

Fairy and Tadpole Shrimps - spp.

Abundance: Unknown

Status: NSSU

NatureServe: G5 SNR

Population Status: Unknown

Limiting Factor: Unknown

Comment: None

Introduction

Fairy, tadpole and clam shrimp are aquatic crustaceans in the class Branchipoda. Fairy shrimp (order Anostraca) have a translucent, elongate and delicate body (Dodson et al. 2010). The species in North America have 11 pairs of legs except the genus *Polyartemiella* which has 17 pairs of legs. Individuals are typically 1 to 6 cm (0.4 to 2.4 inches) in length with two species that can reach 18 cm (7 inches) in length. Fairy shrimp swim upside-down and lack a carapace. They are distributed throughout North America and Wyoming is home to 5 genera (*Eubranchipus*, *Artemia*, *Branchinecta*, *Steptocephalus* and *Thamnocephalus*). Fairy shrimp are typically filter feeders and can develop from egg to adult in 6 to 45 days.

Tadpole shrimp (order Notostraca) have a flat, broad carapace that covers the head and thorax, and a pair of dorsal compound eyes (Dodson et al. 2010). Tadpole shrimp have 35-70 trunk legs that may be hidden by the carapace and are 1 to 5.8 cm (0.4 to 2.3 inches) in length. The carapace may be yellow, green, brown or black. Tadpole shrimp are located west of the Mississippi and in the Arctic of North America. Two genera of tadpole shrimp have been collected in Wyoming (*Triops* and *Lepidurus*). Tadpole shrimp eat detritus from the bottom of pools and can also be carnivorous. Tadpole shrimp generally develop from egg to adult in 2 to 3 weeks.

Clam shrimp (orders Laevicaudata and Diplostraca) have a carapace that resembles the shell of a small clam (Dodson et al. 2010). Inside the carapace, clam shrimp have 10-32 pairs or more of thoracic legs, a head with eyes and an abdomen. These two orders can be separated by the carapace: Laevicaudata lack growth lines on the carapace and Diplostraca have them. They range in size between 2 and 16 mm in length and their carapace can be brown, yellow or green in color. Both orders are widely distributed across North America and 4 genera of clam shrimp are known in Wyoming (*Eulimnadia*, *Lynceus*, *Cyzicus* and *Leptestheria*). Clam shrimp eat algae and phytoplankton in temporary habitats and can develop from egg to adult in 4 to 11 days depending on water temperature.

The life histories of fairy, tadpole and clam shrimp are similar. Generally, these animals complete one generation and produce resting eggs during the time that a temporary habitat is inundated with water. The eggs of many species require diapause before hatching. Temperature, daylight length, dissolved oxygen concentration and salinity may trigger encysted eggs to release from dormancy. Eggs can be produced parthenogenetically or sexually.

Fairy, tadpole and clam shrimp are present in Wyoming. According to NatureServe (2016) 15 species of fairy shrimp are known from Wyoming, including *Branchinecta serrata* is endemic to Wyoming (Rogers 2006). Four tadpole shrimp are known from Wyoming, including *Lepidurus bilobatus* that is known from seven states in the western United States (Rogers 2001; NatureServe 2016), and considered imperiled across their range (NatureServe 2016).

Habitat

Fairy, tadpole and clam shrimp usually live in temporary wetlands such as rock pools, vernal pools, seasonal wetlands, playas, alpine pools, stock tanks and alkali lakes. Some species can also live in permanent waters such as fishless lakes, salt lakes, wetlands that freeze solid in winter, or wetlands that are reduced to damp soil during dryer periods.

Problems

- h A lack of basic knowledge of the species that inhabit the state, their distributions and ecology precludes status assessments in Wyoming. The taxonomy of Triops (tadpole shrimp) is currently in revision and the taxonomy of many clam shrimp are in need of revision.

Conservation Actions

- h Samples are currently being collected to estimate what species live in Wyoming and where they occur.

Monitoring/Research

Specimens of fairy, tadpole and clam shrimp are being collected each year to estimate what species live in Wyoming and how they are distributed.

Recent Developments

Three recently described species of fairy shrimp were found in Wyoming, including *Branchinecta constricta*, *B. serrata*, and *B. lateralis* (Rogers 2006). *B. lateralis* was subsequently collected in four western states. *B. constricta* is a species endemic to southeastern Wyoming, though it may be present in northern Colorado. Additionally, *B. serrata* is endemic to the Crook Mountains of Wyoming.

References

- NatureServe. 2016. NatureServe Explorer: An online encyclopedia of life [web application] Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: 11 January 2016).
- Rogers, D. C. and M. A. Hill. 2013. Annotated checklist of the large branchiopod crustaceans of Idaho, Oregon and Washington, USA, with the "rediscovery" of a new species of *Branchinecta* (Anostraca: Branchinectidae). *Zootaxa* 3694:249-261.
- Dodson, S. L., C. E. Caceres, and D. C. Rogers. 2010. Cladocera and other Branchiopoda. Pages 773-827 in J. H. Thorp and A. P. Covich, editors. *Ecology and Classification of North American Freshwater Invertebrates*. Academic Press, New York.
- Rogers, D. C. 2001. Revision of the nearctic *Lepidurus* (Notostraca). *Journal of Crustacean Biology* 21:991-1006.
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SOURCE: Digital maps of ranges for Wyoming Species of Greatest Conservation Need: April 2010. Wyoming Game and Fish Department. A range map is unavailable for the taxa because distribution and ecology are poorly known in Wyoming.