WGFD

June 2012

State Wildlife Action Plan E-Newsletter

CONSERVING WILDLIFE ~ SERVING PEOPLE

Inventorying Forest Bats

Hoary bats captured during survey (WGFD Photo)

Worldwide, nearly one in five mammal species is a bat, making bats the second most common taxonomic group of mammals, after rodents. An estimated 1,232 bat species are found globally and at least 45 species occur in North America. Wyoming hosts 12 species of resident bats, 10 of which are recognized as Species of Greatest Conservation Need. Over half of North American bats either exclusively or opportunistically use forest habitats. Survival of bats in forests depends upon the availability of suitable roosting sites such as caves, crevices, trees, and foliage as well as adequate foraging sites such as forest edges, interiors, and clearings. Water bodies near forests with abundant insect prey are particularly valuable bat habitat.

Bats present several conservation challenges. Many species of bats are difficult to study because they are small, nocturnal, and quick, agile flyers. Additionally, unlike many other small mammals, bats have low reproductive rates and many have very specialized habitat requirements. Bats and their prey can be sensitive to habitat impacts resulting from logging, fire suppression, bark beetle infestation, and energy development. Recently, white-nose syndrome (WNS) has caused declines in bats that hibernate in caves and abandoned mines in the eastern United States. WNS is the result of an infection of white fungus which invades and erodes the skin, causing hibernating bats to awake more frequently, depleting fat stores necessary for bats to survive the winter. WNS has been confirmed in 16 states and four Canadian provinces and is feared to be moving west.

Prior to 2008, inventories for bats throughout forests of Wyoming were lacking, limiting our understanding of many species. Beginning in 2008 and ending in 2011, the Wyoming Game and Fish Department (WGFD) completed a statewide inventory of bats that occur in forests of Wyoming. Mist nets were set up within 170 survey grids in forested habitats of Wyoming to document the distribution, relative abundance, and diversity (*continued page 2*)

Deploying a mist net over water (WGFD Photo)

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G&F Region	No. bats captured	Proportion	Diversity (No. species captured)
Casper	464	36.28%	11
Cody	199	15.56%	9
Green River	116	9.07%	6
Jackson	145	11.34%	6
Lander	39	3.05%	7
Laramie	222	17.36%	8
Sheridan	94	7.35%	9
Total	1279		

Prepping to capture bats with a mist net (WGFD Photo)

of bat species. Additionally, information was collected on the sex, age, and reproductive status of captured bats.

The majority of mist net surveys were in mountain forests consisting of lodgepole and limber pine, Engelmann spruce, quaking aspen, and subalpine and Douglas-fir. Less frequently, surveys were conducted in lower elevation foothill forests consisting of ponderosa and limber pine with juniper and sagebrush. Surveys were conducted between May and early September.

A total of 1,279 individuals bats representing 13 species, were captured. In addition to eleven resident species, captures included two peripheral species, the eastern red bat and Yuma myotis. The most common species captured were the little brown myotis (≈34%), silver-haired bat (≈22%), long-legged myotis (≈12%), and big brown bat (≈12%). The number of bats captured was highest in the central parts of the state (36%), followed by southeast (17%), and northwest (16%) regions. The region with the lowest number of bats captured was west-central (3%). During the project, new records for the distribution or breeding of bats were documented for the big brown bat, eastern red bat, hoary bat, silver-haired bat, western small-footed myotis, northern myotis, long-eared myotis, long-legged myotis, Yuma myotis, little brown myotis, and fringed myotis.

As in previous studies of bats in Wyoming, males were captured more frequently than females. This is likely due to the segregation of the sexes during the reproductive season. Females can be more commonly found at lower elevations than males. Lower elevations are associated with warmer temperatures, which may result in facilitating the development of young, increased thermoregulatory ability, and decreased energy expenditure for females during the energetically costly periods of gestation and lactation. Males more often utilize torpor (temporary hibernation) as a means of conserving energy during the summer months and benefit from higher elevations and cooler temperatures.

Improving our understanding of the distribution and abundance of bats associated with forests in Wyoming is essential for conservation planning, species status review, and facilitating a management response to WNS. Additionally, the project provided information which will help natural resource managers minimize negative impacts to bats from large-scale habitat changes from both development and natural causes. □

(*Table of capture results by bat species, page 3*)

Eastern red bat (WGFD Photo)

Forest Bat Inventories (continued)

Common	Species	Number Captured	Proportion
Big brown	*Eptesicus fuscus*	154	12.04%
Eastern red	*Lasiurus borealis*	5	0.39%
Fringed	*Myotis thysanodes*	22	1.72%
Hoary	*Lasiurus cinereus*	97	7.58%
Little brown	*Myotis lucifugus*	438	34.25%
Long-eared	*Myotis evotis*	49	3.83%
Long-legged	*Myotis volans*	154	12.04%
Northern	*Myotis septentrionalis*	27	2.11%
Silver-haired	*Lasionycteris noctivagans*	279	21.81%
Spotted	*Euderma maculatum*	32	2.50%
Townsend's	*Corynorhinus townsendii*	3	0.23%
Western small-footed	*Myotis ciliolabrum*	14	1.09%
Yuma	*Myotis yumanensis*	5	0.39%
Total		1279	

Enhancing Swift Fox Monitoring In Wyoming

The swift fox (*Vulpes velox*) is a small, light orange-tan fox that is about the size of a domestic cat. Swift foxes historically occupied short- and mixed-grass prairies from northern Texas to southern Canada; however, population densities and distribution declined greatly in the late 19th and 20th centuries due to the loss of native prairie habitat and predator control.

The swift fox was petitioned for listing as Endangered under the Endangered Species Act (ESA) in 1992. The U.S. Fish and Wildlife Service (USFWS) issued a "warranted but precluded" finding in 1995. In 2002, the swift fox was removed from the ESA Candidate List, due in large part to efforts and data acquired by the Swift Fox Conservation Team. However, the swift fox remains classified as a Species of Greatest Conservation Need in Wyoming. There are concerns that energy development, exotics (e.g., cats), competition from generalists (e.g., red fox, coyotes), and rural sprawl may be impacting populations. Swift foxes are known to be widely distributed in Wyoming. Although localized surveillance have been conducted in some portions of Wyoming, populations have not been monitored more broadly since the species was removed from the ESA Candidate list.

Consequently, the WGFD established a project to investigate methods by which swift fox populations could best be monitored and to revise distribution maps for the species. The project was conducted in the eastern 2/3 of Wyoming using randomly selected 32 km^2 grids of suitable habitat. After receiving landowner permission, (*continued page 4)*

Setting up a camera survey station for swift fox (WGFD Photo)

Swift Fox Surveys (continued)

five infrared cameras were systematically placed on each grid. Swift foxes were attracted to camera locations using a skunk-based attractant and fish oil. Swift foxes, as well as other animals photographed at camera locations, were documented along with GPS coordinates, precipitation, habitat type, and the total number of photos taken for each camera. Monitoring was conducted on 95 of 100 survey grids, for a total of 2,340 camera nights. One hundred and six unique detections of swift foxes were recorded (i.e., photographs of swift fox >1 hr apart) on 25 grids. Surveys were completed between September 12 and November 23, 2010 to coincide with juvenile dispersal in an attempt to maximize detections.

Foxes were more commonly detected in survey grids that had a higher percentage of grasslands. Swift foxes have been shown to prefer short- and mixed grass prairie. This preference is speculated to be related to the increased maneuverability and visibility provided by this habitat which enables foxes to better avoid predators, especially coyotes. Likewise, swift foxes were more likely to occur in areas of low slope which also provides greater visibility. Past research has shown that swift foxes are dependent on borrows for both raising pups and avoiding predators). The availability of suitable denning sites may be a limiting habitat factor for swift fox populations.

Swift foxes were most frequently found in areas predicted in distribution maps found in Wyoming's 2010 State Wildlife Action Plan. Therefore, future survey efforts will focus in this area when attempting to monitor population changes. However, swift foxes were documented in five grids west of the current predicted distribution for this species in Wyoming. These observations and other reliable reports of sightings in Fremont, Sublette, and Wahsakie Counties suggest swift foxes are likely expanding their distribution westward in the state.

Swift fox visiting sent station (WGFD Photo)

Survey techniques tested in the project proved effective for establishing a method to monitor swift fox populations. Future surveys should include new locations for swift fox recorded in the study to document range expansions or contractions in order to keep range maps current. □

Increasing Understanding of the Northern Leatherside Chub

The northern leatherside chub (*Lepidomeda copei)* is a desert fish in the minnow family that lives in small streams and stock ponds. It is native to the Snake and Bear River basins of Idaho, Nevada, Utah, and Wyoming. Northern leathersides are small (<6") and covered with tiny scales over a leathery-textured skin, from which its common name is derived. They are common prey for larger fish and birds. Northern leatherside chubs have declined or have been extirpated throughout much of their historic range, and are often found in disconnected populations where they persist.

In Wyoming, the northern leatherside chub is classified as a Species of Greatest Conservation Need. Although the species was petitioned for listing under the Endangered Species Act in 2007, the USFWS later determined that it did not warrant this protection. Current understanding of the basic biology of this species is rather limited. As a consequence, the WGFD established a study to investigate the distribution, abundance, and habitat use of northern leatherside chub in Wyoming. This

Northern Leatherside Chub (WGFD Photo)

information would contribute to directing future conservation efforts including the identification of priority stream locations. (*continued page 5*)

Streams throughout the known and probable distribution of northern leathersides in southwestern Wyoming were sampled during the summer and early fall of 2010 and 2011. Sampling was conducted by electrofishing and/or seining. Additionally, ponds and isolated pools near occupied habitat were sampled with minnow traps. Stream features including width, water depth and conductivity, substrate, aquatic and overhanging vegetation, woody structure coverage, and bank undercutting were recorded at each sampling location to determine habitat preferences for northern leatherside chubs. Genetic tissues were collected to look at diversity patterns and the potential consequences of the geographical distribution of northern leathersides in the state.

Northern leathersides were found in many places across the Bear River basin and were present in two streams in the Upper Snake River basin. Good numbers were located in Yellow, Sulphur, and La Chapelle creeks near Evanston; Twin Creek by Kemmerer; and Dry Fork of the Smiths Fork near Cokeville. Study findings suggest that northern leathersides have not been extirpated from any of its confirmed historic distribution in Wyoming. Additionally, because populations often contained multiple size (and presumably age) classes, northern leathersides appear to have all habitat features necessary to complete their life history in these locations.

Northern leathersides were most commonly found in foothills streams, but they sometimes were found in larger rivers and stock ponds. They showed a strong association with deeper reaches, high depth variability, and the presence of other native fish including mountain sucker, redside shiner, and longnose and speckled dace. Seasonal use patterns suggest that northern leathersides may be more mobile than originally thought. Northern leathersides were collected from two intermittent streams, indicating that these habitats might be used for spawning, similar to other Western fishes. Northern leathersides are known to persist in small, remnant pools in drying streams during the summer months until conditions improve.

Study results have allowed the WGFD to greatly refine priority areas and provided baseline information to inform future population estimates and trend monitoring. Because of their intact distribution, Wyoming populations of northern leatherside chubs represent core populations for this species, and will likely play a central role in conservation efforts across its range. Furthermore, conservation efforts for northern leathersides will likely benefit other native fish species. The isolation and lack of connectivity between adjacent populations of northern leathersides may present genetic issues for which managers will have to contend. □

Recording stream habitat features (WGFD Photo)

Taking a genetic sample from a northern leatherside chub (WGFD Photo)

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We're on the web:

http://gf.state.wy.us/SWAP2010/Plan/index.asp

Questions or Comments?

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