

# RECLAMATION

*Managing Water in the West*

## Preble's Meadow Jumping Mouse Survey

Cottonwood Creek Below Flatiron Reservoir, Larimer County,  
Colorado



U.S. Department of the Interior  
Bureau of Reclamation  
Fisheries and Wildlife Resources  
Denver, Colorado

February 2009

## **Mission Statements**

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

# Preble's Meadow Jumping Mouse Survey

Cottonwood Creek Below Flatiron Reservoir, Larimer County,  
Colorado

*prepared for*

## **Eastern Colorado Area Office**

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*by*

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# Introduction

The Preble's meadow jumping mouse (*Zapus hudsonius preblei* – Preble's mouse) is listed by the U.S. Fish and Wildlife Service (USFWS) as a threatened species in Colorado (USFWS 1998 - 63 FR 26517). Historically, the mouse occurred along the Front Range of the Rocky Mountains from Pueblo, Colorado to Douglas, Wyoming, within the Arkansas and Platte river basins. Currently, in Colorado Preble's mice are found in Larimer, Weld, Boulder, Jefferson, Douglas, Elbert, El Paso, and Teller counties. This species occurs within riparian habitats that can be characterized by an overstory of woody plant species and an understory of dense grass and other herbaceous plant cover with an adjacent band of grassy uplands. Typically, flowing water is also present in preferred Preble's mouse habitat (Armstrong et al. 1997).

The Bureau of Reclamation (Reclamation) has surveyed lands within the Colorado-Big Thompson Project fee title lands to identify potential habitat for federally protected species. The Colorado-Big Thompson Project lands comprise areas in fee-title including Pole Hill Power Plant, Pinewood Lake, Carter Lake, Boulder Feeder Canal and St. Vrain Supply Canal, Flatirons Reservoir, and Horsetooth Reservoir and Horsetooth Supply Canal. Cottonwood and Dry Creeks below Flatiron Reservoir in Larimer County were identified as containing potential habitat for the Preble's mouse (Solomon 2006). This report documents a subsequent trapping survey along Cottonwood and Dry Creeks to determine the presence or absence of the Preble's mouse.

## Methods

### Study Site

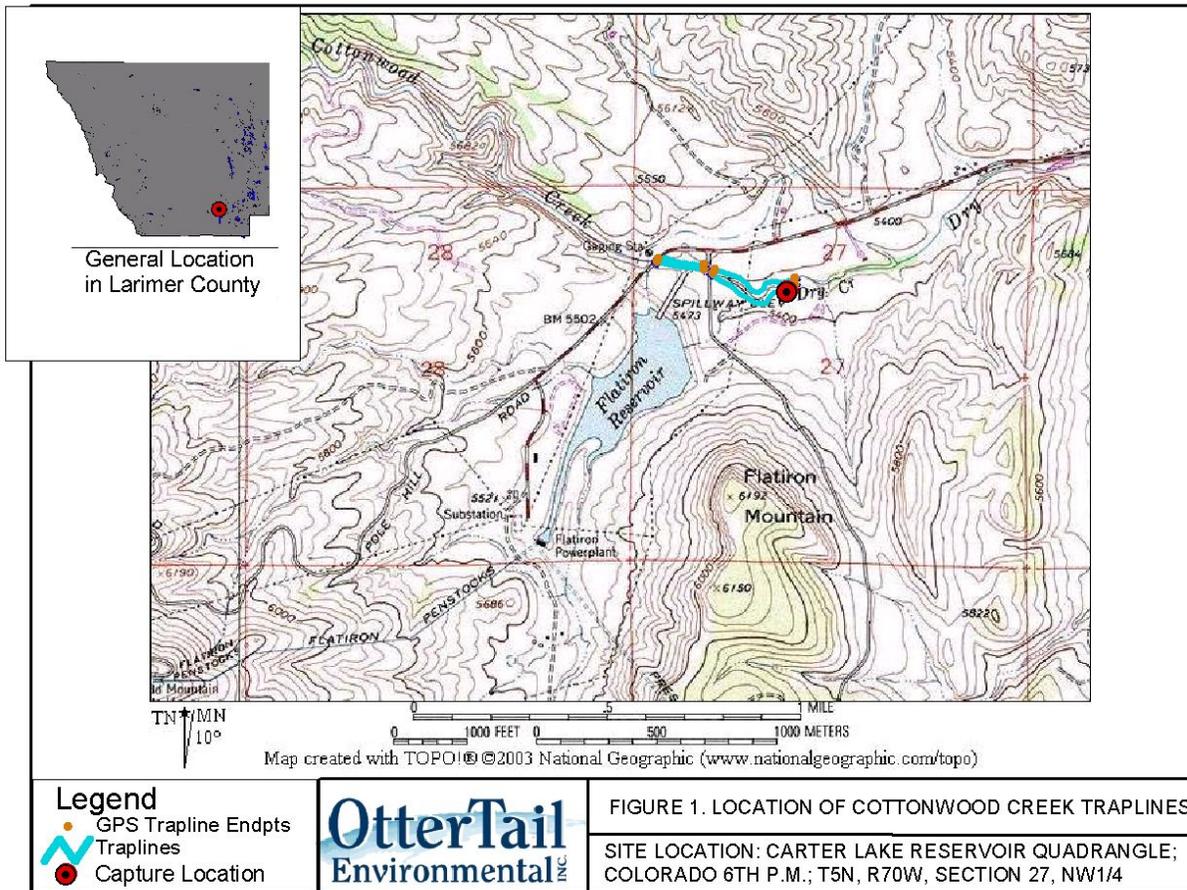
The trapping area consisted of approximately 900 yards of riparian corridor along Cottonwood and Dry Creeks below Flatiron Reservoir in Larimer County, Colorado. Trapping was conducted both upstream and downstream of County Road 31. The legal description is T05 north, R70 west, Section 27 NW ¼ USGS Carter Lake Reservoir and Masonville 7.5 minute quads (Figure 1). The project site is approximately 5,400 feet in elevation.

### Trapping Survey

The methods used to conduct the trapping survey on Cottonwood and Dry Creeks followed those described in the USFWS Survey Guidelines for Preble's meadow jumping mouse (USFWS 2004) and former monitoring efforts. OtterTail Environmental, Inc. conducted research into past trapping/assessment efforts within the Big Thompson Watershed and reviewed the Colorado Division of Wildlife Preble's Mouse Database, 2002 (CDOW 2003) and a preliminary survey for potential habitat (Solomon 2006) within the Colorado-Big Thompson Project lands.

As part of the 2008 trapping survey requirements, OtterTail Environmental, Inc. and personnel from Reclamation's Technical Service Center conducted a survey during the week of July 27<sup>th</sup> to determine if the Preble's meadow jumping mouse occurs within suitable habitat along this reach of Cottonwood and Dry Creeks.

## Results



Small mammal live-trapping was conducted between July 27 and July 31, 2008. A total of two transects with a combined total of 250 traps set for three nights were used to trap the most suitable habitat along this reach of Cottonwood and Dry Creeks. Transect A is east of County Road 31 and trap placement ran downstream along the southern bank and back upstream along the northern bank of Cottonwood and Dry Creeks for a total of 150 traps. Transect B is west of County Road 31 and trap placement ran upstream along the northern bank and downstream along the southern bank for a total of 100 traps. All traps were arranged per U.S. Fish and Wildlife Service Guidelines and were baited with “Purina Mills Omolene” sweet feed. Traps were placed approximately 20 feet apart and in close proximity to the creek. Photographs of the area are provided in Appendix A. Completed data forms are included in Appendix B.

## Results

### Habitats

Cottonwood Creek is an intermittently flowing creek with a width of approximately 5 to 10 feet. At the time of the trapping survey, the channel was dry with only a few (5) small pools of water remaining. The depth of these pools varied from a few inches to one foot deep. However, during our initial site visit in March, the creek flowed continuously through the study site. Substrate within

the creek ranges from fine silt and sand to larger gravel, cobble and boulders. Vegetation in transect A consists of dense sandbar willow (*Salix exigua*) with an overstory of peach-leaved willow (*Salix amygdaloides*) and plains cottonwood (*Populus sargentii*). The understory is mostly grassy with a combination of upland grasses (*Bromus*, *Agropyron*, and *Poa* spp.), rushes (*Juncus* sp.), and sedges (*Carex* sp.). Shrubs were also present in the understory including snowberry (*Symphoricarpos occidentalis*), rose (*Rosa woodsii*), chokecherry (*Prunus virginiana*) and wild plum (*Prunus americana*). Sagebrush (*Artemisia* sp.) and typical upland grasses and forbs dominate the adjacent upland.

Habitat in transect B appears less suitable to the Preble's mouse as it is more upland and drier in nature. This transect is characterized by decadent sandbar willow and an overstory dominated by plains cottonwood and narrowleaf cottonwood (*Populus angustifolia*), but with lesser canopy cover than downstream along transect A. Smooth brome (*Bromus inermis*), rose, wax currant (*Ribes* sp.), and snowberry dominate the understory with much more bare ground than downstream. Also present are skunkbrush (*Rhus trilobata*), poison ivy (*Toxicodendron rydbergii*), fringed sage (*Artemisia frigida*), and prickly pear (*Opuntia* sp.). The adjacent upland community is similar to Transect A.

The Preble's mouse capture site was along Transect A approximately 1,500 feet downstream of County Road 31. A USFWS Survey Field Data Compilation Form is attached at the end of this report (Appendix A). The capture location was along the southern bank of Dry Creek on a terrace within the riparian area of the creek. There were dense stands of sandbar willow nearby (20ft away) and a small stand of cattails and short marsh on the opposite side of the terrace (40ft away). The overstory consisted of a mixture of plains and narrowleaf cottonwoods scattered throughout. The understory consisted of grasses, rushes, and sedges with little bare ground. The surrounding area appeared to be lowlands around an old stream channel (to the south) with the active channel to the north. Adjacent to the lowlands were uplands extending approximately 280 feet to the south. These upland areas contain areas in and outside of the 100-year floodplain and contain cottonwood woodlands with a lush understory of grasses.

The capture site was in "typical habitat" for Preble's mice with one exception: Cottonwood/Dry Creek was not flowing. The only water available in the creek was in the form of several pools of stagnant water. The closest was approximately 300 feet upstream. This is significant because Armstrong et al. (1997) described typical Preble's meadow jumping mouse habitat as "well-developed plains riparian vegetation with relatively undisturbed grassland and a water source in close proximity." Perhaps stagnant pools are enough to be in "close proximity" but biologists may assume a flowing stream. However, Preble's mice are known to range widely in search of food (Shenk 2000) and Meaney et al. (1997) suggested that Preble's has a broader ecological tolerance than previously thought and while they require diverse vegetation and well-developed cover, this can be met in a variety of circumstances. Perhaps water requirements can be met in a variety of conditions as well.

## Trapping Surveys

Biologists from OtterTail Environmental, Inc. and Reclamation trapped the Cottonwood/Dry Creek riparian area for three nights for a total of 750 trap nights. Weather during the survey was very warm and clear during the day with highs in the low to mid-90s (Fahrenheit) and overnight temperatures in the mid 50s to low 60s (Fahrenheit) for all three days. A light rain occurred overnight prior to the first night of trapping.

The 750 trap nights resulted in 125 captures of seven species including (in order of abundance): meadow vole (*Microtus pennsylvanicus*), Mexican woodrat (*Neotoma mexicana*), deer mouse (*Peromyscus maniculatus*), western harvest mouse (*Reithrodontomys megalotis*), prairie vole (*Microtus ochrogaster*), house mouse (*Mus musculus*), and Preble’s meadow jumping mouse (Table 1).

Table 1. Species and number of captures – Preble’s mouse trapping - July 2008.

Night	Preble's Meadow Jumping Mouse	Western Harvest Mouse	Prairie Vole	Meadow Vole	Deer Mouse	Mexican Woodrat	House Mouse	Total
One	0	2	1	6	6	5	0	20
Two	0	4	3	20	5	12	0	44
Three	1	2	0	36	11	10	1	61
Total	1	8	4	62	22	27	1	125

Considering traps sprung and either occupied or not, of the 750 traps set, 543 remained available for potential Preble’s mouse captures, resulting in 72 percent trap availability for the duration of the survey (Table 2).

Table 2. Trap availability during July 2008 trapping survey

Night	Number of Traps Set	Number of Traps Rolled, Tripped, Broken	Number of Traps Occupied By Animals	Number of Traps Available for Preble's Meadow Jumping Mouse	Percent of Traps Available
One	250	17	20	213	85
Two	250	26	44	180	72
Three	250	39	61	150	60
Total	750	82	125	543	72

## Conclusions

Trapping proved the presence of Preble’s mice in riparian habitat along Cottonwood and Dry Creeks below Flatiron Reservoir in Larimer County, Colorado. Additionally, vegetation at the site appears to be suitable for Preble’s mice with willow shrubs and an under story of thick grass especially downstream of County Road 31. These areas should be considered habitat for the Preble’s mouse, however, more detailed trapping studies during subsequent seasons would be required to determine if a population of Preble’s mice exists in this area or if only transient individuals frequent this reach.

As noted above, habitat within this site appears to be suitable for Preble's mice. However, low summer flows in Cottonwood/Dry Creek may limit the vigor of the adjacent riparian area. Conversely, the adjacent undisturbed upland shrub habitat, which is an important component of Preble's mouse habitat (Armstrong et al. 1997, Clippinger 2002), appears to be in excellent condition.

Preble's mice have been recently documented within the Big Thompson Watershed by the Colorado Division of Wildlife and others. Locations include the North fork of the Big Thompson River, Little Thompson River, the main stem of the Big Thompson River, Buckhorn Creek and its tributaries and Dry Creek in Larimer County (CNHP 1999; CDOW 2005, USFWS 2008 – 73 FR 39790). This trapping survey documents that Preble's mice still occupy the watershed and should be considered when assessing impacts from water projects.

## Literature Cited

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- U.S. Fish and Wildlife Service. 1998. Endangered and Threatened Wildlife and Plants; Final Rule to List the Preble's Meadow Jumping Mouse as a Threatened Species. 63 FR 26517.
- U.S. Fish and Wildlife Service. 2004. Interim Survey Guidelines for Preble's Meadow Jumping Mouse. U.S. Fish and Wildlife Service, Denver, Colorado.
- U.S. Fish and Wildlife Service. 2008. Final Rule to Amend the Listing of the Preble's Meadow Jumping Mouse (*Zapus hudsonius preblei*) to Specify Over What Portion of Its Range the Subspecies is Threatened; Final Rule. 73 FR 39790.

## **Appendix A – Trapping Site Photos**

Appendix A



Photo 1. Habitat in Transect A includes dense vegetation cover including trees, shrubs, and grasses. Reclamation biologist Dave Moore pictured during the August trapping survey.



Photo 2. Habitat in Transect B. Cover along this reach of Cottonwood Creek was drier and vegetation less dense or more decadent. Biologists Matt Yurkovich and David Moore pictured while checking traps.



Photo 3. Transect A from CR 31 bridge – March 2008.



Photo 4. Transect B from CR 31 bridge – March 2008.



Photo 5. Site of Preble's mouse capture – Transect A.



Photo 6. Male Preble's Mouse captured August 31, 2008.



Photo 7. Male Preble's Mouse captured August 31, 2008 shortly before release.

## **Appendix B – Survey Field Data Compilation Form and Data Sheets**

**Preble's Meadow Jumping Mouse, *Zapus hudsonius preblei***  
**2008 Survey Field Data Compilation Form**

TRAPPING SURVEY                       EVALUATED, NOT TRAPPED

*Fill out both sections 1 and 2 if trapping survey, fill out section 1 only if habitat evaluation (i.e. not trapped). Compilation forms needed for updated habitat evaluations and site disqualification requests.*

**SECTION 1**

**Surveyor:**

Date of Site/Habitat Assessment July 27 – July 30, 2008  
 Organization/Company Bureau of Reclamation and Ottetail Environmental, Inc.  
 Full Name(s) Tom Ryon, Dave Moore, Tim DeMasters, Matt Yurkovich

**Location:**

Project Name (if applicable) Cottonwood Creek PMJM Survey at Flatiron Reservoir  
 Project Description (nearby road intersection, type of impact, etc.) Presence/Absence Survey -  
 Cottonwood Creek at Flatiron Reservoir

U.S.G.S. Quad Name(s) Carter Lake Reservoir and Masonville County Larimer Elevation  
5400'

Township(s) 05N Range(s) 70W Section(s) 27

¼¼ Section(s) NW ¼

UTM Coordinates, Zone 13 Northing 4469381m Easting 481101m

UTM Coordinate Datum    NAD27     NAD83

Directions to Location From I-25, exit 255 to CO-402 W, west to Lincoln Ave, north to 1<sup>st</sup> Street, west to  
 Cnty Rd 29, south to Cnty Rd 18E, west to County Road 31

Land Ownership Bureau of Reclamation, Eastern Colorado Area Office, Loveland, Colorado

**Habitat:**

General Habitat Description Willow shrubs and cottonwood with an understory of grass.

Dominant Overstory Plant Community narrowleaf cottonwood (*Populus angustifolia*), peach-leaved willow  
 (*Salix amygdaloides*), plains cottonwood (*Populus sargentii*), sandbar willow (*Salix exigua*),  
 chokecherry (*Prunus virginiana*)

Dominant Understory Plant Community snowberry (*Symphoricarpos occidentalis*), sedges (*Carex  
 nebrascensis*), rushes (*Juncus balticus*), wild licorice (*Glycyrrhiza lepidota*), blue grass (*Poa* sp.)

Current Land Use Open Space, Work Center and Visitor Center

Drainage Name: Cottonwood Creek/Dry Creek in Big Thompson Watershed

Type: Perennial Stream \_\_\_\_\_ Ephemeral Stream \_\_\_\_\_ Pond/Lake \_\_\_\_\_ Ditch \_\_\_\_\_

Other Intermittent Stream

**SECTION 2:**

*Z. h. preblei* found ? Yes  No  Dates of Survey July 30, 2008

**Trapping Information:**

Type of Traps Sherman Type of Bait “Omolene” sweet feed

% Available (unsprung) 72% Number of Nights Trapped 3

Total Trapnights 750

Weather conditions prior to and during survey Weather during the survey was very warm and clear during the day with highs in the low to mid-90s (Fahrenheit) and overnight temperatures in the mid 50s to low 60s (Fahrenheit). There was light rain the night before trapping began.

Associated Animal Species (especially urban predators, rats, house mice) meadow vole (*Microtus pennsylvanicus*), deer mouse (*Peromyscus maniculatus*), western harvest mouse (*Reithrodontomys megalotis*), and Mexican woodrat (*Neotoma mexicana*) . One house mouse was captured.

Sketch of surveyed area showing traplines, specific area disqualified (can be done on required U.S.G.S. map of site if appropriate). See report.

**Preble’s Data:**

Number of Preble’s trapped or seen 1

Distance from water (m) Sex (m/f) Evidence of repro.\* Weight (grams). Marked or tagged?

1. 100m, Male, subadult? ; 19 grams, no markings

2.

3.

4.

(Continue on separate sheet if needed)

\* Reproduction evidence for males is descended testes, for females is enlarged nipples.

Evidence of disease, predation or injury none

(Submit injury/mortality form if appropriate)

Genetic Material Obtained? Yes XXX No \_\_\_\_\_ Forwarded to \_\_\_\_\_

Specimen(s)? Yes \_\_\_\_\_ No \_\_\_\_\_ Forwarded to \_\_\_\_\_

Additional Comments: body length – 80mm and tail length – 141mm (live specimen/field measurements).