

A Picture Guide to Fairy Shrimp, Clam Shrimp, and Tadpole Shrimp found in the Arizona-Utah border area.

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The purpose of this picture booklet is to help hikers and other desert travelers to identify the common crustaceans that inhabit non-moving waters, such as ponds and pools, in the southwest United States. The pools that form in the sandstone are also referred to as tinajas, which is Spanish for clay pot.

Living things are put into groups and given names (usually in Latin) by the people who study them, such as entomologists (people who study insects), botanists (people who study plants), and other scientists. So, it may be helpful and even interesting to know that the creatures shown here all belong to the Subphylum Crustacea. Fairy shrimp belong to the Order Anostraca. Tadpole shrimp belong to the Order Notostraca. Clam shrimp belong to the Order Conchostraca. An Order is simply a smaller group found within a Subphylum. Included in this pamphlet are the genus (capitalized) and species names, along with the common name, under each picture.

As you carry this booklet a-field, we hope that you find it informative and fun.



More Interesting Information About These Strange Critters

Clam shrimp are rare north of southern Canada, but tadpole and fairy shrimp are found from arctic islands to Central America. All three groups are especially diverse in the arid southwestern United States.

Many of these creatures live in habitats with extreme or varying salinity. To withstand these harsh conditions, they are able to osmoregulate. This means they can maintain the proper concentration of salt in the blood and the body tissues. Different species show differing tolerances of salinity. Some live in water many times saltier than seawater, while others live in water with very little salt.

There is a wide range of temperature tolerance in members of these groups. When you are out hiking in the warmer months and come upon a shallow pool in the slickrock all you have to do is put your hand in to know that the water gets very warm. Fairy shrimp living in desert areas can tolerate temperatures as high as 40°C (104°F) for several hours. After being buried in desert sand for many years, in conditions of dryness, extreme summer heat, and winter cold, eggs will hatch shortly after being placed in water.



Fairy shrimp – Order Anostraca, *Branchinecta packardii* (female with egg sac)

Fairy shrimp swim with their legs up. They have large compound eyes, and they do not have a shell-like covering. They appear delicate, and their transparent body is from 7-100mm long (usually 20-25mm) with up to 19 pairs of legs, depending on the species. They hatch from eggs. They feed on detritus (decaying organic matter).



Clam shrimp – Order Conchostraca, unknown genus and species

Clam shrimp swim with their legs down or forward. They have a pair of close-set compound eyes, and their body is covered by a carapace which looks like a clam shell. Adults are from 2-16mm long and they may have as many as 32 pairs of legs, depending on the species. They feed on detritus or zooplankton. Zooplankton are small (microscopic) animals.



Tadpole shrimp – Order Notostraca, *Triops longicaudatus*

Tadpole shrimp swim with their legs down. They have a pair of dorsal (on upper side of body) compound eyes, and a shield-like carapace which covers their head and thorax. Adults are up to 58mm long and have up to 70 pairs of legs, depending on the species. They look similar to fossil trilobites you may have seen. Some populations have no males and consist of hermaphrodites (individuals with both male and female sex organs) so reproduction is asexual.

Tadpole shrimp feed on detritus and prey on fairy shrimp and their eggs, as well as the eggs of clam shrimp. They also feed on mosquito larvae.