POST-DELISTING MONITORING PLAN

for the

Black-capped Vireo (*Vireo atricapilla*)

Male black-capped vireo. *Photo by Gil Eckrich*

U.S. Fish and Wildlife Service
Region 2
Arlington Ecological Services Field Office
Arlington, Texas

Acknowledgements

The U.S. Fish and Wildlife Service would like to acknowledge the following entities for providing input and review of this document: The Nature Conservancy of Texas, Fort Hood Military Installation, Wichita Mountains Wildlife Refuge, Balcones Canyonlands National Wildlife Refuge, Big Bend National Park, Fort Sill Military Installation, Texas Parks and Wildlife Department, American Bird Conservancy, Texas Department of Transportation, and Oklahoma Department of Wildlife Conservation.

Suggested citation:

U.S. Fish and Wildlife Service. 2018. Post-delisting monitoring plan for the black-capped vireo (*Vireo atricapilla*). Arlington Ecological Services Field Office, Arlington, Texas.

Black-capped Vireo Post-Delisting Monitoring Plan
July 2018

U.S. Fish and Wildlife Service
Region 2
Arlington Ecological Services Field Office
Arlington, Texas

Regional Director
Southwest Region
U.S. Fish and Wildlife Service

Aug. 23, 2018
Date

Summary

On April 16, 2018, the U.S. Fish and Wildlife Service removed the black-capped vireo from the List of Endangered and Threatened Wildlife due to recovery (83 FR 16228). Under the Endangered Species Act, post-delisting monitoring (PDM) is required to ensure the species remains secure from risk of extinction after delisting.

This PDM plan consists of two components to monitor the biological status of the black-capped vireo: abundance and residual threats. Abundance monitoring will target the majority of localities on managed lands in the U.S. portion of the breeding range. An additional effort to monitor population trends at major population centers will also be conducted. Monitoring of residual threats will be accomplished through evaluation of land use, livestock, and deer trends, as well as monitoring of brown-headed cowbird parasitism on nesting black-capped vireos. The PDM plan is expected to monitor the black-capped vireo over a 12-year period with an interim and final reporting schedule. Monitoring thresholds are provided to ensure viability of the species through resiliency, redundancy, and representation. The *Species Status Assessment Report for the Black-capped Vireo* provides the basis for the monitoring thresholds.

If monitoring results reach the thresholds within the PDM plan, responses are provided to rectify the concern. Responses include extended or intensified monitoring effort and management actions. If future information becomes available that indicates threats to the species have increased and it is likely the species may become endangered with extinction, the Service will initiate a status review and determine if relisting the black-capped vireo is warranted.

Additionally, the Service continues to work with our partners on the successful conservation actions that led to the species' recovery. To formalize these efforts, we have appended to this PDM plan the signed commitments on behalf of several of our partners that manage lands or promote conservation of the species.

Table of Contents

Acknowledgements ii
Summary iv
Table of Contents v
I. Introduction 1
II. Role of PDM Cooperators 1
A. U.S. Fish & Wildlife Service 1
B. Texas Parks and Wildlife Department 2
C. Oklahoma Department of Wildlife Conservation 2
D. U.S. Army 2
E. The Nature Conservancy of Texas 3
F. Big Bend National Park 3
G. Additional Cooperators 4
III. Summary of Species' Status 4
A. Species Information 4
B. Species' Current Status 4
C. Residual Threats 9
IV. Monitoring Methods 9
A. Procedures for Monitoring Localities 10
B. Frequency of Monitoring 11
C. Collection of Census Data 12
D. Procedures for Nest Monitoring 13
V. Monitoring Thresholds 13
A. Thresholds for Resiliency 14
B. Threshold for Redundancy 15
C. Threshold for Representation 16
D. Thresholds for Threat Data 17
E. Relisting Considerations 18
VI. Funding 18
A. Estimated Funding Requirements 18
B. Potential Funding Sources 20
C. Anti-Deficiency Act disclaimer 20
VII. Reporting 20
VIII. PDM Summary and Implementation Schedule 21
IX. Conclusion of PDM 21

X. Review and Adaptation of PDM 23
XI. Literature Cited 24
XII. Appendices 26
Appendix A – Table of Tier 2 localities 26
Appendix B – Black-capped Vireo Recovery Units in Texas 28
Appendix C – Survey methods 29
Appendix D – Management commitments from The Nature Conservancy, Department of the Army, Texas Parks and Wildlife Department, and the Oklahoma Department of Wildlife Conservation. 34

I. Introduction

Section 4(g) of the Endangered Species Act (ESA) requires the U.S. Fish & Wildlife Service (Service) to implement a system in cooperation with the States to monitor for not less than five years the status of all species that have recovered and been removed from the List of Endangered and Threatened Wildlife and Plants (lists). Section 4(g)(2) of the ESA directs the Service to make prompt use of its emergency listing authorities under section 4(b)(7) of the ESA to prevent a significant risk to the well-being of any recovered species. While not specifically mentioned in section 4(g), authorities to list species in accordance with the process prescribed in sections 4(b)(5) and 4(b)(6) may also be used to reinstate species on the list, if warranted.

Post-delisting monitoring (PDM) refers to activities undertaken to verify that a species delisted due to recovery remains secure from risk of extinction after the protections of the ESA no longer apply. The primary goal of PDM is to monitor the delisted species to ensure the status does not deteriorate, and if a substantial decline in the species (numbers of individuals or populations) or an increase in threats is detected, to take measures to halt the decline so that re-proposing it as an endangered or threatened species is not necessary.

II. Role of PDM Cooperators

The Service recognizes the conservation actions of our partners, including the contribution to this PDM plan. We also understand the importance of the management actions on public and private lands that have led to the species' recovery. The majority of our partners that manage lands with populations of vireos or that promote vireo conservation actions, have formalized their continued commitment to management of the species. These commitments from the Department of the Army, The Nature Conservancy, Texas Parks and Wildlife Department, the Oklahoma Department of Wildlife Conservation are included in Appendix D.

A. U.S. Fish & Wildlife Service

The Service is committed to cooperating with the States of Texas and Oklahoma to ensure that effective PDM of the black-capped vireo is accomplished. The Service does not have sufficient personnel available for conducting the necessary field work, data analysis, and reporting required for this PDM effort. However, the Service does manage two National Wildlife Refuges (Wichita Mountains and Balcones Canyonlands) that will continue to manage and monitor the species on their respective properties. The Service will work with our partners to seek funding opportunities through existing grant programs, such as, but not limited to, the Section 6 Endangered Species Cooperative Grant Program administered by the Texas Parks and Wildlife Department (TPWD) and Oklahoma Department of Wildlife

Conservation (ODWC) for their respective states, and the Department of Defense's Legacy Resource Management Program.

Service staff will participate in and maintain oversight of all activities undertaken as part of the PDM. This will include developing and managing one or more grants or contracts, interpreting the intent of the PDM plan, reviewing and commenting on draft reports, distributing final reports and other information to interested parties, approving and documenting any changes to the PDM plan, conducting any necessary future status reviews of the black-capped vireo, and determining when the PDM is complete.

B. Texas Parks and Wildlife Department

The recovery of the black-capped vireo was due in large part to the efforts of TPWD. The TPWD manages multiple properties that maintain breeding populations of the black-capped vireo and has also been engaged in long term surveys of vireos on several of their properties. TPWD provides technical guidance to numerous landowners within the breeding range of the black-capped vireo that includes promoting healthy habitat conditions for all wildlife including the vireo. Additionally, TPWD employs experts on the species and conducts studies on Texas' natural history and ecosystems, which include habitat for the black-capped vireo. The Service requested TPWD assist in developing and implementing the PDM plan. TPWD will continue to manage and monitor existing populations occurring on state managed lands. The Service will work with TPWD to use our cooperative grants programs in an effort to provide funding to implement PDM activities.

C. Oklahoma Department of Wildlife Conservation

The Oklahoma Department of Wildlife Conservation (ODWC) was a significant contributor to research efforts to understand the ecological conditions of habitat and distribution of the species across Oklahoma. The black-capped vireo occurs in Oklahoma as a major population across two properties spanning the Wichita Mountains, and several small, disjunct groups of birds in the surrounding area. The Service requested ODWC assist in developing and implementing the PDM plan. The ODWC will continue to support efforts in Oklahoma that further the purpose of this plan, including monitoring localities that may be present on state-managed lands, such as Quartz Mountain State Park. The Service will work with ODWC to use our cooperative grants programs in an effort to provide funding to implement PDM activities in Oklahoma.

D. U.S. Army

The Army's Fort Hood and Fort Sill Installations played a major role in the recovery of the black-capped vireo. Fort Hood manages the largest population known within the breeding range and has led research efforts to determine important life history parameters for the

species. Fort Sill shares a border with Wichita Mountains Wildlife Refuge, which encompasses the largest known population of black-capped vireos in Oklahoma. Both Fort Hood and Fort Sill contributed to the development and review of the PDM plan.

The Army will continue to support the recovery efforts and PDM of the black-capped vireo through the implementation of Integrated Natural Resource Management Plans (INRMP) under the Sikes Act (16 U.S.C. 670a et seq.) at both Fort Hood, TX and Fort Sill, OK. Implementation of these INRMPs support compliance with all applicable Federal and State laws to ensure military training sustainment and enhancement through sound natural resource management. Additionally these plans signify a tripartite agreement under the Sikes Act between the Army, USFWS, and the State Natural Resource Agency on how natural resources will be managed on the specific installation. Post-delisting monitoring on Fort Hood and Fort Sill will occur if appropriations are available and deemed a sufficient Garrison priority over other natural resource management projects at that time. Additionally via the Sikes Act, DoDI 4715.03 and AR 200-1, the Army can facilitate Federal or State conservation officials' access to DoD-controlled natural resources to conduct official business pursuant to applicable requirements of laws and regulations such as the PDM plan, consistent with the installation's operational, security, and safety policies and procedures.

E. The Nature Conservancy of Texas

The Nature Conservancy of Texas (TNC) is a substantial conservation partner in Texas. TNC owns or manages conservation easements on numerous properties in the state, many of which maintain populations of black-capped vireo. Of particular significance are their holdings in west Texas (Terrell and Val Verde Counties) that support major populations of the vireo. TNC has a conservation commitment to managing lands under their purview, including sustaining species like the black-capped vireo.

F. Big Bend National Park

Big Bend National Park is the largest national park in Texas and maintains the western-most known breeding population of the black-capped vireo. The park's mission is to preserve and protect a representative area of the Chihuahuan Desert along the Rio Grande for the benefit and enjoyment of present and future generations. The purpose and mission of the park align with the conservation of the black-capped vireo, and its habitat occurring on the park property.

G. Additional Cooperators

The Service welcomes additional partners willing to contribute to the success of this plan. The following have contributed to review and input of the final plan and may provide resources to implement various aspects of the plan:

Texas Department of Transportation
American Bird Conservancy
Oncor Electric Delivery Company LLC

III. Summary of Species' Status

A. Species Information

The black-capped vireo is a small, insect-eating, migratory songbird that breeds and nests in Oklahoma, Texas, and northern Mexico, and winters along Mexico's western coastal states (Figure 1). Its breeding habitat is categorized as shrublands and open woodlands. Specifically, vireos utilize low scrubby growth, mostly comprised of deciduous vegetation, of irregular height and distribution, having foliage cover to ground level and with spaces between shrub/tree mottes (Grzybowski 1995, p. 4). Wintering habitat is more general, and associated with arid/semi-arid scrub and secondary growth habitat (Graber 1961, p. 319).

B. Species' Current Status

The Service conducted an assessment of the black-capped vireo using the Species Status Assessment (SSA) framework. The SSA report (USFWS 2016) provides detailed information on the species resource needs and current status. The species' resource needs are described for individuals, populations, and the species rangewide.

The best available information on the abundance and distribution of the species comes from reported surveys across the range, and population estimates from well-surveyed properties. The known population of the black-capped vireo in the breeding range using the most recent survey data collected between 2009 to 2014 was documented at 5,244 adult males.

The Service estimates that vireo localities with suitable breeding habitat to support 30 or more adult male vireos (a manageable locality) can be maintained through vegetation and brown-headed cowbird management, and habitat that supports 100 or more adult male vireos (a likely resilient locality) is buffered from stochastic events, although some management is still necessary. Current conditions of populations indicate there are 20 manageable and 14 likely resilient localities across the breeding range (Table 1). A table of additional known localities (excluding those on private lands) occupied by the species from 2009 to 2014 is included in Appendix A. Recovery unit delineations for Texas are provided in Appendix B.

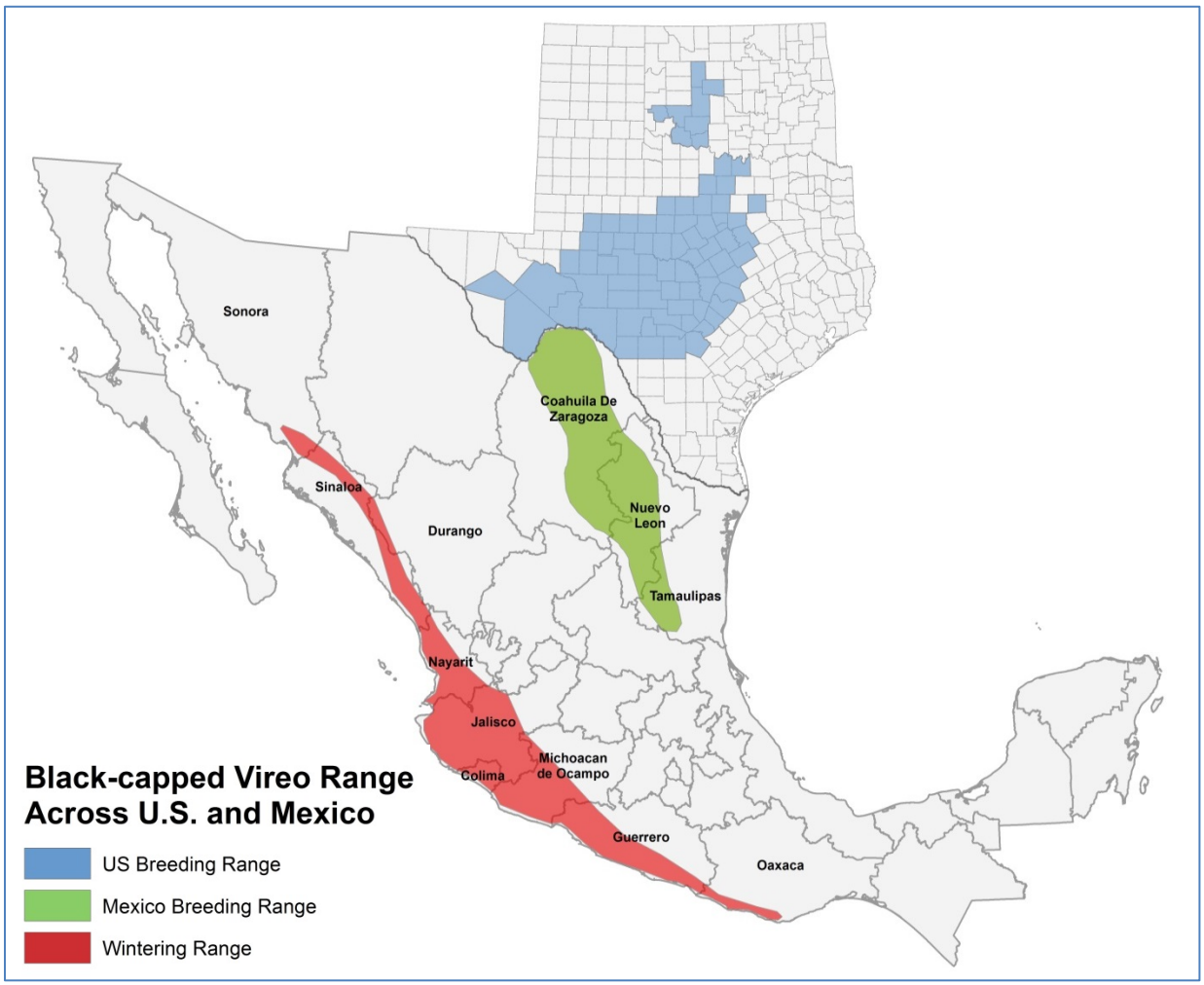


Figure 1: Known breeding and wintering range of the black-capped vireo. Ranges are generalized from known locations.

A summary of the species' needs, current status, threats, and future conditions from the SSA Report are presented in Figure 2. For additional information on the black-capped vireo's biology, resource needs, and status, see the SSA Report for the Black-capped Vireo (https://www.fws.gov/southwest/es/arlingtontexas/bcvi.htm).

Table 1. Manageable and likely resilient localities of the black-capped vireo within the breeding range and anticipated persistence under short and long term, managed and decreased management scenarios. Blue highlighted rows indicate likely resilient localities. Adapted from Black-capped Vireo SSA Report.

Recovery Unit	Locality	Locality Type (Known # of males)	Short Term		Long Term	
			Managed	Decreased Mgmt.	Managed	Decreased Mgmt.
Oklahoma	Wichita Mountains Wildlife Refuge	Likely Resilient (121)	High	High	High	High
	Fort Sill	Likely Resilient (603)	High	High	High	High
TX Central	Private Land - *San Saba Co.*	Manageable (30)	Low	Low	Low	Low
	Private Land – *Kimble Co.*	Manageable (40)	Mod.	Mod.	Low	Low
	Private Land – *Taylor Co.*	Manageable (85)	High	High	Mod.	Mod.
	South Llano River Wildlife Management Area (formerly Walter Buck WMA)	Manageable (95)	High	High	High	Mod.
	Mason Mountain Wildlife Management Area	Likely Resilient (126)	High	Low	High	Low
TX North	LCRA Canyon of the Eagles	Manageable (45)	High	Low	High	Low
	Private Land – *Coryell Co.*	Manageable (52)	Mod.	Mod.	Low	Low
	Balcones Canyonlands National Wildlife Refuge	Likely Resilient (158)	High	Mod.	High	Low
	Fort Hood	Likely Resilient (918)	High	High	High	High
TX South	Love Creek Preserve	Manageable (30)	High	Mod.	High	Low
	City of San Antonio Rancho Diana South	Manageable (37)	High	Low	High	Low
	Shield Ranch (8)	Manageable (54)	High	Mod.	High	Low
	Private Land – *Kerr Co.*	Manageable (85)	High	High	Mod.	Mod.
	Private Land – *Bandera Co.*	Manageable (85)	High	High	Mod.	Mod.
	Private Land – *Bandera Co.*	Manageable (90)	High	High	Mod.	Mod.
	Private Land – *Real Co.*	Likely Resilient (151)	High	High	Mod.	Mod.
	Kerr Wildlife Management Area	Likely Resilient (463)	High	High	High	High
TX West	Big Bend National Park	Manageable (30)	High	Mod.	High	Mod.
	Private Land - *Val Verde Co.*	Manageable (33)	High	High	Mod.	Mod.
	Chandler Independence Creek Preserve	Manageable (39)	High	Mod.	High	Mod.
	Devils Sinkhole State Natural Area	Manageable (40)	High	Mod.	High	Low

	Kickapoo Cavern State Park	Manageable (64)	High	High	High	Mod.
	Private Land – *Edwards Co.*	Manageable (73)	High	High	Mod.	Mod.
	Devils River State Park - Southern Property	Manageable (81)	High	High	High	High
	Dolan Falls Preserve	Likely Resilient (102)	High	High	High	Mod.
	Private Land - *Val Verde Co.*	Likely Resilient (110)	Mod.	Mod.	Low	Low
	Private Land – *Edwards Co.*	Likely Resilient (169)	High	High	Mod.	Mod.
	Devils River State Natural Area	Likely Resilient (171)	High	High	High	High
	Devils River Area Conservation Easements	Likely Resilient (357)	High	High	High	High
Mexico	Private Land – Nuevo León	Manageable (58)	*	*	*	*
	Private Land - Tamaulipas	Likely Resilient (101)	*	*	*	*
	Private Land - Coahuila	Likely Resilient (126)	*	*	*	*

*populations in Mexico were not projected in future scenarios in the SSA report.

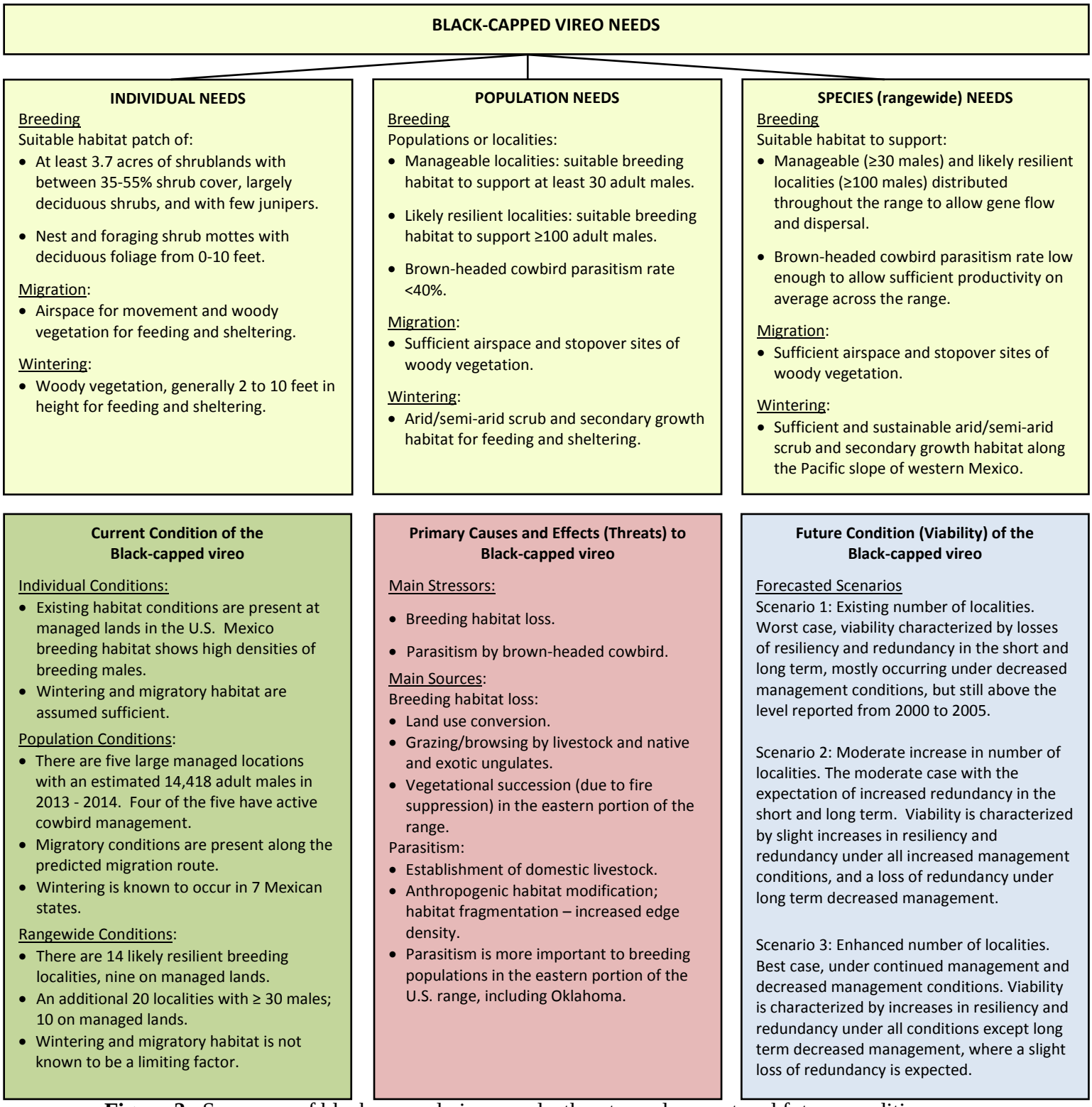


Figure 2. Summary of black-capped vireo needs, threats, and current and future conditions (from SSA Report, USFWS 2016).

C. Residual Threats

Residual threats refer to threats that, collectively, are sufficiently reduced and contained that the species no longer meets the definition of threatened or endangered. In many cases, these management requirements are long-term or even perpetual. The residual threats to the species consist of brown-headed cowbird parasitism, vegetational succession, livestock, and native and exotic herbivore effects on habitat. Cowbird parasitism has been documented as a threat to the black-capped vireo due to its negative effect on seasonal fecundity (Grzybowski *et al.* 1986, p. 1157; USFWS 1991, pp. 26–28), largely in the eastern portion of the vireo's range. Brown-headed cowbird control has been shown to be effective at increasing black-capped vireo breeding success (Eckrich *et al.* 1999 pp. 153–154; Kostecke *et al.* 2005 p. 57; Wilkins *et al.* 2006, p.84; Campomizzi *et al.* 2013, pp. 714–715). There is variation in estimates of maximum sustainable parasitism rates, dependent on other factors such as population size, fecundity rate, and other landscape factors. Based on available information, the Service recommends the parasitism rate at known localities be less than 40 percent for management purposes (USFWS 2016, p. 91). Vegetational succession generally results in an increase in the canopy cover and stature of woody vegetation beyond the early to mid-successional stage suitable for breeding black-capped vireos. Vegetational succession is a residual threat in the eastern portion of the vireo's range (including Oklahoma) and is best managed by prescribed fire. Sheep and goats are a direct threat to habitat. Cattle and native and exotic herbivores can be managed in habitat areas by monitoring densities of animals and quality of habitat.

The PDM plan will address the residual threats through monitoring and management of cowbird parasitism in areas with high parasitism rates (>40%), and monitoring of cattle density and land use changes. Vegetational succession will not be directly monitored, however, abundance monitoring within the eastern portion of the range will indirectly indicate the suitability of breeding habitat and potential losses to succession. The timeframe of this PDM (see Section IV B. Frequency of Monitoring) is a reasonable period to assess the status of the vireo following delisting. The monitoring of residual threats is a critical process for evaluating the status of the species. Monitoring of residual threats, coupled with collection of census data from known localities, will produce adequate information to evaluate the viability of the species.

IV. Monitoring Methods

The PDM for the black-capped vireo will consist of two monitoring components: abundance trends (locality censuses and major population estimates) and residual threat trends (brown-headed cowbird parasitism, land use changes, and livestock, native and exotic herbivore densities). Abundance monitoring will consist of estimating population sizes at major localities

and censusing adult male black-capped vireo on a subset of the known manageable and likely resilient localities, and any other public or easily accessible populations known or discovered within the U.S. breeding range. It is recommended that a standardized point-count protocol (Appendix C) be used at major populations, many of which already employ this method. These include Fort Hood, Fort Sill, Balcones Canyonlands National Wildlife Refuge (NWR), Wichita Mountains Wildlife Refuge (WR), and Kerr Wildlife Management Area. This would provide comparable trend data for the duration of the plan. However, localities with long term survey data may opt to continue their current protocol for comparing long term trends.

The second component is the monitoring of residual threat trends, which will be accomplished as described in the SSA report. Monitoring of brown-headed cowbird parasitism will be labor intensive, requiring a subset of nests be targeted for inspection by field biologists. Properties with established nest monitoring in place prior to delisting may continue the current protocol to sufficiently monitor residual threat status. Trends in livestock numbers will be assessed using data collected by the U.S. Department of Agriculture Agricultural Census or other means. TPWD and ODWC monitor white-tailed deer densities that can be used to assess trends across the vireo's range in Texas and Oklahoma. Land use trends within the breeding range of the black-capped vireo will be monitored using available data, such as population data, development projections, etc.

A. Procedures for Monitoring Localities

Key assumptions: There are currently no rangewide estimates of black-capped vireo abundance or breeding habitat availability. Construction of suitable models utilizing remotely sensed data for predicting location and abundance of black-capped vireo breeding habitat is limited due to the difficulty in distinguishing canopy-to-ground foliage cover, which is necessary for identifying suitable black-capped vireo habitats. Available techniques, such as LiDAR (Light Detection and Ranging), may increase the ability to provide breeding habitat estimates, provided LiDAR data are available and funding is secured for analysis. Should such information become available during the timeframe of this PDM, procedures for adaptation (Section X) should be implemented.

In the absence of reliable estimates of the rangewide abundance of the species, evaluations of the species' status have relied upon compiling the known records of species occurrence over a specific timeframe. This information is gathered by different researchers or entities, using various methodologies, and may be incomplete for certain localities. However, it is the best available information about the known localities, abundance, and distribution of the species. The compilation of this information in the SSA represents the baseline, or current conditions of the species that will be used to compare data gathered under this PDM plan. Survey information (i.e., census data) will serve to characterize the viability of the population at that

locality as described in the SSA. In addition, trends in abundance will be evaluated for localities that produce abundance estimates (Balcones Canyonlands NWR, Fort Hood, Fort Sill, Kerr Wildlife Management Area, and Wichita Mountains Wildlife Refuge WR).

This PDM plan proposes two tiers of abundance monitoring of black-capped vireo localities. Tier 1 includes the localities included in Table 1 (excludes those noted as "private land"). The persistence of these localities was forecasted in the SSA. The second tier consists of all other managed lands which are known to support black-capped vireos (Appendix A). These properties did not reach the level of 30 or greater adult males at the time of the last survey. Additionally, private lands with known populations of vireos may be included based on accessibility.

There are 19 properties in Table 1 (excluding private lands) considered for abundance monitoring. Some of these properties are monitored on a specific schedule, which will be sufficient for the purposes of this PDM plan. The identification of additional localities that meet the manageable (between 30 to 99 adult males) or likely resilient (≥ 100 adult males) categories and are accessible for monitoring may be added to Tier 1 localities.

B. Frequency of Monitoring

1) Monitoring will extend over a 12-year period, beginning in the 2019 breeding season. This period encompasses two 6-year sample timeframes (as used in the SSA) to characterize the species' viability at specific localities and trends in residual threats during the post-delisting period.

2) The frequency of monitoring of the number of adult male black-capped vireos will be dependent on previous survey history, but is recommended that a minimum of two surveys in the first and second 6-year timeframes (but no later than year 11) for Tier 1 localities (except those in #4 below) to produce 4 censuses under the plan. The practicality and availability of resources to provide these surveys may be limiting at some localities. To determine if monitoring thresholds are exceeded, survey data from at least 75% of Tier 1 localities (or 14 of the current 19) may be used for evaluation.

3) If resources allow, Tier 2 locations that are believed to maintain manageable numbers of vireos (i.e., last surveys show count close to 30 adult males) are recommended to be surveyed at least 2 times, once within each 6-year interval and with at least 5 years between the first and last surveys.

4) Localities with major populations and long term monitoring programs (Fort Hood, Fort Sill, Wichita Mountains WR, Balcones Canyonlands NWR, and Kerr Wildlife

Management Area) are recommended to provide estimates of abundance derived from survey data collected every other year.

5) Nest monitoring to determine cowbird parasitism rate is recommended to be conducted in conjunction with population survey frequency at 50% of Tier 1 localities, excluding those with established intensive cowbird control programs. Consideration of sample size is important and, at some localities, it may be necessary to pool data over two to three years to obtain a representative sample for estimating parasitism rate. In general, the localities should be representative of the U.S. breeding range distribution.

6) Residual threats (other than cowbird parasitism rate) will be monitored based on availability of information (e.g., annual deer surveys).

C. Collection of Census Data

Multiple methods of monitoring have been employed to determine black-capped vireo abundance across its breeding range. The most common methods are distance sampling, point counts, and territory mapping. Examples of these protocols are provided in Appendix C. These methods, when conducted with some simple standards will serve to provide adequate census information (actual counts of adult males) and/or estimates of abundance on individual localities.

1) The following procedures should be incorporated into survey design:
   a. Survey season is from April 10 to July 1
   b. Surveys should begin at or 15 minutes before sunrise and completed by 1:00 PM.
   c. Surveys should not be conducted under the following weather conditions: a) greater than 12 mph average wind speed, b) fog, c) light to heavy precipitation, and d) temperatures <45 °F
   d. For point count/distance sampling protocol, count time should not exceed 3 minutes per point.

2) Considerations for consistency of data collection. The "Monitoring Methods" section above acknowledges the differences in survey data collection and effort, and recommends a standardized survey approach. However, for comparison to baseline information used in the SSA, survey information may be collected using a similar protocol to the one previously used at each locality. At a minimum, the area and effort of surveys should be at the same level used for the most recent survey conducted at each locality. Survey efforts may be enhanced if it is necessary to increase the accuracy of census data. Ultimately, the purpose for collecting biological data is to assess the viability of the species at specific locations.

3) Non-traditional census efforts – reliable and verifiable data generated from other sources may contribute to PDM and the evaluation of the species' status. Such sources include Citizen Science, Bio-blitzes, Avicaching, and road transect observations.

D. Procedures for Nest Monitoring

Nest monitoring is conducted for the purposes of determining brown-headed cowbird parasitism rate. A nest is considered parasitized if a cowbird egg or nestling is found in the nest at any time during the monitoring period. The following minimum procedures should be implemented in survey design:

1) There must be evidence that a breeding pair is present within the territory for nest-searching to commence. No longer than 60 minutes per day will be spent in each territory searching for nests.

2) Nests will not be approached during the nest-building stage, if Woodhouse's scrub-jays are present, if there is precipitation, or if the air temperature is less than 45°F.

3) Once a nest is located, flagging will be placed no closer than 5 meters (16 ft) from nest tree/shrub.

4) Nest monitoring will generally occur every three to five days if possible. Nests should not be monitored on consecutive days. The use of remote cameras is discouraged.

5) Nests should be monitored from a safe distance once nestlings are nine days or older to prevent them from fledging the nest prematurely.

V. Monitoring Thresholds

To effectively implement this PDM plan, it is essential to identify the circumstances that trigger concern about the species' status to warrant increased frequency or intensity of the monitoring. It is also important to identify the circumstances under which there is no new concern for the species' status and the requirements of the PDM have been fulfilled. The thresholds and responses described below are based on the information collected under this PDM plan and provide a structured process for evaluating the status of the species during the PDM timeframe. However, other circumstances could arise, such as new threats or increased intensity of residual threats that would warrant additional concern and responses for ensuring the status of the black-capped vireo remains healthy. Possible responses for each threshold are described below.

Generally, the alternative responses may include an extended or intensified monitoring effort, additional research, habitat management at known localities, and implementing cowbird control. Other responses may be proposed in the future, if warranted, based on the collection of new information arising from monitoring activities.

The SSA for the black-capped vireo characterized viability of the species in terms of its resiliency, redundancy, and representation. Resiliency is the ability of a population to withstand stochastic events. For the black-capped vireo, resiliency is measured in population size. Redundancy refers to the ability of a species to withstand catastrophic events. The SSA measured redundancy in the black-capped vireo by the number of viable localities across the breeding range. Representation involves the ability of a species to adapt to changing environmental conditions. This is measured through the breadth of genetic and ecological diversity distributed across the species breeding range.

The SSA evaluated resiliency, redundancy, and representation for the known localities with ≥ 30 adult males (manageable and likely resilient localities) distributed across the breeding range. Three scenarios were forecasted for these localities in terms of viability (resiliency, redundancy, and representation) over 30- and 50-year periods. Under the worst case scenario, it was forecasted that there would likely be 23 manageable and likely resilient localities in the U.S. portion of the breeding range after the 50-year timeframe. The Service used this information to determine that the black-capped vireo should not be considered threatened or endangered under the ESA. The worst case scenario will be used to formulate appropriate thresholds under this PDM plan.

A. Thresholds for Resiliency

The thresholds for resiliency will be established using data sets that are monitored and evaluated over the 12-year monitoring period of the PDM plan. Resiliency thresholds will be based on both the long term population trends and nest monitoring data collected at Fort Hood, Fort Sill, Wichita Mountains WR, Balcones Canyonlands NWR, and Kerr Wildlife Management Area, and the nest monitoring data collected from all other Tier 1 localities.

1. Long term population trends threshold

   At the end of year 6 and 9 of the PDM plan, observed trends in population estimates at the major localities in Texas (listed above) should not decline to less than half the average of an equivalent previous timeframe. In Oklahoma, the Wichita Mountains WR and Fort Sill localities are contiguous and separated from other large populations by large distances. Declines in this northern most population may be more difficult to reverse due to the distance of other potential source populations. For these reasons, the observed trends in population estimates at the major localities in Oklahoma should not decline to

less than 70% of the average of an equivalent timeframe. Previous timeframes are dependent on survey effort at each locality and should represent a reasonable sample for comparison.

If population estimates for one or more of these properties reaches this threshold, population estimation surveys will be scheduled annually, and the locality authority and the Service will evaluate the need for additional management actions based on the reason(s) affecting the decline. The population will be re-evaluated in subsequent years to determine if the status has improved. If the population has not improved, additional coordination with the managing authority and the Service will develop actions to reverse the decline.

2. Cowbird parasitism threshold

Tier 1 localities monitoring nests should stay below a 40% nest parasitism rate averaged over the first and second 6-year time frames.

The response to this threshold being met will be increased cowbird control to manage parasitism under the 40% threshold.

B. Threshold for Redundancy

Redundancy thresholds will consider the number of manageable and likely resilient localities. This threshold will evaluate census data collected from Tier 1 managed properties and use limits based on the results of the worst case scenario forecasted in the SSA. This threshold will use the results of the short term forecast of the SSA. If this scenario were to occur in the 12-year period of the PDM plan, the threshold would have been reached and responses required. However, due to natural fluctuations in species abundance, and ability to monitor all locations, thresholds will be evaluated at years 6, 9, and 12 within the PDM plan timeframe. Additionally, the inability to obtain census data from managed properties will require modification of the threshold as described in Section X.

From Table 1, the threshold will be the expected number of manageable and likely resilient localities that are moderately or highly likely to persist under decreased management over the short term (30 years). Excluding localities on private lands, the expected outcome is nine manageable and eight likely resilient localities (Table 2). To determine that the threshold of nine manageable and eight likely resilient localities within the U.S. breeding range has not been met, data from monitoring the expected 75% existing Table 1 localities, any Appendix A localities that are shown to meet the

minimum number of males through survey data, and any newly discovered localities, will be evaluated.

Table 2. Redundancy threshold numbers of Tier 1 manageable and likely resilient localities.

	Current Conditions	Short Term Scenario	Threshold (75% of localities)
Manageable Localities	10	9	7
Likely Resilient Localities	9	8	6
Total	19	17	13

Responses to this threshold being met will be 1) enhanced management at the localities showing declines in abundance, 2) enhanced surveys of Tier 2 localities likely to be included in Tier 1 based on the most recent information, and 3) enhanced management at Tier 2 localities best suited to increase the abundance to reach the Tier 1 level.

C. Threshold for Representation

The threshold for representation will consider the distribution of Tier 1 localities across the U.S. breeding range. Table 3 shows the distribution of these localities under current conditions and the expected distribution by recovery unit (excluding private localities) as forecast under the worst case scenario in the SSA. Similar to the thresholds for redundancy, representation will consider the short term distribution predictions for the worst case scenario in the SSA. These thresholds consist of the number of forecasted managed properties (excluding private localities) under short term decreased management conditions within the U.S. recovery units. If any of these forecasted outcomes were to occur in the 12-year period of the PDM plan, the thresholds would have been met and responses required. However, due to natural fluctuations in species abundance, and inability to monitor all locations, thresholds will be evaluated at years 6, 9, and 12 within the PDM plan timeframe. Additionally, thresholds would reflect the 75% minimum census data collected (see Table 2). The inability to obtain census data from managed properties will require modification of the thresholds as described in Section X.

Table 3. Representation threshold using forecasted scenario of projected number of Tier 1 manageable (ML) and likely resilient localities (LRL) based on current conditions under short and long term, decreased management conditions. Adapted from the SSA (USFWS 2016).

Forecasted Scenario of Existing Number of Known Localities	Unit	Current Conditions		Short Term Decreased Mgmt.	
		ML	LRL	ML	LRL
	Oklahoma	0	2	0	2
	Central	1	1	2	0
	North	1	2	0	2
	South	3	1	2	1
	West	5	3	5	3
	Total	10	9	**9**	**8**

Response to losses of representative localities will be addressed through enhanced surveys of Tier 2 localities. Specifically, surveys of localities within the U.S. recovery regions for which losses of representation are triggered will be conducted in an effort to verify representation.

The information on genetic diversity indicates the black-capped vireo displays adequate representation to adapt to environmental changes. When considering the species' apparent heterozygosity and lack of genetic structuring, its breadth of likely resilient localities geographically spread across its historical range, and that it displays adaptability to variations in habitat within and across populations, the black-capped vireo appears to be adaptable and persistent when faced with a changing environment.

Monitoring of genetic representation in the black-capped vireo will consist of evaluating available studies related to the species' genetic diversity. Response to studies indicating changes in the level of representation within the species will be the coordination and planning of additional research targeting the issue.

D. Thresholds for Threat Data

Monitoring threat information will be a continuous process under this PDM plan. Thresholds will be evaluated at years 6, 9 and 12, and will be based on data showing increases in trends previously evaluated under the SSA, or new information obtained during the timeframe of this PDM plan. Thresholds will be met if threat trend data show a consistent increase across the species' range, similar to levels at the time the species was listed. If any of the threats are determined to reach the threshold in years 6 and 9, a more detailed analysis of the threat will be conducted over the next 2 years. Additional research will be sought to understand the correlation between the threat and the species.

E. Relisting Considerations

If any of the above thresholds are met and if we believe there are reasons for substantial concerns regarding the status of the black-capped vireo, or other significant concerns arise, the Service will initiate a status review of the species under section 4 of the ESA to evaluate the potential causes, including assessing habitat availability, cowbird parasitism, climate change, and any other possible limiting factors. The Service will work with our cooperators to consider necessary remedial actions or more intensive monitoring or research needs.

During any stage of the PDM period the Service may initiate procedures to re-list the black-capped vireo if data from this monitoring effort or from some other reliable source indicates that the species or its habitat is experiencing a significant decline and that a proposal to relist the species as threatened or endangered is warranted. Any relisting action taken by the Service under section 4(a)(1) of the ESA will be based on the best available information related to the five listing factors and will require public notice and comment. If the best available information indicates an emergency posing a significant risk to the viability of the species, then the Service will use ESA section 4(b)(7) authority (emergency listing) to prevent any significant risk to the viability of the black-capped vireo.

VI. Funding

A. Estimated Funding Requirements

An estimate of funding necessary to complete the PDM plan is presented in Tables 4 and 5. The total estimated monitoring cost for managed properties over the 12-year timeframe of this PDM is $1,360,242. Table 5 provides annual costs for implementing minimum cowbird control at localities. We estimate that implementation of cowbird control may be necessary on up to 20 localities annually (12 years), including responses to thresholds met under this plan, which would cost approximately $1,538,160. In total, it is estimated that completion of this PDM would cost $2,898,402. These estimates are not adjusted for inflation and assume that the monitoring schedule is consistent with the methodology and schedule contained in this plan. Additional costs not included in these estimates are those of staff time that would accrue by personnel of the Service, TPWD, ODWC, and other potential partners in coordinating PDM activities and reviewing draft interim and final reports. These costs will likely be borne as in-kind services provided by the cooperating agencies.

Table 4. Estimated Costs of Monitoring under the Post-delisting Monitoring Plan (2017 dollars).

		Unit	**Cost**
Personnel	Rate	Hours	
Biologist	$45.74	180	$8,233
Bio-technician	$20.00	180	$3,600
Fringe Benefits	15%		$1,775
Travel		Days	
Lodging, meals, per diem	$142	8	$1,136
Equipment			
GPS			$200
Rangefinder			$200
Nest mirror			$20
Subtotal of Direct Costs			$15,164
Indirect Charges, 15% of Direct Costs	15%		$2,275
Total One-year Cost Estimate per Locality			$17,439
Total Cost of each Tier 1 Locality (4 survey years)			$69,756
Total Cost of each Tier 2 Locality (2 survey years)			$34,878
Total Tier 1 Cost (14 Localities)			$976,584
Total Tier 2 Cost (11 Localities)			$383,658
Total Monitoring Cost of PDM			$1,360,242

Table 5. Estimated Annual Costs of Brown-headed Cowbird Trapping (2017 dollars) per Locality.

Personnel	Rate	Hours	Cost
Bio Technician	$14.00	200	$2,800
Fringe Benefits	15%		$420
Equipment			

Trap			$1,500
Handheld net			$13
Waterer			$25
Seed Platform			$15
Seed			$800
Subtotal of Direct Costs			$5,573
Indirect Charges, 15% of Direct Costs	15%		$836
Total Cost Estimate			$6,409

B. Potential Funding Sources

While the ESA authorizes expenditure of both recovery funds and section 6 grants to the states to plan and implement a PDM plan, to date Congress has not allocated any funds expressly for this purpose. Funding of PDM activities will therefore require trade-offs with other competing species needs. Much of the cost will likely be borne as in-kind services provided by cooperating agencies. Working closely with our partners, we anticipate using grant programs to provide funding for activities that go beyond the resources available through in-kind services. Opportunities exist to compete for traditional section 6 grant funds or state wildlife grant funds. The Service, TPWD, ODWC, and other cooperators will continue to work together to secure funding to implement this PDM plan. Many of the tasks in this PDM plan will be carried out by existing staff and will represent in-kind contributions to fund the effort.

C. Anti-Deficiency Act disclaimer

Post-delisting monitoring is a cooperative effort between the Service, States, other Federal agencies, and non-governmental partners. Funding of post-delisting monitoring presents a challenge for all partners committed to ensuring the continued viability of the black-capped vireo following removal of ESA protections. To the extent feasible, the Service intends to procure funding for post-delisting monitoring efforts through the annual appropriations process. Nonetheless, nothing in this Plan should be construed as a commitment or requirement that any Federal agency, including the Service, obligate or pay funds in contravention of the Anti-Deficiency Act, 31 U.S.C. 1341, or any other law or regulation.

VII. Reporting

Monitoring information collected under this PDM plan will be submitted to the Service's Arlington Ecological Services Field Office, TPWD and ODWC. At the completion of year six,

an interim summary report will be prepared by December 31. This report will describe the abundance and residual threat monitoring that occurred and report all activities and results carried out under the plan. The interim report should include a discussion section that describes any deviations from the PDM plan and make any necessary recommendations for changes in the future PDM data collection or analysis.

A final report will be prepared following the conclusion of the 12-year period of the PDM and be prepared by December 31. This report will be similar to the interim report, but provide the final review and evaluation of the PDM plan, as well as a conclusion based on this information as described in section IX.

The Service will work with its partners to develop the reports under this PDM plan. The primary responsibility for reporting lies with the Service, TPWD and ODWC.

VIII. PDM Summary and Implementation Schedule

A summary of the monitoring, thresholds and responses are provided in Table 6. The general implementation schedule for the PDM plan is shown in Table 7.

IX. Conclusion of PDM

At the end of the planned PDM period, the Service will conduct a final review and summarize the results in the PDM plan report. Any relisting decision by the Service will require evaluating the status of the black-capped vireo relative to the ESA's five listing factors (section 4(a)(l)). The Service intends to work with all of our partners toward maintaining continued recovery of the black-capped vireo so as not to require relisting the species. The following four conclusions are possible at the end of PDM for the black-capped vireo:

1. PDM indicates that the species remains secure without ESA protections.

   PDM will be concluded at the completion of year 12 of the PDM plan and no further monitoring will be required. Additional monitoring may continue at the discretion of the Service and its partners dependent upon need as well as available funding and resources.

Table 6. Summary table of monitoring type, frequency, thresholds, and responses for post-delisting monitoring of the black-capped vireo. ML = Manageable Locality, LRL = Likely Resilient Locality.

Component	Monitoring Type	Source	Frequency	Threshold	Response
Abundance	Census	Tier 1 (data collected from at least 75% of localities)	At least twice per 6-year interval (4 total).	Redundancy: 7 ML and 6 LRL in U.S. Evaluate at years 6, 9, and 12. Representation: Distribution of ML and LRL localities in Recovery Units (Table 3). Evaluate at years 6, 9, and 12	Enhance mgmt. at declining localities; increase surveys of Tier 2 localities.
		Tier 2	Once per 6-year interval for 50% of localities	N/A	N/A
	Population Trends	Major Localities	Every other year	Resiliency: Population estimates >50% (TX) and 70% (OK) of past average	Survey increased to annual; evaluation of need for additional mgmt.
Residual Threats	Parasitism	Tier 1	Schedule based on Census frequency on 50% of localities	Resiliency: < 40% p-rate over 6- year intervals	Increased cowbird control
		Tier 2	N/A	N/A	N/A
	Land Use Changes		USDA census 2022, 2027 and other sources as available	Consistent increase to level similar to time of listing. Evaluate at years 6, 9, and 12.	If reached in years 6 or 9, more detailed analysis over next 2 years.
	Livestock		USDA census 2022, 2027 and other sources as available	Consistent increase to level similar to time of listing. Evaluate at years 6, 9, and 12.	If reached in years 6 or 9, more detailed analysis over next 2 years.
	Deer		Annual	N/A	N/A
Genetic Diversity	N/A	Research	As Available	N/A	Evaluation

Table 7. General schedule for post-delisting monitoring of the black-capped vireo. Monitoring occurs over 12 years from 2019 to 2030. The schedule is subject to change if monitoring results in a need for more intensive data collection.

Task	2024	2027	2030	Every other year	Minimum of twice per 6-years	Once per 6 year period	Annually as data are available
Major localities				■			
Tier 1 Monitoring					■		
Tier 2 Monitoring						■	
Threats Monitoring							■
Threshold evaluation	■	■	■				
Reporting	■		■				

2. PDM indicates that the species may be less secure than anticipated at the time of delisting, but information does not indicate that the species meets the definition of threatened or endangered.

   The duration of the PDM period may be extended and additional monitoring and management may be planned and carried out. A new monitoring plan should build upon the information gained from this PDM effort and describe future monitoring activities.

3. PDM yields substantial information indicating a decline in the species' status since delisting, such that listing the species as threatened or endangered may be warranted.

   In addition to further monitoring and management activities discussed above, the Service should initiate a formal status review under section 4 of the ESA to assess changes in threats to the species, its abundance, productivity, survival, and distribution. The purpose of the review is to determine whether a proposal for relisting the vireo as a protected species under section 4 of the ESA is warranted.

4. PDM documents a decline in the species' probability of persistence, such that the species once again meets the definition of a threatened or endangered species under the ESA.

   If PDM reveals that the black-capped vireo is threatened (i.e., likely to become endangered in the foreseeable future throughout all or a significant portion of its range) or endangered, then the species should be promptly proposed for relisting under the ESA in accordance with procedures in section 4(b)(5). Likewise, if the best available information indicates an emergency that poses a significant risk to the well-being of the species, then the Service should exercise its emergency listing authority under section 4(b)(7).

X. Review and Adaptation of PDM

The draft PDM for the black-capped vireo was made available for review and comment by the public through a Federal Register notice. In addition, the Service received comments on the draft PDM plan in accordance with the 1994 peer review policy (59 FR 34270) from three peer reviewers who have expertise in avian ecology and principles of conservation biology. All comments received from the public and peer reviewers were considered and incorporated as appropriate into the final PDM plan. Once finalized and approved by the Service's Southwest Regional Director, the PDM plan may be updated as needed to account for and respond to new

information discovered as part of the ongoing data collection and analysis, or as new technology that enhances the effectiveness of monitoring becomes available.

This PDM plan is final when approved by the Service's Southwest Regional Director. However, it may be updated as needed to account for and respond to new information discovered as part of the ongoing data collection and analysis. If substantial changes are made to the PDM plan or if significant deviations to described PDM procedures set forth in this document occur, this PDM plan will be revised by the Service to document the changes and/or deviations. Future changes to the PDM plan will require approval by the Regional Director. The final PDM plan for the black-capped vireo, including any future revisions will be made available on the Service's website (http://endangered.fws.gov) and the Arlington Ecological Services Field Office website (https://www.fws.gov/southwest/es/arlingtontexas/).

XI. Literature Cited

Campomizzi, A.J., H.A. Mathewson, M.L. Morrison, C.M. Lituma, T.J. Connkling, M. Constanza Cocimano, S.L. Farrell, R.N. Wilkins, and J.A. Butcher. 2013. Understanding nest success and brood parasitism in the endangered black-capped vireo: comparisons with two sympatric songbirds. The Wilson Journal of Ornithology 125:709–719.

Eckrich, G.H., T.E. Koloszar and M.D. Goering. 1999. Effective landscape management of brown-headed cowbirds at Fort Hood, Texas. Studies in Avian Biology 18:267–274.

Graber, J.W. 1961. Distribution, habitat requirements, and life history of the black-capped vireo (*Vireo atricapilla*). Ecological Monographs 31:313-336.

Grzybowski, J.A. 1995. Black-capped vireo (*Vireo atricapillus*) *in* The Birds of North America, No. 181. A. Poole and F. Gill, editors. The Academy of Natural Sciences, Philadelphia, Pennsylvania, and The American Ornithologists' Union, Washington, D.C.

Grzybowski, J.A., R.B. Clapp, and J.T.J. Marshall. 1986. History and current population status of the black-capped vireo in Oklahoma. American Birds 40:1151–1161.

Kostecke, R.M., S.G. Summers, G.H. Eckrich, and D.A. Cimprich. 2005. Effects of brown-headed cowbird (*Molothrus ater*) removal on black-capped vireo (*Vireo atricapilla*) nest success and population growth at Fort Hood, Texas. Ornith. Mono. 57:28–37.

U.S. Fish and Wildlife Service (USFWS) 1991. Black-capped Vireo Recovery Plan. U.S. Fish & Wildlife Service, Region 2, Albuquerque, NM.

U.S. Fish and Wildlife Service. 2016. Species Status Assessment Report for the black-capped vireo (*Vireo atricapilla*). Arlington Ecological Services Field Office, Arlington, Texas.

Wilkins, N., R.A. Powell, A.A.T. Conkey, and A.G. Snelgrove. 2006. Population status and threat analysis for the black-capped vireo. Prepared for the U.S. Fish and Wildlife Service, Region 2.

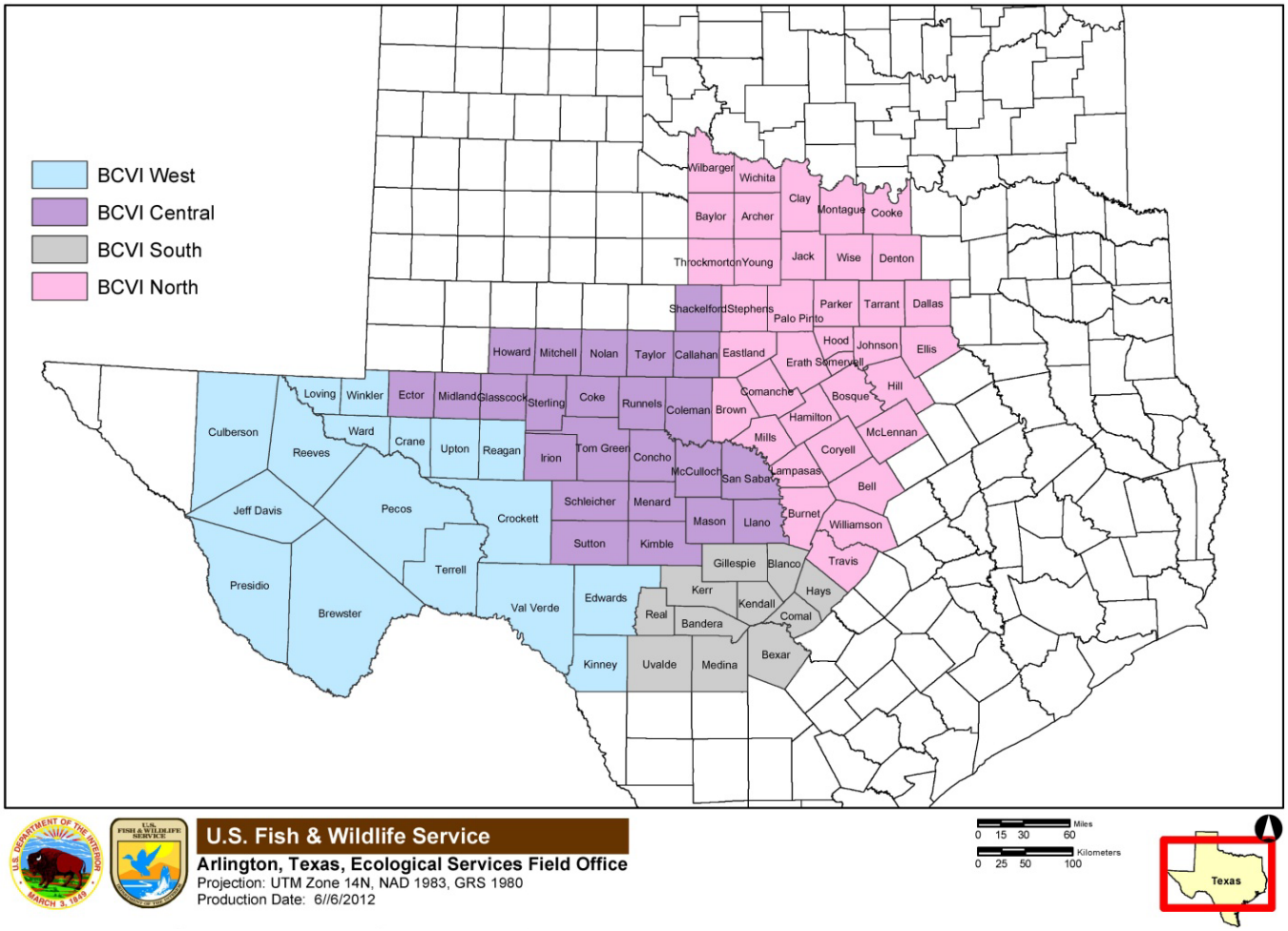
XII. Appendices

Appendix A – Table of Tier 2 localities

Black-capped vireo Recovery Unit	Population	Property Acres (Hectares)	Most recent estimate of available black-capped vireo habitat (acres/hectares)	# of black-capped vireos	Year of black-capped vireo survey.	Active brown-headed cowbird trapping program (yes/no/comment)	Active prescribed fire/black-capped vireo mgmt. program (yes/no/ comment)
Oklahoma	Quartz Mountain State Park *Kiowa and Greer Cos.*	4,284 (1,734)	Unavailable	15	2014	No	No
North	Balcones Preserve-City of Austin *Travis Co.*	13,608 (5,507)	Unavailable	6	2014	Unavailable	Unavailable
	Balcones Preserve-Travis County *Travis Co.*	8,861 (3,586)	Unavailable	13	2014	Yes	Active management
	Barton Creek Habitat Preserve *Travis Co.*	4,084 (1,653)	150 (61)	2	2009	Unavailable	Yes
	Parrie Haynes Ranch *Bell Co.*	4,500 (1,821)	Unavailable	2	2009	Unavailable	Unavailable
	Clearwater Ranch Conservation Easement *Burnet Co.*	5255 (2,127)	1,245 (Oncor annual report) (504)	24	2013	Yes	Yes
	Dinosaur Valley State Park *Somervell Co.*	1,587 (642)	Unavailable	2	2009	No	Prescribed fire plan under development
	Fall-off Creek Mitigation Bank *Coryell Co.*	690 (279)	Unavailable	2	2010	Unavailable	Unavailable
	Inks Lake State Park *Burnet Co.*	1,200 (486)	Unavailable	5	2009	No	Prescribed fire plan under development
	Possum Kingdom State Park *Palo Pinto Co.*	1,528 (618)	Unavailable	5	2014	No	Majority of park burned during 2011 wildfire
South	Camp Bullis Military Installation *Bexar Co.*	24,887 (10,071)	153 (62)	2	2010	Yes	Unavailable
	Garner State Park *Uvalde Co.*	1,774 (718)	Unavailable	7	2011	No	Yes
	Hill Country State Natural Area *Bandera Co.*	5,400 (2,185)	Unavailable	4	2009	No	Yes
	Little Bear Creek Tract-	1,325 (536)	Unavailable	2	2014	Unavailable	Unavailable

	City of Austin *Hays Co.*						
	Lost Maples State Park *Bandera Co.*	2,174 (880)	Unavailable	21	2012	No	Yes
	Mills Spring Ranch-Bandera Corridor Conservation Bank *Bandera Co.*	641 (259)	Unavailable	6	2009	Unavailable	Unavailable
	S4/Spangler Ranch-Bandera Corridor Conservation Bank *Bandera Co.*	1,159 (469)	Unavailable	6	2009	Unavailable	Unavailable
	Wagon Track Ranch-Bandera Corridor Conservation Bank *Bandera Co.*	1216 (492)	Unavailable	5	2009	Unavailable	Unavailable
Central	Cedar Point Recreation Area-LCRA *Llano Co.*	400 (162)	Unavailable	1	2010	No	No
	Colorado Bend State Park *San Saba Co.*	5,328 (2,156)	Several hundred acres	22	2012	No	Yes
West	Escondido Draw Recreational Area *Crockett Co.*	3,300 (1,336)	Unavailable	9	2014	Unavailable	Unavailable

Appendix B – Black-capped Vireo Recovery Units in Texas



Appendix C – Survey methods

General survey methodologies for detecting the number of male black-capped vireos (BCVI) in a specific location. This information is not intended to be comprehensive, but provide the basic methods used in each protocol. Monitoring population trends for BCVI can be accomplished for smaller populations (i.e., <100 territorial males) by mapping territories and for larger populations by estimating population sizes using distance-based point count surveys. The objective of the following guidance is to provide minimal standardized procedures on how to conduct these two procedures to estimate the densities of BCVI in defined areas. The first step for any survey is to define the survey area. For BCVI surveys, the areas of interest typically are managed specifically for the species, comprised of potential habitat with unknown use, or known to have been occupied by the species based on detections during previous breeding seasons.

Point Count Surveys

Population estimates using point count surveys require analysis using distance sampling techniques. A minimum of 60-80 detections are recommended to use this technique; thus, this method is only feasible for large populations. Each detection must be associated with an accurate distance from the surveyor to the bird. Analysis of the survey data requires knowledge of programs that fit the data to detection functions and estimate densities. Program DISTANCE is a free program that can be used for the analysis. It has extensive guidance and a menu-driven interface that helps biologists who have training in population estimation to derive valid population estimates. More advanced users may use statistical packages available in the free open-source program R for these analyses.

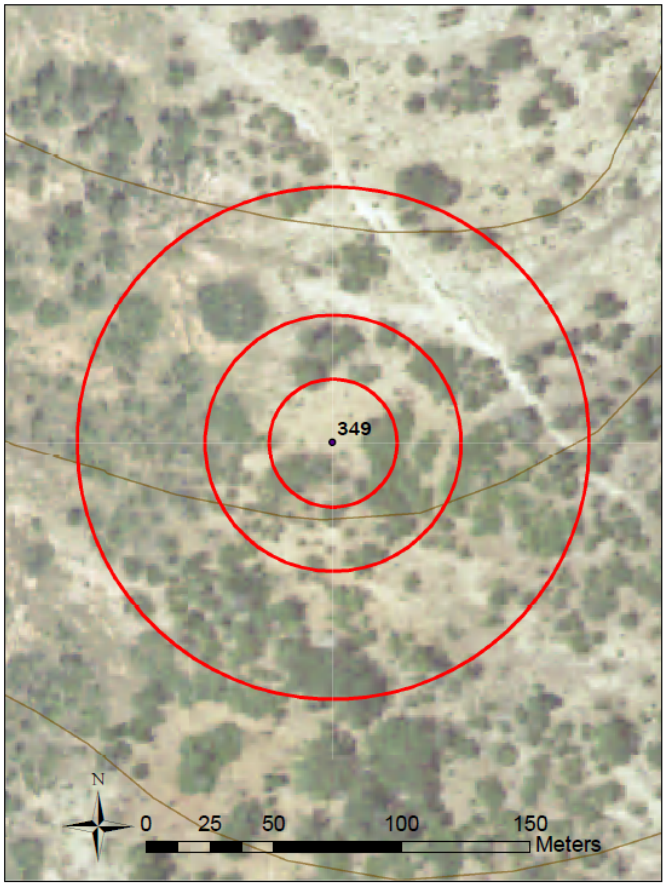
Sample design – A uniform grid of points with a spacing of 250 or 300 meters is randomly placed over the area of interest. If all points will not be surveyed, then points are selected for sampling either completely at random or randomly within strata. Based on the number of points required to record enough detections, the design may dictate surveying a sample of points within the area of interest, all points within the area, or multiple surveys of points within the area within a given year. Generally, more precise estimates of population size are achieved by surveying more points rather than the same points multiple times (e.g., more precision when surveying 100 points once than 50 points twice).

The sample unit is an unlimited variable-radius point (i.e., all detections are recorded). The number of points selected and the number of surveys per point must be adequate to achieve a desired level of precision. Estimates should strive for a coefficient of variation (COV) of ≤20%. Initial surveys should be designed to obtain 60–80 detections based on best estimates regarding density and adjusted (e.g., by increasing the number of points surveyed or by surveying points multiple times) to achieve the desired precision in subsequent years.

Surveys are conducted beginning the second week in April and continuing for up to 8 weeks. Each survey must begin no earlier than 15 minutes before sunrise and no later than 4 hours after sunrise. An average of approximately 15 points per person per day can be sampled when points are adjacent and can be hiked to in succession. Inclement weather will increase the number of days required to complete the survey.

Sources of error -The probability of detecting a bird is the product of the probability it is present, the probability it sings, and the probability it is heard or detected by the observer. Estimates of bird density using distance sampling are based on the assumption that all birds are detected at their initial location and that the distance to that location is measured accurately. Then, detection probability can be estimated. The probability that a bird sings during a survey is problematic. Ideally, the survey is conducted at an instant in time when a snapshot of all bird locations can be recorded. However, birds do not sing constantly, so surveys are conducted for a period of time to increase the likelihood that any bird present does indeed sing. However, during this time, birds are moving around; some birds may be recorded more than once, and other birds that were initially farther away may move closer and subsequently be detected. Based on point count sampling research at Fort Hood, Cimprich (2009) found that estimates based on even as few as 3 min of survey overestimated actual numbers by 26% and longer surveys were biased by far greater amounts. Thus, the survey protocol at Fort Hood was modified so that surveys last only 3 min. FWS biologists at Balcones Canyonlands NWR and Wichita Mountains WR have also adopted this survey duration. The time elapsed from the start of the survey to each detection is also recorded to allow parsing the data to a shorter survey period if deemed appropriate in the future. This also facilitates a technique developed by Amundson et al. 2014 (*A hierarchical model combining distance sampling and time removal to estimate detection probability during avian point counts*, The Auk 131:476–494) that incorporates both time of detection and distance to calculate separate estimates for availability and perceptibility. Although this analysis technique has not been applied to BCVI survey data, by recording both distances and time to detections the surveyor maximizes the utility of the data and maintains the potential for more accurate estimates of density in the future.

Implementation – The following three pages show a data form and instructions that may be used to conduct the survey.



Bird Field Data Form - Circular Plot

Field Conditions

Date:	Start Time:
Observer:	Point No.:
Easting:	Wind Speed Code:
Northing:	Sky Code:

Aural Detections

Obs	Species	Distance	Time of Detection
1			
2			
3			
4			
5			

Wind Speed Code	Description (Wind Speed, mi/hr)
0	Calm; smoke rises vertically (<1)
1	Light air; wind direction shown by smoke drift (1-3)
2	Light breeze; wind felt on face (4-7)
3	Gentle breeze; leaves in constant motion (8-12)
4	Moderate breeze; raises dust; small branches move (13-18)
5	Fresh breeze; small trees sway; crested wavelets on inland waters (19-24)
6	Strong breeze; large branches in motion (25+)

Comments:

Sky Code	Description
0	Clear or a few clouds
1	Partly cloudy (scattered)
2	Cloudy (broken) or overcast
4	Fog or Smoke
5	Drizzle
7	Snow
8	Showers

Sample field data form for point counts showing "bull's-eye" circular plot. Plot is delineated at 25, 50 and 100 meters to assist in estimating distance to bird.

Conducting Surveys for BCVI

1. Prior to the day of the counts, determine which points will be sampled and the order they are to be counted. Also, determine and upload the x,y coordinates for each point into a GPS.

2. Sampling will occur in the morning, from 15 minutes before sunrise to 4 hours after sunrise.

3. Do not conduct the count during high winds, heavy rains, or if fog reduces visibility to ≤100 m.

4. Counts should not be conducted if it is raining hard (sky code 8) or if wind strength on the Beaufort Scale is a sustained 4 or greater. If these conditions are encountered, wait until the weather improves or cancel the sampling for the day and reschedule.

5. Approach the location, noting in the comments any target birds within 100 m of the counting station that are flushed, fly away, or retreat.

6. Record the data under Field Conditions.

7. Orient the bull's-eye data sheet to a fixed direction. Start the count. Use a pocket timer or watch to keep track of time.

8. When a target species is detected by song, plot the location on the map using the observation number. Record the species code, time (minute:second), and distance of the initial detection. (Note: You may use the range finder to assist with distance detection at this point or at the end of the survey. By plotting the location on the map, you may find it more efficient to continue to focus on detections until the end of the survey and then get your distances using the map and range finder, and GPS in step 11.)

9. Do not record visual detections of target species that are unaccompanied by song or other detections that are unaccompanied by song, for example *shrads*.

10. Holding the sheet in a fixed position, spend part of the time facing different directions in order to better detect birds.

11. At the end of 3 minutes, stop recording bird observations. If no birds were detected, record this on the data sheet by writing NONE in the Species box for observation 1. Do not record any new birds seen or heard after the 3 minutes have passed.

12. After the survey, check the accuracy of your estimation ability by determining the distance to the nearest black-capped vireo that is singing. Do this by walking to the nearest individual and determining the distance with the GPS. Adjust your estimated distances on your data form if appropriate. If a BCVI was not detected, this step may be skipped.

Territory Mapping

- At least 5 observations of the same male AND observation of a nest must be made before considering it a territorial male.
    - Observers may collect up to five locations for a given individual bird within a single day as long as each location is separated by ≥ 5 min.
- At least 2 of the observations must be made 10 days apart.
- An individual's territory is calculated by constructing a minimum convex polygon containing each bird's observations.
- Because individual males in close proximity are difficult to uniquely identify in habitat patches, it is strongly recommended to implement color banding to improve accuracy of delineating territories.

Appendix D – Management commitments from The Nature Conservancy, Department of the Army, Texas Parks and Wildlife Department, and the Oklahoma Department of Wildlife Conservation.

COOPERATIVE MANAGEMENT AGREEMENT

Between

U.S. Fish and Wildlife Service
Arlington Ecological Services Office

And

Oklahoma Department of Wildlife Conservation

For

Monitoring and Management of the Black-capped Vireo (*Vireo atricapilla*)

Background

The mission of the U.S. Fish and Wildlife Service (Service) is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. The Service administers the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

The mission of the Oklahoma Department of Wildlife Conservation (ODWC) is the management, protection, and enhancement of wildlife resources and habitat for the scientific, educational, recreational, aesthetic, and economic benefits to present and future generations of citizens and visitors to Oklahoma. The ODWC is a significant contributor to research efforts to understand the ecological conditions of habitat and distribution of the species in Oklahoma.

The black-capped vireo was proposed for removal from the List of Endangered and Threatened Wildlife on December 15, 2016, due to recovery (81 FR 90762). The known threats to the species have been reduced or are adequately managed to the point that the species no longer meets the definition of endangered or threatened. Within the eastern portion of the species' range, management of habitat and cowbird control is necessary for optimal population health. Additional information on the black-capped vireo's biology, resource needs, and status can be found in the *Species Status Assessment Report for the Black-capped Vireo* and the proposed rule available at www.fws.gov/southwest/es/ArlingtonTexas/bcvi.htm.

The Act requires that a post-delisting monitoring (PDM) plan be developed in cooperation with the States to monitor the status of all species that have been delisted due to recovery. In

cooperation with States and other partners, the Service has developed a PDM plan to monitor the black-capped vireo and conduct ongoing management actions, as necessary.

Purpose

The ODWC has served a significant role in the recovery of the black-capped vireo and has been an important conservation partner to the Service. Therefore, the goal of this Cooperative Management Agreement (CMA) is to jointly commit to the implementation of ongoing management of habitat and brown-headed cowbirds determined to be necessary to ensure optimal health of the black-capped vireo after it is delisted. Implementation of the PDM is expected to provide the necessary monitoring data to evaluate the status of the species over the PDM period and identify whether the species is thriving, additional management is needed, or the species needs to be evaluated for relisting. The role and responsibilities of ODWC is described in Section II of the PDM plan.

This CMA is entered into between the Service and ODWC. The purpose of the CMA is to implement management of the black-capped vireo on lands managed by ODWC sufficient to prevent reaching monitoring thresholds established in the PDM plan. The PDM plan provides details on monitoring black-capped vireo abundance and brown-headed cowbird parasitism, among other residual threats, that are necessary to evaluate the status of the species for a 12-year period.

General Provisions

1. It is recognized by both parties that the recovery of the black-capped vireo is in part a result of effective management practices developed and refined by multiple stakeholders. It is also recognized that the majority of the known breeding localities within the U.S. occur on publically-managed or protected lands. Therefore, the Service and ODWC agree that effective management actions, as well as monitoring of the species, are appropriate to include in the PDM plan. As partners in development of the PDM plan and signatories of this CMA, both parties commit to using available resources within their authorities to implement the provisions of the PDM plan to the fullest extent possible.

2. Whereas both parties own or manage lands occupied by the black-capped vireo, it is agreed to continue ongoing habitat and cowbird management on such lands to promote

a healthy population. The goal of habitat management will be to maintain or increase the known population size at each property based on results of monitoring under the PDM plan. The goal of cowbird control will be to maintain parasitism rate below 40% of nests averaged over 6-year periods based data collected under the PDM plan.

3. The PDM plan is a cooperative effort between the Service and its partners. There are no funds specifically allocated to implement the plan. As such, both parties agree to work together to utilize grants or other existing mechanisms to secure funding for PDM activities. However, both parties expect that many PDM activities will be accomplished as "in-kind" contributions carried out by respective staff under existing authorities. In any case, this plan should not be construed as a commitment or requirement to obligate funding in violation to any laws or regulations pertinent to each party. Additionally, for Federal agencies including the Service, the expenditure of funds is expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 U.S.C. 1341). No obligation undertaken by the Service or other Federal agency under the provisions of this CMA or the PDM plan will require or be interpreted as a commitment to expend funds not obligated for that purpose.

4. The PDM plan may conclude in one of four possible scenarios detailed in Section IX – Conclusion of PDM of the plan. Following the conclusion of the plan and prior to cessation of any activities agreed upon in this CMA, both parties agree to discuss the status of the species, the need for extending the CMA for the purpose of long term species management, and updating provisions of the CMA and management practices based on new science and techniques.

5. The parties agree to utilize their existing authority to promote the implementation of effective management and monitoring activities to other stakeholders within the range of the species.

6. Nothing in this CMA shall limit the ability of Federal and State conservation authorities to perform their lawful duties and conduct investigations as authorized by statute and by court guidance and direction.

7. The parties agree to work together in good faith to resolve any disputes using resolution procedures agreed upon by the parties.

8. Parties are not liable in damages for any breach of this CMA, any performance or failure to perform an obligation under this CMA, or any other cause of action arising from this CMA.

9. This CMA may be re-evaluated as needed and amended or renewed by mutual consent of the parties. If amended, any additional provisions will either be attached as an appendix to this CMA or incorporated through revision.

10. This CMA shall become effective beginning on the date of the last signature below and shall remain in effect for the duration of the PDM plan and any agreed upon extensions.

U.S. Fish and Wildlife Service

Debra T. Bills

Debra Bills, Field Supervisor, Arlington Field Office

Date: 7/26/17

Oklahoma Department of Wildlife Conservation

J.D. Strong, Director

Date: 8.8.2017

COOPERATIVE MANAGEMENT AGREEMENT

Between

U.S. Fish and Wildlife Service
Arlington Ecological Services Field Office

And

The Nature Conservancy, Texas Chapter

For

Monitoring and Management of the Black-capped Vireo (*Vireo atricapilla*)

Background

The mission of the U.S. Fish and Wildlife Service (Service) is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. The Service administers the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

The mission of The Nature Conservancy, a District of Columbia nonprofit corporation, is to conserve the lands and waters on which all life depends. The Nature Conservancy has long worked with the Service and enters this CMA through its Texas Chapter (TNC-TX) to further joint conservation objectives.

The black-capped vireo was proposed for removal from the List of Endangered and Threatened Wildlife on December 15, 2016, due to recovery (81 FR 90762). The known threats to the species have been reduced or are adequately managed to the point that the species no longer meets the definition of endangered or threatened. Within the eastern portion of the species' range, management of habitat and cowbird control is necessary for optimal population health. Additional information on the black-capped vireo's biology, resource needs, and status can be found in the *Species Status Assessment Report for the Black-capped Vireo* and the proposed rule available at www.fws.gov/southwest/es/ArlingtonTexas/bcvi.htm.

The Act requires that a post-delisting monitoring (PDM) plan be developed in cooperation with the States to monitor the status of all species that have been delisted due to recovery. In

cooperation with States and other partners, the Service has developed a PDM plan to monitor the black-capped vireo and conduct ongoing management actions as necessary.

Purpose

TNC-TX has served a significant role in the recovery of the black-capped vireo and has been an important conservation partner to the Service. Therefore, the goal of this Cooperative Management Agreement (CMA) is to jointly commit to the implementation of ongoing management of habitat and brown-headed cowbirds determined to be necessary to ensure optimal health of the black-capped vireo after it is delisted. Implementation of the PDM is expected to provide the necessary monitoring data to evaluate the status of the species over the PDM period and identify whether the species is thriving, additional management is needed, or the species needs to be evaluated for relisting. The role and responsibilities of TNC-TX is described in Section II of the PDM plan.

This CMA is entered into between the Service and TNC-TX. The purpose of the CMA is to implement management of the black-capped vireo on lands managed by TNC-TX sufficient to prevent reaching monitoring thresholds established in the PDM plan. The PDM plan provides details on monitoring black-capped vireo abundance and brown-headed cowbird parasitism, among other residual threats, that are necessary to evaluate the status of the species for a 12-year period.

General Provisions

1. It is recognized by both parties that the recovery of the black-capped vireo is in part a result of effective management practices developed and refined by multiple stakeholders. It is also recognized that the majority of the known breeding localities within the U.S. occur on publically-managed or protected lands. Therefore, the Service and TNC-TX agree that effective management actions, as well as monitoring of the species, are appropriate to include in the PDM plan. As partners in development of the PDM plan and signatories of this CMA, both parties commit to using available resources within their authorities and discretion to implement the provisions of the PDM plan to the fullest extent possible.

2. Whereas both parties own or manage lands occupied by the black-capped vireo, it is agreed to continue ongoing habitat and cowbird management on such lands to promote a healthy population. The goal of habitat management will be to maintain or increase the known population size at each property based on results of monitoring under the

PDM plan. The goal of cowbird control will be to maintain parasitism rate below 40% of nests averaged over 6-year periods based data collected under the PDM plan. The efforts of TNC-TX under this CMA are limited to its Love Creek Preserve (Bandera County), Barton Creek Habitat Preserve (Travis County), Dolan Falls Preserve (Val Verde County), and Independence Creek Preserve (Terrell County) and other appropriate conservation properties that TNC-TX may want to include in the future (TNC-TX Properties).

3. The PDM plan is a cooperative effort between the Service and its partners. There are no funds specifically allocated to implement the plan. As such, both parties agree to work together to utilize grants or other existing mechanisms to secure funding for PDM activities. However, both parties expect that many PDM activities will be accomplished as "in-kind" contributions carried out by respective staff under existing authorities. In any case, this plan should not be construed as a commitment or requirement to obligate funding or resources of either party or in violation to any laws, regulations or internal policies and procedures pertinent to each party. Additionally, for Federal agencies including the Service, the expenditure of funds is expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 U.S.C. 1341). No obligation undertaken by the Service or other Federal agency under the provisions of this CMA or the PDM plan will require or be interpreted as a commitment to expend funds not obligated for that purpose.

4. The PDM plan may conclude in one of four possible scenarios detailed in Section IX – Conclusion of PDM of the plan. Following the conclusion of the plan and prior to cessation of any activities agreed upon in this CMA, both parties agree to discuss the status of the species, the need for extending the CMA for the purpose of long term species management, and updating provisions of the CMA and management practices based on new science and techniques.

5. The parties agree to utilize their existing authority to promote the implementation of effective management and monitoring activities to other stakeholders within the range of the species.

6. Nothing in this CMA shall limit the ability of Federal and State conservation authorities to perform their lawful duties and conduct investigations as authorized by statute and by court guidance and direction. This CMA shall not create any federal interest in or other encumbrance of the TNC-TX Properties or restrict or limit the conservation efforts by TNC-TX at TNC-TX Properties or otherwise. Further, the parties acknowledge that the

activities of TNC-TX under this CMA are subject to all restrictions, exceptions, easements, encumbrances, and ordinances that affect the TNC-TX Properties.

7. The parties agree to work together in good faith to resolve any disputes using resolution procedures agreed upon by the parties.

8. Parties are not liable in damages for any breach of this CMA, any performance or failure to perform activities under this CMA, or any other cause of action arising from this CMA.

9. This CMA may be re-evaluated as needed and amended or renewed by mutual consent of the parties. If amended, any additional provisions will either be attached as an appendix to this CMA or incorporated through revision.

10. This CMA shall become effective beginning on the date of the last signature below and shall remain in effect until the earlier of December 31, 2030 or the termination of the PDM plan and any agreed upon extensions.

U.S. Fish and Wildlife Service

Debra T. Bills Date: 10/3/17

Debra Bills, Field Supervisor, Arlington Field Office

The Nature Conservancy, Texas Chapter

Dan Snodgrass Date: 10/5/17

Dan Snodgrass, Director of Land and Agriculture

COOPERATIVE MANAGEMENT AGREEMENT

Between

U.S. Fish and Wildlife Service
Arlington Ecological Services Office

And

Texas Parks and Wildlife Department

For

Monitoring and Management of the Black-capped Vireo (*Vireo atricapilla*)

Background

The mission of the U.S. Fish and Wildlife Service (Service) is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. The Service administers the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

The mission of the Texas Parks and Wildlife Department (TPWD) is to manage and conserve the natural and cultural resources of Texas and to provide hunting, fishing and outdoor recreation opportunities for the use and enjoyment of present and future generations. The recovery of the black-capped vireo was due in large part to the efforts of TPWD, which manages breeding populations on multiple properties in Texas.

The black-capped vireo was proposed for removal from the List of Endangered and Threatened Wildlife on December 15, 2016, due to recovery (81 FR 90762). The known threats to the species have been reduced or are adequately managed to the point that the species no longer meets the definition of endangered or threatened. Within the eastern portion of the species' range, management of habitat and cowbird control is necessary for optimal population health. Additional information on the black-capped vireo's biology, resource needs, and status can be found in the *Species Status Assessment Report for the Black-capped Vireo* and the proposed rule available at www.fws.gov/southwest/es/ArlingtonTexas/bcvi.htm.

The Act requires that a post-delisting monitoring (PDM) plan be developed in cooperation with the States to monitor the status of all species that have been delisted due to recovery. In

cooperation with States and other partners, the Service has developed a PDM plan to monitor the black-capped vireo and conduct ongoing management actions, as necessary.

Purpose

The TPWD has served a significant role in the recovery of the black-capped vireo and has been an important conservation partner to the Service. Therefore, the goal of this Cooperative Management Agreement (CMA) is to jointly commit to the implementation of ongoing management of habitat and brown-headed cowbirds determined to be necessary to ensure optimal health of the black-capped vireo after it is delisted. Implementation of the PDM is expected to provide the necessary monitoring data to evaluate the status of the species over the PDM period and identify whether the species is thriving, additional management is needed, or the species needs to be evaluated for relisting. The role and responsibilities of the TPWD is described in Section II of the PDM plan.

This CMA is entered into between the Service and TPWD. The purpose of the CMA is to implement management of the black-capped vireo on lands managed by TPWD sufficient to prevent reaching monitoring thresholds established in the PDM plan. The PDM plan provides details on monitoring black-capped vireo abundance and brown-headed cowbird parasitism, among other residual threats, that are necessary to evaluate the status of the species for a 12-year period.

General Provisions

1. It is recognized by both parties that the recovery of the black-capped vireo is in part a result of effective management practices developed and refined by multiple stakeholders. It is also recognized that the majority of the known breeding localities within the U.S. occur on publically-managed or protected lands. Therefore, the Service and TPWD agree that effective management actions, as well as monitoring of the species, are appropriate to include in the PDM plan. As partners in development of the PDM plan and signatories of this CMA, both parties commit to using available resources within their authorities to implement the provisions of the PDM plan to the fullest extent possible.

2. Whereas both parties own or manage lands occupied by the black-capped vireo, it is agreed to continue ongoing habitat and cowbird management on such lands to promote

a healthy population. The goal of habitat management will be to maintain or increase the known population size at each property based on results of monitoring under the PDM plan. The goal of cowbird control will be to maintain parasitism rate below 40% of nests averaged over 6-year periods based data collected under the PDM plan.

3. The PDM plan is a cooperative effort between the Service and its partners. There are no funds specifically allocated to implement the plan. As such, both parties agree to work together to utilize grants or other existing mechanisms to secure funding for PDM activities. However, both parties expect that many PDM activities will be accomplished as "in-kind" contributions carried out by respective staff under existing authorities. In any case, this plan should not be construed as a commitment or requirement to obligate funding in violation to any laws or regulations pertinent to each party. Additionally, for Federal agencies including the Service, the expenditure of funds is expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 U.S.C. 1341). No obligation undertaken by the Service or other Federal agency under the provisions of this CMA or the PDM plan will require or be interpreted as a commitment to expend funds not obligated for that purpose.

4. The PDM plan may conclude in one of four possible scenarios detailed in Section IX – Conclusion of PDM of the plan. Following the conclusion of the plan and prior to cessation of any activities agreed upon in this CMA, both parties agree to discuss the status of the species, the need for extending the CMA for the purpose of long term species management, and updating provisions of the CMA and management practices based on new science and techniques.

5. The parties agree to utilize their existing authority to promote the implementation of effective management and monitoring activities to other stakeholders within the range of the species.

6. Nothing in this CMA shall limit the ability of Federal and State conservation authorities to perform their lawful duties and conduct investigations as authorized by statute and by court guidance and direction.

7. The parties agree to work together in good faith to resolve any disputes using resolution procedures agreed upon by the parties.

8. Parties are not liable in damages for any breach of this CMA, any performance or failure to perform an obligation under this CMA, or any other cause of action arising from this CMA.

9. This CMA may be re-evaluated as needed and amended or renewed by mutual consent of the parties. If amended, any additional provisions will either be attached as an appendix to this CMA or incorporated through revision.

10. This CMA shall become effective beginning on the date of the last signature below and shall remain in effect for the duration of the PDM plan and any agreed upon extensions.

U.S. Fish and Wildlife Service

Debra T. Bills

Debra Bills, Field Supervisor, Arlington Field Office

Date: 7/27/17

Texas Parks and Wildlife Department

Carter Smith, Executive Director

Date: 21 August 2017

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
2405 GUN SHED ROAD
JOINT BASE SAN ANTONIO FORT SAM HOUSTON, TX 78234-1223

September 20, 2017

Ms. Debra Bills
Field Supervisor
USFWS Arlington Field Office, Ecological Services
2005 Northeast Green Oaks Boulevard, Suite 140
Arlington, Texas 76006

Dear Ms. Bills,

The Army Installation Management Command Headquarters (IMCOM-HQ) is dedicated to supporting Fort Hood and Fort Sill in maintaining the successful status and recovery of the black-capped vireo. To prevent population declines that could lead to relisting the species, IMCOM-HQ has coordinated with the installations and will ensure the black-capped vireo (BCVI) management programs continue to be adaptively managed and responsive to population indicators through the authority that is established by the Sikes Act [16 USC 671 et seq] for federal military lands and their respective Integrated Natural Resources Management Plans (INRMPs).

The appropriation and use of funds for delisted species on DoD lands is authorized under 16 USC 671 et seq and executed through projects outlined in INRMPs in accordance with the Sikes Act, DoD and Army regulations. Army INRMPs carry the authority of the Sikes Act, as DoD's long-term military land management, providing for both species and ecosystem management. The INRMP provides no less assurance than a Cooperative Management Agreement (CMA). In fact, the Sikes Act requires that INRMPs be implemented, subject to the availability of appropriated funds. The DoD defines "INRMP Implementation" as: actively requesting and using funds in support of INRMP goals and objectives, ensuring trained personnel perform INRMP tasks, inviting annual feedback from its partners, and evaluating and documenting INRMP actions and effectiveness.

Regarding timeframes for INRMP implementation, INRMPs adaptively manage species and ecosystems through regular reviews and collaboration with our USFWS and State partners. In accordance with the Sikes Act, INRMPs must be reviewed for operation and effect not less often than every 5 years, be prepared in cooperation with the USFWS and State fish and wildlife agencies, and reflect the mutual agreement of the DoD, USFWS, and State parties regarding conservation, protections and management of fish and wildlife resources. Army installations are also directed under DoDI 4715.03 and AR 200-1 to conduct annual INRMP reviews and invite the USFWS and State to participate. Under these regulations, it is the Army's intent to make INRMPs living documents that reflect a continual conversation with local fish and wildlife experts from each of the parties. As such, Fort Sill and Fort Hood are required to review their INRMPs

within the year and should evaluate and incorporate appropriate information from the USFWS BCVI Post-Delisting Monitoring Plan.

Given a delisting decision, the BCVI would still be protected under the federal Migratory Bird Treaty Act (MBTA). The current INRMPs for both Fort Hood and Fort Sill have complete MBTA sections to protect and conserve migratory birds. This bolsters the Army's commitment to wildlife management via our INRMPs, even when regulatory mechanisms and status change.

Finally, as part of INRMP implementation, Fort Hood and Fort Sill shall facilitate access for Federal and State conservation officials, in accordance with DoDI 4715.03 and the installations' operational, security, and safety policies, to conduct species surveys. This can directly support the identified BCVI monitoring activities proposed in the USFWS Post Delisting Monitoring Plan.

I welcome and look forward to any additional conversations that may assist the Service in their effort to make a delisting decision. Please feel free to contact my Natural Resources Program Manager, Ms. Stephanie A. Sarver, (210) 466-0573, stephanie.a.sarver2.civ@mail.mil, at any time.

Sincerely,

David P. Giffin
Chief, Environmental Division

CF:
Office of the Assistant Chief of Staff of the Army, Installation Services
U.S. Army Environmental Command
IMCOM Directorate – Readiness
IMCOM Directorate – Training
U.S. Army Garrison, Fort Hood
U.S. Army Garrison, Fort Sill