Marzulla Law

June 29, 2015

received June 30, 2015

The Honorable Sally Jewell
Secretary of the Interior
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240

Re: Petition to delist the golden-cheeked warbler

Dear Secretary Jewell:

Enclosed is the petition of the Texans for Positive Economic Policy, Susan Combs, the Texas Public Policy Foundation, and the Reason Foundation to remove the golden-cheeked warbler (*Setophaga chrysoparia*) from the endangered species list.

We ask the U.S. Fish and Wildlife Service (FWS) to acknowledge the receipt of this petition within 30 days and then to publish a determination in the Federal Register within 90 days that the petition to delist the golden-cheeked warbler is warranted.

Sincerely,

Nancie Marzulla

Nancie G. Marzulla

cc: Gina Shultz, Chief, Division of Conservation and Classification, U.S. Fish and Wildlife Service

Encl.

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

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June 29, 2015

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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

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[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

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[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]

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[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

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[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

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[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

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[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

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[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.