Frogs of North Florida

USGS
science for a changing world

ARMI

Ornate Chorus Frog (Pseudacris ornata)

The Ornate Chorus Frog gets its name from its bold, beautiful markings. Three different color morphs of this species occur (gray, reddish-brown, and green), all of which may be found in the same area.

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January 2004

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				New Year's Day 1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	Martin Luther King Jr. Day 19	20	21	22	23	24
25	26	27	28	29	30	31

Scientists with the USGS and from around the world have documented declines and extirpation of amphibian populations during the past 15 years. In response to this environmental crisis, Congress established the Amphibian Research and Monitoring Initiative (ARMI) to study amphibian populations in the United States

Visit ARMI
http://armi.usgs.gov
(also see the back of this calendar)

ARMI

U.S. Geological Survey
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Gainesville, FL 32653
Phone (352) 378-8181
http://fisc.er.usgs.gov

Southern Leopard Frog (Rana sphenocephala)

This is one of the most conspicuous species of frog in the Southeast. Adults and tadpoles can be found in many different aquatic habitats. Males use paired-vocals sacs, which expand from each side of their head, to make two different types of calls to attract females.

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February 2004

Automobiles are a major source of mortality to frogs, especially on warm, rainy nights. Each year thousands, if not millions, of frogs die while trying to cross America's roads.

USGS scientists monitored the effectiveness of an ecopassage to prevent road mortality of frogs and other animals in north Florida.

Learn more

http://www.fcsc.usgs.gov/Amphibians_and_Reptiles/amphibians_and_reptiles.html

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SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
8	9	10	11	12 Charles Darwin, 1809 Origin of Species	13	Valentine's Day 14
15	President's Day 16	17	18	19	20	21
22	23	24	25 Coleman J. Goin, 1911 *Eleutherodactylus*	26	27	28
29						

Cope's Gray Treefrog
(Hyla chrysoscelis)

Named in honor of famous herpetologist Edward Drinker Cope, Cope's Gray Treefrog is well camouflaged on trees in the forested areas it inhabits in north Florida.

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March 2004

Frogs are a diverse group of amphibians, with about 100 species in the continental U.S. and more than 4,200 species known globally. Thirty-nine species of frogs are found in the six-state Southeast ARMI region.

Learn about SE ARMI

www.fcsc.usgs.gov/armi

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SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2	3	4 Anna A. Wright, 1882 Frogs of the Okefenokee	5	6
7	8	9	10	11	12	13
14	15	16	17 St. Patrick's Day	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Squirrel Treefrog

(Hyla squirella)

These frogs are common around north-Florida dwellings and are seen at night feeding on insects attracted to lights. Their color and markings are quite variable and range from solid bright-green to brown with dark blotches.

April 2004

The USGS Florida Integrated Science Center: Advancing Science in Florida, the Southeastern States, the U.S. Caribbean, and Nationwide.

Be a part of our Schoolyard Treefrog Monitoring Project
http://cars.er.usgs.gov/Education/Herpetology/Data_Submission/data_submission.html

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SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	2	3
4	5 Roger W. Barbour, 1919 Kentucky Herpetology	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Pig Frog
(Rana grylio)

The calls of male Pig Frogs are a series of loud grunts. Frequently confused with the Bullfrog, Pig Frogs are the primary source of native frogs legs served in Florida restaurants. Like all frogs, Pig Frogs have beautiful eyes.

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May 2004

Pig Frogs are commercially and recreationally harvested in Florida . No license or permit is required to take Pig Frogs for personal consumption. Life history characteristics of exploited populations can be influenced by harvesting.

Check out
http://cars.er.usgs.gov/posters/

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3	4	5	6	7	8
9	10	11	12	13 Carl Linnaeus, 1707 Systema Naturae	14	15
16	17	18	19 Inez W. Wilder, 1871 Amphibian Metamorphosis	20	21	22
23	24	25	26	27	28	29
30	Memorial Day 31					

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Southern Toad
(Bufo terrestris)

This toad is common in the yards of residential neighborhoods. When handled, they often void their bladder of stored water in an attempt to startle the perceived predator. You cannot get warts from handling a toad!

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June 2004

USGS biologists at the Patuxent Wildlife Research Center, Upper Midwest Environmental Sciences Center, and National Wetlands Research Center monitor amphibians in the Northeast, North Central, and South Central ARMI regions, respectively.

Learn more
www.pwrc.usgs.gov
www.umesc.usgs.gov
www.nwrc.usgs.gov

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		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16 Archie F. Carr, Jr., 1909 Herpetology of Florida	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Barking Treefrog
(Hyla gratiosa)

Barking Treefrogs are the largest and most attractive of Florida's native treefrogs. They only breed in small, isolated wetlands that lack predatory fishes. They spend much of their time high in the tree canopy.

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July 2004

Natural wetlands are essential habitats for most frog species in the U.S. However, more than 50% of original wetlands in the U.S. have been lost to real estate development and agriculture during the past two centuries.

For more about wetlands
http://wetlands.fws.gov

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SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	2	3
4	Independence Day 5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

E.D. Cope, 1840
Batrachia of North America

Narrow-mouthed Toad
(Gastrophryne carolinensis)

This frog, which is not a true toad, breeds during Florida's summer. Tadpoles of the species are mostly black and resemble little cast-iron skillets. Narrow-mouthed toads feed mainly on ants.

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August 2004

USGS hydrologists, geographers, and statisticians play a major role in the National ARMI program. They work closely with USGS biologists, making ARMI a truly integrated project.

Find out more about these disciplines

http://edc2.usgs.gov/armi/nmd
http://co.water.usgs.gov/armi

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SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15 Albert H. Wright, 1879 Frogs of the Okefenokee	16	17	18	19 Thomas Barbour, 1884 Patron of Herpetology	20	21
22	23	24	25	26	27	28
29	30	31				

Eastern Spadefoot

(Scaphiopus holbrookii)

Spadefoots have a hard structure on their heels that they use to burrow into the soil. Torrential rains trigger breeding in this species, often in late summer as hurricanes and tropical storms pass over Florida.

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September 2004

Spadefoot tadpoles form large schools in the ephemeral ponds where adults breed. They can develop from an egg to a baby toad in as few as 15 days. They leave the ponds *en masse* and may carpet (photo below) the ground where they exit. Young toads migrate far into the surrounding forest.

Fascinating toad facts

http://www.flmnh.ufl.edu/natsci/herpetology/herpbiology/toadjubilee1.htm

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SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1	2	3	4
5	Labor Day 6	7	8	9	10	11
12	13	14	15	16	17	18
19	20 G. Kingsley Noble, 1894 Biology of the Amphibia	21	22	23	24	25
26	27	28	29	30		

Oak Toad
(Bufo quercicus)

This smallest of U.S. toads has a light colored stripe down its back and orange-colored feet. The high-pitched calls of the Oak Toad sound like the peeping of newly hatched chicks.

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October 2004

Amphibians in the southeast and elsewhere continue to lose habitat as land is cleared for development and agriculture. As urban development escalates, public lands will become increasingly important havens for amphibians and other wildlife.

Visit your public lands
http://refuges.fws.gov
http://www.nps.gov
http://www.fs.fed.us

NATIONAL WILDLIFE REFUGE SYSTEM

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
3 M. Graham Netting, 1904 West Virginia Herpetology	4	5	6	7	8	9
10	Columbus Day 11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

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Greenhouse Frog

(Eleutherodactylus planirostris)

Native to Cuba, the Greenhouse Frog is an introduced species in Florida and is now widespread in the state. Greenhouse Frogs lay their eggs on land, rather than in the water as our native species do. Tiny, fully-formed frogs emerge from the eggs.

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November 2004

Introduced (i.e., non-native or nonindigenous) plants and animals are a major threat to biodiversity in the U.S., especially in Florida. One of four well-established non-native frog species in the state, the Cuban Treefrog feeds on Florida's native treefrogs and has decimated their populations in places.

Learn more at

http://cars.er.usgs.gov/Nonindigenous_Species/nonindigenous_species.html

Photo by Pete Shivak

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2	3	4	5	6
7	8	9	10	Veterans Day 11	12	13
14	15	16	17	18 Sherman C. Bishop, 1887 Handbook of Salamanders	19	20
21 Emmett R. Dunn, 1894 Plethodontid Salamanders	22	23	24	Thanksgiving 25	26	27
28	29	30				

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Southern Chorus Frog (*Pseudacris nigrita*)

A ventriloquist among frogs, Southern Chorus Frogs can be difficult to locate by following the sound of their calls. They breed in winter–this male was photographed in February near Sopchoppy in Florida's panhandle.

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December 2004

USGS biologists at the Northern Rocky Mountain Science Center, Western Ecological Research Center, and Forest and Rangeland Ecosystem Science Center monitor amphibians in the Rocky Mountains, Southwest, and Pacific Northwest ARMI regions, respectively.

Learn more at
http://www.nrmsc.usgs.gov
http://www.werc.usgs.gov
http://fresc.usgs.gov

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			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18 C.S. Brimley, 1863 North Carolina Herpetology
19	20	21	22	23	Christmas Eve 24	Christmas 25
26	27	28	29	30 John E. Holbrook, 1794 Father of North American Herpetology	New Years Eve 31	

River Frog
(Rana heckscheri)

River Frogs breed in Florida's lakes and rivers. Tadpoles of this species grow to over four inches long and have a dark border around the edge of their tails. Tadpoles, unlike the adults, have red eyes.

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January 2005

Many of the Florida rivers where *R. heckscheri* breed are fed by springs. Water stored underground in the Floridan aquifer emanates at the surface to form the springs. This aquifer is the source of most of the state's drinking water. Threats to this natural resource include human population growth and contamination from fertilizers and pesticides.

To find out more:
www.floridasprings.org

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						New Years Day 1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	Martin Luther King Jr. Day 17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

US Geological Survey

The U.S. Geological Survey (USGS) is a federal agency within the Department of the Interior. Established in 1879, the USGS serves the Nation as an independent fact-finding agency that collects, monitors, analyzes, and provides scientific understanding about natural resource conditions, issues, and problems. The value of the USGS to the Nation rests on its ability to carry out studies on a national scale and to sustain long-term monitoring and assessment of natural resources. Because it has no regulatory or management mandate, the USGS provides impartial science that serves the needs of our changing world. The diversity of scientific expertise enables the USGS to carry out large-scale, multidisciplinary investigations that build the base of knowledge about the Earth. The USGS is organized into four integrated sections: biology, geography, geology, and water.

Florida's Frogs

With its great diversity of wetland and upland habitats, Florida is a fabulous place to find frogs. Adults and tadpoles can be found throughout the year in roadside ditches, isolated ponds, swamps, lakes, and rivers. Although all of our native frogs require water in which to lay eggs and for tadpole development, individuals of many species spend much of their lives in upland habitats far from wetland breeding sites. Frogs are important components of natural food webs. They feed on a variety of insects, and, in turn, are fed upon by animals higher up the food chain such as birds and mammals (including humans). Like all amphibians, frogs have moist skin that is highly permeable to water. This makes them vulnerable to environmental contaminants. Florida's frogs are threatened primarily by habitat loss and degradation.

There are 27 native and 4 well-established exotic species of frogs in the state. Florida's frogs range in size from the diminutive Little Grass Frog, which is the smallest vertebrate in the United States and never exceeds ¾ of an inch in length, to the American Bullfrog, which can grow as long as eight inches. They range in color from bright green, characteristic of Squirrel and Green Treefrogs (cover photo), to the mottled browns and grays of the Southern Toad. Male frogs inflate vocal sacs on their throats or either side of their heads to produce calls to attract females during breeding seasons, which vary among species. North Florida (including the panhandle) is home to all 27 native, as well as one exotic, species of frog found in the state. This calendar showcases many of these species.

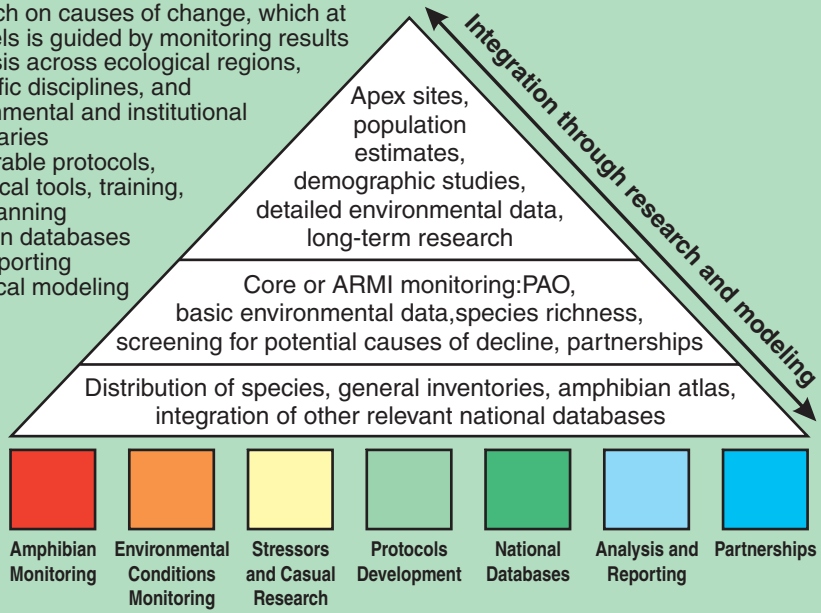
Amphibian Research and Monitoring Initiative (ARMI)

In response to documented declines of amphibians worldwide, including the United States, the President and Congress directed the Department of the Interior (DOI) to develop a plan to monitor trends in amphibian populations on DOI lands and conduct research into causes of declines. The DOI has stewardship responsibilities over vast land holdings in the United States, much of which is occupied by or is potential habitat for amphibians. The USGS was given lead responsibility for planning and organizing this program, named the Amphibian Research and Monitoring Initiative or ARMI (http://armi.usgs.gov).

ARMI is a multidisciplinary program, relying on coordination of efforts and expertise across government agencies, academic institutions, and non-government agencies. ARMI is truly an integrated program and USGS scientists from biology, geography, and water work together to conduct research and monitoring activities. For purposes of the ARMI program implementation, the United States is divided into seven blocks of states that are the focus of regional amphibian investigations (see map).

The framework of ARMI research is conceptualized as a pyramid with extensive and necessarily coarse measurements at many sites across the country (the base of the pyramid), mid-level efforts at a moderate number of sites to provide a regional perspective on the status of amphibians (the middle portions of the pyramid), and intensive research efforts at a relatively small number of index sites throughout the country (the top of the pyramid). Mid-level areas are the primary focus of ARMI monitoring. Activities at the different levels of the framework are integrated by:

- Research on causes of change, which at all levels is guided by monitoring results
- Synthesis across ecological regions, scientific disciplines, and governmental and institutional boundaries
- Comparable protocols, analytical tools, training, and planning
- Common databases and reporting
- Ecological modeling



Credits

This calendar was produced by USGS employees at the Florida Integrated Science Center (http://fisc.er.usgs.gov) in Gainesville and Tallahassee, Florida. Digital images of each month's frog were taken by Steve A. Johnson and William J. Barichivich during fieldwork for the Amphibian Research and Monitoring Initiative (ARMI) at St. Marks National Wildlife Refuge (http://saintmarks.fws.gov) and Lower Suwannee National Wildlife Refuge (http://lowersuwannee.fws.gov).

Steve Johnson wrote most of the text and conceived of the calendar concept. Calendar layout and design produced by Ron Spencer and Jane Eggleston. Jennifer S. Staiger and C. Kenneth Dodd, Jr. helped with calendar organization and edited the text.

The Southeastern ARMI program provided funding.

Amphibian Websites of Interest

www.parcplace.org/default.htm
www.npwrc.usgs.gov/narcam/idguide/index.htm
www.mp2-pwrc.usgs.gov/armiatlas
www.flmnh.ufl.edu/natsci/herpetology/herpetology.htm
wwknapp.home.mindspring.com/GAFrog.Toad.html
www.npwrc.usgs.gov/narcam
www.mp2-pwrc.usgs.gov/naamp
www.pwrc.usgs.gov/tadpole
www.wec.ufl.edu/extension/frogs