Florida's Ephemeral Ponds and Pond-Breeding Amphibians

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, shalow ponds with cypress or tupelo trees growing throughout. Hydroperiod is the duration a pond holds water. Pond hydroperiod 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.

What are Pond-Breeding Amphibians?

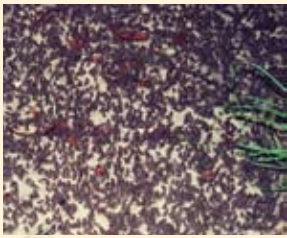
Pond-breeding amphibians are frogs and salamanders that breed in temporary wetlands. In Florida, 28 amphibian species breed in ephemeral ponds either exclusively or opportunistically. Both common (southern leopard frog, oak toad) and rare (striped newt, tiger salamander) species utilize these wetlands.

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 stumpholes. 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. 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

Management Tips

The most important strategy for managing ephemeral ponds, and the uplands that surround them, is to identify and actively maintain or restore historic fire regimes. In Florida, this typically means burning every 1 to 3 years, both in the uplands and in the wetland basin.

Other things you can do:

- Avoid using heavy machinery or vehicles of any kind in and around the pond basin as they can compact soil or break the hardpan within the pond basin.
- Avoid ditching and draining ephemeral ponds and, where possible, existing ditches should be filled.
- Avoid stocking ponds with predatory fish that prey on amphibian larvae.
- Limit roads, including unpaved roads, that traverse the core terrestrial habitat area.
- Standing dead trees, tree stumps, logs, and other coarse woody debris can be left on site because these features serve as important refugia for amphibians.
- Avoid constructing firelines around wetlands and, where present, existing firelines should be restored to original habitat.

Inventorying and Monitoring

An inventory and quality assessment of ephemeral ponds is a necessary step to understanding management needs on a property.

A biological inventory also is useful to give land managers an idea of the amphibian community composition. The presence of sensitive species (such as flatwoods salamanders, striped newts, and gopher frogs) should alert managers to take more precautions during management activities. In addition, the amphibian community should be monitored on a regular basis to ensure the implemented management strategies are effective.

For More Information

For a comprehensive look at managing ephemeral ponds and pond-breeding amphibians, see Coastal Plains Institute's recent report, "Management Strategies for Florida's Ephemeral Ponds and Pond-Breeding Amphibians" downloadable at **www.coastalplains.org**. This report includes many other useful references as well.

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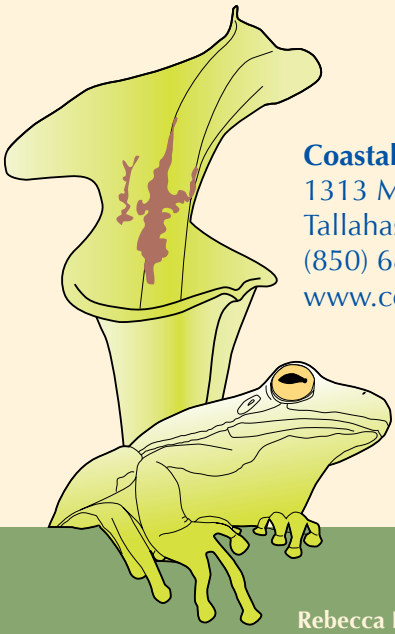

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