

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

**Invertebrate Abstract**

**Element Code:** IMGASB5392

**Data Sensitivity:** No

**CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE**



**ME:** *Oreohelix yavapai cummingsi*

**COMMON NAME:** Yavapai Mountain Snail

**SYNONYMS:** *Oreohelix yavapai clutei*

**FAMILY:** Oreohelicidae

**AUTHOR, PLACE OF PUBLICATION:** H.A. Pilsbry, 1934.

**TYPE LOCALITY:** “Near reservoir of Yellow House ruins, 2 mi S of Endische Springs, at south foot of Navajo Mtn., Coconino County” Arizona.

**TYPE SPECIMEN:**

**TAXONOMIC UNIQUENESS:** “*Oreohelix* is the most distinctive and most widespread genus of recent large land snails of western North America” (Bequaert and Miller 1973). *O. yavapai* should be treated as a species group or subgenus (Frest 1994). Frest believes there is a high probability that *O. y. cummingsi* will be elevated to full species level in future as the Yavapai and Wyoming specimens are very different.

Frest disagrees with Bequaert and Miller in that Frest believes *O. y. clutei* is a separate species. Frest stated that this genus needs revision (1994). The genus is found as far west as western Montana, with a disjunct area in the Bighorn Mountains of north-central Wyoming. Related species go into Baja California. The Northern Arizona border is the type locality for *O.y. cummingsi*, which has not received much study (Frest has not collected *O. yavapai*, at the species level, in Arizona).

**DESCRIPTION:** Very small *Oreohelix*, 14.0 mm (0.56 in.) across at maximum. *O.y. clutei* also in this small size range. *Oreohelix* generally large in size, as much as 40.0 mm (1.6 in.).

**AIDS TO IDENTIFICATION:**

**ILLUSTRATIONS:**

**TOTAL RANGE:** *O.y. cummingsi* is only found on the south side of Navajo Mountain in Arizona, north side of Navajo Mountain and Abajo Mountain in Utah.

**RANGE WITHIN ARIZONA:** See “Total Range.”

## **SPECIES BIOLOGY AND POPULATION TRENDS**

**BIOLOGY:** Six to ten-year life span; desiccation is problem. After Pleistocene glaciations receded, colonies stabilized and have since been in same place. One colony known to be 10,000 years old in Utah. Species forms very large, very stable colonies. Dead shells have been radiocarbon dated; 200-300 years in the same area. One colony impinged on by Lake Bonneville, which has receded. However, this colony has not expanded, which is unusual. If talus is exactly the same in other areas, perhaps snail could be transplanted, however, due to many unknown variables, this is not considered a good idea (Frest 1994).

Stylommatophorans often take water up 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. Furthermore, these animals frequently store urine in the pallial cavity, which is thought to function as a reservoir of water for subsequent resorption by the renal system. They are also able to rehydrate rapidly by the uptake of water through the integument, by drinking and through feeding.

Stylommatophora primarily possess two pairs of tentacles on the head, the cephalic tentacles with an eye at the apex of each, and inferior tentacles on the anterior face of the snout below the cephalic tentacles. They also lack an operculum.

**REPRODUCTION:** This subspecies hatches eggs and holds young internally to avoid drought. Breeds once a year if moisture comes at right time, i.e. fall rains/early snow. Broods young until snow melts in spring. It is suspected that *Oreohelix* breeds more than once, perhaps several times. As snail is subject to desiccation it will not breed in dry conditions, therefore, populations can be badly hurt by dry winter. Stylommatophora are hermaphrodites. The gonad, typically embedded in the upper lobe of the digestive gland, produces both oocytes and spermatozoa.

**FOOD HABITS:** Non-specific fungal parts (except mycelium). Desirable plant species are *Rhus*, *Salix*, mountain mahogany and various forbs. Leaves are eaten, specifically gossypol and *Rosa* (also brown leaves), after oxalic acid has leached. They will not eat oak leaves because of tannic acids. Snail shelters under plant. When plant dies out, snail then eats the leaves.

**HABITAT:** Prefers limestone outcrop but found in most lithologies except granite. *O.y. cummingsi* is found in very xeric, open rocky, dry areas unlike other *Oreohelix*, which are generally found in damper areas of forest (fringe of spring but not in it). Too much moisture is fatal; snail will succumb to fungi. Snails need to estivate a good part of the year. *Oreohelix* is found closer to the surface (can tolerate heat and drought better than *Sonorella*), and does not go as deep as *Sonorella*, which can go deep in talus. *Oreohelix* colonies may be

one mile or more long. Ground can be crawling with snails in March-April and October-November, yet be invisible rest of year (as *Sonorella* may be).

**ELEVATION:** Elevation of Navajo Mountain on Arizona side of boundary, ranges around 6,000 – 7,900 ft (1830 – 2408 m).

**PLANT COMMUNITY:** Associated plants may include *Rhus* sp. (sumac), *Salix* sp. (willow), *Cercocarpus* sp. (mountain mahogany), gossypol, *Rosa* sp. (rose), and various forbs.

**POPULATION TRENDS:**

## **SPECIES PROTECTION AND CONSERVATION**

**ENDANGERED SPECIES ACT STATUS:** None (USDI, FWS 1996)  
[C2 USDI, FWS 1995]

**STATE STATUS:** None

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

**MANAGEMENT FACTORS:** Subject to grazing pressure. Tolerates light but not heavy grazing. Cannot traverse grazed areas, so will become restricted to certain areas. For example, snails will retreat under a sage plant for protection, however, when sage is destroyed, so is the snail habitat. **Threats:** restricted geographic distribution with associated potential for extinction due to chance events; habitat degradation from livestock grazing. **Management needs:** protection of habitat by fenced enclosures; periodic monitoring of known populations and their habitats.

**PROTECTIVE MEASURES TAKEN:**

**SUGGESTED PROJECTS:** Genetics studies should be considered in revising the genus *Oreohelix*, as indicated by Frest in 1994.

**LAND MANAGEMENT/OWNERSHIP:** BIA – Navajo Nation.

## **SOURCES OF FURTHER INFORMATION**

### **REFERENCES:**

- Barker, G.M. 2001. The Biology of Terrestrial Molluscs. CABI Publishing Wallingford, UK.
- Bequaert, J.C. and W.B. Miller. 1973. The mollusks of the arid southwest. The University of Arizona Press. Tucson, Arizona. Pp. 126-128.
- Frest, T. 1994. Pers comm December 29, 1994, to D. Ide (AGFD), Phoenix, Arizona.

- 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).
- State of Utah, Natural Resources, Division of Wildlife Resources. Available: <http://dwrcdc.nr.utah.gov/rsgis2/Search/Display.asp?F1Nm=oreoyava>.
- USDA, Forest Service Region 3. 1999. Regional Forester's Sensitive Species List.
- USDI, Fish and Wildlife Service. 1995. List of Federal Candidate Species of Arizona (January 1995).
- 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; Notice of Review; Proposed Rule. Federal Register 61(40): 7596-7613.

**MAJOR KNOWLEDGEABLE INDIVIDUALS:**

- Terence Frest - Deixis Consulting, Seattle, Washington.
- Walter Miller - Santa Barbara Museum of Natural History, Santa Barbara, California.

**ADDITIONAL INFORMATION:**

- Frest believes *O.y. cummingsi* should be tracked.

**Revised:** 1995-01-05 (DBI)  
1998-02-12 (SMS)  
2003-11-10 (AMS)  
2003-12-03 (JH)

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.