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BAT CONSERVATION INTERNATIONAL

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Continued Surveillance and Monitoring for White-nose Syndrome in Texas Bats

FINAL REPORT

Submitted to Texas Parks and Wildlife Department

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Introduction

Texas bat fauna encompasses 32 species, a greater diversity than any other state (Ammerman et al 2012). Currently, two of the bat species that have been impacted by White-nose Syndrome (WNS) and two species that have tested positive for *Geomyces destructans* (Gd) occur in Texas. Tri-colored bat (*Perimyotis subflavus*), big brown bat (*Eptesicus fuscus*), southeastern myotis (*Myotis austroriparius*), and cave myotis (*Myotis velifer*) are all considered year round residents (Ammerman et al 2012). The range of these four species extends across all Texas ecoregions (Figure 1), increasing the potential that an additional 14 naïve bat species may be exposed to Gd (Table 1). Texas is also considered a winter destination for migratory populations of tri-colored bats, increasing the potential that Gd will expand into Texas.

While significant cave resources have been mapped by caving organizations, a comprehensive analysis of what caves function as hibernacula, maternity, or roosting sites has not been conducted. Additionally, in locations where caves are being used, bat species composition and abundance are little known. The Texas White-nose Syndrome Response Plan, currently in draft form, calls for developing a list of high priority locations and establishing a program of surveying and monitoring locations for the presence of Gd and/or signs of WNS.

In 2012, BCI identified key sites in the Texas Panhandle for WNS surveillance based on occurrences of bat species known or likely to be affected by Gd (see report from Contract Number 417048) and surveyed a subset of these hibernacula to confirm occupancy by bats and species composition. This year, we sought to continue those efforts and expand on baseline, pre-WNS knowledge of bat distribution and abundance in the Texas Panhandle. This project is a continuation of a broader effort to gather baseline data on occurrences of bat species known or likely to be affected by Gd and develop a database of known cave hibernacula in the coming years.

Methods

Bat Conservation International worked closely with Texas Parks and Wildlife Diversity Biologists, the Texas Speleological Survey (TSS), and Julie Parlos (a Texas Tech University graduate student who conducted her M.S. research on *Myotis velifer*) to identify potential hibernacula and obtain landowner permission to visit sites. Much of the initial site identification work was conducted in 2012. We identified potential hibernacula for surveillance using a variety of methods. We gathered site locations from museum specimens, queried the TSS for known cave locations and bat reports, and contacted colleagues who have studied bats in north Texas. Private landowners also provided additional cave locations during our on-site visits to survey our initial cave selections. Ten hibernacula in four counties (Armstrong, Cottle, Collingsworth, and Childress) were selected for surveillance based on several factors including proximity to currently reported expansion of Gd to sites in Oklahoma (Figure 2), prior reports of hibernating bat concentrations, and landowner permission. All known or suspected hibernacula with known coordinates are located on private land in the priority region for surveillance; hence landowner

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permission was a significant factor in this project. BCI staff and two volunteers initiated surveys on February 10, 2013.

Our goal was to collect baseline survey data of hibernating bats and signs of WNS at high priority locations in north Texas and provide recommendations for future management, landowner collaboration, and additional monitoring. At each site a skilled survey team entered the caves, counted roosting bats, collected soil samples, measured temperature, and photo-documented large groups of bats within the roost site for more accurate cluster-size estimates. We collected data in accordance to the guidelines outlined by the United States Geologic Survey (USGS) National Wildlife Health Center (NWHC) for Winter Hibernaculum Surveys and provided to TPWD. Soil samples were collected in accordance with Gd surveillance protocols and submitted to Dr. Jeff Foster at Northern Arizona University. WNS decontamination protocols were strictly followed between cave complexes according to the guidelines provided by the U.S. Fish and Wildlife Service. We arranged to collect and submit any WNS-suspect bats to the NWHC for analysis within 48 hours of collection according to their submission guidelines. While in the field, we identified additional sites for future monitoring.

Results

Between November 7, 2011 and February 22, 2012, under Contract Number 417048, we identified 35 potential hibernacula for surveillance using the variety of methods previously described. We selected 29 sites to pursue landowner access which resulted in ten locations with permission granted to survey. BCI staff and two volunteers initiated surveys on February 10, 2013.

On February 11, 2013, BCI staff and two volunteers conducted a survey at a single cave on private property outside of Shamrock, TX in Collingsworth County. Eight individuals of a single species, *Corynorhinus townsendii*, were encountered. The cave had two entrances and approximately 300 feet of passage. A soil sample to test for the potential presence of *Geomyces destructans* was collected. Test results are pending.

Next, we travelled to Cottle County to locate and survey an additional cave. However, despite 2 hours of searching, we were unable to locate the cave. We travelled to Claude, TX for the night.

On February 12, 2013, we intended to meet with a private landowner to conduct a survey in Armstrong County. However, we awoke to record snowfall, according to the National Weather Service. As reported in the Lubbock-Avalanche Journal, Claude, TX received 8 inches of snow. Travel on maintained roads was slow, at best, as snow drifts exceeded 2 feet. We spoke to the landowner, and had to cancel our field work for the day. We travelled to Childress, and hoped that the weather would clear for field work on the 13th.

On February 13, 2013, the snow had stopped, but travel on unpaved roads was difficult. We had received prior permission to conduct surveys on private property in Childress County, and we left that morning and checked in with the property owner. However, due to the recent precipitation, access to

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the property was denied, as they were concerned that vehicle travel would damage the roads. We returned to the hotel to decontaminate gear from Monday and hoped the roads would dry out.

On February 14, 2013, we contacted the landowner again, and were again denied access, as they felt the roads hadn't yet dried out enough to allow travel. We were told me may be able to access the property the following afternoon. We contacted another landowner in nearby Hardeman County, to ask permission to conduct a survey on their property; we were unable to reach the landowner.

With the uncertainty of access of the 15th, we decided to return to Austin and attempt another survey trip in two weeks. We returned on the evening of February 14, 2013.

Once back, we rescheduled a visit for the week of February 25, 2013. This was the only week BCI staff had available to conduct these surveys. It was also the last week these surveys could be conducted, as bats in the Texas panhandle are leaving hibernation sites by early March. Winter surveys must be conducted prior to March 1.

BCI staff prepared to leave for the Texas panhandle on February 25, 2013. However, another weather event was underway. Amarillo, TX received 11 inches of snow from this storm. We hastily contacted landowners, who either discouraged us from coming, or stated that with the existing weather, access would again be denied until the roads were clear and dry. This second storm effectively eliminated our remaining potential for conducting winter surveys. As such, BCI was able to survey only a single cave in Collingsworth County under this contract.

As data collection was minimal, BCI did not acquire a multi-year dataset for analysis and presentation at the 2013 Western Bat Working Group meeting, as specified in the original proposal.

Data sheets and landowner permission forms are included as an appendix to this report.

Discussion

The surveys conducted in February 2013 were intended to continue previous efforts to provide an initial foundation of critically needed baseline information on hibernating bat populations in north Texas. There are several opportunities to identify significant bat caves in this portion of Texas. And as these winter surveys could not be completed, additional surveys are clearly warranted. Given the proximity of north Texas to a documented *Gd* site and the large number if hibernating MYVE we observed in 2012 surveys, we recommend Texas Parks and Wildlife invest in additional baseline data collection and engage landowners in conversation about cave and bat conservation wherever possible, including providing them with information on decontamination protocols for cave visitors.

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Future Needs

As BCI was unable to complete the surveys as proposed due to significant weather events, the need to survey Texas panhandle caves for bat occupancy is still present. BCI recommends summer field work to locate the remaining 28 caves that are already identified for initial surveys. Conducting this work in the summer months would reduce impacts from weather events. Additionally, this would allow the identification of key sites that could then be prioritized for winter survey work. Summer surveys would allow us to determine if sites are/are likely hibernacula, reducing the time needed for surveillance work in the winter months.

Literature Cited

Ammerman, Loren K., Christine L. Hice, and David J. Schmidly. 2012. Bats of Texas. Texas A&M University Press. College Station. 305 p.

Parlos, Julie A. 2008. Population genetic structure of a cave-dwelling bat, *Myotis velifer*. MSc thesis, Texas State University. San Marcos, Texas. 92 pp.

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Figure 1. Natural regions of Texas based on climate, geology, soils, and physiography. The 11 regions are: (1) Pineywoods, (2) Oak Woods and Prairies, (3) Blackland Prairie, (4) Gulf Coast Prairies and Marshes, (5) Coastal Sand Plain, (6) South Texas Plains, (7) Edwards Plateau, (8) Llano Uplift, (9) Rolling Plains, (10) High Plains, and (11) Trans-Pecos.

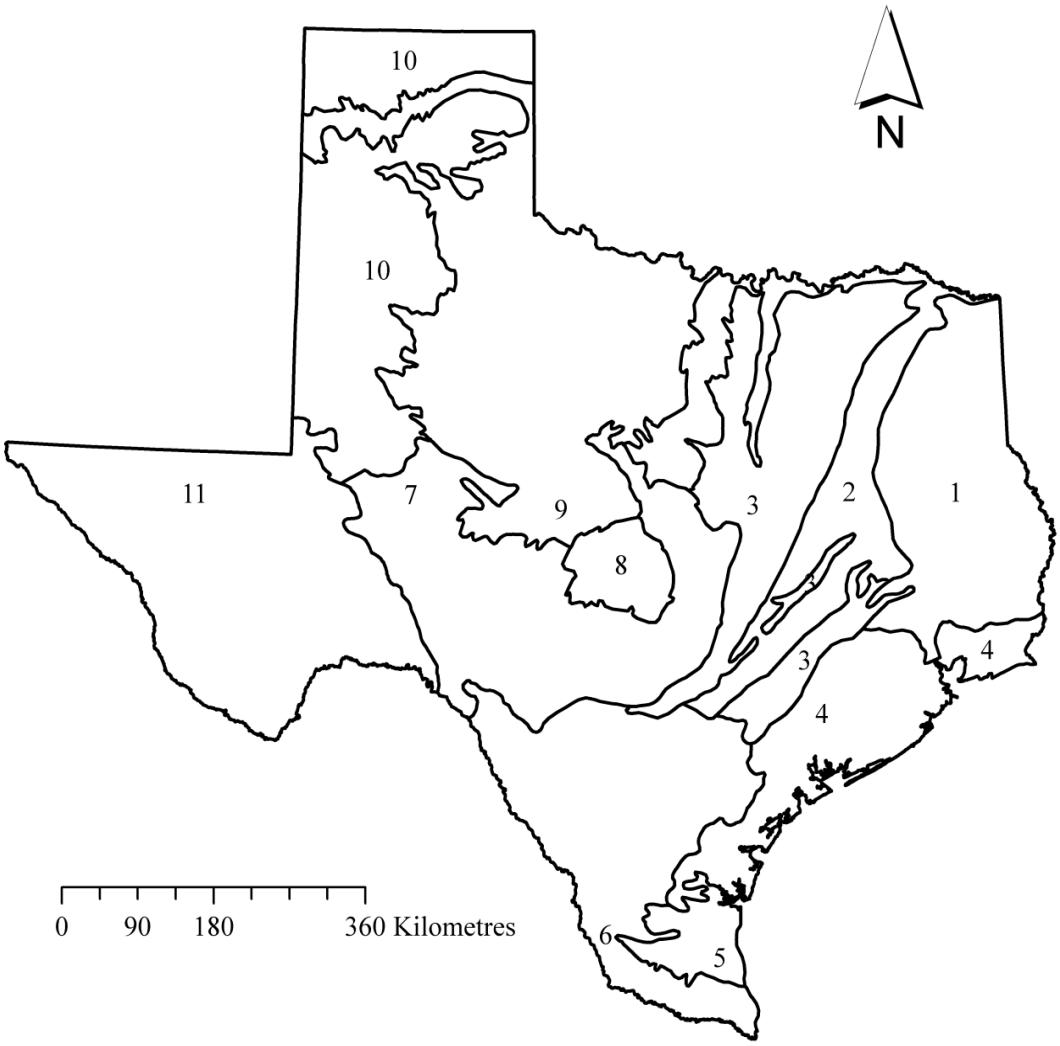

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Figure 2. Locations of known and suspected hibernacula identified by Bat Conservation International (BCI). BCI surveyed one site on February 11, 2013.

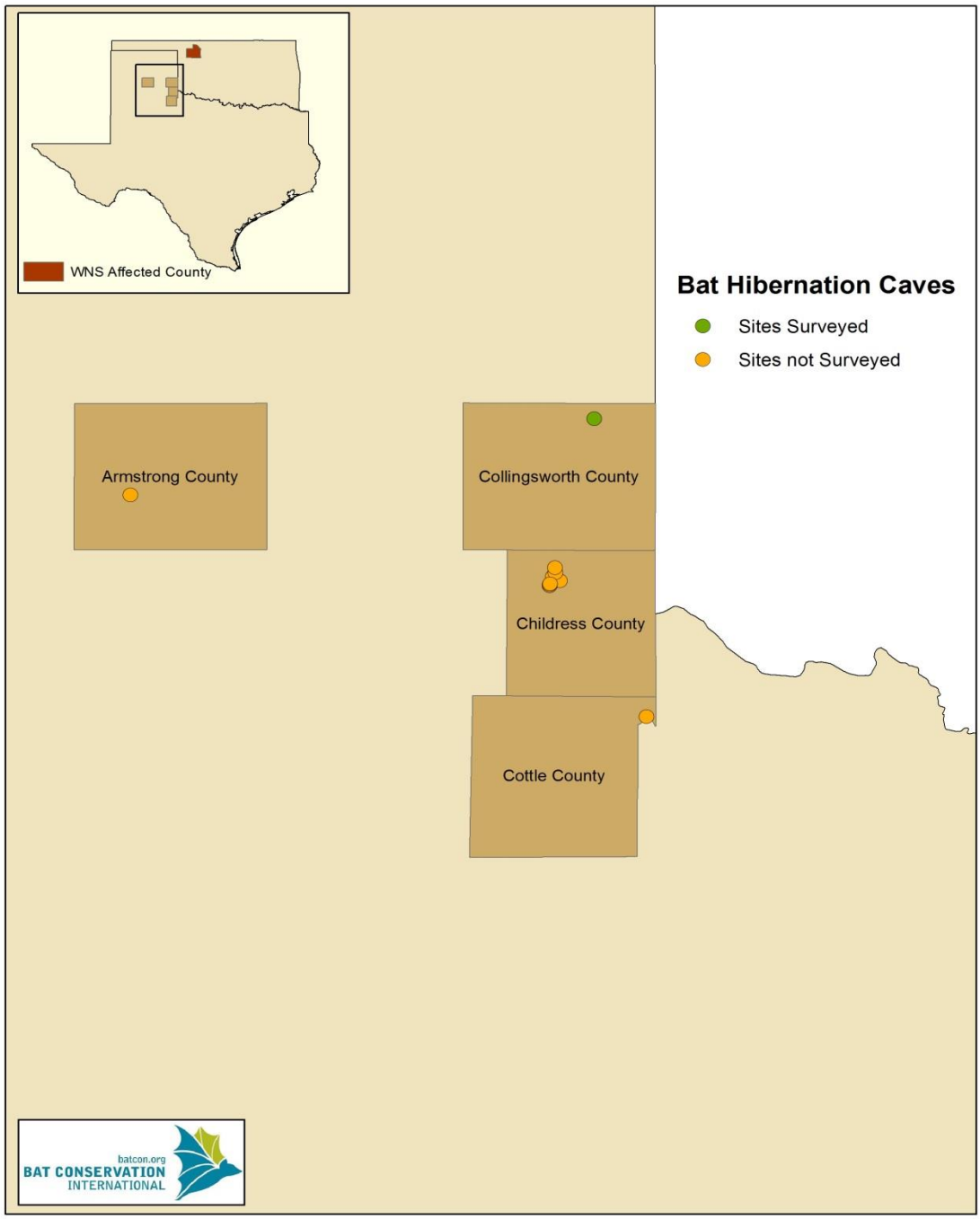

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Table 1. Bat species known to use caves or mine sites in Texas. There are 11 ecoregions in Texas: Pineywoods (PW), Oak Woods and Prairies (OWP), Blackland Prairie (BP), Gulf Coast Prairies and Marshes (GCPM), Coastal Sand Plain (CSP), South Texas Plains (STP), Edwards Plateau (EP), Llano Uplift (LU), Rolling Plains (RP), High Plains (HP), and Trans-Pecos (TP).

Common Name	PW	OWP	BP	GCPM	CSP	STP	EP	LU	RP	HP	TP
Ghost-faced bat						X					X
Mexican long-tongued bat						X					X
Mexican long-nosed bat											X
Southeastern myotis[1]	X	X	X	X							
Western small-footed myotis										X	X
Southwestern little brown myotis											X
Fringed myotis										X	X
Cave myotis[1]			X		X	X	X	X	X	X	X
Long-legged myotis											X
Yuma myotis						X					X
Tri-colored bat[1]	X	X	X	X	X	X	X	X	X	X	X
Big brown bat[1]	X	X	X	X					X	X	X
Townsend's big-eared bat							X		X	X	X
Pallid bat							X	X	X	X	X
Brazilian free-tailed bat	X	X	X	X	X	X	X	X	X	X	X
Pocketed free-tailed bat											X

[1] Species known to be affected by Gd and/or WNS.