

# Anostraca

## Phylum Arthropoda

### Subphylum Crustacea

#### Class Branchiopoda

#### Number of families 8

**Thumbnail description:** Lower crustaceans with elongated bodies and paired eyes on stalks; the body lacks a carapace (hard or bony shell)

On the basis of evidence from the fossil order Lipostraca, and the Upper Cambrian species *Rehbachella kinnekullensis*, the anostracan line apparently split off at a very early stage from the rest of the Branchiopoda, about 500 million years ago. The organisms are widely considered the most primitive living crustaceans. Currently, scientists count eight families in two suborders within the Anostraca.

The organisms are medium-sized branchiopods, usually 0.39-1.18 in (1-3 cm) long; but a few raptorial species, such as *Branchinecta gigas*, may grow as long as 3.9 in (10 cm). The organism's thoracic limbs are flattened and leaflike, without true joints; the body lacks a carapace. Typical anostracans have 11 pairs of limbs, but some atypical species may have as many as 10, 17, or 19 pairs. One peculiar feature of all anostracan species is that they swim upside down. Some are largely translucent and hard to spot in the water; others, however, may develop bands or zones of bright color. The ovisac of females is often deep orange, red, or blue, and the rays in the branches of the tail may also have a distinctive color. The entire animal may develop a bright red or orange color. The eggs or cysts of anostracans are noteworthy because they are surrounded by a thick wall that allows them to resist drought and high temperatures. They develop into a gastrula containing about 4,000 cells, and then stop developing in order to survive adverse conditions. This stage of latency may continue for long periods of time, possibly more than a century.

There are no extant marine organisms, but some species may occur in mountain lakes with almost pure water, while others—mainly *Artemia*—occur in saturated brine. In the Artemiina, the distribution of *Artemia* and *Parartemia* species used to be complementary. *Artemia* occurred in bodies of salt water on all continents except Australia, and *Parartemia* only in Australia. In the twentieth century, however, several species of *Artemia* were successfully introduced in various parts of Australia. Most families of anostracans are found on three or four continents, but their ranges are often restricted to parts of a continent at the subfamily or genus level. At the species (and sometimes genus) level, ranges may be extremely small, often restricted to the type locality. Such is the case with several species of Californian *Branchinecta*. Anostracan species with wide geographic ranges are usually under little or no threat. In densely inhabited areas, however, where there is intense competition between urban and agricultural development on the one hand and conservation efforts on the other, many habitats have either been or are threatened by obliteration. Such Florida endemics as *Dexteria floridana* may already be extinct.



## What are Pond-Breeding Amphibians?

Pond-breeding amphibians are frogs and salamanders that breed in temporary wetlands. In Florida, 28 amphibian species breed in ephemeral ponds either exclusively or opportunistically. Both common (southern leopard frog, oak toad) and rare (striped newt, tiger salamander) species utilize these wetlands.

## What are Ephemeral Ponds?

Ephemeral ponds are small, isolated wetlands that dry periodically. These ponds can be deep, sand-bottomed depressions with vegetation along the edge, tiny depressions covered with leaves that only fill during large rain events, or large, shallow ponds with cypress or tupelo trees growing throughout. Hydroperiod is the duration a pond holds water. Pond hydroperiod in Florida can vary from year to year and from pond to pond. Some ponds hold water only for a few weeks and some can hold water for a year or more.

*Other common names for ephemeral ponds include:* ephemeral wetlands, isolated wetlands, Carolina bays, seasonal ponds, cypress domes, sinkhole wetlands, seasonal marshes, intermittent ponds, pineland depressions, depressional wetlands, and vernal pools.

These animals spend most of their lives in the uplands and use ponds only for short periods to breed. The terrestrial habitat surrounding ephemeral ponds



is as important for their survival as the wetland habitat. Pond-breeding amphibians frequently are found over 200 m (approx. 0.1 miles) from the nearest breeding pond and some individuals have been documented as far as 2 km (1.2 miles).

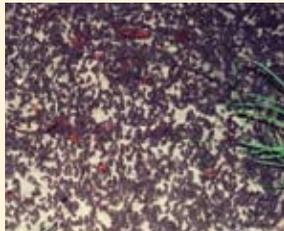
How uplands are utilized by amphibians depends on the species, habitat quality, and other factors. Most are fossorial and bury themselves in friable soils, down logs, leaf litter, and stump holes. Many also utilize the burrows of gopher tortoises, pocket gophers, and other species.



## Why are Ephemeral Ponds Important?

Ephemeral ponds are essential to the survival of many amphibians any other species. Because the ponds dry periodically, predacious fish usually are not present. Some amphibian species lack the defenses to co-exist with predatory fish and require fishless ponds for breeding habitat. Therefore, ephemeral ponds support different species than do lakes and rivers.

These ponds are a source of high diversity and biomass and support far more species and individuals than their size would suggest. It is common to find 15-20 amphibian species utilizing a single wetland and even a small wetland can produce 1000s of juvenile individuals in a single year, as shown in the above photo. These individuals travel widely into the surrounding uplands, transferring biomass from the nutrient-rich ponds into the uplands.



Ephemeral ponds are important to many other species as well. The ponds, and the plants that grow in and around them, provide important habitat to many invertebrates, reptiles, mammals, and birds.

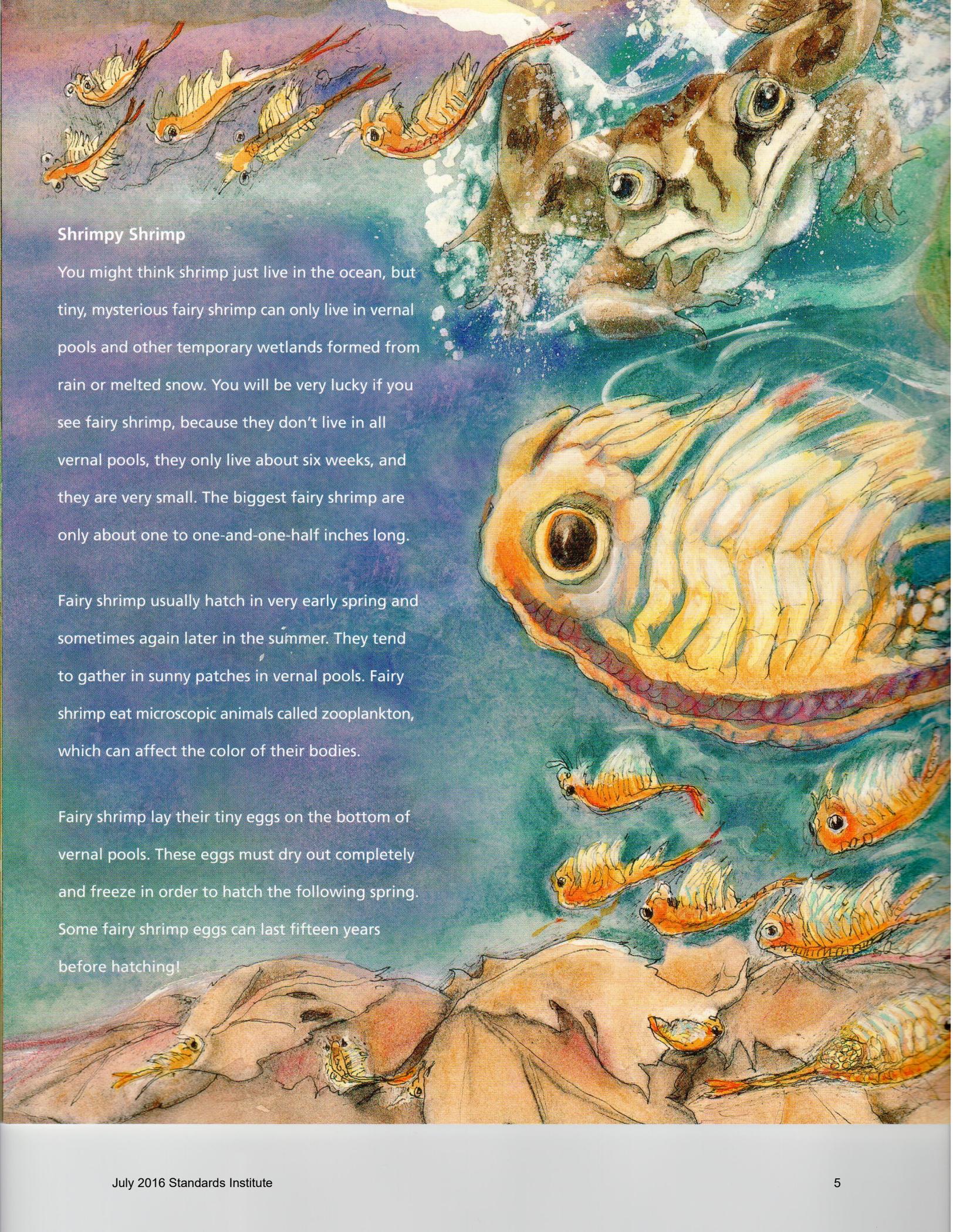


## Landscape Management

From a management perspective, ephemeral wetlands must be viewed within the context of the surrounding uplands. Amphibians spend the majority of their life cycle in the uplands; therefore, these uplands are as vital to the survival of pond-breeding amphibian populations as the aquatic breeding habitat. As a starting point, land managers should incorporate 500 m (0.3 miles) of uplands surrounding an ephemeral pond into their management plans as core terrestrial habitat. Once this radius is delineated, other factors should be considered to determine the size and shape of this core terrestrial habitat.

If a limited number of ponds can be incorporated into a management plan, prioritize:

- Pond clusters
- Ponds with known populations of specialized or target species
- Ponds with varying hydroperiods
- Ponds within 1 km (approx. 0.6 miles) of other ponds
- Ponds surrounded by native or restorable habitat



## Shrimpy Shrimp

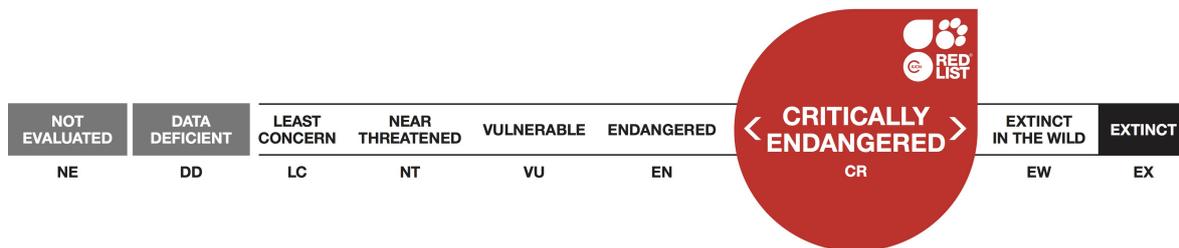
You might think shrimp just live in the ocean, but tiny, mysterious fairy shrimp can only live in vernal pools and other temporary wetlands formed from rain or melted snow. You will be very lucky if you see fairy shrimp, because they don't live in all vernal pools, they only live about six weeks, and they are very small. The biggest fairy shrimp are only about one to one-and-one-half inches long.

Fairy shrimp usually hatch in very early spring and sometimes again later in the summer. They tend to gather in sunny patches in vernal pools. Fairy shrimp eat microscopic animals called zooplankton, which can affect the color of their bodies.

Fairy shrimp lay their tiny eggs on the bottom of vernal pools. These eggs must dry out completely and freeze in order to hatch the following spring. Some fairy shrimp eggs can last fifteen years before hatching!

## *Dexteria floridana*, Florida Fairy Shrimp

Assessment by: Inland Water Crustacean Specialist Group



View on [www.iucnredlist.org](http://www.iucnredlist.org)

**Citation:** Inland Water Crustacean Specialist Group. 1996. *Dexteria floridana*. *The IUCN Red List of Threatened Species 1996*: e.T6519A12786928.

<http://dx.doi.org/10.2305/IUCN.UK.1996.RLTS.T6519A12786928.en>

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## Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Branchiopoda	Anostraca	Chirocephalidae

**Taxon Name:** *Dexteria floridana* (Dexter, 1953)

**Synonym(s):**

- *Eubbranchipus floridana*

**Common Name(s):**

- English: Florida Fairy Shrimp

## Assessment Information

**Red List Category & Criteria:** Critically Endangered B1+2c [ver 2.3](#)

**Year Published:** 1996

**Date Assessed:** August 1, 1996

**Annotations:** Needs Updating

## Geographic Range

**Range Description:**

known only from a single pool near Gainesville, Florida, USA; not recollected for more than 50 years; (K. Crandall. pers comm. 1995)

**Country Occurrence:**

**Native:** United States (Florida)



For Immediate Release, October 5, 2011

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## Two Florida Species Declared Extinct

### ***Endangered Species Review Too Late to Save South Florida Rainbow Snake, Florida Fairy Shrimp***

JACKSONVILLE, Fla.— The U.S. Fish and Wildlife Service announced today that two Florida species, the South Florida rainbow snake and the Florida fairy shrimp, have been determined to be extinct. The finding came in response to a petition filed by the Center for Biological Diversity in 2010 seeking Endangered Species Act protection for the rainbow snake, fairy shrimp and more than 400 aquatic species in the southeastern United States. Last week the Service announced that [374](#) other freshwater species in the petition, including 114 in Florida, may warrant protection under Act. All of those species will now get an in-depth review.

“It’s heart-wrenching to learn that these two unique Florida species have been lost forever. Like most species that go extinct, these two were not protected under the Endangered Species Act, which is the most powerful tool we have for saving our nation’s plants and animals from disappearing,” said Tierra Curry, a conservation biologist with the Center.

The South Florida rainbow snake was known only from Fish Eating Creek, which flows into the west side of Lake Okeechobee. The beautiful snake was iridescent bluish-black with red stripes on its back and sides, red and yellow patches on its belly and throat, and a yellow chin. Adults were more than four feet long. It was last seen in 1952.

The Florida fairy shrimp was known from a single pond just south of Gainesville. The pond was destroyed by development, and the species hasn’t been detected elsewhere.

“The government has to determine quickly whether the 114 other Florida species it’s reviewing will get protection so that more of Florida’s heritage isn’t erased by extinction,” said Curry. “The wellbeing of human society is deeply linked to the health of the natural systems we need to sustain life. In the end, saving species will help save us.”

The [southeastern](#) United States is home to more unique species of freshwater animals than anywhere else in the world, including mussels, snails and crayfish. Tragically, many of the region’s animals have already been lost to extinction.

Earlier this year the Center reached a landmark legal settlement with the Fish and Wildlife Service to expedite protection decisions for [757](#) imperiled species across the country.

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