

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

Invertebrate Abstract

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CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Discus shimekii* (Pils.) Baker

COMMON NAME: Cockerell's Striate Disc (Snail)

SYNONYMS: *Discus shimekii cockerelli* H.A. Pilsbry, *Pyramidula cockerelli*, *Zonites shimeki*, *Gonyodiscus shimeki*

FAMILY: Discidae

AUTHOR, PLACE OF PUBLICATION: *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. shimekii* Iowa City, Iowa.

TYPE SPECIMEN: *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) a year, 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. There are more older 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 under
synonym ssp. *cockerelli*)]

MANAGEMENT FACTORS:

PROTECTIVE MEASURES TAKEN:

SUGGESTED PROJECTS: Inventories are needed in Arizona to look for additional populations and to establish general health of currently known populations. In addition, life history studies are also needed.

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

SOURCES OF FURTHER INFORMATION

REFERENCES:

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MAJOR KNOWLEDGEABLE INDIVIDUALS:

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ADDITIONAL INFORMATION:

- Arizona sites quite unusual (Frest 1994).

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