

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Animal Abstract

Element Code: AMAFH01014

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CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Zapus hudsonius luteus* Miller

COMMON NAME: New Mexican jumping mouse, New Mexican meadow jumping mouse, meadow jumping mouse

SYNONYMS: *Zapus princeps*

FAMILY: Zapodidae

AUTHOR, PLACE OF PUBLICATION: Miller, Proc. Biol. Soc. Washington, 24:253, 1911.

TYPE LOCALITY: Española, 5,000 feet, Rio Arriba County, New Mexico.

TYPE SPECIMEN: HT: USNM-133601.

TAXONOMIC UNIQUENESS: Family is holarctic in distribution and has two genera *Zapus* and *Neozapus*. Three species of *Zapus* in northern North America with one isolated population of one species in Arizona, *Z. hudsonius*. There are 12 subspecies of *Z. hudsonius* in North America, only one in Arizona. The subspecies *luteus* formerly listed under *Zapus princeps*. Wilson and Reeder (2005) considers *Z. h. luteus* a synonym of *Z. h. hudsonius*, based on Hafner et al. (1981) and Hall (1981). Recent genetic study conducted by Dr. Frey (2007) out of the Museum of Southwest Biology, University of New Mexico, indicates that *Z. h. luteus* is a distinct species from the rest of the *Zapus hudsonius* subspecies.

DESCRIPTION: A jumping mouse recognized for its extremely long tail and long hind feet. The hind legs (with 5 toes) are much longer than the delicate forelegs (with 4 toes), and the tail is attenuate, sub-cylindrical and longer than the body. For the species, the total length is 18.0-23.4 cm (7.1-9.2 in), length of tail is 10.1-13.7 cm (3.98-5.39 in), and the weight is 12-30 g (0.423-1.058 oz), which varies with the season (Wilson and Ruff, 1999). Hind feet are long, measuring 2.8-3.5 cm (1.1-1.4 in) (Whitaker 1972; Smith 1999). The general pelage is coarse with broad dorsal band of brown or yellowish brown darkened with brownish black hairs. The sides are paler, under parts white or sometimes suffused with yellowish color. The back of the forefeet and hind feet is grayish white, while the sparsely haired tail is distinctly bicolor (dark brown above and yellowish white below). They have a small, narrow, and relatively high crowned head, with a short and pointed nose. The upper lip has a median groove. Their eyes are small, located midway between ears and nose; ear dark with narrow pale edge and somewhat longer than surrounding hair. They have 8 teats: 2 pectoral, 4 abdominal, and 2 inguinal; Smith (1999) reports 4 inguinal, 1 pectoral, and 1 abdominal for

the species. The condylobasal length of the skull is less than 21 mm. Maxillary toothrow is less than 3.7 mm, incisive foramina shorter than 4.6 mm, baculum shorter than 5.1 mm (Hoffmeister 1986). They are the only mammal with eighteen teeth.

AIDS TO IDENTIFICATION: *Zapus*, with a bicolored tail and four molariform teeth, differs from *Napaeozapus* (the only other North American genus in the family) which has a white-tipped tail and only three molariform teeth. *Z. hudsonius* is smaller, has a narrower skull in proportion to its length, smaller premolars, and a shorter toothrow than other species of *Zapus*. According to Hafner et al. (1981), *Z. h. luteus* is distinguished from *Z. p. princeps* by the paler pelage of *luteus*, a less distinct dorsal band and a more ochraceous coloration. *Z. h. luteus* also lacks the white ear fringe of *Z. p. princeps*.

ILLUSTRATIONS:

Line drawing-skull (Hoffmeister 1986: Fig. 5.240)

Black and white photo (Whitaker 1972: Fig. 1)

Line drawings (Whitaker 1972: Fig. 2)

Color photos of species and tracks (*In*

http://animaldiversity.ummz.umich.edu/site/accounts/information/Zapus_hudsonius.html)

Color photos (in Frey Biological Research website accessed 2/28/2011 from

<http://freybiologicalresearch.com>)

TOTAL RANGE: *Z. h. luteus* ranges through portions of New Mexico, eastern Arizona, and southern Colorado. In New Mexico, they have been found in the San Juan Mountains, Sangre de Cristo Mountains, Jemez Mountains, Sacramento Mountains, Rio Grande Valley, and lower Rio Chama Valley. In Arizona, populations occupy the White Mountains in southern Apache County, and in northern Greenlee County.

RANGE WITHIN ARIZONA: White Mountains of eastern Arizona, in southern Apache and northern Greenlee counties.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: The New Mexico meadow jumping mouse nests in dry soils, but uses moist, streamside, riparian soils to hunt in at night, making the range long and narrow (often as long as 150 m) along permanent running water. The mouse is active only during the growing season for the grasses and forbs on which it depends. They are generally nocturnal, but occasionally diurnal. After the growing season, during which the mouse puts on a lot of fat, hibernation occurs. Preparation for hibernation (weight gain, nest building) seems to be triggered by day length. *Zapus hudsonius luteus* hibernates for as long or longer, than most other mammals. Home ranges for the species vary between 0.15 and 1.1 hectares and may overlap (Smith 1999). They are generally very quiet, however some vocalization has been recorded. The sound was something like rubbing a "cloth over a damp glass. cho...cho..." They have a keen sense of smell and probably use scent to communicate as well. They are

great swimmers and diggers, and can also climb. The longest known lifespan of this species in the wild is 3 years, with an average lifespan <1 year. Longest known lifespan in captivity was 5 years (Smith 1999).

These mice are docile creatures, seldom attempting to bite even when roughly handled. A freeze reaction is the main startle response, which is apparently their primary defense against predators. They are generally solitary animals. However, if two or more are in the same locality, they are not antagonistic toward each other, apparently offering very little defense in the face of a foe. Adults typically make jumps of about a foot at a time, but when startled, are capable of 2-3 foot leaps. Known predators include great horned owls, screech owls, red-tailed hawks, weasels, and foxes (Smith 1999).

REPRODUCTION: Females breed shortly after emerging from hibernation (about 1 to 2 weeks after the males emerge) and may give birth to 2-7 young after an average 19 day gestation. One litter is produced each year, usually between May and September. Neonates are born naked, pink, blind, clawless, and deaf, but squeak audibly at birth. Young are fully developed and weaned at four weeks (Van Pelt 1993). Female jumping mice from other parts of the country may produce two litters per year, of 2-9 (usually 5-6) young. The female provides all the care for their young, until they are weaned and independent. Females born in the spring are sexually reproductive at 2 months of age.

FOOD HABITS: Their diet consists of insects, seeds, snails, slugs, and fruits (Van Pelt 1993).

HABITAT: Moist meadows near streams with willow or alder in the Canadian and Transition life zones; moist grassland is preferred, and heavily wooded areas are avoided. Prefer habitats with permanent running water, and moist to dry soils (Van Pelt 1993). According to Whitaker (1992, in NatureServe, 2010), in New Mexico, *Z.h. luteus* select habitats in the Jemez and Sacramento mountains that included sedge-forb-willow zones along permanent streams; large wet meadows in river floodplains in the Rio Grande Valley; and on the Bosque del Apache NWR, preferred narrow riparian zones along irrigation ditches. Moist riparian zones with tall, dense sedges provides suitable habitat in many areas, while the presence of beavers is useful in maintain habitat (New Mexico Dept. Game & Fish 2008, in NatureServe 2011).

ELEVATION: Historically, they ranged from 6,500 – 9,430 ft (1983–2876 m); currently they range from 6,600 to 8,880 ft (2012-2707 m). (unpublished data, HDMS, Arizona Game and Fish Department, 2011).

PLANT COMMUNITY: Occupied plant communities are dominated by grasses and forbs, with some willow, alder and rose. Grasses include scratch grass, fescue, salt grass, red top, bluegrass, manna, etc. Forbs include clover, yarrow, field mint, sunflower, daisy, plantain, etc. (Morrison 1990).

POPULATION TRENDS: Declining throughout their limited range.

SPECIES PROTECTION AND CONSERVATION

- ENDANGERED SPECIES ACT STATUS:** LE (USDI, FWS 2014) with Proposed CH [USDI, FWS 2007]
[C USDI, FWS 2008-2011]
[No status USDI, FWS 1996]
[C2 USDI, FWS 1989]
- STATE STATUS:** 1A (AGFD SWAP 2012)
[WSC, AGFD, WSCA in prep]
[LT AGFD, TNW 1989]
- OTHER STATUS:** Forest Service Sensitive (USDA, FS Region 3 1999, 2007, 2013)
- MANAGEMENT FACTORS:** Thick vegetation found along waterways in the White and Mogollon mountains should be maintained. Additional areas where suitable habitat has been lost should be restored. Educate public about beneficial role the meadow jumping mouse plays in alpine meadow ecosystems (Van Pelt 1993).
- PROTECTIVE MEASURES TAKEN:** Listed as endangered throughout its range with proposed critical habitat in 2014.
- SUGGESTED PROJECTS:** Intensive distribution and monitoring surveys needed in known habitat, and historical locations. Protection of habitat from erosion and excessive grazing need to be considered, and possibly implemented as management scheme. Evaluations should be implemented on any high elevation moist riparian grass-sedge alteration, drainage, or destruction projects.
- LAND MANAGEMENT/OWNERSHIP:** BIA – Fort Apache Reservation (White Mountains Apache Tribe); USFS - Apache-Sitgreaves National Forest; AGFD – Black River Lands; Phelps Cabin Research Natural Area; Private.

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION:

Confusion as to the identity of these animals in Arizona and New Mexico existed for many years. Genetic and morphometric studies culminated in 1981 to provide a clearer understanding of the taxonomy and consequently the biogeography of the Arizona and New Mexico populations, which were formerly thought to be *Z. princeps*.

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