IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

GENERAL LAND OFFICE OF THE STATE OF TEXAS,
Plaintiff,

v.

UNITED STATES DEPARTMENT OF THE INTERIOR, et al.,
Defendants,

v.

SAVE OUR SPRINGS ALLIANCE,
Intervenor-Defendants.

Civil Case No. 1:23-CV-00169-DAE

PLAINTIFF'S MOTION FOR SUMMARY JUDGMENT

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ORAL HEARING REQUESTED

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TO THE HONORABLE DAVID EZRA, SENIOR UNITED STATES DISTRICT JUDGE:

INTRODUCTION

Plaintiff General Land Office of the State of Texas ("GLO") hereby moves for summary judgment in the above-captioned matter pursuant to Federal Rule of Civil Procedure 56. The administrative record shows that Defendants United States Department of the Interior, et al. ("Federal Defendants") disobeyed a court order of the United States Court of Appeals for the Fifth Circuit ("Fifth Circuit") requiring Federal Defendants to apply the correct legal standard to an Administrative Petition filed in 2015 ("Petition") requesting removal of the golden-cheeked warbler ("Warbler") from the list of endangered species under the Endangered Species Act ("ESA"). The Fifth Circuit held that Defendant United States Fish and Wildlife Service ("Service") applied an impermissibly stringent standard of review to deny the Petition at the 90-day stage ("First 90-Day Finding"). Accordingly, the Fifth Circuit vacated the Service's First 90-Day Finding and remanded the matter to the Service with specific instructions to use the correct standard when reviewing the Petition. On remand, the Service again failed to apply the correct standard and again denied the Petition using the same stringent review standard held impermissible by the Fifth Circuit ("Second 90-Day Finding"). Had the Service complied with the Fifth Circuit's instructions, it would have proceeded to a 12-month administrative review of the Petition to determine whether the Warbler should be removed from the endangered species list. Accordingly, because this is the second time the Service violated the ESA in connection with the Petition—this time in direct violation of the Fifth Circuit's order—GLO respectfully requests this Court not only to vacate the Second 90-Day Finding but also to order the Service to make a positive 90-day finding on the Petition and then to proceed to the 12-month stage of administrative review.

Pursuant to Local Rule CV-7(C), this Motion for Summary Judgment is based on the full text of this Motion and all legal authorities cited herein, the accompanying Appendix, the administrative record in this action, the entire record of proceedings before this Court, and any additional response, evidence, or argument made before, at, or after any hearing on this Motion. GLO also respectfully requests an oral hearing on this Motion.

JURISDICTION AND VENUE

Plaintiff GLO brings this action under the Administrative Procedure Act ("APA"), 5 U.S.C. §§ 701-706, and the Endangered Species Act ("ESA"), 16 U.S.C. §§ 1540(g)(1)(A). This court has subject matter jurisdiction pursuant to 5 U.S.C. §§ 701–706 (APA), 28 U.S.C. § 2201 (Declaratory Judgment Act), and 16 U.S.C. §§ 1540(g)(1)(A) and (C) and (g)(2)(A) and (B) (ESA citizen suit provisions). This Court also has jurisdiction pursuant to 28 U.S.C. § 1331, which grants the district courts "original jurisdiction of all civil actions arising under the . . . laws of the United States," and 16 U.S.C. § 1533(b)(3)(C)(ii) (authorizing judicial review of negative 90-day findings made under the ESA). The relief requested is authorized by 28 U.S.C. § 2201 (declaratory judgment), 28 U.S.C. § 2202 (injunctive relief), 5 U.S.C. §§ 701-706 (APA), and 16 U.S.C. § 1540(g) (ESA citizen suit provision). An actual, justiciable controversy exists between the parties within the meaning of 28 U.S.C. § 2201, and the federal government has waived sovereign immunity in this action pursuant to 5 U.S.C. § 702 and 16 U.S.C. § 1540.

GLO sent a 60-day notice of intent to sue the Federal Defendants regarding these matters on October 11, 2021. See Doc. No. 1 Exhibit 1. GLO filed its complaint on January 12, 2022. See Doc. No. 1. Accordingly, GLO complied with the 60-day notice requirement of the ESA. *See* 16 U.S.C. § 1540(g)(2); *see also* Appx. 00008.

GLO has exhausted all administrative remedies, the federal action at issue is final and ripe for review, and GLO has standing because it is injured in fact because of the Federal Defendants' denial of the Petition, which continues to burden GLO's properties in Texas, and this court has the power to redress the injury by vacating the denial of the Petition and providing the requested relief.

Venue is appropriate pursuant to 28 U.S.C. § 1391(e)(1) because a substantial part of the events or omissions giving rise to the claims occurred in this district, a substantial part of the property that is the subject of the action is situated in this district, or the plaintiff resides in this district. In addition, venue is appropriate pursuant to the ESA's citizen suit provision, 16 U.S.C. § 1540(g)(3)(A), because the violation occurred in this district. Venue is appropriate also under 5 U.S.C. § 703.

LEGAL BACKGROUND

Listing of Species and Designation of Critical Habitat

Before a species receives protection under the ESA, it must be listed by the Secretary of the Interior (the "Secretary") as either "endangered" or "threatened." 16 U.S.C. § 1533(a). The Secretary has delegated this authority to the Fish and Wildlife Service (the "Service"). Appx. 00053; 50 C.F.R. § 402.01(b) (2014).[1] An "endangered" species is one "which is in danger of extinction throughout all or a significant portion of its range." 16 U.S.C. §1532(6). A "threatened" species is "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." 16 U.S.C. §1532(20). A species will be listed if it is endangered or threatened due to any one or a combination of the following factors:

> (A) the present or threatened destruction, modification, or curtailment of its habitat or range;
>
> (B) overutilization for commercial, recreational, scientific, or educational purposes;
>
> (C) disease or predation;
>
> (D) the inadequacy of existing regulatory mechanisms; [or]
>
> (E) other natural or manmade factors affecting its continued existence.

16 U.S.C. § 1533(a)(1).

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[1] The Fifth Circuit used the 2014 version of the ESA regulations in its decision to remand the First 90-Day Finding to the Service. See *General Land Office of the State of Texas v. United States DOI*, 947 F.3d 309, 314 (5th Cir. 2020). It is appropriate to use the 2014 version here because the Petition and its Supplement were received by the Service in 2015, when the 2014 regulations were still in effect. *See* Appx. 00071-112 (Petition dated June 29, 2015), Appx. 00114-138 (Supplement to Petition dated December 11, 2015); *see also Am. Stewards of Liberty v. USDOI*, 370 F. Supp. 3d 711, 726 (W.D. Tex. 2019) (requiring evaluation based on ESA regulations in effect "when the petition and supplemental information were received"); Appx. 00196 (the Service's Second 90-Day Finding acknowledging that the applicable regulations are those in effect "when the original petition for the golden-cheeked warbler was received"). For the Court's convenience, the 2014 regulations, whenever cited herein, are reproduced in the Appendix.

When listing a species as threatened or endangered, the government has a concurrent duty to designate critical habitat for that species "to the maximum extent prudent and determinable." 16 U.S.C. §1533(a)(3)(A)(i); see also id. § 1533(b)(6)(C). The ESA defines "critical habitat" as "(i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 1533 of this title, on which there are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 1533 of this title, upon a determination by the Secretary that such areas are essential for the conservation of the species." 16 U.S.C. § 1532(5)(A).

Effects of Listing and Designation

Only listed "endangered" species are specifically protected by Section 9 of the ESA, which, among other things, makes it unlawful for any person to "take" such species. 16 U.S.C. §1538(a)(1)(b). The term "take" means to "harass, harm, hunt, pursue, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." 16 U.S.C. §1532(19). ESA Section 4(d), however, authorizes Section 9 take protections for merely "threatened" species if such protections are promulgated by rule. 16 U.S.C. § 1533(d). Pursuant to this section, the Secretary of the Interior has issued a general regulation that extends the Section 9 take prohibitions to all threatened species. See Appx. 00051; 50 C.F.R. § 17.31(a) (2014). The designation of a species as endangered or threatened forces property owners to seek permits or approval of activities that could potentially disturb the species. See 16 U.S.C. § 1539(a) (discussing permitting provisions). Consequences of an unauthorized "take" include civil and criminal penalties, including fines of up to $50,000 and imprisonment for up to one year. 16 U.S.C. § 1540.

Under Section 7 of the ESA, federal agencies must engage in a consultation process with the Secretary of the Interior if they believe their project on any property may affect endangered or threatened species. 16 U.S.C. § 1536(a)(2). Under Section 7, the Secretary must provide the consulting federal agency and applicant with a Biological Opinion summarizing the basis for the opinion and detailing how the project will impact a species or its critical habitat. *See* 16 U.S.C. §1536(b)(3)(A). If jeopardy to the species or adverse modification of critical habitat is found, the opinion must suggest "reasonable and prudent alternatives" that may be taken by the consulting agency or applicant to avoid such jeopardy or adverse modification. *Id.*

If it is determined that the "taking of an endangered species or a threatened species incidental to the agency action" will not jeopardize the species' continued existence or result in the destruction or adverse modification of critical habitat of such species, a written incidental take statement must be issued that (1) specifies the impact of such incidental taking on the species; (2) specifies those reasonable and prudent measures that are necessary or appropriate to minimize such impact; and (3) sets forth the terms and conditions with which the agency or applicant must comply to implement the specified measures. 16 U.S.C. §1536(b)(4)(B)(i), (ii) and (iv).

Five-Year Status Reviews of Species

Every five years, the Service must conduct a status review of each listed species to determine whether a change in the species' listing status is warranted. See 16 U.S.C. §1533(c)(2)(A). During such status reviews, the Service must determine whether any species should (1) be removed from such list; (2) be changed in status from an endangered species to a threatened species (i.e., "downlisted"); or (3) be changed in status from a threatened species to an endangered species (i.e., "uplisted"). 16 U.S.C. §1533(c)(2)(B).

Petitions to List, Delist, or Reclassify a Species

An interested person may petition the Service to list, delist, or reclassify the status of a species. 16 U.S.C. § 1533(b)(3)(A). The Service reviews listing and delisting petitions for "substantial scientific or commercial information indicating that the petitioned action *may* be warranted." *Id*. (emphasis added). "Substantial information is that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted." Appx. 00056–57; 50 C.F.R. § 424.14(b)(1) (2014). Further, in evaluating substantiality, the Service shall consider whether the petition:

> (i) Clearly indicates the administrative measure recommended and gives the scientific and any common name of the species involved;
> (ii) Contains detailed narrative justification for the recommended measure, describing, based on available information, past and present numbers and distribution of the species involved and any threats faced by the species;
> (iii) Provides information regarding the status of the species over all or a significant portion of its range; and
> (iv) Is accompanied by appropriate supporting documentation in the form of bibliographic references, reprints of pertinent publications, copies of reports or letters from authorities, and maps.

Appx. 00057; 50 C.F.R. § 424.14(b)(2) (2014).

To the maximum extent practicable, within 90 days after receiving a petition, the Service must determine whether the petition presents the requisite information. 16 U.S.C. § 1533(b)(3)(A). This finding is known as the "90-day" finding and is published in the Federal Register. *Id.* If the Service determines that the petition presents substantial information indicating that the petitioned action may be warranted, i.e., if the Service issues a positive 90-da finding, the Service must commence a "12-month review," where the Service reviews the status of the species within 12

months of the receipt of the petition to delist, then makes one of three findings: that the petitioned action is not warranted; that the petitioned action is warranted; or that the petitioned action is warranted but precluded. 16 U.S.C. §1533(b)(3)(A)–(B). Any negative 90-day finding, denying any further evaluation of a petition, is "subject to judicial review." 16 U.S.C. § 1533(b)(3)(C)(ii); 16 U.S.C. § 1533(b)(3)(A), (B).

FACTUAL BACKGROUND

The Warbler is the only bird species that nests entirely within the state of Texas. It is a migratory songbird, arriving from late February through April and breeding in the mixed Ashe juniper and woodlands of Central Texas, then migrating through Central America in July and August.

The Service first categorized the Warbler as endangered in response to an emergency-listing petition filed on February 2, 1990. 55 Fed. Reg. 18846 *et seq*. (May 4, 1990). The Service justified this listing on the basis of "ongoing and imminent habitat destruction." *Id.* at 18844. The Service indicated that Central Texas contained prime Warbler habitat, and that increased development in the region threatened this habitat. *Id.*

The Service listed the Warbler on December 27, 1990. 55 Fed. Reg. 53153. Its final rule estimated there were about 15,000–17,000 Warblers and between 79,400–263,750 acres of suitable habitat. *Id.* at 53154. In the Final Rule, the Service found the Warbler should be listed due to (1) present or potential habitat destruction, (2) possible nest predation, (3) a lack of regulatory protection for Warbler habitat, and (4) a lack of reproduction of certain trees within Warbler habitat. *Id.* at 53157–59.

The Service completed its first five-year status review of the Warbler in 2014 — 24 years after the species' initial listing. Appx. 00169–193; AR_006774–006798. The Service was

required to conduct five-year status reviews of the Warbler in 1995, 2000, 2005, and 2010. *See* 16 U.S.C. §1533(c)(2)(A). It failed to do so, and the record is silent regarding why. The 2014 review concluded that the Warbler was still "in danger of extinction throughout its range" and should remain listed as endangered. Appx. 00184; AR_006789.

On June 29, 2015, several petitioners filed to remove the Warbler from the endangered species list. *See* Appx. 00071–112; AR_000044–85. The Petition provided information demonstrating that Warbler habitat is far larger than was known in 1990, when the Service listed the species. Appx. 00084–85, 88; *id.* at 000057–58, 61. Additionally, the Petition demonstrated that the Warbler population is about 19 times the size than was believed in 1990. Appx. 00089–90; *id.* at 000062–63.

The Petition went on to state that habitat fragmentation and urbanization are not a threat to the Warbler due to the size and scope of its habitat and population. Appx. 00098–99; *id.* at 000071–72. And currently, several conservation plans and mechanisms exist for the Warbler such that the probability of its extinction within the foreseeable future is low. Appx. 00090, 92–95; *id.* at 000063, 000065–68. Therefore, the Petition argued that the Warbler is "ineligible for continued listing as an endangered species." Appx. 00084; *id.* at 000057. The Petition was supplemented with further information on December 11, 2015. *See* AR_000114–000138.

On June 3, 2016, the Service made a negative 90-day finding denying the Petition ("First 90-Day Finding"). 81 Fed. Reg. 35698 *et seq.*; Appx. 00139–154; AR_000440–000455 (text of First 90-Day Finding). The Service claimed there is still "ongoing wide-spread destruction of [Warbler] habitat" necessitating the species' listing, and that while new data indicates growth in Warbler population and the existence of more habitat, this data represented "estimates rather than indicators of positive trends." 81 Fed. Reg. 35700 (June 3, 2016); Appx. 00141, 148; AR_000442,

000449. Although the Service noted that a post-Petition study supported the Petition's contentions, the Service discounted the Petition's data showing (1) increases in Warbler population and habitat and (2) evidence that neither disease nor predation significantly threaten the Warbler. 81 Fed. Reg. 35700 (June 3, 2016); Appx. 00140–144; AR_000441–000445. Instead, the Service found the Petition provided no "new information" indicating the Warbler should be removed from the endangered species list or that the original listing was erroneous. 81 Fed. Reg. 35700 (June 3, 2016); Appx. 00144, 148; AR_000445, 000449.

GLO filed suit challenging the First 90-Day Finding, and the district court affirmed the finding. *See Gen. Land Office of Tex. v. U.S. Fish and Wildlife Serv.*, 2017 U.S. Dist. LEXIS 208964 (W.D. Tex. Nov. 30, 2017). On appeal, the Fifth Circuit reversed the district court's ruling, holding that the First 90-Day Finding violated the ESA and was arbitrary and capricious. *See Gen. Land Office of Tex. v. United States Dept. of the Interior*, 947 F.3d 309, 320–21 (5th Cir. 2020). The Fifth Circuit held that in denying the Petition, "[t]he Service *recited* [the correct] standard, but a careful examination of its analysis shows that the Service *applied* an inappropriately heightened one." *Id.* at 321 (emphasis in original). The Fifth Circuit found the Service applied a standard of review that was too stringent and impermissibly required the Petition to provide "new" information the Service had not considered in its five-year review of the Warbler in 2014. *Id.* at 321. The Fifth Circuit observed that the applicable regulations required only that a petition offer "that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted." *Id.* at 320–21. Accordingly, the Fifth Circuit vacated the First 90-Day Finding and remanded the matter to the Service for reconsideration of the Petition, instructing the Service to use the correct legal standard, as set forth in the Fifth Circuit's opinion. *Id.* at 321.

In response, on July 27, 2021, the Service published the Second 90-Day Finding denying the Petition while again reciting but not applying the correct standard of review, contrary to the instructions of the Fifth Circuit. 86 Fed. Reg. 40186 *et seq.*; Appx. 00195–00208; AR_008094–008107 (text of Second 90-Day Finding). Accordingly, GLO provided notice of intent to file suit against the Service and the other Federal Defendants. Doc. No. 1 Exhibit 1; Appx. 00008-00020.

On January 12, 2022, GLO filed suit in the Waco Division of the Western District of Texas seeking an order (1) declaring that the Federal Defendants' Second 90-Day Finding violated the ESA, (2) vacating the Second 90-Day Finding, and (3) granting other appropriate relief. Doc. No. 1 at 23–24. The Federal Defendants moved to transfer venue to the Austin Division of the Western District of Texas. Doc. No. 8. Upon review, the Court granted the transfer motion, and this case was transferred on February 9, 2023. Doc. No. 30.

This Court granted Save Our Springs' Alliance's motion to intervene in this matter on March 30, 2023. Doc. No. 32 at 1. GLO then requested judicial notice of a scientific study of the Warbler known as the Mueller Study, or, in the alternative, moved to supplement the administrative record with the Mueller Study. Doc. No. 43. The Court referred this motion to Magistrate Judge Mark Lane, who denied it. Doc. No. 50.

STANDARD OF REVIEW

"Summary judgment is often appropriate in cases involving a review of an administrative record." *Ctr. for Biological Diversity v. United States Fish & Wildlife Serv.,* 202 F. Supp. 2d 594, 602 (W.D. Tex. 2002). Summary judgment is appropriate when there is no genuine issue of material fact and a party is entitled to judgment as a matter of law. FED. R. CIV. P. 56(c); see also *Celotex Corp. v. Catrett*, 477 U.S. 317, 322–23 (1986). When reviewing a summary judgment motion based on the administrative record, the Court does not act as the initial fact finder where

the administrative record contains undisputed facts. Rather, the Court's "review has the function of determining whether the administrative action is consistent with the law." *Girling Health Care v. Shalala*, 85 F.3d 211, 215 (5th Cir. 1996) (quoting 10A Wright & Miller, FED. PRAC. & PROC. CIV. 2d § 2733 (1983)).

An agency action should be held unlawful and vacated if it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law; contrary to constitutional right, power, privilege, or immunity; in excess of statutory jurisdiction, authority, or limitations, or short of statutory right; [or] without observance of procedure required by law . . . ." 5 U.S.C. § 706(2)(A)–(D) (cleaned up). When making such determinations, courts "shall review the whole record . . . ." 5 U.S.C. § 706.

SUMMARY OF ARGUMENT

For four reasons, the Service's denial of the Petition should be vacated. First, in violation of the Fifth Circuit's instructions, the Service's Second 90-Day Finding recited the correct standard of review but applied an incorrect standard by finding the Petition "does not report any new data or study results . . . but summarizes readily available information about the [Warbler] and its habitat[,]." Appx. 00198; AR_00017. This directly contravenes the instructions of the Fifth Circuit not to require new information at the 90-day stage as a condition of moving forward to the 12-month review. *See Gen. Land Office*, 947 F.3d at 321.

Second, the Service once again ignored, downplayed, or misconstrued substantial data presented throughout the Petition, despite its usual practice during a 90-day review of "accept[ing] the petitioner's sources and characterizations of the information unless we [the Service] have specific information to the contrary." *Colo. River Cutthroat Trout v. Kempthorne*, 448 F. Supp. 2d 170, 176 n.4 (D.D.C. Sept. 7, 2006). The Petition shows that (1) the Warbler population

numbers in the hundreds of thousands, (2) the Warbler has millions of acres of available habitat, and (3) neither habitat fragmentation nor disease nor predation threaten the Warbler. Appx. 00087, 92, 95, 97, 98; AR_000060, 000065, 000068, 000070, 000071. The Service does not cite "specific information to the contrary." *Id.*

Third, the Service impermissibly required the Petition to present conclusive evidence at the 90-day stage that the Warbler has recovered. *See* Appx. 00196–200; AR_008095–008099; *see also Am. Stewards of Liberty v. U.S. Dep't of the Interior*, 370 F. Supp. 3d 711, 725 (W.D. Tex. 2019) (holding such an approach unlawful because "[t]he Service violated its regulations when it required . . . conclusive evidence [of] population trends . . . [and] called for more evidence than the law requires"). In the process, the Service also impermissibly used its own species recovery plan as a determining factor in the Second 90-Day Finding, thereby applying criteria not authorized by the ESA or its applicable regulations.

Fourth, in a remarkable omission, the Service failed to squarely address whether the original population and habitat data upon which the Warbler was listed as endangered in 1990 were in error. *See* Appx. 00083–84; AR_000056–000057; *see also* Appx. 00054–55; 50 C.F.R. § 424.11(d)(3) (2014).

Because the Service has already twice failed to apply the proper standard at the 90-day stage of review, this Court should not permit the Service a third bite at the apple. Instead, the Court should order the Service to make a positive 90-day finding and begin a 12-month review of the Petition.

ARGUMENT

The Fifth Circuit instructed the Service to apply the correct standard to the Petition upon remand. The Service, instead, ignored the Court's instructions and continued to violate the ESA

and its attendant regulations by using an impermissibly stringent standard to deny the Petition. At the same time, the administrative record demonstrates that the Petition is more than sufficient to require the Service to commence a 12-month review. Accordingly, based on the Fifth Circuit's order, this Court should vacate the Service's decision and remand with instructions to make a positive 90-day finding and to proceed to the 12-month review requested in the Petition.

I. PLAINTIFF HAS STANDING TO BRING THIS ACTION.

"[C]ourts should not be austere in granting standing under the APA to challenge agency action." *White Oak Realty, L.L.C. v. United States Army Corps of Eng'rs*, 746 Fed. Appx. 294, 299 (5th Cir. 2018). To establish Article III standing, GLO must show an injury-in-fact fairly traceable to the Federal Defendants' allegedly unlawful conduct that is likely to be redressed by its requested relief. *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 590 (1992). If a plaintiff is "an object of a regulation" he generally has standing because "there is ordinarily little question that the action or inaction has caused him injury, and that a judgment preventing or requiring the action will redress it." *Contender Farms, L.L.P. v. United States Dep't of Agric.*, 779 F.3d 258, 264 (5th Cir. 2015).

GLO "owns or operates numerous properties throughout Texas[,]" some of which "are occupied by . . . the Golden-cheeked Warbler . . . ." *See* Appx. 00002–3; Declaration of Mark McAnally ("McAnally Decl.") at ¶ 4. The Service's refusal to proceed to the 12-month review stage in response to the Petition places unnecessary restrictions on GLO's Warbler-occupied properties that decrease their value and prevent redevelopment. Appx. 0004-0005; McAnally Decl. at ¶¶ 9-15. Some of those properties are used by GLO "to maximize revenues from Texas public school lands for the benefit of Texas schoolchildren." Appx. 00003–6; McAnally Decl. at ¶ 6–16; *see also Weyerhaeuser Co. v. United States Fish & Wildlife Serv.*, 139 S.Ct. 361, 368

(2018) (ESA restrictions on property are enough to establish standing). GLO therefore has Article III standing to sue regarding denial of the Petition because GLO's properties continue to be subject to limitations imposed by the ESA due to the Second 90-Day Finding. *See*, *e.g.* 16 U.S.C. §1538(a)(1)(b) (prohibitions of "take" of endangered species); 16 U.S.C. § 1536(a)(2) (requiring agencies to consult with the Service before issuing permits for property development that may impact endangered species); 16 U.S.C. §1536(b)(3)(A) (requiring the Service to prepare "biological opinions" during consultation); 16 U.S.C. §1536(b)(4)(B)(i), (ii) and (iv) (requiring "incidental take statements" outlining criteria of property development that protect an endangered species).

GLO's grievances also fall within the zone of interests protected by ESA Section 4, which specifically provides that negative 90-day findings on petitions to list, delist, and reclassify species are judicially reviewable. 16 U.S.C. § 1553(b)(3)(C)(ii). The breadth of the zone of interest test is "generous" under the APA, *Bennett v. Spear*, 520 U.S. 154, 162-63 (1997), and includes property owners subject to ESA's requirements. *Weyerhaeuser,* 139 S. Ct. at 368 n 1. *See also Clarke v. Sec. Indus. Ass'n.*, 479 U.S. 388, 399 (1987) (observing that zone of interests test is neither especially demanding nor onerous).

II. THE SERVICE FAILED TO FOLLOW THE FIFTH CIRCUIT'S INSTRUCTIONS BY APPLYING AN IMPERMISSIBLY STRINGENT STANDARD OF REVIEW TO THE PETITION.

A. The Service impermissibly required the Petition to contain new information it had not previously considered (Claim 1).

When it found the First 90-Day Finding on the Petition arbitrary and capricious, the Fifth Circuit ruled that the Service applied an incorrect standard of review to the Petition. *See Gen. Land Office of Tex.*, 947 F.3d at 321. Specifically, the Service impermissibly required the Petition "to contain information that the Service had not considered in its five-year review that was

sufficient to refute that review's conclusions." *Id.* But the applicable regulations simply required the Service to make a positive 90-day finding and conduct a 12-month review of the Petition if it contained "substantial scientific or commercial information indicating that the petitioned action may be warranted." 16 U.S.C. § 1533(b)(3)(A) (2014). The Fifth Circuit observed, "[t]he Service *recited* this standard, but a careful examination of its analysis shows that the Service *applied* an inappropriately heightened one." *Gen. Land Office of Tex.*, 947 F.3d at 321 (emphasis in original). Accordingly, the Fifth Circuit found that the Service's First 90-Day Finding was arbitrary and capricious, vacated it, and remanded for reconsideration. *Id.*

In its Second 90-Day Finding, the Service repeated the same error. It cited the regulations in effect "when the original petition for the golden checked warbler was received," see Appx. 00195-96, but applied a substantially heightened, more stringent standard. The applicable regulation states as follows:

> To the maximum extent practicable, within 90 days of receiving a petition to list, delist, or reclassify a species, the Secretary shall make a finding as to whether the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted. For the purposes of this section, "substantial information" is that amount of information that would lead a reasonable person to believe that the measure proposed in the petition *may* be warranted.

Appx. 00056–57; 50 C.F.R. § 424.14(b)(1) (2014) (emphasis added). Nothing in the ESA's applicable regulations requires a delisting petition to contain new information not previously considered by the Service in order to receive a positive 90-day finding. Rather, to pass 90-day review, the delisting petition must contain information to make a reasonable person believe that the petitioned action — delisting the species — may be warranted. In reaching this conclusion, the Secretary must consider: (1) the administrative measures sought, (2) the common and scientific name of the species, (3) a narrative justifying the measure based upon available information including past and present numbers, distribution and current threats to the species, (4) the status of

the species in all or a significant portion of its range, and (5) supporting documents such as a bibliography, copies of publications, reports, letters from authorities, and maps. Appx. 00057; 50 C.F.R. § 424.14(b)(2) (2014). After a positive finding based on this standard, and during the subsequent 12-month review stage, the Service makes its final determination regarding whether a species is endangered "*solely* on the basis of the best scientific and commercial information . . . ." Appx. 00054; 50 C.F.R. § 424.11(b) (2014) (emphasis in original).

The Petition contains more than enough information to pass 90-day review. Among other things, as set forth in greater detail in Section II.D, *infra*, the Petition demonstrates that the Service's original emergency listing of the Warbler was "based on its mistaken belief that the species was rare." Appx. 00075; AR_000048. When it listed the Warbler in 1990, the only studies of the Warbler available to the Service "were based on ten-year-old satellite mapping using the relatively primitive technology then available, and a fourteen-year-old study of [W]arbler density that significantly underestimated" Warbler habitat and population. *Id.* Since then, "multiple surveys and research have established that" Warbler breeding habitat is five times larger and Warbler populations are far greater than believed in 1990, when the Service listed the Warbler as endangered. Appx. 00083; AR_000056. The Petition attached a 2015 survey-of-surveys compiled by the Texas A&M Institute of Renewable Natural Resources ("the Texas A&M survey") establishing these facts, and noted several other independent and peer-reviewed studies that reached the same conclusion. *See, e.g.* Appx. 00083–84; AR_000056–000057. The Petition then states that the original data used to list the Warbler were based on a limited sample size, "while the best available scientific evidence today shows a much larger [W]arbler habitat and population size than originally estimated. Because the [Warbler] does not meet the statutory factors, it should be delisted." Appx. 00084; AR_000057; see also 16 U.S.C. § 1533(a)(1) (listing factors).

The Petition also detailed the flaws inherent in the Service's 2014 five-year review of the Warbler's status. *See* Appx. 00169–193; AR_006774–006798 (full text of 2014 review). While the 2014 review correctly pointed out flaws in the existing Warbler recovery plan and highlighted new habitat, it did not examine studies "reviewing the state of scientific knowledge concerning the [W]arbler" and apply the conclusions of those studies properly. Appx. 00081; AR_000054. For instance, the 2014 review continued to insist that the greatest threat to Warbler prevalence remained habitat loss and fragmentation. *Id.* (citing Appx. 00177–179; AR_006782–006784). It did so despite studies indicating that habitat fragmentation was not a reliable indicator of Warbler population. *Id.* Indeed, these studies showed "an increasing trend in density of [W]arblers . . . from 1991–2008." Appx. 00082; AR_000055 (quoting Appx. 00158; AR_002445). The 2014 five-year review did not discuss these findings, or explain what would be a "viable" Warbler population that would warrant delisting.

The Service acknowledges in its Second 90-Day Finding that "the known potential range [of Warbler habitat] is geographically more extensive than when the [Warbler] was originally listed in 1990," and that "the [P]etition cites studies showing higher [W]arbler population numbers than estimated at the time of listing, which we consider to be accurate for purposes of evaluating the information in the [P]etition." Appx. 00198; AR_008097. The Service even states that it "plan[s] to apply" the habitat and population modeling strategies found in studies the Petition cites "to help inform and guide recovery efforts for the [W]arbler now and in the future . . . ." *Id.* These findings point to the reasonable conclusion that a 12-month review is appropriate because delisting of the Warbler "may be warranted" based on the evidence presented in the Petition. But notwithstanding the Service's own findings, the Service failed to apply the correct statutory standard of review. Instead, in violation of the Fifth Circuit's instructions, the Service faulted the

Petition for relying on the Texas A&M survey-of-surveys, finding that the study "does not report any new data or study results regarding the [W]arbler, but summarizes readily available information about the [W]arbler and its habitat . . . ." *Id.*

The fact that scientific information is "readily available" does not determine whether it is reliable or would otherwise convince a reasonable person that delisting may be warranted. Disregarding the Texas A&M study on these grounds violates the law. *See Nat'l Ass'n of Home Builders v. Defs. of Wildlife,* 551 U.S. 644, 658 (2007) (stating it is arbitrary and capricious for agency to base its decision on irrelevant "factors Congress did not wish it to consider"). What is more, the Fifth Circuit specifically instructed the Service not to "requir[e] the petition to contain information that the Service had not considered" previous to its review of the Petition. *Gen. Land Office of Tex.*, 947 F.3d at 321. Instead, the Service was instructed to apply the reasonable-person standard of review found in the 2014 ESA regulations. *Id.* at 320–321; *see also* Appx. 00056–57; 50 C.F.R. § 424.14(b)(1) (2014) (reciting standard). As before, the Service "recited this standard, but . . . applied an inappropriately heightened one" to its review of the Petition. *Gen. Land Office of Tex.*, 947 F.3d at 321. Accordingly, based on the Fifth Circuit's order and the plain text of the ESA and its applicable regulations, the Service acted arbitrary and capriciously by denying the Petition.

B. The Service impermissibly required the Petition to show proof of recovery at the 90-day review stage (Claim 2).

Nothing in the ESA's regulations require a petition for delisting to show definitive proof that a species has recovered at the 90-day review stage. A petition must only present "that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted" to receive a positive 90-day finding. Appx. 00056–57; 50 C.F.R. § 424.14(b)(1) (2014) (emphasis added).

Yet the Service stated in its Second 90-Day Finding that the data the Petition presented in favor of delisting "represent new estimates rather than indicators of positive trends in [W]arbler habitat and population size, and thus do not imply recovery." Appx. 00198; AR_008097. Citing only to its internal 2014 five-year review, the Service finds that "[t]he most serious threats described in the original listing rule . . . remain, and recovery criteria have not been accomplished." Appx. 00199; AR_008098; *see also* Appx. 00081–82; AR_000054–55 (Petition detailing flaws in Service's internal 2014 review of Warbler).

By requiring the Petition to offer conclusive evidence that the Warbler has recovered at the 90-day review stage, the Service again "applied an inappropriately heightened" standard of review. *Gen. Land Office of Tex.,* 947 F.3d at 321. The Service instead should have determined whether the Petition presented enough information such that a reasonable person would believe delisting of the Warbler may be warranted. *See* Appx. 00056–57; 50 C.F.R. § 424.14(b)(1) (2014). Because the law does not require a petition to show recovery at the 90-day review stage to receive a positive finding, the Service's Second 90-Day Finding relied "on factors Congress did not wish it to consider . . . ." *Nat'l Ass'n of Home Builders*, 551 U.S. at 658 (finding such determinations arbitrary and capricious). Accordingly, the Court should hold unlawful and set aside this finding for this additional reason. *See* 5 U.S.C. § 706.

C. The Service impermissibly used its own species recovery plan as a determining factor when denying the Petition (Claim 3).

When evaluating a petition, the Service is obligated to follow the criteria for review set forth in the ESA and its applicable implementing regulations. *See* 16 U.S.C. § 1533(b)(3)(A); Appx. 00056–57; 50 C.F.R. § 424.14(b) (2014). Nothing in that statute or the regulations allows the Service to base its 90-day petition finding on its own species recovery plan. Such plans do not have the force of law and are not binding on the Service. *See, e.g., Friends of Blackwater v.*

Salazar, 691 F.3d 428, 433–434 (D.C. Cir. 2012) (calling a species recovery plan "a statement of intention" that is "non-binding"); *Fund for Animals, Inc. v. Rice*, 85 F.3d 535, 547 (11th Cir. 1996) ("recovery plans are for guidance purposes only"); *Conservation Cong. v. Finley,* 774 F.3d 611, 614 (9th Cir. 2014) (citing *Friends of Blackwater*).

The Service impermissibly used its own species recovery plan as a determining factor when denying the Petition. In its Second 90-Day Finding, the Service repeatedly discounts or dismisses studies and evidence the Petition provides based on its defective and tardy 2014 five-year review, stating that "recovery criteria have not been accomplished." *See* Appx. 00199; AR_008098 (citing Appx. 00177–00184; AR_006782–006789). The Service also discounts certain evidence in the Petition because it does "not imply recovery." Appx. 00198; AR_008097. The Service's own species recovery criteria are irrelevant to its 90-day review of the Petition, and employing them as a benchmark that the Petition must meet impermissibly heightens the standard of review for the Petition, contrary to the Fifth Circuit's order. *Gen. Land Office of Tex.*, 947 F.3d at 321 (declaring Service's decision to apply "inappropriately heightened" standard of review to Petition arbitrary and capricious). Because the Service's denial of the Petition relied "on factors Congress did not wish it to consider[,]" it was arbitrary and capricious. *Nat'l Ass'n of Home Builders*, 551 U.S. at 658.

D. The Service did not properly consider substantial data in the Petition showing that the original Warbler listing was in error and that delisting may be otherwise appropriate (Claims 4–6).

When considering a petition at the 90-day stage, the Service must consider the factors listed in the ESA and its applicable regulations. *See* 16 U.S.C. § 1533(b)(3)(A), Appx. 00056–57; 50 C.F.R. § 424.14(b) (2014); Appx. 00054–55; 50 C.F.R. § 424.11(c)–(f) (2014). The Service should move forward to a 12-month review where a petition demonstrates that "subsequent investigations

show . . . the best scientific or commercial data *available when the species was listed, or the interpretation of that data, were in error*." Appx. 00055; 50 C.F.R. § 424.11(d)(3) (2014) (emphasis added); *see also* 81 Fed. Reg. 35700 (June 3, 2016) (notice of First 90-Day Finding ignoring Petition data demonstrating error in original data used for listing); 81 Fed. Reg. 7414 *et seq.* (Feb. 11, 2016) (explaining inapplicable 2016 amendments to ESA regulations).

The Petition presented substantial scientific and commercial information demonstrating remarkable increases in Warbler population and habitat since the Warbler was originally listed and calling into question whether the original data used to justify the Warbler's listing, or the Service's interpretation of it, were erroneous. It was arbitrary and capricious for the Service to discount this data in the Second 90-Day Finding. Courts have recognized that conflicting scientific information on threats presented in a petition for delisting requires a positive 90-day finding. *See Humane Soc. of the United States v. Pritzker*, 75 F. Supp. 3d 1, 11 (D.D.C. 2014) (finding of "conflicting scientific evidence" suggests that "a reasonable person might conclude that a [12-month status review] was warranted"); *Ctr. for Biological Diversity v. Kempthorne,* 2007 U.S. Dist. LEXIS 4816 at *11, 20 (N.D. Cal. Jan. 19, 2007) (finding that the Service "must defer to information that supports [the] petition's position" and that the reasonable-person standard "contemplates that where there is disagreement among reasonable scientists, then the Service should make the 'may be warranted' finding").

As stated *supra* at Section II.A, the Petition offered "multiple surveys and research" establishing that "the [W]arbler breeding habitat is five times larger and the [W]arbler population is an order of magnitude greater than [the Service] believed" when listing the species in 1990. Appx. 00083–84; AR_000056–57. The Petition notes that the science establishing these facts was "developed long after the 1976 study and the 1980s satellite images on which the [Warbler's]

listing was based" and that based on this alone, the Warbler should be delisted or the Service should proceed to the 12-month review. Appx. 00084; AR_000057. At the very least, independent peer-reviewed studies showing that Warbler populations were never endangered in the first place provide "that amount of information that would lead a reasonable person to believe that [delisting of the Warbler] *may* be warranted." Appx. 00056–57; 50 C.F.R. § 424.14(b)(1) (2014) (emphasis added); s*ee also Pritzker,* 75 F. Supp. 3d at 11.

Furthermore, the Petition explicitly argues that the best available data demonstrates the Warbler was erroneously listed in 1990:

> The 2015 Texas A&M Survey summarized the extensive research and analysis that has been performed since 1990 and concluded that the [W]arbler's listing status should be re-examined. This represents the best available science concerning the [W]arbler, and it confirms that the [W]arbler is not and never has been endangered in Texas and its habitat is far more abundantly available than FWS erroneously concluded in 1990.

Appx. 00084; AR_000057. The Petition detailed the "flawed assumptions" the 1990 listing relied upon, namely the idea that the Warbler could only survive in very specific habitat types and environments. Appx. 00085–86; AR_000058–59 (quoting Morrison et al. (2012) study). "Ample information on the distribution of the [W]arbler's habitats existed [in 1990] . . . which should have encouraged questions into the basis of population conditions when developing management prescriptions." *Id.* "[A]t least eight other studies" found in the Petition also estimated a much larger Warbler habitat and population than was originally thought, "based on much more scientifically valid and robust data: randomly sampled habitat patches on public and private land across the [W]arbler's breeding range, congruent satellite imagery, and biological covariates known to influence [W]arbler occurrence." Appx. 00086; AR_000059.

The Service's continued insistence that the Warbler remains endangered relies on older studies from 1990 and earlier, which utilized now-primitive aerial imaging with worse resolution

that can lead to incorrect classification of landscape features that constitute Warbler habitat. *Id.* Recent studies identified this limitation inherent in the Wahl study from 1990 that the Service relied on to list the Warbler, and the Petition pointed out these studies, as well as others demonstrating at least that a reasonable person could find that the Warbler was improperly listed in 1990. *See* Appx. 00084–90; AR_000057–63. Accordingly, the Petition presents enough evidence by which a reasonable person could find that the Warbler's "breeding habitat is more widely distributed[,] its preferred habitat conditions are wider ranging[,] and its population is much larger than originally estimated." Appx. 00087; AR_000060; *see also* Appx. 00088–92; AR_000061–65 (detailing studies confirming "there are more [W]arblers and more habitat than [the Service] believed existed when it listed the species as endangered").

But in its Second 90-Day Finding, the Service impermissibly discounted this evidence. With reference both to the Petition and the Service's internal 2014 review of the Warbler's status, the Service summarized the Petition's presented evidence, but then disqualified some of it because it "does not report any new data or study results regarding the [W]arbler" and "represent[s] new estimates rather than indicators of positive trends in [W]arbler habitat and population size, and thus do not imply recovery." Appx. 00198; AR_008097. For the reasons stated *supra* in Sections II.A-C, these summary dismissals of the Petition's contents were arbitrary and capricious because they apply an overly stringent standard to the Petition and, contrary to the Fifth Circuit's instructions, require a showing of Warbler recovery.

Despite "acknowledg[ing] that the known potential range [of the Warbler] is geographically more extensive than when the [Warbler] was originally listed in 1990[,]" an admission that strongly implies delisting may be warranted under 50 C.F.R. § 424.11(d)(3) (2014), the Service still refuses to begin a 12-month review of the Petition by stating that "the ESA does

not base listing determinations solely or predominantly on population and range size. Rather it requires an evaluation of the five factors in 16 U.S.C. § 1533(a)." Appx. 00198–99; AR_008097–98. The Petition presents overwhelming evidence that the Warbler should never have been listed in 1990 in the first place, while the Second 90-Day Finding provides no information to counter the Petition's studies demonstrating the 1990 listing was erroneous at the time, focusing instead on selective quotes from certain studies regarding Warbler habitat since that date. *Id.*; *but see* Appx. 00083; AR_000056 n.52 (Petition detailing evidence showing habitat larger than originally estimated). The Service likewise only makes the case that habitat fragmentation is, generally, "a significant threat to the [W]arbler" without detailing the degree or severity of current habitat fragmentation, or providing any evidence to counter the relevant information in the Petition. Appx. 00199–200; AR_008098–99. The Service can only provide evidence that human populations near a portion of the Warbler's habitat are increasing. *Id*. It then jumps to the conclusion that "[t]he threat of habitat fragmentation is ongoing and expected to threaten the continued existence of the [W]arbler into the foreseeable future." Appx. 00200; AR_008099.

The Second 90-Day Finding offers nothing to disprove that the underlying reasons for the Warbler's listing were incorrect. It also does not demonstrate that the Warbler is currently under threat across its entire range. *See* Appx. 00085; AR_000058 (Petition detailing research showing more extensive Warbler habitat than assumed in 1990).

The Service concludes that "[t]he [P]etition does not provide any scientific data or analysis of existing data that shows a decrease in threats to the warbler associated with present and future habitat destruction and fragmentation." Appx. 00200; AR_008099. It also concludes that "the [P]etition does not reference any scientific data or analysis of existing data that calls into question threats to the warbler associated with disease or predation." Appx. 00202; AR_008101. Both

conclusions are demonstrably false. In fact, the Petition presented and analyzed extensive scientific data showing the Warbler was never and is not now under threat due to habitat destruction, habitat fragmentation, disease, or predation. *See generally* Appx. 00084–92, 97–99; AR_000057–65, 70–72. Additionally, the Petition included information demonstrating both Warbler habitat and Warbler population are sufficiently protected by other existing federal, state, and local laws and regulations. *See* Appx. 00092–97; AR_000065–70. Discounting a wealth of scientific research with conclusory sentences backed almost entirely by a nearly-decade-old 2014 in-house species review is not the sort of analysis that satisfies the ESA.

Furthermore, by impermissibly insisting, at the 90-day review stage, that the Petition meet the full extent of the delisting criteria in 16 U.S.C. § 1533(a), the Service continued to violate its duty under 16 U.S.C. § 1533(b)(3)(A) to proceed to the 12-month review where the Petition offers "substantial scientific or commercial information indicating that the petitioned action may be warranted." *Id.* It is a "fundamental canon of statutory construction that the words of a statute must be read in their context and with a view to their place in the overall statutory scheme." *Food & Drug Admin. v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 133 (2000); *see also Doe v. United States,* 398 F.3d 686, 688 (5th Cir. 2005) (requiring courts to "read all parts of the statute together to produce a harmonious whole"). The Service erroneously applied 12-month criteria at the 90-day finding stage. Additionally, at the 90-day finding stage, the Service should not "subject the [P]etition to critical review." 71 Fed. Reg. 66298 (Nov. 14, 2006). In fact, at this initial stage, the Petition "need not establish a strong likelihood or a high probability" that it will succeed at the 12-month review stage under 16 U.S.C. § 1533(a)'s criteria "to support a positive 90-day finding." 79 Fed. Reg. 4877, 4878 (Jan. 30, 2014) (quotations omitted). The Service erred by doing so here.

III. THE COURT SHOULD REQUIRE THE SERVICE TO MOVE AHEAD WITH THE 12-MONTH REVIEW.

The Fifth Circuit previously remanded for reconsideration after vacating the First 90-Day Finding. *Gen. Land Office of Tex.*, 947 F.3d at 321. The Service did not follow the Fifth Circuit's instructions and once again made a finding using an overly strict standard of review, as demonstrated *supra* at Section II.A-D. The Court should not give the Service yet another opportunity to do the same. Instead, the Court should find that the Petition meets the 90-day standard for review and order the Service to issue a positive 90-day finding on the Petition and proceed to the 12-month review stage.

Courts have authority "to make such disposition of the case as justice may require." *Wiwa v. Royal Dutch Petroleum Co.*, 392 F.3d 812, 819 (5th Cir. 2004). In cases where remand to the agency for further deliberation would "unnecessarily prolong the dispute and the underlying litigation," courts can decide themselves what needs to be done. *North Cypress Med. Ctr. Operating Co., Ltd. v. Aetna Life Ins. Co.,* 898 F.3d 461, 479 (5th Cir. 2018). The Supreme Court recognizes that remand is not required where an agency will inevitably follow its prior decision. *NLRB v. Wyman*, 394 U.S. 759, 766 n.6 (1969) (calling such remand "an idle and useless formality").

Accordingly, this Court should refrain from remanding this case for reconsideration and find that the Petition requires a positive 90-day finding based on the extensive evidence presented in the Petition and its supplement, which can be summarized as follows:

- The best current estimates of potential Warbler breeding habitat identify at least 1,678,000 hectares. Appx. 00088; AR_000061; *see also* Appx. 00159; AR_002504 (Groce *et al.* 2010).
- Disease, predation, and parasitism are not and have never been a supportable basis for listing the Warbler as endangered. Appx. 00092; AR_000065.

- Habitat fragmentation is not of concern because the Warbler is widespread and evolved in an environment where breeding is plentiful even in small patches. Appx. 00097–99; AR_000070–72; *see also* Appx. 00163; AR_005505 (Robinson 2013); Appx. 00173.

- Urbanization is not harming Warbler survival because mortality rates, predation rates, and predator composition are similar in urban and rural areas. Appx. 00097; AR_000070; *see also* Appx. 00209; AR_008228 (Reidy *et al.* 2008). And while urbanization may fragment certain areas of Warbler habitat, the areas where occupancy probability for Warblers is highest see lower rates of urbanization. Appx. 00155; AR_001591 (Collier *et al.* 2012); Appx. 00162; 004466 (Reidy *et al.* 2009).

- About 3,000 breeding pairs will sustain the Warbler population for around 100 years. *See* Appx. 00090–91; AR_000063–64 (referencing studies at Appx. 00194; AR_007507 and Appx. 00156; AR_001906). Multiple studies suggest that Warbler breeding populations numbered between 13,000–23,000 Warblers at the time of the Petition. Appx. 00089–90; AR_000062–63.

- After approximately 25 years of research, studies indicate that there is approximately 5 times more Warbler breeding habitat (6,480 square miles) and 19 times more Warblers (263,339 males; 95% CI= 223,927- 302,620) than assumed at the time of the listing decision. *See* Appx. 00161; AR_003579 (Mathewson *et al.* 2012).

- Habitat available for Warbler breeding is more widely distributed, and Warblers "inhabit a much wider range of habitat conditions than identified during early studies." Appx. 00113; AR_000101 (Texas A&M study).

- Since the Wahl *et al.* study in 1990, a number of subsequent studies . . . have estimated the range of warbler habitat at two to six times the estimate by Wahl et al. and estimated warbler population at many times — up to an order of magnitude — greater than the estimate by Wahl *et al.*" Appx. 00085; *see* Appx. 00107–112; AR_000080–85 (collecting studies); *see also* Appx. 00160; AR_002827 (Klassen et al. 2012); AR_002147 (Farrell, S. 2012).

- Most scientific studies now indicate that the Warbler is "a widely distributed species that is preadapted to occur within a variety of environmental conditions." Appx. 00086; AR_000059 (quoting Morrison et al. (2012)); *see also* Appx. 00161; AR_003579 (Mathewson et al. 2012) (finding substantially more Warblers than assumed in 1990 based on surveys).

Additionally, the Service steadfastly maintains its primary reason for listing the Warbler is habitat destruction, *see* Appx. 00200; AR_008099, but it has never designated critical habitat for the species. This position is logically and legally inconsistent. The fact that the Warbler has been listed for over three decades without any critical habitat designation supports delisting, especially

in light of the Petition's evidence of Warbler's recovery. The Service's failure to designate critical habitat for the Warbler violates its mandatory duty under 16 U.S.C. § 1533(a)(3)(A), and undercuts its denial of the Petition.

On the Service's own admission in the Second 90-Day Finding, "the known potential range [of the Warbler] is geographically more extensive than when the [Warbler] was originally listed in 1990[, and] the [P]etition cites studies showing higher [W]arbler population numbers than estimated at the time of listing, which we consider to be accurate for purposes of evaluating the information in the [P]etition." Appx. 00198; AR_008097. Based on this statement as well, a reasonable person would find the Warbler may be eligible for delisting based on the studies in the Petition, which is all the ESA's regulations require for a positive 90-day finding. *See* Appx. 00056–57; 50 C.F.R. § 424.14(b)(1) (2014).

CONCLUSION

For the foregoing reasons, GLO requests that this Court (1) vacate the Service's erroneous Second 90-Day Finding, (2) declare the correct standard of review of 90-day findings in this case, as detailed in the Fifth Circuit's decision in *Gen. Land Office of Tex.*, 947 F.3d at 320–21 and ESA's applicable regulations at 50 C.F.R. § 424.14(b)(1) (2014), and (3) order the Service to immediately issue a positive 90-day finding on the Petition and begin the 12-month review process.

Dated: December 19, 2023

Respectfully submitted,

/s/Theodore Hadzi-Antich

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CERTIFICATE OF SERVICE

I hereby certify that on December 19, 2023, I electronically filed the foregoing, along with the accompanying Appendix and Proposed Order, with the Clerk of the Court for the U.S. District Court for the Western District of Texas by using the CM/ECF system, which will serve a copy of same on all counsel of record.

/s/Theodore Hadzi-Antich
THEODORE HADZI-ANTICH

CERTIFICATE OF COMPLIANCE

I hereby certify that the foregoing is in compliance with the Scheduling Order entered on October 16, 2023, because it is limited to 30 pages or less, exclusive of caption, signature block, any certificate, and any accompanying documents.

/s/Theodore Hadzi-Antich
THEODORE HADZI-ANTICH

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

GENERAL LAND OFFICE OF THE STATE OF TEXAS,
Plaintiff,

v.

UNITED STATES DEPARTMENT OF THE INTERIOR, et al.,
Defendants,

v.

SAVE OUR SPRINGS ALLIANCE,
Intervenor-Defendants.

Civil Case No. 1:23-CV-00169-DAE

APPENDIX

15.	AR_002445	Appx. 00158
16.	AR_002504	Appx. 00159
17.	AR_002827	Appx. 00160
18.	AR_003579	Appx. 00161
19.	AR_004466	Appx. 00162
20.	AR_005505	Appx. 00163
21.	AR_005700-005704	Appx. 00164-168
22.	AR_006774-006798	Appx. 00169-193
23.	AR_007507	Appx. 00194
24.	AR_008094-008107	Appx. 00195-208
25.	AR_008228	Appx. 00209

IN THE UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

GENERAL LAND OFFICE OF THE STATE OF TEXAS, *Plaintiff*, v. UNITED STATES DEPARTMENT OF THE INTERIOR, et al. *Defendants*.	Case No. 1:23-cv-00169-DAE

DECLARATION OF MARK MCANALLY IN SUPPORT OF PLAINTIFF'S MOTION FOR SUMMARY JUDGMENT

I, Mark McAnally, hereby declare as follows:

1. I am over the age of eighteen (18) and am competent to testify in this matter. I have personal knowledge of the following facts and if called upon to do so could competently testify to them

under oath. As to those matters which reflect a matter of opinion, they reflect my personal opinion and judgment upon the matter.

2. I am the Deputy Director/Chief Appraiser for General Land Office of the State of Texas ("GLO"), and I am authorized to sign this declaration on its behalf.

3. On October 11, 2021, GLO provided the United States Fish and Wildlife Service (the "Service") and its officials with a 60-day written notice of violation of the Endangered Species Act, the Service's implementing regulations, and the Administrative Procedure Act. A true and accurate copy of this document is attached as Exhibit 1.

4. GLO owns or operates numerous properties throughout Texas, including public school lands, State Veterans Cemeteries and State Veterans Homes. Some of these properties are occupied by a species known as the Golden-cheeked Warbler ("Warbler").

5. Texas has dedicated half of the public school lands administered by GLO to the Permanent School Fund, which is maintained for the benefit of the public schoolchildren of the State of Texas.

6. The GLO is responsible for maximizing revenues from Texas public school lands. Proceeds from the sale and mineral leasing of public school lands flow to the Permanent School Fund via the GLO.

7. The ability of the GLO to maximize revenues from Texas public school lands is undermined by the restrictions imposed due to the presence of Warblers on GLO properties.

8. This encumbrance on the property makes development of the property vastly more expensive and significantly decreases its market value if sold, resulting in less money for the Permanent School Fund.

9. The presence of Warblers on certain GLO property significantly impacts the market value of such property. For example, an appraisal was conducted on a 2,316.45-acre property located in Bexar and Kendall counties (the "Rancho Sierra property"). A true and accurate copy of this document is attached as Exhibit 2.

10. The appraisal found that approximately 84.5% of the Rancho Sierra property contains Warbler habitat. (Exhibit 2 at 25).

11. Clearing or development on the Rancho Sierra property would require a lengthy and costly mitigation process, and in order to clear or develop the property under the Service's mitigation program, GLO must replace every one acre of cleared land with three acres of Warbler habitat. (Exhibit 2 at 25).

12. An "as is" valuation of the Rancho Sierra property was also conducted. A true and accurate copy of this document is attached as Exhibit 3.

13. The valuation estimated that the presence of Warbler breeding habitat diminishes the value of the Rancho Sierra property by approximately 35%. (Exhibit 3 at 75).

14. GLO also owns and leases 429 acres in Williamson County, approximately 5 miles east of Jonah. It is my understanding that Warblers inhabit areas throughout Williamson and surrounding counties.

15. The reduction in property values caused by the presence of Warbler habitat translates to less money available for fulfilling GLO's mission to maximize revenues from Texas public school lands for the benefit of Texas schoolchildren.

16. It is my understanding that removal of the Warbler from the endangered species list would remove these impediments to GLO's land values.

Pursuant to 28 U.S.C. § 1746, I, Mark McAnally, declare under penalty of perjury that the foregoing is true and correct.

Executed on this 14 day of December, 2023, in Austin, Texas.

MARK MCANALLY
Deputy Director/Chief Appraiser
General Land Office of the State of Texas

EXHIBIT 1

Texas Public Policy Foundation

October 11, 2021

Via Email and Federal Express

Deb Haaland
Secretary of the Interior
U.S. Department of the Interior
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Washington, DC 20240
feedback@ios.doi.gov

Martha Williams
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Amy Leuders
Southwest Regional Director
U.S. Fish and Wildlife Service
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Albuquerque, NM 87102
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Re: Notice of Intent to File Suit Concerning the Status of the Golden-cheeked Warbler under The Endangered Species Act

Dear Secretary Haaland, Acting Director Williams, and Regional Director Leuders:

Pursuant to the citizen suit provision of the Endangered Species Act ("ESA"), 16 U.S.C. 1540(g)(2), this letter serves as a 60-day notice ("Notice") on behalf of the General Land Office of the State of Texas (sometimes hereinafter referred to as "GLO") of its intent to sue the U.S. Fish and Wildlife Service ("Service") in connection with the Service's July 27, 2021, 90-day negative finding that a June 29, 2015, petition to delist the golden-cheeked warbler (*Setophaga chrysoparia*) ("GCWA") did not present substantial scientific or commercial information indicating that

delisting may be warranted (sometimes hereafter referred to as the "2021 Negative Finding"). 86 Fed. Reg. 40,186 (July 27, 2021).[1]

As is set forth in greater detail below, the 2021 Negative Finding violates the ESA and the Administrative Procedure Act ("APA"), 5 U.S.C. 702, et seq., in a number of ways and must be reconsidered by the Service in accordance with applicable law and the best available scientific information. In addition, the Negative Finding failed to follow the explicit instructions of the United States Court of Appeals for the Fifth Circuit in the case of *General Land Office of Texas v. United States Department of the Interior*, 947 F.3d 309 (5th Cir. 2020) (the "Fifth Circuit Decision").

INTRODUCTION TO THE GENERAL LAND OFFICE OF THE STATE OF TEXAS

The General Land Office of the State of Texas is the oldest state agency in Texas, established by the Constitution of the Republic of Texas. Upon annexation by the United States, Texas retained control of its public lands. Texas constitutionally dedicated half of these public lands to the Permanent School Fund, which is maintained for the benefit of the public schoolchildren of the State of Texas. T.X. Const. art. VII §2. The GLO is responsible for maximizing revenues from Texas public school lands. Tex. Nat. Res. Code Ann. §31.051. Under the Texas Constitution, proceeds from the sale and mineral leasing of public school lands flow to the Permanent School Fund via the GLO. T.X. Const. art. VII § 5(g). The Texas Legislature established the School Land Board in 1939 to manage the sale and mineral leasing of Permanent School Fund lands. The Commissioner of the Texas General Land Office chairs the School Land Board.

Additionally, the GLO owns and maintains State Veterans Cemeteries to honor those who have served, as well as State Veterans Homes that provide care and dignity for veterans, their spouses, and Gold Star parents. The ability of the GLO to maximize revenues from Texas public school lands, and to maintain State Veterans Cemeteries and State Veterans Homes to a high standard, is undermined by the restrictions imposed due to the presence of Warblers or Warbler habitat on GLO properties.

For example, in Bexar and Kendall counties, GLO owns a 2,316.45-acre parcel of land – approximately 84.5% of which contains Warbler habitat. In order to clear or develop the property under the Service's mitigation program, GLO must replace every one acre of cleared land with three acres of Warbler habitat. This encumbrance on the property makes development of the property vastly more expensive and significantly decreases its market value if sold, resulting in less money for the Permanent School Fund, State Veterans Cemeteries, and State Veterans Homes. In fact, after conducting three studies on the presence of Warbler habitat on this property, experts concluded that the presence of Warbler habitat decreased the property's value an average of 43%.

GLO also owns and leases 429 acres in Williamson County, approximately 5 miles east of Jonah. Warbler habitat is located throughout Williamson and surrounding counties.

[1] GLO intends to challenge the 2021 Negative Finding under both the ESA and the Administrative Procedure Act ("APA"). Advanced notice to the Service is required only under the ESA and not under the APA.

If the Service does not correct the noted deficiencies within 60 days of this notice, GLO will seek to have the challenged Negative Finding declared unlawful and set aside. In addition, all other appropriate relief, including costs and fees, will be sought

BACKGROUND

A. Listing History of the Golden-cheeked Warbler

The GCWA is an insectivorous, migratory songbird that breeds in the mixed Ashe juniper and deciduous woodlands of Central Texas, west and north of the Balcones Fault. The species arrives in Texas from late February through April and migrates through Mexico and Central America in July and August to winter in the mountainous regions of Southern Mexico, Guatemala, Honduras, El Salvador, and Nicaragua. *See* Golden-cheeked Warbler (*Setophaga chrysoparia*) 5-year Review (2014) at 1. The Service emergency-listed the GCWA on May 4, 1990 based on the agency's belief that "ongoing and imminent habitat destruction" for the GCWA would occur and that the species needed federal funding and protection available to ESA-listed species. *See* 55 Fed. Reg. 18,844 (May 4, 1990). In the emergency listing rule, the Service indicated that Travis County, Texas, contained some of the best habitat for the GCWA and that the species' habitat was threatened due to development, including development in "late-stage approval" processes by Travis County and the City of Austin. *Id*.

The Service published a final rule listing the species in 55 Fed. Reg. 53,153 (Dec. 27, 1990). The final listing rule estimated there to be approximately 15,000-17,000 GCWAs, and between 79,400-263,750 acres of available suitable habitat. *Id*. at 53,154. Pursuant to the listing factors identified by the ESA, the Service provided the following justification for the listing of the GCWA as endangered:

> *Listing Factor A (the present or threatened destruction, modification, or curtailment of its habitat or range)*: The Service asserted that the central and western range of the GCWA had been "decimated" by clearing of mature Ashe junipers and by encroachment and fragmentation of habitat due to urban development, particularly in the Austin and San Antonio metropolitan areas. *Id*. at 53,157. The Service further asserted that "[c]onsistent population growth in the Edwards Plateau region of Texas" constituted a "major threat" to the GCWA. Other threats to the species asserted by the Service included highway construction, proposed reservoirs and water delivery systems, and private and commercial development. *Id*. at 53,157.
>
> *Listing Factor B (overutilization for commercial, recreational, scientific, or educational purposes)*: The Service did not indicate this factor was present at the time the species was listed. *Id*. at 53,158.
>
> *Listing Factor C (disease or predation)*: While the Service acknowledged that observation of GCWA nests was difficult and, therefore, challenging to assess the extent the species experiences nest predation, the Service nevertheless identified

scrub jays, blue jays, crows, grackles, feral cats and dogs, rat snakes, raccoons, opossums, and squirrels as nest predators. *Id*. The agency also noted that fire ants "could become" a threat to the GCWA. *Id*.

Listing Factor D (the inadequacy of existing regulatory mechanisms): The Service identified the Migratory Bird Treaty Act and Texas Parks and Wildlife Department ("TPWD") regulations as providing limited protection for the species, but noted TPWD regulations did not provide for protection of GCWA habitat. The Service acknowledged that the City of Austin had "limited" ability to protect GWCA habitat, and stated listing the species under the ESA would provide additional protection of the species habitat. *Id*.

Listing Factor E (other natural or manmade factors affecting its continued existence): The Service identified habitat destruction causing habitat fragmentation as an "immediate threat" to the GCWA, the threat of brown-headed cowbird predation, and lack of reproduction of deciduous trees as additional threats to the species. *Id*. at 53,159.

In summary, the final listing rule identified habitat loss and fragmentation due to urban development as posing the greatest threat to the GCWA, with nest predation and lack of regulatory mechanisms contributing to the species' purported endangered status.

B. Delisting Petition, Original 90-day Finding, and Associated Litigation

1. Delisting Petition

On June 29, 2015, Texans for Positive Economic Policy, Susan Combs, the Texas Public Policy Foundation, and the Reason Foundation (collectively, "Petitioners") submitted to the Service their *Petition to remove the golden-cheeked warbler from the list of endangered species* ("Delisting Petition"). The Delisting Petition provided substantial information indicating delisting the GCWA may be warranted. Among other things, the Delisting Petition provided information indicating available habitat for the species is substantially greater than was known at the time the species was listed, that the GCWA population is roughly 19 times greater than was believed at the time of listing, and that significant conservation has been put into place for the species since its listing in 1990. Delisting Petition at 4, 25. Specifically, the Delisting Petition provided scientific and commercial information indicating:

- Estimates of GCWA habitat have consistently demonstrated a substantial increase in the amount of available GCWA habitat than was known at the time the species was listed, including studies published between 2012-2013 indicating between 1,578,281 and 1,678,053 hectares (between 3,900,017-4,146,559 acres) of available GCWA habitat exist across the species' range in Texas. *Id*. at 13, 18.
- Recent population estimates indicate the male GCWA population at between 223,927-302,620 (up from approximately 13,800 territories at the time the species was emergency listed). *Id*. at 19.

- Sufficient habitat exists to suggest the probability of GCWA extinction over the next 100 years is low. *Id*. at 20.
- Predation and brood parasitism of GCWAs is uncommon or otherwise a low risk to the species. *Id*. at 22.
- Myriad habitat conservation plans and other conservation mechanisms ensure continued protection for the GCWA even if the species were delisted, including:
    - The Balcones Canyonlands National Wildlife Refuge—30,000 acres;
    - Fort Hood—22,591 hectares (55,823 acres) supporting between 4,482-7,236 male GCWAs;
    - 160 habitat conservation plans approved by the Service which include GCWAs as a covered (protected) species. *Id*. at 23-25.

The Delisting Petition stated that application of the best available scientific and commercial information clearly indicates the GCWA does not meet the statutory listing factors set forth in the ESA. *Id*. at 14.

2. Original Negative 90-day finding on Delisting Petition

Despite the substantial information provided to the Service in the Delisting Petition, on June 3, 2016, the Service made a negative 90-day finding on the Petition ("Original Negative Finding"). 81 Fed. Reg. 35,698. In the Original Negative Finding, the Service asserted the Petition provided no "new information" indicating the GCWA was originally listed in error or that the species had recovered. *Id*. at 35,700. Further, the Service asserted that there continues to be "ongoing, widespread destruction of [GCWA] habitat" and that the species "continues to be in danger of extinction throughout its range." *Id*.

The Service's petition review form prepared in connection with the agency's Original Negative Finding acknowledged that studies published subsequent to the GCWA's listing indicate growth in the species' distribution and abundance and the existence of more available habitat. However, the agency stated that these studies represent "new estimates rather than indicators of positive trends" in habitat population and size and, therefore, do not imply recovery of the species. The petition review form also referred to a study published subsequent to the agency's receipt of the Delisting Petition to support the Service's contention that uncertainty with respect to GCWA population continued to exist. The petition review form noted that the Delisting Petition did not address whether habitat fragmentation represents a significant threat to the GCWA and did not cite to "new studies" demonstrating continued urbanization, habitat loss and habitat fragmentation.

In its petition review form, the Service also summarily dispensed with information provided by the Delisting Petition indicating neither disease nor predation pose a significant threat to the GCWA, finding that the Delisting Petition did not provide "new information" supporting its position.

3. Lawsuit Challenging Original Negative Finding in District Court

On June 5, 2017, GLO filed suit in federal district court in Austin, challenging as arbitrary and capricious the Original Negative Finding. On February 6, 2019, the U.S. District Court for the Western District of Texas upheld the Original Negative Finding. *See General Land Office of Texas v. U.S. Fish and Wildlife Service*, 2019 WL 1010688 (W.D. Tex. Feb. 6, 2019).

4. U.S. Court of Appeals for the Fifth Circuit Reverses District Court and Overturns the Original Negative Finding

On January 15, 2020, Fifth Circuit Decision reversed the district court and found the Service's Original Negative Finding to be arbitrary and capricious. Specifically, the Fifth Circuit found that the Service applied an inappropriately stringent standard in connection with the agency's review of the Petition. *See General Land Office of Texas v. United States Department of the Interior*, 947 F. 3d 309, 320-21 (5th Cir 2020). The Fifth Circuit held that while the Service's regulations in place at the time the agency made its Original Negative Finding required a petition present only "that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted," *id*. (citing 50 C.F.R. 424.14(b)(1)), the Service instead impermissibly required the Petition to contain "new" information the agency had not considered in its 5-year review. *Id* at 321. Accordingly, because the Service made the Original Negative Finding using an incorrect legal standard, the Fifth Circuit reversed the district court's decision, required vacatur of the Original Negative Finding, and remanded the matter to the Service for reconsideration of the Delisting Petition, ordering the Service to use the correct legal standard. *Id*.

THE POST-REMAND 2021 NEGATIVE FINDING

On July 27, 2021, in response to the order of the Fifth Circuit, the Service published a new 90-day finding that is the subject of this NOI. As noted above, the 2021 Negative Finding stated that the Petition did not present substantial scientific or commercial information indicating delisting the GCWA may be warranted. 86 Fed. Reg. 40,186 (July 27, 2021). The Service provided the rationale for its Negative Finding in the Petition Review Form, which is located in Docket No. FWS-R2-ES-2016-0062 on www.regulations.gov. The remaining portions of this 60-day notice set forth the legal standard that the Service should have applied but failed to apply in connection with the Delisting Petition and the specific reasons why the 2021 Negative Finding is arbitrary, capricious, contrary to law, and contrary to the explicit instructions of the Fifth Circuit's remand order.

A. The Legal Standard Applicable to the Delisting Petition

Upon receipt of a petition to delist a threatened or endangered species, and to the maximum extent practicable, the Service is required by ESA section 4 to make a finding within 90 days regarding whether the petition presents substantial information indicating that delisting may be warranted. 16 U.S.C. 1533(b)(3)(A); 50 C.F.R. 424.14(b)(1). If the Service makes a positive 90-day finding by determining that a petition presents substantial information indicating the petitioned action *may* be warranted, the Secretary is required to commence a review of the species' status and make a

second determination, that is, whether listing is warranted. This second determination is generally referred to as a "12-month finding." If, however, the Secretary makes a negative 90-day finding, the petition is rejected and no further review is conducted by the Service. A negative 90-day finding is subject to judicial review. 16 U.S.C. 1533(b)(3)(C)(ii), 1540(g).

Making a positive 90-day finding is a low bar, as it simply triggers further review of the status of a species. At the 90-day finding stage, the Secretary is required to determine only whether a petition presents substantial scientific and commercial information indicating the petitioned action "may be warranted." As the Fifth Circuit recognized, Service regulations in place at the time the Petition was submitted defined "substantial information" as "that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted." 16 U.S.C. 1534(b)(3)(A); 50 C.F.R. 424.14(b)(1).

Courts generally have held that in making a 90-day finding, the Service does not critically analyze petitions, conduct additional research, or make a determination as to whether listing under the ESA is warranted. *See, e.g., Colorado River Cutthroat Trout v. Kempthorne*, 448 F. Supp. 2d 170, 176-77 (D.D.C. 2006) (recognizing the Service's explicit acknowledgement, in the agency's routine statement in 90-day findings on petitions that it does not conduct additional research or subject the petition to rigorous critical review at the 90-day finding stage). In a 90-day review, the Service may utilize the information that it already has in its files regarding the species in addition to the information provided in the petition; however, the Service may not solicit or consider outside information and opinions. *E.g., Ctr. for Biological Diversity v. Morgenweck*, 351 F.Supp.2d 1137 (D. Colo. 2004); *WildEarth Guardians v. U.S. Secretary of the Interior*, 2011 WL 1225547, *4, *7 (D. Idaho Mar. 28, 2011); *McCrary v. Gutierrez*, 2010 WL 520762 (N.D. Cal. Feb. 8, 2010).

It is well-established that a lower standard of evidence is required at the 90-day finding stage than is required for the Service to make a 12-month finding, because the question before the Service at that preliminary stage is whether the petitioned action ***may be*** warranted, not whether ***it is*** warranted. *See e.g., Moden v. U.S. Fish and Wildlife Service*, 281 F. Supp. 2d 1193, 1203-4 (D. Or. 2003) (concluding that "the standard for evaluating whether substantial information has been presented by an 'interested person' is not overly-burdensome, does not require conclusive information, and uses the 'reasonable person' to determine whether…action may be warranted."); *Humane Soc'y of the U.S. v. Pritzker*, 2014 WL 6946022, *5-8 (D.D.C. Nov. 14, 2014) (summarizing case law verifying the lower evidentiary standard for a 90-day finding and determining that the agency was arbitrary and capricious in its failure to apply the correct evidentiary standard where there was "conflicting evidence" regarding the species and the agency's "own conclusion regarding the need for more thorough analysis suggest[ed] that a reasonable person might conclude that a review of the status of the species concerned was warranted"); *Ctr. for Biological Diversity v. Kempthorne*, 2008 WL 659822, *9 (D. Ariz. Mar. 6, 2008) (holding that the "application of an evidentiary standard requiring conclusive evidence in the context of a 90-day review is arbitrary and capricious"); *Morgenweck*, 351 F. Supp. 2d at 1141 (setting aside negative 90-day finding where the agency applied an incorrect standard to require conclusive evidence that the petitioned-for action was warranted); *Colorado River Cutthroat Trout*, 448 F. Supp. 2d at 176) (holding that the 90-day finding stage is intended to be a threshold determination" and a "less searching review"). At the 90-day finding stage, the Service is not

allowed to "simply discount scientific studies that support the petition or to resolve reasonable extant scientific dispute against the petition. Unless the Service explains why the scientific studies that the petition cites are unreliable, irrelevant, or otherwise unreasonable to credit, the Service must credit the evidence presented." *Buffalo Field Campaign v. Zinke*, 289 F. Supp. 3d 103, 110 (D.D.C. 2018).

Recently, the U.S. District Court for the Western District of Texas specifically examined the standard the Service must apply at the 90-day finding stage. In *American Stewards of Liberty v. U.S. Dep't of the Interior*, the court found the Service's denial of a petition to delist the Bone Cave harvestman—a central Texas karst invertebrate species—was arbitrary and capricious ***because the Service "required a higher quantum of evidence than is permissible*** under the [ESA] and implementing regulations governing a 90-day finding." 370 F. Supp. 3d 711, 725 (W.D. Tex. 2019) ("*American Stewards*") (emphasis added). In that case, the court held that the Service should have considered whether the information presented by the delisting petition "may indicate" delisting was warranted but, instead, required "conclusive evidence" of the same. Importantly, the court recognized that "the evidence presented in the petition is not conclusive proof" that the species warranted delisting; however, the court concluded that "the evidence presented in the petition meets the ***low evidentiary threshold set forth in the [ESA] and implementing regulations for a 90-day finding***." *Id*. at 728 (emphasis added). The Service's ultimate decision as to whether the species should be delisted would be made, said the court, "after a more searching inquiry" associated with the 12-month finding.

B. The 2021 Negative Finding is Unlawful for a Variety of Reasons

Despite clear instruction from the Fifth Circuit that a heightened standard should not be used at the 90-day finding stage to judge the Delisting Petition, the Service has, again, applied the same unlawfully heightened standard to the same Delisting Petition, thereby ignoring the Fifth Circuit's instructions. Throughout the 2021 Negative Finding, the Service made clear that it viewed the burden to be on the Petitioners as proving recovery, proving a negative, and using "new information" to do so. Moreover, the Service wholly ignored Petitioners' claim that the GWCA should be delisted because its original listing was in error.

The Service has acted arbitrarily and capriciously in violating the ESA's mandatory duties by applying the wrong evidentiary standard and failing to apply the "substantial information" standard and by ignoring, misconstruing, and/or subverting scientific information. This runs counter to the Service's own interpretation of the ESA and its customary statement in 90-day findings that "as the Act and regulations contemplate, at the 90-day finding, we [the Service] accept the petitioner's sources and characterizations of the information unless we have specific information to the contrary." *Colorado River Cutthroat Trout v. Kempthorne*, 448 F. Supp. 2d 170, 176 n.4 (citing the Service's statements in numerous 90-day findings that the agency does not conduct additional research or subject the petition to rigorous critical review at the 90-day finding stage). In applying the wrong standard, the Service has violated the instructions of the Fifth Circuit, the ESA, and the APA. *See* 5 U.S.C. 706(2)(A), (D).

1. The Service failed to address or analyze information in the Delisting Petition demonstrating the GCWA was listed in error

In an oversight that defies reason, the Service steadfastly failed to confront in any way the primary basis for the Delisting Petition—that the original data for classification of the GCWA were in error.[2] There can be no dispute that the original data for classification of the GCWA as endangered were in error. As detailed in the Delisting Petition and referenced above, at the time the species was listed, there were thought to be between 15,000-17,000 GCWAs. Recent estimates, however, consistently indicate that the species numbers in the hundreds of thousands. Further, at the time the GCWA was listed as endangered, approximately 79,000-260,000 acres of habitat was thought to be present on the landscape in Texas. Today, and as detailed in the Delisting Petition, recent studies put that number closer to four million acres. And all this is despite continued rapid urbanization in parts of the GCWA's range—the primary threat identified by the Service in its Final Listing Rule and emphasized in the Petition Review Form. The indisputable error in the original classification decision alone warrants delisting and renders the 2021 Negative Finding unlawful. However, the 2021 Negative Finding also fails for several other reasons, as detailed below.

2. The Service held the Delisting Petition to an unlawfully high standard at the 90-day finding stage

Despite the Service indicating in the Petition Review Form that the agency had reviewed the Delisting Petition under the standards applicable at the time the Delisting Petition was submitted to the Service, the agency nevertheless impermissibly applied regulations that were adopted two years after the Delisting Petition was submitted. This was the incorrect standard, as was previously held by the Fifth Circuit. *See* 947 F.3d at 320-21. The court stated, "[t]he Service *recited* [the correct] standard, but a careful review of its analysis shows that the Service *applied* an inappropriately heightened one." *Id.* at 321 (emphasis in original).

The Service was required to make a finding as to whether the petition presents substantial information indicating that delisting may be warranted. 50 C.F.R. 424.14(b)(1). "Substantial information" was defined at the time the Delisting Petition was submitted as "that amount of information that would lead a *reasonable person* to believe that [delisting] *may be* warranted." *See* 50 C.F.R. 424.14(b)(1) (2014) (emphasis added)*; see also* 947 F. 3d at 321. Petition review regulations adopted in October 2016, two years *after* the Delisting Petition had been submitted, instruct that where a prior species status review resulted in final agency action, a petitioned action "generally would not be considered to present substantial scientific and commercial information

[2] On August 27, 2019, the Service published a final rule revising the agency's regulations governing the standard for delisting a species ("2019 Regulations"). The 2019 Regulations removed as a basis for delisting that the species was originally listed in error and, instead, required the Service to simply apply the listing factors to the species petitioned for delisting. 50 C.F.R. 424.11(e); 84 Fed. Reg. 45,052 (Aug. 27, 2019). The Service indicated in the 2021 Negative Finding that it reviewed the Delisting Petition in accordance with standards in place at the time the petition was received, and this is consistent with the Service's practice in other similar circumstances. Because the Service reviewed the Delisting Petition based on regulations in place when the petition was submitted, the Service was required to evaluate whether the GCWA should be delisted on the basis that the original listing was in error.

indicating the petitioned action may be warranted unless the petition provides *new information* not previously considered." 50 C.F.R. 424.14(h)(iii) (2016) (emphasis added).

In its 2021 Negative Finding, the Service stated that information provided by the Delisting Petition "does not report any ***new*** data or study results…but summarizes readily available information about the [GCWA] and its habitat." Petition Review Form, unpaginated (emphasis added). In other words, the Service apparently would require Petitioners to provide information the Service previously had not considered in order to make a positive 90-day finding. Thus, the 2021 Negative Finding was obviously based on petition review regulations that are inapplicable to the Delisting Petition. As indicated, the Fifth Circuit, in its review of the Service's Original Negative Finding, held this approach impermissible:

> Specifically, to proceed to the twelve-month review stage, the Service required the delisting petition to contain information the Service had not considered in its five-year review…The Service thus based its decision to deny the delisting petition on an incorrect legal standard. Consequently, we conclude the Service's decision was arbitrary and capricious.

General Land Office at 321. Thus, in issuing the 2021 Negative Finding using the same standard that had already been rejected by the Fifth Circuit, the Service acted unlawfully.

3. The Service erroneously required conclusive evidence of recovery

In addition to applying the wrong petition review regulations to the Delisting Petition, the Service also applied an unlawfully high standard at the 90-day finding stage. In countering information provided in the Delisting Petition that the GCWA and its habitat are far more abundant than at the time of listing, the Service states "…***these efforts represent new estimates rather than indictors of positive trends*** in [GCWA] habitat and population size, ***and thus do not imply recovery***." Petition Review Form, unpaginated (emphasis added). The Petition Review Form additionally admits that "it is apparent that uncertainty still exists." *Id*. The U.S. District Court for the Western District of Texas has recently held this approach unlawful:

> The Service's regulations require a petition to present only ***available information***, and the Service committed a clear error in judgment and acted arbitrarily, capriciously, and not in accordance with the law when it called for more evidence than the law requires…***Rather than considering whether the information presented in the petition may indicate that delisting is warranted, the Service requires conclusive evidence***…

American Stewards, 370 F. Supp. 3d at 725, 727 (emphasis added). Here, as in *American Stewards*, rather than examine whether the Delisting Petition presented available information that may indicate delisting is warranted, the Service required conclusive evidence of the same.

4. The Service applied inappropriate analysis to Delisting Petition claims that the GCWA has recovered

The Delisting Petition provided information indicating the GCWA has recovered and should be delisted on that basis. The Service's Petition Review Form acknowledges that the known range of the species is geographically more extensive and that the GCWA population numbers are higher than what was known at listing; however, the Service nevertheless indicated threats still exist and that recovery criteria have not been accomplished. *See* Petition Review Form, unpaginated. Achieving recovery criteria, however, is not the measure of whether a species has recovered to the point where listing is no longer necessary.

Courts have held that although the ESA mandates the Service prepare species recovery plans, such plans serve as guidance for the agency and do not carry the force of law in an agency's determination as to whether or not a listed species has recovered and necessitates delisting. *See, e.g., Friends of Blackwater v. Salazar*, 691 F.3d 428, 434 (D.C. Cir. 2012); *Fund for Animals, Inc. v. Rice*, 85 F.3d 535, 547 (11th Cir. 1996); *Conservation Cong. v. Finley*, 774 F.3d 611, 614 (9th Cir. 2014); *Friends of Animals v. U.S. Fish & Wildlife Serv*., Case No. 6:14-cv-01449, 2015 WL 4429147, at *5 (D. Or. July 16, 2015), *appeal docketed* No. 15-35639 (9th Cir. Aug. 7, 2015). The Service has itself argued successfully in the D.C. Circuit Court that the "criteria in [a] [r]ecovery [p]lan, unlike the factors in section 4(a)(1) of the [ESA] are not binding upon the agency in deciding whether a species is no longer endangered and therefore should be delisted." *Friends of Blackwater*, 691 F.3d at 432.

The Delisting Petition provided substantial information indicating that available GCWA habitat and the GCWA population are orders of magnitude greater than was known at the time the species was listed and that many tens of thousands of acres of important GCWA habitat have been preserved across the species range.

The ESA does not identify a minimum population, range, or preserve number or size that must be achieved or maintained in order to warrant delisting. Instead, the relevant determination whether to delist on the basis of recovery is based on the risk of extinction from any one or a combination of the five listing factors. 50 C.F.R. 424.11(d) (1984); 50 C.F.R. 424.11(e). Whether or not the GCWA has achieved its recovery criteria is irrelevant because it is the ESA's definitions of endangered ("in danger of extinction throughout all or a significant portion of its range") and threatened ("likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range") that provide the applicable standards for determining whether a species has recovered. *Id*.

A species numbering in the hundreds of thousands, with millions of acres of available habitat, cannot reasonably be determined to face an imminent threat of extinction throughout all or a significant portion of its range. Considering these facts, and the substantial conservation that has been put into place for the species, it was unreasonable for the Service to find that the GCWA has not recovered.

5. The Service ignored information provided by the Delisting Petition

Throughout its Petition Review Form, the Service indicates the Delisting Petition failed to address various threats to the GCWA, including those caused by habitat fragmentation and urbanization. However, the Delisting Petition did, indeed, include information on whether fragmentation and urbanization threaten the GCWA. For example, on the topic of habitat fragmentation, the Delisting Petition explained, "[b]ecause the Service erroneously concluded that few birds existed and little habitat was available for the species, the Service mistakenly concluded that any encroachments on [GWCA] habitat would threaten the continued survival of the species." Delisting Petition at 28; *see also, id*. at 17, 25, and 27.

Likewise, in its Petition Review Form, the Service claimed that the Delisting Petition did not reference ***any*** information calling into question that disease and predation threaten the GCWA. However, the Delisting Petition cites three separate studies—Stake, et al. (2004), Groce, et al. (2010), and Anders (2000) to support Petitioners' claims that predation is not a threat to the GCWA. Delisting Petition at 22. In support of its claims that disease also does not threaten the GCWA, the Delisting Petition addresses the issue of an isolated outbreak of avian pox on the GCWA. *Id*. The Petition Review Form does not acknowledge that the Delisting Petition addressed the issue of predation and does not cite to Groce et al. (2010) or Anders (2000).

Despite the Service's protests to the contrary, the information provided in the Delisting Petition is much more than required to meet the regulatory standard that a petition present substantial information that the petitioned action ***may be*** warranted. In the 2021 Negative Finding, the Service inexplicably required the Delisting Petition to ***prove*** that the GCWA has recovered. On its face, that is the same, wrong standard that caused the Fifth Circuit to vacate and remand the matter to the Service. Accordingly, the Negative Finding is arbitrary, capricious, an abuse of discretion, and otherwise is contrary to the law.

6. Other Information Relevant to GCWA Status

GLO notes that on February 25, 2021, Dr. James Mueller, a biologist with the Balcones Canyonlands National Wildlife Refuge, delivered a presentation to the Texas Chapter of the Wildlife Society titled *Where and by How Much do Golden-Cheeked Warbler Models Differ?* This presentation described a recently concluded study conducted by Dr. Mueller and others which examined potentially available GCWA habitat across the species' breeding range (based on 2018 satellite imagery) and used presence-absence surveys at 3 and 5 minute intervals to verify results. Dr. Mueller reported that the study concluded there were between 220,000-276,000 singing male GCWAs throughout the species' breeding range and that the species did not appear to be "imminently threatened with extinction." Dr. Mueller indicated publication of the study was forthcoming. While the study referenced by Dr. Mueller has not been published as of the date of this Notice, the information would almost certainly have been contained within the Service's files at the time the agency was preparing its 2021 Negative Finding. It was arbitrary and capricious for the Service to have ignored such relevant information.

CONCLUSION

For the foregoing reasons, in issuing the 2021 Negative Finding, the Service has again violated its duties under the ESA. The 2021 Negative Finding was and is arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with the ESA and the standards set forth in the APA. *See* 5 U.S.C. 706(2). As indicated, if these violations have not been remedied within 60 days, we plan to file a lawsuit in federal district court for appropriate substantive and procedural relief, as well as for costs and attorneys' fees. Should you have any questions, please contact the undersigned.

Sincerely,

ROBERT HENNEKE
General Counsel & Director
THEODORE HADZI-ANTICH
Senior Attorney
Center for the American Future
Texas Public Policy Foundation

By: Theodore Hadzi-Antich
THEODORE HADZI-ANTICH
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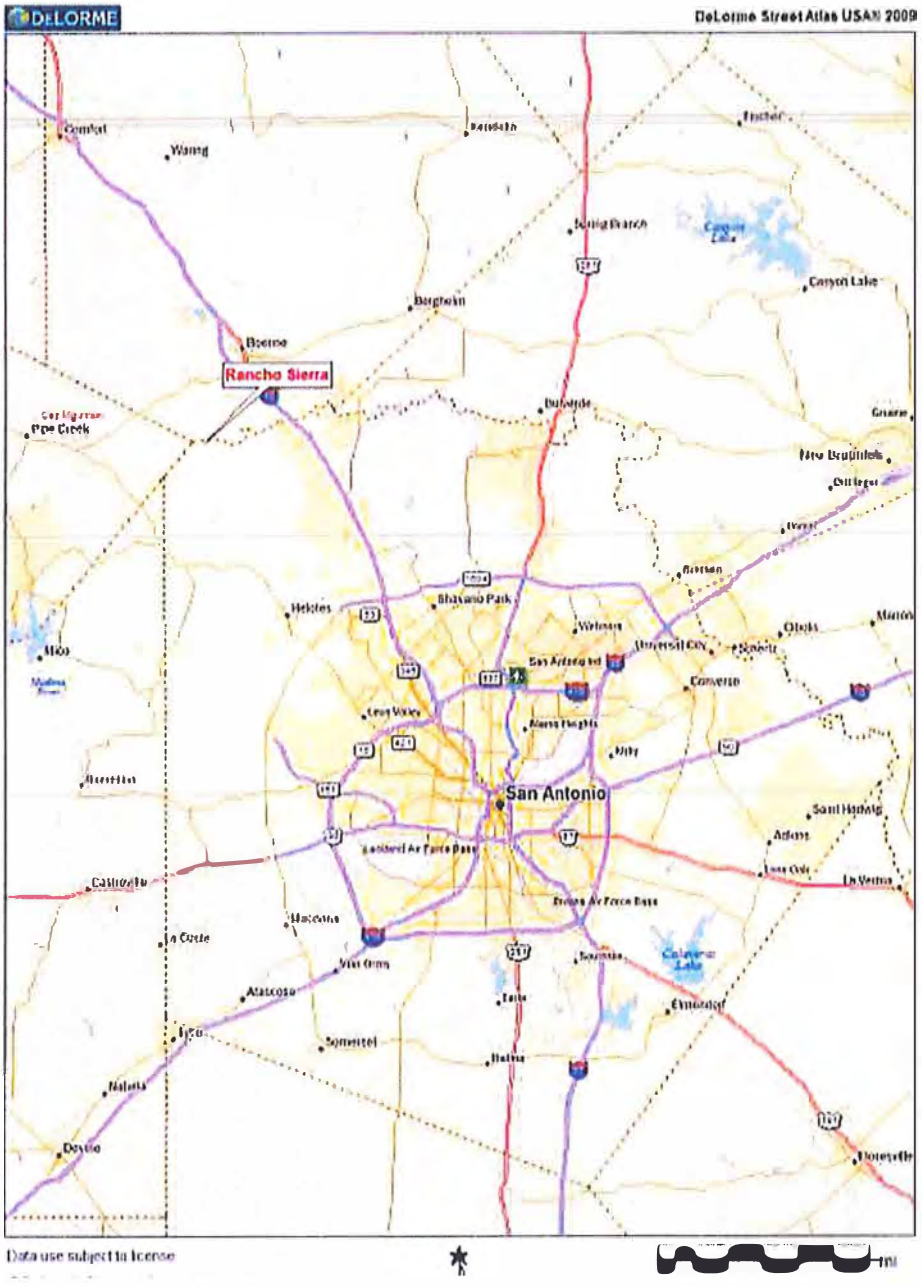
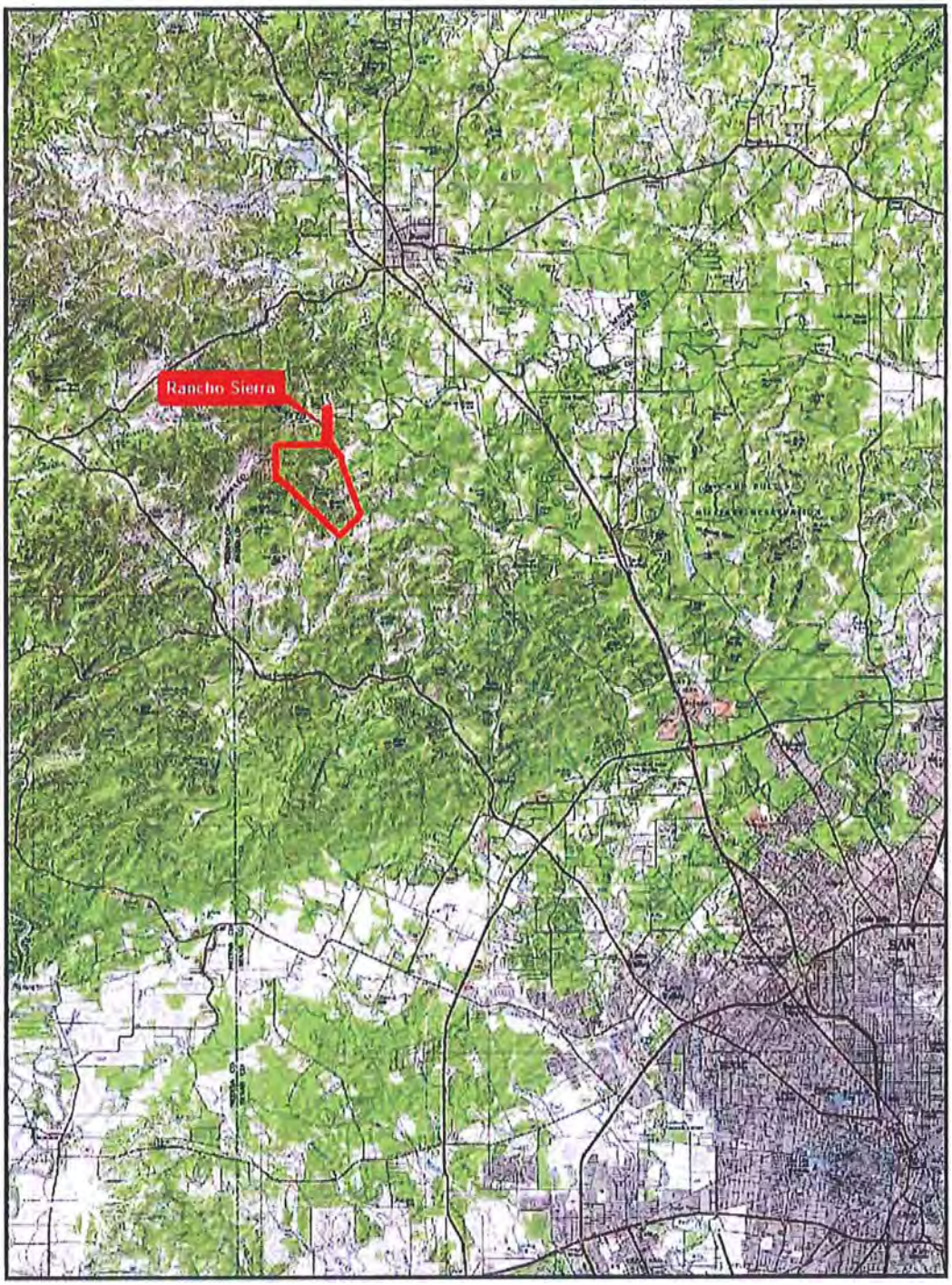
EXHIBIT 2

City of San Antonio Analysis

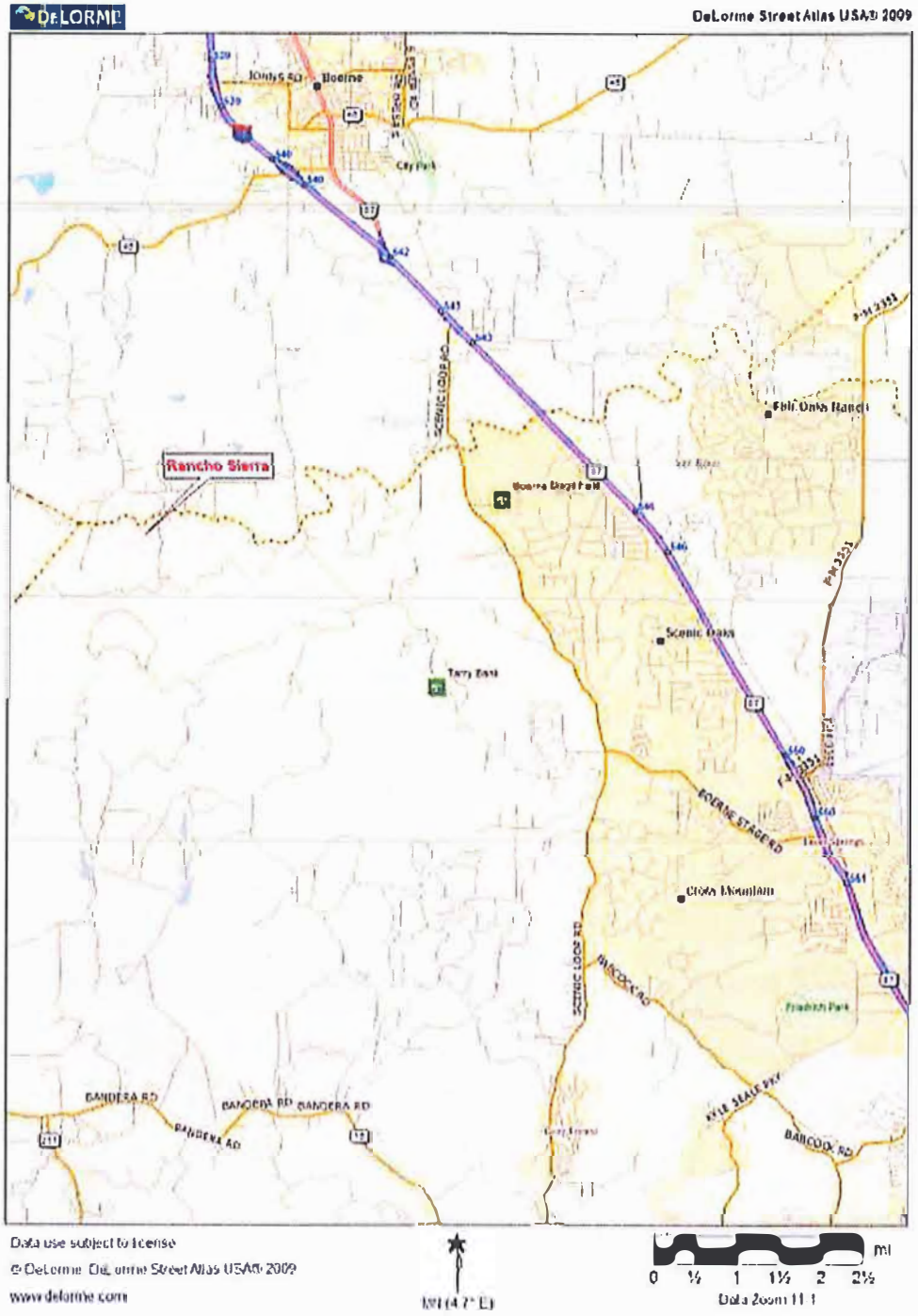
SAN ANTONIO MAP



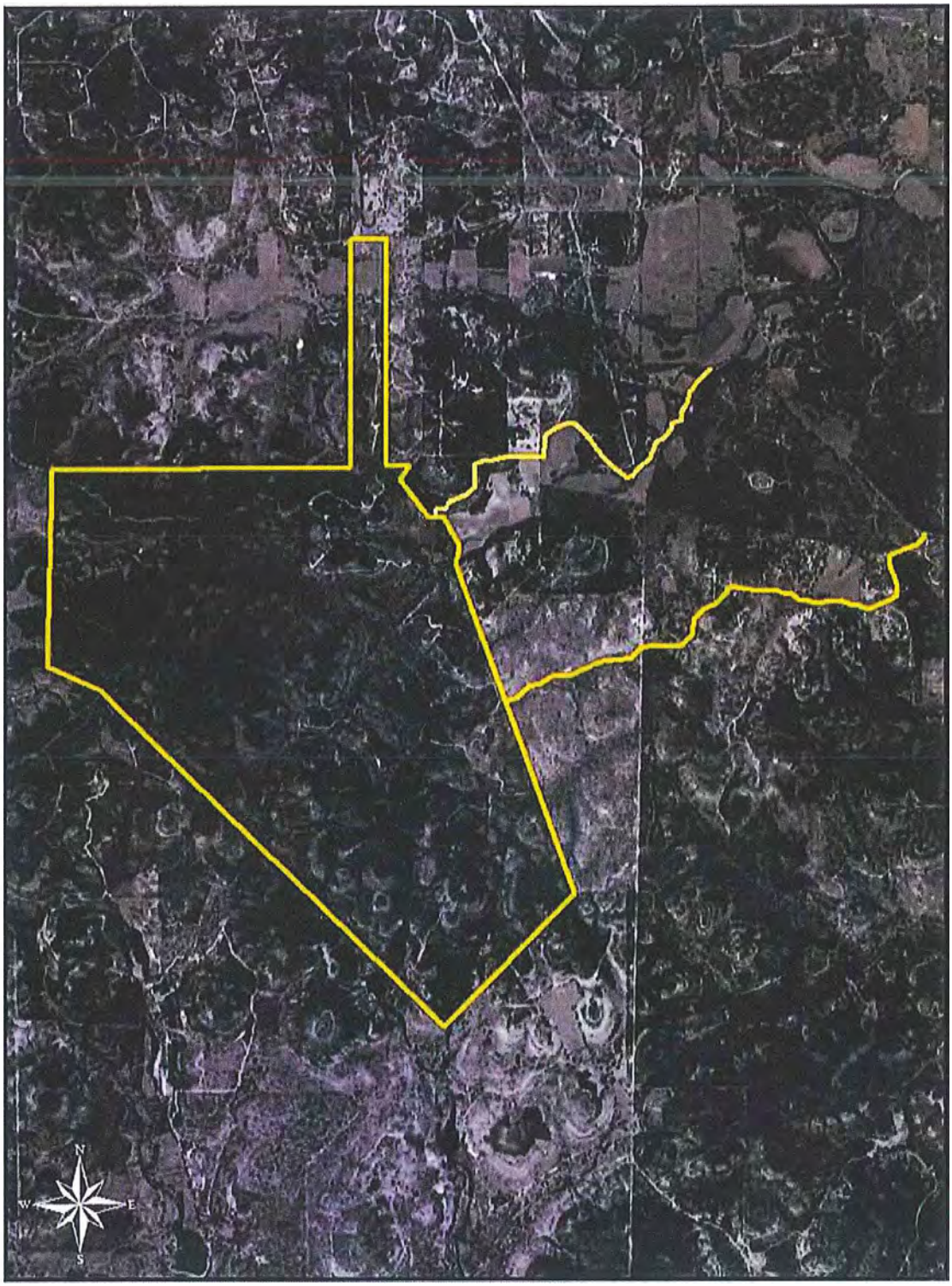
LOCATION MAP



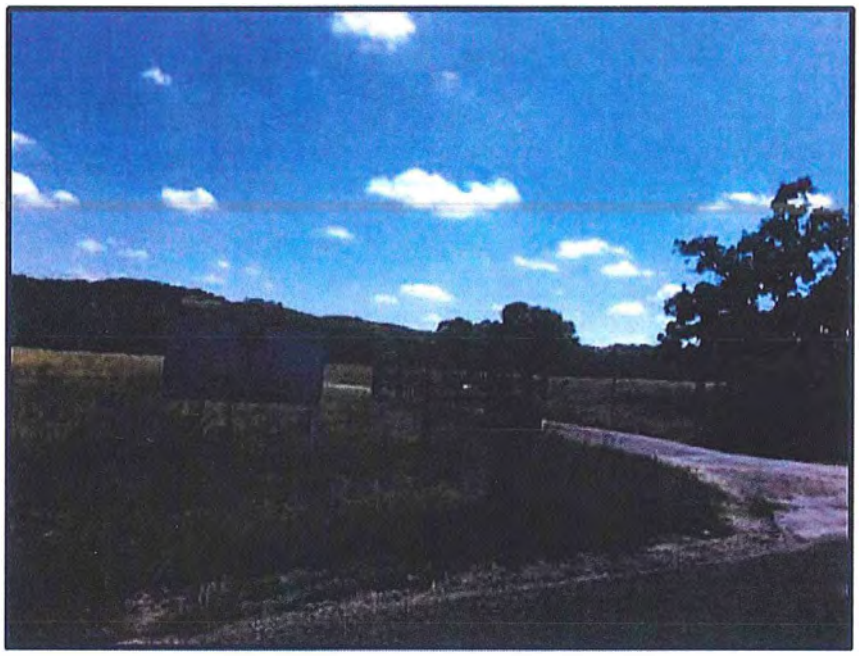
NEIGHBORHOOD MAP



AERIAL MAP



Photographs of the Rancho Sierra



Looking south at the entrance into Rancho Sierra from Dodge Road.

Looking east along Dodge Road. Rancho Sierra is to the right.

Photographs of the Appraised Property

Looking southwest from the north portion.

Looking south at cleared area from the northeast portion.

Photographs of the Appraised Property

Looking west along Rundale Creek and at a small dry stock tank in the northeast portion.

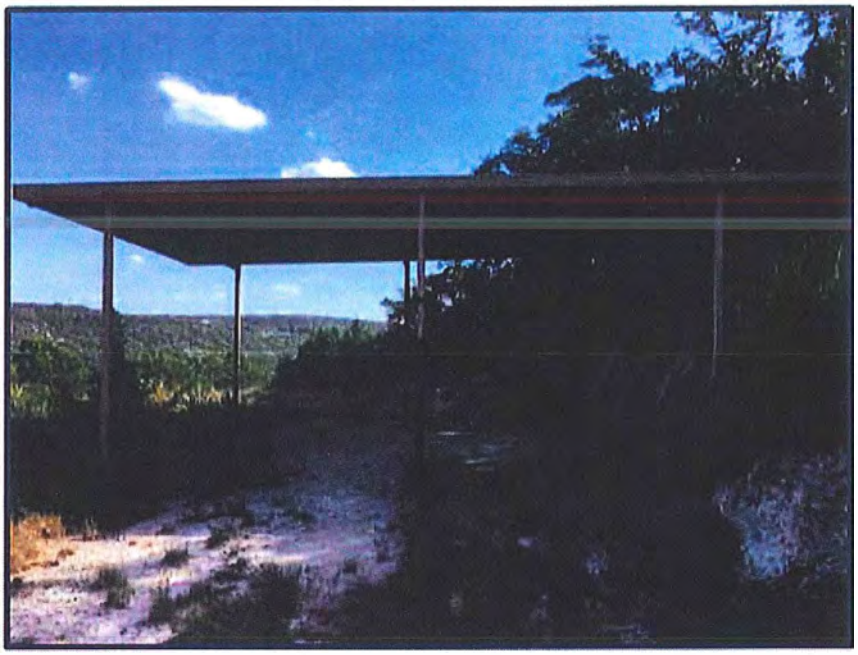
View of drilled water well in the southeast/central portion.
The well is not equipped with a pump or electricity. Rancho Sierra includes several "test wells" which were drilled to ascertain water availability on the ranch.

Photographs of the Appraised Property

Looking south from the central quadrant.

Hunters camp in the southeast portion

Photographs of the Appraised Property



Well elevated pavilion located in the northwest portion.

Looking east at the fee owned lane. The lane provides access to Toutant Beauregard approximately two miles to the east.

Photographs of the Appraised Property

Barn located in the north portion.

Looking east along Balcones Creek near the house. The creek is holding a small pothole of water.

Photographs of the Appraised Property

Front view of the residence and asphalt circle drive.

Alternate front elevation of the residence.

Photographs of the Appraised Property

Rear elevation of the residence which faces the creek.

View of residence and pasture land facing south.

Introduction

Client and Other Intended Users of the Appraisal

The client in this assignment is McKinney Fund. The intended users of this report are McKinney Fund and The General Land Office of Texas.

Intended Use of the Appraisal

The intended use of this report is for asset decision making purposes by McKinney Fund and the Texas General Land Office of Texas.

Real Estate Identification

Rancho Sierra is located in northwest Bexar County and southwest Kendall County. Approximately 2,277.55 acres or 98.3% are located in Bexar County with the balance located in Kendall County. The property is owned by the State of Texas through the General Land Office on behalf of the School Land Board for the benefit of the Permanent School Fund. The ranch is legally described in three tracts. The first tract is the main body of the ranch; the second tract is a separate fee-owned lane which extends east towards Toutant Beauregard. The third tract is an ingress/egress easement which extends east to Upper Balcones Road. The ranch has three access points including the main property frontage, the fee-owned lane and the recorded easement.

Legal Description

The subject property is legally described as:

> ***Tract I:*** *Being 2,299.4 acres consisting of 38.9 acres in Kendall County and 2,260.5 acres in Bexar County, out of the Beaty, Seale and Forwood Survey No. 485, Abstract 110, the Beaty, Seale and Forwood Survey No. 487, Abstract 111, the H. G. Mitchell Survey No. 488, Abstract 1062, the U. Barnsteiner Survey No. 483, Abstract 105, the U. Barnsteiner Survey No. 446, Abstract 84, the Frank D. Hahn Survey No. 416, Abstract No. 1159, the G. C. & S. F. R. R. Survey No. 415, Abstract No. 1080, and the Agapito Gayton Survey No. 408, Abstract No. 202, Kendall County and Abstract No. 295 Bexar County, Kendall and Bexar Counties, Texas.*
>
> ***Tract II:*** *Being 17.05 acres out of the Simon Montalvo Survey No. 417, Abstract No. 483, the Francisco Nuñez Survey No. 484, Abstract 556, and the Beaty, Seale and Forwood Survey No. 487, Abstract 111, Bexar County, Texas.*
>
> ***Tract III:*** *A road easement being the center line of an existing roadway extending from the east line of a 221.95 acre tract described in Volume 10887, Page 534, Bexar County, Texas.*

Tract No. II extends to Toutant Beauregard to the northeast while Tract III (the easement road) extends to Balcones Road to the east. The field notes are referenced in the *Addenda* of the appraisal.

Real Property Interest Appraised

The property rights appraised include the unencumbered fee simple title interest in Rancho Sierra subject to easements and other encumbrances of record. A portion, if not all, of the mineral estate is likely intact with the surface. Northern Bexar and Kendall County are not known for mineral production; a portion of

General Data

Location/Access

Rancho Sierra is located along the south side of Dodge Road approximately ten miles west of Interstate 10. The ranch has approximately 840 feet of frontage along the south side of Dodge Road. Dodge Road is a narrow, two-lane asphalt county maintained road. The ranch has additional access from the west side of Upper Balcones Road and Toutant Beauregard. A 60 foot wide, 17.05 acre, fee owned lane extends east approximately 2.3 miles connecting to Toutant Beauregard from the east quadrant of the property. The ranch has additional access from a recorded ingress/egress easement which extends to Upper Balcones Road from the northeast portion of the ranch.

Primary access to the ranch is from the south side of Dodge Road. The entrance is through an electric steel gate leading along an older asphalt paved road leads to the single family residence and main area of improvements. An all-weather caliche gravel road extends south into the property along the east and southeast boundaries. An additional caliche road extends along the north boundary to the northwest corner. Access within the west and southwest portions of the ranch are difficult with very rugged land and typical ranch roads. Many of the roads within the ranch are "tight" and require the aid of four-wheel drive. It is noted that the roads are eroded in some areas and require blading.

Size/Shape/Configuration

The overall property size is 2,316.45 acres. The main body of the ranch includes 2,299.4 acres with a 17.05 acre fee owned lane which extends east to Toutant Beauregard Road. The shape of the ranch is irregular with an 840 foot wide neck of frontage extending north to Dodge Road. The main body of the ranch measures 1.9 miles wide with the length being 2.5 miles long.

Land Features

The appraised ranch includes rolling to very rugged Hill Country terrain with heavy native brush and various open areas and valleys. Elevations range from approximately 1,545 feet in the north portion of the property near Dodge Road to 1,892 feet in the southwest portion of the property. The lowest elevations are located along Balcones and Rundale Creeks as well as near Dodge Road. Native trees and brush includes cedar, live oaks, Spanish oaks, Texas Shin Oak, etc. Overall, the majority of the property is covered with dense brush with some areas of open improved pasture and native grasses. Approximately 20 acres located in the northern portion in the "neck" along Dodge Road is open improved grasses with scattered live oak trees.

Soils/Productivity

The soils are generally of limestone based and clay varieties. The soils are conducive for typical Bexar and Kendall County tree and vegetation. The soils are classified as Bracket gravely clay loam, Bracket-Eckrant association and Krum clay. The clay soils are predominantly located in Rundale and Upper Balcones Creek. The rocky soils are located predominantly along the hills. Please reference the *Soils Map*, *Soils Legend* provided on the previous pages for specific soil types and appropriate percentages located on the property.

Water Features

Rancho Sierra is improved with several water wells. An electric water well is located in the north portion adjacent to the single family residence and carport. The well includes electricity to the site with a submersible pump. The balance of the water wells are scattered throughout the southern portion of the ranch. The water wells utilize a small gasoline motor/generator and pump to various water troughs throughout the ranch. Balcones Creek bisects the ranch in the north portion. Balcones Creek includes

potholes of water, and was flowing on the date of property inspection due to recent rain. Rundale Creek bisects the ranch in the north central portion. Rundale Creek is a wet weather creek. Portions of Rundale Creek have potholes of water in wet weather times.

Fencing

Rancho Sierra has low perimeter fencing with wood and steel posts with a combination of barbed wire and net wire. Overall, the fencing is in average condition. There are areas with older cross fencing. The south portion of the ranch is not cross fenced.

Easements and Encumbrances

The appraised property is encumbered with typical electric and utility easements. The ranch is bisected by a pipeline easement in the north portion. The pipeline easement is in favor of Enterprise.

Upon purchase of the appraised property, the GLO conducted three bird studies to identify endangered habitat on the appraised ranch. The studies were conducted circa 2007, 2008 and 2010. The results of the study were that approximately 1,958.12 acres or 84.5% of Rancho Sierra include Golden-cheeked Warbler habitat. The Golden-cheeked Warbler is a federally protected bird and endangered species by the U.S. Fish and Wildlife. In the event clearing or development on the property were to be conducted, the U.S. Fish and Wildlife would require notification and a mitigation program to allow for clearing of certain areas. The mitigation process is lengthy. For every one acre of cleared land, three acres of habitat must be replaced. "Mitigation banks" exist for the purchase of mitigation credits to develop Golden-cheeked Warbler habitat land. The impact of the habitat will be discussed in greater detail in a subsequent section of the report.

Improvements:

Rancho Sierra is improved with a ranch house, carport, and barn. The improvements are detailed as follows.

Ranch House and Carport

- The house and carport are located in a scenic area in the northern portion of the property just south of Dodge Road overlooking Balcones Creek. The two story house includes approximately 4,386 square feet of living area with 3,195 square feet on the first floor and 1,191 square feet on the second floor. The house was built circa 1980's and includes a concrete foundation with masonry-limestone exterior on the first floor and hardi-board exterior on the second floor. The house includes approximately 2,270 square feet of covered porch space. The house includes an older standing seam metal roof and central heat and air conditioning. The metal roof is in fair condition and will need replacing in the near future. It is noted that the roof shows signs of hail damage likely from the April hailstorm which impacted Bexar County. The interior of the house was not toured; however, areas of the home were inspected through windows. The interior of the home appears to include a combination of carpet and Saltillo tile flooring. Some woodpecker holes were observed in some of the siding and fascia boards. Overall, the residence is considered to be in average to fair condition.

- Carport – Adjacent to the residence is a 954 square foot carport. Approximately 634 square feet of the carport includes three open parking bays with the balance being enclosed. The carport is constructed with a concrete slab, combination of masonry and wood exterior with metal roof. The enclosed portion includes carpet flooring with a window AC unit and exposed walls. The carport is connected to the single family residence by a covered walkway. The overall condition is fair to average.

- Site improvements surrounding the ranch house and carport include a flag stone patio located at the rear of the house, asphalt paved circular drive, greenhouse with enclosed lean-to, and 4,000 gallon concrete water cistern. The immediate area of the residence and carport are attractively landscaped with wood cedar fencing and flower beds and grass. Much of the fencing is "falling down" and is in need of repair and deferred maintenance.

- Metal Barn – includes approximately 1,842 square feet and was constructed circa 1990's. The barn is constructed with a combination concrete slab and dirt floor. The barn is enclosed on three sides with a metal roof, metal exterior and steel frame. The barn also includes a separate set of pens for horses and livestock.

Adjacent to the barn is a fenced pen area with a former enclosed cooler which is currently being used as a livestock pen. Adjacent to the former cooler is a wash bay for horses with a concrete floor. The area is covered with a metal roof with wood supports.

Additional improvements on the ranch include an approximate 576 square foot covered area located in the central portion. The covered area has two bays and can be used to park RVs, equipment, etc. The area overlooks the south portion of the ranch.

Overall, the main improvements are older but attractively designed and adequately maintained. The improvements contribute value above the underlying land.

In summary, Rancho Sierra is a recreational and working ranch close to San Antonio and Boerne. The ranch is mostly located in the northwest quadrant of Bexar County in the path of development. The Golden-cheeked Warbler habitat on the appraised property hinders development in that mitigation credits must be purchased in the event portions of the property are cleared.

EXHIBIT 3

"As Is" Valuation Considering the Golden-cheeked Warbler Habitat

In Valuation Scenario 2 – the valuation of Rancho Sierra considering the Golden-cheeked Warbler habitat, the appraisers have interviewed several market participants including the offices of the City of San Antonio, Edwards Aquifer Authority, Pape-Dawson Engineers, and real estate brokers familiar with the area and related habitat. The Golden-cheeked Warbler, also known as the "Gold Finch of Texas", is an endangered bird species that nests in central Texas. The Golden-cheeked Warbler is the only bird species with a nesting/mating range confined to Texas. The birds nest in cedar and live oak trees in ravines in canyons. The birds migrate to Texas in March to nest and raise their young, and leave in July to spend the winters in Mexico and Central America. The Golden-cheeked Warbler is a federally protected bird since it was listed on the endangered species list circa May 1990.

In July 2005, the General Land Office for the Benefit of the Permanent Public School Fund purchased the appraised property. Upon purchasing the property, the owner conducted three bird studies to identify Golden-cheeked Warbler habitat. The first model was conducted by Diamond in 2007; the second model was conducted by Loomis in 2008; and the third model was conducted by the Texas A&M Institute of Renewal and Natural Resources circa 2010. The three assessments serve as the biological value of Rancho Sierra to be used by the U.S. Fish and Wildlife Service to determine the amount of acres impacted by bird habitat.

A summary of the three models predictions regarding potential nesting/mating habitat on Rancho Sierra follow.

Model	Survey Year Date	High Quality Habitat	Medium Quality Habitat	Low Quality Habitat	Total Acres
Diamond	2007	1,484.51	149.92	155.03	1,789.46
Loomis	2008	832.82	775.08	350.21	1,958.12
Texas A&M IRNR	2010	1,870.84		4.58	1,875.43

Based on the models, the usable area unsuitable for Golden-cheeked Warbler nesting ranges from 358.33 to 526.99 acres out of approximately 2,316.45 acres.

As the result of the three models and studies being conducted and evidenced, the current owner has the responsibility to report and mitigate the bird habitat on the appraised property in the event portions of the property are cleared. Since the Golden-cheeked Warbler is a federally protected endangered species, the owner of the property would be required by law to mitigate the land area cleared for development by replacing three acres of habitat for every cleared acre. Mitigation credits can be applied by either dedicating permanent habitat on Rancho Sierra for Warbler habitat, or purchasing credits from mitigation bank properties.

Mitigation credits are determined by the U.S. Fish and Wildlife. U.S. Fish and Wildlife determines the credits by a series of studies which identify Golden-cheeked Warbler habitat on a specific property. The property is then listed in a "mitigation bank" with the U.S. Fish and Wildlife. Developers who require mitigation credits can purchase the credits from various land owners to offset developed land. The ratio of mitigation credits to developed land is typically three to one. Essentially, for every one acre of developed land, three acres of permanent habitat must be replaced. It is understood that the mitigation credits cost from $3,000 to $5,000 per credit. Taking the average of the credits, say $4,000 per credit,

would require a potential developer of Rancho Sierra to potentially pay $13,000 per acre to fully develop 100% of the impacted acreage. Based on the market value of the appraised property, and potential retail pricing of developed lots in the market area, it is not currently feasible to purchase mitigation credits for the full development of Rancho Sierra. Feasible development would require lot pricing to be in the $40,000 to $50,000 per acre range with a low basis in the land.

Pape-Dawson Engineers analyzed Rancho Sierra under two different development plans. The first plan included a 360 lot development with an average lot size of 1.3 acres. The development option would impact roughly 500 acres and would require the balance of the land to be used for mitigation credits for the development. The development of the 360 lots averaging 1.3 acres is highly unlikely at this time, as there are several opportunities for other development land which is not impacted by Golden-cheeked Warbler habitat in the market area. This scenario could potentially be likely in the distant future as San Antonio grows and surrounding land tracts are developed. The second scenario includes the development of 180 lots averaging 20 to 75 acres. This development plan impacts 221 acres. This development plan would allow for additional land to be used for mitigation bank credits and sold in the open market. There is currently on property in proximity to the Rancho Sierra listed with U.S. Fish and Wildlife with mitigation credits available. A recent ranch sale with mitigation credits has occurred; however, the sale was for recreational uses.

Rancho Sierra has the potential to offer 1,958.12 credits to the market. With recent home sales, and the expectation for homebuilding to increase in the near future, it appears demand for the mitigation credits has increased.

Discussions with various market participants have been conducted to ascertain the impact of the Golden-cheeked Warbler habitat on Rancho Sierra's market value. A summary of the discussions with the canvassed parties follows.

- Susan Courage – Edwards Aquifer Authority – Ms. Courage works with the Edwards Aquifer Authority and is directly associated with endangered species and mitigation credits. Ms. Courage reports that since the models have been conducted on Rancho Sierra, mitigation credits must be purchased and applied to Rancho Sierra to develop the property. Ms. Courage reports that a conservation easement could be placed on the property; however, the conservation easement is restrictive since portions of the property cannot be utilized during the nesting/mating season of the Golden-cheeked Warbler. Ms. Courage also states that in the event the property was put into a mitigation bank, mitigation credits could be sold ranging from $3,000 to $5,000 per credit.

- Gene Dawson – Partner, Pape-Dawson Engineers – Mr. Dawson conducted a biological resources assessment on Rancho Sierra and utilized the three previously noted models to ascertain development possibilities for Rancho Sierra. Mr. Dawson reports that Rancho Sierra is a prime candidate for entering into a mitigation bank and applying mitigation credits to the market. Mr. Dawson also reports that in the event Rancho Sierra were developed, the balance of the land would more than likely be required to be utilized for mitigation or permanent Golden-cheeked Warbler habitat to potentially develop approximately 500 acres of the ranch.

- Jesse McClain – Bandera Conservation Bank Manager – Mr. McClain states conservation credits are being sold for $5,000 per credit. He states the demand has increased slightly in the last two years due to the increase in development.

In our opinion and based on the above, the Golden-cheeked Warbler habitat limits certain property rights related to clearing and developing the ranch. Approximately 500 acres could be developed, but the balance of the land would be required to be put into permanent habitat. The ranch could be put in a mitigation bank, and credits could be marketed; however, the demand for mitigation credits is not strong at this time.

To ascertain the impact of the Golden-cheeked Warbler habitat on Rancho Sierra, the appraisers have conducted a search for land sales which have sold with habitat in place. The appraisers are aware of three transactions which have sold with habitat.

- The first encumbered sale (Sale No. 6) is an August 2013 sale located just north of the appraised property, along State Highway 46, which is impacted with Golden-cheeked Warbler habitat, and was in a mitigation bank prior to selling. The sale is the Majestic Arts Foundation Ranch, and is located just north of Rancho Sierra long S.H. 46. The appraisers have utilized and additional unencumbered sale (Sale No. 7) of 1,147.48 acres which sold December 2012, and is located along Ranger Creek Road in Kendall County for pairing purposes.

- The second encumbered sale (Sale No. 8) is 1,521.26 acres which sold March 2011, and is located along the southern boundary of Sale No. 4 in Comal County. The property was purchased and then deeded to the Nature Conservancy in return for mitigation credits.

- The third encumbered sale (Heep Ranch) is a June 2015 sale located in Hays County near Kyle, and along the Blanco River which is impacted with Golden Cheeked Warbler Habitat.

A map illustrating the location of Sale No. 6 in relation to Rancho Sierra, and a sales data sheet follows on the next several pages.

Case Study – Matched Pair Analysis No. 1

As noted in the sale sheet, Sale No. 6 includes approximately 503 acres of Golden-cheeked Warbler habitat located just north of the subject along State Highway 46. The appraisers have conducted a matched pair analyses of two sales without bird habitat - Sale No. 7 (Wall Ranch) and Sale No. 8 (MFP Realty) with Sale No. 6 (Majestic Arts Foundation) with bird habitat to arrive at an adjustment for Golden-cheeked Warbler habitat.

After adjustments to Sale Nos. 7 and 8 as compared to the Sale No. 6, the indicated adjustment for the Golden-cheeked Warbler habitat ranges from 52% to 57%.

Details related to the matched paired analysis follows.

Case Study – Matched Pair Analysis No. 2

The second matched pair analysis is a comparison of two sales out of the same parent ranch. Sale No. 9 is the March 2011 sale located along the southern boundary of Sale No. 4. Approximately 95% of the sale property's (Sale No. 9) land area is Golden-cheeked Warbler Habitat. Both sales sold from the same seller to different buyers. The encumbered sale was purchased for mitigation credits for a different development.

After adjustments to Sale No. 4 compared to Sale No. 9, the control sale, the indicated adjustment for the Golden-cheeked Warbler habitat is 28%. Details related to the matched paired analysis follows.

Case Study – Heep Ranch – Hays County, Texas

The Heep Ranch is a 2,166.43 acre ranch located 2.5 miles west of downtown Kyle. The ranch includes 1.24 miles of Blanco River frontage. Approximately 136 acres of the ranch is located in the Kyle City Limits with the balance in the Kyle ETJ.

Prior to the sale, the grantor evaluated the likely sale price of the property without bird habitat. The likely selling price was estimated to be $12,000 to $13,000 per acre. The property sold for $8,000 per acre indicating an approximate 40% discount for the habitat.

A sales sheet for the Heep Ranch follows.

Conclusions

Rancho Sierra is located in northwestern Bexar County in the development growth path of San Antonio. The ranch is heavily impacted by Golden-cheeked Warbler habitat as modeled in the three separate studies. The designated bird habitat negatively affects the market value of the property since a potential purchaser would be required to mitigate the habitat in the event areas of the ranch were cleared. A summary of the various studies related to the Golden-cheeked Warbler habitat follows.

Impact of Golden-cheeked Warbler Habitat from Various Sources

- Case Study No. 1 - 52% to 57%
- Case Study No. 2 – 28%
- Case Study - Heep Ranch 40%
- Conservation Easement Studies – 15% to 41%, 39% Average

The analyzed case studies via matched pair sales analysis and discussions with the listing broker of the Majestic Arts Foundation Ranch indicate an impact of 15% to 57% to the appraised property for the Golden-cheeked Warbler habitat. In our opinion, the discount related to the Golden-cheeked Warbler habitat on Rancho Sierra is estimated to be in the middle of the range, say 35%.

* * * * *

Subpart C—Endangered Wildlife

§ 17.21 Prohibitions.

(a) Except as provided in subpart A of this part, or under permits issued pursuant to § 17.22 or § 17.23, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit or to cause to be committed, any of the acts described in paragraphs (b) through (f) of this section in regard to any endangered wildlife.

(b) *Import or export.* It is unlawful to import or to export any endangered wildlife. Any shipment in transit through the United States is an importation and an exportation, whether or not it has entered the country for customs purposes.

(c) *Take.* (1) It is unlawful to take endangered wildlife within the United States, within the territorial sea of the United States, or upon the high seas. The high seas shall be all waters seaward of the territorial sea of the United States, except waters officially recognized by the United States as the territorial sea of another country, under international law.

(2) Notwithstanding paragraph (c)(1) of this section, any person may take endangered wildlife in defense of his own life or the lives of others.

(3) Notwithstanding paragraph (c)(1) of this section, any employee or agent of the Service, any other Federal land management agency, the National Marine Fisheries Service, or a State conservation agency, who is designated by his agency for such purposes, may, when acting in the course of his official duties, take endangered wildlife without a permit if such action is necessary to:

(i) Aid a sick, injured or orphaned specimen; or

(ii) Dispose of a dead specimen; or

(iii) Salvage a dead specimen which may be useful for scientific study; or

(iv) Remove specimens which constitute a demonstrable but nonimmediate threat to human safety, provided that the taking is done in a humane manner; the taking may involve killing or injuring only if it has not been reasonably possible to eliminate such threat by live-capturing and releasing the specimen unharmed, in a remote area.

(4) Any taking under paragraphs (c)(2) and (3) of this section must be reported in writing to the Office of Law Enforcement, at the address provided at 50 CFR 2.1(b), within 5 days. The specimen may only be retained, disposed of, or salvaged under directions from the Office of Law Enforcement.

(5) Notwithstanding paragraph (c)(1) of this section, any qualified employee or agent of a State Conservation Agency which is a party to a Cooperative Agreement with the Service in accordance with section 6(c) of the Act, who is designated by his agency for such purposes, may, when acting in the course of his official duties take those endangered species which are covered by an approved cooperative agreement for conservation programs in accordance with the Cooperative Agreement, provided that such taking is not reasonably anticipated to result in:

(i) The death or permanent disabling of the specimen;

(ii) The removal of the specimen from the State where the taking occurred;

(iii) The introduction of the specimen so taken, or of any progeny derived from such a specimen, into an area beyond the historical range of the species; or

(iv) The holding of the specimen in captivity for a period of more than 45 consecutive days.

(6) Notwithstanding paragraph (c)(1) of this section, any person acting under a valid migratory bird rehabilitation permit issued pursuant to § 21.31 of this subchapter may take endangered migratory birds without an endangered species permit if such action is necessary to aid a sick, injured, or orphaned endangered migratory bird, provided the permittee:

(i) Notifies the issuing Migratory Bird Permit Office immediately upon receipt of such bird (contact information for your issuing office is listed on your permit and on the Internet at *http://offices.fws.gov*); and

(ii) Disposes of or transfers such birds, or their parts or feathers, as directed by the Migratory Bird Permit Office.

(7) Notwithstanding paragraph (c)(1) of this section, persons exempt from the permit requirements of §21.12(c) and (d) of this subchapter may take sick and injured endangered migratory birds without an endangered species permit in performing the activities authorized under §21.12(c) and (d).

(d) *Possession and other acts with unlawfully taken wildlife.* (1) It is unlawful to possess, sell, deliver, carry, transport, or ship, by any means whatsoever, any endangered wildlife which was taken in violation of paragraph (c) of this section.

Example. A person captures a whooping crane in Texas and gives it to a second person, who puts it in a closed van and drives thirty miles, to another location in Texas. The second person then gives the whooping crane to a third person, who is apprehended with the bird in his possession. All three have violated the law—the first by illegally taking the whooping crane; the second by transporting an illegally taken whooping crane; and the third by possessing an illegally taken whooping crane.

(2) Notwithstanding paragraph (d)(1) of this section, Federal and State law enforcement officers may possess, deliver, carry, transport or ship any endangered wildlife taken in violation of the Act as necessary in performing their official duties.

(3) Notwithstanding paragraph (d)(1) of this section, any person acting under a valid migratory bird rehabilitation permit issued pursuant to §21.31 of this subchapter may possess and transport endangered migratory birds without an endangered species permit when such action is necessary to aid a sick, injured, or orphaned endangered migratory bird, provided the permittee:

(i) Notifies the issuing Migratory Bird Permit Office immediately upon receipt of such bird (contact information for your issuing office is listed on your permit and on the Internet at *http://offices.fws.gov*); and

(ii) Disposes of or transfers such birds, or their parts or feathers, as directed by the Migratory Bird Permit Office.

(4) Notwithstanding paragraph (d)(1) of this section, persons exempt from the permit requirements of §21.12(c) and (d) of this subchapter may possess and transport sick and injured endangered migratory bird species without an endangered species permit in performing the activities authorized under §21.12(c) and (d).

(e) *Interstate or foreign commerce.* It is unlawful to deliver, receive, carry transport, or ship in interstate or foreign commerce, by any means whatsoever, and in the course of a commercial activity, any endangered wildlife.

(f) *Sale or offer for sale.* (1) It is unlawful to sell or to offer for sale in interstate or foreign commerce any endangered wildlife.

(2) An advertisement for the sale of endangered wildlife which carries a warning to the effect that no sale may be consummated until a permit has been obtained from the U.S. Fish and Wildlife Service shall not be considered an offer for sale within the meaning of this section.

(g) *Captive-bred wildlife.* (1) Notwithstanding paragraphs (b), (c), (e) and (f) of this section, any person may take; export or re-import; deliver, receive, carry, transport or ship in interstate or foreign commerce, in the course of a commercial activity; or sell or offer for sale in interstate or foreign commerce any endangered wildlife that is bred in captivity in the United States provided either that the wildlife is of a taxon listed in paragraph (g)(6) of this section, or that the following conditions are met:

(i) The wildlife is of a species having a natural geographic distribution not including any part of the United States, or the wildlife is of a species that the Director has determined to be eligible in accordance with paragraph (g)(5) of this section;

(ii) The purpose of such activity is to enhance the propagation or survival of the affected species;

(iii) Such activity does not involve interstate or foreign commerce, in the course of a commercial activity, with respect to non-living wildlife;

(iv) Each specimen of wildlife to be re-imported is uniquely identified by a band, tattoo or other means that was reported in writing to an official of the Service at a port of export prior to export from the United States; and

(v) Any person subject to the jurisdiction of the United States who engages in any of the activities authorized by this paragraph does so in accordance with paragraphs (g) (2), (3) and (4) of this section, and with all other applicable regulations in this Subchapter B.

(2) Any person subject to the jurisdiction of the United States seeking to engage in any of the activities authorized by this paragraph must first register with the Service's Division of Management Authority at the address provided at 50 CFR 2.1(b). Requests for registration must be submitted on an official application form (Form 3–200-41) provided by the Service, and must include the following information:

(i) The types of wildlife sought to be covered by the registration, identified by common and scientific name to the taxonomic level of family, genus or species;

(ii) A description of the applicant's experience in maintaining and propagating the types of wildlife sought to be covered by the registration, and when appropriate, in conducting research directly related to maintaining and propagating such wildlife;

(iii) Photograph(s) or other evidence clearly depicting the facilities where such wildlife will be maintained; and

(iv) a copy of the applicant's license or registration, if any, under the animal welfare regulations of the U.S. Department of Agriculture (9 CFR part 2).

(3) Upon receipt of a complete application for registration, or the renewal or amendment of an existing registration, under this section, the Service will publish notice of the application in the FEDERAL REGISTER. Each notice will invite the submission from interested parties, within 30 days after the date of the notice, of written data, views, or arguments with respect to the application. All information received as part of each application will be made available to the public, upon request, as a matter of public record at every stage of the proceeding, including, but not limited to, information needed to assess the eligibility of the applicant, such as the original application, materials, any intervening renewal applications documenting a change in location or personnel, and the most recent annual report.

(i) At the completion of this comment period, the Director will decide whether to approve the registration. In making this decision, the Director will consider, in addition to the general criteria in §13.21(b) of this subchapter, whether the expertise, facilities, or other resources available to the applicant appear adequate to enhance the propagation or survival of the affected wildlife. Public education activities may not be the sole basis to justify issuance of a registration or to otherwise establish eligibility for the exception granted in paragraph (g)(1) of this section.

(ii) If the Director approves the registration, the Service will publish notice of the decision in the FEDERAL REGISTER that the registration was applied for in good faith, that issuing the registration will not operate to the disadvantage of the species for which registration was sought, and that issuing the registration will be consistent with the purposes and policy set forth in section 2 of the Act.

(iii) Each person so registered must maintain accurate written records of activities conducted under the registration and allow reasonable access to Service agents for inspection purposes as set forth in §§13.46 and 13.47 of this chapter. Each person so registered must also submit to the Director an individual written annual report of activities, including all births, deaths, and transfers of any type.

(4) Any person subject to the jurisdiction of the United States seeking to export or conduct foreign commerce in captive-bred endangered wildlife that will not remain under the care of that person must first obtain approval by providing written evidence to satisfy the Director that the proposed recipient of the wildlife has expertise, facilities or other resources adequate to enhance the propagation or survival of such wildlife and that the proposed recipient will use such wildlife for purposes of enhancing the propagation or survival of the affected species.

(5)(i) The Director will use the following criteria to determine if wildlife of any species having a natural geographic distribution that includes any

part of the United States is eligible for the provisions of this paragraph:

(A) Whether there is a low demand for taking of the species from wild populations, either because of the success of captive breeding or because of other reasons, and

(B) Whether the wild populations of the species are effectively protected from unauthorized taking as a result of the inaccessibility of their habitat to humans or as a result of the effectiveness of law enforcement.

(ii) The Director will follow the procedures set forth in the Act and in the regulations thereunder with respect to petitions and notification of the public and governors of affected States when determining the eligibility of species for purposes of this paragraph.

(iii) In accordance with the criteria in paragraph (g)(5)(i) of this section, the Director has determined the following species to be eligible for the provisions of this paragraph:

Laysan duck (*Anas laysanensis*).

(6) Any person subject to the jurisdiction of the United States seeking to engage in any of the activities authorized by paragraph (g)(1) of this section may do so without first registering with the Service with respect to the bar-tailed pheasant (*Syrmaticus humiae*), Elliot's pheasant (*S. ellioti*), Mikado pheasant (*S. mikado*), brown eared pheasant (*Crossoptilon mantchuricum*), white eared pheasant (*C. crossoptilon*), cheer pheasant (*Catreus wallichii*), Edward's pheasant (*Lophura edwardsi*), Swinhoe's pheasant (*L. swinhoii*), Chinese monal (*Lophophorus lhuysii*), and Palawan peacock pheasant (*Polyplectron emphanum*); parakeets of the species *Neophema pulchella* and *N. splendida;* the Laysan duck (*Anas laysanensis*); the white-winged wood duck (*Cairina scutulata*); and the inter-subspecific crossed or ''generic'' tiger (*Panthera tigris*) (*i e.*, specimens not identified or identifiable as members of the Bengal, Sumatran, Siberian or Indochinese subspecies (*Panthera tigris tigris, P.t. sumatrae, P.t. altaica* and *P.t. corbetti*, respectively) provided:

(i) The purpose of such activity is to enhance the propagation or survival of the affected exempted species;

(ii) Such activity does not involve interstate or foreign commerce, in the course of a commercial activity, with respect to non-living wildlife;

(iii) Each specimen to be re-imported is uniquely identified by a band, tattoo or other means that was reported in writing to an official of the Service at a port of export prior to export of the specimen from the United States;

(iv) No specimens of the taxa in this paragraph (g)(6) of this section that were taken from the wild may be imported for breeding purposes absent a definitive showing that the need for new bloodlines can only be met by wild specimens, that suitable foreign-bred, captive individuals are unavailable, and that wild populations can sustain limited taking, and an import permit is issued under §17.22;

(v) Any permanent exports of such specimens meet the requirements of paragraph (g)(4) of this section; and

(vi) Each person claiming the benefit of the exception in paragraph (g)(1) of this section must maintain accurate written records of activities, including births, deaths and transfers of specimens, and make those records accessible to Service agents for inspection at reasonable hours as set forth in §§13.46 and 13.47.

(h) *U.S. captive-bred scimitar-horned oryx, addax, and dama gazelle.* Notwithstanding paragraphs (b), (c), (e), and (f) of this section, any person subject to the jurisdiction of the United States may take; export or re-import; deliver, receive, carry, transport or ship in interstate or foreign commerce, in the course of a commercial activity; or sell or offer for sale in interstate or foreign commerce live wildlife, including embryos and gametes, and sport-hunted trophies of scimitar-horned oryx (*Oryx dammah*), addax (*Addax nasomaculatus*), and dama gazelle (*Gazella dama*) provided:

(1) The purpose of such activity is associated with the management or transfer of live wildlife, including embryos and gametes, or sport hunting in a manner that contributes to increasing or sustaining captive numbers or to potential reintroduction to range countries;

(2) The specimen was captive-bred, in accordance with §17.3, within the United States;

(3) All live specimens of that species held by the captive-breeding operation are managed in a manner that prevents hybridization of the species or subspecies;

(4) All live specimens of that species held by the captive-breeding operation are managed in a manner that maintains genetic diversity;

(5) Any export of or foreign commerce in a specimen meets the requirements of paragraph (g)(4) of this section, as well as parts 13, 14, and 23 of this chapter;

(6) Each specimen to be re-imported is uniquely identified by a tattoo or other means that is reported on the documentation required under paragraph (h)(5) of this section; and

(7) Each person claiming the benefit of the exception of this paragraph (h) must maintain accurate written records of activities, including births, deaths, and transfers of specimens, and make those records accessible to Service officials for inspection at reasonable hours set forth in §§13.46 and 13.47 of this chapter.

(8) The sport-hunted trophy consists of raw or tanned parts, such as bones, hair, head, hide, hooves, horns, meat, skull, rug, taxidermied head, shoulder, or full body mount, of a specimen that was taken by the hunter during a sport hunt for personal use. It does not include articles made from a trophy, such as worked, manufactured, or handicraft items for use as clothing, curios, ornamentation, jewelry, or other utilitarian items for commercial purposes.

[40 FR 44415, Sept. 26, 1975, as amended at 40 FR 53400, Nov. 18, 1975; 41 FR 19226, May 11, 1976; 44 FR 31580, May 31, 1979; 44 FR 54007, Sept. 17, 1979; 58 FR 68325, Dec. 27, 1993; 63 FR 48640, Sept. 11, 1998; 68 FR 2919, Jan. 22, 2003; 68 FR 61136, Oct. 27, 2003; 70 FR 52318, Sept. 2, 2005; 77 FR 438, Jan. 5, 2012; 77 FR 43175, July 24, 2012; 79 FR 15252, Mar. 19, 2014; 79 FR 30418, May 27, 2014; 79 FR 43965, July 29, 2014]

§17.22 Permits for scientific purposes, enhancement of propagation or survival, or for incidental taking.

Upon receipt of a complete application, the Director may issue a permit authorizing any activity otherwise prohibited by §17.21, in accordance with the issuance criteria of this section, for scientific purposes, for enhancing the propagation or survival, or for the incidental taking of endangered wildlife. Such permits may authorize a single transaction, a series of transactions, or a number of activities over a specific period of time. (See §17.32 for permits for threatened species.) The Director shall publish notice in the FEDERAL REGISTER of each application for a permit that is made under this section. Each notice shall invite the submission from interested parties, within 30 days after the date of the notice, of written data, views, or arguments with respect to the application. The 30-day period may be waived by the Director in an emergency situation where the life or health of an endangered animal is threatened and no reasonable alternative is available to the applicant. Notice of any such waiver shall be published in the FEDERAL REGISTER within 10 days following issuance of the permit.

(a)(1) *Application requirements for permits for scientific purposes or for the enhancement of propagation or survival.* A person wishing to get a permit for an activity prohibited by §17.21 submits an application for activities under this paragraph. The Service provides Form 3–200 for the application to which all of the following must be attained:

(i) The common and scientific names of the species sought to the covered by the permit, as well as the number, age, and sex of such species, and the activity sought to be authorized (such as taking, exporting, selling in interstate commerce);

(ii) A statement as to whether, at the time of application, the wildlife sought to be covered by the permit (A) is still in the wild, (B) has already been removed from the wild, or (C) was born in captivity;

(iii) A resume of the applicant's attempts to obtain the wildlife sought to be covered by the permit in a manner which would not cause the death or removal from the wild of such wildlife;

(iv) If the wildlife sought to be covered by the permit has already been removed from the wild, the country and place where such removal occurred; if the wildlife sought to be covered by the

activities pursuant to the permit. Such report must be postmarked or actually delivered no later than 10 days after completion of the activity.

(2) The death or escape of all living wildlife covered by the permit shall be immediately reported to the Service's office designated in the permit.

(d) Duration of permits issued under this section shall be designated on the face of the permit. No permit issued under this section, however, shall be valid for more than one year from the date a notice is published in the FEDERAL REGISTER to review status of such wildlife, or to list such wildlife as endangered, whichever is earlier.

[40 FR 44415, Sept. 26, 1975, as amended at 40 FR 53400, Nov. 18, 1975; 40 FR 58307, Dec. 16, 1975; 50 FR 39688, Sept. 30, 1985]

Subpart D—Threatened Wildlife

§ 17.31 Prohibitions.

(a) Except as provided in subpart A of this part, or in a permit issued under this subpart, all of the provisions in § 17.21 shall apply to threatened wildlife, except § 17.21(c)(5).

(b) In addition to any other provisions of this part 17, any employee or agent of the Service, of the National Marine Fisheries Service, or of a State conservation agency which is operating a conservation program pursuant to the terms of a Cooperative Agreement with the Service in accordance with section 6(c) of the Act, who is designated by his agency for such purposes, may, when acting in the course of his official duties, take those threatened species of wildlife which are covered by an approved cooperative agreement to carry out conservation programs.

(c) Whenever a special rule in §§ 17.40 to 17.48 applies to a threatened species, none of the provisions of paragraphs (a) and (b) of this section will apply. The special rule will contain all the applicable prohibitions and exceptions.

[43 FR 18181, Apr. 28, 1978, as amended at 44 FR 31580, May 31, 1979; 70 FR 10503, Mar. 4, 2005]

§ 17.32 Permits—general.

Upon receipt of a complete application the Director may issue a permit for any activity otherwise prohibited with regard to threatened wildlife. Such permit shall be governed by the provisions of this section unless a special rule applicable to the wildlife, appearing in §§ 17.40 to 17.48, of this part provides otherwise. Permits issued under this section must be for one of the following purposes: Scientific purposes, or the enhancement of propagation or survival, or economic hardship, or zoological exhibition, or educational purposes, or incidental taking, or special purposes consistent with the purposes of the Act. Such permits may authorize a single transaction, a series of transactions, or a number of activities over a specific period of time.

(a)(1) *Application requirements for permits for scientific purposes, or the enhancement of propagation or survival, or economic hardship, or zoological exhibition, or educational purposes, or special purposes consistent with the purposes of the Act.* A person wishing to get a permit for an activity prohibited by § 17.31 submits an application for activities under this paragraph. The Service provides Form 3–200 for the application to which as much of the following information relating to the purpose of the permit must be attached:

(i) The Common and scientific names of the species sought to be covered by the permit, as well as the number, age, and sex of such species, and the activity sought to be authorized (such as taking, exporting, selling in interstate commerce);

(ii) A statement as to whether, at the time of application, the wildlife sought to be covered by the permit (A) is still in the wild, (B) has already been removed from the wild, or (C) was born in captivity;

(iii) A resume of the applicant's attempts to obtain the wildlife sought to be covered by the permit in a manner which would not cause the death or removal from the wild of such wildlife;

(iv) If the wildlife sought to be covered by the permit has already been removed from the wild, the country and place where such removal occurred; if the wildlife sought to be covered by permit was born in captivity, the country and place where such wildlife was born;

§ 401.21 Patents and inventions.

Determination of the patent rights in any inventions or discoveries resulting from work under project agreements entered into pursuant to the Act shall be consistent with the ''Government Patent Policy'' (President's memorandum for Heads of Executive Departments and Agencies, August 23, 1971, and statement of Government Patent Policy as printed in 36 FR 16889).

§ 401.22 Civil rights.

Each application for Federal assistance, grant-in-aid award, or project agreement shall be supported by a statement of assurances executed by the Cooperator providing that the project will be carried out in accordance with title VI, Nondiscrimination in federally Assisted Programs of the Civil Rights Act of 1964 and with the Secretary's regulations promulgated thereunder.

§ 401.23 Audits.

The State is required to conduct an audit at least every two years in accordance with the provisions of Attachment P OMB Circular A–102. Failure to conduct audits as required may result in withholding of grant payments or such other sanctions as the Secretary may deem appropriate.

[49 FR 30074, July 26, 1984]

PART 402—INTERAGENCY COOPERATION—ENDANGERED SPECIES ACT OF 1973, AS AMENDED

Subpart A—General

Sec.

Subpart B—Consultation Procedures

Subpart C—Counterpart Regulations For Implementing the National Fire Plan

Subpart D—Counterpart Regulations Governing Actions by the U.S. Environmental Protection Agency Under the Federal Insecticide, Fungicide and Rodenticide Act

AUTHORITY: 16 U.S.C. 1531 *et seq.*

SOURCE: 51 FR 19957, June 3, 1986, unless otherwise noted.

Subpart A—General

§ 402.01 Scope.

(a) This part interprets and implements sections 7(a)–(d) [16 U.S.C. 1536(a)–(d)] of the Endangered Species Act of 1973, as amended (''Act''). Section 7(a) grants authority to and imposes requirements upon Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (''listed species'') and habitat of such species that has been designated as critical (''critical habitat''). Section

7(a)(1) of the Act directs Federal agencies, in consultation with and with the assistance of the Secretary of the Interior or of Commerce, as appropriate, to utilize their authorities to further the purposes of the Act by carrying out conservation programs for listed species. Such affirmative conservation programs must comply with applicable permit requirements (50 CFR parts 17, 220, 222, and 227) for listed species and should be coordinated with the appropriate Secretary. Section 7(a)(2) of the Act requires every Federal agency, in consultation with and with the assistance of the Secretary, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or results in the destruction or adverse modification of critical habitat. Section 7(a)(3) of the Act authorizes a prospective permit or license applicant to request the issuing Federal agency to enter into early consultation with the Service on a proposed action to determine whether such action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. Section 7(a)(4) of the Act requires Federal agencies to confer with the Secretary on any action that is likely to jeopardize the continued existence of proposed species or result in the destruction or adverse modification of proposed critical habitat. Section 7(b) of the Act requires the Secretary, after the conclusion of early or formal consultation, to issue a written statement setting forth the Secretary's opinion detailing how the agency action affects listed species or critical habitat Biological assessments are required under section 7(c) of the Act if listed species or critical habitat may be present in the area affected by any major construction activity as defined in § 404.02. Section 7(d) of the Act prohibits Federal agencies and applicants from making any irreversible or irretrievable commitment of resources which has the effect of foreclosing the formulation or implementation of reasonable and prudent alternatives which would avoid jeopardizing the continued existence of listed species or resulting in the destruction or adverse modification of critical habitat. Section 7(e)–(o)(1) of the Act provide procedures for granting exemptions from the requirements of section 7(a)(2). Regulations governing the submission of exemption applications are found at 50 CFR part 451, and regulations governing the exemption process are found at 50 CFR parts 450, 452, and 453.

(b) The U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) share responsibilities for administering the Act. The Lists of Endangered and Threatened Wildlife and Plants are found in 50 CFR 17.11 and 17.12 and the designated critical habitats are found in 50 CFR 17.95 and 17.96 and 50 CFR part 226. Endangered or threatened species under the jurisdiction of the NMFS are located in 50 CFR 222.23(a) and 227.4. If the subject species is cited in 50 CFR 222.23(a) or 227.4, the Federal agency shall contact the NMFS. For all other listed species the Federal Agency shall contact the FWS.

§ 402.02 Definitions.

Act means the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 *et seq*.

Action means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to:

(a) actions intended to conserve listed species or their habitat;

(b) the promulgation of regulations;

(c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or

(d) actions directly or indirectly causing modifications to the land, water, or air.

Action area means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.

Applicant refers to any person, as defined in section 3(13) of the Act, who requires formal approval or authorization from a Federal agency as a prerequisite to conducting the action.

and biological features of the environment for the conservation of listed species.

(k) *Species* includes any species or subspecies of fish, wildlife, or plant, and any distinct population segment of any vertebrate species that interbreeds when mature. Excluded is any species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of the Act would present an overwhelming and overriding risk to man.

(l) *State agency* means any State agency, department, board, commission, or other governmental entity that is responsible for the management and conservation of fish, plant, or wildlife resources within a State.

(m) *Threatened species* means any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

(n) *Wildlife* or *fish and wildlife* means any member of the animal kingdom, including without limitation, any vertebrate, mollusk, crustacean, arthropod, or other invertebrate, and includes any part, product, egg, or offspring thereof, or the dead body or parts thereof.

Subpart B—Revision of the Lists

§ 424.10 General.

The Secretary may add a species to the lists or designate critical habitat, delete a species or critical habitat, change the listed status of a species, revise the boundary of an area designated as critical habitat, or adopt or modify special rules (see 50 CFR 17.40–17.48 and parts 222 and 227) applied to a threatened species only in accordance with the procedures of this part.

§ 424.11 Factors for listing, delisting, or reclassifying species.

(a) Any species or taxonomic group of species (e.g., genus, subgenus) as defined in § 424.02(k) is eligible for listing under the Act. A taxon of higher rank than species may be listed only if all included species are individually found to be endangered or threatened. In determining whether a particular taxon or population is a species for the purposes of the Act, the Secretary shall rely on standard taxonomic distinctions and the biological expertise of the Department and the scientific community concerning the relevant taxonomic group.

(b) The Secretary shall make any determination required by paragraphs (c) and (d) of this section *solely* on the basis of the best available scientific and commercial information regarding a species' status, without reference to possible economic or other impacts of such determination.

(c) A species shall be listed or reclassified if the Secretary determines, on the basis of the best scientific and commercial data available after conducting a review of the species' status, that the species is endangered or threatened because of any one or a combination of the following factors:

(1) The present or threatened destruction, modification, or curtailment of its habitat or range;

(2) Over utilization for commercial, recreational, scientific, or educational purposes;

(3) Disease or predation;

(4) The inadequacy of existing regulatory mechanisms; or

(5) Other natural or manmade factors affecting its continued existence.

(d) The factors considered in delisting a species are those in paragraph (c) of this section as they relate to the definitions of endangered or threatened species. Such removal must be supported by the best scientific and commercial data available to the Secretary after conducting a review of the status of the species. A species may be delisted only if such data substantiate that it is neither endangered nor threatened for one or more of the following reasons:

(1) *Extinction.* Unless all individuals of the listed species had been previously identified and located, and were later found to be extirpated from their previous range, a sufficient period of time must be allowed before delisting to indicate clearly that the species is extinct.

(2) *Recovery.* The principal goal of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service is to return listed species to a point at which protection under the Act is no longer required. A species may be

delisted on the basis of recovery only if the best scientific and commercial data available indicate that it is no longer endangered or threatened.

(3) *Original data for classification in error.* Subsequent investigations may show that the best scientific or commercial data available when the species was listed, or the interpretation of such data, were in error.

(e) The fact that a species of fish, wildlife, or plant is protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (see part 23 of this title 50) or a similar international agreement on such species, or has been identified as requiring protection from unrestricted commerce by any foreign nation, or to be in danger of extinction or likely to become so within the foreseeable future by any State agency or by any agency of a foreign nation that is responsible for the conservation of fish, wildlife, or plants, may constitute evidence that the species is endangered or threatened. The weight given such evidence will vary depending on the international agreement in question, the criteria pursuant to which the species is eligible for protection under such authorities, and the degree of protection afforded the species. The Secretary shall give consideration to any species protected under such an international agreement, or by any State or foreign nation, to determine whether the species is endangered or threatened.

(f) The Secretary shall take into account, in making determinations under paragraph (c) or (d) of this section, those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas.

§ 424.12 Criteria for designating critical habitat.

(a) Critical habitat shall be specified to the maximum extent prudent and determinable at the time a species is proposed for listing. If designation of critical habitat is not prudent or if critical habitat is not determinable, the reasons for not designating critical habitat will be stated in the publication of proposed and final rules listing a species. A final designation of critical habitat shall be made on the basis of the best scientific data available, after taking into consideration the probable economic and other impacts of making such a designation in accordance with § 424.19.

(1) A designation of critical habitat is not prudent when one or both of the following situations exist:

(i) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of such threat to the species, or

(ii) Such designation of critical habitat would not be beneficial to the species.

(2) Critical habitat is not determinable when one or both of the following situations exist:

(i) Information sufficient to perform required analyses of the impacts of the designation is lacking, or

(ii) The biological needs of the species are not sufficiently well known to permit identification of an area as critical habitat.

(b) In determining what areas are critical habitat, the Secretary shall consider those physical and biological features that are essential to the conservation of a given species and that may require special management considerations or protection. Such requirements include, but are not limited to the following:

(1) Space for individual and population growth, and for normal behavior;

(2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

(3) Cover or shelter;

(4) Sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and generally;

(5) Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

When considering the designation of critical habitat, the Secretary shall focus on the principal biological or physical constituent elements within the defined area that are essential to

the conservation of the species. Known primary constituent elements shall be listed with the critical habitat description. Primary constituent elements may include, but are not limited to, the following: roost sites, nesting grounds, spawning sites, feeding sites, seasonal wetland or dryland, water quality or quantity, host species or plant pollinator, geological formation, vegetation type, tide, and specific soil types.

(c) Each critical habitat area will be shown on a map, with more-detailed information discussed in the preamble of the rulemaking documents published in the FEDERAL REGISTER and made available from the lead field office of the Service responsible for such designation. Textual information may be included for purposes of clarifying or refining the location and boundaries of each area or to explain the exclusion of sites (e.g., paved roads, buildings) within the mapped area. Each area will be referenced to the State(s), county(ies), or other local government units within which all or part of the critical habitat is located. Unless otherwise indicated within the critical habitat descriptions, the names of the State(s) and county(ies) are provided for informational purposes only and do not constitute the boundaries of the area. Ephemeral reference points (*e.g.*, trees, sand bars) shall not be used in any textual description used to clarify or refine the boundaries of critical habitat.

(d) When several habitats, each satisfying the requirements for designation as critical habitat, are located in proximity to one another, an inclusive area may be designated as critical habitat.

Example: Several dozen or more small ponds, lakes, and springs are found in a small local area. The entire area could be designated critical habitat if it were concluded that the upland areas were essential to the conservation of an aquatic species located in the ponds and lakes.

(e) The Secretary shall designate as critical habitat areas outside the geographical area presently occupied by a species only when a designation limited to its present range would be inadequate to ensure the conservation of the species.

(f) Critical habitat may be designated for those species listed as threatened or endangered but for which no critical habitat has been previously designated.

(g) Existing critical habitat may be revised according to procedures in this section as new data become available to the Secretary.

(h) Critical habitat shall not be designated within foreign countries or in other areas outside of United States jurisdiction.

[49 FR 38908, Oct. 1, 1984, as amended at 77 FR 25622, May 1, 2012]

§ 424.13 Sources of information and relevant data.

When considering any revision of the lists, the Secretary shall consult as appropriate with affected States, interested persons and organizations, other affected Federal agencies, and, in cooperation with the Secretary of State, with the country or countries in which the species concerned are normally found or whose citizens harvest such species from the high seas. Data reviewed by the Secretary may include, but are not limited to scientific or commercial publications, administrative reports, maps or other graphic materials, information received from experts on the subject, and comments from interested parties.

§ 424.14 Petitions.

(a) *General.* Any interested person may submit a written petition to the Secretary requesting that one of the actions described in § 424.10 be taken. Such a document must clearly identify itself as a petition and be dated. It must contain the name, signature, address, telephone number, if any, and the association, institution, or business affiliation, if any, of the petitioner. The Secretary shall acknowledge in writing receipt of such a petition within 30 days.

(b) *Petitions to list, delist, or reclassify species.* (1) To the maximum extent practicable, within 90 days of receiving a petition to list, delist, or reclassify a species, the Secretary shall make a finding as to whether the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted. For the purposes of this section, ''substantial information'' is that amount

of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted. The Secretary shall promptly publish such finding in the FEDERAL REGISTER and so notify the petitioner.

(2) In making a finding under paragraph (b)(1) of this section, the Secretary shall consider whether such petition—

(i) Clearly indicates the administrative measure recommended and gives the scientific and any common name of the species involved;

(ii) Contains detailed narrative justification for the recommended measure, describing, based on available information, past and present numbers and distribution of the species involved and any threats faced by the species;

(iii) Provides information regarding the status of the species over all or a significant portion of its range; and

(iv) Is accompanied by appropriate supporting documentation in the form of bibliographic references, reprints of pertinent publications, copies of reports or letters from authorities, and maps.

The petitioner may provide information that describes any recommended critical habitat as to boundaries and physical features, and indicates any benefits and/or adverse effects on the species that would result from such designation. Such information, however, will not be a basis for the determination of the substantiality of a petition.

(3) Upon making a positive finding under paragraph (b)(1) of this section, the Secretary shall commence a review of the status of the species concerned and shall make, within 12 months of receipt of such petition, one of the following findings:

(i) The petitioned action is not warranted, in which case the Secretary shall promptly publish such finding in the FEDERAL REGISTER and so notify the petitioner.

(ii) The petitioned action is warranted, in which case the Secretary shall promptly publish in the FEDERAL REGISTER a proposed regulation to implement the action pursuant to § 424.16 of this part, or

(iii) The petitioned action is warranted, but that—

(A) The immediate proposal and timely promulgation of a regulation to implement the petitioned action is precluded because of other pending proposals to list, delist, or reclassify species, and

(B) Expeditious progress is being made to list, delist, or reclassify qualified species,

in which case, such finding shall be promptly published in the FEDERAL REGISTER together with a description and evaluation of the reasons and data on which the finding is based.

(4) If a finding is made under paragraph (b)(3)(iii) of this section with regard to any petition, the Secretary shall, within 12 months of such finding, again make one of the findings described in paragraph (b)(3) with regard to such petition, but no further finding of substantial information will be required.

(c) *Petitions to revise critical habitat.* (1) To the maximum extent practicable, within 90 days of receiving a petition to revise a critical habitat designation, the Secretary shall make a finding as to whether the petition presents substantial scienific information indicating that the revision may be warranted. The Secretary shall promptly publish such finding in the FEDERAL REGISTER and so notify the petitioner.

(2) In making the finding required by paragraph (c)(1) of this section, the Secretary shall consider whether a petition contains—

(i) Information indicating that areas petitioned to be added to critical habitat contain physical and biological features essential to, and that may require special management to provide for, the conservation of the species involved; or

(ii) Information indicating that areas designated as critical habitat do not contain resources essential to, or do not require special management to provide for, the conservation of the species involved.

(3) Within 12 months after receiving a petition found under paragraph (c)(1) of this section to present substantial information indicating that revision of a critical habitat may be warranted, the

Secretary shall determine how he intends to proceed with the requested revision, and shall promptly publish notice of such intention in the FEDERAL REGISTER.

(d) *Petitions to designate critical habitat or adopt special rules.* Upon receiving a petition to designate critical habitat or to adopt a special rule to provide for the conservation of a species, the Secretary shall promptly conduct a review in accordance with the Administrative Procedure Act (5 U.S.C. 553) and applicable Departmental regulations, and take appropriate action.

§ 424.15 Notices of review.

(a) If the Secretary finds that one of the actions described in § 424.10 may be warranted, but that the available evidence is not sufficiently definitive to justify proposing the action at that time, a notice of review may be published in the FEDERAL REGISTER. The notice will describe the measure under consideration, briefly explain the reasons for considering the action, and solicit comments and additional information on the action under consideration.

(b) The Secretary from time to time also may publish notices of review containing the names of species that are considered to be candidates for listing under the Act and indicating whether sufficient scientific or commercial information is then available to warrant proposing to list such species, the names of species no longer being considered for listing, or the names of listed species being considered for delisting or reclassification. However, none of the substantive or procedural provisions of the Act apply to a species that is designated as a candidate for listing.

(c) Such notices of review will invite comment from all interested parties regarding the status of the species named. At the time of publication of such a notice, notification in writing will be sent to State agencies in any affected States, known affected Federal agencies, and, to the greatest extent practicable, through the Secretary of State, to the governments of any foreign countries in which the subject species normally occur.

§ 424.16 Proposed rules.

(a) *General.* Based on the information received through §§ 424.13, 424.14, 424.15, and 424.21, or through other available avenues, the Secretary may propose revising the lists as described in § 424.10.

(b) *Contents.* A notice of a proposed rule to carry out one of the actions described in § 424.10 will contain a detailed description of the proposed action and a summary of the data on which the proposal is based (including, as appropriate, citation of pertinent information sources) and will show the relationship of such data to the rule proposed. If such a rule proposes to designate or revise critical habitat, such summary will, to the maximum extent practicable, include a brief description and evaluation of those activities (whether public or private) that, in the opinion of the Secretary, if undertaken, may adversely modify such habitat or may be affected by such designation. For any proposed rule to designate or revise critical habitat, the detailed description of the action will include a map of the critical habitat area, and may also include rule text that clarifies or modifies the map. Any such notice proposing the listing, delisting, or reclassification of a species or the designation or revision of critical habitat will also include a summary of factors affecting the species and/or its designated critical habitat.

(c) *Procedures*—(1) *Notifications.* In the case of any proposed rule to list, delist, or reclassify a species, or to designate or revise critical habitat, the Secretary shall—

(i) Publish notice of the proposal in the FEDERAL REGISTER;

(ii) Give actual notice of the proposed regulation to the State agency in each State in which the species is believed to occur and to each county or equivalent jurisdiction therein in which the species is believed to occur, and invite the comment of each such agency and jurisdiction;

(iii) Give notice of the proposed regulation to any Federal agencies, local authorities, or private individuals or organizations known to be affected by the rule;

(iv) Insofar as practical, and in cooperation with the Secretary of State,

PART 424—LISTING ENDANGERED AND THREATENED SPECIES AND DESIGNATING CRITICAL HABITAT

Subpart A—General Provisions

Sec.

Subpart B—Revision of the Lists

AUTHORITY: 16 U.S.C. 1531 *et seq.*

SOURCE: 49 FR 38908, Oct. 1, 1984, unless otherwise noted.

Subpart A—General Provisions

§ 424.01 Scope and purpose.

(a) Part 424 provides regulations for revising the Lists of Endangered and Threatened Wildlife and Plants and designating or revising the critical habitats of listed species. Part 424 provides criteria for determining whether species are endangered or threatened species and for designating critical habitats. Part 424 also establishes procedures for receiving and considering petitions to revise the lists and for conducting periodic reviews of listed species.

(b) The purpose of the regulations in part 424 is to interpret and implement those portions of the Act that pertain to the listing of species as threatened or endangered species and the designation of critical habitat.

[81 FR 7438, Feb. 11, 2016]

§ 424.02 Definitions.

The definitions contained in the Act and parts 17, 222, and 402 of this title apply to this part, unless specifically modified by one of the following definitions. Definitions contained in part 17 of this title apply only to species under the jurisdiction of the U.S. Fish and Wildlife Service. Definitions contained in part 222 of this title apply only to species under the jurisdiction of the National Marine Fisheries Service.

Candidate. Any species being considered by the Secretary for listing as an endangered or threatened species, but not yet the subject of a proposed rule.

Conserve, conserving, and *conservation.* To use and the use of all methods and procedures that are necessary to bring any endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary, *i.e.,* the species is recovered in accordance with § 402.02 of this chapter. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Geographical area occupied by the species. An area that may generally be delineated around species' occurrences, as determined by the Secretary (*i.e.,* range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals).

List or *lists.* The Lists of Endangered and Threatened Wildlife and Plants found at 50 CFR 17.11(h) or 17.12(h).

Physical or biological features. The features that support the life-history needs of the species, including but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic, or a more complex combination of habitat characteristics. Features may include habitat

characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity.

Public hearing. An informal hearing to provide the public with the opportunity to give comments and to permit an exchange of information and opinion on a proposed rule.

Special management considerations or protection. Methods or procedures useful in protecting the physical or biological features essential to the conservation of listed species.

Species. Includes any species or subspecies of fish, wildlife, or plant, and any distinct population segment of any vertebrate species that interbreeds when mature. Excluded is any species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of the Act would present an overwhelming and overriding risk to man.

Wildlife or *fish and wildlife.* Any member of the animal kingdom, including without limitation, any vertebrate, mollusk, crustacean, arthropod, or other invertebrate, and includes any part, product, egg, or offspring thereof, or the dead body or parts thereof.

[81 FR 7438, Feb. 11, 2016]

§ 424.03 Has the Office of Management and Budget approved the collection of information?

The Office of Management and Budget reviewed and approved the information collection requirements contained in subpart B and assigned OMB Control No. 1018–0165. We use the information to evaluate and make decisions on petitions. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number. You may send comments on the information collection requirements to the Information Collection Clearance Officer, U.S. Fish and Wildlife Service, at the address listed at 50 CFR 2.1(b).

EFFECTIVE DATE NOTE: At 81 FR 66484, Sept. 27, 2016, § 424.03 was revised, effective Oct. 27, 2016.

Subpart B—Revision of the Lists

§ 424.10 General.

The Secretary may add a species to the lists or designate critical habitat, delete a species or critical habitat, change the listed status of a species, revise the boundary of an area designated as critical habitat, or adopt or modify special rules (see 50 CFR 17.40–17.48 and parts 222 and 227) applied to a threatened species only in accordance with the procedures of this part.

§ 424.11 Factors for listing, delisting, or reclassifying species.

(a) Any species or taxonomic group of species (e.g., genus, subgenus) as defined in § 424.02(k) is eligible for listing under the Act. A taxon of higher rank than species may be listed only if all included species are individually found to be endangered or threatened. In determining whether a particular taxon or population is a species for the purposes of the Act, the Secretary shall rely on standard taxonomic distinctions and the biological expertise of the Department and the scientific community concerning the relevant taxonomic group.

(b) The Secretary shall make any determination required by paragraphs (c) and (d) of this section *solely* on the basis of the best available scientific and commercial information regarding a species' status, without reference to possible economic or other impacts of such determination.

(c) A species shall be listed or reclassified if the Secretary determines, on the basis of the best scientific and commercial data available after conducting a review of the species' status, that the species is endangered or threatened because of any one or a combination of the following factors:

(1) The present or threatened destruction, modification, or curtailment of its habitat or range;

(2) Over utilization for commercial, recreational, scientific, or educational purposes;

(3) Disease or predation;

(4) The inadequacy of existing regulatory mechanisms; or

(5) Other natural or manmade factors affecting its continued existence.

(d) The factors considered in delisting a species are those in paragraph (c) of this section as they relate to the definitions of endangered or threatened species. Such removal must be supported by the best scientific and commercial data available to the Secretary after conducting a review of the status of the species. A species may be delisted only if such data substantiate that it is neither endangered nor threatened for one or more of the following reasons:

(1) *Extinction*. Unless all individuals of the listed species had been previously identified and located, and were later found to be extirpated from their previous range, a sufficient period of time must be allowed before delisting to indicate clearly that the species is extinct.

(2) *Recovery*. The principal goal of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service is to return listed species to a point at which protection under the Act is no longer required. A species may be delisted on the basis of recovery only if the best scientific and commercial data available indicate that it is no longer endangered or threatened.

(3) *Original data for classification in error*. Subsequent investigations may show that the best scientific or commercial data available when the species was listed, or the interpretation of such data, were in error.

(e) The fact that a species of fish, wildlife, or plant is protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (see part 23 of this title 50) or a similar international agreement on such species, or has been identified as requiring protection from unrestricted commerce by any foreign nation, or to be in danger of extinction or likely to become so within the foreseeable future by any State agency or by any agency of a foreign nation that is responsible for the conservation of fish, wildlife, or plants, may constitute evidence that the species is endangered or threatened. The weight given such evidence will vary depending on the international agreement in question, the criteria pursuant to which the species is eligible for protection under such authorities, and the degree of protection afforded the species. The Secretary shall give consideration to any species protected under such an international agreement, or by any State or foreign nation, to determine whether the species is endangered or threatened.

(f) The Secretary shall take into account, in making determinations under paragraph (c) or (d) of this section, those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas.

§ 424.12 Criteria for designating critical habitat.

(a) To the maximum extent prudent and determinable, we will propose and finalize critical habitat designations concurrent with issuing proposed and final listing rules, respectively. If designation of critical habitat is not prudent or if critical habitat is not determinable, the Secretary will state the reasons for not designating critical habitat in the publication of proposed and final rules listing a species. The Secretary will make a final designation of critical habitat on the basis of the best scientific data available, after taking into consideration the probable economic, national security, and other relevant impacts of making such a designation in accordance with § 424.19.

(1) A designation of critical habitat is not prudent when any of the following situations exist:

(i) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of such threat to the species; or

(ii) Such designation of critical habitat would not be beneficial to the species. In determining whether a designation would not be beneficial, the factors the Services may consider include but are not limited to: Whether the present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or whether any areas meet the definition of ''critical habitat.''

(2) Designation of critical habitat is not determinable when one or both of the following situations exist:

(i) Data sufficient to perform required analyses are lacking; or

(ii) The biological needs of the species are not sufficiently well known to identify any area that meets the definition of ''critical habitat.''

(b) Where designation of critical habitat is prudent and determinable, the Secretary will identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat.

(1) The Secretary will identify, at a scale determined by the Secretary to be appropriate, specific areas within the geographical area occupied by the species for consideration as critical habitat. The Secretary will:

(i) Identify the geographical area occupied by the species at the time of listing.

(ii) Identify physical and biological features essential to the conservation of the species at an appropriate level of specificity using the best available scientific data. This analysis will vary between species and may include consideration of the appropriate quality, quantity, and spatial and temporal arrangements of such features in the context of the life history, status, and conservation needs of the species.

(iii) Determine the specific areas within the geographical area occupied by the species that contain the physical or biological features essential to the conservation of the species.

(iv) Determine which of these features may require special management considerations or protection.

(2) The Secretary will identify, at a scale determined by the Secretary to be appropriate, specific areas outside the geographical area occupied by the species that are essential for its conservation, considering the life history, status, and conservation needs of the species based on the best available scientific data.

(c) Each critical habitat area will be shown on a map, with more-detailed information discussed in the preamble of the rulemaking documents published in the FEDERAL REGISTER and made available from the lead field office of the Service responsible for such designation. Textual information may be included for purposes of clarifying or refining the location and boundaries of each area or to explain the exclusion of sites (e.g., paved roads, buildings) within the mapped area. Each area will be referenced to the State(s), county(ies), or other local government units within which all or part of the critical habitat is located. Unless otherwise indicated within the critical habitat descriptions, the names of the State(s) and county(ies) are provided for informational purposes only and do not constitute the boundaries of the area. Ephemeral reference points (*e.g.*, trees, sand bars) shall not be used in any textual description used to clarify or refine the boundaries of critical habitat.

(d) When several habitats, each satisfying the requirements for designation as critical habitat, are located in proximity to one another, the Secretary may designate an inclusive area as critical habitat.

(e) The Secretary may designate critical habitat for those species listed as threatened or endangered but for which no critical habitat has been previously designated. For species listed prior to November 10, 1978, the designation of critical habitat is at the discretion of the Secretary.

(f) The Secretary may revise existing designations of critical habitat according to procedures in this section as new data become available.

(g) The Secretary will not designate critical habitat within foreign countries or in other areas outside of the jurisdiction of the United States.

(h) The Secretary will not designate as critical habitat land or other geographic areas owned or controlled by the Department of Defense, or designated for its use, that are subject to a compliant or operational integrated natural resources management plan (INRMP) prepared under section 101 of the Sikes Act (16 U.S.C. 670a) if the Secretary determines in writing that such plan provides a conservation benefit to the species for which critical habitat is being designated. In determining whether such a benefit is provided, the Secretary will consider:

(1) The extent of the area and features present;

(2) The type and frequency of use of the area by the species;

(3) The relevant elements of the INRMP in terms of management objectives, activities covered, and best management practices, and the certainty that the relevant elements will be implemented; and

(4) The degree to which the relevant elements of the INRMP will protect the habitat from the types of effects that would be addressed through a destruction-or-adverse-modification analysis.

[49 FR 38908, Oct. 1, 1984, as amended at 77 FR 25622, May 1, 2012; 81 FR 7439, Feb. 11, 2016]

§ 424.13 Sources of information and relevant data.

When considering any revision of the lists, the Secretary shall consult as appropriate with affected States, interested persons and organizations, other affected Federal agencies, and, in cooperation with the Secretary of State, with the country or countries in which the species concerned are normally found or whose citizens harvest such species from the high seas. Data reviewed by the Secretary may include, but are not limited to scientific or commercial publications, administrative reports, maps or other graphic materials, information received from experts on the subject, and comments from interested parties.

§ 424.14 Petitions.

(a) *General.* Any interested person may submit a written petition to the Secretary requesting that one of the actions described in § 424.10 be taken. Such a document must clearly identify itself as a petition and be dated. It must contain the name, signature, address, telephone number, if any, and the association, institution, or business affiliation, if any, of the petitioner. The Secretary shall acknowledge in writing receipt of such a petition within 30 days.

(b) *Petitions to list, delist, or reclassify species.* (1) To the maximum extent practicable, within 90 days of receiving a petition to list, delist, or reclassify a species, the Secretary shall make a finding as to whether the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted. For the purposes of this section, ''substantial information'' is that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted. The Secretary shall promptly publish such finding in the FEDERAL REGISTER and so notify the petitioner.

(2) In making a finding under paragraph (b)(1) of this section, the Secretary shall consider whether such petition—

(i) Clearly indicates the administrative measure recommended and gives the scientific and any common name of the species involved;

(ii) Contains detailed narrative justification for the recommended measure, describing, based on available information, past and present numbers and distribution of the species involved and any threats faced by the species;

(iii) Provides information regarding the status of the species over all or a significant portion of its range; and

(iv) Is accompanied by appropriate supporting documentation in the form of bibliographic references, reprints of pertinent publications, copies of reports or letters from authorities, and maps.

The petitioner may provide information that describes any recommended critical habitat as to boundaries and physical features, and indicates any benefits and/or adverse effects on the species that would result from such designation. Such information, however, will not be a basis for the determination of the substantiality of a petition.

(3) Upon making a positive finding under paragraph (b)(1) of this section, the Secretary shall commence a review of the status of the species concerned and shall make, within 12 months of receipt of such petition, one of the following findings:

(i) The petitioned action is not warranted, in which case the Secretary shall promptly publish such finding in the FEDERAL REGISTER and so notify the petitioner.

(ii) The petitioned action is warranted, in which case the Secretary shall promptly publish in the FEDERAL

REGISTER a proposed regulation to implement the action pursuant to § 424.16 of this part, or

(iii) The petitioned action is warranted, but that—

(A) The immediate proposal and timely promulgation of a regulation to implement the petitioned action is precluded because of other pending proposals to list, delist, or reclassify species, and

(B) Expeditious progress is being made to list, delist, or reclassify qualified species,

in which case, such finding shall be promptly published in the FEDERAL REGISTER together with a description and evaluation of the reasons and data on which the finding is based.

(4) If a finding is made under paragraph (b)(3)(iii) of this section with regard to any petition, the Secretary shall, within 12 months of such finding, again make one of the findings described in paragraph (b)(3) with regard to such petition, but no further finding of substantial information will be required.

(c) *Petitions to revise critical habitat.* (1) To the maximum extent practicable, within 90 days of receiving a petition to revise a critical habitat designation, the Secretary shall make a finding as to whether the petition presents substantial scienific information indicating that the revision may be warranted. The Secretary shall promptly publish such finding in the FEDERAL REGISTER and so notify the petitioner.

(2) In making the finding required by paragraph (c)(1) of this section, the Secretary shall consider whether a petition contains—

(i) Information indicating that areas petitioned to be added to critical habitat contain physical and biological features essential to, and that may require special management to provide for, the conservation of the species involved; or

(ii) Information indicating that areas designated as critical habitat do not contain resources essential to, or do not require special management to provide for, the conservation of the species involved.

(3) Within 12 months after receiving a petition found under paragraph (c)(1) of this section to present substantial information indicating that revision of a critical habitat may be warranted, the Secretary shall determine how he intends to proceed with the requested revision, and shall promptly publish notice of such intention in the FEDERAL REGISTER.

(d) *Petitions to designate critical habitat or adopt special rules.* Upon receiving a petition to designate critical habitat or to adopt a special rule to provide for the conservation of a species, the Secretary shall promptly conduct a review in accordance with the Administrative Procedure Act (5 U.S.C. 553) and applicable Departmental regulations, and take appropriate action.

EFFECTIVE DATE NOTE: At 81 FR 66484, Sept. 27, 2016, § 424.14 was revised, effective Oct. 27, 2014. For the convenience of the user, the revised text is set forth as follows:

§ 424.14 Petitions.

(a) *Ability to petition.* Any interested person may submit a written petition to the Services requesting that one of the actions described in § 424.10 be taken for a species.

(b) *Notification of intent to file petition.* For a petition to list, delist, or reclassify a species, or for petitions to revise critical habitat, petitioners must provide notice to the State agency responsible for the management and conservation of fish, plant, or wildlife resources in each State where the species that is the subject of the petition occurs. This notification must be made at least 30 days prior to submission of the petition. This notification requirement shall not apply to any petition submitted pertaining to a species that does not occur within the United States.

(c) *Requirements for petitions.* A petition must clearly identify itself as such, be dated, and contain the following information:

(1) The name, signature, address, telephone number, if any, and the association, institution, or business affiliation, if any, of the petitioner;

(2) The scientific name and any common name of a species of fish or wildlife or plants that is the subject of the petition. Only one species may be the subject of a petition, which may include, by hierarchical extension based on taxonomy and the Act, any subspecies or variety, or (for vertebrates) any potential distinct population segments of that species;

(3) A clear indication of the administrative action the petitioner seeks (*e.g.*, listing of a species or revision of critical habitat);

(4) A detailed narrative justifying the recommended administrative action that contains an analysis of the information presented;

(5) Literature citations that are specific enough for the Services to readily locate the information cited in the petition, including page numbers or chapters as applicable;

(6) Electronic or hard copies of supporting materials, to the extent permitted by U.S. copyright law, or appropriate excerpts or quotations from those materials (*e.g.*, publications, maps, reports, letters from authorities) cited in the petition;

(7) For a petition to list, delist, or reclassify a species, information to establish whether the subject entity is a ''species'' as defined in the Act;

(8) For a petition to list a species, or for a petition to delist or reclassify a species in cases where the species' range has changed since listing, information on the current and historical geographic range of the species, including the States or countries intersected, in whole or part, by that range; and

(9) For a petition to list, delist or reclassify a species, or for petitions to revise critical habitat, copies of the notification letters or electronic communication which petitioners provided to the State agency or agencies responsible for the management and conservation of fish, plant, or wildlife resources in each State where the species that is the subject of the petition currently occurs.

(d) *Information to be included in petitions to add or remove species from the lists, or change the listed status of a species.* The Service's determination as to whether the petition provides substantial scientific or commercial information indicating that the petitioned action may be warranted will depend in part on the degree to which the petition includes the following types of information:

(1) Information on current population status and trends and estimates of current population sizes and distributions, both in captivity and the wild, if available;

(2) Identification of the factors under section 4(a)(1) of the Act that may affect the species and where these factors are acting upon the species;

(3) Whether and to what extent any or all of the factors alone or in combination identified in section 4(a)(1) of the Act may cause the species to be an endangered species or threatened species (*i.e.*, the species is currently in danger of extinction or is likely to become so within the foreseeable future), and, if so, how high in magnitude and how imminent the threats to the species and its habitat are;

(4) Information on adequacy of regulatory protections and effectiveness of conservation activities by States as well as other parties, that have been initiated or that are ongoing, that may protect the species or its habitat; and

(5) A complete, balanced representation of the relevant facts, including information that may contradict claims in the petition.

(e) *Information to be included in petitions to revise critical habitat.* The Services' determinations as to whether the petition provides substantial scientific information indicating that the petitioned action may be warranted will depend in part on the degree to which the petition includes the following types of information:

(1) A description and map(s) of areas that the current designation does not include that should be included, or includes that should no longer be included, and a description of the benefits of designating or not designating these specific areas as critical habitat. Petitioners should include sufficient supporting information to substantiate the requested changes, which may include GIS data or boundary layers that relate to the request, if appropriate;

(2) A description of physical or biological features essential for the conservation of the species and whether they may require special management considerations or protection;

(3) For any areas petitioned to be added to critical habitat within the geographical area occupied by the species at time it was listed, information indicating that the specific areas contain one or more of the physical or biological features (including characteristics that support ephemeral or dynamic habitat conditions) that are essential to the conservation of the species and may require special management considerations or protection. The petitioner should also indicate which specific areas contain which features;

(4) For any areas petitioned for removal from currently designated critical habitat within the geographical area occupied by the species at the time it was listed, information indicating that the specific areas do not contain the physical or biological features (including characteristics that support ephemeral or dynamic habitat conditions) that are essential to the conservation of the species, or that these features do not require special management considerations or protection;

(5) For areas petitioned to be added to or removed from critical habitat that were outside the geographical area occupied by the species at the time it was listed, information indicating why the petitioned areas are or are not essential for the conservation of the species; and

(6) A complete, balanced representation of the relevant facts, including information that may contradict claims in the petition.

(f) *Response to petitions.* (1) If a request does not meet the requirements set forth at paragraph (c) of this section, the Services will generally reject the request without making

a finding, and will, within a reasonable timeframe, notify the sender and provide an explanation of the rejection. However, the Services retain discretion to process a petition where the Services determine there has been substantial compliance with the relevant requirements.

(2) If a request does meet the requirements set forth at paragraph (c) of this section, the Services will acknowledge receipt of the petition by posting information on the respective Service's Web site.

(g) *Supplemental information.* If the petitioner provides supplemental information before the initial finding is made and states that it is part of the petition, the new information, along with the previously submitted information, is treated as a new petition that supersedes the original petition, and the statutory timeframes will begin when such supplemental information is received.

(h) *Findings on petitions to add or remove a species from the lists, or change the listed status of a species.* (1) To the maximum extent practicable, within 90 days of receiving a petition to add a species to the lists, remove a species from the lists, or change the listed status of a species, the Services will make a finding as to whether the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted. The Services will publish the finding in the FEDERAL REGISTER.

(i) For the purposes of this section, ''substantial scientific or commercial information'' refers to credible scientific or commercial information in support of the petition's claims such that a reasonable person conducting an impartial scientific review would conclude that the action proposed in the petition may be warranted. Conclusions drawn in the petition without the support of credible scientific or commercial information will not be considered ''substantial information.''

(ii) In reaching the initial finding on the petition, the Services will consider the information referenced at paragraphs (c), (d), and (g) of this section. The Services may also consider information readily available at the time the determination is made. The Services are not required to consider any supporting materials cited by the petitioner if the cited document is not provided in accordance with paragraph (c)(6) of this section.

(iii) The ''substantial scientific or commercial information'' standard must be applied in light of any prior reviews or findings the Services have made on the listing status of the species that is the subject of the petition. Where the Services have already conducted a finding on, or review of, the listing status of that species (whether in response to a petition or on the Services' own initiative), the Services will evaluate any petition received thereafter seeking to list, delist, or reclassify that species to determine whether a reasonable person conducting an impartial scientific review would conclude that the action proposed in the petition may be warranted despite the previous review or finding. Where the prior review resulted in a final agency action, a petitioned action generally would not be considered to present substantial scientific and commercial information indicating that the action may be warranted unless the petition provides new information not previously considered.

(2) If the Services find that a petition presents substantial information indicating that the petitioned action may be warranted, the Services will commence a review of the status of the species concerned. At the conclusion of the status review and within 12 months of receipt of the petition, the Services will make one of the following findings:

(i) The petitioned action is not warranted, in which case the Service shall publish a finding in the FEDERAL REGISTER.

(ii) The petitioned action is warranted, in which case the Services shall publish in the FEDERAL REGISTER a proposed regulation to implement the action pursuant to § 424.16; or

(iii) The petitioned action is warranted, but:

(A) The immediate proposal and timely promulgation of a regulation to implement the petitioned action is precluded because of other pending proposals to list, delist, or change the listed status of species; and

(B) Expeditious progress is being made to list, delist, or change the listed status of qualified species, in which case such finding will be published in the FEDERAL REGISTER together with a description and evaluation of the reasons and data on which the finding is based. The Secretary will make any determination of expeditious progress in relation to the amount of funds available after complying with nondiscretionary duties under section 4 of the Act and court orders and court-approved settlement agreements to take actions pursuant to section 4 of the Act.

(3) If a finding is made under paragraph (h)(2)(iii) of this section with regard to any petition, the Services will, within 12 months of such finding, again make one of the findings described in paragraph (h)(2) of this section with regard to such petition.

(i) *Findings on petitions to revise critical habitat.* (1) To the maximum extent practicable, within 90 days of receiving a petition to revise a critical habitat designation, the Services will make a finding as to whether the petition presents substantial scientific information indicating that the revision may be warranted. The Services will publish such finding in the FEDERAL REGISTER.

(i) For the purposes of this section, ''substantial scientific information'' refers to credible scientific information in support of the petition's claims such that a reasonable

person conducting an impartial scientific review would conclude that the revision proposed in the petition may be warranted. Conclusions drawn in the petition without the support of credible scientific information will not be considered ''substantial information.''

(ii) The Services will consider the information referenced at paragraphs (c), (e), and (g) of this section. The Services may also consider other information readily available at the time the determination is made in reaching its initial finding on the petition. The Services are not required to consider any supporting materials cited by the petitioner if the cited documents are not provided in accordance with paragraph (b)(6) of this section.

(2) If the Services find that the petition presents substantial information that the requested revision may be warranted, the Services will determine, within 12 months of receiving the petition, how to proceed with the requested revision, and will promptly publish notice of such intention in the FEDERAL REGISTER. That notice may, but need not, take a form similar to one of the findings described under paragraph (h)(2) of this section.

(j) *Petitions to designate critical habitat or adopt rules under sections 4(d), 4(e), or 10(j) of the Act.* The Services will conduct a review of petitions to designate critical habitat or to adopt a rule under section 4(d), 4(e), or 10(j) of the Act in accordance with the Administrative Procedure Act (5 U.S.C. 553) and applicable Departmental regulations, and take appropriate action.

(k) *Withdrawal of petition.* A petitioner may withdraw the petition at any time during the petition process by submitting such request in writing. If a petition is withdrawn, the Services may, at their discretion, discontinue action on the petition finding, even if the Services have already made a 90-day finding that there is substantial information indicating that the requested action may be warranted.

§ 424.15 Notices of review.

(a) If the Secretary finds that one of the actions described in § 424.10 may be warranted, but that the available evidence is not sufficiently definitive to justify proposing the action at that time, a notice of review may be published in the FEDERAL REGISTER. The notice will describe the measure under consideration, briefly explain the reasons for considering the action, and solicit comments and additional information on the action under consideration.

(b) The Secretary from time to time also may publish notices of review containing the names of species that are considered to be candidates for listing under the Act and indicating whether sufficient scientific or commercial information is then available to warrant proposing to list such species, the names of species no longer being considered for listing, or the names of listed species being considered for delisting or reclassification. However, none of the substantive or procedural provisions of the Act apply to a species that is designated as a candidate for listing.

(c) Such notices of review will invite comment from all interested parties regarding the status of the species named. At the time of publication of such a notice, notification in writing will be sent to State agencies in any affected States, known affected Federal agencies, and, to the greatest extent practicable, through the Secretary of State, to the governments of any foreign countries in which the subject species normally occur.

§ 424.16 Proposed rules.

(a) *General.* Based on the information received through §§ 424.13, 424.14, 424.15, and 424.21, or through other available avenues, the Secretary may propose revising the lists as described in § 424.10.

(b) *Contents.* A notice of a proposed rule to carry out one of the actions described in § 424.10 will contain a detailed description of the proposed action and a summary of the data on which the proposal is based (including, as appropriate, citation of pertinent information sources) and will show the relationship of such data to the rule proposed. If such a rule proposes to designate or revise critical habitat, such summary will, to the maximum extent practicable, include a brief description and evaluation of those activities (whether public or private) that, in the opinion of the Secretary, if undertaken, may adversely modify such habitat or may be affected by such designation. For any proposed rule to designate or revise critical habitat, the detailed description of the action will include a map of the critical habitat area, and may also include rule text that clarifies or modifies the map. Any such notice proposing the listing, delisting, or reclassification of a species or the designation or revision of

critical habitat will also include a summary of factors affecting the species and/or its designated critical habitat.

(c) *Procedures*—(1) *Notifications.* In the case of any proposed rule to list, delist, or reclassify a species, or to designate or revise critical habitat, the Secretary shall—

(i) Publish notice of the proposal in the FEDERAL REGISTER;

(ii) Give actual notice of the proposed regulation to the State agency in each State in which the species is believed to occur and to each county or equivalent jurisdiction therein in which the species is believed to occur, and invite the comment of each such agency and jurisdiction;

(iii) Give notice of the proposed regulation to any Federal agencies, local authorities, or private individuals or organizations known to be affected by the rule;

(iv) Insofar as practical, and in cooperation with the Secretary of State, give notice of the proposed regulation to list, delist, or reclassify a species to each foreign nation in which the species is believed to occur or whose citizens harvest the species on the high seas, and invite the comment of such nation;

(v) Give notice of the proposed regulation to such professional scientific organizations as the Secretary deems appropriate; and

(vi) Publish a summary of the proposed regulation in a newspaper of general circulation in each area of the United States in which the species is believed to occur.

(2) *Period of public comments.* At least 60 days shall be allowed for public comment following publication in the FEDERAL REGISTER of a rule proposing the listing, delisting, or reclassification of a species, or the designation or revision of critical habitat. All other proposed rules shall be subject to a comment period of at least 30 days following publication in the FEDERAL REGISTER. The Secretary may extend or reopen the period for public comment on a proposed rule upon a finding that there is good cause to do so. A notice of any such extension or reopening shall be published in the FEDERAL REGISTER, and shall specify the basis for so doing.

(3) *Public hearings.* The Secretary shall promptly hold at least one public hearing if any person so requests within 45 days of publication of a proposed regulation to list, delist, or reclassify a species, or to designate or revise critical habitat. Notice of the location and time of any such hearing shall be published in the FEDERAL REGISTER not less than 15 days before the hearing is held.

[49 FR 38908, Oct. 1, 1984, as amended at 77 FR 25622, May 1, 2012]

§ 424.17 Time limits and required actions.

(a) *General.* (1) Within 1 year of the publication of a rule proposing to determine whether a species is an endangered or threatened species, or to designate or revise critical habitat, the Secretary shall publish one of the following in the FEDERAL REGISTER:

(i) A final rule to implement such determination or revision,

(ii) A finding that such revision should not be made,

(iii) A notice withdrawing the proposed rule upon a finding that available evidence does not justify the action proposed by the rule, or

(iv) A notice extending such 1-year period by an additional period of not more than 6 months because there is substantial disagreement among scientists knowledgeable about the species concerned regarding the sufficiency or accuracy of the available data relevant to the determination or revision concerned.

(2) If an extension is made under paragraph (a)(1)(iv) of this section, the Secretary shall, within the extended period, take one of the actions described in paragraphs (a)(1) (i), (ii), or (iii) of this section.

(3) If a proposed rule is withdrawn under paragraph (a)(1)(iii) of this section, the notice of withdrawal shall set forth the basis upon which the proposed rule has been found not to be supported by available evidence. The Secretary shall not again propose a rule withdrawn under such provision except on the basis of sufficient new information that warrants a reproposal.

(b) *Critical habitat designations.* A final rule designating critical habitat

of an endangered or a threatened species shall to the extent permissible under § 424.12 be published concurrently with the final rule listing such species, unless the Secretary deems that—

(1) It is essential to the conservation of such species that it be listed promptly; or

(2) Critical habitat of such species is not then determinable,

in which case, the Secretary, with respect to the proposed regulation to designate such habitat, may extend the 1-year period specified in paragraph (a) of this section by not more than one additional year. Not later than the close of such additional year the Secretary must publish a final regulation, based on such data as may be available at that time, designating, to the maximum extent prudent, such habitat.

§ 424.18 Final rules—general.

(a) *Contents.* A final rule promulgated to carry out the purposes of the Act will be published in the FEDERAL REGISTER. This publication will contain a detailed description of the action being finalized, a summary of the comments and recommendations received in response to the proposal (including applicable public hearings), summaries of the data on which the rule is based and the relationship of such data to the final rule, and a description of any conservation measures available under the rule. Publication of a final rule to list, delist, or reclassify a species or designate or revise critical habitat will also provide a summary of factors affecting the species.

(1) For a rule designating or revising critical habitat, the detailed description of the action will include a map of the critical habitat area, and may also include rule text that clarifies or modifies the map. The map itself, as modified by any rule text, constitutes the official boundary of the designation.

(i) The Service responsible for the designation will include more-detailed information in the preamble of the rulemaking document and will make the coordinates and/or plot points on which the map is based available to the public on the Internet site of the Service promulgating the designation, at *www.regulations.gov*, and at the lead field office of the Service responsible for the designation.

(ii) In addition, if the Service responsible for the designation concludes that additional tools or supporting information would be appropriate and would help the public understand the official boundary map, it will, for the convenience of the public, make those additional tools and supporting information available on our Internet sites and at the lead field office of the Service that is responsible for the critical habitat designation (and may also include it in the preamble and/or at *www.regulations.gov*).

(2) The rule will, to the maximum extent practicable, include a brief description and evaluation of those activities (whether public or private) that might occur in the area and which, in the opinion of the Secretary, may adversely modify such habitat or be affected by such designation.

(b) *Effective date.* A final rule shall take effect—

(1) Not less than 30 days after it is published in the FEDERAL REGISTER, except as otherwise provided for good cause found and published with the rule; and

(2) Not less than 90 days after (i) publication in the FEDERAL REGISTER of the proposed rule, and (ii) actual notification of any affected State agencies and counties or equivalent jurisdictions in accordance with § 424.16(c)(1)(ii).

(c) *Disagreement with State agency.* If a State agency, given notice of a proposed rule in accordance with § 424.16(c)(1)(ii), submits comments disagreeing in whole or in part with a proposed rule, and the Secretary issues a final rule that is in conflict with such comments, or if the Secretary fails to adopt a regulation for which a State agency has made a petition in accordance with § 424.14, the Secretary shall provide such agency with a written justification for the failure to adopt a rule consistent with the agency's comments or petition.

[49 FR 38908, Oct. 1, 1984, as amended at 77 FR 25622, May 1, 2012]

§ 424.19 Impact analysis and exclusions from critical habitat.

(a) At the time of publication of a proposed rule to designate critical habitat, the Secretary will make available for public comment the draft economic analysis of the designation. The draft economic analysis will be summarized in the FEDERAL REGISTER notice of the proposed designation of critical habitat.

(b) Prior to finalizing the designation of critical habitat, the Secretary will consider the probable economic, national security, and other relevant impacts of the designation upon proposed or ongoing activities. The Secretary will consider impacts at a scale that the Secretary determines to be appropriate, and will compare the impacts with and without the designation. Impacts may be qualitatively or quantitatively described.

(c) The Secretary has discretion to exclude any particular area from the critical habitat upon a determination that the benefits of such exclusion outweigh the benefits of specifying the particular area as part of the critical habitat. In identifying those benefits, in addition to the mandatory consideration of impacts conducted pursuant to paragraph (b) of this section, the Secretary may assign the weight given to any benefits relevant to the designation of critical habitat. The Secretary, however, will not exclude any particular area if, based on the best scientific and commercial data available, the Secretary determines that the failure to designate that area as critical habitat will result in the extinction of the species concerned.

[78 FR 53076, Aug. 28, 2013]

§ 424.20 Emergency rules.

(a) Sections 424.16, 424.17, 424.18, and 424.19 notwithstanding, the Secretary may at any time issue a regulation implementing any action described in § 424.10 in regard to any emergency posing a significant risk to the well-being of a species of fish, wildlife, or plant. Such rules shall, at the discretion of the Secretary, take effect immediately on publication in the FEDERAL REGISTER. In the case of any such action that applies to a resident species, the Secretary shall give actual notice of such regulation to the State agency in each State in which such species is believed to occur. Publication in the FEDERAL REGISTER of such an emergency rule shall provide detailed reasons why the rule is necessary. An emergency rule shall cease to have force and effect after 240 days unless the procedures described in §§ 424.16, 424.17, 424.18, and 424.19 (as appropriate) have been complied with during that period.

(b) If at any time after issuing an emergency rule, the Secretary determines, on the basis of the best scientific and commercial data available, that substantial evidence does not then exist to warrant such rule, it shall be withdrawn.

§ 424.21 Periodic review.

At least once every 5 years, the Secretary shall conduct a review of each listed species to determine whether it should be delisted or reclassified. Each such determination shall be made in accordance with §§ 424.11, 424.16, and 424.17 of this part, as appropriate. A notice announcing those species under active review will be published in the FEDERAL REGISTER. Notwithstanding this section's provisions, the Secretary may review the status of any species at any time based upon a petition (see § 424.14) or upon other data available to the Service.

SUBCHAPTER B [RESERVED]

Petition to remove the golden-cheeked warbler from the list of endangered species

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From U.S. Fish & Wildlife Serv., National Digital Library, at http://digitalmedia.fws.gov/cdm/singleitem/collection/natdiglib/id/40/rec/1.

Executive summary

On May 4, 1990, the U.S. Fish and Wildlife Service (FWS) listed the golden-cheeked warbler (*Setophaga chrysoparia*) as endangered on an emergency basis, erroneously believing that the species was rare and that its best breeding habitat was primarily limited to Travis County, Texas.[1] At that time, FWS relied on the only available studies of the golden-cheeked warbler, which were based on ten-year-old satellite mapping using the relatively primitive technology then available, and a fourteen-year-old study of warbler density that significantly underestimated the extent of warbler habitat and the size of the warbler population.[2]

Today, after 25 years of additional studies, the best available science shows that the warbler's habitat and population are greater than what FWS believed in 1990. Recent studies show that the amount of warbler habitat is five times larger, and that the warbler population is roughly 19 times greater in number, than what FWS thought it to be in 1990.

Simply put, the science that prompted FWS to list the warbler in 1990 was inaccurate, and certainly current studies show that the warbler's continued listing is neither scientifically sound nor warranted by the listing criteria under the Endangered Species Act.[3]

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[1] Endangered and Threatened Wildlife and Plants; Emergency Rule to List the Golden-cheeked Warbler as Endangered, 55 Fed. Reg. 18,844, 18,844 (May 4, 1990) ("Some of the best habitat for this species occurs in Travis County, Texas. Travis County has, by far, more warbler habitat than any other county, and it is some of the least fragmented habitat in the golden-cheeked warbler's range.").

[2] *Id.*; Endangered and Threatened Wildlife and Plants; Final Rule to List the Golden-cheeked Warbler as Endangered, 55 Fed. Reg. 53,153, 53,154 (Dec. 27, 1990).

[3] 16 U.S.C. § 1533(a)(1).

Introduction

On May 4, 1990, FWS listed the golden-cheeked warbler (*Setophaga chrysoparia*) as endangered on an emergency basis, based on its mistaken belief that the species was rare and that its breeding habitat was primarily limited to Travis County, Texas.[4] FWS published a final rule listing the warbler on December 27, 1990.[5] At that time, FWS relied on the only available studies of the golden-cheeked warbler, which were based on ten-year-old satellite mapping using the primitive technology then available, and a fourteen-year-old study of warbler density that significantly underestimated the extent of warbler habitat and the size of the warbler population.[6] Now, after 25 years of additional studies and massive efforts to conserve the warbler, its continued listing is neither scientifically sound nor warranted by the listing criteria under the Endangered Species Act.[7] The time has come to remove the golden-cheeked warbler from the endangered species list.

At the time of listing in 1990, the best available science was based on a small number of studies of sites in Travis County—believed to be the prime breeding habitat of the warbler. This research suggested that there were only about 328,928 hectares[8] of potential warbler habitat in Texas supporting 13,800 warbler territories (Wahl et al. 1990; FWS 1992). But over the last twenty-five years, extensive and comprehensive biological research has been performed indicating:

- There is almost 5 times more warbler breeding habitat (1,678,312 hectares) than FWS believed at the time of the listing;

- There are roughly 19 times more warblers than FWS believed at the time of the listing (263,339 males; 95% confidence interval = 223,927–302,620) (Collier et al. 2012, Mathewson et al. 2012); and,

The science upon which listing was based in 1990, and upon which FWS based its 1992 Recovery Plan, is therefore out-of-date. Even if it had been prudent to list the species in 1990 (although the facts suggest otherwise), today's science shows that the species does not meet the Endangered Species Act's definition of "endangered" or "threatened"— the golden-cheeked warbler today is not "in danger of extinction throughout all or a significant portion of its range,"[9] nor is it likely to become so in the

[4] 55 Fed. Reg. at 18,844 ("Some of the best habitat for this species occurs in Travis County, Texas. Travis County has, by far, more warbler habitat than any other county, and it is some of the least fragmented habitat in the golden-cheeked warbler's range.").
[5] 55 Fed. Reg. 53,153 (Dec. 27, 1990)
[6] *Id.*; 55 Fed. Reg. at 53,154.
[7] 16 U.S.C. § 1533(a)(1).
[8] There are 2.471 acres in a hectare, and 259 hectares comprise one square mile.
[9] 16 U.S.C. § 1532(6).

foreseeable future.[10] In addition, there is consensus among the scientific community that breeding warblers inhabit a much wider range of habitat types than identified in the early studies on which FWS relied (e.g., Klassen et al. 2012).[11] Recent studies also suggest that there is no genetic basis for managing warblers as separate population entities.[12]

Recognizing that the science upon which listing was based in 1990 is outmoded, FWS has concluded that its 1992 Recovery Plan—which was based on that same early science—must be revised: "[a]dditional information has been collected since the recovery plan was published [in 1992] and warrants revision of the recovery plan."[13]

In short, both the listing and recovery plan for this species were based on scientific evidence that has since been made obsolete. There is no biological or scientific basis for maintaining this species on the endangered species list. Delisting this species is now compelled by today's best available science and the provisions of the Endangered Species Act.[14]

The golden-cheeked warbler

The golden-cheeked warbler (*Setophaga chrysoparia*) is a small, insectivorous, migratory songbird that breeds in mixed oak-juniper (Quercus-Juniperus) woodland of central Texas between March and August (Pulich 1976; Ladd and Gass 1999). The warbler nests in tall, closed canopy stands of Ashe juniper mixed with a variety of oak, maple, and other trees.[15] During the breeding season, warblers require shredded bark from mature Ashe juniper (*Juniperus ashei*) for nest material and a combination of Ashe juniper, oaks, and associated hardwoods for nesting and foraging (Pulich 1976; Ladd and Gass 1999). The composition of woody vegetation found in warbler habitat varies, with

[10] *See id.* at § 1532(20) (defining "threatened species").
[11] *See* Ex. 1, Tex. A&M Inst. of Renewable Natural Resources, Conservation Status of the Federally Endangered Golden-cheeked Warbler (unpublished research summary, June 2015), available at http://irnr.tamu.edu/publications/research-reports/ (hereinafter "Ex. 1, Texas A&M Survey").
[12] Denise L. Lindsay et al., *Habitat fragmentation and genetic diversity of an endangered, migratory songbird, the golden-cheeked warbler* (Dendroica chrysoparia), 17 MOLECULAR ECOLOGY 2122 (2008).
[13] U.S. Fish & Wildlife Serv., Golden-cheeked warbler (*Setophaga chrysoparia*) 5-Year Review: Summary and Evaluation 3 (Aug. 26, 2014) (hereinafter "Five-Year Review").
[14] 16 U.S.C. § 1533(a)(1).
[15] 55 Fed. Reg. at 53,154; *see also* U.S. Fish & Wildlife Serv., Species Profile for golden-cheeked warbler (Dendroica chrysoparia), http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B07W.

Ashe juniper often but not always the dominant species.[16] The male warbler is territorial, and can be located by its territorial song.[17]

Most warblers leave the breeding grounds in late July and migrate through Mexico and Central America to their wintering grounds in southern Mexico, Guatemala, Honduras, El Salvador, and Nicaragua, where they remain until spring migration begins in late February (Pulich 1976; Ladd and Gass 1999). In the past few years, warbler presence has been confirmed in northern El Salvador and north-central Nicaragua.[18] Warblers have also recently been documented in other new areas since 2000, and warbler sightings from Costa Rica and Panama suggest the warbler's winter range extends further south than originally assumed.[19] According to Komar (2011), "[t]he warblers were overlooked for decades in other parts of their range, now recognized as regular wintering areas, such as Nicaragua, northern El Salvador and southern Chiapas."[20]

Petitioners

Petitioners are the Texans for Positive Economic Policy, Susan Combs, the Texas Public Policy Foundation, and the Reason Foundation.

Texans for Positive Economic Policy (TPEP) is devoted to promoting, among other objectives, the use of sound science in protecting endangered species. Over the past 20 years, Texas has created a national model for funding objective, peer-reviewed science to deal with the Endangered Species Act and thereby assure protection of both the species and the economy. TPEP works to promote the use of sound science in the study of species and habitat by helping to secure funding for research, study, and analysis. TPEP has a key organizational interest in promoting the use of objective, peer-reviewed science in listing and delisting decisions. TPEP supports local and state conservation efforts for the warbler rather than the unnecessary federal listing of the warbler under the Endangered Species Act. Texans for Positive Economic Policy is based in Austin, Texas, and can be contacted through counsel for Petitioners.

Susan Combs is a fourth-generation Texan with a ranch in Brewster County, Texas, first owned by her great grandfather over a century ago. Combs has served as a state representative, agriculture commissioner, and most recently, as state comptroller.

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[16] U.S. Fish & Wildlife Serv., Species Profile for golden-cheeked warbler (*Dendroica chrysoparia*), http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B07W.
[17] *Id.*
[18] Five-Year Review at 6.
[19] *Id.*
[20] Oliver Komar, Winter ecology, relative abundance and population monitoring of Golden-cheeked Warblers throughout the known and potential range 29 (May 4, 2011) (submitted to Tex. Parks & Wildlife).

Combs has devoted her career to Endangered Species Act issues, heading the state task force on endangered species, and holding the state permit for the Candidate Conservation Agreement with Assurances for the dunes sagebrush lizard in her capacity as Texas Comptroller. Combs has an aesthetic interest in the golden-cheeked warbler and seeks to conserve the warbler and its habitat within Texas. Combs believes that local and state conservation efforts would be of greater benefit to the warbler and that continued unwarranted regulation under the Endangered Species Act can impede voluntary and local conservation efforts. Susan Combs is a resident of Texas and can be contacted through counsel for Petitioners.

The Texas Public Policy Foundation is a 501(c)(3) nonprofit, nonpartisan research institute, whose mission is to promote and defend liberty, personal responsibility, and free enterprise in Texas and the nation by educating and affecting policymakers and the Texas public policy debate with academically sound research and outreach. The Foundation's research fellows regularly testify before the U.S. Congress and Texas legislature on environmental and endangered species issues. This delisting petition supports the Foundation's ongoing efforts to promote the use of academically sound research in federal regulatory decisions. The Foundation supports state and local conservation efforts as being of greater benefit to the warbler and that continued regulation under the Endangered Species Act can impede voluntary and local conservation efforts. The Texas Public Policy Foundation is based in Austin, Texas, and can be contacted through counsel for Petitioners.

Reason Foundation was founded in 1978 and is a 501(c)(3) nonprofit organization. Reason Foundation's nonpartisan public policy research promotes choice, competition, and a dynamic market economy as the foundation for human dignity and progress. Reason produces rigorous, peer-reviewed research and directly engages in the policy process, seeking strategies that emphasize cooperation, flexibility, local knowledge, transparency, accountability, and results. This delisting petition is consistent with Reason's mission to encourage voluntary efforts to support conservation using peer-reviewed research and to discourage unwarranted federal regulation of species. Reason Foundation is based in Los Angeles, California, and can be contacted through counsel for Petitioners.

Procedural history

1. Emergency listing decision—May 4, 1990

Under Section 4(a)(1) of the federal Endangered Species Act, the Secretary is required to evaluate five factors in determining whether to list a species as endangered:

> The Secretary shall by regulation . . . determine whether any species is an endangered species or a threatened species because of any of the following factors:

(A) the present or threatened destruction, modification, or curtailment of its habitat or range;

(B) overutilization for commercial, recreational, scientific, or educational purposes;

(C) disease or predation;

(D) the inadequacy of existing regulatory mechanisms; or

(E) other natural or man-made factors affecting its continued existence.[21]

On May 4, 1990, FWS published an emergency listing for the golden-cheeked warbler, stating that "an emergency posing a significant risk to the well-being of the golden-cheeked warbler exists as a result of on-going and imminent habitat destruction by both illegal and legal clearing" in and around the City of Austin in Travis County, Texas. At the time of the emergency listing, FWS believed that warbler breeding habitat was very limited—31,750 to 106,750 hectares located primarily in Travis County, Texas—according to a study conducted for FWS by Wahl et al. in 1990. Wahl et al.'s analysis was based on three key sources of information: satellite images from 1974, 1976, and 1981used to classify warbler habitat; the decision to exclude habitat under 50 hectares; and density estimates from a 1976 study by Pulich used to estimate the total warbler population.

2. Final listing decision—December 27, 1990

On December 27, 1990, FWS published its final rule to list the golden-cheeked warbler as endangered based solely on evidence found to support the first factor, threatened habitat destruction. In response to the proposed rule several commentators suggested that FWS wait to make its listing decision, stating that "further studies and surveys should be conducted and evaluated before a final decision is made on whether or not to list the golden-cheeked warbler as endangered."[22] FWS ignored that advice, instead taking the position that the agency is required to make a decision within a year of the proposal on the best science it had available at the time.

The final rule again relied on the same habitat and population estimates of Wahl et al. (1990) along with Pulich (1976). The final rule stated FWS's belief at the time that "[b]ased on the assumption that all suitable habitat is occupied, the carrying capacity of the available suitable habitat area would support between 4,600–16,000 pairs of golden-cheeked warblers at a density of 15 pairs/100 hectares (247 acres)."[23] The primary reason for listing the warbler was the potential for habitat destruction, as described by

[21] 16 U.S.C. § 1533(a)(1).
[22] 55 Fed. Reg. at 53,156.
[23] *Id.* at 53,154.

Wahl et al.: "At present rates, the estimated maximum carrying capacity of the habitat will be 2,266–7,527 pairs of golden-cheeked warblers by the year 2000, a reduction in population size of more than 50 percent."[24] Echoing the emergency rule, the final rule emphasized that the primary threat to the warbler was habitat loss in Travis County.[25]

But FWS admitted in the final listing rule that its information on warbler habitat was so limited that it could not designate critical habitat along with the listing:

> Critical habitat for this species remains undeterminable at this time. There is currently insufficient information on warbler habitat requirements to support delineation of critical habitat boundaries throughout summer range. Although some areas of warbler habitat have been identified by satellite mapping, all the specific elements of the habitat that are critical to the survival of the golden-cheeked warbler are not known. For example, information is lacking on habitat configuration fragmentation corridors, and minimum patch size.[26]

3. FWS Species Recovery Plan—September 30, 1992

On September 30, 1992, FWS approved a Recovery Plan for the warbler based on the same scientific information that FWS relied on when issuing the 1990 listing decision. That Recovery Plan contained the following criteria based on FWS's flawed notion that there were few warblers in Texas and that the species' habitat was limited:

- Sufficient breeding habitat protection to ensure continued existence of at least one viable, self-sustaining population in each of the eight regions outlined in the plan;
- The potential for gene flow exists across regions between demographically self-sustaining populations needed for long-term viability;
- Sufficient and sustainable non-breeding habitat to support the breeding populations;
- All existing warbler populations on public lands are protected and managed to ensure their continued existence;
- All criteria met for 10 consecutive years.[27]

[24] *Id.* at 53,157.
[25] *Id.* at 53,156.
[26] *Id.* at 53,158.
[27] Recovery Plan at iv.

4. Five-Year Review—August 26, 2014

On April 21, 2006, FWS published a notice indicating its intent to perform a review of the warbler's status.[28] FWS then commissioned a report by Groce et al. (2010) that summarized available scientific information on the warbler and made general recommendations.[29] FWS published its Five-Year Review on August 26, 2014.[30]

The Five-Year Review correctly criticized the 1992 Recovery Plan for failing to address the statutory listing factors and for relying on out-of-date information, and stated that FWS was "in the process of revising the [1992] recovery plan."[31] And the Five-Year Review identified additional newly protected habitat, including 19,994,190 hectares of Department of Defense lands.[32]

The Five-Year Review did not, however, take advantage of the work already completed by Groce et al. (2010) reviewing the state of scientific knowledge concerning the warbler. The Five-Year Review concluded that "the greatest threat to [the golden-cheeked warbler] is habitat loss" and therefore "permanent protection of large blocks of contiguous habitat is necessary for the long-term survival and recovery of the [warbler]. Enough habitat should be protected in the breeding, migrating, and wintering habitat to support viable [warbler] populations."[33] Yet Groce et al. discussed studies that indicated "habitat type (semifragmented or fragmented) did not emerge as a significant predictor of territory abundances"; "[t]here was no difference in age structure of male warblers in unfragmented and fragmented study sites"; and "minimum patch size threshold for productivity of 15–24 h[ectares]."[34] The Five-Year Review also did not respond to the recommendation by Groce et al. that limited study sites for the warbler made population and habitat estimates unreliable: "Current estimates of demographics and habitat influences are derived from limited locations (i.e., Fort Hood and Travis County), thus, biasing estimates towards the eastern and central extent of the warbler range."[35] Instead, the Five-Year Review relied—as did the 1990 Final Rule—on the limited surveys of Pulich (1976) and Wahl et al. (1990).[36] Furthermore, Groce et al. cited multiple studies

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[28] Endangered and Threatened Wildlife and Plants; 5-Year Review of 25 Southwestern Species, 71 Fed. Reg. 20,714 (Apr. 21, 2006).
[29] Julie Groce et al., Five-year Status Review: Golden-Cheeked Warbler (Apr. 15, 2010) (prepared for Tex. Parks & Wildlife under Grant No. TX E-102-R).
[30] Five-Year Review.
[31] *Id.* at 3; *see also id.* at 4 ("A revision to the recovery plan is warranted and a draft is being developed.").
[32] *Id.* at 10.
[33] *Id.* at 16.
[34] Groce et al., *supra* note 29, at 86–87.
[35] *Id.* at 170.
[36] Five-Year Review at 5.

that detected "an increasing trend in density of warblers,"[37] while the Five-Year Review did not discuss these findings.[38] The Five-Year Review also questioned population demographics studies because of the need to consider pairing success to accurately estimate the female population while ignoring the discussion in Groce et al. of various estimates of warbler pairing success, generally ranging from 53 to 100 percent.[39] Finally, the Five-Year Review did not delineate what would be a "viable" warbler population.

Reasons for delisting the species as endangered

1. Standard of review

When the Secretary of Interior receives a petition to delist a species from the endangered species list, the Secretary must "make a finding" within 90 days "as to whether the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted."[40]

To determine if delisting is warranted, the Secretary must consider whether the petition contains:

1. The administrative measures sought;
2. The common and scientific name of the species;
3. A narrative justifying the measure based upon available information including past and present numbers, distribution and current threats to the species;
4. The status of the species in all or a significant portion of its range; and
5. Supporting documentation such as a bibliography, copies of publications, reports, letters from authorities, and maps.[41]

If the Secretary finds that there is information "that would lead a reasonable person to believe that the measures proposed in the petition may be warranted,"[42] the Secretary is required to "promptly commence a review of the status" of the species.[43]

Within 12 months of receiving the petition, the Secretary must issue a finding that the petitioned action is either warranted or not warranted.[44] If the petitioned action is warranted, the Secretary must promptly publish "a general notice and complete text of proposed regulation to implement such action" or publish a finding that the action is

[37] Groce et al., *supra* note 29, at 39–40.
[38] *See* Five-Year Review at 5.
[39] *Compare* Five-Year Review at 5, *with* Groce et al., *supra* note 29, at 44–45.
[40] 16 U.S.C. § 1533(b)(3)(A).
[41] 50 C.F.R. § 424.14(b)(2).
[42] *Id.* § 424.14(b)(1).
[43] 16 U.S.C. § 1533(b)(3)(A).
[44] *Id.* § 1533(b)(3)(B).

warranted but precluded at that time because of other pending proposals or efforts to change the status of species on the lists.[45]

To make a determination that a petition is warranted under 16 U.S.C. § 1533(b)(3)(B), the Secretary must consider the "best available scientific and commercial information" for the species.[46] The scientific and commercial information should consider whether there is a "present or threatened destruction, modification or curtailment of its habitat or range; over utilization for commercial, recreational, scientific, or education purposes; disease or predation"; inadequate existing regulations, or other factors that affect the species' continued existence.[47] In addition, the delisting petition and the scientific or commercial information must show that the species has either recovered to the point where protection of the species is no longer required or new information shows that the original data for classification was in error.[48]

Federal regulations provide three circumstances under which FWS may delist a previously listed species—extinction, recovery, and error. Petitioner seeks the delisting of the golden-cheeked warbler under the authority of 16 U.S.C. § 1533(b)(3), 5 U.S.C. § 553(e), and 50 C.F.R. § 424.11(d)(2) and (3), because the best available science today shows that the species is not endangered: the warbler was either listed in error[49] or has recovered since listing.[50]

Since the 1990 listing, multiple surveys and research have established that the warbler breeding habitat is five times larger, extending far beyond Travis County, and that the warbler population is an order of magnitude greater than FWS believed at the time. The exhaustive survey of these studies prepared by the Texas A&M Institute of Renewable Natural Resources, attached as Exhibit 1, summarizes these studies. Estimates of warbler habitat have dramatically increased—ranging between 551,668 and 1,771,552 hectares—due to improved classification techniques, better satellite image quality, and on-the-ground sampling.[51] Independent, peer-reviewed studies in 2012—Collier et al. and Mathewson et al.—and one independent, peer-reviewed study in 2013—Duarte et al.[52]—put the total potential habitat between 1,578,281 and 1,678,053 hectares,

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[45] *Id.* § 1533(b)(3)(B).
[46] 50 C.F.R. § 424.11(b).
[47] *Id.* § 424.11(c).
[48] *Id.* § 424.11(d).
[49] *Id.* § 424.11(d)(3).
[50] *Id.* § 424.11(d)(2).
[51] *See* Ex. 1, Texas A&M Survey 3 & 4 tbl. 1.
[52] The Five-Year Review cites Duarte et al. (2013) only to highlight the study's determination that warbler breeding habitat decreased 29 percent between 1999–2001 and 2010–2011. Five-Year Review at 8. The Five-Year Review fails to mention that Duarte et al.'s 1999–2001 habitat estimate for the warbler was 2,219,168 hectares—higher than any other published study to date, or that their 2010–2011 habitat estimate was 1,578,281

or nearly five times more habitat than originally estimated when the warbler was listed in 1990.[53] And the territory density estimates derived by Mathewson et al. (2012) were well within the range of most available information for the species (Table 1). These more recent studies represent the best available science on warbler habitat, carrying capacity, and abundance. And the reliability of these studies is underlined by the fact that these three peer-reviewed population estimates came to similar conclusions with regard to the extent of warbler breeding habitat.

This best available science, developed long after the 1976 study and the 1980s satellite images on which the listing was based, shows that the warbler does not meet the five statutory factors for listing the species. As summarized by Exhibit 1, the 2015 Texas A&M Survey, the original data on warbler habitat and population were based on a small number of study sites in a limited portion of the warbler's breeding range, while the best available scientific evidence today shows a much larger warbler habitat and population size than originally estimated. Because the golden-cheeked warbler does not meet the statutory factors, it should be delisted.

2. The best available science developed since the listing of the warbler in 1990 shows that the species is not endangered

In 2015, the Institute of Renewable Natural Resources at Texas A&M conducted a survey analyzing the status of the golden-cheeked warbler, attached to this Petition as Exhibit 1. The 2015 Texas A&M Survey summarized the extensive research and analysis that has been performed since 1990 and concluded that the warbler's listing status should be re-examined. This represents the best available science concerning the warbler, and it confirms that the warbler is not and never has been endangered in Texas and its habitat is far more abundantly available than FWS erroneously concluded in 1990.[54]

The information presented in this Petition demonstrates that the species has either recovered to the point where protection of the species is no longer required or presents new information demonstrating that the original data for classification was in error,[55] making the golden-cheeked warbler ineligible for continued listing as an endangered species. The golden-cheeked warbler habitat and population size were significantly

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hectares—in line with Mathewson et al. (2012) and Collier et al. (2012). Adam Duarte et al., *Spatiotemporal variation in range-wide Golden-cheeked Warbler breeding habitat*, 4 ECOSPHERE 5 (2013).

[53] Bret A. Collier et al., *Predicting patch occupancy in fragmented landscapes at the rangewide scale for an endangered species: an example of the American warbler*, 18 DIVERSITY & DISTRIB. 158 (2012); Heather A. Mathewson et al., *Estimating Breeding Season Abundance of Golden-Cheeked Warblers in Texas, USA*, 76 J. WILDLIFE MGMT. 1117 (2012); Duarte et al., *supra* note 52, at 5.

[54] Ex. 1, Texas A&M Survey at 2–13.

[55] 50 C.F.R. § 424.11(d).

underestimated in the 1990 listing. The best available scientific data today shows that habitat is at least five times larger and the warbler population is an order of magnitude larger than estimated in 1990. In addition, regulations will continue to protect the warbler and its habitat even after delisting (as discussed in Section 6 of this petition), and none of the other statutory factors are a significant threat to the warbler (as discussed in Sections 4, 5, and 7).

FWS's original listing of the warbler primarily relied upon the Wahl et al. (1990) estimate of warbler habitat of 338,035 hectares.[56] The Wahl et al. estimate was further reduced in the 1992 Recovery Plan to 237,163 hectares. This research was based on a small number of study sites in a limited portion of the warbler's breeding range.[57] As Groce et al. (2010) noted, "[w]hen the golden-cheeked warbler was listed as federally endangered, no known population size was provided for the species; rather, a range of possible population sizes was provided based on habitat and density estimates by Pulich (1976) and Wahl et al. (1990)."[58] The Wahl et al. study, and several other studies prior to 2010, sampled from small survey areas primarily within Fort Hood, which was problematic: "[T]he relative lack of warbler population estimates from other areas in the breeding range reflects the fact that both the species and the habitat have not been well studied outside of Fort Hood."[59] The pre-2010 studies' reliance on such a limited sample was based on an erroneous assumption that habitat conditions and warbler population densities were the same, or very similar, outside Fort Hood as inside Fort Hood.

Since the Wahl et al. study in 1990, a number of subsequent studies, summarized in Table 2, have estimated the range of warbler habitat at two to six times the estimate by Wahl et al. and estimated warbler population at many times—up to an order of magnitude—greater than the estimate by Wahl et al.

Morrison et al. (2012) described the flawed assumptions relied upon in the 1990 listing:

> For the golden-cheeked warbler, understanding of the species at the time of listing in 1990 was based on either incorrect or untested assumptions of species distribution within available habitats. Adhering to untested assumptions led to development of priorities for research and management that were well-intentioned but largely misguided. Ample information on the distribution of the warbler's habitats existed, however, which should have encouraged questions into the basis of population conditions when developing management prescriptions. Current knowledge clearly indicates

[56] R. Wahl, D.D. Diamond, & D. Shaw, *The Golden-cheeked Warbler: a status review* (unpubl., 1990); Recovery Plan.
[57] Ex. 1, Texas A&M Survey at 2.
[58] Groce et al., *supra* note 29.
[59] *Id.*

> that a new paradigm for the warbler is needed, that being one of a widely distributed species that is preadapted to occur within a variety of environmental conditions.[60]

Morrison et al. (2012) was published in a respected and widely-respected peer-reviewed scientific journal. And at least eight other studies described in Table 2 also estimated a much larger warbler habitat and population than was originally thought when FWS finalized the warbler listing in 1990 and published its Recovery Plan in 1992. FWS, however, ignored these studies in the 2014 Five-Year Review and instead relied on the out-of-date 1990 Wahl et al. study along with one 2007 SWCA study. More recent estimates since the early 1990s, contained in studies described in Table 2, of the warbler's total available habitat and population are based on much more scientifically valid and robust data: randomly sampled habitat patches on public and private land across the warbler's breeding range, congruent satellite imagery, and biological covariates known to influence warbler occurrence. One such recent study, Collier et al. (2012), identified 1,678,698 hectares of potential warbler breeding habitat.[61] This estimate falls within the range of potential warbler breeding habitat—643,454 to 1,679,234 hectares—identified by others since the listing decision (see Table 2).[62]

The 1990 Wahl et al. study used Landsat imagery at 60-meter resolution to classify potential warbler habitat.[63] More recent studies have improved on this classification dramatically, with the 2012 studies by Collier et al. and Mathewson et al. relying on 1-meter resolution aerial photography to classify habitat along with 30-meter resolution satellite imagery.[64] To put this into perspective, a 1-meter resolution image can have as much as 3,600 times greater detail than a 60-meter resolution image. This greater detail allows for more accurate classification of landscape features, such as the types of vegetation that constitute warbler habitat, than is possible with lower-resolution imagery. In addition, recent studies rely on more sophisticated remote sensing classification techniques that take advantage of the enormous progress in computing power since the 1990 Wahl et al. study.

Groce et al. (2010), commissioned by FWS to undertake the Five-Year Review, recognized how more recent studies used more sophisticated estimation techniques to improve survey estimates of the warbler breeding population:

> Although most studies discussed in previous sections incorporated multiple site visits in their survey methods, the inclusion of detection probabilities as

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[60] Michael L. Morrison et al., *The Prevailing Paradigm as a Hindrance to Conservation*, 36 WILDLIFE SOC'Y BULLETIN 408 (2012).
[61] Collier et al., *supra* note 53.
[62] *See* Table 2.
[63] Final Rule, 55 Fed. Reg. at 53,155.
[64] Mathewson et al., *supra* note 53, at 1118; Collier et al., *supra* note 53, at 160.

> a component of golden-cheeked warbler research is relatively recent. . . . Results from these [more recent] studies indicate warblers are more likely to be detected in certain locations and at certain times of the breeding season. Low detection probabilities would necessitate increasing the number of visits to a site to limit non-detection errors (MacKenzie and Royle 2005).[65]

In their 2012 study, Morrison et al. summarized how recent studies have re-examined pre-existing assumptions concerning warbler habitat and abundance:

> It is evident that the golden-cheeked warbler is widely distributed throughout its breeding range (Collier et al. 2012), is breeding successfully in a variety of habitat conditions (Butcher et al. 2010, Klassen et al. 2012, see also Campomizzi et al., this section), and is more abundant than previous estimates have indicated (Mathewson et al. 2012). Within those areas with the longest record of research, the warbler has been shown to occur at a roughly stable abundance and shows a level of breeding success expected for similar species (Groce et al. 2010). Additionally, there is scant evidence that habitat or other resources are limited outside of the Texas breeding range. We are not implying that there are no potential threats that could negatively impact the warbler's distribution and abundance; however, given current estimates of habitat and abundance, their situation may not be as dire as it was originally assumed.[66]

The 2015 Texas A&M Survey determined:

> Regardless of the actual warbler population size, it is clear that there are substantially more warblers than assumed at the time of listing (Mathewson et al. 2012), the available warbler breeding habitat is much more widely distributed than initially thought (Collier et al. 2012), and that breeding warblers inhabit a much wider range of habitat conditions than identified during early studies (e.g., Klassen et al. 2012). In addition, there is no genetic evidence that warblers have demographically self-sustaining populations, and thus, there is no basis for managing warblers as separate population entities across the recovery regions (Lindsay et al. 2008).[67]

The best available, peer-reviewed scientific evidence therefore presents a new perspective on the golden-cheeked warbler. Its breeding habitat is more widely distributed; its preferred habitat conditions are wider ranging; and its population is much larger than originally estimated.

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[65] Groce et al., *supra* note 29, at 69–70.
[66] Morrison et al., *supra* note 60.
[67] Ex. 1, Texas A&M Survey at 15.

3. The scientific evidence confirms that there are more warblers and more habitat than FWS believed existed when it listed the species as endangered

A. Breeding habitat estimates

At the time of its listing, research conducted on a small number of study sites, primarily at Fort Hood, located in the eastern portion of the warbler's breeding range suggested that there were roughly 328,929 hectares of potential warbler habitat in Texas (Wahl et al. 1990).[68] Since that time, there have been numerous updates to this original warbler breeding habitat estimate. Results have been highly variable due to differences in land cover classification techniques, source imagery (year collected, image quality, resolution), post-hoc adjustments (minimum patch size requirements, estimated conversion rates, personal opinion), counties included as part of the warbler's breeding range, access to private land for surveys, and actual change in ground cover over time. But all of the recent studies confirm that FWS was wrong in its original conclusion that the warbler species is rare, on which it based its 1990 listing decision.

The most recent estimates, based on randomly sampled patches on public and private land across the warbler's breeding range, congruent satellite imagery, and biological factors known to influence warbler occurrence, identified 1,678,053 hectares (Collier et al. 2012; Mathewson et al. 2012) and 1,678,281 hectares (Duarte et al. 2013) of potential warbler breeding habitat. These estimates fall within the range of potential warbler breeding habitat identified by others since the listing decision (551,668–1,771,552 hectares; Table 2).

The Collier et al. (2012) habitat model provides the first probabilistic predictions for the likelihood of patch occupancy by warblers and was constructed using data and statistical procedures that were appropriate for the scale and scope of the project. Collier et al. thus is the most robust habitat model available. The Collier et al. study indicates that there is five times more warbler breeding habitat than identified at the time of the warbler's listing, that there are a large number of warbler habitat patches across their breeding range, and that these patches are not separated by large distances.[69]

B. Winter and migratory habitat estimates

Recent studies have also provided estimates of the warbler's winter and migratory habitat estimates. Warblers winter in pine-oak forests of southern Mexico, Guatemala, Honduras, El Salvador, Nicaragua, and possibly Costa Rica at elevations between 792 and 2,591 meters (Komar et al. 2011). Warblers may also be found in pine, cloud or broadleaf forests; scrub habitat; or agricultural areas (Rappole et al. 2003; Potosem and Muñoz 2007; McCrary et al. 2009). Using U.S. Geological Survey data and Landsat

[68] *See* Recovery Plan.
[69] Collier et al., *supra* note 53.

imagery, Rappole et al. (2003) estimated 673,397 hectares of potential pine oak-habitat on the wintering grounds (excluding Nicaragua). Those authors acknowledged that known detections, however, fell into a USGS land cover class of "evergreen needleleaf forest" that they did not include in their initial analyses; this additional class could add 440,298 hectares to their estimate, resulting in 1,113,695 hectares of potential winter habitat.[70]

In addition, the Alliance for the Conservation of Mesoamerican Pine-Oak Forests estimated 1,942,491 hectares of potential warbler wintering habitat, including parks and protected areas that exist along the migration route.[71]

C. Breeding population estimates

Population estimates extrapolated from research conducted on a small number of study sites located in the eastern portion of the warbler's breeding range suggested that there were 13,800 warbler territories in Texas at the time of the warbler's emergency listing as federally endangered (Wahl et al. 1990).[72] Subsequent population estimates based on improved imagery (though still quantified using a small number of site-specific observations, qualitative definitions of warbler habitat based on personal opinion, and assumptions of constant density across the warbler's breeding range) indicated that there were 13,000–230,000 warblers (Table 2). Most recently, Mathewson et al. (2012) estimated the warbler population size using models of patch-specific densities derived from randomly located range-wide abundance surveys, and then developed a predictive equation that related biological metrics to patch-scale density. They found that patch-specific occupancy probability (which is a function of patch size and landscape composition; Collier et al. 2012) was the best predictor of patch-specific densities, and estimated the population of male warblers at 263,339 (95% confidence interval = 223,927–302,620). Mathewson et al.'s territory density estimate was well within the range of most available information for the species (Table 1). Without accounting for detection probability, which would have increased the overall population estimate, this indicates that there are 19 times more warblers than assumed at the time of the emergency listing decision.

FWS's Five-Year Review suggested that the Mathewson et al. (2012) model may have over-predicted warbler density estimates, and, therefore, resulted in inflated population estimates by FWS in 2014. FWS noted concerns that patch-specific territory density estimates with known warbler numbers are lower than predicted by the range-

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[70] John H. Rappole, David I. King, & Jeffrey Diez, *Winter- vs. breeding habitat limitation for an endangered avian migrant*, 13 ECOLOGICAL APPLICATIONS 735 (2003).
[71] Alianza para la Conservación de los Bosques de Pino-Encino de Mesoamérica, Plan de Conservación de los Bosques de Pino-Encino de Centroamérica y el Ave Migratoria *Dendroica chrysoparia* (2008).
[72] *See* Recovery Plan.

wide estimates. But this is a misapplication of the model results, which the authors explained should only be applied at the range-wide scale. Mathewson et al. used data and statistical procedures that were appropriate for the scale and scope of the project (i.e., patches were randomly sampled on public and private land across the warbler's breeding range, imagery was current to the study). In addition, their overall estimates align with other habitat and population estimates when assumptions regarding habitat quality are removed (Table 2).

The territory density estimates derived by Mathewson et al. (2012) were also well within the range of most available information for the species (Table 1). Relationships between warbler density and patch-scale metrics used by Mathewson et al. to predict abundance across the species' range were consistent with patch-scale metrics previously shown to affect warbler density at local scales (Magness et al. 2006; Baccus et al. 2007). While the Mathewson et al. model should not be used at the local scale, as noted by the authors in their peer-reviewed manuscript, the Mathewson et al. study provided patch-specific predictions of warbler density across the species' breeding range and represents the best available warbler breeding population estimate. That some individuals misapply the Mathewson et al. work does not in any way negate its validity.

D. Survival

Using data collected from a small portion of the warbler's breeding range (Fort Hood Military Reservation, Coryell and Bell counties, Texas) and assuming metapopulation dynamics (but see Lindsay et al. 2008 below), Alldredge et al. (2004) developed the population viability model used to guide conservation decisions by the FWS. Results of their analyses suggest that the probability of warbler extinction over the next 100 years is low as long as enough habitat exists to support more than 3,000 breeding pairs in each of the eight defined recovery regions.

More recent studies confirm the total amount of available warbler habitat exceeds this threshold (Mathewson et al. 2012), and Hatfield et al. (2012) recently suggested that recovery region boundaries should be re-established to reflect warbler biology as opposed to watershed boundaries. Under this paradigm, recovery metrics would not include estimates of abundance across the eight recovery regions, which currently require a minimum of 3,000 males per recovery region, since these initial estimates were based off small-scale studies. We now know that density varies widely across the warbler's breeding range, and warblers do not exist as a metapopulation (Lindsay et al. 2008). The survival of the species thus depends on the number of warblers as a whole, not the number of warblers in each artificially constructed recovery region.

In a more recent analysis, Duarte et al. (2014) found (again using data collected at Fort Hood) that adult survival rates were only slightly lower than those initially estimated by Alldredge et al. (2004) (mean apparent survival for Duarte et al. = 0.47 and mean apparent survival for Alldredge et al. = 0.56). The Duarte et al. study further recognized

that warbler survival rates coincided with those obtained for other closely related warbler species.

E. Productivity

Pairing success of the species is generally high (typically >70%) and studies suggest that estimates of this metric depend on factors such as tree species composition (Marshall et al. 2013), male age (Jetté et al. 1998), and warbler territory density (Farrell et al. 2012). Territory success (proportion of territories that successfully fledge young) is also relatively high (typically >50%) and exhibits similar trends with tree species composition (Marshall et al. 2013), male age (Pruett 2014), and warbler territory density (Farrell et al. 2012). Fecundity is difficult to compare across years due to inconsistencies in measuring, reporting, and that warblers split broods (biasing fledging counts low), but estimates of fecundity are consistently high on the Fort Hood Military Reservation (1.13–2.06 young per territory; Anders 2000) and City of Austin properties (1.82–3.04 young per territory; City of Austin 2011, 2012, 2013).

While warbler management guidelines identify large-tracts of oak-juniper woodland with greater than 70% cover as high quality breeding habitat, more recent research indicates that relationships between woodland stand characteristics and fledging success vary regionally (Campomizzi et al. 2012). In the Limestone Cut Plain Ecoregion, where most warbler research has been conducted, the predicted probability of warbler fledging success increased with increasing patch size, decreasing patch edge-to-area ratio, and increasing percent cover. This coincides with site-specific nest survival data obtained at the Fort Hood Military Reservation and in the Austin area (Stake 2003; Peak 2007; Reidy et al. 2009b; Peak and Thompson 2014). These relationships are not consistent across ecoregions (Campomizzi et al. 2012), however, and warblers will fledge young in areas with less than 20% canopy cover, especially in the southern portion of their breeding range (Klassen et al. 2012). In addition, experimental, song-playback studies provide evidence that warblers can be drawn into previously unoccupied woodland stands with less canopy cover and successfully fledge young outside the habitat conditions typically considered suitable for the species (Farrell et al. 2012).

Alliance for the Conservation of Mesoamerican Pine-Oak Forests (2008) estimated that 74% of the original pine-oak forest cover remains on the warbler's wintering grounds in Mexico and Central America, and that 7% of the warbler's existing habitat is located in protected areas. Primary conversion threats include unsustainable forestry practices that are incompatible with conservation, forest fires, and commercial logging (ACMPOF 2008). Parks and protected areas exist along the migration route, but no data exists regarding the amount of potential stopover habitat.

F. Genetics

Genetic studies performed using DNA collected from 109 individuals at seven

study sites across the warblers' range in 2004 and 2005 showed no evidence of genetic bottlenecks or genetic differentiation (Lindsay et al. 2008). The latter results indicate that current allelic richness and heterozygosity are relatively high and similar to those of other warbler species, and suggests no genetic basis for managing warblers as separate population entities (i.e., there is no genetic basis for assuming metapopulation dynamics; Lindsay et al. 2008).

4. Disease, predation, and brood parasitism have never been a basis for listing this species as endangered

Although the final rule listing the species in 1990 suggests that fire ants could become a threat to young warblers, there has been no evidence supporting this supposition.[73] Documented warbler predators (adults and young) include snakes, birds, mammals, and red-imported fire ants (*Solenopsis invicta*) (Stake et al. 2004; Reidy et al. 2008; Reidy et al. 2009a). Stake et al. (2004) noted that the height of warbler nests reduced the risk of fire ant predation and that warblers are not the main target of other birds or mammals. Brood parasitism varies annually, but is uncommon and represents a small risk to overall warbler nest survival (Groce et al. 2010). Anders (2000) recorded no brood parasitism by cowbirds during her study of warbler territories within Fort Hood. This factor thus also supports delisting the species.

At most there is one documented outbreak in 2012 of avian pox that was confirmed on Balcones Canyonlands Preserve in Austin, Texas properties after several warblers were reported with swollen and bleeding feet, legs, and lesions on the face, legs and feet.[74] City of Austin researchers recommended exercising care when handling the birds in those locations to minimize the spread of the infection.[75] This appears to be an isolated event and there are no other disease detection records for this species. Therefore, this factor continues to support delisting this species.

5. The warbler habitat is secure and the warbler will remain protected after delisting

Due to overlap and redundancy in state and federal regulatory mechanisms, delisting the golden-cheeked warbler under the federal Endangered Species Act will not deprive it of any significant regulatory protections. Apart from the Endangered Species Act, many other regulatory mechanisms exist to ensure that the populations and habitat of the golden-cheeked warbler remain protected after delisting. These include the Migratory Bird Treaty Act of 1918,[76] the 1975 Texas Endangered Species law,[77] the Balcones

[73] 55 Fed. Reg. at 53,158.
[74] The City of Austin, State of Our Environment Report 19 (2012).
[75] *Id.*
[76] 16 U.S.C. §§ 703–12.

Canyonlands National Wildlife Refuge, conservation plans on Fort Hood, approximately 160 habitat conservation plans on private lands that are enforceable by FWS, and the Alliance for the Conservation of Mesoamerican Pine-Oak Forests that protects the warbler's wintering habitat in Central America. Warbler habitat is actively managed on many Texas Parks and Wildlife Management Areas, Nature Conservancy properties in Texas, and on other public and private lands.[78]

FWS has never designated critical habitat for the golden-cheeked warbler. FWS declined to designate critical habitat in both the 1990 emergency listing[79] and final listing.[80] And in a 1994 letter to the Governor of Texas, the Secretary of the Interior stated:

> [T]he designation of critical habitat for the warbler will be neither necessary nor prudent because it will provide no net benefit to the species. I have therefore instructed the U.S. Fish and Wildlife Service to cease work on warbler critical habitat designation.[81]

Since the environmental baseline is that the warbler as listed does not have any of the regulatory benefits of critical habitat designation, delisting the species does not remove any of those protections— the critical habitat baseline remains the same regardless of whether the species is listed.

A. Migratory Bird Treaty Act

Delisting will not affect the populations of the golden-cheeked warbler, which will continue to be protected under the federal Migratory Bird Treaty Act.[82] The Migratory Bird Treaty Act makes it unlawful

> to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase,

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[77] Tex. Acts 1975, 64th Leg., p. 1405, ch. 545 (codified at 5 Tex. Parks & Wildlife Code § 68.001 et seq.).
[78] *See, e.g.*, The Nature Conservancy, Texas: Golden-Cheeked Warbler, *at* http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/texas/explore/birds-golden-cheeked-warbler.xml ("The Nature Conservancy is actively protecting habitat for the rare bird at the Barton Creek Habitat Preserve and Love Creek Preserve. The Nature Conservancy also participates in numerous private and public partnerships aimed at preserving essential breeding habitat such as our community-based conservation work along the Blanco, Pedernales, Frio, and Nueces and Sabinal Rivers.").
[79] 55 Fed. Reg. at 18,844.
[80] 55 Fed. Reg. at 53,159.
[81] Letter from Bruce Babbitt, Sec'y of Interior to Gov. Ann Richardson (Sep. 22, 1994).
[82] Migratory Bird Treaty Act of 1918, 40 Stat. 755 (codified at 16 U.S.C. §§ 703–12).

> deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof . . . .[83]

Violations are punishable by fine and imprisonment, as well as forfeit of equipment used in such acts.[84]

FWS also recently announced that it was considering various approaches to regulating incidental take of migratory birds.[85] The approaches could include

> issuance of general incidental take authorizations for some types of hazards to birds associated with particular industry sectors; issuance of individual permits authorizing incidental take from particular projects or activities; development of memoranda of understanding with Federal agencies authorizing incidental take from those agencies' operations and activities; and/or development of voluntary guidance for industry sectors regarding operational techniques or technologies that can avoid or minimize incidental take.[86]

Such rulemaking would also "establish appropriate standards for any such regulatory approach to ensure that incidental take of migratory birds is appropriately mitigated, which may include requiring measures to avoid or minimize take or securing compensation."[87] This announcement is further evidence that FWS has options available to it under the Migratory Bird Treaty Act to protect the golden-cheeked warbler, even after delisting.[88]

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[83] 16 U.S.C. § 703(a).

[84] 16 U.S.C. § 707; *see, e.g.*, *Pacificorp Pleads Guilty To Violating Migratory Bird Treaty Act*, N. AM. WINDPOWER (Dec. 22, 2014), *at* http://www.nawindpower.com/e107_plugins/content/content.php?content.13781; Linda Chiem, *Citgo Could Pay $2M After Judge Backs Bird Death Conviction*, LAW360 (Sep. 10, 2012), *at* http://www.law360.com/articles/376571.

[85] Migratory Bird Permits; Programmatic Environmental Impact Statement, 80 Fed. Reg. 30,032 (May 26, 2015).

[86] 80 Fed. Reg. at 30,033.

[87] *Id.*

[88] *See, e.g.*, U.S. Fish & Wildlife Serv., Migratory Bird Program: Management, *at* http://www.fws.gov/birds/management.php ("To manage birds and their habitats, [FWS] work[s] with bird conservation partnerships comprising federal and state agencies,

B. Texas Endangered Species Act

The warbler also remains separately listed and protected under the Texas Endangered Species Act, which provides:

> No person may capture, trap, take, or kill, or attempt to capture, trap, take, or kill, endangered fish or wildlife . . . possess, sell, distribute, or offer or advertise for sale endangered fish or wildlife . . . possess, sell, distribute, or offer or advertise for sale any goods made from endangered fish or wildlife...sell, advertise, or offer for sale any species of fish or wildlife not classified as endangered under the name of any endangered fish or wildlife.[89]

C. Balcones Canyonlands National Wildlife Refuge

Nor will delisting affect the protection of prime golden-cheeked warbler habitat in the Balcones Canyonlands National Wildlife Refuge, a 30,000-acre area in Travis County, Texas that was set aside in 1996 and is managed to protect the populations of the golden-cheeked warbler, black-capped vireo, and six invertebrates. The City of Austin and Travis County are required to report annually to FWS on warbler populations, habitat protection and scientific research—none of which will be altered by delisting.[90]

Fort Hood has the largest populations of two listed migratory songbirds—the golden-cheeked warbler and the black-capped vireo.[91] "Fort Hood contains an estimated 22,591 h[ectares] (roughly 25% of the total area of the installation) of habitat suitable for the federally endangered golden-cheeked warbler (*Setophaga chrysoparia*; warbler), which supports between 4,482 and 7,236 territorial male warblers . . . ."[92] Fort Hood developed an Endangered Species Management Plan, established core and non-core habitat areas, and regularly monitored the populations of these two songbirds.[93]

Tribes, nongovernment organizations, universities, corporations, individuals with expertise in bird conservation, and private landowners. These partnerships develop and implement management plans that provide explicit, strategic and adaptive sets of conservation actions required to return and maintain species to healthy and sustainable levels.").

[89] 5 Tex. Parks & Wildlife Code § 68.015.

[90] Travis Cnty., Tex., The Balcones Canyon Conservation Plan, *at* https://www.traviscountytx.gov/tnr/bccp.

[91] Charles E. Pekins, Dep't of the Army Envtl. Div., Conserving Biodiversity on Military Lands: A Guide for Natural Resources Managers chpt. 5, *available at* http://www.dodbiodiversity.org/case_studies/ch_5_2.html.

[92] David W. Wolfe et al., *Regional Credit Market for Species Conservation: Developing the Fort Hood Recovery Credit System*, 36 WILDLIFE SOC'Y BULLETIN 423, 424 (2012).

[93] Pekins, *supra* note 91, at chpt. 5.

According to an Army case study, "Fort Hood has greatly exceeded population and habitat goals" for the warbler and vireo.[94] And a study by Anders (2000) found that the warbler population within Fort Hood had increased in number and density since the early 1990s. The conservation status of the warbler at Fort Hood will not be impacted by delisting the warbler.

In addition, Executive Order 13,186 requires "each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement, within 2 years, a Memorandum of Understanding (MOU) with the Fish and Wildlife Service . . . that shall promote the conservation of migratory bird populations."[95] Through this Executive Order, federal agencies are required to incorporate warbler conservation considerations into their plans and report annually on implementation of the Order.

D. The Recovery Credit System

The Recovery Credit System (RCS), a voluntary natural resource management program developed by the Texas Department of Agriculture, also provides technical guidance and assistance to private landowners near the Fort Hood Military Reservation with qualifying lands that support warbler habitat. The goal of this program is to mitigate adverse impacts to habitat that result from military training activities. Since July 2006, the total investment for implementation of the RCS is $1,954,666 and the 20 participating landowners' cost share is $451,295. Contract terms range from 10–25 years and the program protects approximately 881 hectares of warbler breeding habitat on private land. The Robertson Consulting Group conducted a third-party, independent peer review of the RCS, published in 2010, that details the program's success.[96] And a study by Wolfe et al. (2012) determined that by using the Recovery Credit System, "[c]lear benefits have been achieved in terms of acres under conservation management for the species."

E. Habitat Identification/Treatment Criteria

The black-capped vireo and golden-cheeked warbler Habitat Identification/Treatment Criteria developed by the U.S. Department of Agriculture's Natural Resource Conservation Service (NCRS) Brush Management Consultation provides technical guidance for brush clearing to avoid warbler breeding habitat on properties with NRCS contracts.

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[94] *Id.*

[95] Executive Order 13,186 of January 10, 2001: Responsibilities of Federal Agencies to Protect Migratory Birds, 3 C.F.R. 13,186 (2002).

[96] Third Party Evaluation of the Recovery Credit System Proof of Concept (March 2010), *available at* http://rcs.tamu.edu/media/277203/final_rcs_eval_report_march_2010.pdf.

F. Alliance for the Conservation of Mesoamerican Pine-Oak Forests

Protection of warbler wintering habitat outside the United States (which is beyond the jurisdiction of the Endangered Species Act) remains after delisting under the Alliance for the Conservation of Mesoamerican Pine-Oak Forests, established in 2003. This voluntary international cooperative partnership includes members from many national nongovernmental organizations in Mexico, Guatemala, El Salvador, Honduras, Nicaragua, and the United States (including the Nature Conservancy, Texas Parks and Wildlife Department, and the Zoo Conservation Outreach Program). The Alliance's conservation plan, published in 2008, directs management and preservation actions in the pine-oak ecoregion in Central America, where most warbler wintering habitat is located.

G. Habitat conservation plans

FWS has issued Endangered Species Act permits to approximately 160 landowners who have entered into habitat conservation agreements to protect warbler habitat, enforceable by FWS. The agreements are not affected by delisting and will continue to protect the warbler as well as other listed species.[97]

6. Other natural and manmade factors support delisting

Because FWS erroneously concluded that few birds existed and little habitat was available for the species, FWS mistakenly concluded that any encroachments on warbler habitat would threaten the continued survival of the species. Current studies show that FWS was wrong in its original conclusions.

From 1992–2001, Groce et al. (2010) examined National Land Cover Data (NLCD) and estimated a net loss of 116,549 hectares (roughly 6%) of woodland within the warbler's breeding range during that time period. The highest conversion rates were identified near urban areas and were attributed to development and population growth. More recent Texas Land Trends analyses support this trend, as most land conversion from 1997–2012 occurred along with population expansion in the state's 25 fastest growing counties (txlandtrends.org).

Habitat fragmentation of existing breeding habitat represented a major concern at the time of the warbler's listing. Since then, range-wide studies conducted during the breeding season indicate that the predicted probability of occupancy increases from north to south with increasing patch size and mean percentage of woodland cover in the

[97] *See, e.g.*, 72 Fed. Reg. 59,109 (Oct. 18, 2007) (giving notice of a proposed habitat conservation plan that would set aside land for an on-site preserve and pay Balcones Canyonlands Preserve to purchase additional warbler habitat); 72 Fed. Reg. 74,323 (Dec. 31, 2007) (proposing to aside on-site mitigation land to be managed as part of the Balcones Canyonlands Preserve in perpetuity).

surrounding landscape (Collier et al. 2012). Site-specific research conducted by Butcher et al. (2010) found that warblers establish territories in patches as small as approximately 2.6 hectares in rural landscapes. Follow-up research conducted in the Austin area found that minimum patch size requirements for territory establishment were of similar size (~13 hectares; Robinson 2013). Combined, the Collier et al., Butcher et al., and Robinson studies emphasize the importance of large and small patches to sustain the warbler population on its breeding ground.

This coincides with site-specific research (Magnesss et al. 2006; Baccus et al. 2007; Peak and Thompson 2013). Though again, small patches do support warblers and the importance of these smaller areas should not be discounted. Patch size can also influence avian reproduction. Coldren (1998) found that pairing and fledging success increased with increased patch size. Minimum patch size for reproductive success is 16–18 hectares in a rural landscape (Butcher et al. 2010) and about 21 hectares in an urban environment (Arnold et al. 1996). However, in a range-wide study that included productivity data from 1,382 territories, Campomizzi et al. (2012) did not find consistent relationships between territory success and patch size or patch edge-to-area ratio across their breeding range.

A. Habitat degradation

In a study conducted in the western portion of the warbler's breeding range, Stewart et al. (2014b) found that the presence of oak wilt (a defoliating tree disease caused by the fungus *Ceratocytis fagacearum*) did not affect warbler territory placement, but pairing success for males whose territories included some proportion of oak wilt had 27% lower pairing success. Stewart et al. (2014b) found no difference in fledging success between territories in oak wilt affected and unaffected forests. In a similar study conducted in the eastern portion of the warbler's breeding range, Appel and Camilli (2010) examined post-breeding habitat use in warblers in relation to oak wilt and found no difference in the use of affected and unaffected forest. Studies suggest that oak wilt is more likely to occur outside warbler habitat (Appel and Camilli 2010, Stewart et al. 2014a); Stewart et al. (2014a) found that oak wilt occurred in 4.1% of their study area and predicted that the amount of habitat affected will double by 2018 as the disease spreads.

Deer can limit oak survival when the saplings are browsed (Russell and Fowler 2002, 2004). No direct evidence suggests, however, that herbivory by native or non-native browsers is contributing to reduced habitat (or habitat suitability) for the warbler. Murray et al. (2013) investigated local declines in Texas red oak (*Quercus buckleyi*) at Balcones Canyonlands National Wildlife Refuge, but concluded that fire suppression and drought were likely the cause of reduced oak density. Similarly, Yao et al. (2012) suggested fire could have a dual effect on warbler habitat (such that reduced tree density could reduce suitability), but oak recruitment is typically high following moderate to high intensity fires. Yao et al. showed that properly managed fires can increase future habitat

suitability for warblers by increasing tree diversity.

B. Management practices

At the time of listing, FWS assumed that any Ashe juniper removal from warbler habitat would have a negative effect on the species.[98] Marshall et al. (2012) found, however, that a higher proportion of territories successfully fledged young in areas where understory juniper was thinned when compared to untreated control sites. Warbler territory density was also similar between the thinned sites and control sites, which suggests that the pattern of higher productivity in the treated areas did not result from density dependent mechanisms.

C. Noise

Lackey et al. (2012) found similar warbler abundance, pairing success, and fledging success across road-noise-only sites, road construction sites, and control sites, and there was no relationship between warbler reproductive success and distance from the roadway. Similarly, warblers at the Fort Hood Military Reservation occupy and breed in patches exposed to active military activity and there is no correlation between warbler reproductive success and noise level (Lopez et al. 2012). Both studies suggest that warblers habituate to noise disturbance.

Conclusion

Because golden-cheeked warbler populations and habitat are far greater than FWS believed in 1990, the species should not have been listed as endangered and, based on new scientific, peer-reviewed studies and evidence confirming the species is not in danger of extinction throughout all or any significant part of its range, the species should be removed from the federal endangered species list.

Respectfully submitted,

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[98] 55 Fed. Reg. at 53,154.

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Exhibit 1: Texas A&M Survey

Tex. A&M Inst. of Renewable Natural Resources, Conservation Status of the Federally Endangered Golden-cheeked Warbler (unpublished research summary, June 2015), *available at* http://irnr.tamu.edu/publications/research-reports/.

Exhibit 2: Enclosed bibliography

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Table 1: Summary of patch-specific golden-cheeked warbler territory density estimates[99]

Source	Density (males/ha)	Location	Survey method
Pulich 1976	0.03–0.13	Dallas, Bosque, Kendall counties	Census
Kroll 1980	0.12–0.20	Bosque county	Territory mapping
Wahl et al. 1990	0.08-0.63	Rangewide	1.6 km Emlen strip census
Jetté 1998	0.14–0.28 (1992–1996)	Fort Hood (Coryell County)	Territory mapping
Peak 2003	0.10–0.22 (Site 1, 1999–2003) 0.25–0.37 (Site 2, 1999–2003)	Fort Hood (Coryell County)	# males / size of study site
Peak and Lusk 2009	0.21–0.29 (2003–2009)	Fort Hood (Coryell County)	# males / size of study site
Peak and Grigsby 2011, 2012, 2013	0.27–0.32 (2011–2013)	Fort Hood (Coryell County)	# males / size of study site
City of Austin & Travis County 2013	0.17–0.44 (1999–2013)	BCP (Travis County)	Territory mapping
Cooksey & Edwards 2008	0.04–0.20 (1991–2008)	Camp Bullis (Bexar County)	Point counts along transects
Mathewson et al. 2012	0.23	Rangewide	Point counts at random points in patches

[99] Adapted from Ex. 1, Texas A&M Survey at 9 tbl.2.

Table 2: Summary of golden-cheeked warbler breeding habitat and population estimates[100]

Reference	Total potential habitat (hectares)	Habitat delineation method	Density estimate	Density method	Total population	Population method	Advantages	Limitations
Pulich 1976	130,017	Used Soil Conservation Service definition of ‘‘virgin Ashe juniper’’ (stands 20–40 ft. trees >75 years old), reduced by author; no imagery used	"good" = 0.125 pairs/ha; "average" = 0.05 pairs/ha; "marginal = 0.03 pairs/ha	Spot-mapping with marked population in Dallas, Bosque, Kendall counties; Census surveys conducted in 1962 and 1974	1962: 15,630 individuals; 1974: 14,950 individuals	Calculated proportion of total habitat for each of 3 habitat quality ranks (23%, 31%, and 46%, respectively), multiplied by respective density estimates	Calculated proportion of total habitat for each of 3 habitat quality ranks (23%, 31%, and 46%, respectively), multiplied by respective density estimates	Site-specific estimates from a small number of sites applied to entire range; Narrow habitat definition; Assumed constant density across the warbler's breeding range; Projected density within 3 qualitative habitat assessment ranks.
Wahl et al. 1990	337,993 236,984 (corrected)	Corrected values for habitat loss and patch size; 1974, 1976, and 1981 Landsat imagery, unsupervised and supervised classification from known breeding locations (see Shaw 1989); 1989 value is corrected for estimated habitat loss	0.149 pairs/ha	Median estimate for 16 sites in 11 counties determined primarily by 1-mile transect method (Emlen 1971); surveys conducted in 1987, 1988	Carrying capacity: 4,822–16,016 pairs	Median density estimate projected to total potential habitat estimates after corrections	First attempt to use remote sensing for warbler habitat mapping	Assumed constant density across the warbler's breeding range; Imagery for habitat map did not include all portions of the breeding range; Used asynchronous remote imagery to define habitat; Corrected based on assumed habitat change and warbler-habitat relationships (e.g., patches <0.02 mi^2 unoccupied); Site-specific estimates applied range-wide; Data collected primarily on public lands

[100] Adapted from Ex. 1, Texas A&M Survey at 4–6 tbl.1.

Reference	Total potential habitat (hectares)	Habitat delineation method	Density estimate	Density method	Total population	Population method	Advantages	Limitations
FWS 1992	329,447	Used Wahl et al. (1990) habitat total estimate for 1989 adjusted for estimated habitat loss; included the assumption that 34% of patches <0.02 mi^2 are occupied. Estimates included counties with > 3.8 mi^2 of potential warbler habitat.	Used Pulich (1976): "good" = 0.125 pairs/ha; "average" = 0.05 pairs/ha; "marginal = 0.03 pairs/ha	Estimates for each of 3 habitat ranks from Pulich (1976)	13,800 territories	Followed Pulich (1976) proportions of habitat quality assuming same proportions apply to habitat delineated by Wahl et al. (1990); not corrected for patch size	See above	See above
Rowell et al. 1995	116,549 (method 1) 545,970 (method 2)	Method 1 used unsupervised classification of polygons; derived from generalized locations constraining typical warbler habitat. Method 2 used supervised classification from point locations; derived using limited warbler detections and included patches < 0.2 mi^2. Use d 1990–1992 Landsat, Ashe juniper-deciduous woodlands with >75% canopy cover and patches >0.02 mi^2.	0.3 individuals/ha	Estimates from Wahl et al. (1990)	Carrying capacity: 64,520 individuals	Projected density to total habitat from Method 2 for patches >0.02 mi^2 because less variation in spectral reflectance compared to Method 1	Based on improved imagery from a narrow period of time; Habitat classifications based on larger warbler occurrence data sets	Did not conduct range-wide field surveys; Vegetation data used to drive classification collected at few study sites; Assumed constant density across the warbler's breeding range; Corrected based on assumed warbler-habitat relationships (e.g., patches <0.02 mi2 unoccupied; estimated at 40% of the total area classified as potential habitat)

Reference	Total potential habitat (hectares)	Habitat delineation method	Density estimate	Density method	Total population	Population method	Advantages	Limitations
Diamond & True 1998	1,652,153 (1986) 1,676,240 (1996–1997)	1986 and 1996–1997 Landsat; land cover classified as Ashe juniper, or mixed juniperoak forest/woodland, or mixed or primarily deciduous forest	NA	NA	NA	NA	Clearly identified limitations	Occupancy within potential habitat unknown; classification accuracy questioned
Rappole et al. 2003	653,353	Used Diamond and True (1998) classification but removed patches <0.02 mi^2	0.188 territorial males/ha 89% pairing success	Estimates from 167 males from monitored population on Fort Hood, Coryell and Bell counties from 1992 to 1996 (Jetté et al. 1998)	228,426 (95% CI: 227,142–229,710) individuals	Adjusted mean density of males by 89% pairing success to estimate number of females	More inclusive habitat classification (included patches >0.02 mi^2)	Site-specific estimates from a small number of sites applied to entire range; Assumed constant density across the warbler's breeding range; Excluded ~29,000 hectares of potential warbler habitat; Adjusted based on pairing success at small number of study sites
DeBoer & Diamond 2006	756,536	Grouped forest cover types based on NLCD data; Included only patches >246 ft. from edge; Conducted occupancy surveys in 2002	NA	NA	NA	NA	Used metrics obtained at local and landscape scales; Collected data on 36 patches of privately owned land and 13 patches of publicly owned land	Limited field sampling across the range; Does not incorporate interpatch heterogeneity

Reference	Total potential habitat (hectares)	Habitat delineation method	Density estimate	Density method	Total population	Population method	Advantages	Limitations
Diamond 2007	1,678,571 (model C) 1,721,824 (model D)	Evergreen / forest / woodland or deciduous forest / woodland within 100 m of evergreen. Model C: adjusted for edge; Model D: with reduction for low canopy cover and addition for high canopy cover	NA	NA	NA	NA	Compared multiple models	Narrow habitat definition and included qualitative classification of habitat "quality"; Limited field data; unclear methodology
SWCA 2007	552,186	2004 digital imagery; >50% canopy closure composed of large Ashe juniper and deciduous trees; patches >0.02 mi	"high" = 0.22 pair/ha; "low" = 0.025 pair/ha	‘‘High’’ estimate from long-term monitoring study on Fort Hood, Bell and Coryell counties (Peak 2003); ‘‘low’’ estimate from surveys Government Canyon SNA, Bexar Co.	13,931–116,565 pairs; 20,445–26,978 pairs (adjusted)	Estimated using the SWCA habitat model; adjusted estimate based on personal opinion, based on assumptions of density with goal of deriving a ‘‘satisfactory minimum population estimate’’	Considered several landscape- scale metrics: density of woodland, proportions of Ashe juniper and deciduous trees, size of trees, patch size, land use	Site-specific estimates from a small number of sites applied to entire range; Included only high quality habitat, therefore narrow definition of warbler habitat not based on quality as it relates to productivity; Personal opinion used to adjust population estimates downward "We looked at the results of this application and did not like it."
Loomis Austin 2008	1,679,348	2001 NLCD average canopy cover in a 7 x 7 cell (cell = 98 ft.) neighborhood; potential habitat = all areas within 3 cells of areas with at least 50% mean canopy cover	NA	NA	NA	NA	Broad range in canopy cover considered potential habitat	Included qualitative classification of habitat "quality" based on canopy cover metrics; Limited field data collected small number of sites over long period of time (2001–2008); unclear methodology

Reference	Total potential habitat (hectares)	Habitat delineation method	Density estimate	Density method	Total population	Population method	Advantages	Limitations
Collier et al. 2012	1,678,053	2007 and 2008 Landsat 5; unsupervised classification; used NLCD to remove any cover types mis-classified as woodland and pixels identified as woodland, but with <30% canopy cover; used road layer to further define habitat patches	NA	NA	NA	NA	Data collection and statistical procedures were appropriate for the scale and scope of the project (patches were randomly sampled across the warbler's breeding range, imagery was current to the study); Included data collected public and private land; Used biological co-variates know to influence warbler occurrence; High predictive accuracy; Provided probabilistic prediction of the likelihood of patch occupancy	Did not incorporate interpatch heterogeneity

Reference	Total potential habitat (hectares)	Habitat delineation method	Density estimate	Density method	Total population	Population method	Advantages	Limitations
Mathewson et al. 2012	1,678,053	2007 and 2008 Landsat 5; unsupervised classification; used NLCD to remove any cover types mis-classified as woodland and pixels identified as woodland, but with <30% canopy cover; used road layer to further define habitat patches. (Collier et al. 2012)	0.23 males/ha (mean patch-specific density)	Abundance point counts done in 301 patches, such that each patch surveyed was given a density estimate	263,339 singing males (95% CI: 223,927–302,620)	Used predicted patch-specific density estimates as a function of predicted patch-specific occupancy probability and based on 1,000 simulated realizations of population distribution	Data collection and statistical procedures were appropriate for the scale and scope of the project (patches were randomly sampled across the warbler's breeding range, imagery was current to the study); Included data collected within 306 patches on public and private land; More conservative estimate than would have been projected by including detection probability	2009 population estimate; Cannot be applied to local-scale; Patch-specific, so does not incorporate interpatch heterogeneity
Duarte et al. 2013	1,678,281	GIS data and Landsat imagery quantifying breeding habitat change from 1999–2001 to 2010–2011	NA	NA	NA	NA		

populations across small, disjunct patches of warbler habitat. Specifically, the warbler recovery criteria require:

- Sufficient breeding habitat protection to ensure continued existence of at least one viable, self-sustaining population in each of the eight regions outlined in the plan
- Potential for gene flow across regions between demographically self-sustaining populations needed for long-term viability
- Sufficient and sustainable non-breeding habitat to support the breeding populations
- All existing warblers populations on public lands protected and managed to ensure their continued existence
- All criteria met for 10 consecutive years

After ~25 years of research, recent and comprehensive studies indicate that there is ~5 times more warbler breeding habitat (~6,480 mi^2) and that there are ~19 times more warblers (263,339 males; 95% CI = 223,927–302,620) than assumed at the time of the emergency listing decision (Collier et al. 2012, Mathewson et al. 2012). Regardless of the actual warbler population size, it is clear that there are substantially more warblers than assumed at the time of listing (Mathewson et al. 2012), the available warbler breeding habitat is much more widely distributed than initially thought (Collier et al. 2012), and that breeding warblers inhabit a much wider range of habitat conditions than identified during early studies (e.g., Klassen et al. 2012). In addition, there is no genetic evidence that warblers have demographically self-sustaining populations, and thus, there is no basis for managing warblers as separate population entities across the recovery regions (Lindsay et al. 2008). Scientific studies also fail to support the notion that the spatial extent of wintering habitat is a limiting factor for this migratory species. Finally, maintaining warbler populations on public lands is certainly a part of warbler conservation. However, this criterion was developed under the assumption that there was limited warbler breeding habitat and that the remaining warbler breeding habitat was highly fragmented and separated by large distances, which recent studies no longer support. Long-term and comprehensive research conducted over the last 25 years offers a different perspective on the species, strongly warranting a re-examination of the warbler's federally endangered listing status by the USFWS.

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Supplement to the June 29, 2015 petition to remove the golden-cheeked warbler from the list of endangered species

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Introduction

On June 29, 2015, Texans for Positive Economic Policy, Susan Combs, the Texas Public Policy Foundation, and the Reason Foundation (Petitioners), filed their petition to delist the golden-cheeked warbler with the Department of the Interior. This supplemental information identifies actions and events that have addressed the five factors for listing the warbler and identifies the requirements of the 1992 Recovery Plan and draft 1995 Golden-Cheeked Warbler Population and Habitat Viability Assessment Report that have been achieved.

The five statutory factors that prompted the U.S. Fish and Wildlife Service to list the golden-cheeked warbler have been ameliorated

In its 1992 final listing, FWS based its listing for the warbler according to five statutory factors.[1] Table 1 summarizes how these factors have been addressed.

The action items identified in the 1992 Recovery Plan have been accomplished

The 1992 Recovery plan set forth a number of action items to help achieve the recovery of the golden-cheeked warbler population. Table 2 describes the progress made for these action items.

The action items identified in the draft 1995 Golden-Cheeked Warbler Population and Habitat Viability Assessment Report have also been accomplished

The 1995 Golden-Cheeked Warbler Population and Habitat Viability Assessment Report, which was never adopted, also identified a series of action items to benefit the warbler. Table 3 indicates the progress made on these action items. Petitioners are including this plan, although never adopted, because even when the recovery plan was based on a better understanding of the underlying facts and standards were higher, activities were nevertheless undertaken that met those higher standards.

[1] 16 U.S.C. § 1533(a)(1); Endangered and Threatened Wildlife and Plants; Final Rule to List the Golden-cheeked Warbler as Endangered, 55 Fed. Reg. 53,153, 53,154 (Dec. 27, 1990).

Table 1: Comparison of the 1990 listing with current science[2]

Basis for 1990 listing	Current science
(A) The present or threatened destruction, modification, or curtailment of [the warbler's] habitat or range The 1990 listing was based on: • 19,400–55,750 hectares of habitat (urban) • 12,750–51,000 hectares of habitat (rural) • 15,000–17,000 warblers • Thinning of juniper • Habitat fragmentation • Human population growth	Since 1990, additional populations and additional habitat have been discovered and/or developed. Current estimates put the total habitat size at two to six times the habitat estimated in 1990: 756,536–1.6 million hectares. (Duarte et al. 2013; Mathewson et al. 2012; Collier et al. 2012; Loomis Austin 2008; SWCA 2007; Diamond 2007; DeBoer & Diamond 2006; Diamond & True 1998.) Current estimates put the total warbler population at up to an order of magnitude greater than the population estimated in 1990: 263,339 singing males. (Mathewson et al. 2012.) Marshall et al. (2012) discovered that a higher proportion of territories successfully fledged young in areas where understory juniper was thinned when compared to untreated control sites. Warbler territory density was also similar between the thinned sites and control sites, which suggests that the pattern of higher productivity in the treated areas did not result from density dependent mechanisms. Researchers have determined that warblers can successfully breed in habitat patches as small as 10–20 hectares. While this does not discount the impact of habitat fragmentation on warbler success, this does demonstrate that there are significant areas of productive habitat that were unanticipated at time of listing. (Five-Year Review at 4; Arnold et al. 1996; Butcher et al. 2010). Furthermore, warblers have recently been shown to have high movement rates among habitat patches. (Duarte et al. 2016.) Recent modeling results indicate that "warbler viability can be achieved under current conditions" (Duarte 2016); however, as is noted by Duarte et al. (2016), a change in listing status is not warranted if based only on the evidence of their model projections. The additional corroborating findings that the warbler is more widely distributed (Collier et al., 2012), more abundant (Mathewson et al., 2012), and is genetically undifferentiated across its breeding range (Lindsay et al., 2008)—all in contrast to the evidence available at time of listing—provides the additional reason to confirm that the warbler's habitat and population status was essentially misunderstood when it was initially listed as endangered. Despite rapid population growth in Texas, "[i]t is evident that the golden-cheeked warbler is widely distributed throughout its breeding range (Collier et al. 2012), is breeding successfully in

[2] 16 U.S.C. § 1533(a)(1); Final Listing Rule. Endangered and Threatened Wildlife and Plants; Final Rule to List the Golden-cheeked Warbler as Endangered, 55 Fed. Reg. 53,153, 53,154 (Dec. 27, 1990).

	a variety of habitat conditions (Butcher et al. 2010, Klassen et al. 2012, see also Campomizzi et al., this section), and is more abundant than previous estimates have indicated (Mathewson et al. 2012). Within those areas with the longest record of research, the warbler has been shown to occur at a roughly stable abundance and shows a level of breeding success expected for similar species (Groce et al. 2010)." (Morrison et al. 2012.)
(B) Overutilization for commercial, recreational, scientific, or educational purposes	Overutilization was not a factor in the 1990 listing and the 2014 Five Year Review reiterated that the warbler is not threatened by overutilization. (Five Year Review at 10–11.)
(C) Disease or predation The 1990 listing was based on: • Nest predation • Fire ants	Disease was not a factor in the 1990 listing and the Five Year Review stated that "we do not consider disease to be a threat to this species." (Five Year Review at 11.) Studies have examined predation and determined that it is not as significant a factor as originally believed. "[P]redation is a natural occurrence in GCWA habitat" and "[n]est predation and parasitism likely varies annually and regionally. Due to this variance, the magnitude of this threat is moderate." (Five Year Review at 11.) A three-year study of warblers at 100 sites in Travis County identified twenty species of potential avian predators occurring in warbler habitat, but determined that "[n]o single species or group of species appear[ed] responsible for excluding warblers from apparently suitable habitat" and that "sites which support warblers were more likely to be occupied by the eight most commonly occurring predator species than were sites without warblers." (Arnold et al. 1996.) Stake et al. (2004) discovered that the height of warbler nests reduced the risk of fire ant predation and that warblers are not the main target of other birds or mammals.
(D) The inadequacy of existing regulatory mechanisms. The 1990 listing was based on: • "Listing the species under the Act would provide additional protection, especially for habitat."	The golden-cheeked warbler will continue to be protected by the Migratory Bird Treaty Act even after delisting. FWS also recently announced that it was considering various approaches to regulating incidental take of migratory birds.[3] Such rulemaking would also "establish appropriate standards for any such regulatory approach to ensure that incidental take of migratory birds is appropriately mitigated, which may include requiring measures to avoid or minimize take or securing compensation."[4] The golden-cheeked warbler would continue to be listed by the State of Texas[5] even after delisting from the federal endangered species list.

[3] Migratory Bird Permits; Programmatic Environmental Impact Statement, 80 Fed. Reg. 30,032 (May 25, 2015).
[4] 80 Fed. Reg. at 30,033.
[5] Tex. Acts 1975, 64th Leg., p. 1405, ch. 545 (codified at 5 Tex. Parks & Wildlife Code § 68.001 et seq.).

	Critical habitat has never been designated for the golden-cheeked warbler. Additional habitat for the warbler, however, has been protected: "Several properties have been acquired in the GCWA's breeding range that provide long-term protection. They include 77,198 ac (31,241 ha) of Department of Defense lands (Fort Hood, Camp Bullis, and U.S. Army Corps Engineers); 39,428 ac (15,956 ha) on Texas Parks and Wildlife Department lands; 2,844 ac (1,151 ha) on Lower Colorado River Authority properties; 14,789 ac (5,742 ha) on the Balcones Canyonlands National Wildlife Refuge; and over 50,000 ac (20,234 ha) of additional lands owned across the range by cities, counties, conservation organizations, and others (Groce et al. 2010, pp. 11, 151, 155-156)." (Five Year Review at 10.) In addition, habitat conservation plans with private landowners will protect 59,000 acres of warbler habitat. (Five-Year Review at 10.)
(E) Other natural or manmade factors affecting its continued existence The 1990 listing was based on: • Need for a minimum habitat size of 50 hectares • Cowbird parasitism • Oak wilt as a threat to juniper habitat	Researchers have determined that warblers can breed in a minimum habitat size of less than 20 hectares. "In their breeding range, GCWA pairs have been found in habitat patches smaller than 10 hectares (ha) (24.7 acres [ac]); however, successful reproduction is more likely if patches of habitat exceed 15 ha (37 ac) (Arnold et al. 1996, p. 19; Butcher et al. 2010, p. 135-138)." (Five Year Review at 4.) Furthermore, warblers have recently been shown to have high movement rates among habitat patches. (Duarte et al. 2016.) Anders (2000) recorded no brood parasitism by cowbirds during her study of warbler territories within Fort Hood. Stewart et al. (2014b) found that the presence of oak wilt (a defoliating tree disease caused by the fungus *Ceratocytis fagacearum*) did not affect warbler territory placement, but pairing success for males whose territories included some proportion of oak wilt had 27% lower pairing success. Stewart et al. (2014b) found no difference in fledging success between territories in oak wilt affected and unaffected forests. In a similar study conducted in the eastern portion of the warbler's breeding range, Appel and Camilli (2010) examined post-breeding habitat use in warblers in relation to oak wilt and found no difference in the use of affected and unaffected forest. Studies suggest that oak wilt is more likely to occur outside warbler habitat. (Appel and Camilli 2010, Stewart et al. 2014a.)

Table 2: 1992 Recovery Plan[6]

Recovery standards	Standards met	Subsequent activities or events addressing the standards
1. Research needs		
1.1 Population biology		
1.11 Determine survivorship, dispersal, reproductive success, and other population parameters.	✓	Various studies have examined warbler population parameters. Studies have examined pairing success as it depends on tree species composition (Marshall et al. 2013), male age (Jetté et al. 1998), and warbler territory density (Farrell et al. 2012). Studies of territory success examined its relationship to tree species composition (Marshall et al. 2013), male age (Pruett 2014), and warbler territory density (Farrell et al. 2012).
1.12 Determine population sizes, etc. necessary to attain and maintain viability.	✓	Population size and other factors necessary to maintain viability have been determined. Alldredge et al. (2004) developed the population viability model used to guide conservation decisions by the FWS. Results of their analyses suggest that the probability of warbler extinction over the next 100 years is low as long as enough habitat exists to support more than 3,000 breeding pairs in each of the eight defined recovery regions. Estimates of fecundity are consistently high on the Fort Hood Military Reservation (1.13–2.06 young per territory; Anders 2000) and City of Austin properties (1.82–3.04 young per territory; City of Austin 2011, 2012, 2013). Recent modeling results indicate that "warbler viability can be achieved under current conditions." (Duarte 2016.)
1.13 Determine whether gene flow is provided for among populations.	✓	Lindsay et al. (2008) found that there is actually very little genetic differentiation across the warblers breeding range, indicating adequate gene flow throughout the species' range. "Lindsay et al. (2008, p. 2123) examined population genetics of GCWA using 109 individuals across 7 sample sites. The authors found no evidence of genetic bottlenecks or genetic differentiation among populations, suggesting that gene flow among populations was unimpeded. The authors also suggested that there was no evidence of elevated risk of extinction resulting from the genetic mechanisms examined (Lindsay et al. 2008, pp. 2130)." (Five Year Review at 5–6.)

[6] Items listed are from the "Narrative Outline for Recovery Actions," pages 44 to 56 of the 1992 Recovery Plan.

Recovery standards	Standards met	Subsequent activities or events addressing the standards
1.2 Ecology and Behavior		
1.21 Study foraging behavior and prey species.	✓	Ladd & Gass (1999) studied and summarized studies on warbler foraging, food capture, and diet.
1.22 Study movements within populations and during the post-breeding period.	✓	Ladd & Glass (1999) studied and summarized studies on post-breeding habits of the warbler.
1.23 Study distribution in relation to productivity.	✓	Researchers have discovered that pairing success of the warbler is generally high (typically >70%) and studies suggest that estimates of this metric depend on factors such as tree species composition (Marshall et al. 2013), male age (Jetté et al. 1998), and warbler territory density (Farrell et al. 2012). Territory success (proportion of territories that successfully fledge young) is also relatively high (typically >50%) and exhibits similar trends with tree species composition (Marshall et al. 2013), male age (Pruett 2014), and warbler territory density (Farrell et al. 2012).
1.24 Study the relationship of various predators to GCW reproductive success.	✓	Stake et al. (2004) discovered that the height of warbler nests reduced the risk of fire ant predation and that warblers are not the main target of other birds or mammals.
1.25 Determine the rate and extent of cowbird parasitism and whether it is a threat to recovery.	✓	Brood parasitism varies annually, but is uncommon and represents a small risk to overall warbler nest survival (Groce et al. 2010). Anders (2000) recorded no brood parasitism by cowbirds during her study of warbler territories within Fort Hood.
1.26 Study the biology and behavior of wintering and migrating GCWs.	✓	Komar (2011) conducted a four-year study of the winter ecology of the warbler in five countries: Mexico, Guatemala, Honduras, El Salvador, and Nicaragua. The researchers located over 400 individual warblers across forty-seven sites.

Recovery standards	Standards met	Subsequent activities or events addressing the standards
1.3 Habitat Requirements and Availability		
1.31 Determine habitat requirements and habitat selection patterns in the breeding range.	✓	The predicted probability of warbler fledging success increased with increasing patch size, decreasing patch edge-to-area ratio, and increasing percent cover. This coincides with site-specific nest survival data obtained at the Fort Hood Military Reservation and in the Austin area (Stake 2003; Peak 2007; Reidy et al. 2009b; Peak and Thompson 2014). These relationships are not consistent across ecoregions (Campomizzi et al. 2012), however, and warblers will fledge young in areas with less than 20% canopy cover, especially in the southern portion of their breeding range (Klassen et al. 2012).
1.32 Study habitat patch size requirements and determine the effects of patch size on reproductive success.	✓	Song-playback studies provide evidence that warblers can be drawn into previously unoccupied woodland stands with less canopy cover and successfully fledge young outside the habitat conditions typically considered suitable for the species (Farrell et al. 2012). Researchers have discovered that warblers can breed in habitat as small as 10–20 hectares, minimizing the impact of habitat fragmentation on warbler success. (Five-Year Review at 4; Arnold et al. 1996; Butcher et al. 2010).
1.33 Determine the effects of urbanization and other land use practices on GCW abundance.	✓	Lackey et al. (2012) found similar warbler abundance, pairing success, and fledging success across road-noise-only sites, road construction sites, and control sites, and there was no relationship between warbler reproductive success and distance from the roadway. Similarly, warblers at the Fort Hood Military Reservation occupy and breed in patches exposed to active military activity and there is no correlation between warbler reproductive success and noise level (Lopez et al. 2012).
1.34 Study the dynamics of hardwood regeneration in older mixed deciduous-juniper associations.	✓	Stewart et al. (2014b) discovered that the presence of oak wilt (a defoliating tree disease caused by the fungus *Ceratocytis fagacearum*) did not affect warbler territory placement, but pairing success for males whose territories included some proportion of oak wilt had 27% lower pairing success. Stewart et al. (2014b) found no difference in fledging success between territories in oak wilt affected and unaffected forests. Appel and Camilli (2010) examined post-breeding habitat use in warblers in relation to oak wilt and found no difference in the use of affected and unaffected forest.

Recovery standards	Standards met	Subsequent activities or events addressing the standards
1.35 Study the habitat requirements of GCWs during migration and on their wintering grounds.	✓	"In Central America, the occurrence of GCWA in northern El Salvador and north-central Nicaragua during the winter has only been confirmed within the last 6 years (Morales et al. 2008, p. 30; King et al. 2009, p. 48; Komar 2008, pp. 2-3). In addition, several new areas with warbler occurrences have been documented since 2000 (Jones and Komar 2008a, pp. 169; Jones and Komar 2008b pp. 317). Eight sightings from Costa Rica (highlands of the Central Valley) and one from Panama suggest the warbler's wintering range may extend further south than Nicaragua (Jones 2005b, p. 1; Jones and Komar 2006, p. 155; Groce et al. 2010, p. 33)." (Five Year Review at 6.) "The GCWA migrates north and south along the Sierra Madre Oriental of Mexico, through the Mexican states of Coahuila, Nuevo Leon, Tamaulipas, Queretaro, and Veracruz (Phillips 1911, p. 86; Pulich 1976, pp. 56-58; Johnson et al. 1988, p. 131; Lyons 1990, p. 48; Perrigo et al. 1990, p. 28). Sightings are typically at elevations above 1,100 meters (m) (3,609 feet [ft]) in the pine (Pinus spp.), pine-oak (Quercus spp.), and oak-sweetgum (Liquidambar styraciflua) woodlands of the Sierra Madre Oriental (Braun et al. 1986, p. 564; Johnson et al. 1988, p. 131; Perrigo et al. 1990, p. 28; Perrigo and Booher 1994, pp. 14-15)." (Five Year Review at 6–7.) Komar (2011) conducted a four-year study of the winter ecology of the warbler across Central America.
1.36 Determine current distribution of existing habitat on private and public land in the breeding range.	✓	Collier et al. (2012), identified 1,678,698 hectares of potential warbler breeding habitat. This estimate falls within the range of potential warbler breeding habitat—643,454 to 1,679,234 hectares—identified by others since the listing decision. (Duarte et al. 2013; Mathewson et al. 2012; Collier et al. 2012; Loomis Austin 2008; SWCA 2007; Diamond 2007; DeBoer & Diamond 2006; Diamond & True 1998.)
1.37 Determine the availability and placement of the focal areas and associated habitat.	✓	Recent studies identify warbler focal areas and associated habitat. (Duarte et al. 2013; Mathewson et al. 2012; Collier et al. 2012.) Well-distributed patches of protected habitat are now present on public and private lands throughout the present breeding distribution of the warbler. In 1996, 30,00 acres was set aside in Travis County, Texas to protect the warbler population along with other species. Conservation efforts have also been undertaken at Fort Hood, which has the largest population of the golden-cheeked warbler, supporting between 4,482 and 7,236 territorial male warblers. (Pekins.) Habitat conservation plans throughout the warbler range will protect over 59,000 acres of habitat. (Five-Year Review at 10.)

Recovery standards	Standards met	Subsequent activities or events addressing the standards
1.38 Determine size of buffer zones needed to reduce impacts of urbanization and agricultural activities.	✓	Minimum patch size for reproductive success is 16–18 hectares in a rural landscape (Butcher et al. 2010) and about 21 hectares in an urban environment (Arnold et al. 1996). Researchers have discovered that warblers habituate to noise disturbance and do not require a minimum distance from road sites for reproductive success, indicating that the size of buffer zones do not significantly impact warbler populations. (Lackey et al. 2012; Lopez et al. 2012.)
1.39 Study the effects of management options in Task 3.0.	✓	The Five-Year Review examined efforts to manage warbler populations in Texas and in Central America. (Five-Year Review 2014.) Campomizzi et al. (2012) evaluated management guidelines for the warbler between 2007 and 2011.
1.310 Determine the current distribution and availability of habitat in the winter range and migration corridor.	✓	Komar (2011) describes in detail the winter distribution, abundance, and habitat preferences for warbler in their winter grounds. Researchers determined that "[s]ites with pine forest mixed with encino-type oak trees in the mid-story were most attractive for the warblers, and mixed-species foraging flocks at such sites typically had on average one or more Golden-cheeked warblers in each flock." (Komar 2011, p. 4.)
1.311 Determine the optimum distribution of areas to be protected in the winter range and migration corridor.	✓	Komar (2011) recommends conservation of Encino oaks, in which warblers forage during the winter.
1.4 Monitoring		
1.41 Monitor target populations.	✓	Alldredge et al. (2004) developed the population viability model used to guide conservation decisions by the FWS. Results of their analyses suggest that the probability of warbler extinction over the next 100 years is low as long as enough habitat exists to support more than 3,000 breeding pairs in each of the eight defined recovery regions. Subsequent studies have monitored warbler populations. (City of Austin 2013; Robinson 2013; Campomizzi et al. 2012; City of Austin 2012; Klassen et al. 2012; City of Austin 2011; Komar 2011.)
1.42 Monitor the effects of management tasks in 3.0.	✓	Arnold et al. (1996) conducted a three-year study of warblers at 100 sites in Travis County. the City of Austin publishes annual monitoring reports on the golden-cheeked warbler in the Balcones Canyonlands Preserve. (City of Austin 2013; City of Austin 2012; City of Austin 2011.) Campomizzi et al. (2012) evaluated management guidelines for the warbler between 2007 and 2011.

Recovery standards	Standards met	Subsequent activities or events addressing the standards
1.43 Develop a post-recovery monitoring plan.	✓	See Recovery standard 1.42.
1.44 Monitor habitat and populations in Mexico and Central America.	✓	Komar (2011) monitored wintering warbler habitat and populations in Central America.
2.0 Habitat Needs		
2.1 Establish a system of focal areas and interconnecting habitat, where necessary, within the eight regions in the breeding range.	✓	"Several properties have been acquired in the GCWA's breeding range that provide long-term protection. They include 77,198 ac (31,241 ha) of Department of Defense lands (Fort Hood, Camp Bullis, and U.S. Army Corps Engineers); 39,428 ac (15,956 ha) on Texas Parks and Wildlife Department lands; 2,844 ac (1,151 ha) on Lower Colorado River Authority properties; 14,789 ac (5,742 ha) on the Balcones Canyonlands National Wildlife Refuge; and over 50,000 ac (20,234 ha) of additional lands owned across the range by cities, counties, conservation organizations, and others (Groce et al. 2010, pp. 11, 151, 155-156)." (Five Year Review at 10.)
2.12 Protect populations on private land		
2.121 Locate landowners interested in voluntarily protecting GCW habitat.	✓	Using habitat conservation plans, 59,000 acres of habitat is expected to be protected and nearly $1.3 million dedicated to preservation and maintenance of land for the benefit of the warbler. (Five-Year Review at 10.) The golden-cheeked warbler Recovery Credit System, developed in 2005, provides for off-site conservation efforts by private landowners that generates offset credits used by Fort Hood. Under this System, private landowners work with local specialists to implement management practices for maintenance and enhancement of warbler habitat on their land.[7] (Wolfe et al. 2012.) The three-year proof-of-concept pilot project for the Recovery Credit System resulted in conservation of 1,174 acres of golden-cheeked warbler habitat under eleven landowner contracts.[8] (Robertson & Rinker 2010.)

[7] http://rcs.tamu.edu/.
[8] http://rcs.tamu.edu/proof-of-concept/

Recovery standards	Standards met	Subsequent activities or events addressing the standards
2.122 Encourage voluntary protection and improve incentives for voluntary protection of GCW habitat.	✓	The black-capped vireo and golden-cheeked warbler Habitat Identification/Treatment Criteria developed by the U.S. Department of Agriculture's Natural Resource Conservation Service (NCRS) Brush Management Consultation provides technical guidance for brush clearing to avoid warbler breeding habitat on properties with NRCS contracts. The golden-cheeked warbler Recovery Credit System, developed in 2005, provides for off-site conservation efforts by private landowners that generates offset credits used by Fort Hood. See Recovery standard 2.121.
2.2 Protect habitat in the winter range and along the migration corridor		
2.2 Protect habitat in the winter range and along the migration corridor.	✓	"Since listing, there have been several efforts to encourage GCWA preservation in the winter range. The most notable effort is the ACMPOF, which was formed in 2003, and consists of eight institutions located in the United States, Mexico, Guatemala, El Salvador, Honduras, and Nicaragua. The ACMPOF (2008, p. 8) drafted a conservation plan for the ecoregion with the goal of conserving pine-oak forest habitat, which will help ensure GCWA survival. This conservation plan represents the first regional management, conservation, and sustainable development effort for pine-oak forests with the purpose of promoting and sustaining biodiversity, water, timber, recreation, and sustainable rural development (ACMPOF 2008, p. 11)." (Five Year Review at 10.)
2.21 Identify currently protected areas within potential GCW winter and migratory habitat.	✓	Komar (2011) describes in detail the winter distribution, abundance, and habitat of the golden-cheeked warber.
2.22 Make contacts, encourage and assist, where possible, with efforts by governmental and conservation organizations and individuals in these countries.	✓	Komar (2011), in their study of wintering warblers, worked with SalvaNATURA (Fundación Ecológica de El Salvador), Fundación Defensores de la Naturaleza in Guatemala, Pronatura-Sur in México, and FUNDECI/GAIA in Nicaragua. The report was funded in part by the Alliance for the Conservation of Central American Pine-oak Forests Ecoregion along with a Section 6 grant by U.S. Fish and Wildlife Service.
2.23 Identify and encourage funding of conservation efforts.	✓	See Recovery standard 2.22.

Recovery standards	Standards met	Subsequent activities or events addressing the standards
2.24 Investigate and encourage options to protect habitat.	✓	Balcones Canyonlands National Wildlife Refuge has partnered with the Central Texas Conservation Partnership to provide landowners with a centralized information resource and conservation guidelines.[9] The golden-cheeked warbler Recovery Credit System, developed in 2005, provides for off-site conservation efforts by private landowners that generates offset credits used by Fort Hood. See Recovery standard 2.121.
3.0 Management		
3.1 Enhance and maintain quality of GCW habitat on public and private lands.	✓	The black-capped vireo and golden-cheeked warbler Habitat Identification/Treatment Criteria developed by the U.S. Department of Agriculture's Natural Resource Conservation Service (NCRS) Brush Management Consultation provides technical guidance for brush clearing to avoid warbler breeding habitat on properties with NRCS contracts. FWS has issued Endangered Species Act permits to approximately 160 landowners who have entered into habitat conservation agreements to protect warbler habitat, enforceable by FWS. The agreements are not affected by delisting and will continue to protect the warbler as well as other listed species.
3.2 Maintain hardwood regeneration within GCW management sites.	✓	The black-capped vireo and golden-cheeked warbler Habitat Identification/Treatment Criteria developed by the U.S. Department of Agriculture's Natural Resource Conservation Service (NCRS) Brush Management Consultation provides technical guidance for brush clearing to avoid warbler breeding habitat on properties with NRCS contracts.
3.3 Promote the regeneration of oak-juniper woodlands in certain areas previously cleared, thinned, or burned.	✓	Yao et al. (2012) suggested fire could have a dual effect on warbler habitat (such that reduced tree density could reduce suitability), but oak recruitment is typically high following moderate to high intensity fires. Yao et al. showed that properly managed fires can increase future habitat suitability for warblers by increasing tree diversity. Marshall et al. (2012) found that a higher proportion of territories successfully fledged young in areas where understory juniper was thinned when compared to untreated control sites.

[9] http://texasconservation.org/.

Recovery standards	Standards met	Subsequent activities or events addressing the standards
3.4 Develop management guidelines for formation of GCW habitat.	✓	Management guidelines are summarized and studied in the Five-Year Review (2014). Campomizzi et al. (2012) evaluated management guidelines for the warbler between 2007 and 2011. Texas Parks and Wildlife has published management guidelines for the golden-cheeked warbler, funded by U.S. Fish and Wildlife Service.[10]
3.5 Adopt management strategies that reduce the impact of cowbird parasitism and nest predation on GCW populations.	✓	Anders (2000) recorded no brood parasitism by cowbirds during her study of warbler territories within Fort Hood. One of the management activities at Fort Hood is cowbird trapping. (Summers et al. 2000.) Cowbird trapping has proven to be an effective management technique in reducing nest parasitism for golden-cheeked warblers and other bird species. (Braden et al. 1997.)
3.6 Minimize the extent to which GCWs are affected by agriculture and urbanization.	✓	Texas Parks and Wildlife has published management guidelines for the golden-cheeked warbler, funded by U.S. Fish and Wildlife Service.[11] The Service has minimized impact of agriculture and urbanization to warblers through habitat conservation plans that protect over 59,000 acres of habitat. The golden-cheeked warbler Recovery Credit System, developed in 2005, provides for off-site conservation efforts by private landowners that generates offset credits used by Fort Hood. See Recovery standard 2.121. The U.S. Department of Agriculture's Natural Resource Conservation Service (NCRS) Brush Management Consultation provides technical guidance for brush clearing to avoid warbler breeding habitat on properties with NRCS contracts. Researchers have also discovered that warblers are less affected by urbanization than originally assumed. Warblers require less habitat than originally assumed for reproductive success—around 20 hectares—and they habituate to noise disturbance. (Lackey et al. 2012; Lopez et al. 2012; Arnold et al. 1996.)

[10] https://tpwd.texas.gov/publications/pwdpubs/media/pwd_bk_w7000_0013_golden_cheeked_warbler_mgmt.pdf.
[11] https://tpwd.texas.gov/publications/pwdpubs/media/pwd_bk_w7000_0013_golden_cheeked_warbler_mgmt.pdf.

Recovery standards	Standards met	Subsequent activities or events addressing the standards
3.7 Develop management guidelines and provide technical assistance to landowners.	✓	Texas Parks and Wildlife has published management guidelines for the golden-cheeked warbler, funded by U.S. Fish and Wildlife Service.[12] Since 2006 the Service has authorized impacts to over 24,700 acres of warbler habitat through the development of habitat conservation plans, protecting over 59,000 acres of habitat protected and providing almost $1.3 million for the preservation and/or maintenance of land for the benefit of the warbler.
3.8 Investigate and encourage sustainable development options for GCW habitat in Mexico and Central America.	✓	See Recovery standard 2.2.
4.0 Public education and information		
4.1 Increase public awareness of the importance of the GCW and natural ecosystems.	✓	Travis Audubon entered into an agreement with Travis County in April 2015 to incorporate its 715-acre Baker Sanctuary into the Balcones Canyonlands Preserve. As part of the agreement, $3.5 million will be dedicated to an endowment to manage and preserve the sanctuary and expand its educational outreach.[13]
4.2 Develop curriculum/media for childhood and adult natural history/endangered species education.	✓	Under a Texas state grant, a group of researchers developed interdisciplinary, supplemental instruction resources for elementary education on the natural history of the golden-cheeked warbler. (Merkord 2013.)
4.3 Develop and disseminate informative brochures and pamphlets on GCW management and natural history.	✓	Balcones Canyonlands National Wildlife Refuge has partnered with the Central Texas Conservation Partnership to provide landowners with a centralized information resource and conservation guidelines.[14]
4.4 Develop and provide information and educational materials for Mexico and Central America.	✓	See Recovery standard 2.2.

[12] https://tpwd.texas.gov/publications/pwdpubs/media/pwd_bk_w7000_0013_golden_cheeked_warbler_mgmt.pdf.
[13] http://www.hillcountryalliance.org/conservation-easement-to-provide-permanent-protection-for-the-golden-cheeked-warbler/.
[14] http://texasconservation.org/.

Recovery standards	Standards met	Subsequent activities or events addressing the standards
4.5 Develop demonstration ranches and public areas.	✓	Balcones Canyonlands National Wildlife Refuge is one of fourteen dedicated Land Management Research and Demonstration Areas, used to develop, implement, and showcase new habitat management techniques.[15]
5.0 Regulatory		
Habitat should be protected through available regulatory measures, with particular emphasis placed on areas likely to be within the focal areas.	✓	The warbler continues to be protected under the Migratory Bird Treaty Act and listing under the Texas Endangered Species Act. Increased protections for habitat have been accomplished under habitat conservation plans, establishment of the Balcones Canyonlands National Wildlife Refuge, and the Fort Hood Recovery Credit System.

[15] http://www.fws.gov/refuge/Balcones_Canyonlands/land_management_research_and_demonstration_area.html.

Table 3: The Draft 1995 Golden-Cheeked Warbler Population and Habitat Viability Assessment Report[16]

Proposed standard	Standard met	Subsequent activities or events addressing the standards
Distribution, status, and threats		
Refine knowledge of distribution and status in Texas.	✓	Duarte et al. 2013; Mathewson et al. 2012; Collier et al. 2012; Loomis Austin 2008; SWCA 2007; Diamond 2007; DeBoer & Diamond 2006; Diamond & True 1998.
Determine presence or absence of golden-cheeked warblers in "counties needing study".	✓	Duarte et al. 2013; Mathewson et al. 2012; Collier et al. 2012.
Determine golden-cheeked warbler winter habitat distribution and characterize winter habitat.	✓	Komar 2011.
Conduct population studies .at the extremes of the breeding range, i.e., in the northern and southwestern portions.	✓	Collier et al. 2012; Klassen et al. 2012; Mathewson et al. 2012; Klassen et al. 2012; Diamond et al. 2010.
Determine the ratio of mated to unmated territorial males.	✓	Anders 2000.
Determine survival rates by age classes.	✓	Duarte et al. 2014; Alldredge et al. 2004.
Determine reproductive success.		
Refine knowledge of distributional status for all counties with breeding golden-cheeked warblers.	✓	Duarte et al. 2013; Mathewson et al. 2012; Collier et al. 2012; Loomis Austin 2008; SWCA 2007; Diamond 2007; DeBoer & Diamond 2006; Diamond & True 1998.
Investigate differences in territory size and population density over the species' range.	✓	Peak and Thompson 2014; Reidy et al. 2009b; Peak 2007; Stake 2003.
Determine the ratio of nonterritorial male "floaters" to territory holders.	✓	Anders 2000.
Determine predation levels under various conditions.	✓	Stake 2013; Reidy et al. 2009a; Reidy et al. 2008; Stake et al. 2004.

[16] Beardmore (1995) at 12–13, 21–22, 28–29, and 44.

Determine brood parasitism levels under various conditions.	✓	Groce et al. 2010; Anders 2000; Summers et al. 2000; Braden et al. 1997.
Population biology and modeling		
Precise estimates of survival, fecundity, and temporal variances for each age class need to be determined for each recovery unit .	✓	Hatfield et al. 2012; Alldredge et al. 2004.
Precise density estimates and carrying capacities of warbler populations need to be determined for different recovery units and/or patches within each unit.	✓	Hatfield et al. 2012; Alldredge et al. 2004.
A spatially-explicit PVA should be developed that models dispersal among habitat patches of different sizes, and changes over time in these patches, among the recovery units.	✓	Duarte et al. 2013; Mathewson et al. 2012; Collier et al. 2012; Hatfield et al. 2012; Alldredge et al. 2004; Duarte et al 2016.
Habitat management strategies		
Using contemporaneous studies, determine the productivity across different portions of the birds' range.	✓	Pruett 2014; Marshall et al. 2013; Farrell et al. 2012; Jetté et al. 1998.
Add to the knowledge about the use of understory structure in breeding habitat.	✓	Peak & Thompson 2013.
Determine relationships among insect abundance, plant species composition, warbler survival, and reproduction.	✓	Peak & Thompson 2014; Peak & Thompson 2013; Klassen et al. 2012;.
Evaluate the minimum size of patch in terms of extinction probabilities.	✓	Robinson 2013; Butcher et al. 2010; Arnold et al. 1996.
Evaluate warbler occupancy in relation to patch size using GIS.	✓	Duarte et al. 2013; Mathewson et al. 2012; Collier et al. 2012.
Determine the relationship of limiting factors such as brood parasitism, predation, and fire ants to golden-cheeked warblers.	✓	Groce et al. 2010; Stake et al. 2004; Anders 2000; Arnold et al. 1996.

Supplement to the June 29, 2015 petition to remove the golden-cheeked warbler from the list of endangered species

Outreach and partnerships		
Have an independent policy assessment group measure the success of current warbler conservation policies and make recommendations.	✓	Five-Year Review 2014; Campomizzi et al. 2012.

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Federal Docket No. FWS-R2-ES-2016-0062

90-DAY FINDING ON A PETITION TO REMOVE THE GOLDEN-CHEEKED WARBLER FROM THE LIST OF ENDANGERED AND THREATENED WILDLIFE

Background

Section 4(b)(3)(A) of the Endangered Species Act (Act) requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. Our standard for substantial scientific or commercial information with regard to a 90-day petition finding is "that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted" 50 C.F.R. § 424.14(b).

Petition History

On June 30, 2015, we received a petition dated June 29, 2015, from Nancie G. Marzulla (Marzulla Law, LLC – Washington, DC) and Robert Henneke (Texas Public Policy Foundation – Austin, TX) requesting that the golden-cheeked warbler be removed from the list of endangered and threatened wildlife ("delisted") due to recovery or error in information. The petition clearly identified itself as a petition and included the requisite identification information for the petitioner, as required by 50 C.F.R. § 424.14(a).

On December 11, 2015, we received supplemental information from the petitioners that included additional published studies and an unpublished report. These studies, as well as others known to the Service and in our files at the time the supplement was received, are addressed as appropriate in this finding. This finding addresses the petition.

Evaluation of a Petition to Delist the Golden-cheeked Warbler Under the Act

Species and Range

Does the petition identify an entity that may be eligible for removal from listing (delisting) (that is, is the entity a species, subspecies, or DPS)?

☒ Yes

☐ No

The American Ornithologists' Union adopted a new classification of the Parulidae based on a phylogenetic analysis by Lovette et al. (2010, p. 763) that resulted in all *Dendroica* species being placed into of a single clade for which the generic name *Setophaga* has taxonomic priority (Chesser et al. 2011, p. 608). Hereafter, the Service recognizes the golden-cheeked warbler as *Setophaga chrysoparia*, formerly placed in the genus *Dendroica*.

If yes, list common name (scientific name); and range.

Golden-cheeked warbler (*Dendroica chrysoparia* = *Setophaga chrysoparia*, hereafter warbler), breeding exclusively in Texas; wintering in the highlands of Mexico (Chiapas) and Central America (Guatemala, Honduras, Nicaragua, El Salvador).

Information in the Petition

Factor A

1. Does the petitioner claim the entity warrants delisting based on the lack of the present or threatened destruction, modification or curtailment of the species' habitat or range?
   ☒Yes
   ☐No

   a. If the answer to 1 is yes:
   Do the sources cited in the petition provide substantial information to support the claim?
   ☐Yes
   ☒No
   If yes, indicate for which activity(ies) present or threatened destruction, modification or curtailment of the species habitat or range (e.g., logging, agriculture, overgrazing, etc.) is a threat and list the citations with page numbers for each purpose. If no, please indicate for which activity(ies) and explain.

   The petition asserts that none of the statutory factors pose a significant threat to the continued existence of the warbler (p. 15) and that "the warbler was either listed in error or has recovered since listing" (p. 13). The petition states that because the numbers of warblers and extent of warbler habitat is far greater than the Service determined in 1990, the warbler should not have been listed as endangered, and further cites several studies known to the Service (2014) indicating the species is not in danger of extinction throughout all or any significant portion of its range and requests that the warbler be removed from the federal endangered species list (Petition, p. 29).

   The petition states that recent studies confirm there are more warblers and more warbler habitat than at the time the Service listed the warbler as endangered (p. 18). Much of this argument is based on Mathewson *et al.* (2012, p. 1,123) which employed a spatially-explicit model to estimate the range-wide population of male warblers to be 263,330 and the amount of warbler habitat to be 4,147,123 acres (1,678,281 hectares). The Mathewson *et al.* (2012) study was considered by the Service and discussed in our most recent 5-year review for the warbler, which was completed in 2014 (Service 2014, p. 5). The Mathewson *et al.* (2012, entire) study estimated a range-wide population number of warblers by applying warbler density estimates to the Collier *et al.* (2011, entire) model, which estimated the

probability of warblers occupying given patches of woodland habitats throughout the breeding range of the warbler. Previous estimates of the total adult golden-cheeked warbler population range from 14,950 individuals to 26,978 pairs (Service 2014, p. 5). Previous estimates of potential golden-cheeked warbler breeding habitat range from 326,000 to 4,378,148 acres with differences due primarily to varying definitions of breeding habitat associated with vegetation types and habitat patch size, differing parameters included in habitat models, and remote sensing techniques and data sets (Service 2014, pp. 6–7). We acknowledge that the known potential range is geographically more extensive than when the golden-cheeked warbler was originally listed. However, population estimates are very difficult to determine and threats described in the original listing rule remain and recovery criteria have not been accomplished. This and other pertinent information was evaluated in the 2014 5-year review where we recommended that the species remain listed as in danger of extinction throughout its range (Service 2014, p. 15).

Efforts to model warbler habitat, estimate patch-level occupancy probabilities, and draw inferences about distribution and abundance of warblers across the landscape will ultimately be useful to the Service in planning and implementing recovery actions and conservation measures designed to provide for the continued existence of the warbler (Mathewson *et al.* 2012, p. 1,127). However, the Service does not agree with the petitioner's assertion that the 2015 Texas A&M Survey (Petition, Exhibit 1) "confirms that the warbler is not and never has been endangered in Texas" (Petition, p. 14). The Survey (Petition, Exhibit 1) summarizes information already known to the Service and discussed in the 5-year review (Service, 2014), which represents the best available body of science known to the Service pertaining to the status of the warbler. The Service recognizes that the modeling studies described in the 2015 Texas A&M Survey (Petition, Exhibit 1) do represent the most recent and comprehensive efforts to estimate range-wide warbler habitat and population size to date.

However, these efforts represent new estimates rather than indicators of positive trends in warbler habitat and population size, and thus do not imply recovery. Further, a recent study reported results of a similar modeling effort to infer warbler density from landscape and habitat relationships that performed well at sites with high known densities but tended to overestimate plots with lower known densities (Reidy *et al.* 2016, p. 379) and it is apparent that uncertainty still exists, especially for habitats occupied by warblers at lower-densities. Habitat destruction, fragmentation and degradation remain a real and significant threat to the continued existence of the warbler (Service 2014, pp. 8–10). The Service does plan to apply these and other modeling efforts, in the context of all that is known about the warbler and warbler habitat, to help inform and guide recovery efforts for the warbler now and in the future (Service 2014, p. 16). A recent population modeling study found that movement rates were high among warbler breeding habitat patches, immigration (i.e., natal dispersal) appears to be an important driver of local warbler population dynamics. Because these complex

processes occur on a landscape scale, the authors recommended that future conservation efforts be implemented at a larger spatial extent (Duarte *et al.* 2015 pp. 70–72).

The petition discusses habitat fragmentation generally (pp. 27–28), but fails to articulate whether or not habitat fragmentation is a significant threat to the warbler, instead stating simply that "studies emphasize the importance of large and small patches to sustain the warbler population on its breeding ground". While we agree that all patches are important because they provide potential habitat for the warbler, we believe that larger more connected habitat patches are especially important for supporting a viable warbler population given that occupancy probability increases with patch size (Collier *et al.* 2010, Figure 4, p. 144). McFarland *et al.* (2012, p. 438) concluded that large patches are important for maintaining high rates of warbler occupancy, small isolated patches have a lower probability of occupancy, and habitat connectivity is especially important in areas where habitat patches are small. A recent study found that significant losses of warbler breeding habitat have occurred over the past decade, warbler habitats are far more likely to be diminished than regenerated, dispersal of juvenile warblers among patches of breeding habitat is essential for maintaining local warbler populations, and concluded that the conservation of large blocks of habitat is especially important for ensuring the long-term viability of the species (Duarte et al. 2016, pp. 57–60).

The petition briefly mentions warbler habitat loss from 1992–2001 (p. 27), but does not cite any new studies showing increasing urbanization, habitat loss, and habitat fragmentation within the range of the golden-cheeked warbler. As we describe in the 2014 5-year review, warbler habitat loss and habitat fragmentation are mostly driven by rapid suburban development and human population growth in Travis, Williamson, and Bexar Counties (Service 2014, pp. 8–9). In the warbler breeding range, the human population has increased by nearly 50 percent from 1990 to 2010 (Groce *et al.* 2010, p. 123). Further, population projections from 2010 to 2050 for 35 counties within the warbler breeding range report a 64 percent increase in the human population from 4.7 to 7.8 million, and with the population of Williamson and Hays Counties expected to more than double (Potter and Hoque 2014, entire). The threat of habitat fragmentation is ongoing and is expected to threaten the continued existence of the golden-cheeked warbler into the foreseeable future (Service 2014, p. 9). The petition does not provide any information on these significant threats.

b. Provide additional comments, if any.

Factor B

2. Does the petitioner claim the entity warrants delisting based on the lack of overutilization for commercial, recreational, scientific, or educational purposes (Factor B)?
☐Yes

☒No

a. If the answer to 2 is no:
Do sources cited in the petition provide substantial information indicating the entity may warrant delisting based on factor B, even though the petitioner does not make this claim?
☐Yes
☒No
If yes, indicate for which purpose(s) overutilization is a threat and list citations with page numbers for each purpose. If no, please explain.

Factor B (overutilization) is not specifically discussed in the petition, despite the assertion that none of the statutory factors apply and that the warbler should not be listed (Petition, p. 14). However, the Service does not consider overutilization to be a threat to the warbler (Service 2014, p. 10).

c. Provide additional comments, if any.

Factor C

3. Does the petitioner claim the entity warrants delisting based on the lack of disease or predation (Factor C)?
☒Yes
☐No

a. If the answer to 3 is yes:
Which does the petitioner claim is not a threat such that delisting may be warranted? (check all that apply)
☒Disease
☒Predation

b. If the answer to 3 is yes:
Do the sources cited in the petition provide substantial information to support the claim?
☐Yes
☒No
If yes, indicate which (disease, predation, or both) is a threat and list the citations with page numbers for each. If no, please indicate disease and/or predation and provide an explanation.

The petitioners claim that neither disease nor predation constitutes a significant threat to the continued existence of the warbler and that the warbler should not be listed (Petition, p. 22). Information provided in the petition is refuted by the 2014 5-year review, in which we conclude that multiple factors such as urbanization and fragmentation have likely resulted in increased rates of predation of warbler

nests by a wide variety of animal predators(Service 2014, p. 11), especially rat snakes (*Elaphe spp*). This increase in nest predation by rat snakes has been proposed as a proximate explanation for the observed negative effects of forest edge on warbler nest survival and productivity (Peak and Thompson 2014, p. 554–557).

No diseases in golden-cheeked warblers have been reported; therefore, we do not consider disease to be a threat to this species (Service 2014, p. 11). However, nest parasitism and nest depredation, both of which occur to a varying degree across the range of the warbler, are exacerbated by habitat fragmentation and are considered a moderate threat (Service 2014, p. 11). The petition does not provide any new information indicating that predation is no longer a threat to the warbler.

c. If the answer to 3 is no:
Do sources cited in the petition provide substantial information indicating the entity may warrant delisting based on factor C, even though the petitioner does not make this claim?
☐Yes
☐No
If yes, indicate which (disease, predation, both) is a threat and list citations with page numbers for each. If no, please explain.

d. Provide additional comments, if any.

Factor D

4. Does the petitioner claim the entity warrants delisting because existing regulatory mechanisms (Factor D) are adequate?
☒Yes
☐No

a. If the answer to 4 is yes:
Do the sources cited in the petition provide substantial information to support the claim?
☐Yes
☒No
If yes, list the citations with page numbers. If no, please explain.

The petition asserts that, even with protections of the Act removed, the warbler will be protected by existing regulatory mechanisms including: the Migratory Bird Treaty Act of 1918, and the 1975 Texas Endangered Species law (pp. 22–25). However, as discussed in the 2014 5-year review, while these regulations do provide some protections for the birds neither "prohibits habitat destruction, which is an immediate threat to the warbler" (Service 2014, p. 12).

The petition also claims that warbler habitat is protected by the Balcones Canyonlands National Wildlife Refuge, the Balcones Canyonlands Preserve, and approximately 160 habitat conservation plans (HCPs). While we did not consider these long-term land protections as "existing regulatory mechanisms" under Factor D in the 5-year review, we did consider these land protection efforts under Factor A (Service 2014, p. 10). Many but not all of these protected lands are managed for the warbler and there have been important strides in regional planning in central Texas that include the county-wide HCPs that occur along the I-35 corridor from Williamson County to Bexar County. Despite these land protections and regional HCPs, an estimated 29 percent of existing breeding season habitat was lost between 1999–2001 and 2010–2011 (Duarte *et al.* 2013, p. 7) indicating that, but for protections of the Act, adequate regulatory mechanisms do not exist to prevent continued destruction of warbler breeding habitat in Texas. Given the projected population growth, the loss of warbler habitat is expected to continue.

b. If the answer to 4 is no:
Do sources cited in the petition provide substantial information indicating the entity may warrant delisting based on Factor D, even though the petitioner does not make this claim?
☐Yes
☐No
If yes, list citations with page numbers. If no, please explain.

c. Provide additional comments, if any.

The petition (p. 25) seems to confuse the Balcones Canyonlands National Wildlife Refuge, which is an approximately 24,000-acre Federal land unit of which 19,079 acres are actively managed for the warbler (Service 2015 p. 40), with the Balcones Canyonlands Preserve (BCP), which is a system of preserves managed under a regional Habitat Conservation Plan by the City of Austin and Travis County (Texas) to benefit multiple species including the warbler as well as several species of karst invertebrates. To date the BCP has protected 30,540 acres of golden-cheeked warbler and black-capped vireo habitat (Travis County-City of Austin 2014, p. 1).

Factor E

2. Does the petitioner claim the entity warrants delisting based on the lack of other natural or manmade factors affecting its continued existence (Factor E)?
☒Yes
☐No

a. If the answer to 5 is yes:
Identify the other natural or manmade factors claimed by the petitioner to not be a threat such that delisting may be warranted.

- Habitat fragmentation (Petition, pp. 27–28)
- Habitat degradation (Petition, pp. 28–29)
- Forest management practices (Petition, p. 29)
- Noise (Petition, p. 29)

b. If the answer to 5 is yes:
Do the sources cited in the petition provide substantial information to support the claim?
☐Yes
☒No
If yes, indicate for which other natural or manmade factors (e.g., climate change, road mortality, or small population dynamics) are a threat and list the citations with page numbers for each factor. If no, please indicate for which factor(s) and explain.

The Service maintains that habitat fragmentation, habitat degradation, inappropriate habitat management practices, and excessive noise all contribute to reductions in overall warbler habitat quantity and quality and present a real and significant threat to the long term viability of the species (Service 2014, p. 15). We analyzed the threats of habitat fragmentation, habitat degradation, and poor forest management practices in our 2014 5-year review. Specifically, we described how the quality of habitat for warblers is reduced by small patch sizes, reduced oak recruitment, and unsustainable forestry practices (Service 2014, p. 9). The petition addresses some of these threats by describing research on warbler habitat quality that has resulted in some conflicting conclusions about the effects of oak wilt (described below), wildfire, vegetation management, road and construction noise, and patch size on warbler reproductive success (Petition, p. 28). While we agree that there is some uncertainty regarding the magnitude of threats these activities present to warbler habitat quality (and thus, warbler reproductive success and survival), the research cited in the petition does not allow us to conclude that oak wilt, wildfire, vegetation management, and patch size are not threats to the species.

Oak wilt is a fungal infection that can affect all oak species, especially red and live oaks, frequently occurs in warbler habitat, and has the potential to negatively affect warblers and their habitat (Stewart *et al.* 2014, entire).

Wildfire is known to be an important process for maintaining oak-dominated ecosystems throughout eastern North America (Brose et al. 2014, entire). However, catastrophic wildfires have the potential to significantly diminish occupancy by warblers in previously occupied habitat, and that effect can last for over a decade (Reemts and Hansen 2008, p. 8).

Vegetation management designed specifically to benefit warblers and warbler habitat is encouraged by state and federal agencies (Campbell 1995, pp. 23–27). However, inappropriate conversion of potential warbler habitat to other vegetation

types for agricultural and other practices remains a threat to the species. A recent study found that warbler breeding habitats, once lost, were not likely to be restored (Duarte *et al.* 2016, p. 56.)

The petition cites two studies conducted in 2012, which found no effect of noise disturbance on golden-cheeked warbler abundance, survival, or reproduction. While the literature on other songbird species has demonstrated profound behavioral responses to manmade noise pollution (Ortega 2012, entire), we currently have no evidence that noise pollution is affecting golden-cheeked warbler populations. Because the findings of these studies were not significant, noise from roads and construction was not discussed as a potential threat in our 2014 5-year review. We still do not consider noise to be a significant threat above and beyond the observed negative effects of edge on warbler occupancy and productivity.

Patch size is an important aspect of warbler habitat in that nest survival decreases as forest edge increases (Peak 2007, pp. 7–8) and "with an overall shift to smaller and more fragmented patches within the northern portions of the range, the probability of warbler occurrence declines significantly, even for large patches of woodland habitats" (Collier *et al.* 2011, p. 7). The combined effects of reduced patch size and increased forest edge on warbler reproductive success was recently evaluated by Peak and Thompson (2014) who demonstrated a negative relationship between forest edge density and period nest survival (p. 554). Nest depredation is one causal factor that may help explain this phenomenon. Fragmentation of woodland habitats resulting in reduced patch size and increased forest edge continues to be a threat to the warbler.

There are additional threats that we evaluated and identified in the 2014 5-year review, such as the potential consequences of climate change (that is, increased risk of catastrophic wildfire and range shifts or restrictions; Service 2014, pp. 12–14). Additionally, the 5-year review noted that recreation was a threat to the warbler (Service 2014, p. 14). The petition did not present any information to address these threats.

c. Provide additional comments, if any.

Cumulative Effects

6. Does the petitioner claim that factors they have identified may have synergistic or cumulative effects such that the entity may warrant delisting?

☐Yes

☒No

a. If the answer to 6 is yes:
Do the sources cited in the petition provide substantial information to support the claim?

☐Yes
☐No
If yes, indicate which factors the petitioner claims may have synergistic or cumulative effects and list the citations with page numbers. If no, please indicate which threats and explain.

Cumulative effects are not discussed in either the petition or the Service's 2014 5-year review.

b. Provide additional comments, if any.

Petition Finding

The petition provided information indicating that the population was larger than estimated at the time of listing and that threats considered at the time of listing were no longer threatening the species. A 5-year review for the golden-cheeked warbler was completed on August 26, 2014, in which we recommended that the current classification as endangered should not change. The petition does not present substantial information not previously addressed in the 2014 5-year review for this species and does not offer any substantial information indicating that the petitioned action to delist the species may be warranted. We acknowledge that the known potential range is more extensive than when the golden-cheeked warbler was originally listed. However, threats of habitat loss and habitat fragmentation are ongoing and expected to impact the continued existence of the warbler in the foreseeable future. This and other pertinent information was evaluated in the 2014 5-year review.

No new information is presented that would suggest that the species was originally listed due to an error in information. The golden-cheeked warbler is a taxonomically unique species and was shown to be in danger of extinction at the time of the listing. The golden-cheeked warbler has not been recovered, and due to ongoing wide-spread destruction of its habitat, the species continues to be in danger of extinction throughout its range (Service 2014, p. 15).

Based on our review of the petition, sources cited in the petition, and information in our files, we find that the petition does not provide substantial scientific or commercial information indicating that the petitioned action may be warranted.

Author

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Director
U.S. Fish and Wildlife Service

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See enclosed

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BIODIVERSITY RESEARCH

Predicting patch occupancy in fragmented landscapes at the rangewide scale for an endangered species: an example of an American warbler

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ABSTRACT

Aim Our objective was to identify the distribution of the endangered golden-cheeked warbler (*Setophaga chrysoparia*) in fragmented oak–juniper woodlands by applying a geoadditive semiparametric occupancy model to better assist decision-makers in identifying suitable habitat across the species breeding range on which conservation or mitigation activities can be focused and thus prioritize management and conservation planning.

Location Texas, USA.

Methods We used repeated double-observer detection/non-detection surveys of randomly selected (n = 287) patches of potential habitat to evaluate warbler patch-scale presence across the species breeding range. We used a geoadditive semiparametric occupancy model with remotely sensed habitat metrics (patch size and landscape composition) to predict patch-scale occupancy of golden-cheeked warblers in the fragmented oak–juniper woodlands of central Texas, USA.

Results Our spatially explicit model indicated that golden-cheeked warbler patch occupancy declined from south to north within the breeding range concomitant with reductions in the availability of large habitat patches. We found that 59% of woodland patches, primarily in the northern and central portions of the warbler's range, were predicted to have occupancy probabilities ≤0.10 with only 3% of patches predicted to have occupancy probabilities >0.90. Our model exhibited high prediction accuracy (area under curve = 0.91) when validated using independently collected warbler occurrence data.

Main conclusions We have identified a distinct spatial occurrence gradient for golden-cheeked warblers as well as a relationship between two measurable landscape characteristics. Because habitat-occupancy relationships were key drivers of our model, our results can be used to identify potential areas where conservation actions supporting habitat mitigation can occur and identify areas where conservation of future potential habitat is possible. Additionally, our results can be used to focus resources on maintenance and creation of patches that are more likely to harbour viable local warbler populations.

Keywords

Bayesian inference, golden-cheeked warbler, habitat conservation, occupancy, semiparametric regression, *Setophaga chrysoparia*.

INTRODUCTION

Species inhabiting human-dominated environments often exist in locations where habitat loss and fragmentation have reduced patch contiguity, patch size, and increased edge and isolation effects (Marzluff, 2001; Bolger, 2002). Such changes in structural features at the local scale also influence dynamics in surrounding areas (Forman, 1995; Saab, 1999). Moreover,

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Research Paper

Age-specific survival of male Golden-cheeked Warblers on the Fort Hood Military Reservation, Texas

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ABSTRACT. Population models are essential components of large-scale conservation and management plans for the federally endangered Golden-cheeked Warbler (*Setophaga chrysoparia*; hereafter GCWA). However, existing models are based on vital rate estimates calculated using relatively small data sets that are now more than a decade old. We estimated more current, precise adult and juvenile apparent survival (Φ) probabilities and their associated variances for male GCWAs. In addition to providing estimates for use in population modeling, we tested hypotheses about spatial and temporal variation in Φ. We assessed whether a linear trend in Φ or a change in the overall mean Φ corresponded to an observed increase in GCWA abundance during 1992-2000 and if Φ varied among study plots. To accomplish these objectives, we analyzed long-term GCWA capture-resight data from 1992 through 2011, collected across seven study plots on the Fort Hood Military Reservation using a Cormack-Jolly-Seber model structure within program MARK. We also estimated Φ process and sampling variances using a variance-components approach. Our results did not provide evidence of site-specific variation in adult Φ on the installation. Because of a lack of data, we could not assess whether juvenile Φ varied spatially. We did not detect a strong temporal association between GCWA abundance and Φ. Mean estimates of Φ for adult and juvenile male GCWAs for all years analyzed were 0.47 with a process variance of 0.0120 and a sampling variance of 0.0113 and 0.28 with a process variance of 0.0076 and a sampling variance of 0.0149, respectively. Although juvenile Φ did not differ greatly from previous estimates, our adult Φ estimate suggests previous GCWA population models were overly optimistic with respect to adult survival. These updated Φ probabilities and their associated variances will be incorporated into new population models to assist with GCWA conservation decision making.

Survie en fonction de l'âge des Parulines à dos noir mâles sur la réserve militaire de Fort Hood, Texas

RÉSUMÉ. Les modèles de population sont des éléments essentiels des plans de gestion et de conservation à grande échelle pour la Paruline à dos noir (*Setophaga chrysoparia*; abrégée PADN ci-dessous), désignée « menacée » par le gouvernement fédéral étatsunien. Toutefois, les modèles existants sont fondés sur des estimations de taux vitaux calculées à partir d'échantillons relativement petits qui datent maintenant de plus d'une décennie. Nous avons actualisé et précisé la probabilité de survie apparente (Φ) adulte et juvénile et calculé les variances associées pour les mâles PADN. En plus de ces estimations destinées à la modélisation des populations, nous avons testé les hypothèses de variations spatiale et temporelle de Φ. Nous avons évalué si une tendance linéaire de Φ ou un changement de Φ moyen correspondait à une augmentation réelle du nombre de PADN de 1992 à 2000, et si Φ avait varié entre les parcelles échantillonnées. Pour atteindre nos objectifs, nous avons analysé les données de capture-réobservation de PADN de 1992 à 2011, récoltées dans sept parcelles situées sur la réserve militaire de Fort Hood, Texas, au moyen d'une structure de modèle de Cormack-Jolly-Seber avec le programme MARK. Nous avons aussi estimé les composantes de la variance de Φ associées au processus et à l'échantillonnage en les partitionnant. Nos résultats n'ont pas confirmé qu'il existait une variation du Φ adulte propre au site. À cause du petit échantillon de données, nous n'avons pas pu déterminer si le Φ juvénile avait varié spatialement. Nous n'avons pas détecté d'association temporelle forte entre le nombre de PADN et Φ. L'estimation moyenne de Φ s'élevait à 0,47 pour les mâles adultes, avec une variance relative au processus de 0,0120 et une variance relative à l'échantillonnage de 0,0113, et atteignait 0,28 pour les mâles juvéniles, avec une variance relative au processus de 0,0076 et une variance relative à l'échantillonnage de 0,0149. Alors que notre estimation de Φ juvénile ne diffère pas grandement des estimations antérieures, notre estimation de Φ adulte indique que les modèles précédents de population pour la PADN étaient trop optimistes quant à la survie des adultes. Ces probabilités actualisées de Φ et leurs variances seront incluses dans de nouveaux modèles de population afin de contribuer à la prise de décision touchant la conservation de la PADN.

Key Words: *adult survival; capture-resight; Golden-cheeked Warbler; juvenile survival; MARK; process variance; Setophaga chrysoparia; variance components*

INTRODUCTION

The Golden-cheeked Warbler (*Setophaga chrysoparia*; hereafter GCWA) is a neotropical migrant passerine that breeds almost exclusively in the mature oak-juniper woodlands of central Texas (Pulich 1976). Motivated by concerns about the GCWA's restricted breeding range and the perceived ongoing loss of breeding habitat, the species was listed as endangered by the U. S. federal government in 1990 (USFWS 1990; R. Wahl, D. D.

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Conspecific cues and breeding habitat selection in an endangered woodland warbler

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Summary

1. Research on habitat selection has focused on the role of vegetative and geologic characteristics or antagonistic behavioural interactions.
2. Conspecifics can confer information about habitat quality and provide positive density-dependent effects, suggesting habitat selection in response to the presence of conspecifics can be an adaptive strategy.
3. We conducted a manipulative field experiment investigating use of conspecific location cues for habitat selection and consequent reproductive outcomes for the endangered golden-cheeked warbler (*Setophaga chrysoparia*). We investigated the response in woodlands across a range of habitat canopy cover conditions typically considered suitable to unsuitable and using vocal cues presented during two time periods: pre-settlement and post-breeding.
4. Warblers showed a strong response to both pre-settlement and post-breeding conspecific cues. Territory density was greater than four times higher in treatment sample units than controls. The magnitude of response was higher for cues presented during the pre-settlement period. Positive response to conspecific cues was consistent even in previously unoccupied areas with low canopy cover typically considered unsuitable, resulting in aggregations of warblers in areas generally not considered potential habitat.
5. Pairing and reproductive success of males was not correlated with canopy cover, as commonly thought. Pairing success and fledging success increased with increasing territory density suggesting that conspecific density may be more important for habitat selection decisions than the canopy cover conditions typically thought to be most important. These results suggest the range of habitat within which birds can perform successfully may be greater than is typically observed.
6. Our results suggest the territory selection process may not be substantially influenced by competition in some systems. Settlement in response to conspecific cues produced aggregations within larger areas of similar vegetative characteristics. Understanding what cues drive habitat selection decisions and whether these cues are correlated with habitat quality is critical for conserving fitness-enhancing habitats, avoiding creation of ecological traps, generating accurate predictions of species distributions and understanding how occupancy relates to habitat suitability.

Key-words: conspecific attraction, density dependence, golden-cheeked warbler, public information, social information

Introduction

Most research on habitat selection has focused on the role of vegetative, geologic and geomorphic habitat characteristics (Kendeigh 1945; Rosenzweig 1991). Where behavioural interactions are considered negative, density dependence and competition have been the emphasis (Fretwell & Lucas 1970), although some researchers have questioned the emphasis on competition (Darling 1952; Connell 1983; Brawn, Boecklen & Balda 1987; Dodds 1997). Bird song is typically considered a behaviour used for competitive exclusion or mate attraction (Falls 1992), but song can also function as an inadvertent source of information for habitat selection that can attract conspecific males (Doligez *et al.* 2004; Araújo & Guisan 2006; Hahn & Silverman 2006). Social information is used for habitat selection decisions in several taxa (Stamps 1988; Donahue 2006). Auditory, visual or chemical cues from conspecifics or heterospecifics can provide public information (Danchin *et al.* 2004) about local habitat quality, with varying reliability (Van Horne 1983;

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3.2.2 Territory Density

On Fort Hood, territory density was estimated on monitoring plots using territory-mapping methods; differences in estimates among years were likely because of differences in methods and study sites as noted above. From 1991–2008 the number of territories per hectare within monitoring plots increased (Fig. 3.1), a trend which supports the increasing trend in abundance of warblers at standard point counts across Fort Hood.

For the BCP, Weckerly and Ott (2008) recommended that trends in abundance should be reported on a per plot basis because of the amount of variability within plots among years. From 1999 to 2006, territory densities increased in 2 of 5 plots defined as prime habitat on City of Austin property (Fig. 3.2; Weckerly and Ott 2008). Territory densities in 3 transitional plots on City of Austin properties did not exceed 0.25 territories/ha (0.10 territories/ac) between 1998 and 2008. On Travis County properties, the number of territories per hectare increased on 2 of the study plots between 2002 and 2008 (Fig. 3.3; Travis County 2008b).

On Camp Bullis, Bexar County, territory densities indicated a variable trend across survey years (Fig. 3.4). Cooksey and Edwards (2008) suggested an increasing trend in density of warblers based on a linear regression of data from 1991–2008.

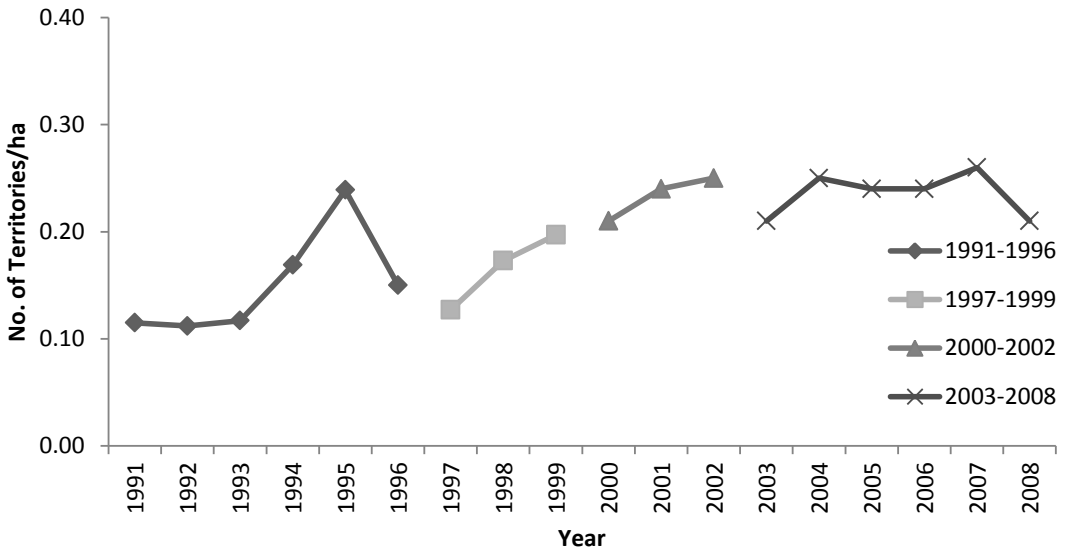

Fig. 3.1 Annual territory densities (territory/ha) of golden-cheeked warblers on monitoring sites on Fort Hood Military Reservation, Bell and Coryell Counties, Texas from 1991 to 2008. Years are grouped based on similar survey methods and number of study sites.

Table 6.1 Continued.

County	Pulich 1976	Wahl et al. 1990	Rowell et al. 1995[a]	Rowell et al. 1995[b]	TNC 2002	USFWS 2004	SWCA 2007
Region 7							
Edwards	10,117	17,189	60,478	29,994	25,658	12,552	33,126
Kerr	16,187	18,163	90,373	33,295	52,710	31,510	35,240
Kimble	2,428	12,765	44,874	10,371	21,041	5,963	6,642
Menard	-	2,030	2,387	309	705	189	178
Region 7 total	28,733	50,147	198,112	73,969	100,114	50,214	75,186
Region 8							
Bandera	8,094	21,631	95,457	43,071	58,430	43,496	58,349
Kinney	1,214	2,455	10,693	5,479	7,887	4,673	10,047
Medina	2,833	4,878	58,036	22,688	54,453	52,210	21,765
Real	10,117	26,782	74,899	33,274	61,359	54,066	78,198
Uvalde	4,047	16,541	53,563	19,296	66,848	60,581	37,212
Region 8 total	26,305	72,287	292,648	123,808	248,977	215,026	205,571
Misc. counties							
Brown	-	0	-	-	-	-	72
Comanche	-	16	-	-	-	-	1,243
Dallas	-	-	-	-	-	-	855
Ellis	-	0	-	-	-	-	149
Falls	-	0	-	-	-	-	-
Guadalupe	-	187	-	-	-	-	-
McCulloch	-	568	-	-	-	-	59
Mills	-	52	-	-	-	-	982
Parker	-	-	-	-	-	-	253
Schleicher	-	77	-	-	-	-	-
Sutton	-	262	-	-	-	-	-
Misc. counties total	0	1,162	0	0	0	0	3,613
Breeding range total (ha)	129,904	338,035	1,116,665	545,948	756,585	476,238	551,912[c]
Breeding range total (ac)	321,000	835,302	2,759,339	1,349,067	1,869,562	1,176,810	1,363,804
# Counties included	31	43	35	35	35	35	43

[a] Estimates are from Method 1.
[b] Estimates are from Method 2.
[c] Our estimate differs from SWCA Environmental Consultants' estimate of 552,195 ha due to using a slightly different factor when converting acres to hectares for each county. SWCA used a factor of 0.40489 ha per acre while we used 0.404686 ha per acre.

habitat used by management agencies and other land managers will need to expand to include areas of lower canopy closure and oak composition. TPWD guidelines describe warbler-breeding habitat as exceeding 35% canopy closure, with much higher (>50–70%) canopy closure considered optimal; oak species comprising ≥10% of tree composition is also advised (Campbell 2003). Our findings, however, indicate that warblers will occupy and successfully reproduce in areas with canopy closure as low as 15% and only 3% oak composition.

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Population Ecology

Estimating Breeding Season Abundance of Golden-Cheeked Warblers in Texas, USA

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ABSTRACT Population abundance estimates using predictive models are important for describing habitat use and responses to population-level impacts, evaluating conservation status of a species, and for establishing monitoring programs. The golden-cheeked warbler (*Setophaga chrysoparia*) is a neotropical migratory bird that was listed as federally endangered in 1990 because of threats related to loss and fragmentation of its woodland habitat. Since listing, abundance estimates for the species have mainly relied on localized population studies on public lands and qualitative-based methods. Our goal was to estimate breeding population size of male warblers using a predictive model based on metrics for patches of woodland habitat throughout the species' breeding range. We first conducted occupancy surveys to determine range-wide distribution. We then conducted standard point-count surveys on a subset of the initial sampling locations to estimate density of males. Mean observed patch-specific density was 0.23 males/ha (95% CI = 0.197–0.252, $n = 301$). We modeled the relationship between patch-specific density of males and woodland patch characteristics (size and landscape composition) and predicted patch occupancy. The probability of patch occupancy, derived from a model that used patch size and landscape composition as predictor variables while addressing effects of spatial relatedness, best predicted patch-specific density. We predicted patch-specific densities as a function of occupancy probability and estimated abundance of male warblers across 63,616 woodland patches accounting for 1.678 million ha of potential warbler habitat. Using a Monte Carlo simulation, our approach yielded a range-wide male warbler population estimate of 263,339 (95% CI: 223,927–302,620). Our results provide the first abundance estimate using habitat and count data from a sampling design focused on range-wide inference. Managers can use the resulting model as a tool to support conservation planning and guide recovery efforts. © 2012 The Wildlife Society.

KEY WORDS abundance, density, endangered species, golden-cheeked warbler, point count, population estimate, *Setophaga chrysoparia*, Texas.

Abundance estimates are of particular importance for evaluating conservation status and determining recovery goals, establishing monitoring programs, describing habitat use patterns, and assessing population-level impacts driven by anthropogenic and natural factors (Campbell et al. 2002, Scott et al. 2005, Fitzgerald et al. 2009, Sirami et al. 2010). Population size estimation is a challenge for most species, but approaches integrating remotely sensed data with predictive models can assist in predicting abundance at large spatial scales (Thompson 2002*a*, Fitzgerald et al. 2009). The golden-cheeked warbler (*Setophaga chrysoparia*) is a neotropical migratory songbird that breeds only in central Texas and winters in the highlands of southern Mexico and Central America (Pulich 1976, Groce et al. 2010). In 1990, the United States Fish and Wildlife Service (USFWS) listed the golden-cheeked warbler (hereafter warbler) as endangered and cited habitat loss and fragmentation as primary threats (USFWS 1990, 1992). Warbler occurrence, density, and recruitment rates appear to decrease as the size of habitat patches and the amount of habitat in the surrounding

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Management and Conservation Article

Factors Affecting Golden-Cheeked Warbler Nest Survival in Urban and Rural Landscapes

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ABSTRACT We evaluated hypotheses concerning temporal, landscape, and habitat effects on nest survival of golden-cheeked warblers (*Dendroica chrysoparia*) in an urban and a rural landscape during the breeding seasons of 2005 and 2006 in central Texas, USA. We found support for temporal effects of year and cubic effect of date and included them in candidate models that evaluated habitat and landscape effects. Nest survival was lower in 2006 than in 2005 and decreased nonlinearly as the breeding season progressed. We found support for edge effects with decreased nest survival nearer edges and in areas with increased open edge density (wooded habitat abutting open habitat) or decreased trail density. However, confidence intervals for the model-averaged odds ratios overlapped 1.0 for all edge variables. Overall daily survival rate was 0.964 (95% CI = 0.949–0.975), resulting in a 25-day period survival of 0.398 (95% CI = 0.269–0.524). Period survival in Austin's urban landscape (0.399, 95% CI = 0.270–0.526) was similar to survival in Fort Hood's rural landscape (0.396, 95% CI = 0.261–0.528). Both landscapes likely support self-sustaining populations based on reasonable assumptions for adult survival and number of nesting attempts. We suggest that some large urban preserves can provide breeding habitat of comparable quality to rural locations and recommend protecting large parcels (>100 ha) of breeding habitat with limited fragmentation and reducing the amount of wooded edge abutting open habitat to ensure nest survival regardless of their landscape context. (JOURNAL OF WILDLIFE MANAGEMENT 73(3):407–413; 2009)

DOI: 10.2193/2007-516

KEY WORDS *Dendroica chrysoparia*, edge effects, golden-cheeked warbler, information-theoretic approach, nest survival, rural, temporal effects, Texas, urban.

Factors affecting nest survival of migrant songbirds may act in a hierarchical top-down manner where large-scale effects such as fragmentation constrain or provide context for small-scale effects (Thompson et al. 2002, Stephens et al. 2003), likely resulting from patterns in nest predator diversity, abundance, and behavior (Chalfoun et al. 2002*b*). Recent studies of avian communities (Knutson et al. 2004, Peak et al. 2004) and single species or populations (Driscoll et al. 2005, Bakermans and Rodewald 2006) support the idea that multiple scales affect nest survival. However, only a few studies have incorporated factors associated with human development into their analysis (Bakermans and Rodewald 2006, Burhans and Thompson 2006). As human development continues to fragment, alter, and destroy native habitats, it is increasingly important to assess and understand how urbanization impacts avian populations (Marzluff et al. 2001). Knowledge of which scale and which factors affect nest success can aid in prioritizing management decisions (Thompson et al. 2002, Driscoll et al. 2005) and is critical for effective management of endangered species (Dearborn and Sanchez 2001).

The golden-cheeked warbler (*Dendroica chrysoparia*) is a federally endangered Neotropical migrant songbird whose current breeding range is restricted to ≤25 counties in central and south-central Texas, USA (Ladd and Gass 1999). Because females construct their nests from the peeling bark of mature Ashe juniper (*Juniperus ashei*), golden-cheeked warbler nesting habitat is restricted to mature Ashe juniper–oak (*Quercus* sp.) forests (Ladd and Gass 1999). Habitat loss and fragmentation resulting from urbanization and agricultural clearing (including ranching) are considered the main threats to the golden-cheeked warbler's population viability (U.S. Fish and Wildlife Service 1992). Urban and suburban growth is particularly high in their central breeding range in and around Travis County (Wahl et al. 1990, U.S. Fish and Wildlife Service 1992).

Little information exists on how processes operating at any scale impact nest success or productivity of golden-cheeked warblers. Paired males had higher inferred success (based on evidence of adults feeding young) in territories closer to residential development than agriculture or residual grassland and in large patches (>100 ha) in Travis County (Coldren 1998). In a rural landscape, on Fort Hood Military Reservation, nest survival declined with increasing forest edge density (Peak 2007), and there was only marginal support for nest-site and territory factors affecting nest survival when nest predator groups were analyzed separately (Stake 2003).

In addition to habitat features, temporal factors such as year, nest stage, and date have been shown to affect nest success of songbirds (Grant et al. 2005). These often represent effects that could be related to predator behavior or other environmental factors not otherwise captured by models (Grant et al. 2005, Shaffer and Thompson 2007). On Fort Hood, Stake (2003) did not find support that temporal factors affected nest survival, whereas Peak (2007) found marginal support that nest stage and day of year affected nest survival.

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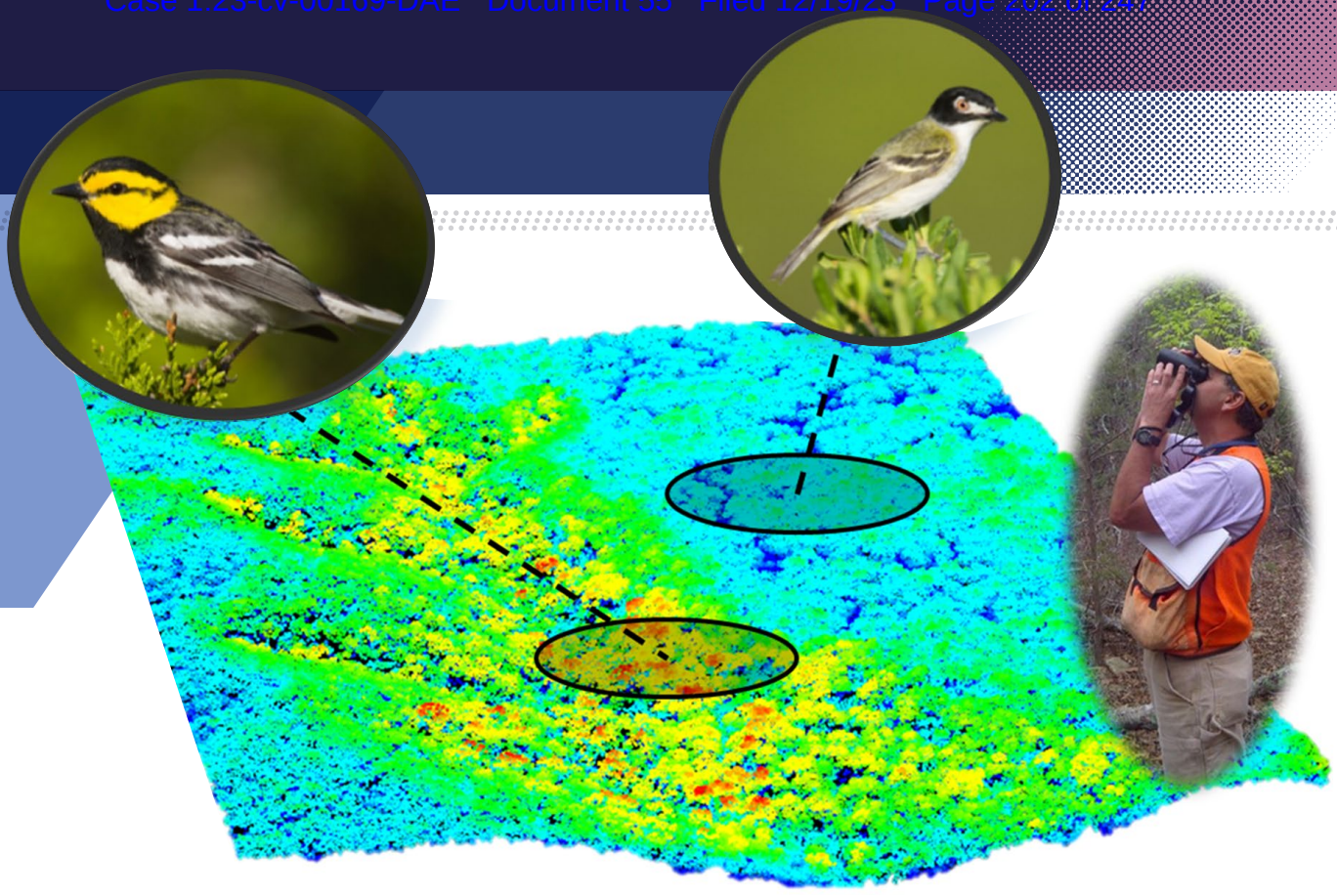
patch occupancy is a consistent finding in other golden-cheeked warbler research (Benson 1990, Arnold et al. 1996, Butcher et al. 2010), and suggests warblers do not require a minimum habitat patch-size to successfully occupy a patch.

I found a minimum patch-size threshold of 13.4 ha and 19.7 ha where territory establishment and pairing success occurred, respectively, although these minimum thresholds were non-significant. Muggeo (2003) states it is often difficult to distinguish a breaking-point between 2 slopes with smaller samples, which may have resulted in the non-predictive nature of my data. Although I was not able to determine a solid breaking-point for territory establishment and pairing success, small confidence intervals for territory establishment and pairing success (± 3.35, ±3.47, respectively) suggest the breaking point for territory establishment is 10-17 ha and the breaking point for pairing success is 16-23 ha.

Because territory establishment is associated with the goal of obtaining a female and fledging young for most songbirds, the minimum patch-size requirement for territory establishment demonstrated in this study suggests warblers select habitat patches for breeding purposes based on patch-size. Farrell et al. (2012) experimentally added warbler vocalizations to habitat patches and found golden-cheeked warblers displayed significantly higher territory density within treatment sites with conspecific vocalizations broadcast than within control sites without conspecific broadcasts. This trend was consistent within habitat patches previously unoccupied and deemed less suitable (i.e., low quality), suggesting territory selection was in part due to proximity of other warblers. I found a higher minimum patch-size threshold for pairing success than



LiDAR height data indicating differing golden-cheeked warbler and black capped vireo habitat areas in central Texas juniper and oak woodlands.
Photos courtesy of Greg Lasley.

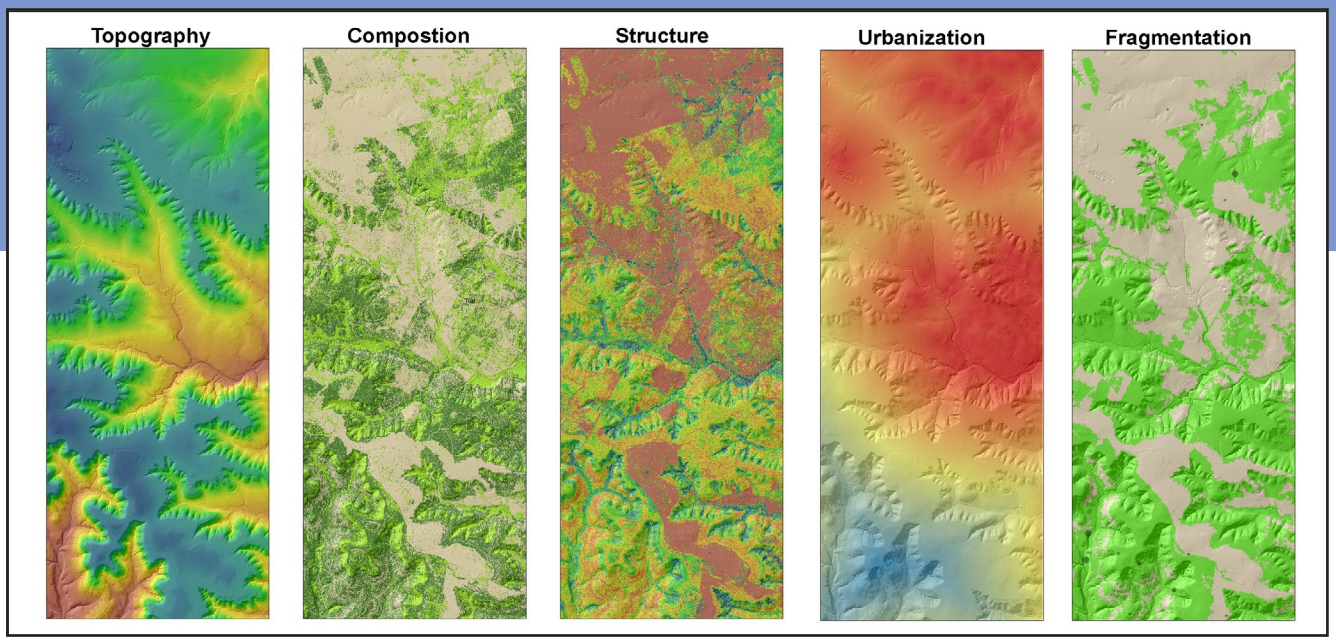
Airborne Laser Altimetry for Strategic Habitat Conservation Planning on National Wildlife Refuge Lands

Spatial data layers, predictive model outcomes, and GIS maps describing wildlife habitat relationships are now standard tools for guiding wildlife management and monitoring, and for targeting conservation actions in places where they have the greatest impact (Craighead and Convis 2013). Therefore, it's not hard to imagine why airborne LiDAR has rapidly become one of the most highly desired geospatial technologies for natural resource management and planning.

LiDAR has quickly transitioned from a novel technology to a valuable and operational environmental data source that can characterize terrestrial and aquatic ecosystems in ways not easily imagined a decade ago (Evans et al. 2009). Of the variety of LiDAR systems, 3D point cloud data from airborne laser altimetry shows the greatest potential for wildlife studies. It is highly intuitive (i.e. x, y, z coordinates) and relatively easy to process into precisely quantified vertical and horizontal vegetation structure and bare earth surfaces. These layers can then be used to inform best practices for maintaining wildlife populations and other valued ecosystem services, such as clean and consistent water supplies. LiDAR availability has also increased as federal, state, and local governments develop cooperative arrangements to cost-effectively acquire data.

Since the start of the National Wildlife Refuge System Inventory and Monitoring (I&M) initiative in 2010, LiDAR has become a nearly

BY STEVEN E. **SESNIE**, JAMES M. **MUELLER**, AND SARAH E. **LEHNEN**



LiDAR-derived data layers depicting topography (elevation), composition (juniper and broadleaf tree cover), structure (vegetation height), urbanization (housing density), and fragmentation (remnant woodland patches).

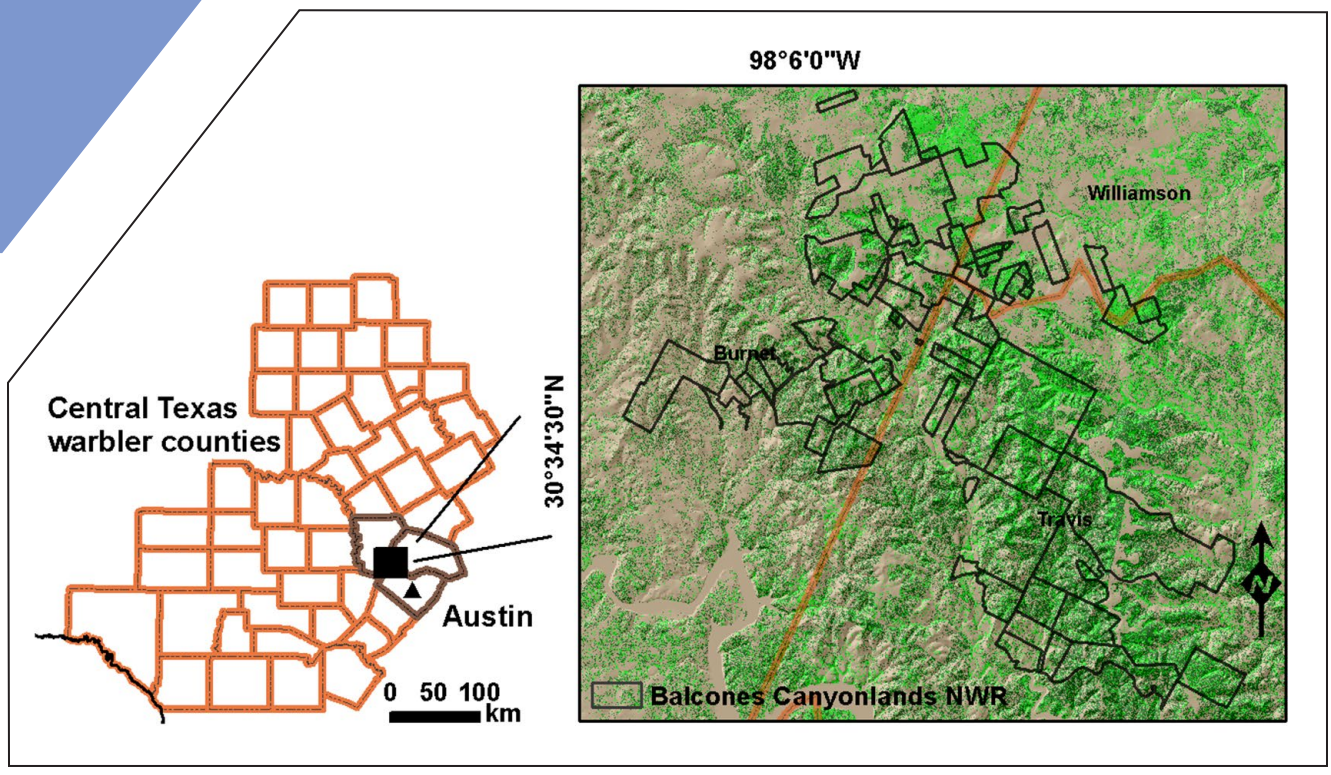
indispensable tool for strategic habitat conservation planning. The Southwest Region of the U.S. Fish and Wildlife Service (USFWS), which encompasses Texas, Oklahoma, New Mexico, and Arizona, is developing and applying LiDAR products in a number of ways to better target habitat conservation, its primary mission. For species reaching critically low population numbers, LiDAR provides a new tool that can be used to reduce species declines and monitor progress toward achieving habitat and population goals.

What does LiDAR offer that is so uniquely suited to answering key questions about how best to sustain healthy wildlife populations? LiDAR has proven effective for developing detailed map layers characterizing habitat, often at spatial scales more closely linked to site conditions selected for reproduction, foraging, and refuge from predators than have traditionally been available (Vierling et al. 2008). LiDAR 3D point clouds provide detailed height measurements of objects on the ground that can be converted to data layers describing vegetation structure (height, density, and cover), terrain (elevation, solar radiation, and slope conditions), hydrology (site moisture potential, flow paths, and catchment areas), human infrastructure (buildings, transmission lines and towers, wind turbines, and other structures), and fragmentation effects (patch distribution, edge density and distance from woodland edge) across large landscapes. LiDAR, in combination with other airborne and satellite sensors, can also help characterize vegetation composition (e.g., broadleaf vs. evergreen trees), leveraging multispectral information in addition to LiDAR height and density metrics.

The above features generated from LiDAR provide a picture of habitat that is readily integrated into a GIS, or processed using sophisticated statistical models to estimate likelihood of occurrence, populations numbers or habitat suitability for a species at a level of detail useful to managers.

A recent and compelling example of where LiDAR is now playing a central role in conservation planning is on the 25,000 acre Balcones Canyonlands National Wildlife Refuge (BCNWR) located north of Austin, Texas. The refuge was established in 1992 primarily for the protection of two endangered songbirds, the golden-cheeked warbler (Setophaga chrysoparia) and black-capped vireo (Vireo atricapilla). The entire breeding range of the warbler lies in central Texas, often close to areas undergoing urbanization at the expense of habitat quality. The vireo breeds throughout a larger area reaching northern Mexico and into parts of southern Oklahoma.

On the refuge, the two species often occur in adjacent habitat at different



Golden-cheeked warbler and black-capped vireo study area at Balcones Canyonlands National Wildlife Refuge.

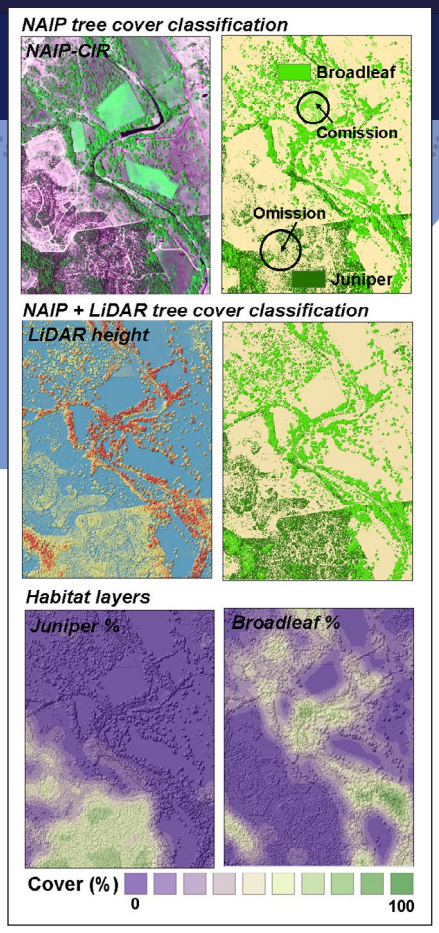
stages of vegetation succession. Appropriate vegetation structure for the vireo typically develops about five years after a major disturbance such as fire. In contrast, the warbler prefers mature woodlands of oak (Quercus spp.) and Ashe juniper (Juniperous ashsei), requiring 50 to 60 years to develop. A site may be suitable as habitat for either species, but only optimal for one at a given successional stage.

To date, the majority of our work with LiDAR data at BCNWR has focused on modeling habitat relationships for the golden-cheeked warbler. BCNWR is currently considered to be about half the size of the area needed to sustain a viable population of warblers, and is complemented by other nearby conservation areas such as the 30,400-acre Balcones Canyonlands Preserve managed by the city of Austin, Travis County and partners. Understanding the habitat needs of this species ensures that future acquisitions for the federal refuge are the highest quality habitat available for warblers. Better estimates of warbler numbers are also needed to help guide recovery programs managed by the USFWS and a variety of partners.

Developing accurate data layers in a GIS is a primary step for developing credible models of wildlife habitat relationships. An important aspect of distinguishing warbler habitat is determining the amount of juniper and broadleaf tree cover within a breeding territory. A diversity of tree species provides the high quality foraging habitat for the insectivorous warbler as it follows arthropod irruptions that occur on different tree species throughout the spring and summer. Older juniper trees are also necessary for the peeling bark that is used as nesting material.

LiDAR vegetation height fused with high resolution (1m pixels) 4-band color infrared aerial photography from the USDA Farm Service Agency National Agricultural Imagery Program (NAIP) greatly improves opportunities for effectively distinguishing these habitat differences by reducing misclassification errors that occur when mapping vegetation using supervised image classification techniques. These types of errors can "scale-up", impacting subsequent data layers and spatial model results important for decision making.

Classified LiDAR points can also greatly help to discriminate important features such as urban and suburban



NAIP-CIR aerial photo and LiDAR data fusion for reducing omission and commission classification errors and developing essential habitat composition layers.

infrastructure that can be detrimental to songbirds through increased predation and disturbance. For example, building classified points can be used as model inputs by creating data layers quantifying housing density, distances from urban areas, and other features characterizing human infrastructure and development.

Classified points are also useful for extracting vegetation height, canopy cover, and density. We used the LP360 LiDAR toolbox for ArcGIS to efficiently filter and classify point cloud data for LiDAR tiles that were then passed to U.S. Forest Service FUSION LiDAR processing software to create vegetation metrics, while eliminating building features that would, in places, create erroneous tree canopy and height estimates.

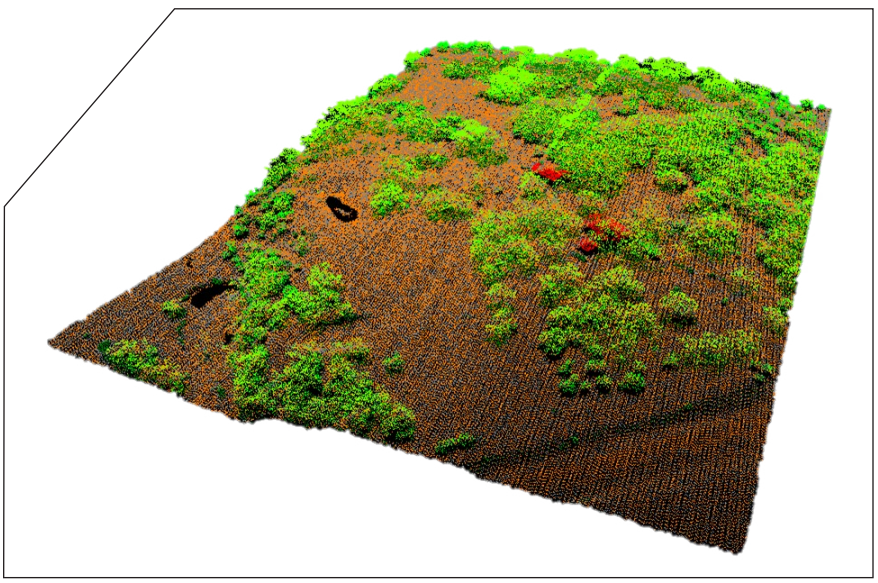
Where wildlife data collected in the field and LiDAR-derived habitat layers often come together is in a model. Habitat modeling can take many forms, depending on objectives. However, most spatial models of wildlife habitat relationships take information from a limited number of survey locations that are then combined with values from digital data layers. Models can then be built to estimate occurrence, occupancy, habitat suitability, or abundance of a species for a much larger un-sampled area.

When combined with bird survey data collected on the ground, LiDAR is proving to be an effective tool for developing spatial data layers and habitat models in a manner that helps guide decision making.

In the case of the warbler and vireo, 250 point counts randomly distributed across BCNWR were surveyed four times and then combined with LiDAR habitat metrics (e.g., tree canopy cover, proportion of Ashe juniper, tree height, slope, solar radiation, etc.) to estimate occupancy (likelihood of species presence) and density (number of individuals per acre). The end result of modeling were data layers depicting warbler and vireo occupancy and density which can be used to estimate population size for BCNWR and adjacent lands.

Models are, of course, a simulation of reality that must be vetted by peers, natural resources managers, biologists, stakeholders, and others familiar with local conditions, and using intensively collected field data from a subset of points. This is an ongoing process, but our initial review of models developed with LiDAR-derived habitat metrics bodes favorably with managers and individuals knowledgeable about each species and habitat conditions on the refuge.

Models fitted with LiDAR habitat data have also performed well for predicting golden-cheeked warbler and black-capped vireo occurrence in other locations such as the Fort Hood military installation in north central Texas (Farrell et al. 2013). In each case,

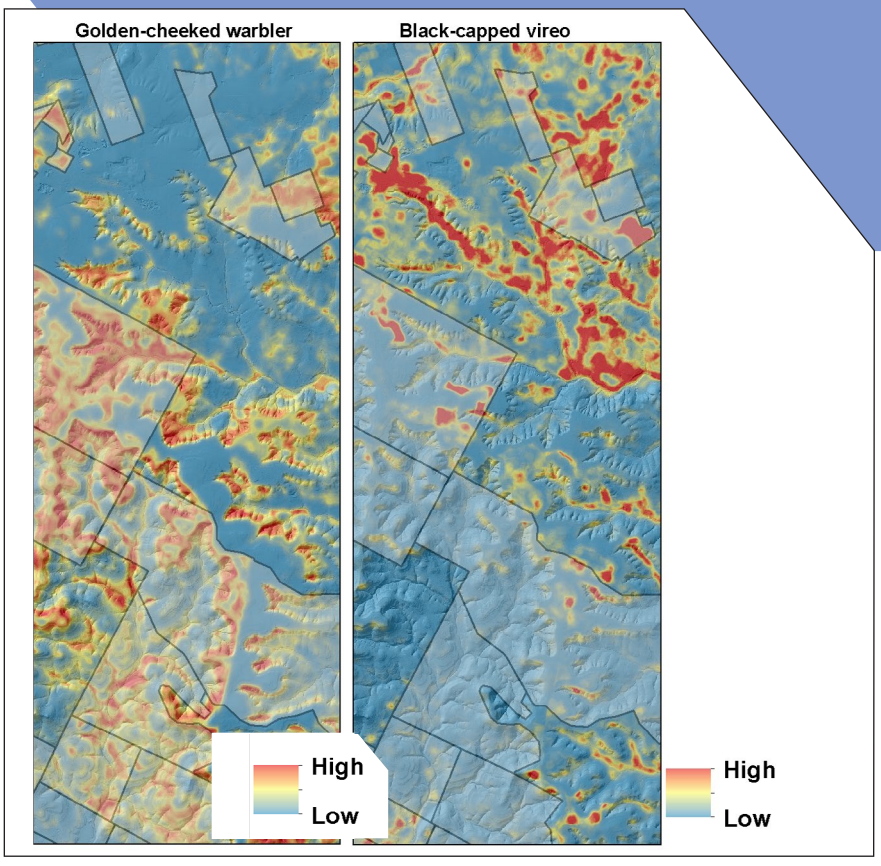


LiDAR point clouds classified as ground (orange), buildings (red) and vegetation (green).

LiDAR-based model outputs provide a foundation for making better informed decisions with respect to identifying, managing, and monitoring habitat areas critical for sustaining viable populations of endangered songbirds. These principal aspects of strategic habitat conservation will continue to drive demand for modern geospatial technologies such as LiDAR.

Currently, we are using LiDAR to address other priority conservation questions, such as the impact of climate change and sea-level rise on critical wetland habitat along Texas Gulf Coast. LiDAR data is presently available for coastal areas of Texas that harbor multiple species such as the critically endangered whooping crane (Grus americana), piping plover (Charadrius melodus), and ocelot (Leopardus pardalis). High precision LiDAR elevation data is vital to predicting where and how sea-level rise may alter coastal wetlands on National Wildlife Refuge lands in Texas and other Gulf Coast States over the next century.

For other parts of the Southwest region, LiDAR is now being acquired to meet many other needs particularly on refuge lands where water resources are managed for waterfowl and marsh-bird habitat. This has benefitted from the partnerships of state and county governments that have cooperated to fund LiDAR data acquisition, resulting in these data being made available to the public at little or no cost. The Texas Natural Resource Information System (TNRIS), Capital Area Council of Governments (CAPCOG) and Lower Colorado River Authority (LCRA) are shining examples of cooperative efforts to acquire and serve LiDAR data for natural resource applications. These types of efforts substantiate the value of LiDAR for natural resource management. With little doubt LiDAR applications will continue to grow within the USFWS as a highly effective tool for mapping monitoring vegetation and landscape changes at a level of precision that can readily be used for conservation decision making.



Spatial model outcomes highlighting important habitat areas for the warbler and vireo on and off Balcones Canyonlands National Wildlife Refuge (grey shaded areas).

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Golden-cheeked warbler
(*Setophaga chrysoparia*)

5-Year Review:
Summary and Evaluation


Male (D. Lindsay)


Female feeding young (G. Eckrich)

U.S. Fish and Wildlife Service
Austin Ecological Services Field Office
Austin, TX
August 26, 2014

5-YEAR REVIEW
Golden-cheeked warbler (*Setophaga chrysoparia*)

1.0 GENERAL INFORMATION

1.1 Reviewers:

Lead Regional Office: Southwest Regional Office, Region 2
Susan Jacobsen, Chief, Division of Classification and Restoration (505) 248-6641
Julie McIntyre, Acting Branch Chief, Restoration and Recovery (505) 248-6507
Jennifer Smith-Castro, Recovery Biologist (281) 286-8282, ext. 234

Lead Field Office: Austin Ecological Services Field Office (AESFO)
Alisa Shull, Recovery Branch Chief (512) 490-0057, ext. 236.
Timothy Breen, Fish and Wildlife Biologist (512) 490-0057, ext. 240

1.2 Purpose of 5-Year Reviews:

The U.S. Fish and Wildlife Service (Service) is required by section 4(c)(2) of the Endangered Species Act (Act) to conduct a status review of each listed species once every 5 years. The purpose of a 5-year review is to evaluate whether or not the species' status has changed since it was listed (or since the most recent 5-year review). Based on the 5-year review, we recommend whether the species should be removed from the list of endangered and threatened species, be changed in status from endangered to threatened, or be changed in status from threatened to endangered. Our original listing as endangered or threatened is based on the species' status considering the five threat factors described in section 4(a)(1) of the Act. These same five factors are considered in any subsequent reclassification or delisting decisions. In the 5-year review, we consider the best available scientific and commercial data on the species, and focus on new information available since the species was listed or last reviewed. If we recommend a change in listing status based on the results of the 5-year review, we must propose to do so through a separate rule-making process including public review and comment.

1.3 Methodology used to complete the review:

The Service provides notice of status reviews via the Federal Register and requests information on the status of the species. No comments were received during the 90-day request for information period. This review was conducted by Timothy Breen from the Austin Ecological Services Field Office and relied heavily on a status review contracted through a grant under section 6 of the Act to Texas A&M University (TAMU). Additionally, we requested the Golden-cheeked Warbler Recovery Team review and provide comments on this document and have incorporated those comments into this review.

1.4 Background:

The GCWA is a small, insectivorous, migratory songbird that breeds only in the mixed Ashe juniper/deciduous woodlands of the central Texas Hill Country west and north of the Balcones Fault (Pulich 1976, p. 1). GCWA require the shredding bark produced by mature Ashe junipers for nest material (Pulich 1976, p. 1). Breeding and nesting GCWA feed primarily on insects, spiders, and other arthropods found in Ashe junipers and associated deciduous tree species (Pulich 1976). In July-August, GCWA migrate through Mexico and Central America to winter in the mountainous regions of southern Mexico, Guatemala, Honduras, El Salvador, and Nicaragua; they return to Texas from late February through April. It was originally listed as a member of the *Dendroica* genus; in 2011, the genus was changed to *Setophaga* (see section 2.3.1.4). In accordance with this current information, we officially accept the new scientific name of the GCWA as *Setophaga chrysoparia* in this 5-year review.

1.4.1 FR Notice citation announcing initiation of this review:

21 April 2006 (71 FR 20714), with 90-day request for information period.

1.4.2 Listing history

Original Listing

FR notice: Emergency listed 55 FR 18844 and final 55 FR 53153
Date listed: Emergency-listed as endangered on May 4, 1990; Final Rule published on December 27, 1990
Entity listed: Golden-cheeked warbler (*Dendroica chrysoparia*)
Classification: Endangered, without critical habitat

Revised Listing, if applicable: N/A; there have been no revisions.

1.4.3 Associated rulemakings: None.

1.4.4 Review History:

Prior to listing, in 1976, Pulich (pp. 1-128) completed a status review of the GCWA, which described the species, its life history, known breeding and wintering distribution, and habitat. Pulich (1976, p. 132) concluded at that time that if the rate of habitat clearing continued at the current rate, Ashe juniper trees, which are necessary for GCWA nesting/reproduction, could be eliminated by the turn of the century.

Additional status reviews of the GCWA were conducted in 1990 for the emergency and final listings (55 FR 18844, 55 FR 53153), in 1992 for the GCWA Recovery Plan (USFWS 1992, pp. 1-34), and in 2010 by TAMU (Groce et. al. 2010, pp. 1-193).

1.4.5 Species' Recovery Priority Number at start of 5-year review: 2C

A Recovery Priority Number of 2C indicates the taxon is a species, with a high degree of threat, high potential for recovery, and conflict exists with economic development or human resource use.

1.4.6 Recovery Plan or Outline
Name of plan or outline: Golden-cheeked Warbler Recovery Plan
Date issued: September 1992
Dates of previous revisions, if applicable: N/A

2.0 REVIEW ANALYSIS

2.1 Application of the 1996 Distinct Population Segment (DPS) policy

2.1.1 Is the species under review a vertebrate? Yes.

2.1.2 Is the species under review listed as a DPS? No.

2.2 Recovery Criteria

2.2.1 Does the species have a final, approved recovery plan? Yes.

2.2.1.1 Does the recovery plan contain objective, measurable criteria? Yes. The recovery plan contains objective, measurable delisting criteria; downlisting criteria have not been developed.

2.2.2 Adequacy of recovery criteria.

2.2.2.1 Do the recovery criteria reflect the best available and most up-to date information on the biology of the species and its habitat? No. Additional information has been collected since the recovery plan was published and warrants revision of the recovery plan. The Service is in the process of revising the recovery plan.

2.2.2.2 Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria (and is there no new information to consider regarding existing or new threats)? No.

2.2.3 List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information:

The GCWA recovery plan (USFWS 1992) contains the following recovery criteria:

(1) sufficient breeding habitat has been protected to ensure the continued existence of at least one viable, self-sustaining population in each of eight regions outlined in the plan;

(2) the potential for gene flow exists across regions between demographically self-sustaining populations where needed for long-term viability;
(3) sufficient and sustainable non-breeding habitat exists to support the breeding populations;
(4) all existing GCWA populations on public lands are protected and managed to ensure their continued existence and;
(5) all of these criteria have been met for 10 consecutive years (Service 1992, p. iv).

Although progress has been made towards these criteria, none have been achieved to date. Additionally, the existing criteria are only for delisting and the recovery plan lacks downlisting criteria. Changes in the GCWA's distribution, abundance, and threats have occurred since the recovery plan was published in 1992 (see Section 2.3. this document). Therefore, the criteria identified in the 1992 recovery plan do not adequately address all of the threats to the species nor do they reflect the current needs of the species based on the best available science. A revision to the recovery plan is warranted and a draft is being developed. The revised recovery plan will evaluate the utility of the eight recovery regions identified in the original plan, and it will also incorporate downlisting criteria, which will allow us to more accurately chart the progress toward threatened status and ultimately removal from the list.

2.3 Updated Information and Current Species Status

2.3.1 Biology and Habitat

2.3.1.1 New information on the species' biology and life history:

In their breeding range, GCWA pairs have been found in habitat patches smaller than 10 hectares (ha) (24.7 acres [ac]); however, successful reproduction is more likely if patches of habitat exceed 15 ha (37 ac) (Arnold et al. 1996, p. 19; Butcher et al. 2010, p. 135-138). One study indicated that the probability of occupancy of a particular patch by GCWA increases with increasing patch size, reaching a probability of 100 percent between approximately 160 and 200 ha (400 and 500 ac) (Collier et al. 2010). Reproductive success of GCWA is higher in large, unfragmented patches of habitat as compared to small, fragmented patches, and reproductive success increases as forest edge decreases (Maas-Burleigh 1998, p. 16; Coldren 1998, pp. 74-75; Peak 2007, p. 632, Reidy et al. 2009, p. 410). Research on the wintering range found that GCWA prefer foraging in deciduous trees in pine-oak forests (Thompson 1995, p. 12; Rappole 1996, p. 15). In their wintering habitat, GCWA usually occur in mixed-species flocks that move within a home range that varies from 1.8 to 9.6 ha (4.4 to 23.7 ac) (Braun et al. 1986, p. 564; Vidal et al. 1994, p. 689; Rappole et al. 1999, p. 765; King and Rappole 2000, p. 667). Although as many as 12 GCWA have been seen in one flock, studies show that most mixed-species flocks contain a single GCWA (Kroll 1980 p. 64; Braun et al. 1986, p. 564; Vidal et al. 1994, pp. 686-688; Thompson 1995, p.11; Rappole et al. 1999, p. 764).

2.3.1.2 Abundance, population trends (e.g. increasing, decreasing, stable), demographic features (e.g., age structure, sex ratio, family size, birth rate, age at mortality, mortality rate, etc.), or demographic trends:

Several studies have assessed GCWA abundance. The first, by Pulich (1976, pp. 9-12), was based on one site each in Dallas, Bosque, and Kendall Counties and estimated 14,950 individuals (Pulich 1976, pp. 10-11, 163). In 1990, Wahl et al. (1990, pp. 32-35, 55) estimated available habitat and determined there was a maximum carrying capacity of 4,822 to 16,016 pairs. Comparing Wahl et al.'s and Pulich's estimates, the Service (1992, pp. 18-20) estimated 13,800 territories. In 2007, SWCA Environmental estimated 20,445 to 26,978 pairs (SWCA 2007, pp. 34-43). Finally, Mathewson et al. (2012, pp. 1, 117) estimated the range-wide population of male GCWA to be 263,339. However, others have cautioned that this analysis may have over-predicted density estimates, resulting in inflated population estimates. For example, Mathewson et al. (2012) used point counts to estimate the number of GCWA on a portion of the Balcones Canyonlands Preserve in Travis County, Texas. The same area was intensively surveyed by City of Austin staff using territory-mapping, color banding, and nest monitoring (Reiner et al. 2013, p. 28). Abundance estimates from Mathewson et al. (2012) were 1.4 to 13 times the data generated by the City of Austin. Due to the size and geographic distribution of the breeding and wintering habitat, an actual count of GCWA individuals in any given year is not possible range-wide. However, the differences in individual population estimates listed above underscores the need for more accurate status and distribution information for the GCWA.

Since the GCWA was listed in 1990, there have been increased efforts to obtain survival and productivity data to better understand population trends. Several life history characteristics of the GCWA contribute to difficulties in obtaining accurate data including the elusive behavior of females (Hayden and Tazik 1991, pp. 40), the difficulty in locating and accessing nest sites (Hayden and Tazik 1991, pp. 48), and the high rate of juvenile dispersal (Jette et al. 1998, pp. 35). Therefore, much of the information available for population demographics on the breeding grounds is based on observations of the more conspicuous male. Accurate measures of reproductive success and survival for the species rely on the detection of females, nests, and fledglings. Survey techniques, such as point counts, that rely on detection of males do not detect whether males have successfully paired; therefore, reproductive success of the GCWA may be underestimated when based on counts of males (Weckerly and Ott 2008, p. 3).

2.3.1.3 Genetics, genetic variation, or trends in genetic variation (e.g., loss of genetic variation, genetic drift, inbreeding, etc.):

Lindsay et al. (2008, p. 2123) examined population genetics of GCWA using 109 individuals across 7 sample sites. The authors found no evidence of genetic bottlenecks or genetic differentiation among populations, suggesting that gene flow among populations was unimpeded. The authors also suggested that there was no evidence of elevated risk of extinction resulting from the genetic mechanisms

examined (Lindsay et al. 2008, pp. 2130). However, Athrey et al. (2011, p. 1346-1348) used historical and recent samples to assess demographic changes on population genetics of the GCWA. They documented a steep decline in genetic diversity over a 100-year period, an increase in genetic differentiation in all 3 sample sites, and low effective sizes for current populations. They contribute the steep increase in genetic differentiation to increased habitat loss and fragmentation throughout the range of the GCWA and suggest that barriers to gene flow are recent phenomena (Athrey et al. 2011, pp. 1352).

2.3.1.4 Taxonomic classification or changes in nomenclature:

The GCWA was first described by Sclater and Salvin (1860, p. 298) from a specimen collected by Osbert Salvin in Guatemala. The American Ornithologists' Union Committee on Classification and Nomenclature transferred all species in genus *Dendroica* to the genus *Setophaga* (Chesser et al. 2011, pp. 600). In this 5-Year Review, the Service is adopting this change in nomenclature for the GCWA, and we refer to the species as *Setophaga chrysoparia* throughout this document. In accordance with this current information, we officially accept the new scientific name of the GCWA as *Setophaga chrysoparia*.

2.3.1.5 Spatial distribution, trends in spatial distribution or historical range:

Golden-cheeked warblers breed exclusively in the mixed Ashe juniper/deciduous woodlands of the Edwards Plateau, Lampasas Cut-Plain, and Llano Uplift regions of central Texas from March to August (Figure 1; Kroll 1974, p. 45; Oberholser 1974, p. 751; Pulich 1976, pp. 54, 67-68). In July GCWA begin migrating southward from Texas through the Sierra Madre Oriental mountain range and winter in the mountainous regions (highlands) of southern Mexico (Chiapas) and Central America (Guatemala, Honduras, El Salvador, and Nicaragua) (Figure 1; Ridgeway 1902, p. 566; Oberholser 1974, p. 750; Pulich 1976, pp. 55, 58, 62; Perrigo and Booher 1994, p. 15; Rappole et al. 1999, pp. 768-769; Komar 2008, pp. 2-3).

In Central America, the occurrence of GCWA in northern El Salvador and north-central Nicaragua during the winter has only been confirmed within the last 6 years (Morales et al. 2008, p. 30; King et al. 2009, p. 48; Komar 2008, pp. 2-3). In addition, several new areas with warbler occurrences have been documented since 2000 (Jones and Komar 2008a, pp. 169; Jones and Komar 2008b pp. 317). Eight sightings from Costa Rica (highlands of the Central Valley) and one from Panama suggest the warbler's wintering range may extend further south than Nicaragua (Jones 2005b, p. 1; Jones and Komar 2006, p. 155; Groce et al. 2010, p. 33).

The GCWA migrates north and south along the Sierra Madre Oriental of Mexico, through the Mexican states of Coahuila, Nuevo Leon, Tamaulipas, Queretaro, and Veracruz (Phillips 1911, p. 86; Pulich 1976, pp. 56-58; Johnson et al. 1988, p. 131; Lyons 1990, p. 48; Perrigo et al. 1990, p. 28). Sightings are typically at elevations above 1,100 meters (m) (3,609 feet [ft]) in the pine (*Pinus* spp.), pine-oak (*Quercus* spp.), and oak-sweetgum (*Liquidambar styraciflua*) woodlands of the

Sierra Madre Oriental (Braun et al. 1986, p. 564; Johnson et al. 1988, p. 131; Perrigo et al. 1990, p. 28; Perrigo and Booher 1994, pp. 14-15).

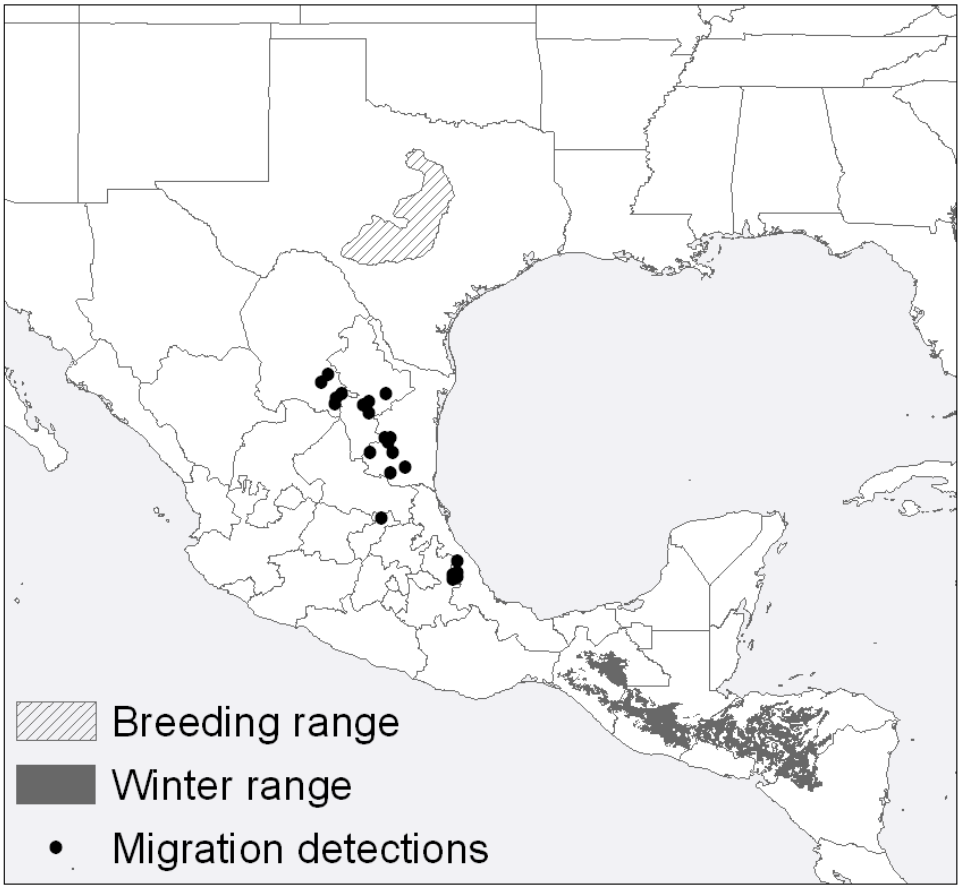

Figure 1. Golden-cheeked warbler breeding, migration (Sierra Madre Oriental), and wintering range (Groce et. al 2010, p. 18)

2.3.1.6 Habitat or ecosystem conditions (e.g., amount, distribution, and suitability of the habitat or ecosystem):

Several estimates of potential GCWA breeding habitat exist. The earliest estimate used the Soil Conservation Service's 1962 and 1974 vegetation surveys, which resulted in an estimate of 129,904 ha (326,000 ac) (Pulich 1976, p. 163). The next set of GCWA habitat estimates used satellite imagery from 1997 or earlier and range from 32,149 to 1,676,140 ha (78,441 to 4,141,832 ac) (Wahl et al. 1990, pp. 17-35, 55; Rowell et al. 1995, pp. 9-17; Diamond and True 2008, pp. 49-56; The Nature Conservancy 2002, pp. 4-8; Rappole et al. 2003, pp. 735-741). The most recent GCWA habitat estimates used 2001 Landsat imagery and range from 552,195 to 1,771,883 ha (1,364,504 to 4,378,418 ac) (Diamond 2007, pp. 1-27; SWCA 2007, pp. 22-24; Loomis Austin 2008, pp. 3-15; Groce et al. 2010, p. 101; Morrison et al. 2010, pp. 72-75). The differences in these numbers are

mainly due to the use of different vegetation types, different definitions of breeding habitat and patch size, and different parameters included or excluded from the habitat models. For example, the models used aerial imagery from different years, which reflect varying amounts of available habitat.

A recent habitat analysis concluded there had been an estimated 29 percent loss of existing breeding season habitat between 1999-2001 and 2010-2011 (Duarte et al. 2013, p. 7). The authors acknowledge that such a large estimated reduction in habitat is likely a function of the additive influence of direct GCWA breeding habitat loss, their minimum habitat patch size criterion, and their lack of consideration for creation of new warbler breeding habitat. Others have previously documented the loss of habitat within the breeding range of the GCWA as a result of residential and commercial development, highways, transmission corridors, reservoirs, and human population growth (Groce et al. 2010, p. 113-131).

The Alliance for the Conservation of Mesoamerican Pine-oak Forest (2008, p. 22; ACMPOF) developed a map of potential wintering habitat based on documented sightings (Pulich 1976, pp. 57-62; Vidal et al. 1994, pp. 685-687; Thompson 1995, pp. 13-49; and Rappole et al. 1999, pp. 763-765; ACMPOF 2008, p. 12). The area covered by pine-oak forests and pure oak stands (*Quercus* spp.) ranging from 900 to 2,200 m (2,953 to 7,218 ft) above sea level, and considered potential GCWA habitat, is approximately 19,500 km^2 (7529 mi^2) or 18.78 percent of the Mesoamerican Pine-oak Forest's total area (ACMPOF 2008, p. 21). A survey in Honduras indicated that GCWA have less specific habitat requirements in their wintering range as long as the habitat is forested and contains approximately 5.6 m^2/ha of encino oak basal area (King et al. 2012, pp. 7).

2.3.1.7 Conservation Measures:

See discussion below, in section 2.3.2.1, covering Long-term Land Protection, Section 7 Consultations and Habitat Conservation Plans, and International Conservation in Migratory/Wintering Range.

2.3.2 Five-Factor Analysis (threats, conservation measures, and regulatory mechanisms)

2.3.2.1 Present or threatened destruction, modification or curtailment of its habitat or range:

Habitat Loss. The GCWA is threatened by ongoing and imminent habitat loss. Historically, the primary cause of habitat loss was juniper clearing to create pastures for cattle grazing (Pulich 1976, pp. 72-73). Other causes of habitat loss included cutting junipers for fence posts, furniture, and cedar oil. However, recent habitat loss in Travis, Williamson, and Bexar Counties is due to rapid suburban development (Biological Advisory Team 1990, p. 19; Groce et al. 2010,

p. 142). Further, the human population is projected to continue to increase throughout the GCWA's range (Groce et al. 2010, p. 118). This growth will continue to bring additional residential and commercial development, which will further reduce and fragment GCWA breeding habitat.

Habitat Fragmentation. The loss of habitat through activities such as residential development often results in the fragmentation of larger contiguous patches of habitat and increased isolation of habitat patches which can prevent the interaction between nearby populations of the GCWA. Habitat fragmentation has been shown to influence habitat quality for woodland songbirds, such as the GCWA, in the following ways: (1) small patch size and thus small population size make extant populations more susceptible to random extinction or effects of inbreeding; (2) increased distance between patches reduces gene flow between populations and makes recolonization of vacant patches more difficult; and (3) increased proportion of habitat edge in small patches may alter patterns of insect abundance, vegetation structure, and songbird foraging activity (due to changes in the microclimate) (Brett 1989, pp. 7-8; Reville et al. 1990, p. 23; Saunders et al. 1991. p. 18, 22, 24). Fragmentation also heightens rates of nest parasitism and nest predation to the point at which the surviving songbird populations cannot maintain themselves (Lovejoy et al. 1986, p. 263; Wilcove et al. 1986, p. 248, 251).

Many GCWA populations may be impacted by the adverse effects of habitat fragmentation, particularly due to their dependence on mature forest habitat for foraging and nesting. Selection of nesting habitat is especially important, because nest location often affects reproductive success (Martin 1998, p. 656) and population viability. In addition, the fragmentation of large blocks of breeding habitat can reduce occupancy and breeding success (Peak 2007, p. 632; Groce et al. 2010, p. 10). For example, DeBoer and Diamond (2006, p. 186, 188) found that GCWA were more likely to occupy large contiguous patches of habitat that contained less edge.

Reduced Oak Recruitment. Additional threats to the GCWA breeding habitat include reduced oak recruitment due to herbivory from native and non-native animals, death of mature oaks from oak wilt, and the potential for catastrophic wildland fires from increasing fine fuel loads and urban encroachment (Groce et al. 2010, pp. 137-139, 141).

Pine-Oak Forest Conversion. The ongoing destruction and fragmentation of pine-oak forests throughout the GCWA's migration and wintering habitat has been due to unsustainable forestry practices, fires from agricultural conversion, extraction of timber, and cattle ranching (Dinerstein et al. 1995, p. 87; Redo et al. 2009, p. 95; Groce et al. 2010, p. 131). While some countries have a legal framework that encourages sustainable forestry, they still allow clearcutting, which results in forest fragmentation, reduced species diversity, and soil loss (ACMPOF 2008, p. 34).

Long-term Land Protection. Several properties have been acquired in the GCWA's breeding range that provide long-term protection. They include 77,198 ac (31,241 ha) of Department of Defense lands (Fort Hood, Camp Bullis, and U.S. Army Corps Engineers); 39,428 ac (15,956 ha) on Texas Parks and Wildlife Department lands; 2,844 ac (1,151 ha) on Lower Colorado River Authority properties; 14,789 ac (5,742 ha) on the Balcones Canyonlands National Wildlife Refuge; and over 50,000 ac (20,234 ha) of additional lands owned across the range by cities, counties, conservation organizations, and others (Groce et al. 2010, pp. 11, 151, 155-156). The land management practices vary on these lands; however, many are managed for the GCWA.

Section 7 Consultations and Habitat Conservation Plans. According to the Service's consultations tracking database, there have been 56 formal consultations on the GCWA under section 7 of the Act. Over 98,000 acres of GCWA habitat were authorized to be impacted by these consultations. The result of these consultations is over 67,800 acres of GCWA habitat maintained on Department of Defense land and over 32,000 acres of private land preserved and/or maintained for the benefit of the GCWA. Additionally, since 2006 the Service has authorized impacts to over 24,700 acres of GCWA habitat through the development of five Habitat Conservation Plans (HCP) under section 10(a)(1)(B) of the Act. The result of all HCPs if fully implemented is over 59,000 acres of habitat protected and almost $1.3 million for the preservation and/or maintenance of land for the benefit of the GCWA.

International Conservation in Migratory/Wintering Range. Since listing, there have been several efforts to encourage GCWA preservation in the winter range. The most notable effort is the ACMPOF, which was formed in 2003, and consists of eight institutions located in the United States, Mexico, Guatemala, El Salvador, Honduras, and Nicaragua. The ACMPOF (2008, p. 8) drafted a conservation plan for the ecoregion with the goal of conserving pine-oak forest habitat, which will help ensure GCWA survival. This conservation plan represents the first regional management, conservation, and sustainable development effort for pine-oak forests with the purpose of promoting and sustaining biodiversity, water, timber, recreation, and sustainable rural development (ACMPOF 2008, p. 11).

Although efforts to restore, create, and manage GCWA habitat are underway, habitat continues to be degraded or lost across the species' range. As stated above, a recent analysis suggests there may have been as much as a 29 percent loss of breeding season habitat just over the 12 year period between 1999 and 2011. Due to the ongoing declines in habitat area, and continuing habitat destruction and fragmentation, the magnitude of this threat is high.

2.3.2.2 Overutilization for commercial, recreational, scientific, or educational purposes: There is no evidence that GCWA are threatened by overutilization. Mist netting of the GCWA occurs for scientific purposes and is regulated by the

Service pursuant to section 10(a)(1)(A) of the Act, the Migratory Bird Treaty Act, and by Texas Parks and Wildlife Department (TPWD, Title 31, Part 2, Chapter 69, subchapter J). This activity rarely results in death or injury to the birds. Therefore, we do not consider this factor to be a threat to this species.

2.3.2.3 Disease or predation: No diseases in GCWA have been reported; therefore, we do not consider disease to be a threat to this species.

Red-imported fire ants (*Solenopsis invicta*), snakes, other bird species, and mammals have all been documented to prey on GCWA adults and/or young (Stake et al. 2004, p. 341; Reidy et al. 2008, pp. 462-463; Reidy et al. 2009, p. 418). Two separate studies have documented nest predation by red-imported fire ants (Stake et al. 2004, p. 341; Reidy et al. 2008, p. 462). Texas rat snakes have been observed preying on female warblers while on the nest (Stake et al. 2004, p. 341; Reidy et al. 2008, p. 462; Reidy et al. 2009, p. 418). Other likely or documented GCWA predators include western coachwhip (*Masticophis flagellum testaceus*), Great Plain's rat snake (*Elaphe guttata emoryi*), western scrub-jay (*Aphelocoma californica*), Cooper's hawk (*Accipiter cooperii*), American crow (*Corvus brachyrhynchos*), greater roadrunner (*Geococcyx californianus*), brown-headed cowbird (*Molothrus ater*), and mice (*Peromyscus* sp.) (Stake et al. 2004, p. 341; Reidy et al. 2008, p. 463).

Predation is a natural occurrence in GCWA habitat; however, increased fragmentation creates increased edge which can increase nest predation and reduce reproductive output (Peak 2007, pp. 632). Fragmentation of GCWA habitat can increase predation by opportunistic species, such as fox squirrels (*Sciurus niger*), blue jays (*Cyanocitta cristata*), grackles (*Quiscalus spp.*), and feral cats (*Felis domesticus*), which adapt well to fragmented and urban habitats. Most of these species have the potential to impact GCWA populations by destroying eggs, young birds, and adults. Avian predators are more abundant in GCWA habitat within 328 feet (100 meters) from edges (Arnold et al. 1996, p. 27), which may affect GCWA use and/or reproductive success (Fink 1996, p. 72, Coldren 1998, p. 77-79, 100, 103). For example, urban sprawl has resulted in an increase in the blue jay population, which feeds on eggs and nestlings and may have contributed to the warbler's extirpation from suburban areas where suitable habitat is found (Engels and Sexton 1994, p. 289; Engels 1995, p. 38-44).

Nest predation and parasitism likely varies annually and regionally (Groce et al. 2010, p. 60). Due to this variance, the magnitude of this threat is moderate. The GCWA continues to be affected by predation and nest parasitism and these threats can be exacerbated by the loss and fragmentation of habitat. Therefore, we believe the degree of this threat to be significant.

2.3.2.4 Inadequacy of existing regulatory mechanisms: The Migratory Bird Treaty Act of 1918 (MBTA) offers some protection to GCWA. This species is also listed by the State of Texas as an endangered species. However, neither of these protections prohibits habitat destruction, which is an imminent threat to the GCWA. In addition to being federally listed as endangered under the Endangered Species Act in the United States, both Mexico and El Salvador have national lists of threatened and endangered species which include GCWA. However, the species is not listed under CITES, nor is it listed in Honduras, Nicaragua or Guatemala.

2.3.2.5 Other natural or manmade factors affecting its continued existence:

Climate change

According to the Intergovernmental Panel on Climate Change (IPCC), "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level." Average Northern Hemisphere temperatures during the second half of the 20th century were very likely higher than during any other 50-year period in the last 500 years and likely the highest in at least the past 1,300 years (IPCC 2007, p. 1). It is very likely that over the past 50 years cold days, cold nights and frosts have become less frequent over most land areas, and hot days and hot nights have become more frequent (IPCC 2007, p. 1). It is likely that heat waves have become more frequent and the frequency of heavy precipitation events has increased over most areas (IPCC 2007, p. 1).

The IPCC (2013, pp. 15-16) predicts that changes in the global climate system during the 21st century are very likely to be larger than those observed during the 20th century. For the next two decades (2016-2035), a warming of 0.3°C (0.5°F) to 0.7°C (1.3°F) per decade is projected (IPCC 2013, p. 15). Afterwards, temperature projections increasingly depend on specific emission scenarios (IPCC 2007b, p. 6). Various emissions scenarios suggest that by the end of the 21st century, average global temperatures are expected to increase 0.3°C to 4.8°C (0.5°F to 8.6°F), relative to 1986-2005 (IPCC 2013, p. 15). By the end of 2100, it is virtually certain that there will be more frequent hot and fewer cold temperature extremes over most land areas on daily and seasonal timescales, and it is very likely that heat waves and extreme precipitation events will occur with a higher frequency and intensity (IPCC 2013, pp. 15-16).

Localized projections suggest the southwest may experience the greatest temperature increase of any area in the lower 48 States (IPCC 2007, p. 8). The IPCC also predicts that hot extremes and heat waves will increase in frequency and that many semi-arid areas like the western United States will suffer a decrease in water resources (IPCC 2007, p. 8). Others project a 10–30 percent decrease in precipitation in mid-latitude western North America by the year 2050 (Milly et al. 2005, p. 349).

Increased Wildfire. Climate change projections indicate continued droughts and increased wildfire risk, which can further restrict existing breeding habitat (EPA 2009, p. 49). Throughout the GCWA's range, urban development encroaches into Ashe juniper woodlands and this alone contributes to the risk of catastrophic wildfires. As large wooded ranches are subdivided into smaller parcels, it becomes more challenging to defend against large wildfires (Hermansen-Báez et al. 2009, p. 1). Additionally, in the absence of naturally occurring fire, juniper needles can persist on the ground for 40 to 50 years (White et al. 2009, p. 9). This build-up of dry material contributes to the potential for large stand replacement fires that can burn so hot that they destroy the seed bank in the soil and lengthen woodland recovery time (Reemts and Hansen 2008, pp. 1062-1064; White et al. 2009, p. 9). Typically these large stand replacement fires occur during the mid-summer months when rain is lacking, which makes the air and trees very dry (White et al. 2009, p. 9).

In response to the 2000 fire season, Congress directed the Secretaries of the Interior (DOI) and Agriculture (USDA) to work with Governors to develop a 10-year comprehensive strategy for reducing wildfire risks to communities and the environment (Public Law 106-291). Despite the large scale nationwide efforts to reduce the potential for wildfires, annual acreages destroyed by wildfires in Texas have ranged from 35,044 acres (14,181 hectares) in 2002, to over 1.5 million acres (607,000 hectares) in both 2006 and 2009 (DOI and USDA 2006, pp. 1-2; DOI and USDA 2009, pp. 1-2; National Interagency Fire Center 2010, pp. 1-9), and close to 4 million acres in 2011 (The Texas Interagency Coordination Center 2011). We are unaware of the exact acreages burned within the GCWA's breeding range, but with the increasing fuel loads within forests and urban encroachment into GCWA habitat, catastrophic wildfires are a potential threat to the long-term survival and recovery of the GCWA.

Range Shifts/Restrictions. The Environmental Protection Agency (EPA) developed an evaluation framework and assessment of the vulnerability of several species to the effects of climate change (EPA 2009, p. 1). The GCWA was classified as "critically vulnerable" to climate change due to the species' dependence upon Ashe juniper, the historical and continued loss of the species' breeding habitat, and the fact that the geographical extent of this habitat is probably limited by surface geology (EPA 2009, p. 50). Stands of mixed juniper-oak woodlands are restricted to areas in central Texas containing suitable geology, soil, precipitation, and land use practices (Diamond 1997, p. 1-4). Increased temperatures in the southern portions of the breeding range of many species is predicted to shift breeding ranges northward; however, GCWA are currently limited to the northern extent of their breeding range by distributional limits of their associated breeding habitat (EPA 2009. pp. 45-46). Expansion of juniper woodlands to the north is unlikely because just north of its current range the soil becomes deeper, more fertile, and more suitable for grasslands and deciduous trees. The land is also intensively farmed, creating unsuitable habitat for junipers. Further,

the Dallas-Ft. Worth metropolis lies on the northern edge of the species' range. This is an urban barrier approximately 90.5 kilometers (km) wide by 48 km deep (50 miles [mi] wide by 30 mi deep). Even if suitable soils and land-use patterns existed to the north, it is unlikely that Ashe juniper could expand through such a barrier (EPA 2009, p. 46).

Climate change models that focused on vegetation in Mexico indicate that with increasing temperatures and decreasing precipitation there could be a corresponding reduction in the geographic distribution of oaks and pines. Further, pines may be more vulnerable to fluctuations in temperature and precipitation (Gomez-Mendoza and Arriaga 2007 p. 1,545). One of the most vulnerable pines, ocote pine (*Pinus oocarpa*; Gomez-Mendoza and Arriaga 2007, p. 1,545), was described by Rappole et al. (1999, p. 765; 2000, p. 49) as the dominant canopy species in GCWA winter habitat in Honduras and Guatemala. The GCWA is already limited in its geographic distribution in Central America (Rappole et al. 2000, p. 48), and range restrictions may increase the species' vulnerability to climate change (EPA 2009, pp. 19-20).

Therefore, although we lack certainty about how climate change will affect this species, it is reasonable to expect that it will threaten GCWA due to their restricted distribution and reliance on specific habitat types in their wintering and breeding ranges. All possible impacts from climate change cannot presently be predicted. However, accelerating climate change will likely exacerbate existing threats and could result in future threats. Moreover, subtle but significant changes in the ecosystem supporting the GCWA could result in threats of high magnitude.

Recreation

There are few studies on the effects of recreation on GCWA. One study found no difference in GCWA relative abundance, return rate, male age structure, or productivity between a mountain biking area and a non-mountain biking area (Peak 2003, pp. 6-7). However, only one study site was used and sample sizes were small. Conversely, Davis and Leslie (2008, pp. 27-28, 30) found GCWA nest success was 50 percent less in mountain biking areas than in non- mountain biking areas, but direct cause-and-effect relationships could not be made. We are unaware of other specific studies on the effects of recreation on GCWA. However, studies on other forest birds have shown impacts from recreation can include, but are not limited to, increased potential for wildfire, soil compaction/erosion, and increases in edge-adapted predators and invasive plants (Sykes et al. 1989, p. 556; Hickman 1990, pp. 4-5; Miller et al. 1998, pp. 14-15; Leung and Marion 2000, p. 24.).

Therefore, although we lack certainty about how recreation impacts GCWA, limited data have shown that mountain biking may impact nest success. Because several local and state lands that support GCWA also allow public access (camping, hiking, biking, and horseback riding), additional research is needed on effects from recreation on GCWA.

2.4 Synthesis

The best available scientific information indicates that the threats to the GCWA include: (1) habitat destruction and fragmentation of breeding and wintering habitat; (2) a lack of reproduction of deciduous trees due to overbrowsing; (3) catastrophic wildfires; (4) nest predation and/or nest parasitism; and (5) potentially climate change and recreation. The loss of GCWA habitat is ongoing and significant due to the threats discussed above. The magnitude of impacts associated with these combined threats is high, because (1) the breeding range of the species is limited to central Texas and (2) habitat within the breeding and wintering ranges of the GCWA continues to be lost.

Given the ongoing, wide-spread destruction of its habitat, this species continues to be in danger of extinction throughout its range. Therefore, we recommend no change to the classification of the GCWA as endangered.

3.0 RESULTS

3.1 Recommended Classification:

____ Downlist to Threatened
____ Uplist to Endangered
____ Delist
____ *Extinction*
____ *Recovery*
____ *Original data for classification in error*
__x__ No change is needed

3.2 New Recovery Priority Number: No change needed; remain as 2C.

Brief Rationale: A listed species with a recovery priority number of 2C is one that has a high degree of threats; conflict with construction or development projects or other forms of economic activity; and, a high potential for recovery. The GCWA continues to be threatened by a high degree of habitat destruction, disturbance, and degradation across its range. However, we consider this species' potential for recovery to be feasible through the concerted efforts of Service personnel and our partners to restore, enhance, and protect habitat.

3.3 Listing and Reclassification Priority Number: N/A

4.0 RECOMMENDATIONS FOR FUTURE ACTIONS

The Service's Spotlight Species Action Plan for GCWA recommended five actions, which still remain important to the conservation of this bird:

(1) protect GCWA habitat in the breeding, migration, and wintering ranges;
(2) monitor GCWA throughout the breeding range to verify adult survival and productivity levels;
(3) manage habitat in the breeding, migration, and wintering ranges to ensure long-term survival of the habitat necessary to support viable GCWA populations;
(4) adapt monitoring and management strategies based on new information; and
(5) provide education and outreach on the GCWA throughout the breeding, migration, and wintering ranges.

An updated recovery plan that includes objective, measurable recovery criteria is needed and is being drafted for the GCWA. The Service has worked with the recovery team to develop a new recovery strategy for the GCWA, and the Service is currently drafting an updated recovery plan.

Since the greatest threat to GCWA is habitat loss, permanent protection of large blocks of contiguous habitat is necessary for the long-term survival and recovery of the GCWA. Enough habitat should be protected in the breeding, migrating, and wintering habitat to support viable GCWA populations. Habitat management throughout the range must occur such that woodland and forest regeneration occurs and persists over the long term.

To assist with the planning and recovery efforts, the following additional information is needed:

(1) identification of focal areas within breeding habitat;
(2) development of management guidelines for achieving recovery criteria;
(3) developing a monitoring protocol for verifying recovery criteria;
(4) determining the effects of recreation on GCWA and their habitat;
(5) determining the effects of climate change on GCWA habitat;
(6) identifying priority stopover sites within their migration corridor,
(7) identifying, promoting, and implementing sustainable forestry practices within the wintering range, and
(8) providing education and outreach on GCWA throughout their range.

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U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of the Golden-cheeked Warbler (*Setophaga chrysoparia*)

Current Classification: Endangered

Recommendation resulting from the 5-Year Review:

____ Downlist to Threatened
____ Uplist to Endangered
____ Delist
_X_ No change needed

Appropriate Listing/Reclassification Priority Number, if applicable: N/A

Review Conducted By: Timothy Breen, Austin Ecological Services Field Office

FIELD OFFICE APPROVAL:

Lead Field Supervisor, Fish and Wildlife Service

Approve _____ Date August 15, 2014

REGIONAL OFFICE APPROVAL:

Assistant Regional Director, Ecological Services, U.S. Fish and Wildlife Service, Region 2

Approve _____ Date 8/26/14

Final Report 23 Dec 2002

Population Viability Analysis of the Golden-cheeked Warbler

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Abstract: The golden-cheeked warbler (*Dendroica chrysoparia*) is a neotropical migrant songbird which was federally listed as endangered in 1990, primarily because of loss of breeding habitat. Currently, efforts are being made to sustain the remaining population through public and private land management within the breeding range. The remaining breeding habitat for the golden-cheeked warbler is distributed across its historical range, sometimes in isolated patches, on both private and public lands. Fragmentation of habitat may create a metapopulation dynamic, depending on dispersal, which could affect future management decisions, land acquisition, and private landowner contact programs. We describe the potential metapopulation dynamic in a subset of the breeding area and perform a population viability analysis within this framework. This analysis is done across the range of documented demographic rates for the golden-cheeked warbler and with hatch-year dispersal of 0, 15, and 30%. Our analysis is limited by the lack of available information for the species, especially dispersal, and is likely more useful in directing future research than in identifying management strategies. Since dispersal rates and distances are not known, we conclude that large patches (> 3,000 breeding pairs) should be maintained for a viable golden-cheeked warbler population over a 100-year time frame. If a metapopulation can be determined to exist, then this estimate may be reduced. Future studies must include region-wide efforts to determine the impact of habitat quality on demographic rates and to accurately describe dispersal among suitable golden-cheeked warbler habitat.

Federal Docket No. FWS-FWS–R2–ES–2016–0062

90-DAY FINDING ON A PETITION TO REMOVE THE GOLDEN-CHEEKED WARBLER FROM THE LIST OF ENDANGERED SPECIES

Background

Section 4(b)(3)(A) of the Endangered Species Act (Act) requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. At the time the petition was received, our standard for substantial scientific or commercial information with regard to a 90-day petition finding was "that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted." 50 C.F.R. § 424.14(b) (2016).

The American Ornithologists' Union adopted a new classification of the Parulidae based on a phylogenetic analysis that resulted in all *Dendroica* species being placed into a single clade for which the generic name *Setophaga* has taxonomic priority (Chesser et al. 2011, p. 608; Lovette et al. 2010, p. 763). Hereafter, the Service recognizes the golden-cheeked warbler as *Setophaga chrysoparia*, formerly placed in the genus *Dendroica*.

Petition History

On June 30, 2015, we received a petition dated June 29, 2015, from Nancie G. Marzulla (Marzulla Law, LLC – Washington DC) and Robert Henneke (Texas Public Policy Foundation – Austin TX) requesting that the golden-cheeked warbler be delisted under the Act due to recovery or error in information. The petition clearly identified itself as a petition and included the requisite identification information for the petitioner, as required by 50 C.F.R. § 424.14(a). This finding addresses the petition. No information is presented that would suggest that the species was originally listed due to an error in information. The golden-cheeked warbler is a taxonomically unique species and was shown to be in danger of extinction at the time of the listing. The petition does not present substantial information indicating that delisting the golden-cheeked warbler may be warranted.

On December 11, 2015, we received supplemental information from the petitioners that included additional published studies and an unpublished report. These studies, as well as readily available information in our files at the time the supplement was received, are addressed in this finding.

On June 3, 2016, we issued a 90-day finding denying the Petition to Delist. On June 5, 2017, the General Land Office of the State of Texas (GLO) filed a complaint challenging our decision in the U.S. District Court for the Western District of Texas. GLO amended its complaint twice. The District Court held in favor of the Service on all counts in the complaint and its subsequent amendments. GLO appealed the District Court's decision to the Fifth Circuit Court of Appeals.

The Fifth Circuit held in favor of the Service on all counts, except one. The Fifth Circuit held that "the Service applied the incorrect standard when reviewing the delisting petition." *Gen. Land Office v. U.S. Dep't of the Interior*, No. 19-50178, 2020 WL 219012 (5th Cir. Jan. 15, 2020). The previous 90-day finding was vacated and remanded to the Service.

On remand in this case, the Service is applying the regulations that were in effect prior to October 27, 2016 because those were the applicable requirements when the original petition for the golden-cheeked warbler was received. This is consistent with the recent holding in *Am. Stewards of Liberty v. Dep't of the Interior*, 370 F. Supp. 3d 711 (W.D. Tex. 2019).

In *Am. Stewards of Liberty v. Dep't of the Interior*, the original petition to delist was filed in 2014. In 2015, the petitioners challenged the Service's 90-day finding, which concluded that the delisting was not warranted. In 2016, the court remanded the 90-day finding, and the Service rendered a second 90-day finding, reaching the same conclusion that the delisting was not warranted. Again, the petitioners challenged the finding in court. Although the new regulations were already in effect at the time the Service was conducting its second 90-day finding on remand, the Service used the older version of the regulations for its evaluation because those were the requirements in effect at the time the petition was received. In *Am. Stewards of Liberty v. Dep't of the Interior*, the court determined that the Service correctly articulated the proper standard in its finding, stating: "In considering the Stewards' petition, the Service correctly articulates the standard required by its regulations, '[w]e evaluated this petition under the 50 C.F.R. 424.14 requirements that were in effect prior to October 27, 2016, as those requirements applied when the petition and supplemental information were received.'" *Am. Stewards of Liberty v. Dep't of the Interior*, 370 F. Supp. 3d 711, 726 (W.D. Tex. 2019).

Evaluation of a Petition to Delist the Golden-cheeked Warbler Under the Act

Species and Range

Does the petition identify an entity that is eligible for removal from listing (delisting) (that is, is the entity a species, subspecies, or DPS)?

☒ Yes
☐ No

If yes, list common name (scientific name); and range.

Golden-cheeked warbler (*Dendroica chrysoparia* = *Setophaga chrysoparia*, hereafter warbler), a migratory songbird breeding exclusively in Texas; wintering in the highlands of Mexico (Chiapas) and Central America (Guatemala, Honduras, Nicaragua, El Salvador).

Information in the Petition

Factor A

1. Does the petitioner claim the entity warrants delisting based on the present or threatened destruction, modification or curtailment of the species habitat or range (Factor A)?

☒Yes
☐No

a. If the answer to 1 is yes:
Do the sources cited in the petition provide substantial information to support the claim?
☐Yes
☒No
If yes, indicate for which activity(ies) present or threatened destruction, modification or curtailment of the species habitat or range (e.g., logging, agriculture, overgrazing, etc.) is a threat and list the citations with page numbers for each purpose. If no, please indicate for which activity(ies) and explain.

The range of the warbler, and the extent of its breeding habitat in central Texas and wintering habitat in Central America is discussed in the petition (Texans for Positive Economic Policy et al. 2015, pp. 14-20) and the summary that was referenced in the petition as Exhibit 1 (Texas A&M IRNR 2015, pp. 3-11).

The petition asserts that none of the statutory factors pose a significant threat to the continued existence of the warbler (Texans for Positive Economic Policy et al. 2015, p. 15). The petition also claims that listing the warbler was either originally an error or that the species has since recovered (Texans for Positive Economic Policy et al. 2015, p. 13). The petition states that because the numbers of warblers and extent of warbler habitat is far greater than the Service determined in 1990, the warbler should not have been listed as endangered, and further cites several studies (e.g. Mathewson et al. 2012; Collier et al. 2012; Duarte et al. 2013; Texas A&M IRNR 2015). The petition argues that these studies confirm that the species is not in danger of extinction throughout all or any significant portion of its range and requests that the warbler be removed from the federal endangered species list (Texans for Positive Economic Policy et al. 2015, p. 29).

The petition states that recent studies confirm there are more warblers and more warbler habitat than at the time the Service listed the warbler as endangered (Texans for Positive Economic Policy et al. 2015, p. 18). The petition cites studies that estimate the size of the warbler breeding population , including Mathewson et al. (2012, p. 1123) which employed a spatially-explicit model to estimate the range-wide population of male warblers to be 263,330 and the amount of warbler habitat to be 4,147,123 acres (1,678,281 hectares). The Mathewson et al. (2012, entire) study estimated a range-wide population number of warblers by applying warbler density estimates to the Collier et al. (2011, entire) model, which estimated the probability of warblers occupying given patches of woodland habitats throughout the breeding range of the warbler. Previous estimates of the total adult golden-cheeked warbler population range from 14,950 individuals to 26,978 pairs (Service 2014, p. 5 and references therein). Previous estimates of potential golden-cheeked warbler breeding habitat range from 326,000 to 4,378,148 acres with differences due primarily to varying

definitions of breeding habitat associated with vegetation types and habitat patch size, differing parameters included in habitat models, and remote sensing techniques and data sets (Service 2014, pp. 6-7 and references therein).

The petition asserts that the warbler is not currently, nor was it previously, endangered in Texas (Texans for Positive Economic Policy 2015, p. 14). The summary referenced in the petition as Exhibit 1 does not report any new data or study results regarding the warbler, but summarizes readily available information about the warbler and its habitat (Texas A&M IRNR 2015, entire). The modeling studies described in the summary (Texas A&M IRNR 2015, entire), including Mathewson et al. (2012), represent the most recent and comprehensive efforts to estimate range-wide warbler habitat and population size to date (Service 2014, p. 5). However, these efforts represent new estimates rather than indicators of positive trends in warbler habitat and population size, and thus do not imply recovery. Additionally, the Mathewson study indicated that a "liberal estimation of habitat" was used, which included "habitat often assumed as lower quality." Mathewson noted that 59% of the habitat patches in its study (and Collier et al. (2012)) had less than a 10% probability of occupancy by Warblers. This indicates that the total potential habitat estimate used in these studies is not a reliable indicator of actual warbler range, and overestimated habitat area may have had some effect on the total population size estimates. Further, a recent study reported results of a similar modeling effort to infer warbler density from landscape and habitat relationships that performed well at sites with high known densities but tended to overestimate plots with lower known densities, and it is apparent that uncertainty still exists, especially for habitats occupied by warblers at lower densities (Reidy et al. 2016, p. 379). Nonetheless, the Service treats Mathewson et al. and the other studies described in the summary (Texas A&M IRNR 2015, entire) as reliable for the purposes of evaluating whether the petition (Texans for Positive Economic Policy 2015, p. 14) presents substantial information that delisting may be warranted. The Service does plan to apply these and other modeling efforts, in the context of all that is known about the warbler and warbler habitat, to help inform and guide recovery efforts for the warbler now and in the future (Service 2014, p. 16). A recent population modeling study found that movement rates were high among warbler breeding habitat patches; immigration (i.e., natal dispersal) appears to be an important driver of local warbler population dynamics, and because these complex processes occur on a landscape scale the authors recommended that future conservation efforts be implemented at a larger spatial scale (Duarte et al. 2015, pp. 70-72).

We acknowledge that the known potential range is geographically more extensive than when the golden-cheeked warbler was originally listed in 1990. Additionally, the petition cites studies showing higher warbler population numbers than estimated at the time of listing, which we consider to be accurate for purposes of evaluating the information in the petition. However, the ESA does not base listing determinations solely or predominantly on population and range size. Rather, it requires an evaluation of the five factors in 16 U.S.C. §

1533(a). The most serious threats described in the original listing rule, and which are well documented in the literature that is readily available in the Service's files, remain, and recovery criteria have not been accomplished (Service 2014, pp. 8-15). The petition acknowledges that the golden-cheeked warbler has particular habitat needs (Texans for Positive Economic Policy 2015, p. 6). Habitat destruction, fragmentation, and degradation remain real and significant threats to the continued existence of the warbler (Service 2014, pp. 8-10). The petition does not present substantial information indicating that habitat destruction, fragmentation, and degradation may no longer threaten the species with extinction.

The petition discusses habitat fragmentation generally (Texans for Positive Economic Policy et al. 2015, pp. 27-28) but does not articulate whether or not habitat fragmentation is a significant threat to the warbler, instead stating that "studies emphasize the importance of large and small patches to sustain the warbler population on its breeding ground." While all habitat patches are important because they provide potential habitat for the warbler, larger more connected habitat patches are especially important for supporting a viable warbler population, given that occupancy probability increases with patch size (Collier et al. 2010, Figure 4, p. 144) and reproductive success is positively associated with increased patch size (Coldren 1998, p. 28). Large patches are important for maintaining high rates of warbler occupancy, and small isolated patches have a lower probability of occupancy (McFarland et al. 2012, p. 438). Habitat connectivity is especially important in areas where habitat patches are small (McFarland et al. 2012, p. 438). Significant losses of warbler breeding habitat have occurred over the past decade, and warbler habitats are far more likely to be diminished than regenerated (Duarte et al. 2016, pp. 57-60). Duarte et al. (2016) states that habitat loss and fragmentation have continued across the warbler's breeding range and concludes that "any change in the listing status of the species based on these projections is not warranted." Dispersal of juvenile warblers among patches of breeding habitat is essential for maintaining local warbler populations, and the conservation of large blocks of habitat is especially important for ensuring the long-term viability of the species (Duarte et al. 2016, pp. 57-60).

The petition briefly mentions warbler habitat loss from 1992–2001 (Texans for Positive Economic Policy et al. 2015, pp. 27-28; citing Groce et al. 2010). The studies cited in the petition show that increasing urbanization, habitat loss, and habitat fragmentation within the range of the golden-cheeked warbler are adversely affecting the warbler. A 29% reduction in warbler habitat was detected from 2001 to 2011, and range-wide breeding habitat experienced large declines during that same timeframe (Duarte et al. 2013, pp. 5, 10). The petition cites documented habitat loss between 1992-2001 (Groce 2021, entire). Similarly, warbler occurrence declined as the proportion of large patches from south to north decreased (Collier et al. 2012). This decrease in patch size correlates with conditions that support fewer large patches with canopy closure (Collier et al. 2012, p. 163). Butcher et al. (2010, p. 136) report a minimum patch size

threshold for reproductive success. Warblers require a larger minimum patch-size for pairing success in an urban environment than warblers in a rural environment (Robinson 2013, p. 34). Each of these studies cited in the petition suggest that increasing habitat destruction and fragmentation negatively affect warblers and warbler populations (Duarte et al. 2013, Collier et al. 2012, Butcher et al. 2010, and Robinson 2013).

Warbler habitat loss and habitat fragmentation are primarily driven by rapid suburban development and human population growth in Travis, Williamson, Bexar and surrounding counties (Biological Advisory Team 1990, p. 19; Groce et al. 2010, 9 p. 142; Service 2014, pp. 8–9). In the warbler breeding range, the human population has increased by nearly 50 percent from 1990 to 2010 (Groce et al. 2010, p. 123). Further, human population projections from 2010 to 2050 for 35 counties within the warbler breeding range report a 64% increase in the human population from 4.7 to 7.8 million, and with the population of Williamson and Hays Counties expected to more than double (Potter and Hoque 2014, entire and data provided therein). The threat of habitat fragmentation is ongoing and is expected to threaten the continued existence of the warbler into the foreseeable future (Service 2014, p. 9). The petition does not address the threat of human population growth and increasing pressure from development.

The petition does not provide any scientific data or analysis of existing data that shows a decrease in threats to the warbler associated with present and future habitat destruction and fragmentation. Therefore, the petition does not provide substantial information that delisting the warbler may be warranted based on the present or threatened destruction, modification or curtailment of the species' habitat or range (Factor A).

b. Provide additional comments, if any.

The Service considers habitat loss to be the primary threat to the warbler because of the ongoing declines in habitat area and continuing habitat destruction and habitat fragmentation (Service 2014, p. 10).

Factor B

2. Does the petitioner claim the entity warrants delisting based on overutilization for commercial, recreational, scientific, or educational purposes (Factor B)?
☐Yes
☒No

a. If the answer to 2 is no:
Do sources cited in the petition provide substantial information indicating the entity may warrant delisting based on factor B, even though the petitioner does not make this claim?
☐Yes

☒No
If yes, indicate for which purpose(s) overutilization is a threat and list citations with page numbers for each purpose. If no, please explain.

Factor B (overutilization) is not specifically discussed in the petition, despite the assertion that none of the statutory factors apply and that the warbler should not be listed (Texans for Positive Economic Policy et al. 2015, p. 14). The Texas A&M summary discusses Factor B in Section VII (Texas A&M IRNR 2015, p. 12). Neither the petition nor the Texas A&M summary provide scientific data or analysis of data regarding the threat of overutilization. Therefore, the petition does not provide substantial information that delisting the warbler may be warranted based on overutilization for commercial, recreational, scientific, or educational purposes (Factor B).

c. Provide additional comments, if any.

The Service does not consider overutilization to be a significant threat to the warbler at this time (Service 2014, p. 10).

Factor C

3. Does the petitioner claim the entity warrants delisting based on disease or predation (Factor C)?
☒Yes
☐No

a. If the answer to 3 is yes:
Which does the petitioner claim is not a threat such that delisting may be warranted (check all that apply)
☒Disease
☒Predation

b. If the answer to 3 is yes:
Do the sources cited in the petition provide substantial information to support the claim?
☐Yes
☒No
If yes, indicate which (disease, predation, or both) is a threat and list the citations with page numbers for each. If no, please indicate disease and/or predation and provide an explanation.

Factor C is discussed in Section 4 of the petition (Texans for Positive Economic Policy et al. 2015, p.22), and Section VIII of the Texas A&M summary (Texas A&M IRNR 2015, pp. 12-13).

The petition states that neither disease nor predation constitutes a significant threat to the continued existence of the warbler and that the warbler should not be listed (Texans for Positive Economic Policy et al. 2015, p. 22). The petition cites several studies that document predation of nests and nestlings by predators including fire ants, snakes, mammals, and other birds (Stake et al. 2004; Reidy et al. 2008; Reidy et al. 2009a). Depredation rates above 20% have been estimated for eggs and nestlings (Stake et al., 2004). An important source of mortality may be predation of nesting females (Reidy 2009). Further, readily available information existing in the Service's files indicates that multiple factors such as urbanization and fragmentation have likely resulted in increased rates of predation of warbler nests by a wide variety of animal predators (Peak 2007, pp. 632; Arnold et al. 1996, p. 27; Fink 1996, p. 72; Coldren 1998, p. 77-79, 100, 103; Engels and Sexton 1994, p. 289; Engels 1995, p. 38-44, Service 2014, p. 11), especially rat snakes (*Elaphe* spp). This increase in nest predation by rat snakes and other predators has been proposed as a proximate explanation for the observed negative effects of forest edge on warbler nest survival and productivity (Peak and Thompson 2014, pp. 554-557).

While the threat from disease is not considered to be a significant threat to the warbler, nest parasitism and nest depredation, both of which vary across the range of the warbler, are exacerbated by habitat fragmentation and are considered a moderate threat (Service 2014, p. 11).

The petition does not reference any scientific data or analysis of existing data that calls into question threats to the warbler associated with disease and predation. Therefore, the petition does not provide substantial information that delisting the warbler may be warranted based on disease or predation (Factor C).

c. If the answer to 3 is no:
Do sources cited in the petition provide substantial information indicating the entity may warrant delisting based on factor C, even though the petitioner does not make this claim?
☐Yes
☐No
If yes, indicate which (disease, predation, both) is a threat and list citations with page numbers for each. If no, please explain.

d. Provide additional comments, if any.

No diseases in golden-cheeked warblers have been reported; therefore, we do not consider disease to be a threat to the warbler at this time (Service 2014, p.11). However, because warbler populations continue to be affected by predation and nest parasitism, and these threats are exacerbated by habitat destruction and habitat fragmentation, the Service considers the threat of predation to be significant (Service 2014, p. 11).

Factor D

4. Does the petitioner claim the entity warrants delisting based on the inadequacy of existing regulatory mechanisms (Factor D)?
   ☒Yes
   ☐No

   a. If the answer to 4 is yes:
      Do the sources cited in the petition provide substantial information to support the claim?
      ☐Yes
      ☒No
      If yes, list the citations with page numbers. If no, please explain.

      Factor D is discussed in Section 5 of the petition (Texans for Positive Economic Policy et al. 2015, pp. 22-27) and Section X of the Texas A&M summary (Texas A&M IRNR 2015, p. 15).

      The petition asserts that, even with protections of the Act removed, the warbler will be protected by existing regulatory mechanisms including: the Migratory Bird Treaty Act of 1918[1], and the 1975 Texas Endangered Species law (Texans for Positive Economic Policy et al. 2015, pp. 22–25). However, while these regulations do provide some protections for individual birds, neither prohibits habitat destruction, which is an immediate threat to the warbler (Service 2014, p. 12).

      The petition also claims that warbler habitat is protected by the Balcones Canyonlands National Wildlife Refuge, the Balcones Canyonlands Preserve, and approximately 160 habitat conservation plans (HCPs). While we do not consider these long-term land protections to be "existing regulatory mechanisms" under Factor D, we do consider these land protection efforts relevant to Factor A (Service 2014, p. 10). Many but not all of these protected lands are managed for the warbler, and there have been important strides in regional planning in Central Texas that include the county-wide HCPs that occur along the I-35 corridor from Williamson County to Bexar County. Despite these land protections and regional HCPs, an estimated 29 percent of existing breeding season habitat was lost between 1999-2001 and 2010–2011 (Duarte et al. 2013, p. 7) indicating that, but for protections of the Act, adequate regulatory mechanisms do not exist to prevent continued destruction of warbler breeding habitat in Texas. Given the projected human population growth in Central Texas (Potter and Hoque 2014, entire), the loss of warbler breeding habitat is expected to continue (Groce et al. 2010, p. 118, Service 2014, p. 9).

[1] Note that the most recent M-opinion (M-37050, issued December 22, 2017) on the Migratory Bird Treaty Act (MBTA) concluded that "the MBTA's prohibition on pursuing, hunting, taking, capturing, killing or attempting to do the same applies only to the direct and affirmative purposeful actions that reduce migratory birds, their eggs, or their nests, by killing or capturing, to human control"

b. If the answer to 4 is no:
Do sources cited in the petition provide substantial information indicating the entity may warrant delisting based on Factor D, even though the petitioner does not make this claim?
☐Yes
☒No
If yes, list citations with page numbers. If no, please explain.

The petitioners did not provide any scientific data or analysis of existing data that show a decrease in threats to the warbler associated with adequate regulatory mechanisms. Therefore, the petition does not provide substantial information that delisting the warbler may be warranted based on inadequacy of existing regulatory mechanisms (Factor D).

c. Provide additional comments, if any.

The petition (Texans for Positive Economic Policy et al. 2015, p. 25) seems to confuse the Balcones Canyonlands National Wildlife Refuge, which is an approximately 24,000-acre federal land unit of which 19,079-acres are actively managed for the warbler (Service 2015, p. 40), with the Balcones Canyonlands Preserve (BCP), which is a system of preserves managed under a regional Habitat Conservation Plan (rHCP) by the City of Austin and Travis County (Texas) to benefit multiple species, including the warbler, as well as several species of karst invertebrates and the black-capped vireo. To date, the BCP has protected 30,540-acres of golden-cheeked warbler and black-capped vireo habitat (Travis County-City of Austin 2014, p. 1). Both the Balcones Canyonlands National Wildlife Refuge and the Balcones Canyonlands Preserve represent important warbler populations receiving some degree of protections, consistent with the recovery strategy for the species (Service 1992, p. 40).

Factor E

5. Does the petitioner claim the entity warrants delisting based on other natural or manmade factors affecting its continued existence (Factor E)?
☒Yes
☐No

a. If the answer to 5 is yes:
Identify the other natural or manmade factors claimed by the petitioner to not be a threat such that delisting may be warranted.
- Habitat fragmentation (Texans for Positive Economic Policy 2015, pp. 27–28)
- Habitat degradation (Texans for Positive Economic Policy 2015, pp. 28–29)

- Forest management practices (Texans for Positive Economic Policy 2015, p. 29)
- Noise (Texans for Positive Economic Policy 2015, p. 29)

b. If the answer to 5 is yes:
Do the sources cited in the petition provide substantial information to support the claim?
☐Yes
☒No
If yes, indicate for which other natural or manmade factors (e.g., climate change, road mortality, or small population dynamics) are a threat and list the citations with page numbers for each factor. If no, please indicate for which factor(s) and explain.

Factor E is discussed in Section 6 of the petition (Texans for Positive Economic Policy et al. 2015, pp. 27-29) and Section IX of the Texas A&M summary (Texas A&M IRNR 2015, pp. 13-15).

As discussed in part in our consideration of Factor A above, habitat fragmentation, habitat degradation, inappropriate habitat management practices, and excessive noise all contribute to reductions in overall warbler habitat quantity and quality and present a significant threat to the long-term viability of the species (Service 2014, p. 15). The quality of breeding habitat for warblers is reduced by small patch sizes (Brett 1989, pp. 7-8; Reville et al. 1990, p. 23; Saunders et al. 1991. p. 18, 22, 24), reduced oak recruitment (Groce et al. 2010, pp. 137-139, 141), and unsustainable forestry practices (Dinerstein et al. 1995, p. 87; Redo et al. 2009, p. 95; Groce et al. 2010, p. 131; Service 2014, p. 9). The petition discusses some of these threats by describing research (e.g. Russell and Fowler 2002, 2004; Appel and Camilli 2010; Yao et al. 2012; Murray et al. 2013; Stewart et al. 2014a,b) on warbler habitat quality that has resulted in conflicting conclusions about the effects of oak wilt, fire, vegetation management, road and construction noise, and patch size on warbler reproductive success (Texans for Positive Economic Policy et al. 2015, p. 28). However, the research cited, (Russell and Fowler 2002, 2004; Appel and Camilli 2010; Yao et al. 2012; Murray et al. 2013; Stewart et al. 2014a,b) and other readily available information in the Service's files, describes how these factors adversely affect the warbler to varying degrees (Service 2014, pp. 12-14).

Oak wilt is a fungal infection that can affect all oak species, frequently occurs in warbler habitat, and has the potential to negatively affect warblers and their habitat by reducing oak canopy cover, an important component of warbler breeding habitat (Stewart et al. 2014a, entire). The petition cites this study, which reports that "pairing success was 27% lower for males whose territories contained >10% affected forest" and that warblers "avoided establishing territories within affected forest" (Stewart et al. 2014a, pp. 1, 6).

Fire is known to be an important process for maintaining oak-dominated ecosystems throughout eastern North America (Brose et al. 2014, entire). However, catastrophic wildfires do have the potential to significantly diminish occupancy by warblers in previously occupied habitat for over a decade (Reemts and Hansen 2008, p.8). The petition discusses the role of fire in maintaining oak woodlands (Texans for Positive Economic Policy et al. 2015, p. 28). However, fire reduces mature tree density, and negatively impacts habitat suitability (Yao et al. 2012, p. 48). Further, a lack of appropriate fire management (i.e., prescribed fire) is a threat to the long-term health of mixed juniper-oak woodlands that support warbler breeding (Yao et al. 2012, p. 48).

Vegetation management designed specifically to benefit warblers and warbler habitat is encouraged by state and federal agencies (Campbell 1995, pp. 23-27). However, inappropriate conversion of potential warbler habitat to other vegetation types for agricultural and other practices remains a threat to the species. A recent study cited in the supplement to the petition found that warbler breeding habitats, once lost, were not likely to be restored (Duarte et al. 2016, p. 56.)

The petition cites two studies that failed to detect an effect of noise disturbance on golden-cheeked warbler abundance, survival, or reproduction (Lackey et al. 2012 and Lopez et al. 2012). Birds that responded to simulated road noise were located in areas that had not previously been subjected to road noise, indicating that birds in the noisiest areas habituate to construction noise, or that noise does affect warblers and warblers do avoid areas subjected to anthropogenic noise (Lackey et al. 2012, p. 98). Lopez et al. (2012, pp. 26, 31, 72) failed to detect any relationship between noise levels and warbler singing characteristics. While the literature on other songbird species has demonstrated profound behavioral responses to manmade noise pollution (Ortega 2012, entire), we currently have no evidence that noise pollution is directly affecting golden-cheeked warbler populations beyond edge effects. We do not consider noise to be a significant threat beyond the observed negative effects of edge on warbler occupancy and productivity, and other impacts to habitat quality.

Patch size is an important aspect of warbler habitat in that nest survival decreases as forest edge increases (Peak 2007, pp. 7-8). The probability of warbler occupancy declines significantly in the smaller, more fragmented patches found in northern portions of the range (Collier et al. 2011, p.7). The combined effects of reduced patch size and increased forest edge result in reduced nest survival (Peak and Thompson 2014, p. 554). Nest depredation is one causal factor that may help explain this phenomenon. Fragmentation of woodland habitats, resulting in reduced patch size and increased forest edge, continues to be a threat to the warbler.

The petition provides information and cites data indicating that the warbler faces some threats associated with other natural or manmade factors. However, the petition does not provide substantial information that delisting the warbler may be

warranted based on other natural or manmade factors affecting its continued existence (Factor E).

c. Provide additional comments, if any.
The warbler is subject to additional threats including the potential consequences of climate change (that is, increased risk of catastrophic wildfire and range shifts or restrictions; Service 2014, pp. 12–14) and recreation (Service 2014, p. 14), which were not discussed in the petition.

Cumulative Effects

6. Does the petitioner claim that the threats they have identified may have synergistic or cumulative effects such that the entity may warrant delisting?
☐Yes
☒No

a. If the answer to 6 is yes:
Do the sources cited in the petition provide substantial information to support the claim?
☐Yes
☐No
If yes, indicate which threats the petitioner claims may have synergistic or cumulative effects and list the citations with page numbers. If no, please indicate which threats and explain.

Cumulative effects are not discussed the petition.

The petitioners did not provide any scientific data or analysis of existing data indicating that the cumulative effects to the warbler from all existing threats may not place the species in danger of extinction. Therefore, the petition does not provide substantial information that delisting the warbler may be warranted based on synergistic or cumulative effects.

b. Provide additional comments, if any.

Petition Finding

The petition provided information indicating that the warbler population is larger now than it was estimated at the time of listing and argues that threats considered at the time of listing no longer threaten the species. This argument is refuted by readily available information, in the Service's files, including many studies cited in the petition itself. The petition does not provide any scientific data or analysis of existing data showing that threats to the warbler are minimal enough that the petitioned action to delist the warbler may be warranted. We acknowledge that the known potential range is more extensive than when the golden-cheeked warbler was originally listed in 1990. However, the warbler has very particular habitat needs and important threats, especially those associated with habitat destruction and habitat fragmentation, that are

ongoing and expected to impact the continued existence of the warbler in the foreseeable future. Those threats are likely to be exacerbated by future human development and climate change (Service 2014, p. 15).

Based on our review of the petition, sources cited in the petition, and other information in our files, we find that the petition does not provide substantial scientific or commercial information indicating that the petitioned action may be warranted.

Author

The primary authors of this notice are the staff members of the Austin Ecological Services Field Office, U.S. Fish and Wildlife Service.

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Date: _____

MARTHA WILLIAMS Digitally signed by MARTHA WILLIAMS Date: 2021.07.20 17:10:55 -06'00'

Martha Williams
Principal Deputy Director
Exercising the Delegated Authority of the Director
U.S. Fish and Wildlife Service

References

See enclosed

The Condor 110(3):458–466

GOLDEN-CHEEKED WARBLER NEST MORTALITY AND PREDATORS IN URBAN AND RURAL LANDSCAPES

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Abstract. Predation is a major cause of nest failure for songbirds, yet information is lacking on the relative importance of predator species in different landscapes. We identified nest predators of Golden-cheeked Warblers (*Dendroica chrysoparia*) in an urban landscape, compared cause-specific mortality rates between urban and rural landscapes, and evaluated whether monitoring nests with cameras affected nest survival. We monitored 68 nests with cameras in Austin, Texas, during 2005, 2006, and 2008 to identify causes of mortality, including predators, in an urban landscape. The period mortality and predation rates were 0.60 (95% CI: 0.42–0.73) and 0.52 (95% CI: 0.37–0.68), respectively. We identified predators at 20 nests: Texas rat snakes (*Elaphe obsoleta lindheimerii*) depredated eight nests (40%), Western Scrub-Jays (*Aphelocoma californica*) depredated six (30%), Cooper's Hawks (*Accipter cooperii*) depredated two (10%), fox squirrels (*Sciurus niger*) depredated three (15%), and fire ants (*Solenopsis* sp.) depredated one nest (5%). We compared mortality rates, predation rates, and predators of the 68 camera-monitored nests in Austin to 74 nests monitored with cameras in the rural landscape of Fort Hood, Texas, during 1997–2002 and 2005. The period mortality rate (0.63, 95% CI: 0.47–0.75), predation rate (0.59, 95% CI: 0.45–0.73), and predator composition at Fort Hood were similar to those in Austin. Nest abandonment, hatching success, and nestling survival were also similar in both landscapes. We compared nest survival of the 68 camera-monitored nests to 62 active nests monitored without video cameras in Austin; period nest survival was slightly higher for camera-monitored nests (0.40, 95% CI: 0.22–0.58) than for nests without cameras (0.37, 95% CI: 0.19–0.54).

Key words: *Austin,* Dendroica chrysoparia, *Fort Hood, Golden-cheeked Warbler, nest predators, urban, video cameras.*

Mortalidad y Depredadores de Nidos de *Dendroica chrysoparia* en Paisajes Urbanos y Rurales

Resumen. La depredación es una de las principales causas de fracaso de los nidos en las aves canoras; sin embargo, la información sobre la importancia relativa de las especies de depredadores en diferentes paisajes es escasa. Identificamos los depredadores de nidos de *Dendroica chrysoparia* en un paisaje urbano, comparamos las tasas de mortalidad específicas para los paisajes urbanos y rurales, y evaluamos si el seguimiento de nidos mediante el uso de cámaras afectó la supervivencia del nido. Seguimos 68 nidos con cámaras en Austin, Texas, durante 2005, 2006 y 2008 para identificar las causas de mortalidad, incluyendo la identidad de los depredadores, en un paisaje urbano. Las tasas de mortalidad y depredación durante el período estudiado fueron 0.60 (95% IC: 0.42–0.73) y 0.52 (95% IC: 0.37–0.68), respectivamente. Identificamos depredadores en 20 nidos: la serpiente *Elaphe lindheimeri obsoleta* depredó ocho nidos (40%), la urraca *Aphelocoma californica* depredó seis (30%), el halcón *Accipter cooperii* depredó dos (10%), la ardilla *Sciurus niger* depredó tres (15%) y las hormigas *Solenopsis* sp. depredaron un nido (5%). Comparamos las tasas de mortalidad y de depredación, y los depredadores de los 68 nidos controlados con cámaras en Austin con los de 74 nidos controlados con cámaras en un paisaje rural de Fort Hood, Texas, durante 1997–2002 y 2005. La tasa de mortalidad durante el período de estudio (0.63, 95% IC: 0.47–0.75), la tasa de depredación (0.59, 95% IC: 0.45–0.73) y la identidad de los depredadores en Fort Hood fueron similares a las de Austin. El abandono del nido, el éxito de eclosión y la supervivencia de los pichones fueron similares en ambos paisajes. Comparamos la supervivencia de los 68 nidos controlados con cámaras con la de 62 nidos activos controlados sin cámaras en Austin. La supervivencia del nido durante el período de estudio fue levemente mayor para los nidos controlados con cámaras (0.40, 95% IC: 0.22–0.58) que para los nidos sin cámara (0.37, 95% IC: 0.19–0.54).

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IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

GENERAL LAND OFFICE OF THE STATE OF TEXAS,
Plaintiff,

v.

UNITED STATES DEPARTMENT OF THE INTERIOR, et al.,
Defendants,

v.

SAVE OUR SPRINGS ALLIANCE,
Intervenor-Defendants.

Civil Case No. 1:23-CV-00169-DAE

[PROPOSED] ORDER

Before the Court is the Plaintiff's Motion for Summary Judgment. Having considered it, the Court **GRANTS** the Motion. The Court hereby **VACATES** the Service's 90-day finding dated July 27, 2021 as arbitrary and capricious. *See* 5 U.S.C. § 706. The Service failed to use the proper standard of review to evaluate the Petition. *See* 50 C.F.R. § 424.14(b)(1) (2014) (requiring positive 90-day finding when petition presents "that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted"); *see also Gen. Land Office of Tex. v. United States Dept. of the Interior*, 947 F.3d 309, 320–21 (5th Cir. 2020) (reciting standard).

As this is the second time the Service failed to properly apply this standard of review to the Petition, and as the Petition meets the standard for a positive 90-day finding, this Court **ORDERS** the Service to immediately issue a positive 90-day finding on the Petition and begin its 12-month review thereof.

IT IS SO ORDERED this _____ day of _____, 2023.

_____
THE HON. DAVID EZRA
SENIOR JUDGE