

serviceberry, western thimbleberry, currant, and herbaceous species are consumed. Insects are eaten during summer, as are small bird eggs, neonatal mice, and carrion. Human foods are highly sought. The species enters torpor from late August to November, depending on elevation and latitude. Emergence is in March or April.¹ Population biology is not known from Wyoming. The species is important prey for various mid-sized mammals and raptors. It was the second most frequently taken prey—after red squirrels—by northern goshawks in the Medicine Bow Mountains.⁶

CONSERVATION AND MANAGEMENT: This is not generally considered a species of conservation concern, although the complex pattern of subspecific biogeography admits the possibility of some endemic subspecific forms that are rare, isolated, in decline, or all of these.

NOTES AND REFERENCES

1. Bartels and Thompson (1993).
2. UWMV specimens.
3. Commission Regulations Chapter 52, Section 6.
4. Long (1965).
5. Cork and Kenagy (1989), Bartels and Thompson (1993).
6. Squires (2000).

Yellow-bellied marmot, *Marmota flaviventris*

DESCRIPTION: A “giant” ground squirrel with tan or buff fur, dorsal guard hairs banded or tipped with light color, tending to tan or orange on the underside. The tail is well furred with black and orange hairs, and the pinnae are visible but short. The population in the Teton Mountains has a high incidence of melanism; around 23% of animals are nearly black with lighter facial markings.¹ Several vocalizations are used, all distinctive, communicating different levels and sources of alarm. Visually, marmots are easily identified at a distance with experience, but are challenging for novice observers, being confused with badgers, wolverines, fishers, porcupines, and beavers. The behavior and microhabitat of the species can be strong clues to identity: marmots tend to perch atop large rocks and often stand on their hind legs to scan for predators or peer at intruders. Measurements (**Sex** [n] mean (mm, g), *range*): various counties, L = F [30] 504, 300–630; M [5] 504, 376–714; TL = F [30] 139, 90–186; M [5] 136, 108–180; HF = F [30] 70, 53–81; M [5] 70, 61–75; EFN = F [30] 26, 20–39; M [5] 21, 17–23; WT = M [5] 1560, 671–2079.² Dental formula: 1/1, 0/0, 2/1, 3/3 = 22.

STATUS: A non-protected nongame mammal that is common within its geographic range.³

NOMENCLATURE AND SYSTEMATICS: The genus and species names have been stable for decades; the specific name means “yellow-bellied.” Of the 11 recognized subspecies, three occur in Wyoming: *M. f. luteola* in the Laramie and Medicine Bow Mountains, *M. f. nosophora* in the Uinta, Bighorn, and northwestern mountains, and *M. f. dacota*, the only geographically disjunct subspecies, in the Black Hills and Bear Lodge Mountains.⁴

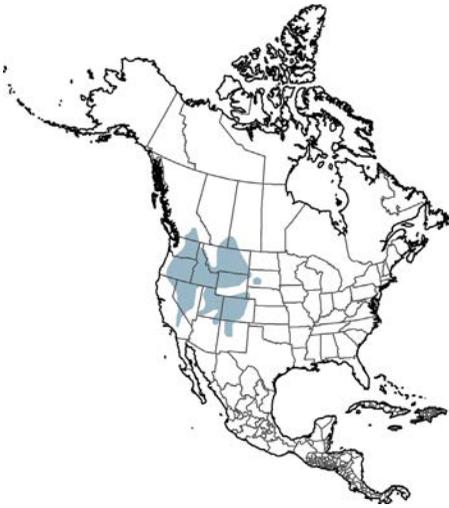
DISTRIBUTION AND HABITAT ASSOCIATIONS: This species of temperate western mountains occurs in montane and alpine habitats statewide. Typical habitat is alpine



Yellow-bellied marmot with typical pelage.



Yellow-bellied marmot with the melanistic pelage common in the Teton Mountains.



Distribution of the yellow-bellied marmot in Wyoming.

tundra or woodland edge with rock outcroppings or talus. Such features protect marmots from excavation by large digging carnivores: bears, badgers, and wolverines. Areas above and below the forest zone are used, as are forest edges, but dense forest and the interiors of woodlands are avoided. In the Great Basin, most of the marmot burrows examined in one study were within the elevation range 2100–3000 m (6900–9900 ft).⁵

ECOLOGY: Yellow-bellied marmots are diurnal, semi-fossorial, seasonally hibernating herbivores. Their annual pattern of activity includes emergence in late April or May, adults emerging before juveniles and males before females. Cessation of aboveground activity occurs from August to September, in roughly the same demographic order. The continuity of hibernation depends on age, with adults able to withstand prolonged torporous fasts, while juveniles must arouse to feed on vegetation when weather conditions and plant phenology allow.⁶ Marmots are generalist feeders, eating plants based on abundance, phenology, and defensive compounds. Most foods are grasses, forbs, or seeds.⁴ Burrows are widely distributed across the home range and vary in function from predator escape to hibernation. Hibernation is believed to be somewhat social, as for other colonial marmots, in that adult males synchronize torpor with adult females, and mothers with offspring. But thermal energetic benefits of co-hibernation do not appear to be a benefit of such synchrony.⁷ The main cause of death during the active season appears to be predation; in southern Colorado predators caused 96% of summer deaths. Predators include various mammals and large raptors of montane or alpine settings, especially coyotes and badgers. In Colorado, martens caused as many deaths as black bears.⁸ Yellow-bellied marmots in Montana were found to be the third most common prey taken by golden eagles.⁹

CONSERVATION AND MANAGEMENT: The species traditionally has not been a conservation concern. However, climate warming is believed to be affecting dates of emergence from hibernation at lower elevations, with animals in Gunnison County, Colorado, emerging 10–16 days earlier in 2003 than they had in early 1990s.⁷ In the same area over the period

1976–1999, the first sighting of a marmot in spring advanced by 23 days.¹⁰ On the other hand, the changing climate may feature more precipitation and longer-duration snowpack at higher elevations, so that emergence times in those areas could be delayed.¹¹ Clearly, the effect of a changing climate on species such as the yellow-bellied marmot is a multifaceted issue, involving possibly opposing forces at various sites within the geographic range.

NOTES AND REFERENCES

1. Armitage (1961). This local anomaly in pelage color was first noted by Olaus Murie in the 1930s (Murie 1934).
2. UWMV specimens for males, KU specimens for females.
3. Commission Regulations Chapter 52, Section 6.
4. Frase and Hoffman (1980).
5. Floyd (2004).
6. Armitage (1991).
7. Blumstein et al. (2004).
8. Armitage (1961), Van Vuren (2001).
9. McGahan (1967).
10. Inouye et al. (2000). This estimate is based on a regression of the date of first sighting of a marmot in the area on year. The corresponding change in temperature at Crested Butte, Colorado, for the period studied was +1.4°C (2.5°F), showing the apparently high sensitivity of yellow-bellied marmots to temperature.
11. van Vuren and Armitage (1991).

Uinta ground squirrel, *Urocitellus armatus*

DESCRIPTION: A medium-sized ground squirrel slightly larger than the Wyoming ground squirrel. Dorsal fur is tan, and the tail is buff-colored, with black on dorsal and ventral surfaces, and pink along the margins.¹ Melanistic animals are rare, but have been reported from near Lyman, Wyoming.² Measurements (**Sex** [n] mean (mm), *range*): Sublette County, L = F [8] 270, 256–284; M [11] 282, 257–308; TL = F [8] 66, 61–72; M [11] 68, 62–74; HF = F [8] 42, 40–43; M [11] 42, 40–45.³ Dental formula: 1/1, 0/0, 2/1, 3/3 = 22.

STATUS: A non-protected nongame mammal, common or abundant within the occupied range.⁴

NOMENCLATURE AND SYSTEMATICS: The species name has been stable for over a century, but the genus name has undergone recurring revision through the same period.⁵ Subspecies have not been designated, although some Idaho populations are isolated on mountain ranges. The zone of contact or area of sympatry with the Wyoming ground squirrel is uncertain with respect to its location, and regarding the extent and depth of any introgression.

DISTRIBUTION AND HABITAT ASSOCIATIONS: This species has a small geographic range. In Wyoming, it occurs in a north–south band along the western border of the state, around 130 km (80 mi) in east–west dimension. Marked genetic structure within the species' range has been linked to volcanic and glacial events during the Pleistocene. In particular, the species is low in genetic variability, consistent with a major volcanic eruption