based on the extent to which each alternative addresses these hazards, which may or may not have BMPs implemented. Thus, if migratory birds are negatively affected during the time they spend in the U.S. before migrating to another country, this could also negatively affect bird populations in those countries as well as the ecosystem services and socioeconomics derived from migratory birds. The alternatives that have the potential to benefit migratory birds during the time they spend in the U.S. would similarly benefit bird populations in the other countries where the migratory birds also occur, as well as the ecosystem services and socioeconomics derived from migratory birds and vice versa.

4.4 Cumulative Impacts

Cumulative effects include past, present, and reasonably foreseeable future actions in addition to the proposed action. Impacts, both negative and positive, accumulate over time and the degree and intensity of those impacts vary depending on the type of environment in which they occur. Impacts accumulate by adding the same type of impact over time (such as habitat loss), or two types of impacts can interact with each other and the impact of both will be greater than the impact individually (such as two types of poisons). Specific cumulative impacts are also discussed above in section 3 in the analysis of the affected environment (past and present actions) and in section 4.2 under each alternative, along with direct and indirect impacts, where appropriate. Cumulative impacts discussed below are more general in nature and focus on how broad anthropogenic impacts may affect migratory birds in the foreseeable future.

4.4.1 Future U.S. Growth Projections

The majority of impacts to birds come from the human alteration of the landscape. According to the U.S. Census Bureau (Colby and Ortman 2015), the U.S. population is expected to increase from 319 million people in 2014 to just under 417 million people in 2060; an average increase of 2.1 million people per year. With increasing populations, the demand for space, energy, and food will also continue to grow.

Concurrently with population growth is the need for urban center expansion, increased conversion of land for agriculture, and the demand to meet energy requirements. It is estimated that approximately one acre of land is lost to urbanization for every person added to the U.S. population (Pimentel and Giampietro, 1994) and that urban expansion will increase by 139% over the next 50 years and occupy 17% of the U.S. land area (Terrando et al. 2014).

As urban areas continue to sprawl, increased pressure will be applied to agricultural sectors as limited land area becomes an issue, resulting in less habitat available for birds and biological resources. Agricultural sectors may have to find new innovative ways to grow crops more efficiently. Examples of how agriculture may produce greater crop yields in less area includes using more genetically modified seeds, increasing annual harvest rates, and resorting to increased chemical applications (e.g., fertilizer, pesticides, rodenticides, etc.) to reduce crop loss and increase plant vigor.

In addition to housing and feeding a growing nation, there will be severe strains on how to power a growing nation. This could mean reliance on multiple sources of energy; both fossil fuels and renewable energy. According to projections, global energy consumption will continue to grow by 0.7 percent per year thru 2050 (Nyquist 2016) and thus increased energy production will be required to meet these demands.

4.4.2 Impacts of Human Population Growth on Birds

The impacts of U.S. population growth and the drive to meet societal demands for housing, food, and energy could have significant impacts on the environment. Environmental impacts associated with these needs include accelerated alteration of landscapes due to shifts in climate and increased hazards on the landscape, air pollution, acid rain, energy waste (e.g., radioactive waste), and habitat destruction. As a result, it can be anticipated that human population growth will negatively affect migratory birds.

Impacts to migratory birds could result from the increase in anthropogenic impacts such as collision risk from increases in glass and lighting, wind energy, solar development and electrical transmission and distribution lines. These impacts might be offset to some degree with the continued development of more effective technologies and efficiency measures that may also reduce the risk of bird mortality.

In addition to the potential increase in anthropogenic impacts there would be an increased rate of habitat loss and degradation, increased application of chemicals, degradation of air and water quality, and potential for large environmental incidents (e.g., oil spills, pipeline breaks, and wildfires). As urbanization and agricultural intensification increase, the amount of habitat that remains intact and suitable for providing all resources required for breeding, feeding, and sheltering will almost certainly decrease.

Vast areas of forest, prairie, wetland, and estuary habitat have been developed for agricultural, industrial, commercial, residential, recreational, and other uses. Although statutory and regulatory requirements for environmental protection have become widespread in recent decades, many habitat types continue to decline as they are converted to other uses (North American Bird Conservation Initiative 2014). This past and ongoing loss of habitat is a major cause of decline for many migratory birds (North American Bird Conservation Initiative 2014). Wetland loss, for instance, has had a particularly deleterious cumulative effect, with as much as 117 million acres lost since the 1780s (Dahl 1990).

4.4.3 Beneficial Effects

The MBTA was instituted to prevent the large-scale intentional harvesting of migratory birds that threatened their survival. Environmental laws have substantially reduced the introduction of chemicals that are harmful to birds. Populations of many bird species recovered following the implementation of restrictions on the use of chlorinated pesticides (e.g., DDT) during the 1970s (Rattner 2007). Other environmental laws, notably NEPA, Clean Water Act, and the ESA, have provided a variety of means to avoid and reduce some environmental changes that are harmful to migratory birds.

Business and industry have taken steps to reduce bird loss. Organizations in which industry has participated, such as the Wind Turbine Guidelines Advisory Committee and the Avian Power Line Interaction Committee, worked closely with the Service to develop guidelines that include mitigation measures for migratory bird protection. Some architects and building developers have instituted anti-glare measures, and some industrial sites are using covers for ponds that contain material deleterious to migratory birds. Oil and gas operations are increasingly using closed-containment systems instead of open pits for waste materials during drilling operations, eliminating this threat to birds.

These past measures will continue to benefit migratory birds into the future to the extent they continue to be implemented. New technologies may also continue to reduce impacts from sources of mortality that have traditionally killed birds.

4.4.4 Overall Cumulative Environmental Effects

Regardless of what alternative is selected, existing trends of habitat loss and the proliferation of anthropogenic hazards on the landscape are expected to continue and will adversely affect most migratory birds and the ecosystems that support them, in some cases contributing to population declines. The No Action Alternative and Alternative A (promulgate regulations) have the potential to increase the rate and severity at which anthropogenic effects negatively affect migratory birds. Alternative B (rescind M-Opinion 37050) encourages or requires the use of best practices and thus could decrease the rate and severity at which anthropogenic effects negatively impact migratory birds.

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APPENDIX A. Available Best Practices (also known as Best Management Practices, Conservation Measures, and Beneficial Practices), organized by the threats to migratory birds each addresses.

Multiple threats:

Nationwide Standard Conservation Measures (FWS)

This is a comprehensive compilation of many stressors that may exist as a result of adding hazards to the landscape. Each stressor that is identified is followed with specific actions or considerations that can be ma de to avoid or minimize negative effects.

Available online:
https://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Power lines:

The Avian Powerline Interaction Committee (APLIC) is an industry-led collaboration with government and non-government conservation organizations that has identified several effective measures to reduce the risk of bird collisions with powerlines and their associated infrastructure. They have developed several publicly available resources:

Reducing Avian Collisions with Power Lines – The State of the Art in 2012
APLIC 2012, available online:
https://www.aplic.org/uploads/files/11218/Reducing_Avian_Collisions_2012watermarkLR.pdf

Reducing Avian Collisions with Power Lines – The State of the Art in 2006
APLIC 2006, available online:
https://www.aplic.org/uploads/files/2613/SuggestedPractices2006(LR-2watermark).pdf

Avian Protection Plan (App) Guidelines
APLIC 2005, available online: https://www.aplic.org/uploads/files/2634/APPguidelines_final-draft_Aprl2005.pdf

Eagle Risk Framework A Practical Approach for Power LinesSource
APLIC 2018, available online:
https://www.aplic.org/uploads/files/15798/APLICEagleRISKFramework-APraticalApproachforPowerLines-December132018FinalwAppendixPUBLIC.pdf

Best Management Practices for Electric Utilities in Sage-Grouse Habitat
APLIC 2015, available online:
https://www.aplic.org/uploads/files/15798/APLICEagleRISKFramework-APraticalApproachforPowerLines-December132018FinalwAppendixPUBLIC.pdf

Wind Energy:

USFWS Land Based Energy Guidelines
U.S. Fish and Wildlife Service 2012, available online: https://www.fws.gov/ecological-services/es-library/pdfs/WEG_final.pdf

Worldwide Wind Guidelines. Metrics and methods – tools for assessing impacts to birds and bats and addressing episodic mortality events
U.S. Fish and Wildlife Service 2011, available online: https://www.fws.gov/ecological-services/es-library/pdfs/worldwide_wind_guidelines.pdf

Wind power siting, incentives, and wildlife guidelines in the United States. Jodi Stemler Consulting, Denver, CO
U.S. Fish and Wildlife Service 2007, available online: https://www.fws.gov/habitatconservation/windpower/AFWA%20Wind%20Power%20Final%20Report.pdf

Guidelines for Information Requirements for a Renewable Energy Construction and Operations Plan
Bureau of Ocean Energy Management 2016, available online: https://www.boem.gov/COP-Guidelines/

Wind Power Siting, Incentives, and Wildlife Guidelines in the United States
U.S. Fish and Wildlife Service 2007, available online: https://www.fws.gov/habitatconservation/windpower/AFWA%20Wind%20Power%20Final%20Report.pdf

Wind energy: Great Lakes regional guidelines
The Nature Conservancy 2018, available online: https://www.fws.gov/habitatconservation/windpower/AFWA%20Wind%20Power%20Final%20Report.pdf

Bird-Smart Wind Energy
American Bird Conservancy 2019, available online: https://abcbirds.org/wp-content/uploads/2019/05/bird-smart-wind-energy.pdf

Building and Glass:

Reducing Bird Collisions with Buildings and Building Glass Best Practices
U.S. Fish and Wildlife Service 2016, available online: https://www.fws.gov/migratorybirds/pdf/management/reducingbirdcollisionswithbuildings.pdf

Best practices for data collection in studies of bird-window collisions
Smithsonian Conservation Biology Institute, Migratory Bird Center (year unknown), available online:

https://www.fws.gov/migratorybirds/pdf/management/Lossetal2014bestpracticesforwindowdata.pdf

Bird Safe Buildings Act
U.S. Congress 2019, available online: https://www.congress.gov/bill/116th-congress/house-bill/919

Communication Towers:

Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning
U.S. Fish and Wildlife Service 2018, available online: https://www.fws.gov/migratorybirds/pdf/management/usfwscommtowerguidance.pdf

Opportunities to Reduce Bird Collisions with Communications Towers While Reducing Tower Lighting Costs
Federal Communications Commission 2017, available online: https://www.fws.gov/migratorybirds/pdf/management/fccopportunitiestoreducebirdcollisions.pdf

Tower Owners: Save Birds! Save Money!
Federal Communications Commission 2017, available online: https://www.fcc.gov/guides/towers-and-birds

Migratory Bird Treaty Act Conservation Opportunities Revisions to Federal Aviation Administration Obstruction Marking and Lighting Advisory Circular
U.S. Fish and Wildlife Service 2016, available online: https://www.fws.gov/migratorybirds/pdf/management/communicationtowerlightingfactsheet.pdf

Oil and Gas Operations:

Contaminant Issues - Oil Field Waste Pits
U.S. Fish and Wildlife Service approximately 2009, available online: https://www.fws.gov/mountain-prairie/contaminants/contaminants1c.html

Minimizing Risk to Migratory Birds in Oil and Gas Facilities
U.S. Fish and Wildlife Service, year unknown, available online: https://www.fws.gov/mountain-prairie/contaminants/oilPits.php

Fluid Minerals Operations Reducing Preventable Causes of Direct Wildlife Mortality
Bureau of Land Management 2012, available online: https://www.blm.gov/policy/im-2013-033

Open Pipes:

Reducing Preventable Wildlife Mortalities BLM IM 2016-023
Bureau of Land Management 2016, available online: https://www.blm.gov/policy/im-2016-023

Longline Fisheries and Marine Debris:

Agreement on the Conservation of Albatrosses and Petrels
Agreement on the Conservation of Albatrosses and Petrels 2018, available online: https://acap.aq/en/acap-agreement/206-agreement-on-the-conservation-of-albatrosses-and-petrels/file

Vehicles:

Road Vehicles
U.S. Fish and Wildlife Service, year unknown, available online: https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/road-vehicles.php

Aircraft:

Aircraft
U.S. Fish and Wildlife Service 2016, available online: https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/aircrafts.php

Appendix B. Applicable Statutes, Executive Orders, Policies, and Regulations

Fish & Wildlife

The Migratory Bird Treaty Act of 1918 (MBTA), as amended, (16 U.S.C. §§ 703–712)

Bald and Golden Eagle Protection Act, as amended, 16 U.S.C. 668-668c, 50 CFR 22

Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450

Fish and Wildlife Act of 1956, 16 U.S.C. 742 a-m

Lacey Act, as amended, 16 U.S.C. 3371 et seq.; 15 CFR Parts 10, 11, 12, 14, 300, and 904

Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)

Cultural Resources

American Indian Religious Freedom Act, as amended, 42 U.S.C. 1996 – 1996a; 43 CFR Part 7

Antiquities Act of 1906, 16 U.S.C. 431-433; 43 CFR Part 3

Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa – 470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7

National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470-470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810

Paleontological Resources Protection Act, 16 U.S.C. 470aaa – 470aaa-11

Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001-3013; 43 CFR Part 10

Executive Order 11593 – Protection and Enhancement of the Cultural Environment, 36 Fed. Reg. 8921 (1971)

Executive Order 13007 – Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)