

FINAL REPORT

STATE: Montana
GRANT:
FBMS NUMBER: F13AP00633
GRANT NUMBER: U-16-R

OBJECTIVE:

The objective of this grant is to collect, analyze, and manage bat presence and activity data as well as cave and mine information for Montana. This work is part of ongoing work and cooperative effort between Montana Fish, Wildlife and Parks, the Montana Natural Heritage Program and the US Fish and Wildlife Service (Region 6).

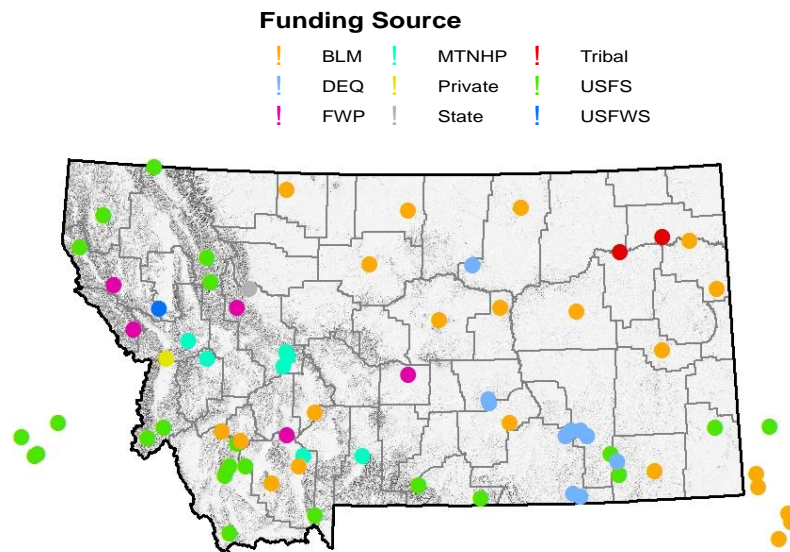
VARIANCES:

None. Actual costs and activities were as anticipated.

ACCOMPLISHMENTS:

1. Implement WNS surveillance plan for statewide passive acoustic surveys. Full surveillance plan (28MB) available in separate files.
 - a. *Centralize data resulting from statewide passive acoustic array (5 days of senior biologist time):*

Funding from this grant allowed continued centralization of data; As of mid-November, the statewide acoustic surveillance database had a total of 3,511,319 acoustic files gathered across a network of 67 acoustic monitoring stations deployed between the fall of 2011 and the fall of 2014. Location of acoustic detectors and funding source for maintenance of those detectors and data analysis.

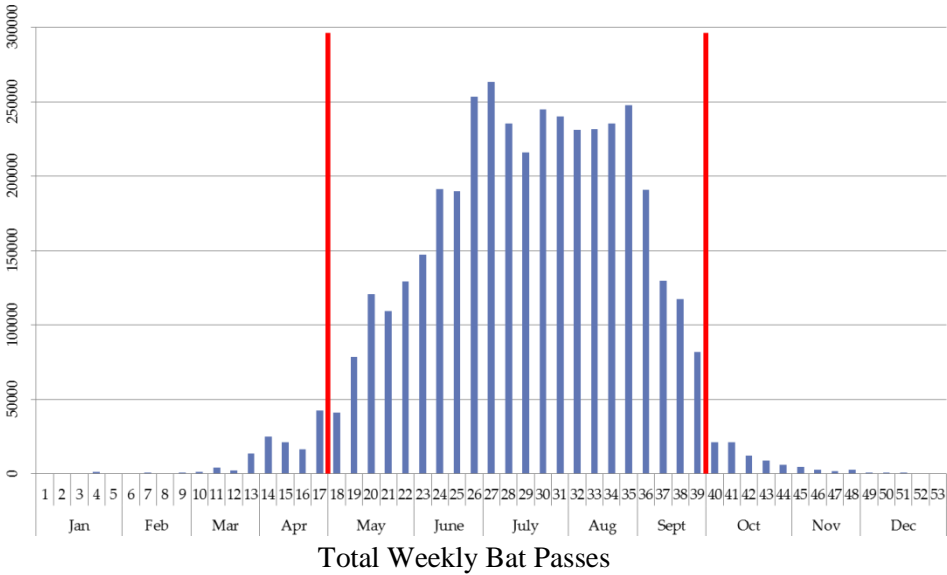


- b. *Analyze acoustic data (46 days of dedicated technician time):*

During the course of this contract, over half a million acoustic files were processed from

raw WAC acoustic files into WAV files that have undergone automated analysis. A total of 29,666 files received hand review, with all acoustic files that were associated with temperatures below zero degrees C receiving hand review and monthly hand confirmation of species presence being completed across the entire period of deployment at 17 of the 67 long-term monitoring sites.

- c. *Summarize acoustic data (5 days of senior biologists time):*
 Monthly statistics on total bat activity (i.e. passes as measured by the number of acoustic files) and average bat activity per night have been summarized in an excel spreadsheet for all 67 long-term monitoring sites and shared with individual partners. Completed hand confirmations of monthly species presence across the entire period of deployment has been summarized for 17 of the 67 long-term monitoring sites and shared with partners. Total weekly bat passes shown below from statewide array of detectors as an example of the summaries produced. Detailed powerpoint summaries for 4 detectors that have been decommissioned have been completed and shared with partners.



- d. *Share information with state, federal, tribal, and NGO partners needing this information for management and conservation decisions:*
 A summary of WNS acoustic surveillance efforts was shared in detail with partners at the Montana Bat Working Group meeting and in a daylong workshop on bat and WNS surveillance efforts at the upcoming Montana Chapter of the Wildlife Society Meetings in Helena in February 2015. Forty agency staff, consultants, and university professionals attended this workshop.

2. Implement WNS surveillance plan for cave surveys (10 days of senior biologist time)
- a. Coordinate cave surveys and data logger deployment and downloading with Northern Rocky Mountain grotto members:
- Cave surveys were conducted at 31 caves, including four sentinel sites with high human visitation rates and/or large winter aggregations of roosting bats. Data loggers were deployed at 14 sites and data from earlier deployments was downloaded at from 15 dataloggers previously deployed in 11 caves. Example cave report shown here:

Appendix 2
Winter Survey Summary Datasheet

Site Name: Ophir Cave Lat: 46.7151072 Long: -112.4935475
 Town: 11N07WSec9 County: Lewis and Clark State: Montana Date: 8 March 2014
 Surveyors: Bryce Maxell, James Cummins, Ellen Whittle, Ian Chechet, Haendel Zepeda
 Contact email: bmaxell@mt.gov
 Site type (circle one): cave mine Time in: 13:30 Time out: 17:00
 Specify type (e.g. fractured cave, limestone mine): Limestone Cave at entrance elevation of 6411 ft.
 WNS present (circle one): Unknown Suspect/Confirmed Pd positive
 WNS 1st Year of Detection: _____ Bat Mortality: Y/N _____ %
 Site map: See attached.
 Please include a site map or draw a rough sketch here. (See example on back.)
 See attached.

Site description (describe features – standing water, rappel in, multiple entrances, crawling, etc):
 See attached.

Approximate physical size of hibernaculum:
 ___ **Very small:** blunt, dead end passage < 10m in length
 ___ **Small:** one to two short passages > 10 – 100 m in length, may have a single room
X **Medium:** multiple rooms connected by 2 or more passages, or passages > 100 m in length
 ___ **Large:** many rooms, passages, and levels; total area is >1 km², but < 5 km²
 ___ **Very large:** many rooms, passages, and levels, extensive passages; > 5 km²

Complete survey: (circle one: Y/N)
 If **NO**: Please briefly list the areas surveyed, and with a description of sections that were skipped.

Percent of **site area** (e.g. number of chambers or levels used) occupied by bats:
 <10% ___ 10-25% ___ 25%-50% ___ 50-75% X >75% ___
 Percent of **occupied areas** (e.g. within used areas, amount of wall) covered by bats:
 <10% X 10-25% ___ 25%-50% ___ 50-75% ___ >75% ___

Species present and final counts of each:

Circle:	MYCI	Unidentified Myotis							
Total #	2	42							

If other species present, please specify and include count by species:

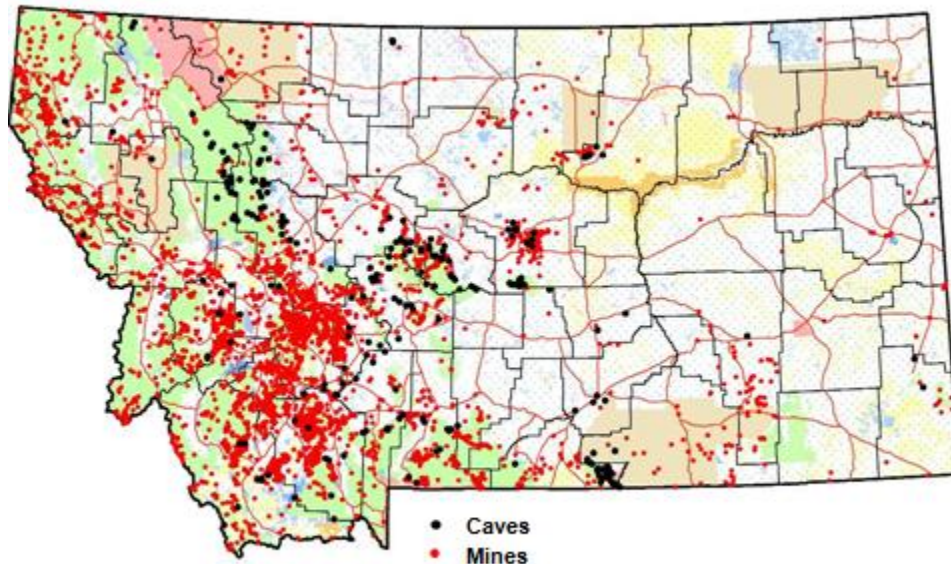
Section ID and Description (Start/End Time)	Tally of bats by species in each cluster Numbers represent # of bats in each cluster (defined as bats in physical contact); indicate number of bats with visible signs of WNS in parenthesis (see example below)	# Bats Swabbed (swab IDs)
Entrance Room (mostly on cave right wall and ceiling) (ca. 13:30-14:00)	Unidentified Myotis Species: 1	0
Right Passage off Entrance Room (ca. 14:00-14:45)	Unidentified Myotis Species: 1-1-1	0
Small Room rigging for drop into bottom room (ca. 15:15-15:45)	Unidentified Myotis Species: 1	0
Lower Level (ca. 16:00-17:00)	MYCI: 1-1 Unidentified Myotis Species: 1-1-1-2-1-1-1-1-1-1-8-10-8	0
Total Count Summary	MYCI = 2 Unidentified Myotis = 42 Total Bats = 44	

- b. *Reimburse travel for volunteers doing cave surveys:*
One volunteer requested reimbursement during this period for cave visits and data collection.
 - c. *Centralize cave survey data into statewide database:*
Late winter (2014) cave surveys have been entered into the Montana Bat Roost Survey database. The database was also updated to allow tracking of soil samples and bat and surface swabs for PCR-based detection of *P. destructans*, bat condition (weight and forearm lengths), and roost cluster size and roost surface and air temperatures for all clusters of bats detected.
 - d. *Summarize cave survey data:*
Cave survey reports have been written and individual cave survey reports are being shared with collaborators responsible for local cave management and/or management of bats in the region where the cave is located.
 - e. *Share information with state, federal, tribal, and NGO partners needing this information for management and conservation decisions:*
In addition the overall status of bat and WNS surveillance efforts will be shared in detail with partners at the Montana Bat Working Group meeting and in a daylong workshop on bat and WNS surveillance efforts at the upcoming Montana Chapter of the Wildlife Society Meetings in Helena in February 2015. Forty agency staff, private consultants, and university professionals attended this workshop.
3. Make use of existing hazardous mine information (5 days of senior biologist time, 10 days of technician time)
- a. *Digitize location and closure status information:*
633 hazardous mine closures in the DEQ Hazardous Mine database were gathered. Several pages of additional hazard mine closures that were available only in hard copy format were also gathered and scanned into digital format with optical character recognition.
 - b. *Centralize location and closure status information:*

Digital information on 633 hazardous mine closures in the DEQ Hazardous Mine has been appended to the Montana bat roost monitoring database. Formatting of the additional hazard mine closures that were originally available in only hard copy format are still being formatted for appending into the master database.

- c. *Share information with state, federal, tribal, and NGO partners so that they can prioritize surveys and appropriate closure methods in order to protect bat roost habitats:* Hazardous mine and other potential bat roost site information will be shared in detail with partners at a the Montana Bat Working Group meeting and in a daylong workshop on bat and WNS surveillance efforts at the upcoming Montana Chapter of the Wildlife Society Meetings in Helena in February 2015. Forty agency staff, private consultants, and university professionals attended this workshop including a biologist from the Department of Environmental Quality which is the state agency with mine oversight.

Montana Caves and Abandoned Lode Mines



Lots of potential roost habitat has not be surveyed!

