



ARIZONA GAME AND FISH DEPARTMENT  
HERITAGE DATA MANAGEMENT SYSTEM

Invertebrate Abstract

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**CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE**

**NAME:** *Discus shimekii cockerelli* H.A. Pilsbry  
**COMMON NAME:** Cockerell's Striate Disc (Snail)  
**SYNONYMS:** *Discus shimekii* (Pils.) Baker, *Discus shimeki cockerelli*, *Pyramidula cockerelli*, *Zonites shimeki*, *Gonyodiscus shimeki*  
**FAMILY:** Discidae

**AUTHOR, PLACE OF PUBLICATION:** *Discus shimekii cockerelli* H.A. Pilsbry, 1898.85.  
*D. shimeki* H.A. Pilsbry, May 1890, Nautilus, 4:3 (as *Zonites*); Proc. Acad. Nat. Sci. Phila., 42:297, pl. 5, figs. 9-11. *Discus shimekii* (Pils.) H.B. Baker, 1934, Nautilus, 48:71.

**TYPE LOCALITY:** *D. s. cockerelli* Saguache County, Colorado.  
*D. shimekii* Iowa City, Iowa.

**TYPE SPECIMEN:** *D. s. cockerelli*, Type: A.N.S.P. – 73671. Pilsbry.  
*D. shimekii*, A.N.S.P. – 12297. Shimek.

**TAXONOMIC UNIQUENESS:** “Pilsbry (1948:598-622) recognizes nine species, of which two only occur in the Southwestern Province” (Bequaert and Miller 1973).

*D. shimekii* should be tracked as species but perhaps not at subspecies level. “It thus appears that the subspecies *cockerelli* is scarcely recognizable, as B. Shimek concluded long ago” [p.58] and “*Pyramidula cockerelli*, based on recent shells, is not separable as a subspecies from nominate fossil *shimekii*” ([p.151] Bequaert and Miller 1973). Along with Shimek (1901), and Bequaert and Miller (1973), Frest and Johannes (1993) also conclude that the ssp. *cockerelli* is not distinguishable from the nominate form (NatureServe 2003).

**DESCRIPTION:** *D. s. cockerelli* “differs from typical *shimekii* by the more depressed shape and slightly wider umbilicus, contained 3.6 to 3.9 times in the diameter. Also by having the regular rib-striation less developed, being often restricted to only a part of the third whorl, or even wanting, replaced by rather irregular incremental wrinkles. The shell is flat, helicoid and is yellowish brown. The umbilicus is large. Height 3.1-4 mm, diameter 6-6.9 mm, 5.5 whorls” (Pilsbry 1948).

Stylommatophorans snout is greatly reduced and is separated from sole by indistinct cleft without a proboscis. The jaw is either absent or is a single plate derived from fused lateral

plates. The salivary glands are present with ducts. The eyes are closed vesicles with a lens. And the eye is at the tip of a more or less elongate, retractile, and invaginable cephalic tentacle. The adult operculum is absent.

**AIDS TO IDENTIFICATION:** The species *D. shimekii* differs from the *D. cronkhitei* group by its smoother base, which is only lightly striate, not rib-striate; the upper surface, after the smooth and rather projecting apex, being rib-striate, the ribs weaker on the last whorl. (Pilsbry 1948).

**ILLUSTRATIONS:** B&W line drawing of shell (Pilsbry 1948: 618).

**TOTAL RANGE:** The subspecies ranges from Taos County, New Mexico, Custer and Saguaro counties, Colorado, Kane County, Utah, and Coconino and Cochise counties, Arizona.

**RANGE WITHIN ARIZONA:** Carr Canyon in the Huachuca Mountains, Cochise County; Agassiz Peak on San Francisco Mountain, and Navajo Mountain, Coconino County.

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

**BIOLOGY:** Two-year life span. Stylommatophorans often take up water through the pneumostome: a rectal pump rapidly conveys this water through the anus into the digestive tract. Under dry environmental conditions, this extrasomal reserve cannot only be utilized by absorption into the blood, but a large portion can be expelled from the anus and directly conveyed to the external body surfaces where water losses due to evaporation and locomotion occur. These animals are purinotelic in that they excrete much of their solid matter in the form of uric acid, guanine and xanthine concretions, thus enabling nitrogen removal with reduced water loss.

**REPRODUCTION:** Breeds once (annual species) laying eggs in fall. Stylommatophorans larval development has no trochophore or veliger stages, there is direct development in the egg. These snails are simultaneously hermaphroditic. Fertilization takes place internally. The male and female genital orifices are fused or nearly so in the cephalic region. The penis is internal when present.

**FOOD HABITS:** Small forbs, leaves, small rushes, *Rosa* species. Stylommatophorans stomach's gastric region is simple and without gizzard or plates.

**HABITAT:** Soggy areas such as stream flood plains with no periodic flooding; cool, moist areas. In litter, and under rocks and dead wood, often on mountains; rich understory areas.

**ELEVATION:** 7,000 - 12,000 ft. (2,135 - 3,660 m).

**PLANT COMMUNITY:** Associated with *Linnaea* sp., *Viola* sp., and conifers.

**POPULATION TRENDS:** Three sites known in Arizona. Formerly had a broad distribution but sites may no longer exist, due largely to grazing. Arizona sites are disjunct from the rest of the range. More old colonies known.

### **SPECIES PROTECTION AND CONSERVATION**

**ENDANGERED SPECIES ACT STATUS:** None (USDI, FWS 1996)  
[C2 USDI, FWS 1994]  
[C2 USDI, FWS 1991]

**STATE STATUS:** None

**OTHER STATUS:** Bureau of Land Management Sensitive  
(USDI, BLM AZ 2000, 2005)

**MANAGEMENT FACTORS:**

**PROTECTIVE MEASURES TAKEN:**

**SUGGESTED PROJECTS:** Taxonomic studies to determine the validity of this subspecies are needed. Inventories to establish distribution as well as life history are needed also.

**LAND MANAGEMENT/OWNERSHIP:** BIA – Navajo Nation; USFS – Coconino and Coronado National Forests.

### **SOURCES OF FURTHER INFORMATION**

#### **REFERENCES:**

- Barker, G.M. 2001. The Biology of Terrestrial Molluscs. CABI Publishing UK. Pp: 84, 131.
- Bequaert, J.C. and W.B. Miller. 1973. The mollusks of the arid southwest. The University of Arizona Press. Tucson, Arizona. pp. 57, 58, 83, 151.
- Frest, T. 1994. Pers comm. December 29, 1994, to D. Ide (AGFD), Phoenix, Arizona.  
[Http://members.tripod.com/arnobrosi/discidae.html](http://members.tripod.com/arnobrosi/discidae.html).
- NatureServe Explorer: An online encyclopedia of life [web application]. 2003. Version 1.6. Arlington, Virginia, USA: NatureServe. Available: <http://www.natureserve.org/explorer>. (Accessed: August 11, 2003).
- Pilsbry, H.A. 1948. Land Mollusca of North America. The Academy of Natural Sciences of Philadelphia. II: 618-620.

State of Utah Natural Resources. Available:

<http://www.utahcdc.usu.edu/rsgis2/Search/Display.asp?FINm=discshim>.

USDI, Bureau of Land Management. 2000. Arizona BLM Sensitive Species List. Instruction Memorandum No. AZ-2000-018.

USDI, Bureau of Land Management. 2005. Arizona BLM Sensitive Species List.

USDI, Fish and Wildlife Service. 1991. Endangered and Threatened Wildlife and Plants; Animal Candidate Review of Listing as Endangered or Threatened Species; Proposed Rule. Federal Register 59(219): 59001.

USDI, Fish and Wildlife Service. 1994. Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species; Proposed Rule. Federal Register 59(219): 59001.

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.

**MAJOR KNOWLEDGEABLE INDIVIDUALS:**

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**ADDITIONAL INFORMATION:**

Arizona sites quite unusual (Frest 1994).

**Revised:** 1995-01-03 (DBI)  
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