

Heritage Rank Status Factors

Elcode IMGASG3370
Gname FLUMINICOLA SP 14
Gcomname POTES PEBBLESNAIL

Number of Occurrences

B = 6 - 20

Comments The species has been collected from a total of 11 sites out of the 231 surveyed by Frest and Johannes (1995c; Furnish et al., 1997), only one of which is on federal land in the Shasta National Forest.

Number of Occurrences with Good Viability

U = Unknown what number of occurrences with good viability

Comments

Population Size

U = Unknown

Comments

Range Extent

A = <100 km² (less than about 40 square miles)

B = 100-250 km² (about 40-100 square miles)

Comments Upper Sacramento endemic and appears to be restricted to small, perennial, cold, shallow spring runs in the upper Sacramento River system and Pit River tributaries in Shasta County, California (Frest and Johannes 1993a; 1995c; 1999; Furnish et al., 1997; Furnish and Monthey, 1999).

Area of Occupancy

A = <0.4 km² (less than about 100 acres)

B = 0.4-4 km² (about 100-1,000 acres)

LA = <4 km (less than about 2.5 miles)

LB = 4-40 km (about 2.5-25 miles)

Comments Eleven sites known, at present. Known localities are on private lands (one may be within Shasta National Forest); we anticipate that additional sites in Shasta National Forest, Whiskeytown-Shasta-Trinity National Recreation Area, and areas administered by Lassen National Forest will be found, as some existing sites have federal lands immediately adjacent or are surrounded by such lands. One site is close to DCA [Designated Conservation Area] CD-83; another appears to be on Shasta National Forest property. Management of nearby DCAs CD-64, 65, 66, 67, & 68 will likely impact this species in part of its range. It is likely to be found on some of the listed DCAs (Frest and Johannes, 1999).

Long-term Trend in Population Size, Extent of Occurrence, Area of Occupancy, and/or Number or Condition of Occurrences

B = Large Decline (decline of 75-90%)

C = Substantial Decline (decline of 50-75%)

Comments Large/Substantial decline.

Short-term Trend in Population Size, Extent of Occurrence, Area of Occupancy, and/or Number or Condition of Occurrences

U = Unknown. Short-term trend in population, range, area occupied, and number and condition of occurrences unknown.

Comments Unknown.

Threats

A = Substantial, imminent threat. Threat is moderate to severe and imminent for most (> 60%) of the population, occurrences, or area. Ecological community occurrences are directly impacted over a widespread area, either causing irreversible damage or requiring long term recovery

Scope High Severity High Immediacy High

Comments Threats include: Chemical spills and other forms of water pollution (e.g., livestock use of springs and channel bottoms) resulting in effects such as: (1) direct mortality of species as evidenced by the recent (1991) Cantara Spill on the Upper Sacramento River, and (2) deleterious habitat alterations resulting from factors such as eutrophication caused by excessive fertilization, reduced dissolved oxygen levels, or elevated water temperatures. Dam construction that submerges cold springs, slows current velocities, lowers the availability of oxygen, and allows fine sediments to accumulate is also a threat. Existing dams on the Sacramento River (e.g., Shasta Dam, Whiskeytown Reservoir, and Siskiyou Lake) and the Pit River have already caused extensive destruction of potentially suitable habitat. Reductions in water flow by water diversions, road construction, or pumping of aquifers results in elimination or reduction of aquatic habitat for snails. Excessive sedimentation from a variety of activities such as logging, mining, road and railroad grade construction, and grazing may smother substrates preferred by these species and may impair egg-laying or survivorship of eggs or young (Frest and Johannes, 1999; Furnish and Monthey, 1999).

Number of Appropriately Protected and Managed Occurrences

A = None. No occurrences appropriately protected and managed

Comments There are no known protected sites. The species has been collected from a total of 11 sites out of the 231 surveyed by Frest and Johannes (1995c), only one of which is on federal land in the Shasta National Forest (Furnish and Monthey, 1999). All sites occupied by these snails should be protected.

Intrinsic Vulnerability

A = Highly Vulnerable. Species is slow to mature, reproduces infrequently, and/or has low fecundity such that populations are very slow (> 20 years or 5 generations) to recover from decreases in abundance; or species has low dispersal capability such that extirpated populations are unlikely to become reestablished through natural recolonization (unaided by humans). Ecological community occurrences are highly susceptible to changes in composition and structure that rarely if ever are reversed through natural processes even over substantial time periods (> 100 years).

Comments Typically, members of the genus are dioecious (i.e., have separate sexes) and semelparous (i.e., breed only once in their lifetime and then die). Individuals have a life span of one year, with 90 percent or more of the population turning over annually. Surviving individuals are generally those that do not breed during their first year. Eggs are laid in the spring and hatch in approximately 2-4 weeks. Sexual maturity is reached by late summer, after a few months of growth. Individuals overwinter as adults and do not disperse widely, so populations remain very localized in their distribution (Furnish and Monthey, 1999).

Environmental Specificity

B = Narrow. Specialist or community with key requirements common.

Comments This species is a crenophile (i.e., it prefers spring habitats). Substrate types at occupied sites are usually mud, silt, and sand, with scattered gravel, cobbles, and boulders. The species has been found at sites ranging from 439-963 meters (1440-3160 feet) in elevation. It has not yet been found to co-occur with other *Fluminicola* species; however, at a few of the sites, it co-occurred with *Juga* species, and it occurred together once with *Vorticifex effusa*. Occurs on muddy-silty substrate in small cold springs and spring runs. Sites are often shaded and the species appears to graze on partly decayed deciduous leaves. May occur with other endemic *Fluminicola* species. This species appears to be restricted to small, cold springs. Most sites are small and shallow, but perennial cold spring runs with silt substrate; this crenophile species could be a detritivore as well as a grazer (Frest and Johannes, 1999).

Other Considerations

NRANK: N1N2. All sites occupied by these snails should be protected. Cited as *Fluminicola* n. sp. 2 in Frest and Johannes (1993b; 1995a).

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Grank G1G2 **Grank Date** 11/27/2002

Reasons

Limited number of occurrences, with restricted range. There are no known protected sites.

BCD Sources

New Sources

Frest, T.J. and E.J. Johannes. 1993a. Mollusc species of special concern within the range of the northern spotted owl. Final report for the Forest Ecosystem Management Working Group. Deixis Consultants, Seattle, Washington. 39 pp.

Frest, T.J. and E.J. Johannes. 1993b. Freshwater mollusks of the Upper Sacramento System, California, with particular reference to the Cantara Spill. 1992 yearly report to California Department of Fish and Game, Deixis Consultants, Seattle, Washington. 1-1 pp.

Frest, T.J. and E.J. Johannes. 1995a. Freshwater mollusks of the Upper Sacramento System, California, with particular reference to the Cantara Spill. 1995 final report to the California Department of Fish and Game, Deixis Consultants, Seattle, Washington. 88 pp.

Frest, T.J. and E.J. Johannes. 1995b. Freshwater mollusks of the Upper Klamath drainage, Oregon. Yearly report to Oregon Natural Heritage Program, Deixis Consultants, Seattle, Washington. 68 pp.

Frest, T.J. and E.J. Johannes. 1995c. Interior Columbia Basin mollusk species of special concern. Report to Interior Columbia Basin Ecosystem Management Project. 274 pp.

Frest, T.J. and E.J. Johannes. 1999. Field Guide to Survey and Manage Freshwater Mollusk Species. Bureau of Land Management, Oregon State Office, Portland, Oregon. 117 pp.

Furnish, J., R. Monthey, and J. Applegarth. 1997. Survey protocol for terrestrial mollusk species from the Northwest Forest Plan. Version 2.0. Report to the USDI Bureau of Land Management, Salem, Oregon, October 29, 1997. Unpaginated.

Furnish, J.L. and R. Monthey. 1999. Management recommendations for aquatic mollusks. Ver. 2.0. Report submitted to USDI Bureau of Land Management, Salem, Oregon, December 1998. Unpaginated.