

ARIZONA GAME AND FISH DEPARTMENT  
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract

Element Code: AMABA05020

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

**NAME:** *Notiosorex cockrumi*  
**COMMON NAME:** Cockrum's Desert Shrew  
**SYNONYMS:** None  
**OTHER COMMON NAMES:** Cockrum's Gray Shrew  
**FAMILY:** Soricidae

**AUTHOR, PLACE OF PUBLICATION:** R. J. Baker, M. B. O'Neill, and R. L. McAliley. 2003. Museum of Texas Tech University Occasional Papers. 222:1-12.

**TYPE LOCALITY:** Leslie Canyon National Wildlife Refuge, Cochise County, Arizona. T21S, R28E, Section 20 NE ¼.

**TYPE SPECIMEN:** TTU-100000, skin, skull, postcranial skeleton, and frozen tissues.

**TAXONOMIC UNIQUENESS:** in arid areas of northern Mexico and the southwestern United States. *Notiosorex* is comprised of four recognized species (*N. crawfordi*, *N. cockrumi*, *N. villai*, and *N. evotis*), which are difficult or impossible to distinguish morphologically. Results of molecular phylogeny support the existence of a fifth species, *Notiosorex tataticuli*, west of the Colorado River (Camargo and Álvarez-Castañeda 2020). *N. cockrumi* and *N. crawfordi* are only distinguishable genetically.

**DESCRIPTION:** A small shrew, ranging from 78-86 mm (3.07-3.39 in) in length and 2.9-6.3 g (0.11-0.21 oz) in mass, upperparts lead grey, underparts paler gray. Conspicuous ears, tail more than twice as long as hind foot. Scent glands on flanks. Dental formula: I 3/2, C 1/0, Pm 1/1, M 3/3. Anterior teeth are slightly pigmented in labial view. From lingual view, both upper molars are nonpigmented. Three upper uni-cuspid teeth are diagnostic of the genus in North America. The socket of first lower incisor extends below the paraconid first molar. Deeply emarginated area between condylar processes (Carraway 2010, Carmargo and Álvarez-Castañeda 2020).

**AIDS TO IDENTIFICATION:** External morphology is highly conservative within the genus, Thus, identification to species is difficult or impossible in the field. *Notiosorex cockrumi* can only be distinguished from *N. crawfordi* through genetic analysis, and from *N. tataticuli* by genetic analysis or distribution, as *N. taticuli* occurs only west of the Colorado River. Individuals of *N. cockrumi* are smaller than individuals of *N. evotis* or *N. villai*, though examination of skull morphology and application of discriminant equations are generally

needed for identification. Can be distinguished from *N. villai* by the roof of the glenoid fossa extending laterally from cranium when the skull is viewed from the dorsal aspect in *N. cockrumi*. Can be distinguished from *N. evotis* by height of coronoid process (3.7-4.3mm in *N. cockrumi*) and articular condyle (2.7-3.0 mm in *N. cockrumi*) (Carraway 2010).

**ILLUSTRATIONS:** Black and white drawing of holotype skull (Baker et al. 2003, fig 2.)

**TOTAL RANGE:** Known from southeastern and south-central Arizona to central Sonora, Mexico. However, because DNA data are available from so few individuals from throughout the range of *N. crawfordi*, the range of *N. cockrumi* cannot be fully characterized. Both *N. cockrumi* and *N. crawfordi* are considered sympatric over a substantial area of southeastern Arizona making it difficult to distinguish each species' full range (Camargo and Álvarez-Castañeda 2020).

**RANGE WITHIN ARIZONA:** Known from Cienega Creek Natural Preserve, Pima County, and Leslie Canyon National Wildlife Refuge, Cochise County. See "Total Range" for discussion of range uncertainty.

### **SPECIES BIOLOGY AND POPULATION TRENDS**

**BIOLOGY:** Unknown, believed to be similar to *N. crawfordi*: Nocturnal with poor vision, using sense of smell and hearing to hunt prey. Food is stored to avoid daytime activity, as water conservation is imperative for such a small desert animal. Water is also retained in *N. crawfordi* by cooling air during exhalation, condensing water vapor in the nasal passages. A lower resting metabolic rate compared to other shrews, and concentration of urine also decreases water loss. Life expectancy is about a year in the wild (University of Michigan 2020).

**REPRODUCTION:** Unknown, believed to be similar to *N. crawfordi*: Reaching sexual maturity at approximately two months, and capable of having more than one litter a year if conditions are favorable. Litters consist of 3 to 5 young, born hairless and blind. Young nurse, then are fed regurgitated food before beginning to hunt. Young reach adult size in four to five weeks. Breeding season lasts from spring into the fall months, potentially as late as November (Texas Tech University 2020).

**FOOD HABITS:** Unknown, believed to be similar to *N. crawfordi*: Insectivorous and carnivorous. Captive *N. crawfordi* shrews eat about 75% of their body weight each day. Main prey are insects, insect larvae, and arachnids, with small mammals, lizards, and birds taken opportunistically. *N. crawfordi* is common near water and is known to drink, but captive individuals have been able to subsist upon water obtained from prey. Prey may be paralyzed by crushing the base of the skull or the legs, keeping prey alive to avoid desiccation while storing prey items (University of Michigan 2020).

**HABITAT:** Unknown, further study is needed. Habitat of *N. crawfordi* varies widely.

**ELEVATION:** Elevation range extent unknown. Known specimens in Arizona have been collected from 3,360 – 5,320 feet (1024 – 1621 m).

**PLANT COMMUNITY:** Unknown.

**POPULATION TRENDS:** Unknown.

### **SPECIES PROTECTION AND CONSERVATION**

**ENDANGERED SPECIES ACT STATUS:** None  
**STATE STATUS:** 2 (AZGFD, AWCS 2022)  
[1B (AGFD SWAP 2012)]  
**OTHER STATUS:** None

**MANAGEMENT FACTORS:**

**PROTECTIVE MEASURES TAKEN:**

**SUGGESTED PROJECTS:** Research needed on habitat preferences, population status, distribution, reproduction, dispersal, and occurrence of interbreeding with *N. crawfordi* (McAliley et al. 2007). Continued surveying is needed to better understand this species' geographic range and biology.

**LAND MANAGEMENT/OWNERSHIP:** Known specimens: Pima County – Cienega Creek Natural Preserve; USFWS – Leslie Canyon NWR; Private.

### **SOURCES OF FURTHER INFORMATION**

#### **LITERATURE CITATIONS:**

Arizona Game and Fish Department. 2012. Arizona's State Wildlife Action Plan 2012-2022. Phoenix, AZ.

Arizona Game and Fish Department. 2022. Arizona Wildlife Conservation Strategy: 2022-2032. Arizona Game and Fish Department, Phoenix, Arizona. 378 pages.

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Camargo, I. and Álvarez-Castañeda, S.T., 2020. A new species and three subspecies of the desert shrew (*Notiosorex*) from the Baja California peninsula and California. *Journal of Mammalogy*.

Carraway, L.N. 2010. Fossil history of *Notiosorex* (Soricomorpha: Soricidae) shrews with descriptions of new fossil species. *Western North American Naturalist*. 70:2:2 pp. 144-163.

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Texas Tech University. 2020. Mammals of Texas Online Edition. Crawford's Desert Shrew *Notiosorex crawfordi* (Coues 1877). [https://www.depts.ttu.edu/nsrl/mammals-of-texas-online-edition/Accounts\\_Soricomorpha/Notiosorex\\_crawfordi.php](https://www.depts.ttu.edu/nsrl/mammals-of-texas-online-edition/Accounts_Soricomorpha/Notiosorex_crawfordi.php). Accessed 10/23/2020.

University of Michigan. 2020. Animal Diversity Web. *Notiosorex crawfordi*. [https://animaldiversity.org/accounts/Notiosorex\\_crawfordi/](https://animaldiversity.org/accounts/Notiosorex_crawfordi/) Accessed 10/23/2020.

#### MAJOR KNOWLEDGEABLE INDIVIDUALS:

#### ADDITIONAL INFORMATION:

**Revised:** 2020-10-23 (KSL)  
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