U.S. Fish & Wildlife Service
Bay Delta Fish & Wildlife Office
Species Account
SALT MARSH HARVEST MOUSE
Reithrodontomys raviventris

CLASSIFICATION: Endangered
Federal Register 35:16047; October 13, 1970


CRITICAL HABITAT: None designated

RECOVERY PLAN: FINAL
Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California

5-YEAR REVIEW: Completed February 2010. No change recommended.
http://www.fws.gov/ecos/ajax/docs/five_year_review/doc3221.pdf
(853 KB)

DESCRIPTION
The salt marsh harvest mouse (Reithrodontomys raviventris), also known as the "red-bellied harvest mouse," is a small native rodent in the Cricetidae family, which includes field mice, lemmings, muskrats, hamsters and gerbils. There are two subspecies: the northern (R. r. halicoetes) and southern (R. r. raviventris). The northern subspecies lives in the marshes of the San Pablo and Suisun bays, the southern in the marshes of Corte Madera, Richmond and South San Francisco Bay. (See field identification below)

The scientific name Reithrodontomys raviventris means "grooved-toothed mouse with a red belly." Both subspecies do have grooved upper front teeth but generally only the southern subspecies has a cinnamon- or rufous-colored belly.

Salt marsh harvest mice are critically dependent on dense cover and their preferred habitat is pickleweed (Salicornia virginica). Harvest mice are seldom found in cordgrass or alkali bulrush. In marshes with an upper zone of peripheral halophytes (salt-tolerant plants), mice use this vegetation to escape the higher tides, and may even spend a considerable portion of their lives there. Mice also move into the adjoining grasslands during the highest winter tides.

The mice probably live on leaves, seeds and stems of plants. In winter, they seem to prefer fresh green grasses. The rest of the year, they tend toward pickleweed and saltgrass. They have longer intestines than the western harvest mouse, which is a seed eater. The northern subspecies of the salt marsh mouse can drink sea water for long periods but prefers fresh water. The southern subspecies can't subsist on sea water but it actually prefers moderately salty water over fresh.
Although salt marsh harvest mice are active mainly at night, they are sometimes active during daylight hours. They swim very well, in contrast to the western harvest mouse, which is a poor swimmer.

Breeding goes on from spring through autumn. However, each female usually has only one or two litters per year. The average litter size is about four. Nests are quite minimal, often built over old birds' nests. Members of the southern group often don't make a nest at all.

**Field identification:** Both subspecies, particularly the northern one, look very similar to the widely-distributed western harvest mouse (R. megalotis). (Genetic analysis does not support a close ancestral relationship between the two. Instead, genetic data suggest that the salt marsh harvest mouse is most closely related to the plains harvest mouse, R. montanus, a western interior species that does not occur near the central California coast today.)

Field identification is difficult. The underside of the western harvest mouse, including its tail, ranges from white to dark gray. As mentioned above, the belly of the southern salt marsh harvest mouse subspecies tends to be cinnamon- or rufous-colored. The other parts of both species are buff or brown. The backs and ears of the salt marsh mice tend to be darker. Both species have a combined head and body length of around 3 inches and an average weight of less than half an ounce.

**Key Field characters distinguishing between the salt marsh harvest mouse and western harvest mouse.** *(from recovery plan – See above)*

<table>
<thead>
<tr>
<th>Trait</th>
<th>Salt marsh harvest mouse <em>(R. r. raviventris)</em></th>
<th>Northern salt marsh harvest mouse <em>(R. r. halicoetes)</em></th>
<th>Western harvest mouse <em>(R. r. megalotis)</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>tail thickness (20 millimeters from body)</td>
<td>2.1 to 3.0 millimeters (0.083 to 0.118 inch)</td>
<td>2.1 to 3.0 millimeters (0.083 to 0.118 inch)</td>
<td>1.9 to 2.0 millimeters (0.075 to 0.079 inch)</td>
</tr>
<tr>
<td>venter (belly) hair color</td>
<td>rusty-cinnamon</td>
<td>white</td>
<td>white</td>
</tr>
<tr>
<td>tail hair color</td>
<td>unicolor or indistinctly bicolor (typical)</td>
<td>unicolor or indistinctly bicolor (typical)</td>
<td>distinctly bicolor (typically white hairs below)</td>
</tr>
<tr>
<td>average tail:body ratio</td>
<td>94.7 to 105.3</td>
<td>107.0 to 116.8</td>
<td>103.1 to 110.8</td>
</tr>
<tr>
<td>tail tip</td>
<td>heavy, relatively blunt</td>
<td>heavy, relatively blunt</td>
<td>relatively pointed</td>
</tr>
<tr>
<td>pelage (coat)</td>
<td>relatively thick; long hairs</td>
<td>relatively thick; long hairs</td>
<td>relatively thin; short hairs</td>
</tr>
<tr>
<td>activity (during trap, release observation)</td>
<td>relatively placid; infrequent aggressive behavior</td>
<td>relatively placid; infrequent aggressive behavior</td>
<td>relatively active, typical, frequent aggressive behavior</td>
</tr>
<tr>
<td>early morning activity</td>
<td>becomes torpid when cold</td>
<td>no torpidity</td>
<td>no torpidity</td>
</tr>
</tbody>
</table>

**DISTRIBUTION**
The two subspecies are restricted to the salt and brackish marshes of San Francisco, San Pablo, and Suisun Bay areas. The southern subspecies inhabits central and south San Francisco Bay, and has suffered severe habitat loss and fragmentation. Less than 10 percent of its historic habitat acreage remains, and nearly all is deficient in its structural suitability. The northern subspecies, living in the marshes of San Pablo and Suisun bays, has also sustained extensive habitat loss and degradation, but less so than the southern subspecies.
Tidal Marsh Threats

Tidal marsh species occur in a variety of *tidal marsh* habitats where they are limited by the requirements of moisture, *salinity*, topography, soil types, and climatic conditions. Adjacent *uplands* and *ecotone* areas are also crucial habitats for many of these species.

Primary threats to all the listed species include:
- Historical and current habitat loss and fragmentation due to urban development, agriculture, and diking related to duck hunting; altered hydrology and salinity;
- Non-native invasive species
- Inadequate regulatory mechanisms;
- Disturbance
- Contamination
- Sea level rise due to climate change
- Risk of extinction due to vulnerability of small populations in the face of random naturally occurring events.

Of the 193,800 acres of tidal marsh that bordered San Francisco Bay in 1850, about 30,100 remain. This represents an 84 percent reduction. Furthermore, a number of factors influencing remaining tidal marshes limit their habitat values for salt marsh harvest mice.

 REFERENCES FOR ADDITIONAL INFORMATION


