

Recommended Conservation Measures
Preble's Meadow Jumping Mouse (Preble's mouse)
USFWS
March 2025

PRE-CONSTRUCTION DESIGN:

1. Design the project to avoid and minimize the permanent and temporary impacts to riparian and adjacent upland habitats.
 - a. Before construction, identify and prioritize protection of riparian and adjacent upland habitats within the project area. Design the project so that it avoids or minimizes disturbance to these habitats.
 - b. Avoid or minimize the amount of concrete, riprap, bridge footings, and other "hard," impermeable engineering features intended to be constructed within the stream channel and riparian or adjacent upland habitats.
 - c. Where feasible, use bioengineering techniques to stabilize stream banks (e.g., [Living Streambanks](#)).
 - d. If riprap will be used, plan to bury the riprap with soil, then plant with native riparian vegetation.
 - e. Minimize the number and footprint of access routes, staging areas, and work areas.
 - f. Locate access routes, staging areas, and work areas within previously disturbed or modified non-habitat areas.
 - g. Maintain habitat connectivity under bridges or through culverts by installing ledges or dry culverts adjacent to the culverts with water flow. Design bridges that allow sunlight through to support vegetation cover and allow shrubs to grow at either end of culverts.
 - h. Avoid fragmenting linear riparian corridors.
2. Install fencing (e.g., orange barrier netting or silt fencing), signage, or other visible markers to delineate access routes and the project area from habitats. Use this fencing to enforce no-entry zones.
3. Hold a preconstruction briefing for onsite personnel to explain the conservation measures.
4. Follow regional stormwater management guidelines and design best management practices (BMPs) to control contamination, erosion, and sedimentation, such as silt fences, silt basins, gravel bags, biodegradable and wildlife friendly netting and blankets, and other controls needed to stabilize soils in denuded or graded areas, during and after construction.
5. Locate utilities along existing road corridors, and if possible, within the paved roadway or road shoulder.
 - a. Bury overhead utilities whenever possible.
 - b. Directionally bore utilities and pipes underneath suitable habitat and perennial waterways.
 - c. If utilities cross Preble's mouse habitat, minimize footprint of habitat impact by crossing the habitat at 90° to creek flow.

6. Develop and implement a habitat restoration plan that addresses site preparation, salvaging desirable shrubs and saplings, planting techniques, control of non-native weeds, native species seed mixtures, and post-construction monitoring.
7. If the project is expected to impact Preble's mouse habitat, deter Preble's mouse use of the area by hand-trimming shrub and herbaceous vegetation prior to initiating surface-disturbing activity. See Item 2 under Project Implementation below for guidelines for when and how to alter Preble's mouse habitat. Coordinate with the USFWS (Service) to minimize potential for take.

PROJECT IMPLEMENTATION:

1. Contact the Service's Regional Recovery Permit Coordinator, Robert Krijgsman (robert_krijgsman@fws.gov), and the Eastern Colorado Services Field Office (coloradoes@fws.gov) immediately if a Preble's mouse is found alive, dead, injured, or hibernating within the project area. Please also contact the Eastern Colorado Services Field Office if any other listed species are found within the project area.
2. Deter Preble's mouse use of the area prior to surface disturbing activities. Hand-trimming shrubs and herbaceous vegetation to less than 1 ft tall prior to land-impacting activity can discourage Preble's mouse from the area and reduce the potential for take. To minimize disturbance to Preble's mouse, prioritize projects to occur during Preble's mouse hibernation (inactive) period (November 1 – April 30).
 - a. For projects that would occur during the Preble's mouse inactive period (November 1 – April 30): Hand-trim shrubs and herbaceous vegetation located above the first floodplain to < 1 ft tall prior to hibernation (September 15 – October 1) and wait to initiate construction until November 1. As Preble's mice prepare to hibernate, they will leave the lowest floodplain to build hibernacula at the base of shrubs and small trees to ensure they are above the spring flood zone. Hand-trimming should minimize the potential for take.
 - b. For projects that would occur during Preble's mouse active period (May 1 – October 31): Hand-trim vegetation prior to Preble's mice emergence from hibernation, during the last two weeks of April. Do not initiate surface disturbing activity until after May 31, when both male and female Preble's mice likely have emerged from hibernation. Male Preble's mice typically emerge from hibernation by mid-May, and females tend to emerge from hibernation 2 – 3 weeks later than males. Hand-trimming the vegetation will deter Preble's mice use of the area and prevent breeding and/or day nest construction.
3. To the maximum extent practicable, limit disturbance (e.g., crushing, trampling) and/or removal of (e.g., cutting, clearing) all native vegetation, such as willows, trees, shrubs, and grasses within riparian and adjacent upland habitats.
 - a. Restrict the temporary or permanent removal of vegetation to the footprint of the project area.

- c. If habitat must be affected, clip to ground level vegetation that will be permanently or temporarily affected at least two weeks prior to initiation of construction to discourage use of areas where the project intersects Preble's mouse habitat.
 - b. Minimize the use of heavy machinery and use smaller equipment and hand tools when possible. Limit heavy equipment and vehicle access to the work site via previously disturbed areas or use a route that avoids damaging live or dormant vegetation.
 - c. Temporarily line access routes with geotextiles or other materials, especially in wet, unstable soils to protect roots and the seed bank.
- 4. Locate, store, stage, operate, and refuel equipment outside of riparian or adjacent upland habitats.
 - a. Operate equipment from previously disturbed or modified roadbeds or road shoulders above the riparian habitats.
 - b. Limit the number of entrance and exit points leading into the project area.
 - c. Stockpile topsoil, trash and debris outside the riparian corridor and protect from stream flows or runoff.
- 5. If the project must be implemented during the Preble's mouse active season (May 1 through October 31), limit construction to daylight hours to avoid disrupting Preble's mouse nocturnal activities.
- 6. Utilize wildlife-proof garbage containers on site and promptly remove waste to minimize site disturbance and avoid attracting predators.
- 7. Cover exposed holes or piles of loose dirt with boards, tarps, or other materials to prevent entrapment.
- 8. Control the spread of noxious weeds and invasive aquatic invertebrates.
 - a. Wash and inspect vehicles and equipment before entering or leaving the project area so that they are free of noxious weed seeds and plant parts.
 - b. Use only weed free certified materials, including gravel, sand, topsoil, seed, and mulch.
 - c. Clean equipment and vehicles operating in streams in accordance with Hazard Analysis-Critical Control Point (HACCP) guidelines:
<https://nctc.fws.gov/courses/HACCP/>
- 9. Complete construction before beginning restoration or enhancement activities.
- 10. Restrict work site lighting to the Preble's mouse hibernation season (November 1 to April 30). Any temporary lighting installed should use downcast LED full-cutoff fixtures that comply with the International Dark-Sky Association's recommendations for outdoor illumination. Shield directing lighting appropriately to minimize light spill off the site. Ensure that lighting does not raise soil temperatures and induce Preble's mice to emerge from hibernation.

POST-CONSTRUCTION:

1. Upon project completion, revegetate all disturbed areas with native shrubs, trees, forbs, and grasses.
 - a. Rip compacted access routes prior to replanting with native vegetation.
 - b. Fill and reseed with weed free material and native seed mixtures.
 - c. Plug willow sprouts to accelerate shrub cover regeneration.
 - d. Consult the Service before finalizing a seed species and plant species list.
2. Bury riprap, then plant with native riparian vegetation.
3. Use fencing to discourage public access into sensitive habitats. Require pedestrians to stay on established trails and pets to be kept on leash. Place signage along recreational trails that are adjacent to Preble's mouse habitat to inform users that the area is undergoing habitat restoration.