

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

Animal Abstract

Element Code: AMAFH01014

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Zapus hudsonius luteus* Miller

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

SYNONYMS:

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* was formerly listed under *Zapus princeps*.

DESCRIPTION: A jumping mouse that is 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 187-255 mm (7.4-10 in), the tail is 108-155 mm (4.25-6 in), hind feet 28-35 mm (1-1.4 in) long, and the weight is 3/8-1 oz (13-28 g) and varies substantially with the season. (Whitaker 1972; Smith 1999). The general pelage is coarse with broad dorsal band of brown or yellowish brown darkened with brownish black hairs; sides 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). The head is small, narrow, and relatively high crowned. The nose is short and pointed. The eyes are small and midway between ears and nose; ear dark with narrow pale edge and somewhat longer than surrounding hair. The upper lip has a median groove. There are 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, bacculum 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)

TOTAL RANGE: *Z. h. luteus* is found in New Mexico from the Sacramento Mountains, Otero County to the San Juan Mountains, Rio Arriba County, and the Sangre de Cristo Mountains, and the Jemez Mountains. In Arizona it is found in the White Mountains, southern Apache County, and in northern Greenlee County. Arizona and New Mexico populations are removed by at least 310 miles from the nearest populations in northern Colorado (Van Pelt 1993).

RANGE WITHIN ARIZONA: White Mountains, southern Apache and northern Greenlee counties (Hoffmeister 1986).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: The Mexican 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). It is 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) 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 2 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. Permanent running water, moist to dry soils (Van Pelt 1993).

ELEVATION: 6,500 – 9,430 ft (1983–2876 m), based on unpublished records in the HDMS (AGFD, 2005).

PLANT COMMUNITY: 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: Unknown.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1996)
[C2 USDI, FWS 1989]

STATE STATUS: WSC (AGFD, WSCA in prep)
[LT AGFD, TNW 1989]

OTHER STATUS: Forest Service Sensitive (USDA, FS Region
3 1999)

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 1986). Although the species is not currently threatened, local populations may be affected by changes in land use and habitat destruction.

PROTECTIVE MEASURES TAKEN:

SUGGESTED PROJECTS: Protection of habitat from erosion and grazing. Evaluation of any high-elevation moist riparian grass-sedge alteration, drainage, or destruction projects. Studies on distribution, habitat requirements, life history, and grazing impacts are needed (AGFD 1988).

LAND MANAGEMENT/OWNERSHIP: BIA – Fort Apache Reservation; USFS - Apache-Sitgreaves National Forest; AGFD – Black River Lands; Phelps Cabin Research Natural Area; Private.

SOURCES OF FURTHER INFORMATION**REFERENCES:**

- Arizona Game and Fish Department. 1988. Threatened native wildlife in Arizona. Arizona Game and Fish Department Publication. Phoenix, Arizona. 32pp.
- Arizona Game and Fish Department. In prep. Wildlife of special concern in Arizona. Arizona Game and Fish Department Publication. Phoenix, Arizona. 32 pp.
- Berkeley Natural History Museum. Available: http://elib.cs.berkeley.edu/cgi-bin/mvz_query?CatNum_CollCde=61317Mamm.
- BISON. Available: http://fwie.fw.vt.edu/states/nmex_main/species/050410.htm.
- Cockrum, E.L. 1960. The recent mammals of Arizona: their taxonomy and distribution. The University of Arizona Press. Tucson, Arizona. P. 214.
- Colorado GAP. Available: <http://ndis1.nrel.colostate.edu/cogap...>
- ENature.com. Web abstract: Meadow Jumping Mouse. Accessed 3/23/2005 at <http://www.enature.com/fieldguide/showSpeciesRECNUM.asp?recNum=MA0100>.
- Hafner, D.J., K.E. Petersen, and T.L. Yates. 1981. Evolutionary relationships of jumping mice (genus *Zapus*) of the southwestern United States. *J. Mamm.* 62(3): 501-512.
- Hall, E.R. 1981. The mammals of North America, second edition. John Wiley & Sons, Inc. New York, New York. Pp. 844-845.
- Hoffmeister, D.F. 1986. Mammals of Arizona. The University of Arizona Press. Tucson, Arizona. P. 453.
- Integrated Taxonomic Information System (ITIS). Retrieved 3/23/2005 from ITIS, <http://www.itis.usda.gov>.
- Krutsch, P.H. 1954. North American jumping mice (genus *Zapus*). *University of Kansas Publ., Mus. Nat. Hist.* 7: 349-472.
- Morrison, J.L. 1992. Persistence of the Meadow Jumping Mouse, *Zapus hudsonius luteus* in New Mexico. *The Southwestern Naturalist*. Volume 37, Number 3. Pp: 308-311.

- Morrison, J.L. 1991. Distribution and status of the meadow jumping mouse, *Zapus hudsonius luteus* on the Apache-Sitgreaves National Forest, 1991. Unpublished report for the U.S. Forest Service, Apache-Sitgreaves National Forest.
- Morrison, J.L. 1990. "The Meadow Jumping Mouse in New Mexico: Habitat Preferences and Management recommendations." Managing Wildlife in the Southwest. Proceedings of the symposium. Edited by P.R. Krausman and N.S. Smith. Arizona chapter of The Wildlife Society.
- Morrison, J.L. 1989. Distribution, population status, life history and habitat affinities of the meadow jumping mouse, *Zapus hudsonius luteus* in the Sacramento Mountains, New Mexico. Unpublished report for the U.S. Forest Service, Lincoln National Forest, New Mexico.
- Morrison, J.L. 1987. A study of the active season ecology, population dynamics and habitat affinities of a known population of the meadow jumping mouse, *Zapus hudsonius luteus* in Northern New Mexico. Unpublished report for the New Mexico Department of Game and Fish.
- Morrison, J.L. 1985. The distribution of the meadow jumping mouse, *Zapus hudsonius luteus* in the Jemez Mountains, New Mexico. Unpublished report for the New Mexico Department of Game and Fish.
- NatureServe. 2005. NatureServe Explorer: An online encyclopedia of life [web application]. Version 4.2. Arlington, Virginia, USA: NatureServe. Available: <http://www.natureserve.org/explorer>. (Accessed: February 16, 2005).
- Smith, J. 1999. "*Zapus hudsonius*" (On-line), Animal Diversity Web. Accessed March 23, 2005 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Zapus_hudsonius.html.
- USDA, Forest Service Region 3. 1999. Regional Forester's Sensitive Species List.
- USDI, Fish and Wildlife Service. 1989. Endangered and Threatened Wildlife and Plants; Animal Notice of Review. Federal Register 54(4): 563.
- USDI, Fish and Wildlife Service. 1996. Endangered and Threatened Wildlife and Plants: Review of Plant and Animal Taxa that are Candidates for Listing as Endangered or Threatened Species. Federal Register 61(40): 7596-7613.
- Van Pelt, B. 1993. Meadow Jumping Mouse. Wildlife Views. November. Pp. 8.
- Whitaker, J.O., Jr. 1972. *Zapus hudsonius*. Mammalian species. No.11. The American Society of Mammalogists. Pp. 1-7.
- Wilson, D.E., and S. Ruff. 1999. The Smithsonian Book of North American Mammals. Smithsonian Institution Press. Washington D.C. Pp. 668-669.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

- D.F. Hoffmeister – Professor Emeritus, University of Illinois, Urbana.
J.L. Morrison - New Mexico Department of Game and Fish, Albuquerque.
Bill Van Pelt - Arizona Game and Fish Department, Phoenix, Arizona.

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*.

Revised: 1992-01-08 (JSP)
1993-02-19 (DBI)
1997-03-04 (SMS)
1999-07-08 (DAS)
2005-02-25 (AMS)
2005-03-24 (SMS)

To the user of this abstract: you may use the entire abstract or any part of it. We do request, however, that if you make use of this abstract in plans, reports, publications, etc. that you credit the Arizona Game and Fish Department. Please use the following citation:

Arizona Game and Fish Department. 20XX (= **year of last revision as indicated at end of abstract**). X...X (= **taxon of animal or plant**). Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. X pp.