

## Heritage Rank Status Factors

**Elcode** IMGASG3150  
**Gname** FLUMINICOLA SP 3  
**Gcomname** DIMINUITIVE PEBBLESNAIL

### Number of Occurrences

A = 1 - 5

**Comments** Known from three sites, in two large spring complexes in the middle Klamath River drainage (Frest and Johannes, 1999; 2000).

### Number of Occurrences with Good Viability

B = Very few (1-3) occurrences with good viability

**Comments** Found in two large spring complexes, in two creeks tributary to Klamath River, Jackson County, Oregon (Frest and Johannes, 2000).

### Population Size

U = Unknown

**Comments**

### Range Extent

A = <100 km<sup>2</sup> (less than about 40 square miles)

**Comments** Found only in two large spring complexes, at about three separate sites, likely restricted to the middle portion of the Klamath drainage, i.e., below Upper Klamath Lake and above Copco Reservoir; Klamath County, Oregon and Siskiyou County, California (Frest and Johannes, 1999; 2000; Furnish and Monthey, 1999).

### Area of Occupancy

A = <0.4 km<sup>2</sup> (less than about 100 acres)

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

**Comments** This species occurs at 3 sites in Klamath County, Oregon. Two are on Medford District BLM lands (Frest and Johannes, 1999; Furnish et al., 1997). Frest and Johannes (2000) have completely covered most of the Jenny and Fall Creek systems and adjoining creek drainages, confirming the extreme localization of this species.

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

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

**Comments** Unknown

### 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 Potential threats include: diversion of water for municipalities and irrigation, cattle incursion, current and past logging, grazing, and one creek has a small hydroelectric operation (Frest and Johannes, 1999). Chemical spills and other forms of water pollution (e.g., livestock use of springs and spring runs, urban runoff, other agriculture, other industrial), 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 nitrogen and phosphorus levels, reduced dissolved oxygen levels, or elevated water temperatures. Water diversions for such activities as irrigation and livestock watering, result in reduced spring flow and thus less habitat for these snails. Dam construction that submerges cold springs, slows current velocities, lowers the availability of oxygen and allows fine sediments to accumulate is a threat. For example, dams on the Columbia River have likely submerged sites formerly occupied by other snail species. 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. Cold springs in the Klamath lake basin in southwestern Oregon have all been affected by grazing, water diversions, and road building (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 occurrences. This species occurs at 2 sites in Klamath County, Oregon. Two are on Medford District BLM lands (Frest and Johannes, 1999; Furnish et al., 1997).

## 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 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 did 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. All species generally appear to breed only once in their lifetime and then die. Usually 90 percent of the population turns over annually, so any condition (e.g., excessive sedimentation) that impairs egg laying, or survivorship of eggs or young may result in extirpation. The area is currently badly grazed; adjacent springs do not have this species (Frest and Johannes, 1999).

## Environmental Specificity

A = Very Narrow. Specialist or community with key requirements scarce.

Comments The snail occurs only in shaded areas and may be photophobic. Its habitat is small, cold spring runs, in very shallow water with gravel-cobble substrate, and no macrophytes present (Furnish

and Monthey, 1999). A perolithon grazer and lithophile (Frest and Johannes, 1999; 2000).

## Other Considerations

NRANK: N1. Because of their rarity, occurrence in localized sites, and high degree of endemism, the FEMAT analysis (USDA, Forest Service and USDI, Bureau of Land Management 1994b) concluded that these species have low likelihood of attaining stable, well distributed populations. Note listed as *Fluminicola* n. sp. 12 in Frest and Johannes (2000).

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**Grank** G1      **Grank Date** 11/27/2002

## Reasons

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

## BCD Sources

## New Sources

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.

Frest, J.T. and E.J. Johannes. 2000. A baseline survey of southwestern Oregon, with emphasis on the Rogue and Umpqua River drainages. Year 2000 Report prepared for Oregon Natural Heritage Program, Portland, Oregon. 403 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.