

*Conservation Assessment
for
(Euconulus alderi)*



USDA Forest Service, Eastern Region

January 16, 2003

Janet Kudell-Ekstrum
2727 N. Lincoln Rd
Escanaba, MI 49829
906-786-4062



This document is undergoing peer review, comments welcome

This Conservation Assessment was prepared to compile the published and unpublished information on the subject taxon or community; or this document was prepared by another organization and provides information to serve as a Conservation Assessment for the Eastern Region of the Forest Service. It does not represent a management decision by the U.S. Forest Service. Though the best scientific information available was used and subject experts were consulted in preparation of this document, it is expected that new information will arise. In the spirit of continuous learning and adaptive management, if you have information that will assist in conserving the subject taxon, please contact the Eastern Region of the Forest Service – Threatened and Endangered Species Program at 310 Wisconsin Avenue, Suite 580 Milwaukee, Wisconsin 53203.

Table of Contents

| | |
|--|-----------|
| EXECUTIVE SUMMARY | 4 |
| ACKNOWLEDGEMENTS | 5 |
| NOMENCLATURE AND TAXONOMY | 5 |
| DESCRIPTION AND ABUNDANCE | 5 |
| LIFE HISTORY | 5 |
| HABITAT | 5 |
| DISTRIBUTION AND ABUNDANCE | 6 |
| Rangewide/Regionwide | 6 |
| Status in the Great Lakes Region | 6 |
| State | 6 |
| State | 7 |
| POPULATION BIOLOGY AND VIABILITY | 8 |
| POTENTIAL THREATS AND MONITORING | 8 |
| Forest | 8 |
| Commercial, Recreational, Scientific or Educational Overutilization ... | 8 |
| Disease or Predation | 8 |
| Inadequacy of Existing Regulatory Mechanisms | 8 |
| Other Natural or Human Factors Affecting Continued Existence of Species | 9 |
| SUMMARY OF LAND OWNERSHIP AND EXISTING HABITAT PROTECTION..... | 9 |
| SUMMARY OF EXISTING MANAGEMENT ACTIVITIES..... | 9 |
| PAST AND CURRENT CONSERVATION ACTIVITIES | 9 |
| RESEARCH AND MONITORING | 9 |
| Existing Surveys, Monitoring and Research | 9 |
| Survey Protocol | 10 |
| Research Priorities..... | 10 |
| REFERENCE..... | 10 |
| LIST OF CONTACTS..... | 11 |

EXECUTIVE SUMMARY

This is a draft Conservation Assessment providing a summary of readily available information on the distribution, ecology, habitat and population biology of *Euconulus alderi*, a terrestrial snail, in the Great Lake States. This document was compiled to assist the writing of the Conservation Assessment for the Niagara Escarpment Community.

Euconulus alderi is known in Europe (Nekola 1998b). It was not known in North America until 1986 when this species was discovered at 35 northeastern Iowa and 9 Wisconsin stations and was discovered in 5 counties in Michigan's Upper Peninsula (Nekola 1998b). The three richest counties for terrestrial gastropods in the Upper Peninsula all lie along the Niagara Escarpment in Delta, Chippewa and Mackinac Counties. Sites with *Euconulus alderi* in the Upper Peninsula are limited to the vicinity of the Lake Michigan-Lake Huron shore and to the northern tip of the Keweenaw Peninsula (Nekola 1998b).

Habitat this species is found are cobble beaches with a number of shallow pools and *Carex spp.* turf zones; open *Larix laricina* forests with an understory of *Alnus rugosa*, some with a dense *Carex spp.* dominated ground layer; *Thuja occidentalis* communities, either with an open canopy and scattered *Alnus rugosa* and thick *Carex spp.* turf or mixed *T. occidentalis* swamp forest and *Picea mariana* swamp forest and open marl flats (Nekola 1998b).

Threats to this and other gastropods include disturbances such as highway corridors or rail road right-of-ways and other disturbances (Nekola 1998b). Generally, sites providing habitat for land snail communities are being lost to development, agriculture and some types of forestry management (Frest 1991, Nekola 1998b). In areas with land snail populations, forest clearing has negative impacts as well as any activities that may alter groundwater seepage in cliff areas (Nekola 1998a). Specific threats to populations of *Euconulus alderi* found in Nekola's inventory of the Niagara Escarpment and Keweenaw Volcanic Belt (1998b) were ATV use, human disturbance from visitors at a lighthouse and change in hydrology from a railroad right-of-way and highway corridor.

There is very little information published on the population biology and viability of this species. *Euconulus alderi* is not listed as Threatened or Endangered for any state in the Great Lakes Region.

Research needs for *Euconulus alderi* is to determine the extent of their distribution (Nekola 1998b), population viability and life history information.

ACKNOWLEDGEMENTS

Information was provided by the following individuals: Dave Cuthrell, Associate Program Leader, Zoology, Michigan Natural Features Inventory. Laura Hutchinson, Library Services Leader, North Central Research Station in St. Paul Minnesota conducted a literature search on this species. Julie Williams compiled the State Endangered, Threatened and Sensitive Species lists for the majority of the states within the continental U.S. and Canadian provinces.

NOMENCLATURE AND TAXONOMY

Scientific name: *Euconulus alderi* (Gray, 1840)

Subspecies: None

Common name: None

Order: Stylommatophora

Family: Helicarionidae

Synonym (s): There are no synonyms.

DESCRIPTION AND ABUNDANCE

The shell measures between 2.3-2.8 mm in length. It is close in appearance to *Euconulus fulvus* but differs in being smaller, having a luster that is more shiny, a darker colored shell and the microscopic spiral lines on the base of the shell are stronger than the radial striations. This situation in *E. fulvus* is reversed (Nekola 1998b).

LIFE HISTORY

Not documented.

HABITAT

Most of the sites this species has been found are fens but observations of populations have been made in cool, calcareous wetlands (Nekola 1998b). In the Upper Peninsula of Michigan this species has been found most often in tamarack-sedge wetland communities where it was found to consistently co-occurring with *Vertigo elatior* and *Vertigo nylanderi*. It has also been observed in white cedar wetlands and to a lesser extent in fens

and at one cobble beach (Nekola 1998b). Habitats this species was found by Nekola's survey of the Niagara Escarpment and Keweenaw Volcanic Belt in Michigan's Upper Peninsula were described as cobble beaches with a number of shallow pools and *Carex spp.* turf zones; open *Larix laricina* forests with an understory of *Alnus rugosa*, some with a dense *Carex spp.* dominated ground layer; *Thuja occidentalis* communities, either with an open canopy and scattered *Alnus rugosa* and thick *Carex spp.* turf or mixed *T. occidentalis* swamp forest and *Picea mariana* swamp forest and open marl flats (Nekola 1998b).

DISTRIBUTION AND ABUNDANCE

Rangewide/Regionwide

In the United States this species has been found in Iowa, Michigan and Wisconsin (Nekola 1998b). Nature Serve (2000) shows the distribution of this species in the United States as the State of Michigan.

Status in the Great Lakes Region

Table 1. State Ranks for *Euconulus alderi*

| State | State Threatened/Endangered or Special Concern Listing | State/Province Heritage Status Ranks |
|--------------|--|--------------------------------------|
| Illinois | Not listed as T/E or Special Concern | |
| Indiana | Not listed as T/E or Special Concern | |
| Michigan | Not listed as T/E or Special Concern | S2 |
| Minnesota | Not listed as T/E or Special Concern | |
| New York | Not listed as T/E or Special Concern | |
| Ohio | Not listed as T/E or Special Concern | |
| Ontario | Not listed as T/E or Special Concern | |
| Pennsylvania | Not listed as T/E or Special Concern | |
| Wisconsin | Not listed as T/E or Special Concern | |

State Ranks: S2= Imperiled because of rarity (typically 6-20 occurrences, 1,000-3,000 individuals or very few remaining acres) or because of some factor making it extremely vulnerable to extinction throughout its range.

The global rank is G3 (NatureServe 2002). G3= Rare to uncommon; usually between 20 and 100 occurrences may have fewer occurrences, but with a larger number of individuals in some populations; may be susceptible to large-scale disturbances.

This species has been found in Wisconsin and Iowa (Frest 1990; Nekola 1998 In Nekola 1998b). This species was not found in any other state, of those states species lists were located. State status information was not located for Alaska, Florida, Georgia, Idaho,

Kansas, Kentucky, Maine, Maryland, New Hampshire, New Jersey, North Carolina, Rhode Island, Tennessee, Texas and West Virginia.

Table 2. *Euconulus alderi* Occurrence in the Great Lake States by County, State and Year*

| State | County of Occurrence | Number of Occurrences and Year |
|---------------------|---|---|
| Illinois | Not tracked by Natural Heritage in this state. | |
| Indiana | Not tracked by Natural Heritage in this state. | |
| Michigan | Chippewa County Delta County Keweenaw County Mackinac County Schoolcraft County | 2 occurrences, both 1998. 1 occurrence, 1998 2 occurrences, both 1998. 4 occurrences, all 1998. 1 occurrence, 1998. Info. from Nekola (1998b),this species is not tracked by Natural Heritage in Michigan. |
| Minnesota | Not tracked by Natural Heritage in this state. | |
| New York | Not tracked by Natural Heritage in this state. | |
| Ohio | Not tracked by Natural Heritage in this state. | |
| Ontario | Not tracked by Natural Heritage in this province. | |
| Pennsylvania | Not tracked by Natural Heritage in this state. | |
| Wisconsin | Found at nine stations Wisconsin (not listed in Door Peninsula paper) | This species is not tracked by Natural Heritage in Wisconsin. |

*County occurrence information from Michigan Natural Features Inventory, Michigan County Element List-September 1999, Wisconsin Natural Heritage Program, Rare Species and Natural Communities, NHI Working List by County, Indiana Natural Heritage Data Center, List of Endangered, Threatened , and Rare Species by County,

November 16, 1999, Ontario Natural Heritage Information Centre, Rare Species Query by County query ran 1/9/01. Threats specific to populations found by Nekola in Michigan (1998b) are ATV use and changes to microclimate from a railroad and highway corridor.

POPULATION BIOLOGY AND VIABILITY

Not documented.

POTENTIAL THREATS AND MONITORING

The small size of this snail precludes it from mammalian predators (D. Cuthrell, personal communication 2001).

Present or Threatened Risks to Habitat or Range

Threats to this and other gastropods include anthropogenic (such as highway corridors and railroad right-of-ways) and other disturbances (Nekola 1998b). Generally sites providing habitat for land snail communities are being lost to development, agriculture and forestry management (Frest 1991, Nekola 1998b). Acid rain may be a threat to this species (D. Cuthrell, personal communication 2001)

Table 3 *Threats or Risks to Euconulus alderi and Its Habitat by Forest*

| Forest | Risk or Threat |
|----------------------------|--|
| Chequamegon-Nicolet | Not on RF Sensitive Species list for the Cheq-Nicolet. |
| Chippewa | Not on RF Sensitive Species list for the Chippewa. |
| Hiawatha | One existing known site is protected by candidate RNA status, other two sites are near a wilderness but may be disturbed by ORV's. |
| Huron-Manistee | Not on RF Sensitive Species list for the Huron-Manistee. |
| Ottawa | Not on RF Sensitive Species list for the Ottawa. |
| Superior | Not on RF Sensitive Species list for the Superior. |

Commercial, Recreational, Scientific or Educational Overutilization

Not documented.

Disease or Predation

None documented.

Inadequacy of Existing Regulatory Mechanisms

None documented.

Other Natural or Human Factors Affecting Continued Existence of Species

Not documented.

SUMMARY OF LAND OWNERSHIP AND EXISTING HABITAT PROTECTION

In the Upper Peninsula of Michigan, *Euconulus alderi* was found at ten sites, three which occur within the Hiawatha National Forest boundary (Sjogren 2000). Two of the three sites within the National Forest are 100% Forest Service ownership. Two of the three sites are on the boundary of wilderness areas. One of the sites on the boundary is marked private on the Forest map. Management guidelines within the wilderness area will act to prevent disturbance from motorized use and vegetative management. At the Martineau Creek site Dr. Nekola recommends closing the site to ATV use to retain the integrity of this unique site which has not only this species, but rare plant species associated with the fen and extensive open marl flats (Nekola 1998b).

Euconulus alderi was found to occur at 7 additional site in Michigan (Nekola 1998b). Ownership varies with occurrences on National Forest, State Forest and other occurrences on private land. Ownership was not recorded for every location.

SUMMARY OF EXISTING MANAGEMENT ACTIVITIES

None known.

PAST AND CURRENT CONSERVATION ACTIVITIES

None known.

RESEARCH AND MONITORING

Existing Surveys, Monitoring and Research

The National Biological Information Infrastructure (NBII) was searched for this species at <http://search.usgs.gov/nbii/query>, no documents were found. The *Euconulus alderi* query at North Central Research Station found New and rare species of land snails in the fauna of Latvia (Gastropods:Pulmonata) source German In: Malakologische Abhandlungen (Dresden) 19 (2). 15 Dezember, 2000; Late Quaternary land snails from the southwestern Baltic Sea source Polish In: Journal of Conchology 26 (2) : 64-65, June 1998; Snails (Gastropoda) of the hills Wzgorza Trzebnickie (SW Poland) source Polish In: Prace Zoologiczne (Wroclaw) 291995 pgs. 5-21, Witkowski, A. editor, Zoological

Proceedings; and *Vertigo geyeri* (Lindholm 1925), a snail new to Yorkshire In: *Naturalist (Doncaster)* 120 (1012):35-36, 1995.

Dr. Jeffery Nekola, University of Wisconsin Green Bay conducted a study : Terrestrial Gastropod Inventory of the Niagaran Escarpment and Keweenaw Volcanic Belt in Michigan's Upper Peninsula in 1998.

Survey Protocol

Samples are collected from various habitats, larger land snails are collected by hand and placed in plastic snap vials. Four liter litter samples are used to collect smaller taxa. At woodland sites, concentrate collections at places of abundance of larger snails, along the base of cliffs, rocks, trees, soil covering ledges or at microclimates such as cold air vents on a cliff face. In open sites collect small blocks of turf (ca 125 cm³) or loose soil and leaf litter accumulations under or adjacent to cobbles, boulders or shrubs (Nekola 1998b) or from hummock sides, undisturbed places or swales (Nekola and Frest 1996). Samples could also be taken under shrubs (Nekola and Frest 1996). At the lab, use a low-temperature soil oven to slowly and completely dry the samples. Once dry, soak the samples in water for 3-24 hours and sieve. Use a neutral-brown background, binocular microscope and sable brush to separate shells for identification (Nekola 1998b).

Research Priorities

Research needs for *Euconulus alderi* is to determine the extent of their distribution (Nekola 1998b).

REFERENCE

Cuthrell, David. Associate Program Leader, Zoology, Michigan Natural Features Inventory. Personal; communication 2001.

Frest, T. J. 1991. Summary Status Reports on Eight Species of Candidate Land Snails from Driftless Area (Paleozoic Plateau), Upper Midwest. Final Report USFWS R3, pp. 14-15.

Indiana Natural Heritage Data Center, List of Endangered, Threatened and Rare Species by County.
<http://www.ai.org/dnr/naturpr/species/index.htm>.

Michigan Natural Features Inventory. Michigan County Element List, September 1999.
http://www.dnr.state.mi.us/wildlife/heritage/mnfi/lists/1999_county_lists.pdf. 98 pp.

NatureServe: An online encyclopedia of life [web application]. 2000. Version 1.2. Arlington, Virginia USA: Association for Biodiversity Information. Available: <http://www.natureserve.org/>. (Accessed: February 3, 2001).

NatureServe Explorer: An online encyclopedia of life [web application]. 2002. Version 1.6 Arlington, Virginia USA: Association for Biodiversity Information. Available: <http://www.natureserve.org/>. (Accessed: January 2, 2003).

Nekola, Jeffery C. 1998a. Personal communication with Kirstin Seleen, message subject: Snails of the Niagara Escarpment. 1 pp.

Nekola, Jeffery C. 1998b. Terrestrial Gastropod Inventory of the Niagarian Escarpment and Keweenaw Volcanic Belt in Michigan's Upper Peninsula, 133 pp.

Nekola, Jeffery C. and Terrence J. Frest 1996. Land Snails of Door Peninsula Natural Habitats. Final Report Wisconsin Chapter, The Nature Conservancy. 97 pp.

Ontario Natural Heritage Information Centre Rare Species Query by County, information gathered 1/9/01.

<http://www.mnr.gov.on.ca/MNR/nhic/queries/countysel.cfm>.

Sjogren, Steve. 2000. Regional Forester Sensitive Species Risk Evaluation for *Euconulus alderi*. 2 pp.

Wisconsin Natural Heritage Program. Rare Species and Natural Communities, NHI Working List by County. <http://www.dnr.state.wi.us/org/land/er/workinglist/countylist/>.

LIST OF CONTACTS

Dave Cuthrell, Associate Program Leader, Zoology, Michigan Natural Features Inventory.

Dr. Jeffery Nekola, Department of Natural and Applied Sciences, University of Wisconsin, Green Bay.

Laura Hutchinson, Library Services Leader, North Central Research Station, St. Paul Minnesota.