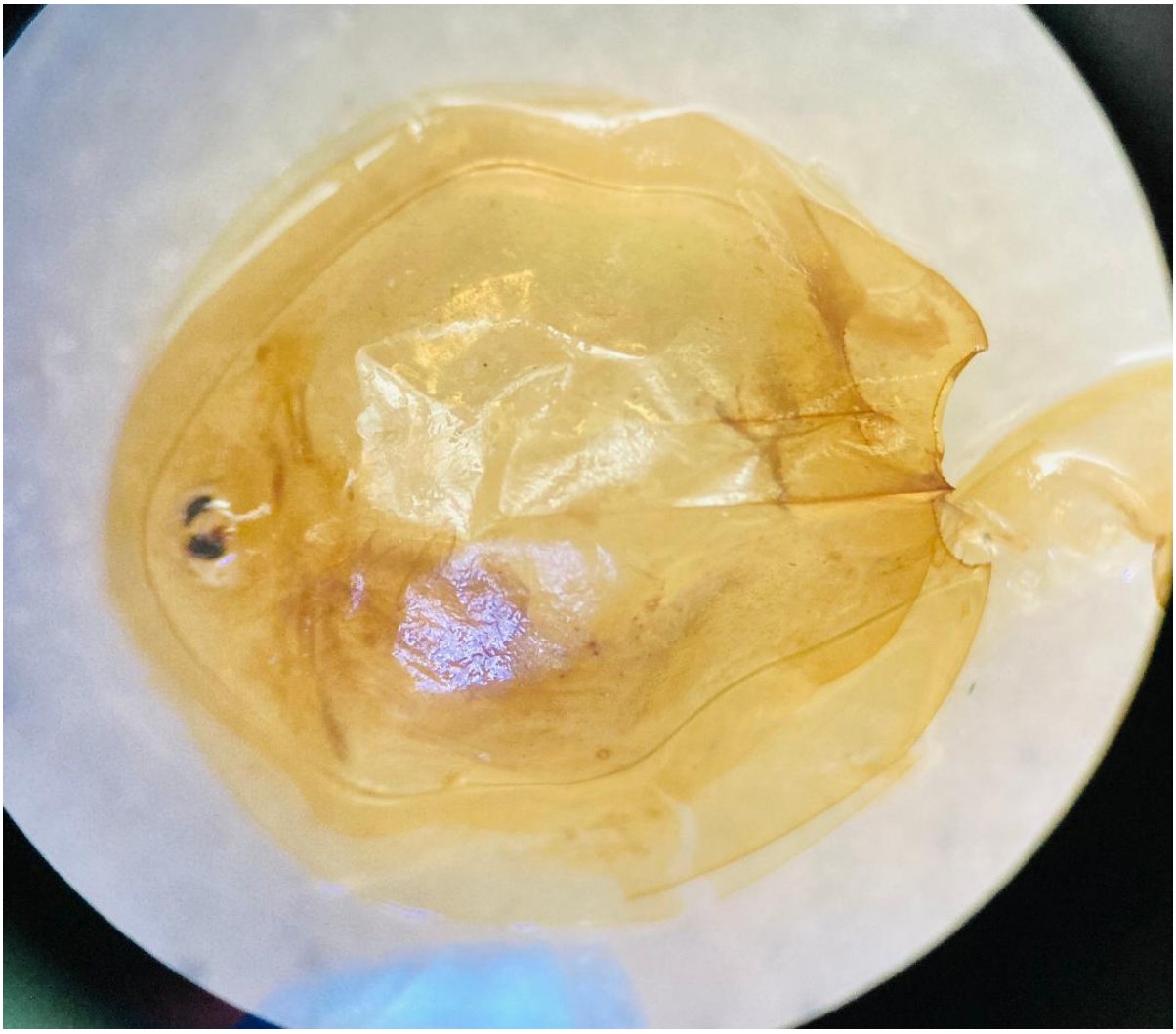
Living Fossils on the High Mountain Plains of Wyoming, U.S.A.

"And these are Tadpole Shrimp," my friend and mentor said, as he thrust a jar filled with sand, pebbles, liquid, and some translucent brown shapes into my hands.

"Tadpole Shrimp?" I questioned. I knew I must do some research about these little creatures as soon as possible.

Tadpole Shrimp, *Triops longicaudatus,* like many organisms have a variety of common names. These include the Summer tadpole shrimp, the American tadpole shrimp, and the Longtail tadpole shrimp. The latter two names are so called because the body resembles a tadpole. The *Triops* part of their name comes about because they also have a medial eye.

In reality, they resemble a miniature horseshoe crab, *Limulus polyphemus.* The shrimp have an elongated, segmented body. A flattened, shield-like brownish carapace covers two-thirds of the thorax. There are two long filaments on the abdomen. The little creatures are 10-44 mm long, 3-8 mm wide, a have a mass of 2-2.5 grams. This size makes them easily seen and photographed without any type of enlargement technology. It has about 60 hair like appendages on the underside of its abdomen. As these beat, they funnel food via a current to the shrimp's mouth.



The above photo shows the shield like carapace that covers two-thirds of the thorax. The two compound eyes are obvious in this photo. (20x)

Triops longicaudatus are found in a wide variety of places. This includes North America, South America, the Caribbean, Japan, and some Pacific Islands. They are widespread in the contiguous United States and in Hawaii but are not found in the Great Lakes or Alaska. They were probably introduced to Japan and the Pacific Islands. Tadpole Shrimp prefer vernal pools as a habitat. These are seasonal, depressional wetlands that provide habitat for a variety of plants and animals. The pools appear primarily on the west coast, particularly in California and southern Oregon, and in glaciated areas of northeastern and midwestern states.

Tadpole shrimp are found at the bottom of warm, 21° to 31° C (69.8° - 87.8° F) freshwater pools that average four feet in depth and are approximately 30 feet by 60 feet long. They also like highly alkaline water and must have a pH higher than six to survive. During the day the shrimp can be found on the bottom of the pool searching for food. They are omnivorous, and prey on mosquito larvae and other insect larvae. They prefer animal detritus over plant but will eat both. When food is limited, they may resort to cannibalism. At night they bury themselves in the detritus on the bottom of the little pond. The above photo, taken on the plains of the Laramie, Wyoming area, shows a typical pool where one might expect to find *T. longicaudatus.*

These little creatures also provide food for other animals, including birds, particularly waterfowl, and wood frogs, *Lithobates sylvaticus.* While the latter are not terribly common in Wyoming, Albany County and adjoining Carbon County do have a population, as does a four county area in the northern part of the state. (Laramie is in Albany County.)

The majority of populations of *T. longicaudatus* are female, so sexual reproduction is rare. Parthenogenesis is the most common method of reproduction. Some populations are mostly hermaphrodites, so self-fertilization is possible. All fertilization is external. Breeding tends to take place during the warmer spring and summer months. The females will lay eggs in the morning. The average lifespan of *T. longicadatus* is 40 to 70 days, if the pool does not dry up. They are sexually mature at 7 days. The eggs can undergo a state of extended dormancy when dry.

Often called living fossils, these are interesting little creatures, that, with some careful searching may be found where you live.

Much of the information contained in this article came from:
Hasbun, E. 2014. "Triops longicadatus" (on-line), Animal Diversity Web. Accessed June 06, 2022 at https://animaldiversity.org/accounts/Triops_longicaudatus/

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