

Sierra Nevada snowshoe hare, *Lepus americanus tahoensis**Paul W. Collins*

Description: A medium-sized (363-400 mm, TL) cinnamon-brown (summer pelage) rabbit with relatively short ears (76-99 mm); large, hirsute hindfeet (112-132 mm); and a short tail (25-40 mm) (Orr 1933, 1940, 1949). This is the smallest subspecies of snowshoe hare in western North America. The pelage is long, thick, and soft; there are two annual molts. In winter, individuals are more or less uniformly white (Orr 1940). Summer pelage is cinnamon-brown to brownish-black above and white beneath (Orr 1940, Hall 1946). The species is distinguished from *L. townsendii* by its smaller ears (less than 100 mm; slightly longer than the head), and smaller hindfeet (less than 138 mm) (Jameson and Peeters 1988). It is distinguished from *L. a. klamathensis* by its overall darker dorsal summer pelage with a contrasting blackish rump, other details of coloration, and skull proportions (see Orr 1933, 1940).

Taxonomic Remarks: The Sierra Nevada snowshoe hare was first described as a subspecies of *L. washingtonii* (Orr 1933) and later as a subspecies of *L. americanus* by Dalquest (1942).

Distribution: Sierra Nevada snowshoe hares inhabit the mid-elevations of the northern and central Sierra Nevada from approximately Mount Lassen in southeastern Shasta County south through Yosemite National Park to Mono and Mariposa counties. They have also been recorded from Nevada in the general vicinity of Lake Tahoe (Hall 1946, Richardson 1954). The southern locality is north of Mammoth (Mono County: CSUH 2593). The elevational range is from 4,800 ft at Mineral (Tehama County: MVZ 35017) to approximately 7,000 ft near Donner Summit (Placer County: MVZ 20860). *L. t. tahoensis* typically occurs below 8,000 ft; however, its upper elevational limits are unknown. There are a number of apparent sightings from Yosemite National Park (NPS unpubl. data) at localities above 8,000 ft, although these have not been verified.

Life History: There is some anecdotal information on the natural history of the Sierra Nevada snowshoe hare (Grinnell et al. 1930, Orr 1940), but most of the information presented here is based on the literature of *Lepus americanus* (Keith 1981, Bittner and Rongstad 1982, Flux and Angermann 1990). Snowshoe hares are secretive, and usually observed when flushed. They typically spend the day in forms under evergreen bushes, dense thickets of willows, logs, or jumbled piles of fallen trees or shrubs (Bailey 1936). Snowshoe hares are active year-round and are most active at night and early morning, moving via runways to reach feeding areas (Flux and Angermann 1990). They seldom venture into open spaces or mature closed canopy conifer forests. Breeding occurs from early spring to late summer; litter size ranges from two to seven young, with an average of approximately three (Orr 1940, Zeiner et al. 1990). Two litters are produced annually, sometimes three (Keith 1981), usually in the female's second summer. Grinnell et al. (1930) and Orr (1940) reported embryo counts from three to five in Sierra Nevada snowshoe hares. Snowshoe hares in the southern range have smaller litters than those in the northern range (Keith et al. 1966). Pregnant females of *L. a. tahoensis* have been reported between May 7 and July 22; young have been observed from mid-June through mid-July (Grinnell et al. 1930, Orr 1940).

Snowshoe hares can show dramatic population fluctuations with a cycle of eight to ten years (Keith 1981). However, populations that occupy fragmented habitat in mountainous terrain such as *L. a. tahoensis* may not show dramatic population fluctuations (Keith 1981, Wolff 1981). Wolff (1981) attributed this to the high mortality of dispersing hares from preferred habitat into suboptimal and marginal habitats.

Densities range from 0.1 per ha to 11-23 per ha (Keith and Windberg 1978). Snowshoe hares spend

their lives in relatively small home ranges. Home ranges of snowshoe hares vary from 9.9 to 24.7 acres (4.0 to 10.0 ha) averaging 12.3 to 14.8 acres (5 to 6 ha) (O'Farrell 1965).

In the summer, snowshoe hares feed on various green succulent plants, grasses, sedges, ferns, and forbs (Bittner and Rongstad 1982). In the winter, their diet changes to bark and twigs of conifers, evergreen shrubs, and deciduous trees such as aspen (*Populus*), alder (*Alnus*), and willow (*Salix*) (Orr 1940, Ingles 1965). Primary predators of hares in the western United States are bobcats (*Lynx rufus*), red foxes (*Vulpes vulpes*), coyotes (*Canis latrans*), and several species of hawks and owls (Wolff 1981). Predators of *L. a. tahoensis* probably include bobcats (*Lynx rufus*), pine martens (*Martes americana*), long-tailed weasels (*Mustela frenata*), red foxes (*Vulpes vulpes*), coyotes (*Canis latrans*), mountain lions (*Felis concolor*) and great horned owls (*Bubo virginianus*). Hunting by humans is an additional mortality factor.

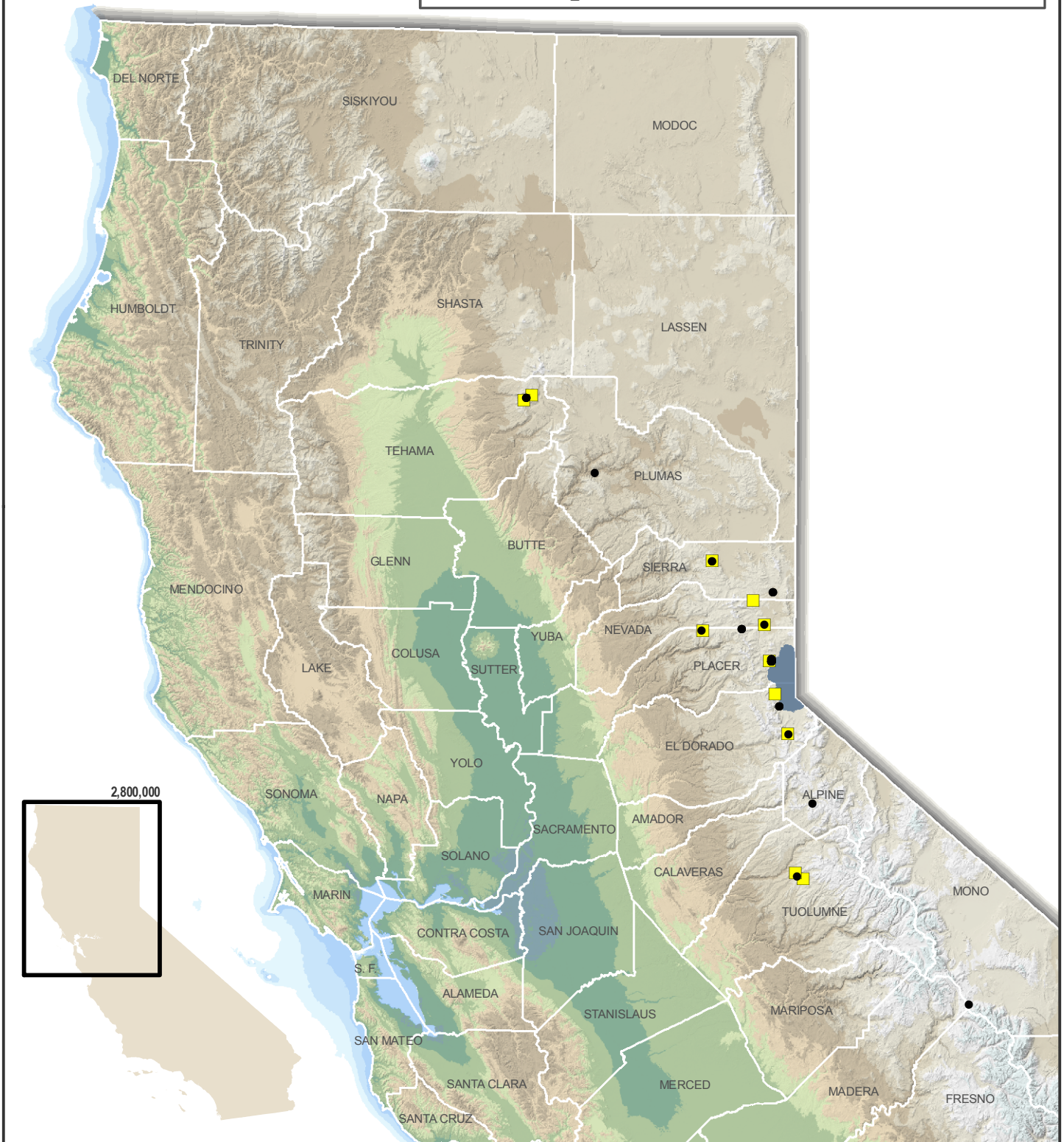
Habitat: In California, snowshoe hares are generally found above the Yellow Pine zone in Canadian and Hudsonian associations (Grinnell 1933), in an ecologic niche within the boreal life zone which is the high mountain counterpart to the riparian/brush community inhabited at lower elevations by the brush rabbit (Orr 1940). The Sierra Nevada snowshoe hare occurs in riparian communities characterized by thickets of deciduous trees and shrubs such as willows and alders (Grinnell 1933, Orr 1940, Williams 1986). In the vicinity of Lake Tahoe, it was reported in dense deciduous streamside vegetation, forest undergrowth, dense thickets of young conifers, especially firs where the branches droop to the ground, and patches of chaparral composed of *Ceanothus* and manzanita (*Arctostaphylos*) (Orr 1940, 1949; Hall 1946). During the summer, snowshoe hares in the Lake Tahoe area are associated with brush situated close to meadows or deciduous riparian vegetation rather than on ridgetops or brush-covered upper slopes (Orr 1940). In the Mount Lassen region, Grinnell et al. (1930) reported that snowshoe hares were uncommon, being infrequently encountered "among snow-brush thickets and small firs and in or near thickets of alders or willows in meadows."

Status: Class II. The population status of the Sierra Nevada snowshoe hare is poorly known. Its distribution is patchy, with populations common in some areas of the Sierra Nevada, especially in willow/alder riparian habitat. The subspecies is vulnerable to loss and degradation of riparian habitat due to logging activities, grazing, wildfires, conversion for agricultural, recreational or urban uses, and any other activities that remove or alter areas of brushy cover. It is a small game species and hunted from July 1 through the last Sunday in January with a bag limit of five per day or five in possession. Some are probably taken by hunters out of season because they are difficult to distinguish from white-tailed jackrabbits (which have no season or bag limit in California). The overall effect of hunting on fragmented populations of *L. a. tahoensis* in California is unknown, but is probably not a significant factor contributing to mortality rates in this taxon. The principal threats to the Sierra Nevada snowshoe hare come from destruction or alteration of habitat from logging activities, human settlements, and grazing activities.

Management Recommendations: The highest priority is for field studies on its current distribution, abundance, population status, habitat requirements, and numbers being harvested annually by hunters in California. The natural history of *L. a. tahoensis* is not well-known, especially its breeding biology, demographics, dispersal capabilities, and food habits. These data would improve the evaluation of current hunting quotas, and are essential to the development of long-term conservation and management measures. Finally, State and Federal resource management agencies in California should consider the habitat requirements of *L. a. tahoensis* in evaluating grazing, timber harvest, and controlled burns proposed for lands that they manage. Protection of brush and alder/willow riparian habitats within the range of the Sierra Nevada snowshoe hare is probably the most important element to ensuring their survival.

SIERRA NEVADA SNOWSHOE HARE

Lepus americanus tahoensis



- Locations verified by authors
(captures, observations, museum records)

■ CNDDDB 1978 and before