Heritage Rank Status Factors

Elcode IMGASG3420

Gname FLUMINICOLA SP 19

Gcomname UMBILICATE PEBBLESNAIL

Number of Occurrences

A = 1 - 5

Comments This species is only known to occur at a single spring complex in Lassen National Forest in Shasta County, California (Frest and Johannes, 1999; Furnish et al., 1997).

Number of Occurrences with Good Viability

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

Comments This species is only known to occur at a single spring complex in Lassen National Forest in Shasta County, California (Frest and Johannes, 1999; Furnish et al., 1997).

Population Size

U = Unknown

Comments

Range Extent

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

Comments This species is a local endemic known from a single, cold, spring pool and outflow complex that is part of the source of Hat Creek and a tributary to the Pit River in Lassen National Forest in Shasta County, California (Frest and Johannes, 1999; Furnish et al., 1997; Furnish and Monthey, 1999).

Area of Occupancy

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

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

Comments This species is a local endemic known from a single, cold, spring pool and outflow complex that is part of the source of Hat Creek and a tributary to the Pit River in Lassen National Forest in Shasta County, California (Frest and Johannes, 1999; Furnish et al., 1997; Furnish and Monthey, 1999).

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 Threats particularly include road and railroad building, water diversions, and grazing, but also include: 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 also a threat. For example, dams on the Columbia River have likely submerged formerly occupied sites of other species of snail. 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). The habitats associated with the Pit River have been intensively modified by humans. Therefore, it is highly probable that the species in this area have suffered significant negative impacts from mining, logging, grazing, chemical pollution, road and railroad grade construction, and water diversions. Dam construction on the Pit River by Pacific Gas and Electric has caused extensive destruction of suitable habitat. Dam construction submerges cold springs, slows current velocities, lowers the availability of oxygen, and allows fine sediments to accumulate. Existing populations have been decimated and become fragmented and isolated as a result (Furnish and Monthey, 1999). Habitats associated with the Pit River have been intensively modified by humans. Therefore, it is highly probable that the species in this area have suffered significant negative impacts from mining, logging, grazing, chemical pollution, road and railroad grade construction, and water diversions (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. Only known occurrence is in Lassen National Forest, Shasta County, California (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. Individuals overwinter as adults and do not disperse widely so populations remain very localized in their distribution (Frest and Johannes, 1999)..

Environmental Specificity

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

Comments This species is a spring dweller that is abundant on submerged portions of emergent Rorippa and Veronica. It can be found on mixed silt, sand, gravel, and cobble substrates of spring pools and their outflows (Frest and Johannes, 1999; Furnish and Monthey, 1999).

Other Considerations

NRANK: N1. Cited as Fluminicola n. sp. 7 in Frest and Johannes (1993b; 1995a).

Edition 11/27/2002 **Edauthor** Cordeiro, J.

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

Greasons

Limited number of occurrences, with restricted range. This species is only known to occur at a single spring complex in Lassen National Forest in Shasta County, California (Frest and Johannes, 1999; Furnish et al., 1997). This site is not protected.

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. 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.