

BATS IN THE PARADOX VALLEY AREA  
AND GUNNISON GORGE NATIONAL CONSERVATION AREA:  
RESULTS OF MIST-NETTING AND ACOUSTIC SURVEYS DURING 2008

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## INTRODUCTION

Western Colorado has a diverse bat fauna consisting of approximately 17 species (Fitzgerald et al.1994, Armstrong et al.1994, Adams 2003). The Bureau of Land Management's Colorado Uncompahgre Field Office lists Townsend's big-eared bat (*Corynorhinus townsendii*), spotted bat (*Euderma maculatum*), Allen's big-eared bat (*Idionycteris phyllotis*), fringed myotis (*Myotis thysanodes*), and Yuma myotis (*Myotis yumanensis*) as sensitive wildlife species (BLM 2007). Allen's big-eared bat has not been captured in Colorado, but was recently documented in the Paradox Valley area using recorded echolocation calls (Hayes et al., in press). Since the mid-1990's, the Colorado Division of Wildlife has conducted bat surveys at abandoned mines in western Colorado emphasizing the identification of Townsend's big-eared bat roosts (Navo et al. 1991, Navo and Krabacher 2005). However, little is know about the ecology of the four other BLM sensitive bat species in southwestern Colorado. In particular, BLM biologists have an interest in learning more about the occurrence and distribution of Allen's big-eared bat and spotted bat on lands managed the Uncompahgre Field Office.

In 2008, ten days of mist-netting surveys and acoustic monitoring were completed in the Paradox Valley area and the Gunnison Gorge National Conservation area. The two main objectives of this study focused on: (1) performing preliminary mist-net capture and acoustic monitoring in the BLM's area of interest in Paradox Valley, Colorado, and the surrounding area looking specifically for evidence of Allen's big-eared bat; and (2) performing preliminary mist-net capture and acoustic monitoring in the BLM's area of

interest in the Gunnison Gorge National Conservation Area, looking specifically for evidence of spotted bat on the Fruitland Mesa. This 2008 survey work was funded by the BLM's Uncompahgre Field Office in Montrose, Colorado.

The purpose of this report is to summarize the results of mist-net and acoustic sampling for bats in the Paradox Valley area and the Gunnison Gorge National Conservation Area during 2008. These areas are used by bats for roosting, foraging, and drinking, and the Bureau of Land Management's Uncompahgre Field Office has an interest in understanding the species occurrence and diversity of bats using these areas, especially the occurrence and activities of bat species that are listed as sensitive wildlife species by this BLM field office. This sampling effort adds to the species inventories of these areas and will help increase knowledge of the ecology of bats in southwestern Colorado.

Field work in 2008 involved mist-net capture work and acoustic monitoring of bat echolocation calls. Mist-netting was conducted in areas likely to be visited by bats and consisted of placing mist-nets over or near water and along roads. Once captured, standard data were recorded including species, age class, and reproductive status. Bat echolocation calls of bats flying over the survey sites were recorded each night. Calls were analyzed using SonoBat™ software for bat call analysis.

Allen's big-eared bat inhabits much of the southwestern United States (Czaplewski 1983), but the species has until recently not been documented in Colorado (Armstrong et al. 1994, Fitzgerald et al. 1994, Adams 2003, Hayes et al., in press). Czaplewski (1983) included extreme southwestern Colorado in the geographical

distribution map of Allen's big-eared bat, and Armstrong et al. (1994), Fitzgerald et al. (1994), and Adams (2003) also speculated that this species likely resides in southwestern Colorado. Nevertheless, the nearest capture records for this species are from Canyonlands National Park, Utah (Armstrong 1974; Museum of Southwestern Biology 2008; pers. comm. M. Siders concerning a capture by M. Bogan and others in Canyonlands National Park) and from 8 km north of Blanding, Utah (Black 1970). Allen's big-eared bat is the only species in North America known to emit long constant frequency/frequency modulated echolocation calls with the following characteristics (Simmons and O'Farrell 1977, Simmons and Stein 1980): a long constant frequency (CF) component that occurs at approximately 27 kHz with duration of 20-200 milliseconds; and a frequency modulated (FM) component at the end of the call that sweeps from approximately 24 to 12 kHz. In 2006, Hayes et al. (in press) documented Allen's big-eared bat at La Sal Creek near Paradox Valley based on recorded echolocation calls that are consistent with these characteristics. Figures 15 and 16 of this report show spectrographs of Allen's big-eared bat echolocation calls recorded at La Sal Creek, Montrose County, Colorado by Hayes et al. on August 18, 2006.

Spotted bats inhabit much of the western United States and are usually associated with river canyon systems. This species has been documented in Colorado (Finley and Creasy 1982, Navo et al. 1992, Armstrong et al. 1994, Fitzgerald et al. 1994, Adams 2003, O'Shea pers. comm.) but has not been studied on the mesas adjacent to the Black Canyon of the Gunnison and the Gunnison Gorge.

## METHODS AND MATERIALS

Mist-netting was conducted in areas likely to be visited by bats and consisted of placing mist-nets over or near water and along roads. Once captured, standard data were recorded including species, age class, and reproductive status. Bat echolocation calls emitted by free-flying bats at the sampling sites were recorded using a Pettersson Ultrasound Detector D240x (Pettersson Elektronik AB, Uppsala, Sweden) combined with an iRiver IFP-895 digital MP3 player/recorder. Calls were analyzed using SonoBat™ 2.5.6 software for bat call analysis (DNDesign, Arcata, California). When adequate call information was available, call sequences were identified to species using echolocation call characteristics in comparison to reference information (Szewczak and Weller 2008, Szewczak 2008) and other known-species reference calls from western Colorado; otherwise calls were identified to genus. Call sequences without adequate information, or that only included call fragments, were not identified. Accurate and reliable identification of bat species using echolocation call recordings often requires the compilation of extensive echolocation call libraries of known-species call sequences from the geographical area of interest. Due to the present lack of such an echolocation call library for southwestern Colorado and the difficulty of identifying some bat call sequences to species (especially *Myotis* species) no effort has been made to list the number of echolocation sequences recorded for each species. However, for species where there is little or no ambiguity in species identification (i.e. spotted bats and big free-tailed bats), the number of call sequences recorded at a site is listed. Where appropriate I have added modifiers (such as “likely *Myotis yumanensis*”) to the description of call sequences

recorded at a sampling location. Maps of capture locations are shown on Maps 1 and 2 below. Capture information from each site are shown in “Appendix A: Capture and Acoustic Recording Results”. For each capture location, the following information is included: survey location; date surveyed; UTM coordinates in North American Datum 1927 (NAD 27 CONUS); number and length of mist-net used; species, sex, age, weight, and reproductive status of each bat captured; genus and, when possible, species identity, of echolocation calls recorded during the survey.

Mark Hayes and Lea’ Bonewell conducted mist-netting and acoustic sampling in the Paradox area from May 31 to June 4. Mark Hayes conducted sampling in the Gunnison Gorge National Conservation Area from June 17 to June 21; Missy Siders, Biologist with the BLM’s Uncompahgre Field Office, assisted with sampling on June 17.

## RESULTS

Detailed results from mist-netting and acoustic surveys at each site are shown in “Appendix A: Capture and Acoustic Recording Results”. Information in this appendix includes the site name, sampling date, sampling location using UTM coordinates, number and length of nets deployed, species captured, and sex, age, weight, and reproductive condition of each individual captured. The genus and, when possible, species identity, of echolocation calls recorded during the survey are also listed.

## Species diversity in the Paradox Valley area

A total of 23 individual bats were captured and released on 5 nights from May 31 to June 4 2008. Eight species were documented within the sampling area: big brown bat (*Eptesicus fuscus*), silver-haired bat (*Lasionycteris noctivagans*), California myotis (*Myotis californicus*), western small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*Myotis evotis*), long-legged myotis (*Myotis volans*), Yuma myotis (*Myotis yumanensis*), and western pipistrelle (*Pipistrellus hesperus*). Of the bat species listed on the BLM's Colorado Uncompahgre Field Office sensitive wildlife species list, we captured one species, Yuma myotis (*Myotis yumanensis*). We captured 1 big brown bat (4.3%), 3 silver-haired bats (13.0%), 1 California myotis (4.3%), 2 western small-footed myotis (8.6%), 4 long-eared myotis (17.2%), 5 long-legged myotis (21.7%), 4 Yuma myotis (17.2%), and 3 western pipistrelles (13.0%). The proportion of females to males captured was higher in California myotis (1F:0M), long-legged myotis (4F:1M), and western pipistrelle (3F:0M). The proportion of males to females was higher in big brown bat (0F:1M), silver-haired bat (0F:3M), and western small-footed myotis (0F:2M). The proportion of females to males captured was equal in long-eared myotis (2F:2M) and Yuma myotis (2F:2M). All females captured were pregnant or lactating, except for the one California myotis captured, which showed no obvious signs of being pregnant or lactating and was considered to be non-reproductive at the time of capture. All males captured were non-scrotal. All captured bats were adults.

Echolocation call sequences consistent with 12 species were recorded within the sampling area: Townsend's big-eared bat (*Corynorhinus townsendii*), big brown bat

(*Eptesicus fuscus*), spotted bat (*Euderma maculatum*), silver-haired bat (*Lasionycteris noctivagans*), western small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*Myotis evotis*), little brown myotis (*Myotis lucifugus*), fringed myotis (*Myotis thysanodes*), long-legged myotis (*Myotis volans*), Yuma myotis (*Myotis yumanensis*), big free-tailed bat (*Nyctinomops macrotis*), western pipistrelle (*Pipistrellus hesperus*), and Brazilian free-tailed bat (*Tadarida brasiliensis*). Of the bat species listed on the BLM's Colorado Uncompahgre Field Office sensitive wildlife species list, we recorded echolocation call sequences consistent with three species, spotted bat (*Euderma maculatum*), fringed myotis (*Myotis thysanodes*), and Yuma myotis (*Myotis yumanensis*). Audible spotted bat and big free-tailed bat calls were heard at the Paradox Valley cattle pond on June 3.

No evidence of Allen's big-eared bat was found during sampling of the Paradox Valley area.

#### Species diversity in the Gunnison Gorge National Conservation Area

A total of 3 individual bats were captured and released during sampling on the Fruitland Mesa on 5 nights from June 17 to June 21, 2008. Two species were captured within the sampling area: silver-haired bat (*Lasionycteris noctivagans*) and Yuma myotis (*Myotis yumanensis*). Of the bat species listed on the BLM's Colorado Uncompahgre Field Office sensitive wildlife species list, one species was captured, Yuma myotis (*Myotis yumanensis*). We captured 1 male, non-scrotal silver-haired bat, 1 pregnant

female Yuma myotis, and 1 small *Myotis* (*Myotis californicus* or *Myotis ciliolabrum*) that got away during removal from the net. All captured bats were adults.

Echolocation call sequences consistent with 10 species were recorded within the sampling area: big brown bat (*Eptesicus fuscus*), spotted bat (*Euderma maculatum*), silver-haired bat (*Lasionycteris noctivagans*), California myotis (*Myotis californicus*), western small-footed myotis (*Myotis ciliolabrum*), little brown myotis (*Myotis lucifugus*), long-legged myotis (*Myotis volans*), Yuma myotis (*Myotis yumanensis*), and big free-tailed bat (*Nyctinomops macrotis*). Of the bat species listed on the BLM's Colorado Uncompahgre Field Office sensitive wildlife species list, we recorded echolocation call sequences consistent with two species, spotted bat (*Euderma maculatum*) and Yuma myotis (*Myotis yumanensis*).

Spotted bats were not captured, but spotted bat echolocation calls were recorded and/or heard on three of five nights. Figure 3 shows a spectrograph of the distinctive echolocation calls of this species. All spotted bats heard were flying from the direction of the Gunnison Gorge and the Black Canyon across Fruitland Mesa, moving in a northerly direction. Spotted bats were seen drinking from one cattle pond.

Figures 1 – 14 show spectrographs of the bat species recorded in both study areas. These figures are organized alphabetically by species name.

## DISCUSSION

Sampling of the bat fauna in the Paradox Valley area and the Gunnison Gorge National Conservation Area documented the presence of 13 species. Four of the bat

species listed on the BLM's Colorado Uncompahgre Field Office sensitive wildlife species list were documented in these two sampling areas. Echolocation calls consistent with Townsend's big-eared bat were recorded in the Paradox Valley area. Spotted bats were not captured during this sampling effort, but echolocation calls were recorded in both areas. Yuma myotis was captured in the Paradox Valley sampling area. Echolocation calls consistent with Yuma myotis were recorded in both the Paradox Valley and Gunnison Gorge National Conservation Areas. Fringed myotis were not captured, but echolocation calls consistent with this species were recorded in the Paradox Valley area. One sensitive species, Allen's big-eared bat was not captured and echolocation calls consistent with these species were not recorded.

Significantly more bat activity was observed in the Paradox Valley area than on the Fruitland Mesa in the Gunnison Gorge National Conservation Area. The sampling areas in the Paradox Valley included riparian areas along La Sal Creek, a cattle pond in a ponderosa pine forest on Ray Mesa, a cattle pond in Paradox Valley and near Long Park Ridge, and at a spring near Paradox Valley's Carpenter Ridge. All of these areas are near cliffs, rocky areas, large trees in riparian areas, and snag trees; there are extensive abandoned mines in the La Sal Creek area. All of these areas are likely to have suitable roosting refugia near them. This diversity of roosting options and variety of habitats sampled may explain why more bats were captured in the Paradox Valley Area than in the Gunnison Gorge National Conservation Area.

There do not appear to be major obstacles that would impede the dispersal of Allen's big-eared bats from the Canyonlands area of Utah, where this species is known to

reside, to the Paradox Valley area, and other areas of southwestern Colorado. The Paradox Valley area also offers similar habitat to what this species is known to use in other parts of the southwestern United States. A reasonable working hypothesis is that Allen's big-eared bats do reside in the Paradox Valley area and there are likely reproductive females in the area during the summer. My prediction is that more extensive sampling in the Paradox Valley area will reveal that this species does reside in this part of southwestern Colorado. Future sampling and research may also allow us to identify the roosting and foraging areas used by this species in southwestern Colorado.

Spotted bats were not captured during this sampling effort, but their echolocation calls were recorded and heard audibly at sites in the Paradox Valley area and the Gunnison Gorge National Conservation Area. It is probable that these bats are roosting in the high cliff walls of the Paradox Valley, Black Canyon of the Gunnison, and Gunnison Gorge. The spotted bats on the Fruitland Mesa appeared to be commuting from the direction of the Black Canyon and the Gunnison Gorge toward the north, perhaps to the agricultural lands near Hotchkiss or even to the lakes of the Grand Mesa. Spotted bats in other parts of the southwestern United States have been documented flying significant distances to forage and drink (Rabe et al. 1998). If spotted bats in southwestern Colorado are commuting long distances to forage and drink, as they are elsewhere, it will be important to identify these areas if appropriate management and conservation strategies are to be developed for this sensitive species.

Yuma myotis were captured in the Paradox Valley area and echolocation calls consistent with this species were recorded in both sampling areas. Both of the female

Yuma myotis captured were reproductively active indicating that there are maternity colonies of this species in the Paradox Valley area. This species is highly associated with the presence of open water and in Colorado is usually captured over open water and in riparian areas (Armstrong et al. 1994, Fitzgerald et al. 1994, Adams 2003). It is likely that the persistence of this species will in the long term depend on suitable and predictably available water sources.

Fringed myotis were not captured during this sampling effort, but echolocation calls consistent with this species were recorded at the Ray Mesa cattle pond on June 2. This species is known to inhabit piñon-juniper woodlands and ponderosa pine forests in western Colorado (Armstrong et al. 1994, Fitzgerald et al. 1994, Adams 2003, Navo pers. comm.). In the Front Range of the Southern Rocky Mountains this species forms maternity roosts in rock crevices, abandoned mines, and occasionally in buildings and cabins (Adams 2003, Hayes unpublished data). Little is known, however, about the roosting preferences of this species in western Colorado. Of the *Myotis* bats in western Colorado, fringed myotis have a distinctive echolocation call that is readily identifiable if good echolocation call sequences are available.

Townsend's big-eared bat is a species of significant conservation concern in the southwestern United States. This species was not captured during this survey, but echolocation calls consistent with this species were recorded at the Paradox Valley cattle pond. There are about 15 known maternity roosts of this species in Colorado (K. Navo, pers. comm.), at least 3 of which are located on lands managed by the Colorado BLM's Uncompahgre Field Office. Continued protection of these sites and the identification and

protection of other maternity sites in western Colorado may be important to the long-term persistence of populations of this species within Colorado and other States in the 4-Corner's region.

Four of the five bat species listed by the BLM's Uncompahgre Field Office as sensitive wildlife species are readily identifiable using echolocation call recordings (Townsend's big-eared bat, spotted bat, Allen's big-eared bat, and fringed myotis). Continued use of echolocation call recording and analysis will be an important tool in evaluating the occurrence and habitat associations of sensitive bat species in southwestern Colorado.

The two key goals of this study were to look for evidence of Allen's big-eared bat in the Paradox Valley area and spotted bat in the Gunnison Gorge National Conservation Area. Allen's big-eared bat was not captured and no echolocation call sequences consistent with this species were recorded. Spotted bats were not captured, but their echolocation calls were recorded in both sampling areas and were recorded on three of five survey nights in the Gunnison Gorge National Conservation Area. Knowledge is limited about the roosting needs, dietary preferences, and reproductive behavior of both of these species, as well as other sensitive bat species in western Colorado. More extensive survey work is recommended, ideally over several years, if a better understanding of the conservation needs of these species is to be attained.

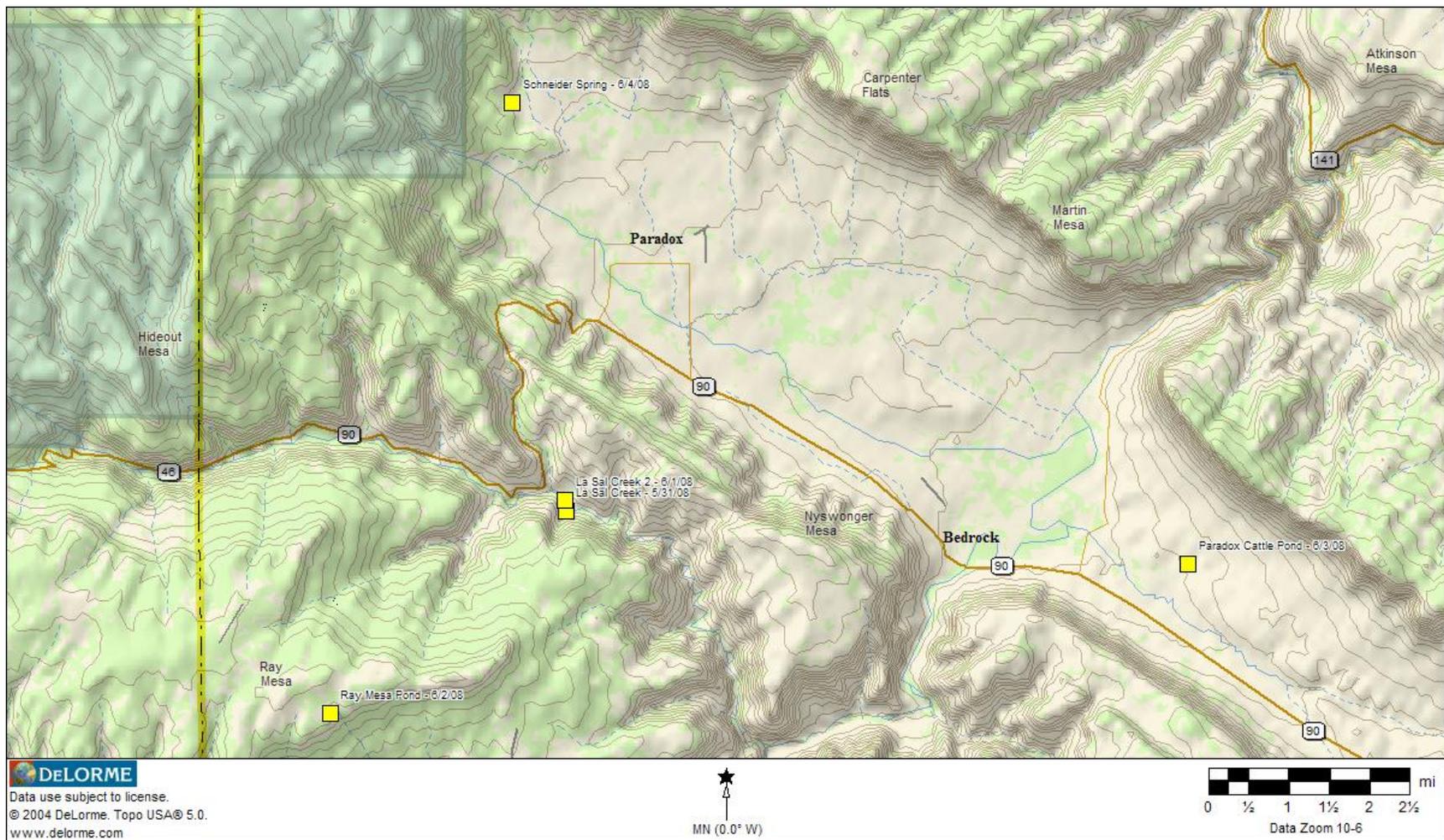
## ACKNOWLEDGEMENTS

The support, assistance, and expertise of Missy Siders (BLM Biologist, Uncompahgre Field Office) are very much appreciated. Lea' Bonewell (USGS Biologist, Fort Collins Science Center) assisted with field work during the Paradox Valley area surveys and provided important input and expertise prior to and during this project. Kirk Navo (Colorado Division of Wildlife) provided thoughtful comments and encouragement. Rick Adams (University of Northern Colorado) kindly provided the Pettersson bat detectors that were used to record echolocation calls.

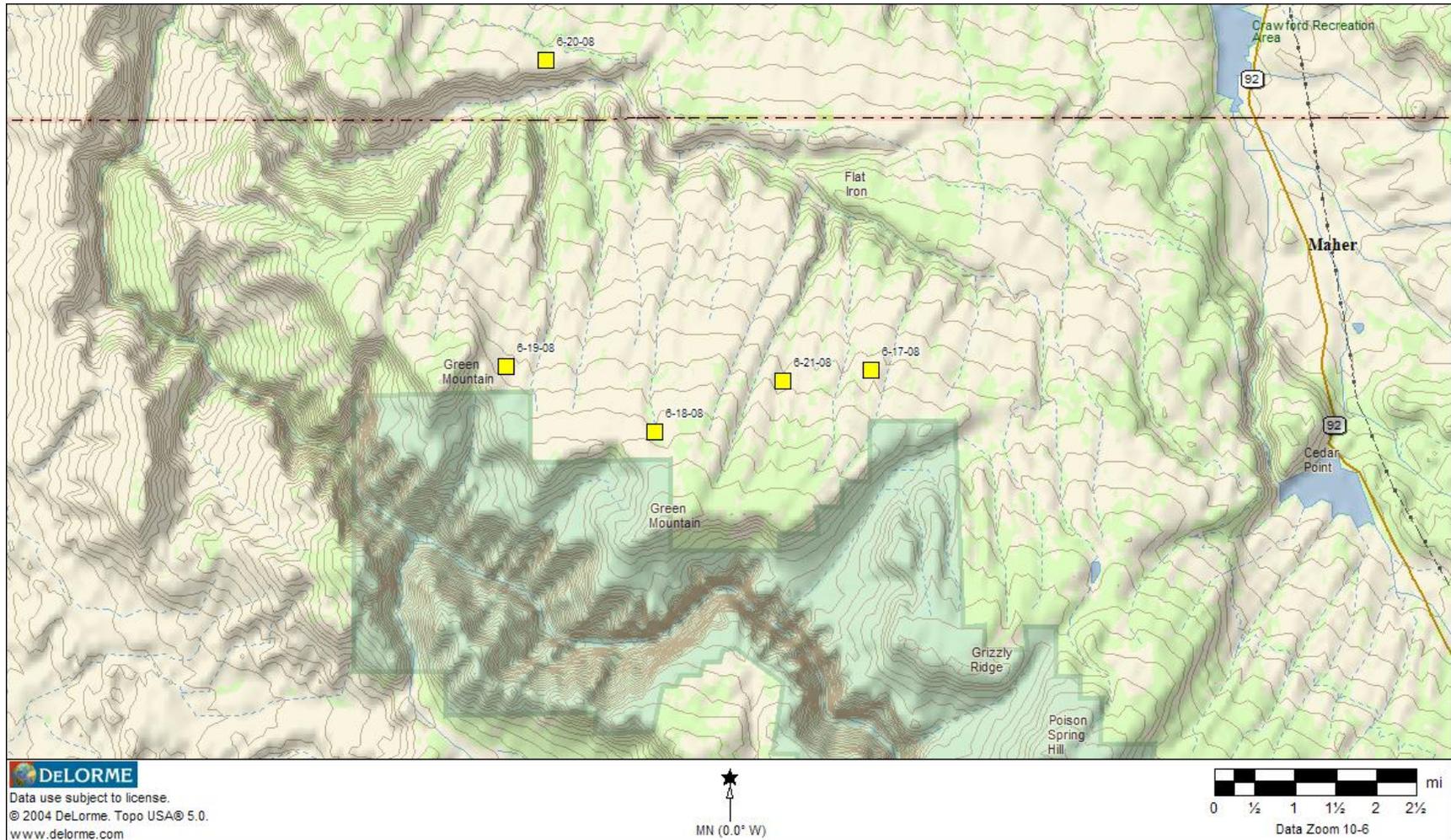
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**Map 1:** Mist-net and acoustic survey locations in the Paradox Valley area May 31 to June 4, 2008.



**Map 2:** Mist-net and acoustic survey locations in the Gunnison Gorge National Conservation Area, June 17 to June 21, 2008.

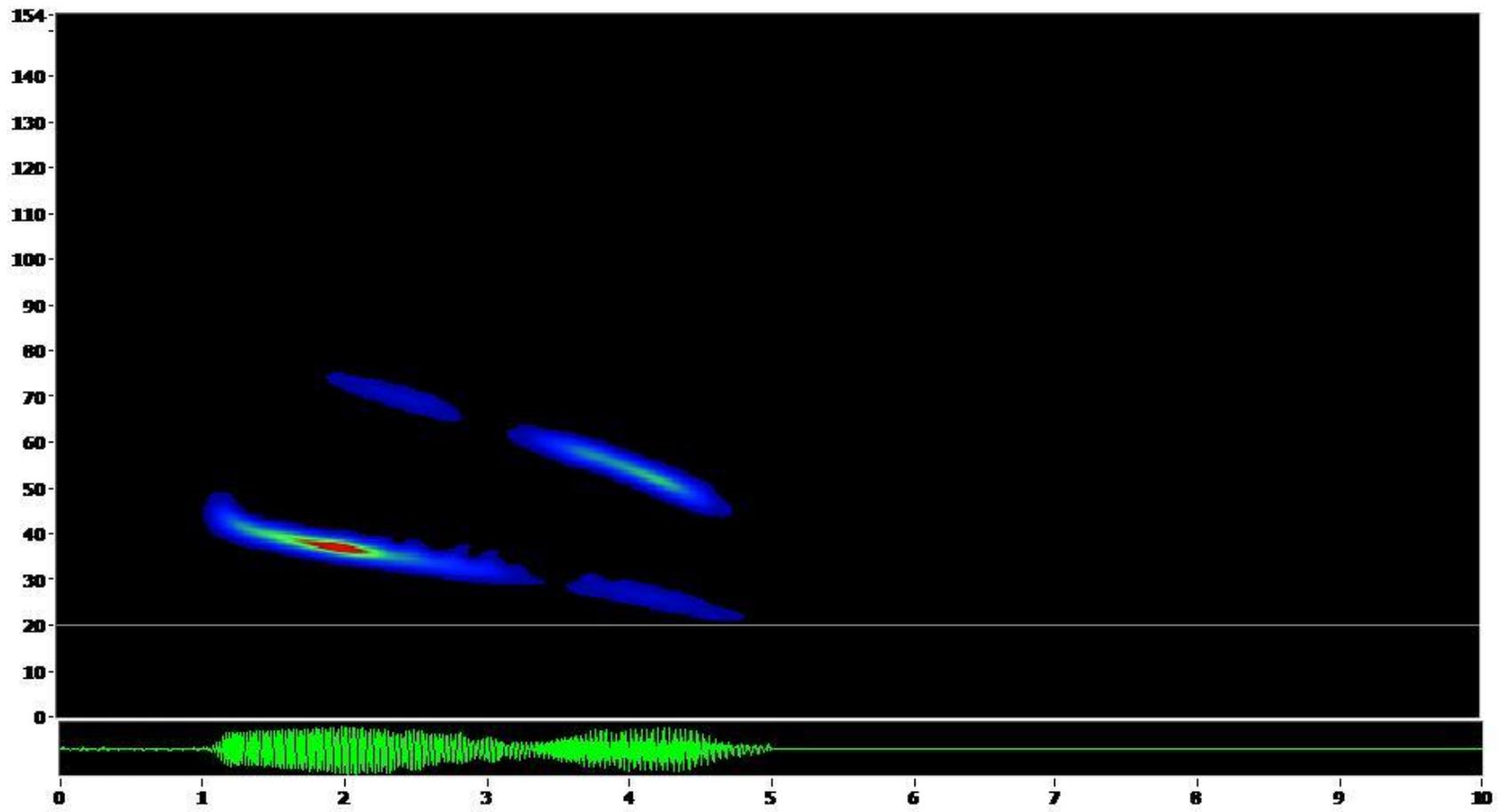


Figure 1. Spectrogram of a Townsend's big-eared bat (*Corynorhinus townsendii*) echolocation call recorded at Paradox cattle pond on June 3, 2008.

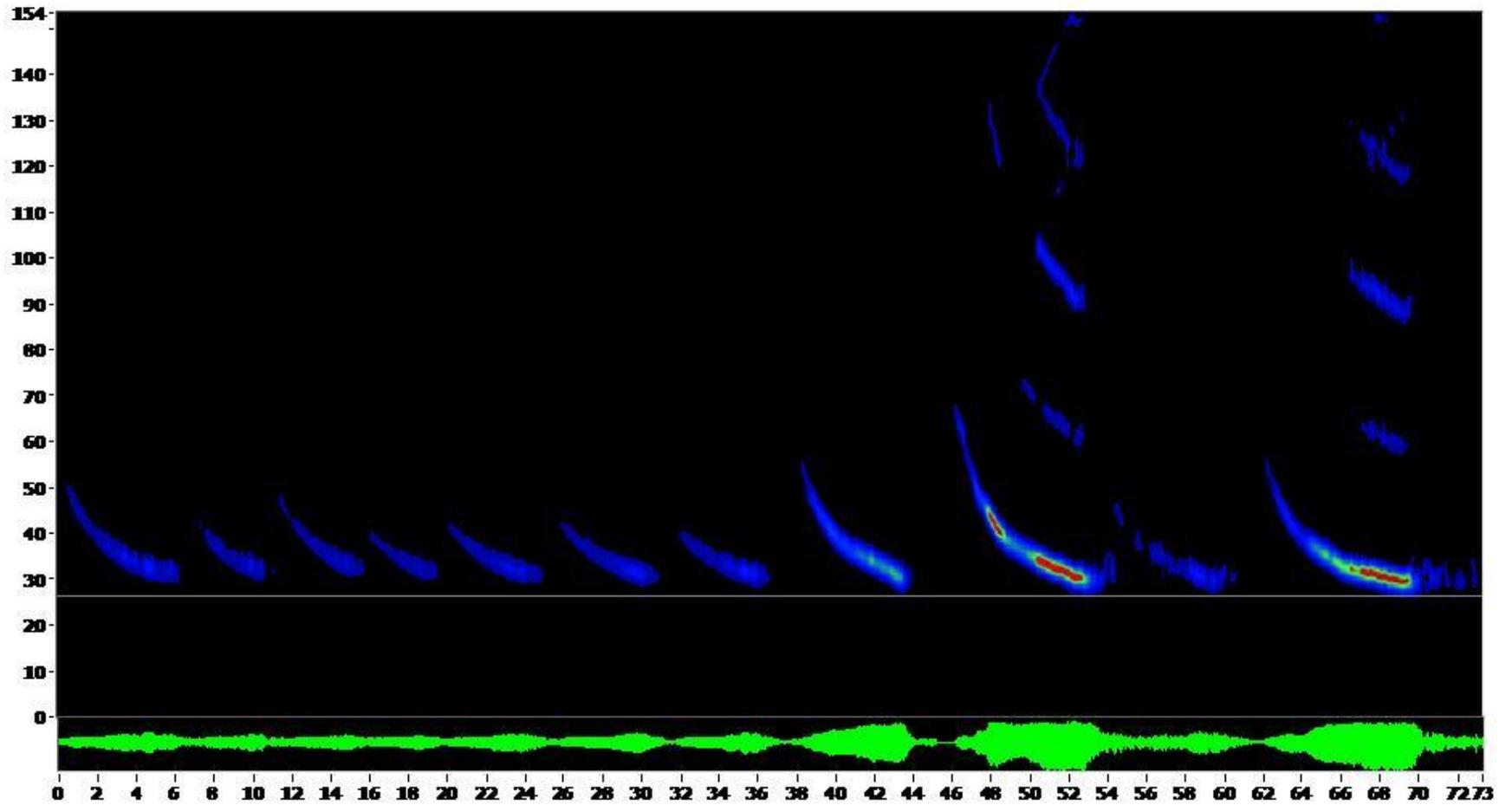


Figure 2. Spectrogram of a big brown bat (*Eptesicus fuscus*) echolocation call recorded at Ray Mesa Pond on June 2, 2008.

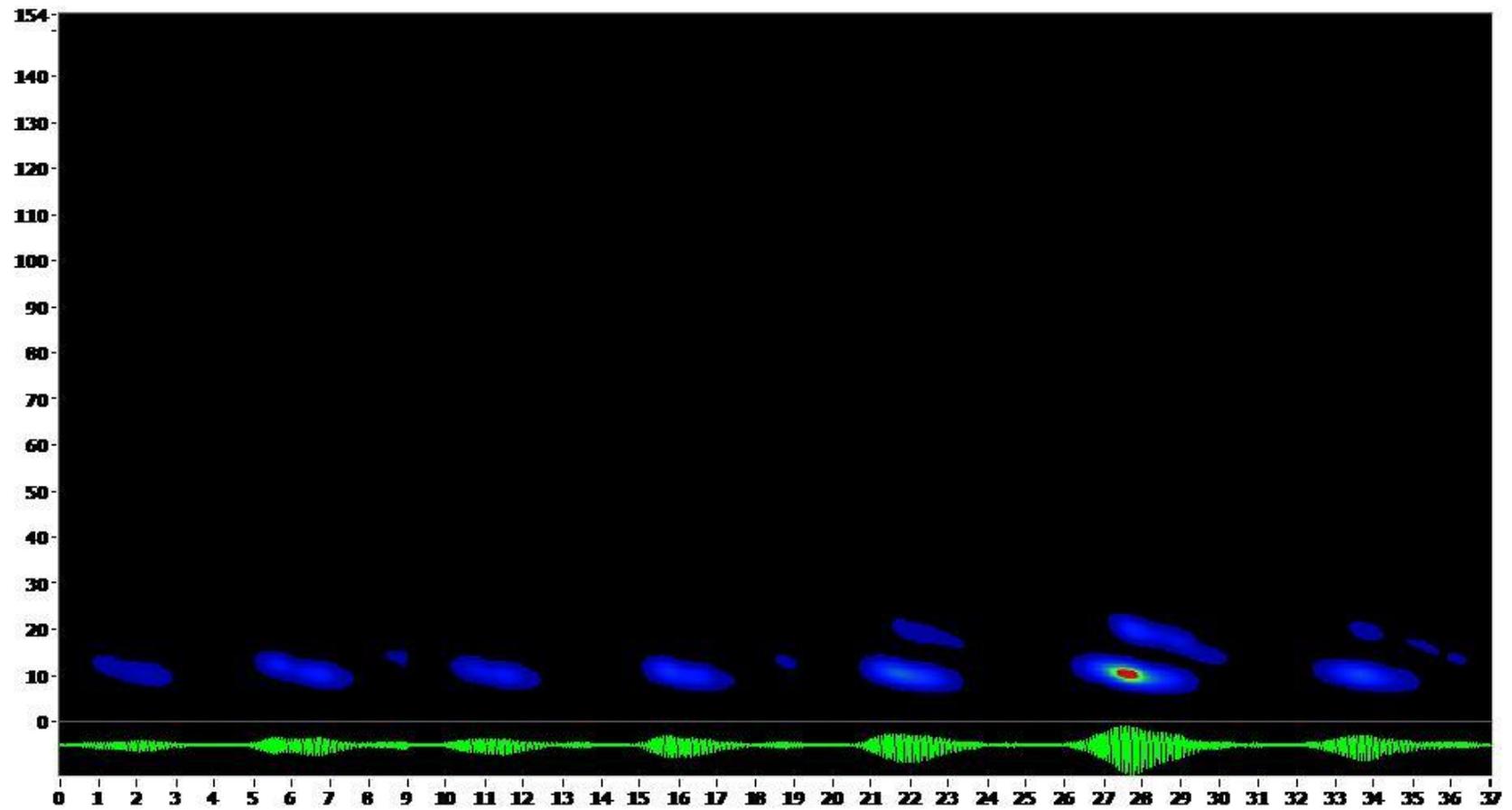


Figure 3. Spectrogram of a spotted bat (*Euderma maculatum*) echolocation call recorded near the Fruitland Mesa irrigation ditch on June 20, 2008.

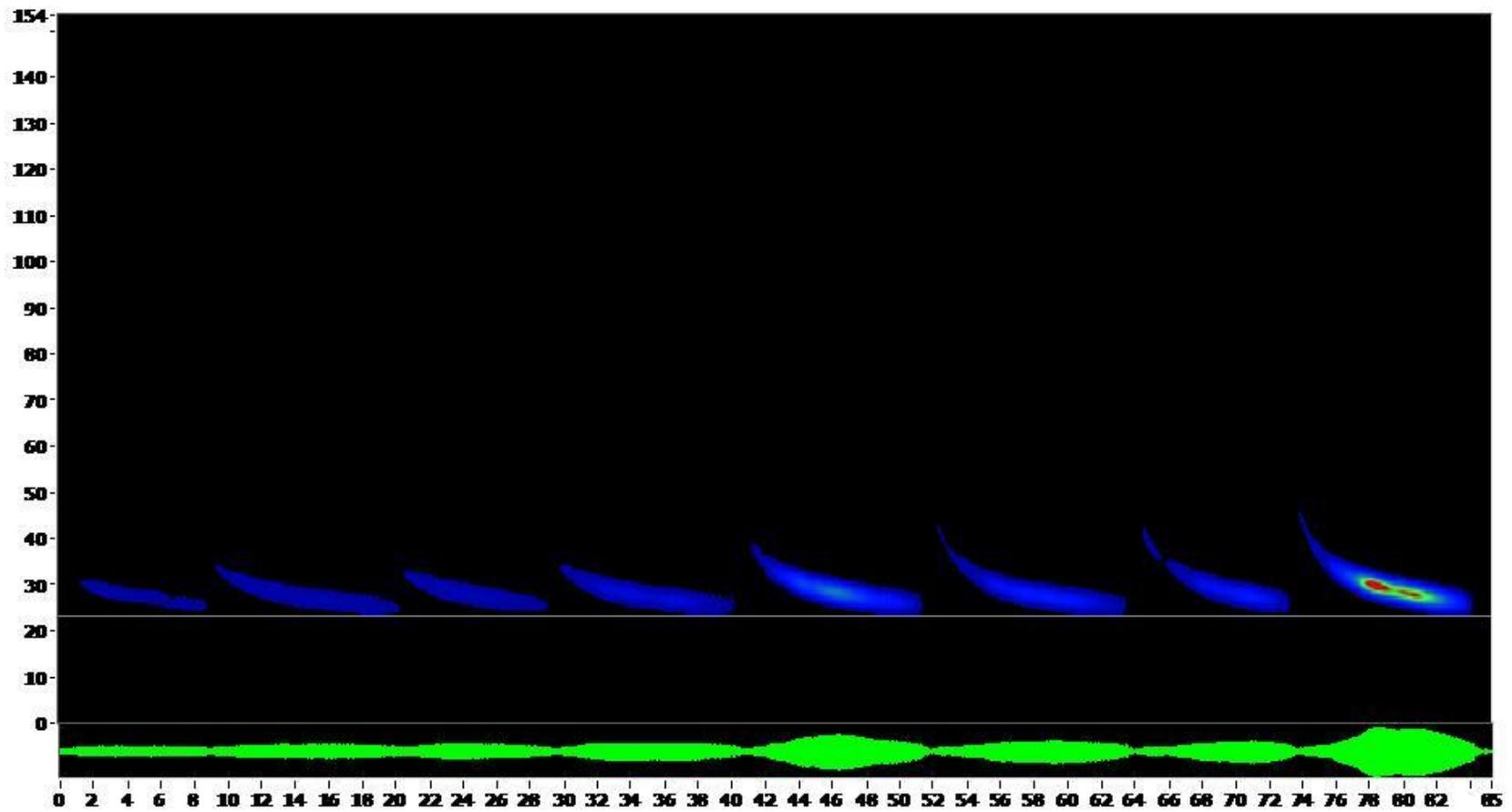


Figure 4. Spectrogram of a silver-haired bat (*Lasiorycteris noctivagans*) echolocation call recorded at the Fruitland Mesa irrigation ditch on June 20, 2008.

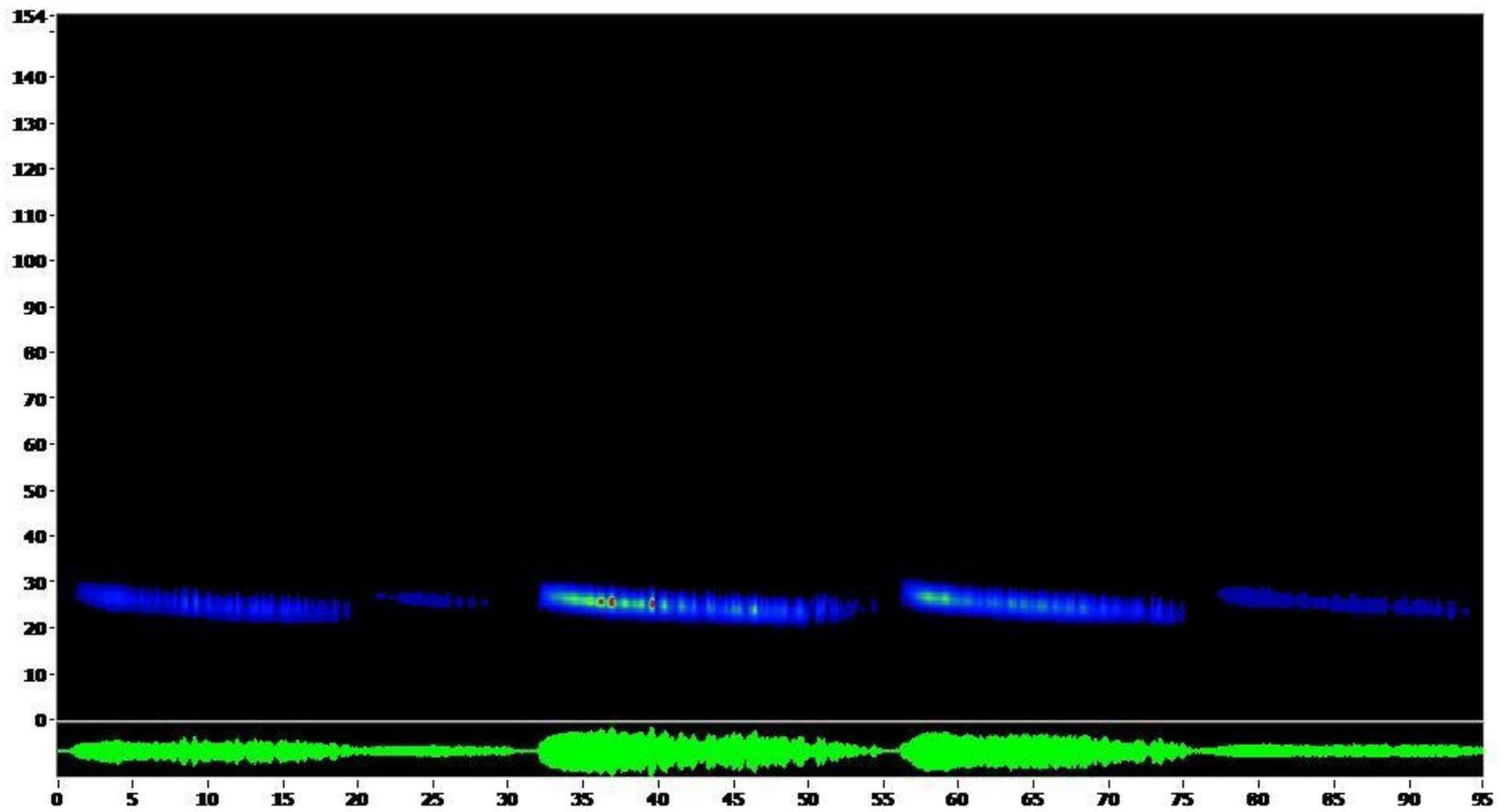


Figure 5. Spectrogram of a hoary bat (*Lasiurus cinereus*) echolocation call recorded near the Fruitland Mesa irrigation ditch on June 20, 2008.

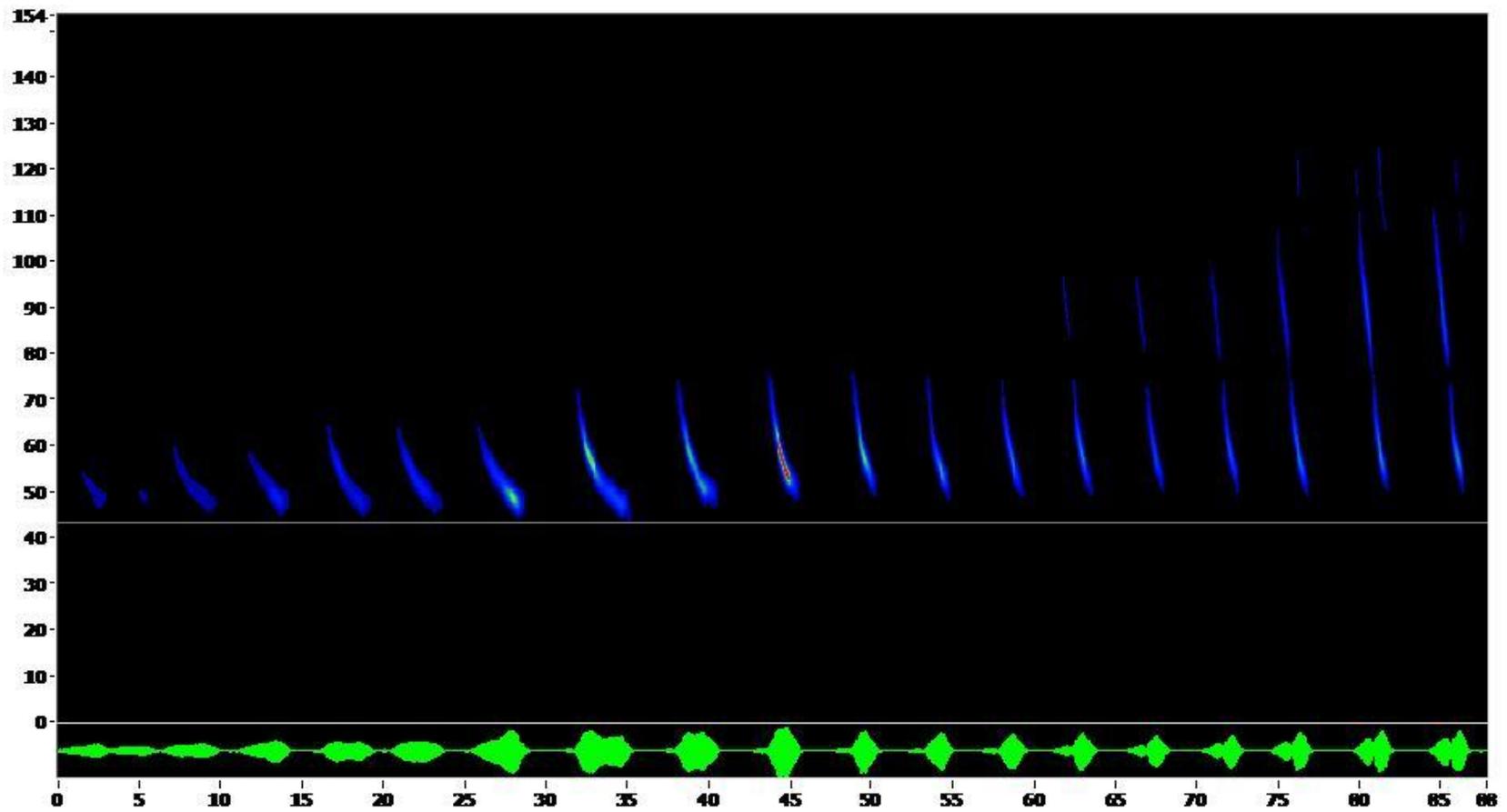


Figure 6. Spectrograph of a California myotis (*Myotis californicus*) echolocation call recorded at the Fruitland Mesa cattle pond #3 on June 19, 2008.

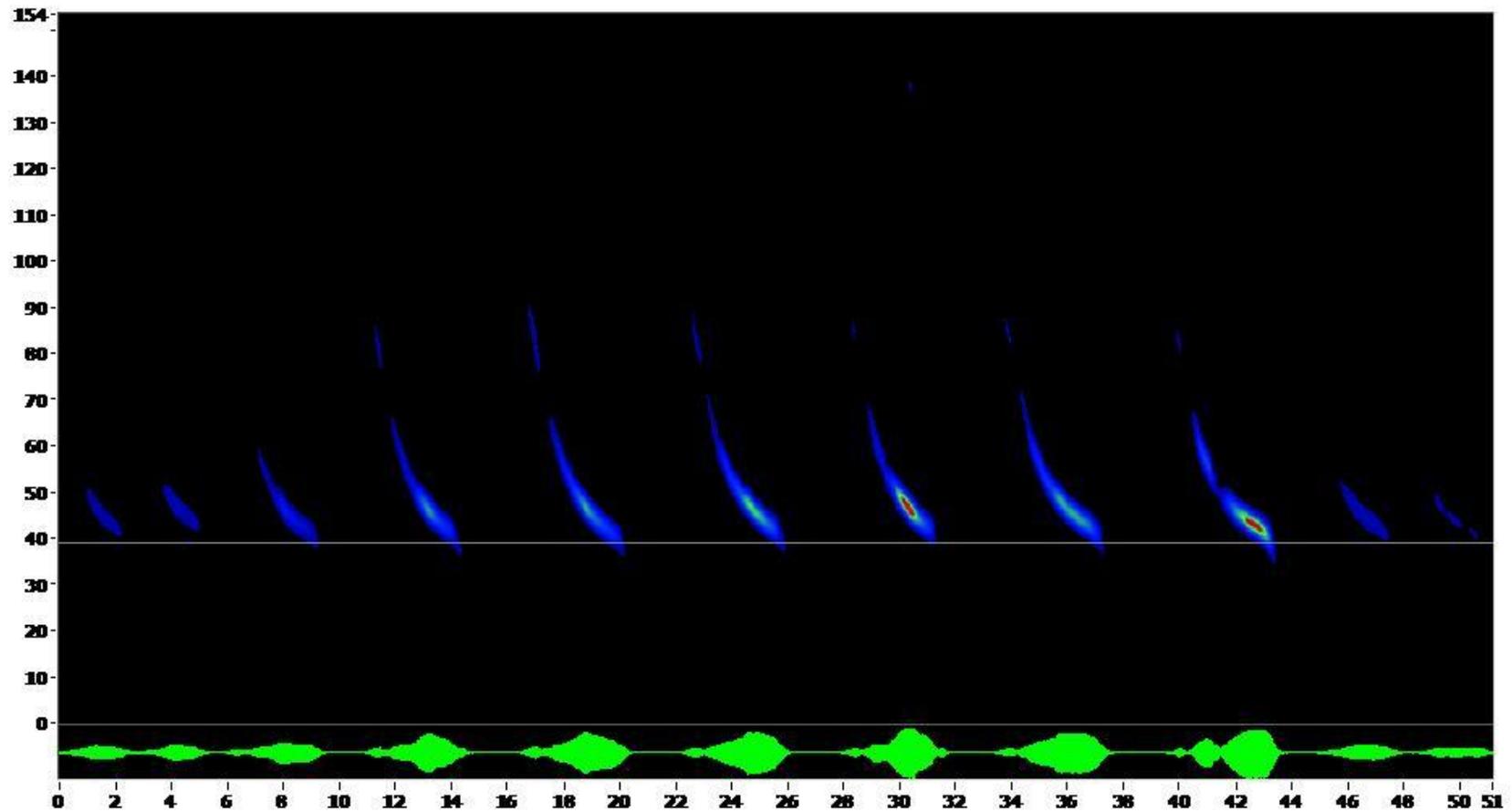


Figure 7. Spectrograph of a western small-footed myotis (*Myotis ciliolabrum*) echolocation call recorded at the Fruitland Mesa irrigation ditch on June 20, 2008.

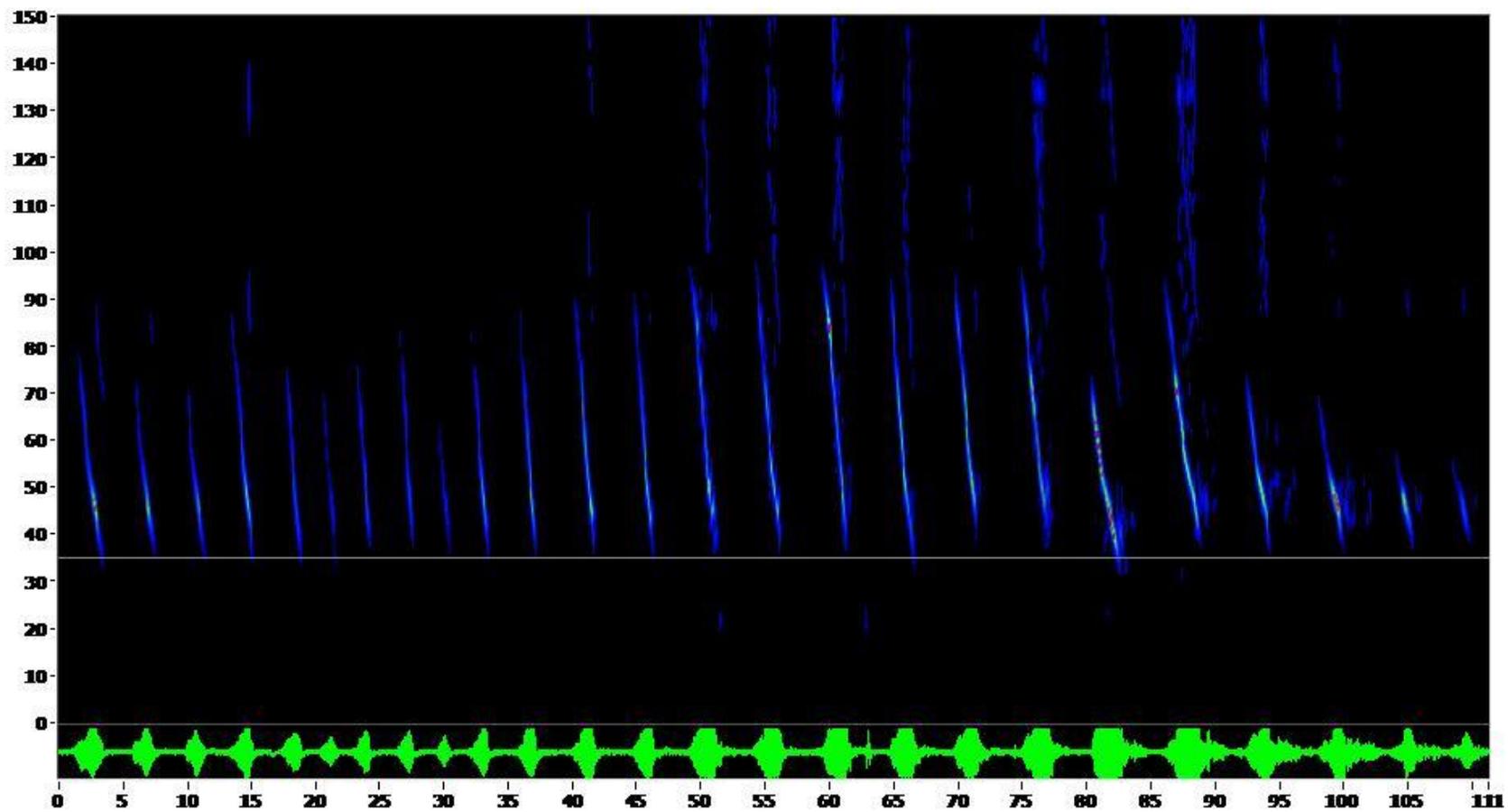


Figure 8. Spectrograph of a little brown bat (*Myotis lucifugus*) echolocation call recorded at La Sal Creek #2 on June 1, 2008.

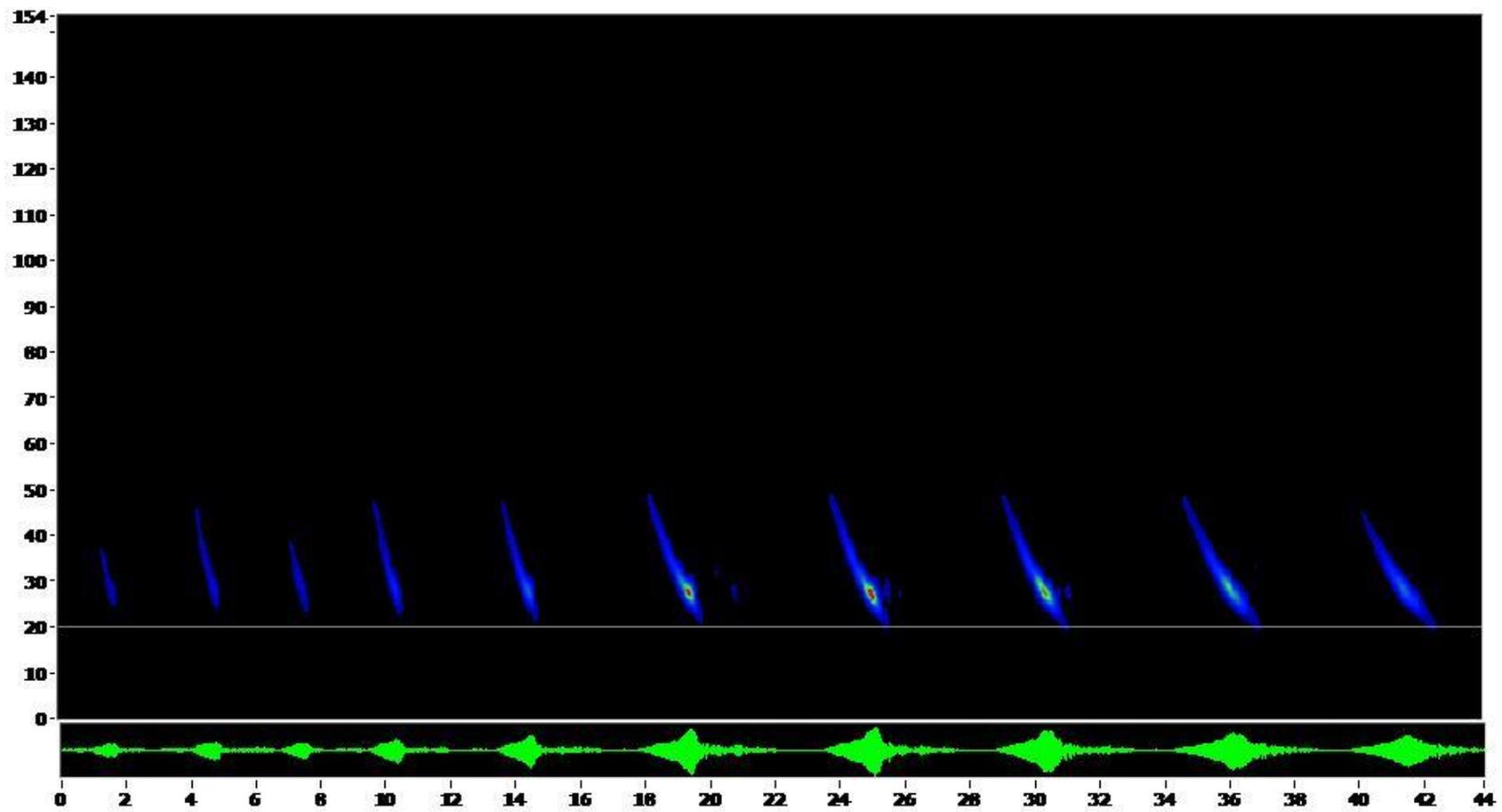


Figure 9. Spectrogram of a fringed myotis (*Myotis thysanodes*) echolocation call recorded at Ray Mesa Pond on June 2, 2008.

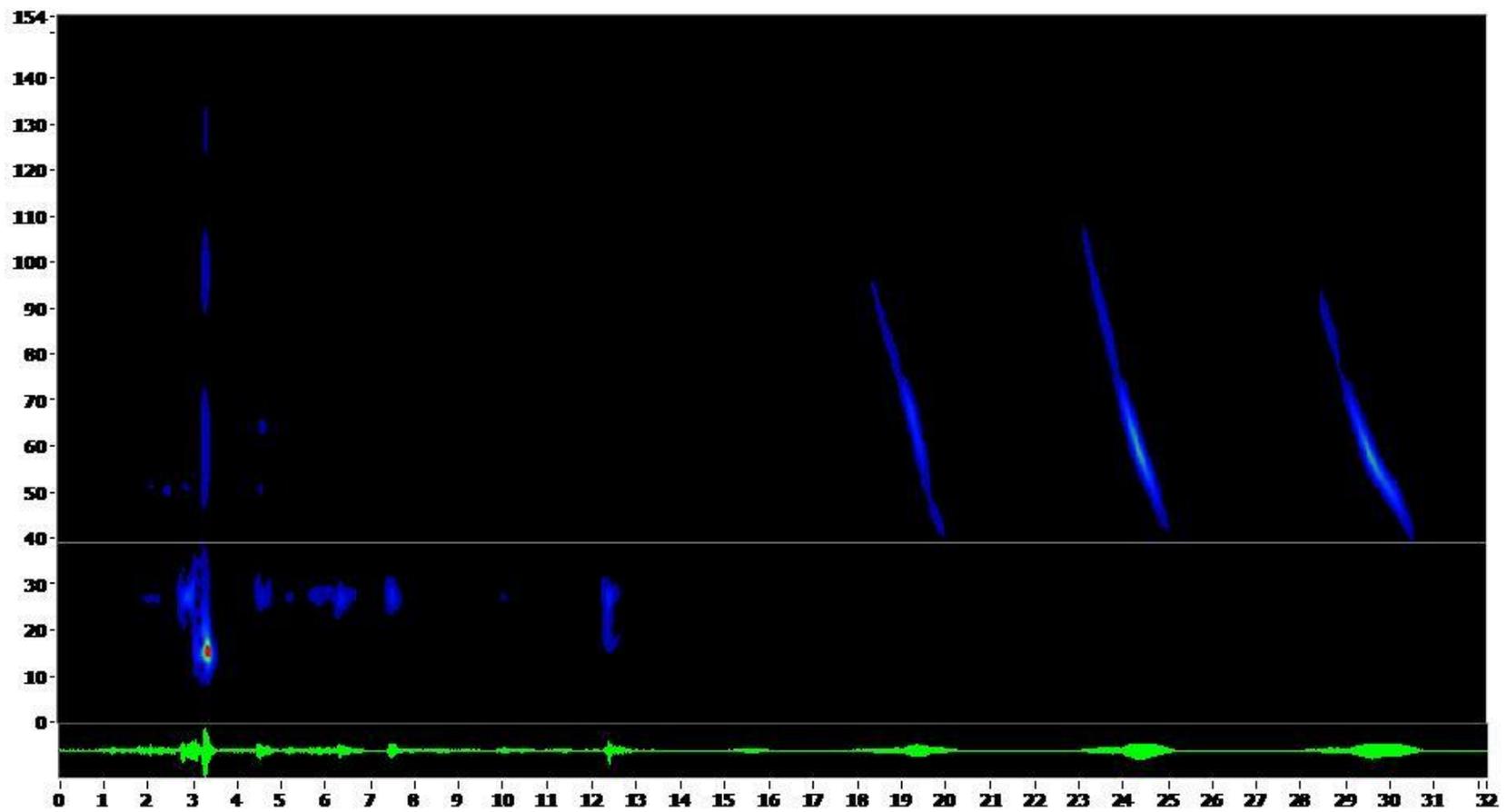


Figure 10. Spectrogram of a long-legged myotis (*Myotis volans*) echolocation call recorded at La Sal Creek #1 on May 31, 2008.

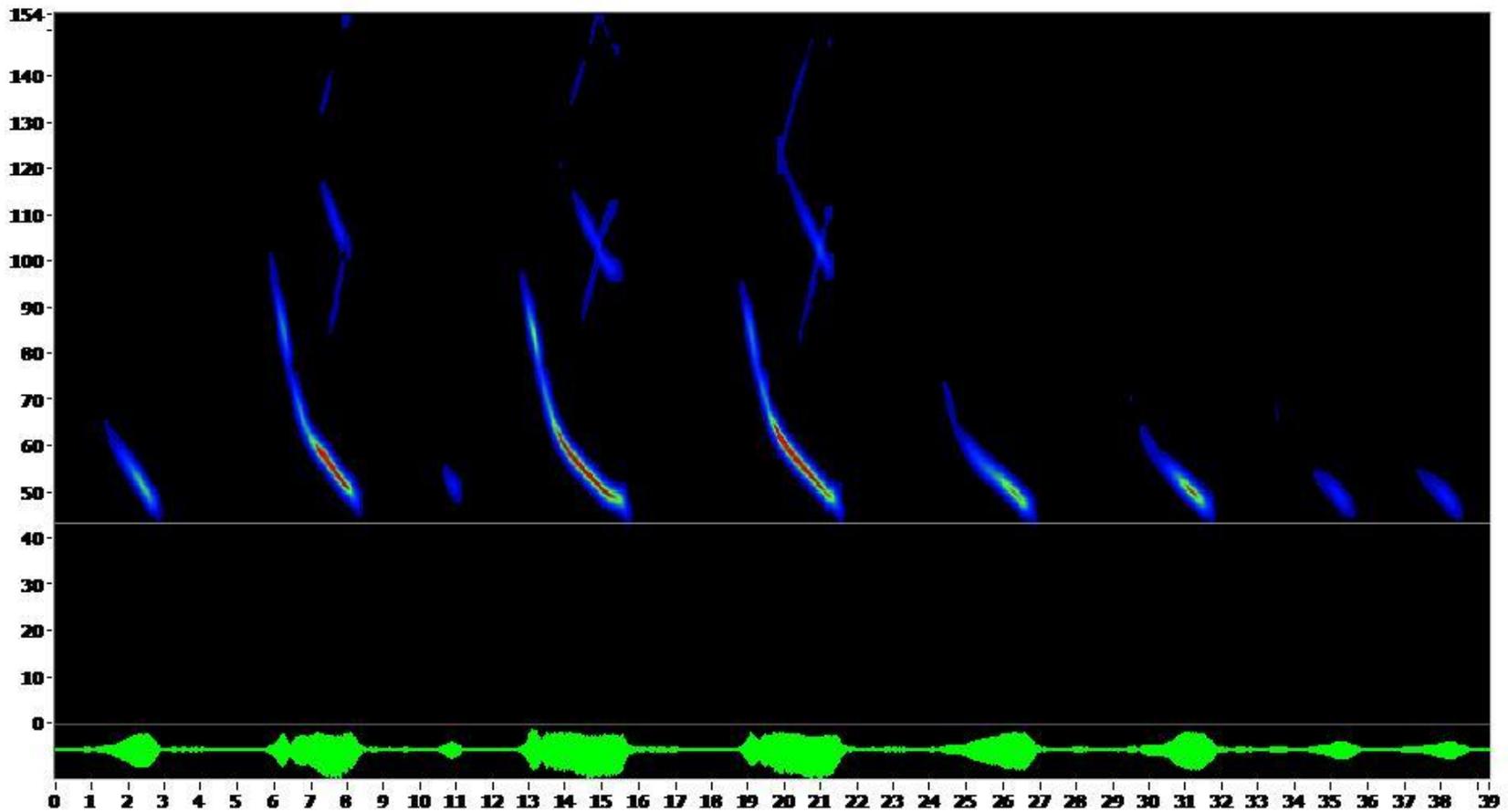


Figure 11. Spectrogram of a Yuma myotis (*Myotis yumanensis*) echolocation call recorded at La Sal Creek #1 on May 31, 2008.

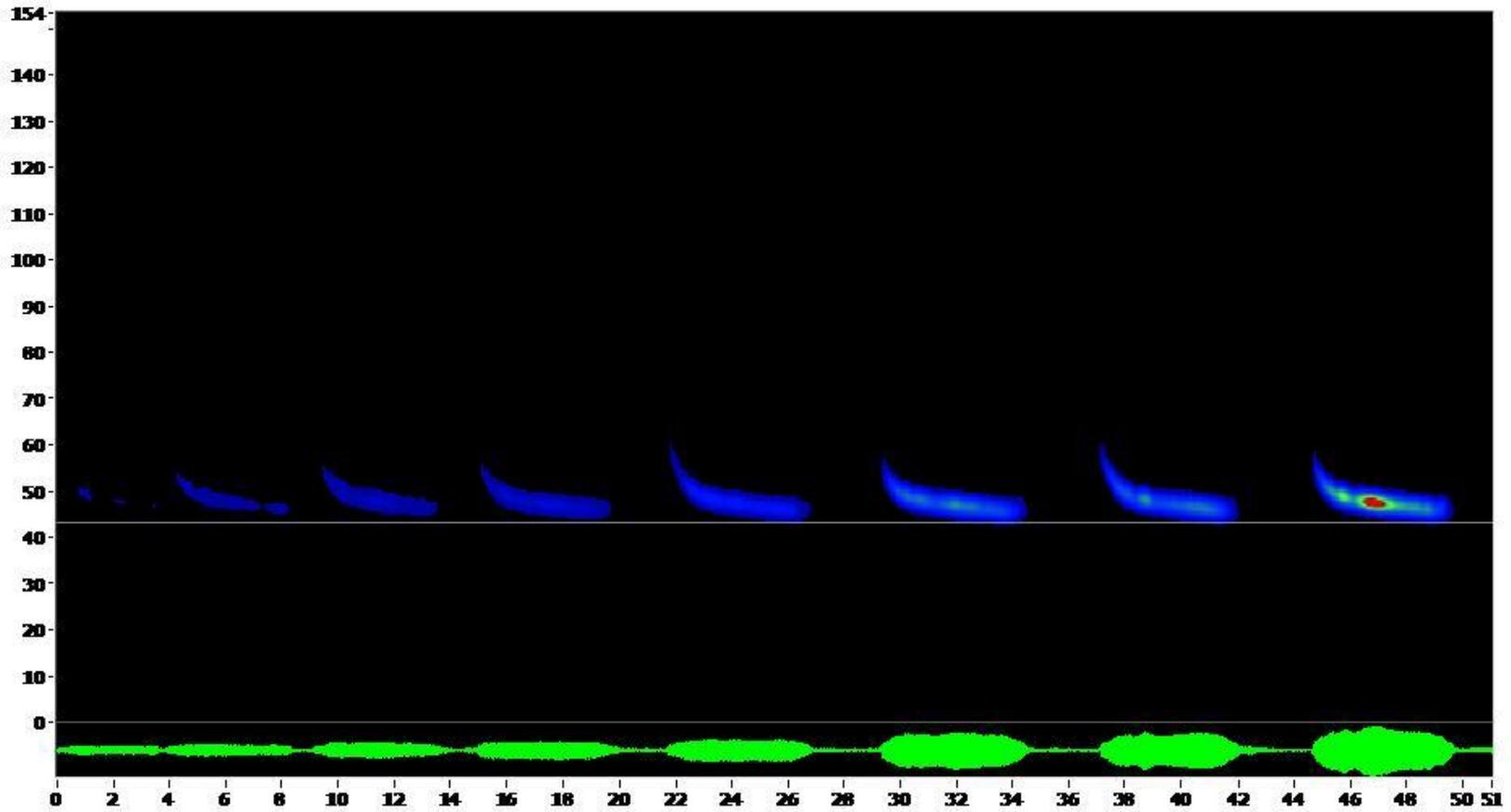


Figure 12. Spectrogram of a western pipistrelle (*Pipistrellus hesperus*) echolocation call recorded at La Sal Creek #1 on May 31, 2008.

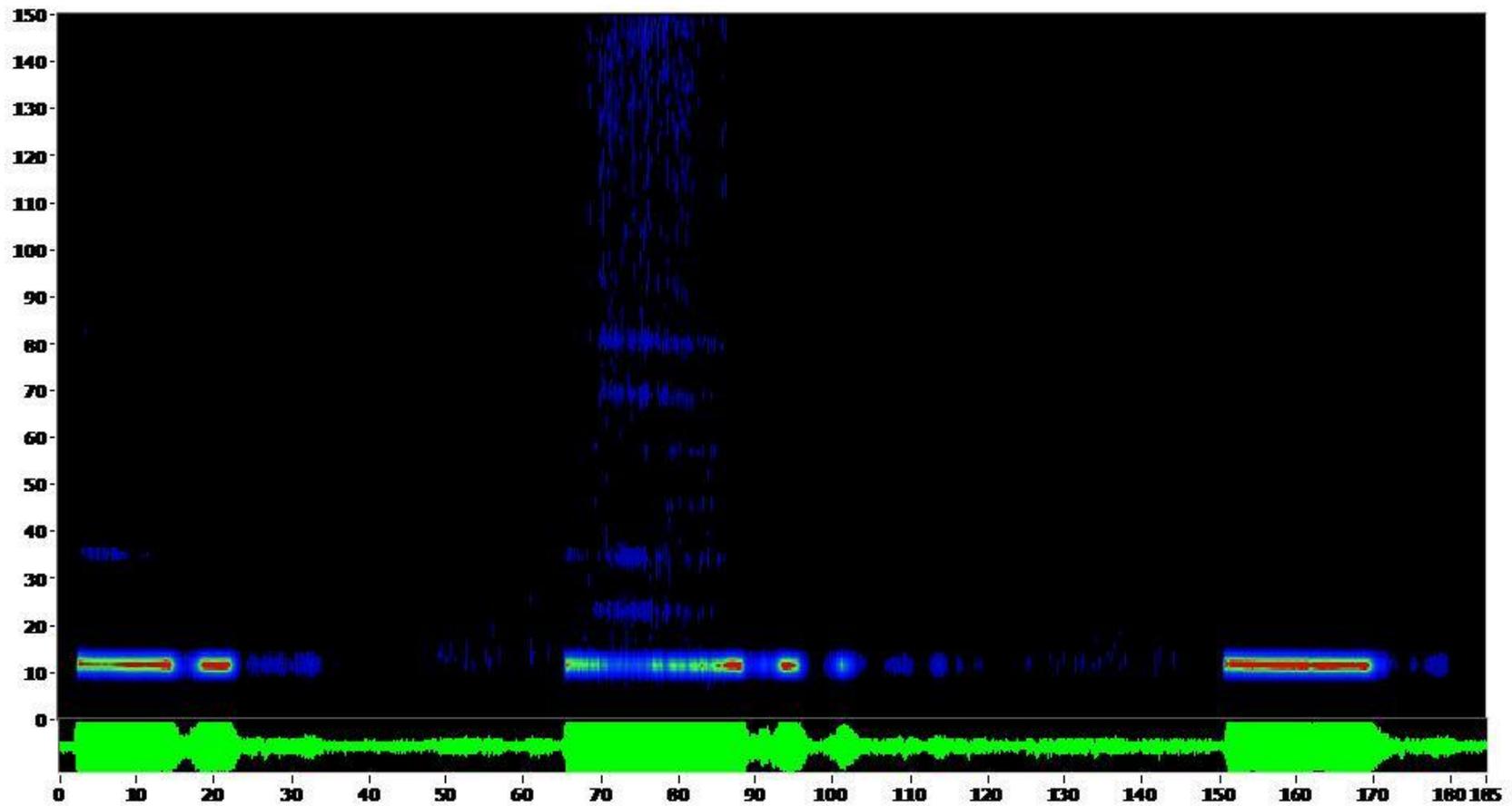


Figure 13. Spectrogram of a big free-tailed bat (*Nyctinomops macrotis*) echolocation call recorded at the Paradox Valley Cattle Pond on June 3, 2008.

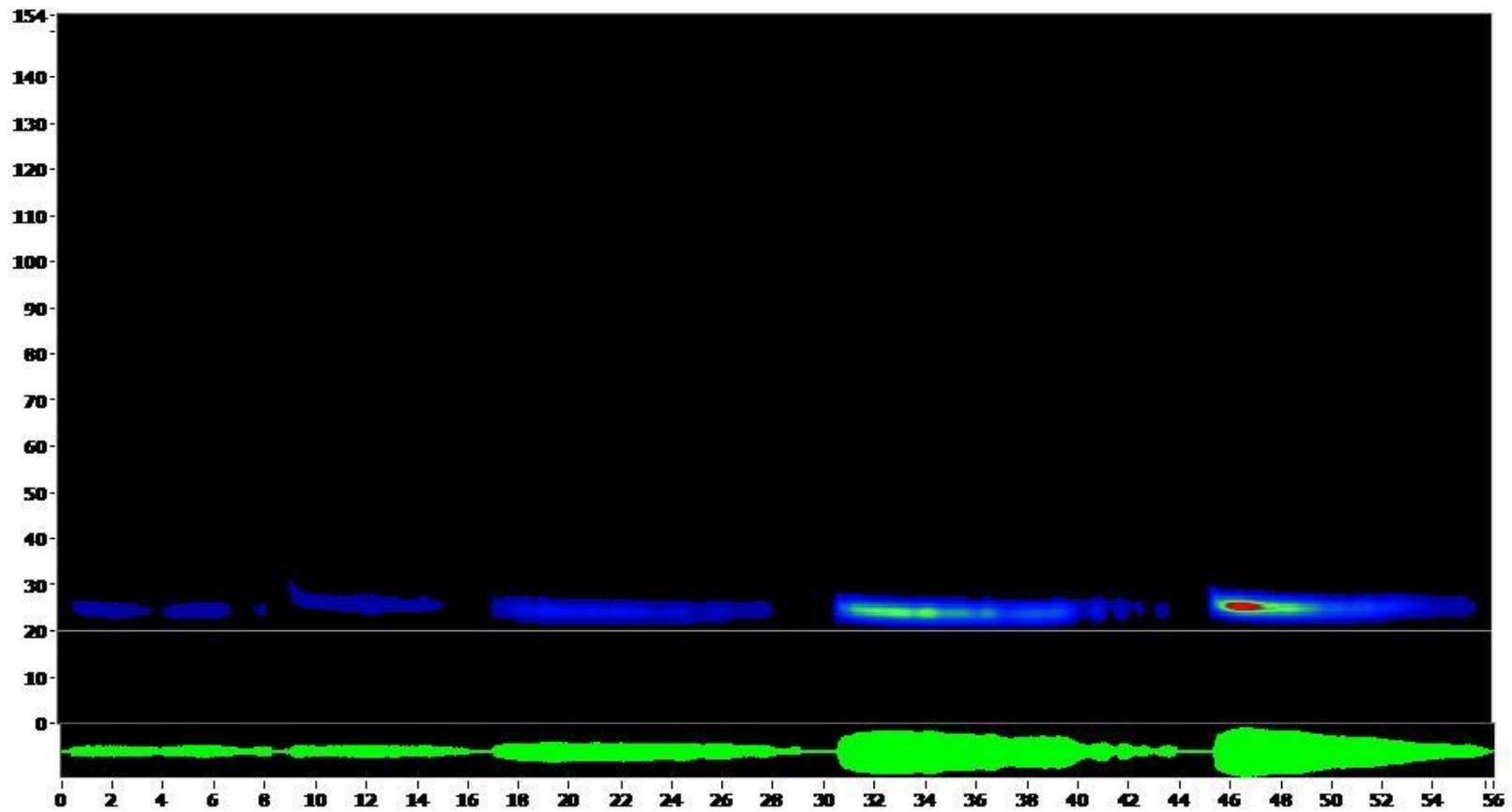


Figure 14. Spectrogram of a Mexican free-tailed bat (*Tadarida brasiliensis*) echolocation call recorded at La Sal Creek #2 on June 1, 2008.

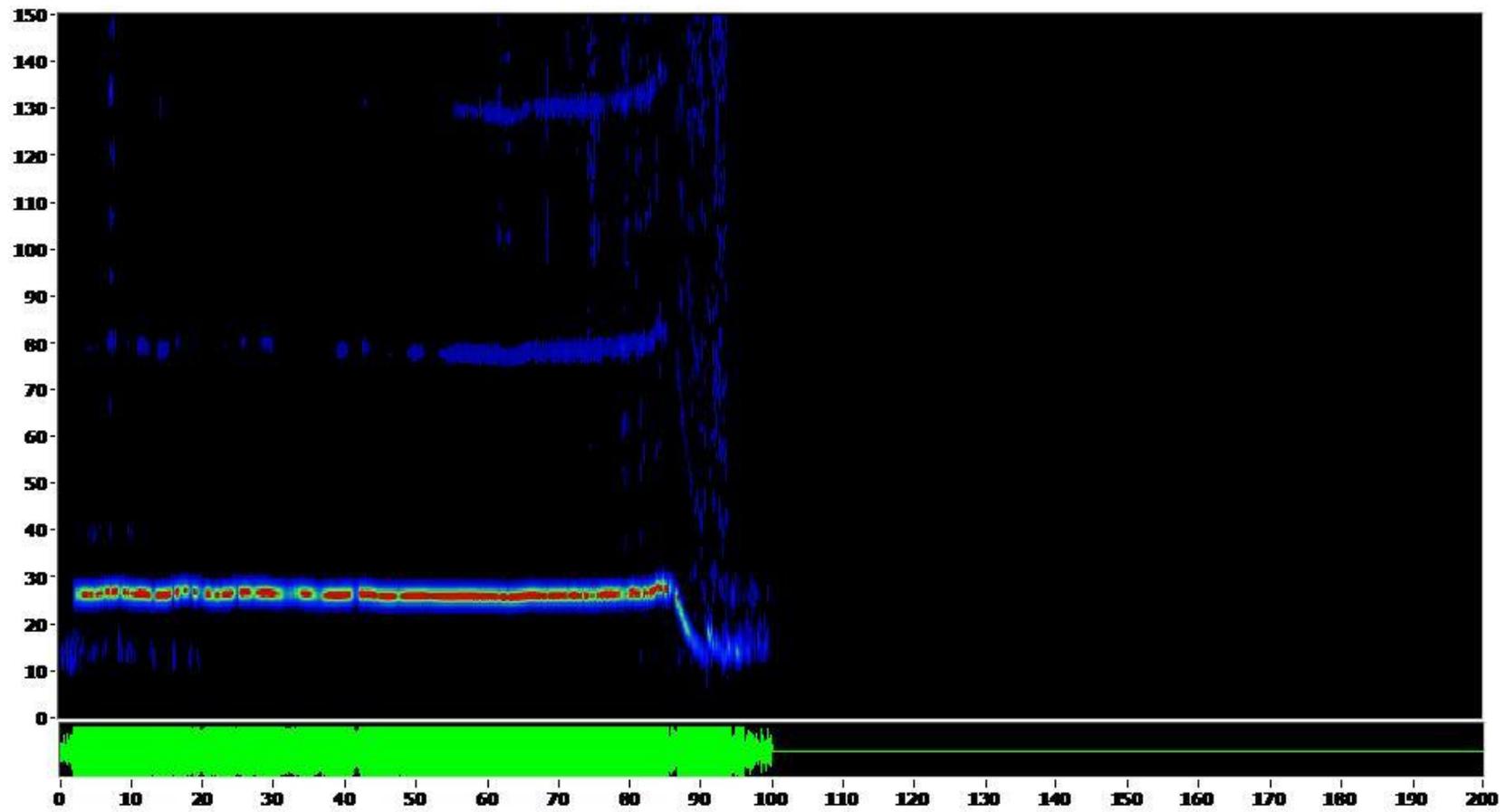


Figure 15. Spectrogram of an Allen's big-eared bat (*Idionycteris phyllotis*) echolocation call recorded at La Sal Creek on August 18, 2006.

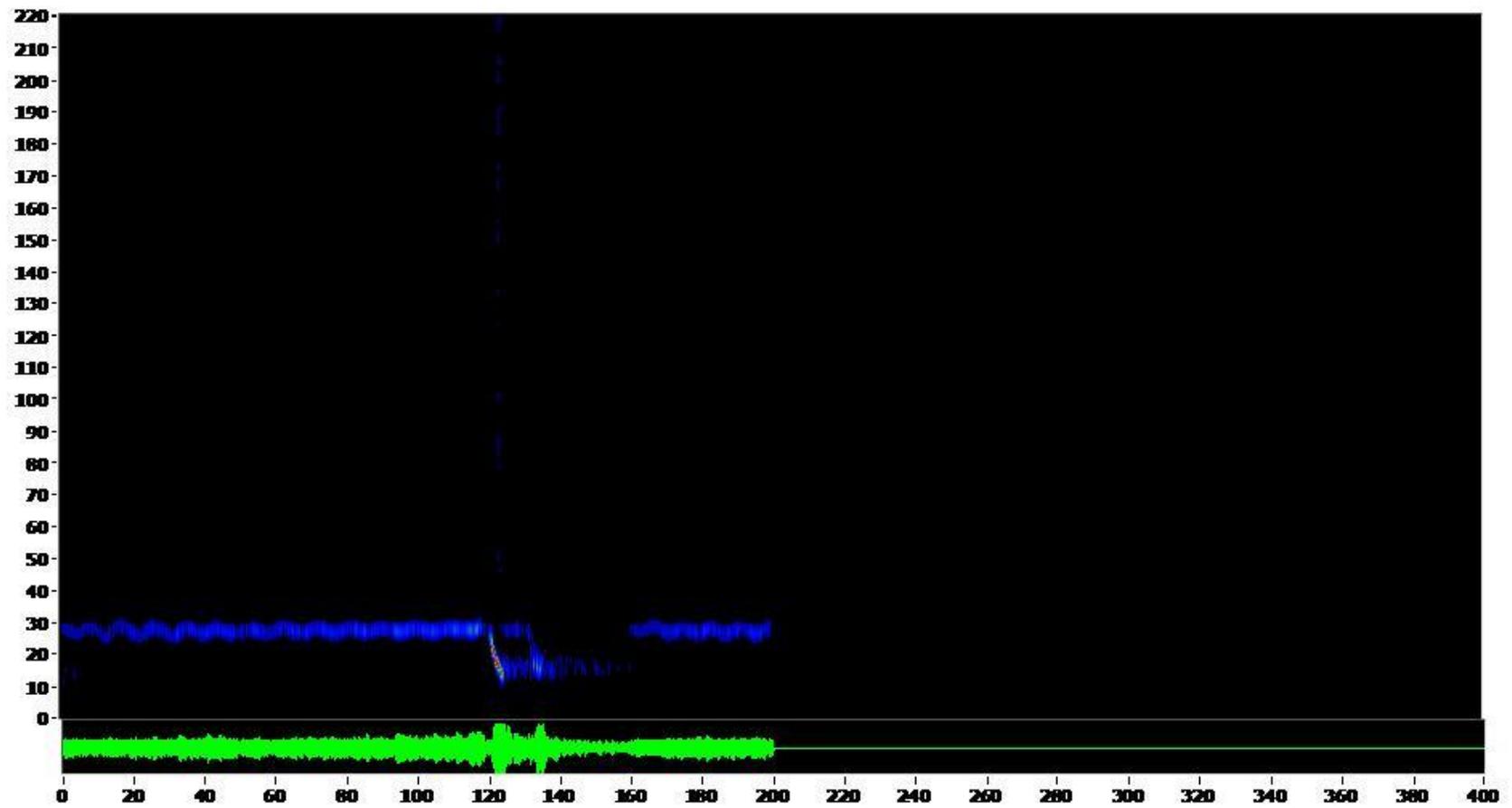


Figure 16. Spectrograph of an Allen's big-eared bat (*Idionycteris phyllotis*) echolocation call recorded at La Sal Creek on August 18, 2006.

## APPENDIX A: Capture and Acoustic Recording Results

### PARADOX VALLEY AREA SURVEYS

#### La Sal Creek #1, May 31 2008

UTM Coordinates: 12S/0676861/4243311; 5,627 ft.; Mist nets used: 1x3m, 1x6m.

<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Weight</u>	<u>Reproductive Status</u>
<i>Myotis ciliolabrum</i>	Male	Adult	4.4g	Non-scrotal
<i>Myotis evotis</i>	Female	Adult	5.1g	Lactating
<i>Myotis volans</i>	Female	Adult	7.5g	Lactating
<i>Myotis yumanensis</i>	Female	Adult	4.9g	Pregnant
<i>Pipistrellus hesperus</i>	Female	Adult	4.2g	Lactating

Acoustic calls recorded: multiple *Eptesicus fuscus*, *Lasionycteris noctivagans*, *Myotis ciliolabrum* and *Pipistrellus hesperus*, and likely *Myotis evotis*, *Myotis lucifugus*, *Myotis volans*, and *Myotis yumanensis* call sequences recorded.

Bats Captured: 5; Species captured: 5; Species recorded: ~8.

#### La Sal Creek #2, June 1 2008

UTM Coordinates: 12S/0676830/4243510; 5,656 ft.; Mist nets used: 1x3m, 1x6m.

<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Weight</u>	<u>Reproductive Status</u>
<i>Lasionycteris noctivagans</i>	Male	Adult	10.9g	Non-scrotal
<i>Lasionycteris noctivagans</i>	Male	Adult	10.3g	Non-scrotal
<i>Myotis yumanensis</i>	Female	Adult	5.9g	Lactating
<i>Myotis yumanensis</i>	Male	Adult	4.8g	Non-scrotal
<i>Myotis yumanensis</i>	Male	Adult	5.7g	Non-scrotal

Acoustic calls recorded: multiple *Lasionycteris noctivagans*, *Myotis lucifugus*, *Myotis volans*, *Myotis yumanensis* call sequences and one sequence of *Tadarida brasiliensis* recorded.

Bats Captured: 5; Species captured: 2; Species recorded: 5.

### Ray Mesa Pond, June 2, 2008

UTM Coordinates: 12S/0672250/4239190; 7,287 ft.; Mist nets used: 2x3m, 1x6m.

<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Weight</u>	<u>Reproductive Status</u>
<i>Eptesicus fuscus</i>	Male	Adult	13.6g	Non-scrotal
<i>Lasionycteris noctivagans</i>	Male	Adult	8.1g	Non-scrotal
<i>Myotis californicus</i>	Female	Adult	3.5g	Non-reproductive
<i>Myotis ciliolabrum</i>	Female	Adult	4.5g	Lactating
<i>Myotis evotis</i>	Female	Adult	6.3g	Pregnant
<i>Myotis evotis</i>	Male	Adult	5.0g	Non-scrotal
<i>Myotis evotis</i>	Male	Adult	5.5g	Non-scrotal
<i>Myotis volans</i>	Female	Adult	7.6g	Pregnant
<i>Myotis volans</i>	Male	Adult	6.6g	Non-scrotal

Acoustic calls recorded: multiple *Eptesicus fuscus*, *Lasionycteris noctivagans*, *Myotis ciliolabrum*, *Myotis thysanodes*, and likely *Myotis evotis*, *Myotis lucifugus* and *Myotis volans* call sequences recorded.

Bats Captured: 9; Species captured: 6; Species recorded: ~7.

### Paradox Valley Cattle Pond, June 3, 2008

UTM Coordinates: 12S/0689264/4242533; 5,104 ft., Mist nets used: 2x3m, 1x6m.

<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Weight</u>	<u>Reproductive Status</u>
<i>Myotis volans</i>	Female	Adult	9.1g	Pregnant
<i>Myotis volans</i>	Female	Adult	8.3g	Pregnant
<i>Pipistrellus hesperus</i>	Female	Adult	4.6g	Pregnant
<i>Pipistrellus hesperus</i>	Female	Adult	4.4g	Pregnant

Acoustic calls recorded: *Myotis ciliolabrum*, *Myotis yumanensis*, *Myotis volans*, *Pipistrellus hesperus*, and 2 *Euderma maculatum*, 3 *Corynorhinus townsendii*, 1 *Nyctinomops macrotis* call sequences were recorded. Multiple audible *Euderma maculatum* and *Nyctinomops macrotis* calls heard.

Bats Captured: 4; Species captured: 2; Species recorded: ~7.

**Schneider Spring, June 4, 2008**

UTM Coordinates: 12S/0675600/4251300; 5,574 ft; Mist nets used: 1x3m, 1x6m.

<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Weight</u>	<u>Reproductive Status</u>
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No captures and no recorded calls. Rain off and on throughout day and night.

Bats Captured: 0; Species captured: 0; Species recorded: 0.

**GUNNISON GORGE NATIONAL CONSERVATION AREA SURVEYS**

**Fruitland Mesa Cattle Pond #1, June 17, 2008**

UTM Coordinates: 13S/0266300/4278400; 7,847 ft; Mist nets used: 1x6m, 1x18m.

<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Weight</u>	<u>Reproductive Status</u>
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No captures

Acoustic calls recorded: One *Myotis lucifugus* and 1 *Nyctinomops macrotis* call sequence recorded.

Bats Captured: 0; Species captured: 0; Species recorded: 2.

**Fruitland Mesa Cattle Pond #2, June 18, 2008**

UTM Coordinates: 13S/0261900/4277300; 8,096 ft; Mist nets used: 1x6m, 1x18m.

<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Weight</u>	<u>Reproductive Status</u>
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<i>Lasionycteris noctivagans</i>	Male	Adult	9.6g	Non-scrotal
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<i>Myotis yumanensis</i>	Female	Adult	6.2g	Pregnant
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Acoustic calls recorded: multiple *Myotis lucifugus* calls recorded.

Bats Captured: 2; Species captured: 2; Species recorded: 1.

### **Fruitland Mesa Cattle Pond #3, June 19, 2008**

UTM Coordinates: 13S/0259110/4278714; 7,958 ft; Mist nets used: 1x6m, 1x3m.

<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Weight</u>	<u>Reproductive Status</u>
<i>Myotis</i>	Female	Adult	Not weighed	Pregnant (?)

\*This bat escaped from net during removal and was a *M. californicus* or *M. ciliolabrum*.

Acoustic calls recorded: *Lasiurus cinerius*, *Myotis californicus*, *M. yumanensis*, probable *M. lucifugus*, *M. volans*, and *Lasionycteris noctivagans*. 13 *Euderma maculatum* and 1 *Nyctinomops macrotis* call sequences recorded. Multiple audible *Euderma maculatum* calls heard while a pair of these bats were foraging and drinking at the pond.

Bats Captured: 1; Species captured: 1; Species recorded: ~7.

### **Fruitland Mesa Irrigation Ditch, June 20, 2008**

UTM Coordinates: 13S/0260097/4284723; 6,928 ft; Mist nets used: 2x3m.

<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Weight</u>	<u>Reproductive Status</u>
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No captures

Acoustic calls recorded: *Eptesicus fuscus*, *Lasiurus noctivagans*, *Myotis ciliolabrum*, *M. yumanensis*, and perhaps other *Myotis* species. 1 *Euderma maculatum* and 1 *Nyctinomops macrotis* call sequences recorded. On three occasions, audible calls were heard emitted by one *Euderma maculatum* flew rapidly through the area moving from south to north. This is either 3 separate bats or the same bat using a foraging route.

Bats Captured: 0; Species captured: 0; Species recorded: ~6.

**Fruitland Mesa Cattle Pond #4, June 21, 2008**

UTM Coordinates: 13S/0264596/4278270; 7,796 ft; Mist nets used: 2x3m, 1x6m.

<u>Species</u>	<u>Sex</u>	<u>Age</u>	<u>Weight</u>	<u>Reproductive Status</u>
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No captures

Acoustic calls recorded: *Eptesicus fuscus*, *Lasiurus noctivagans*, *Myotis ciliolabrum*, and perhaps other *Myotis* species. 3 *Euderma maculatum* and 2 *Nyctinomops macrotis* call sequences recorded. Audible *Euderma maculatum* calls emitted by one or more bats heard on three occasions.

Bats Captured: 0; Species captured: 0; Species recorded: ~5