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New species and records of *Pyrgulopsis* (Gastropoda: Hydrobiidae) from the Snake River basin, southeastern Oregon: further delineation of a highly imperiled fauna

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Abstract

Here we describe two new species from southeastern Oregon based on morphologic and molecular (mtCOI) evidence. *Pyrgulopsis fresti* **n. sp.**, commonly known as the "Owyhee hot springsnail" and long considered to be distinct and critically imperiled, lives in thermal springs along a short reach of the Owyhee River above Three Forks. This snail differs from other regional species in its squat shell; penial ornament consisting of a large, disc-shaped ventral gland; absence of a seminal receptacle; and mtCOI sequences. *Pyrgulopsis owyheensis* **n. sp.** ranges among five disjunct groups of springs in the Owyhee and Malheur river drainages and is occasionally sympatric with *P. fresti*. This snail is closely similar to another regional congener, *P. intermedia* (Tryon, 1865), but is smaller and further differentiated by its typically disjunct inner shell lip, longer and narrower penial filament, more distally positioned ventral gland of penis, and mtCOI sequences. The type locality (Owyhee Spring) population of *P. owyheensis* is genetically differentiated from the other geographical subunits of this species (1.5–1.8% sequence divergence) and should perhaps be managed as a separate conservation unit. New records are provided for *P. intermedia* which extends the range of this conservation priority species into the lower Owyhee River basin. We also show that the "Malheur springsnail," which has been listed in various conservation-related publications and documents, is the same as *P. intermedia*. This study provides critical information for the conservation of springsnails in southeastern Oregon and underscores the need for additional field surveys in the region.

Key words: springs, Owyhee River, Malheur River, springsnails, mitochondrial DNA, conservation

Introduction

Pyrgulopsis Call & Pilsbry, 1883, with 127 currently recognized congeners (Hershler *et al*. 2007a), is the most species-rich genus of freshwater mollusks in North America. These tiny, gill-breathing gastropods, commonly known as springsnails, are distributed in springs and other perennial waters throughout much of western North America and in portions of the Missouri River basin, Rio Grande basin, and the internal drainage of northeastern Mexico (Hershler & Gustafson 2001; Hershler & Sada 2002). *Pyrgulopsis* was last reviewed by Hershler (1994); 72 additional species have subsequently been described (Hershler 1995, 1998; Hershler & Sada 2000; Hershler & Gustafson 2001; Hershler *et al*. 2003a; Hershler *et al*. 2007a), the majority of which (50/72, 69%) are endemic to the Great Basin. In spite of this recent surge in descriptive studies, our knowledge of the diversity and distribution of *Pyrgulopsis* is far from complete as many portions of the broad geographic range of this genus are poorly sampled and/or contain possibly undescribed species which have not been formally treated (e.g., Frest & Johannes 1995, 2000; Liu *et al*. 2003; Liu & Hershler 2008). A more complete characterization of these faunas is needed to aid conservation initiatives that are currently being

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