

# Voices of the Night

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## Reveling in Alabama's Treefrogs

No matter the time of year, the cyclic rhythms of the natural world summon the familiar sounds that define the seasons. Among the most notable of these are the choruses of treefrogs that reliably characterize late spring and summer across an Alabama landscape. Such sounds often conjure images of warm, humid evenings over a "country" setting and, to a certain extent, capture the essence of our southern identity.

Alabama's treefrogs belong to the family Hylidae, which is a large anuran (frogs and toads) family comprised of more than 700 species worldwide. Most

members of this family are noted for having enlarged, adhesive discs (or pads) on the ends of their toes that enable them to be efficient climbers. Furthermore, their toes are very flexible due to an extra joint in each digit that allows them to freely grasp onto almost any structure like small limbs and leaves. Fifteen native species of "hylids" representing three closely related groups occur in Alabama and include the true treefrogs (genus *Hyla*), chorus (genus *Pseudacris*) and cricket (genus *Acris*) frogs. Of these three groups, the true treefrogs are the focus of this article.

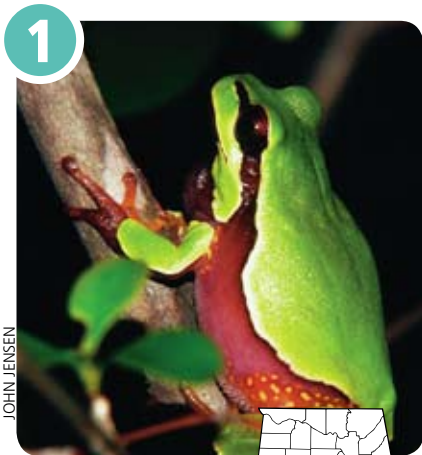


Cope's Gray Treefrog

## Representative Species of Alabama

Seven species of true treefrogs inhabit Alabama and include pine barrens treefrog (*H. andersonii*), bird-voiced treefrog (*H. avivoca*), Cope's gray treefrog (*H. chrysoscelis*), green treefrog (*Hyla cinerea*), pine woods treefrog (*H. femoralis*), barking treefrog (*H. gratiosa*) and squirrel treefrog (*H. squirella*). The following accounts provide physical descriptions along with some basic natural history facets for each of these seven species.

### Pine Barrens Treefrog (*Hyla andersonii*)



The pine barrens treefrog could arguably be considered Alabama's most beautiful frog. Adults are relatively small (1.5") and plump in stature. Their head, back and upper surfaces of legs are vibrant green and fringed with a narrow yellowish-white border. Their green back and legs are contrasted by a plum-colored stripe that extends narrowly from the nostrils, through the eye, and broadens along the sides toward the inner portion of the thighs. Yellowish-orange spots are present within the covered portions

of the legs and lower flanks. Males have darker throats than females. At first glance, this species could be confused with our other "green-colored" treefrogs, but the dark lateral stripe is diagnostic.

The pine barrens treefrog is Alabama's rarest treefrog. It is currently known from less than 30 isolated sites in the lower portions of Escambia, Covington and Geneva counties with the Conecuh National Forest being its stronghold. They inhabit acidic hillside seepage bogs characterized by thickets of evergreen shrubs over a diverse group of herbs, particularly where carnivorous plants are present. Within these areas, they breed in shallow pools formed by water trickling in from subsurface seeps.

Males begin calling in late March and continue through September. Their advertisement call is a rapid, nasal-sounding *quenk-quenk-quenk* often emitted from the limbs (4 feet or lower) of vegetation surrounding breeding sites. Breeding choruses are small and generally limited to 10 or fewer males. Because of its specific habitat requirements and overall scarcity, the pine barrens treefrog is currently recognized as a species of high conservation concern in Alabama.

### Bird-voiced Treefrog (*Hyla avivoca*)



The bird-voiced treefrog is a relatively small frog (1.5") and variable in coloration. It is best characterized by having an overall grayish to greenish wash and a large, variegated dark blotch over the back. A distinct light spot occurs below the eye and its skin is smooth with some noticeable bumps. Males are smaller than females and usually have a darker throat. Superficially, bird-voiced treefrogs are very similar to Cope's gray treefrogs, but the inner surfaces of the hind legs are lined with greenish-yellow spots as opposed to the bright yellow-orange markings on the inner legs of the latter species.

In Alabama, the bird-voiced treefrog is primarily restricted to the Coastal Plain region, although one disjunct population may occur north of the fall line. They inhabit floodplain forests often in association with cypress/tupelo communities spending most of their time in trees except when they descend to pools to breed. Breeding activity usually begins in April and may last through September. Advertisement calls are characterized by a repeated series of rapid, high-pitched *wheets* that are suggestive of birdlike whistles. Bird-voiced treefrogs are not as widespread as our other resident treefrog species, but are still considered relatively common.



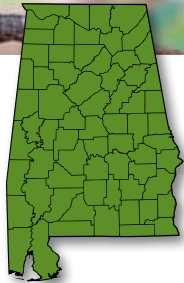
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## Cope's Gray Treefrog (*Hyla chrysoscelis*)

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The Cope's gray treefrog is a medium-sized frog (1.75") that is often well camouflaged. It is typically gray-backed with darker blotches laid in no particular pattern often resembling tree bark. The skin is granular and its coloration may vary from gray to green depending on temperature and activity level. A light square-shaped spot just below the eye and vivid yellow to orange coloration on the inner thighs (often hidden) are diagnostic of its identification. The bird-voiced treefrog is very similar in appearance, but the inner thigh is light greenish-yellow instead of a bright yellow-orange and the calls are distinctly different. Squirrel treefrogs may also look similar when both species are green in overall coloration, but the lack of a light spot below the eye on the squirrel treefrog separates the two.

The Cope's gray treefrog is common throughout Alabama. Breeding typically

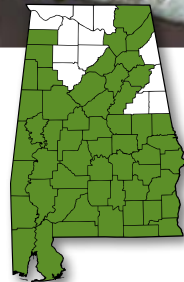
ranges from late March to early August and usually occurs during warm, rainy periods. They utilize a variety of natural and artificial habitats for breeding. Their advertisement call is a fast, high-pitched musical trill that is repeated regularly and trill rates vary with temperature. Two species of gray treefrogs are recognized: Cope's and common gray treefrog (*Hyla versicolor*). They are generally referred to as the gray treefrog complex based on their close similarities. The two species are indistinguishable in appearance, but are best differentiated by their respective calls. The Cope's gray treefrog's call is faster and higher pitched than the latter. Additionally, both species differ in the number of chromosomes they possess. The ranges of both species overlap but the line of separation is poorly understood. Of the two, only the Cope's gray treefrog occurs in Alabama.

## Green Treefrog (*Hyla cinerea*)

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The green treefrog is a moderate-sized treefrog (up to 2") with a slender build. It is characterized by a vivid green back and legs, light belly and a prominent white stripe along both sides of the body, which run continuously from the upper lip to the inner thigh. Like most treefrogs, its coloration may vary (anywhere from brown to turquoise) depending on temperature and activity level. It is not unusual for some individuals to have small yellowish-orange flecks scattered over the back. This species is sometimes confused with squirrel treefrogs, but are readily distinguished from them by being larger and having a much more prominent white stripe along the sides.

Green treefrogs are among the most common of Alabama's treefrogs. Although they range above the fall line

well into northeast Alabama, they are most abundant in the coastal plain region occurring in almost all types of wetland habitats where emergent vegetation exists. Green treefrogs begin calling in April, continue through August, and usually form very large choruses that can be near deafening at close proximity. Their typical advertisement call is a nasally *quenk* that is consistently repeated. At lengthy distances, full choruses are said to sound like ringing cowbells, which is created by the variation in pitch between many calling individuals. Green treefrogs appear to be expanding their range northward in Alabama.



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## Pine Woods Treefrog (*Hyla femoralis*)

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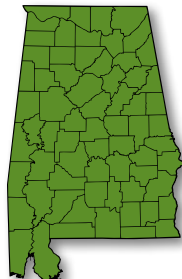
The pine woods treefrog is a rather small treefrog (1.25") that has a variable brownish wash with usually one or two variegated dark blotches. Sometimes there is a triangular-shaped mark between the eyes. Some may have a thin dark line extending through the nostrils and widening across the tympanum. Distinctive yellowish spots run down the darker portion of the inner thighs and are what distinguishes this species from the similar-looking squirrel treefrog.

As their name implies, this species is found primarily in pine-dominated forests of the lower coastal plain region of Alabama, although an isolated population has been documented above the fall line in Shelby County. During the warm season, they typically use temporary rain-filled pools or small isolated ponds for breeding.

Pine woods treefrogs begin calling in early April and may continue into fall when conditions are favorable. Males call from surrounding vegetation fringing along the pools' perimeter emitting a distinctive, even-pitched *dat-a-dat-dat* repeated rapidly that is suggestive of the sound of Morse code. Outside the breeding season, this species is seldom encountered because of time spent hidden high in trees, under the bark of rotting pine snags or other moist places. Although primarily restricted to the coastal plain region, this species is considered locally common in Alabama where favorable habitat exists.

## Barking Treefrog (*Hyla gratiosa*)

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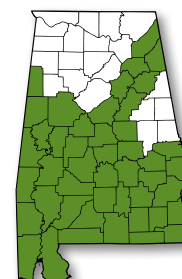


The barking treefrog is the largest (up to 2.5") native treefrog in the United States and is most easily recognized by its robust body size and granular skin. Although variable, barking treefrogs are usually green with dark blotches on the back and sides. The upper lip is often whitish and may extend laterally as a duller, irregular stripe toward the groin. This species is capable of changing its background color and pattern quickly in response to various external conditions. Males have a darker throat and are smaller than females. It can sometimes be confused with green treefrogs, but its robust appearance and granular skin readily separate it from the latter.

Barking treefrogs are widely distributed throughout Alabama, but are most prevalent in the coastal plain region. Adults favor forested landscapes near shallow ephemeral or semi-permanent fishless wetlands. Less frequently, perhaps as a necessity, they may breed in permanent water bodies where fish occur. Breeding activity is often initiated after heavy rainfall from late March into early August. This species' common name is derived from its advertisement call, which is a low, emphatic *boonk* repeated once per second and resembles the bark of a dog. Males call while floating on the water's surface and congregations may reach into the hundreds, resulting in impressively loud choruses. This species appears to be stable in Alabama although they are relatively scarce north of the fall line.

## Squirrel Treefrog (*Hyla squirella*)

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The squirrel treefrog is a small (1.25"), plain treefrog that is variable in coloration. It ranges in color from green to brown and has a subtle off-white stripe extending laterally from the upper lip to the sides of the body. Males are smaller than females and usually have a darker throat. This species is often confused with green treefrogs, but its smaller size and less distinctive lateral stripe separates the two.

Squirrel treefrogs are common throughout the coastal plain with some populations extending linearly into the ridge and valley region as far north as DeKalb County. It can be found in many different habitats and will utilize most aquatic situations for breeding, particularly temporary rain-filled pools.

Males begin calling in March and will continue into August emitting a raspy *waank* repeated several times. However, this species receives its name for its peculiar "rain call" given before and during summer rain events that is reminiscent of a scolding squirrel. Many Alabamians are familiar with this species for their tendency of turning up around residential areas (more so than any other species), especially under porch lights and on windows when foraging at night. Squirrel treefrogs appear to be expanding their range in Alabama.

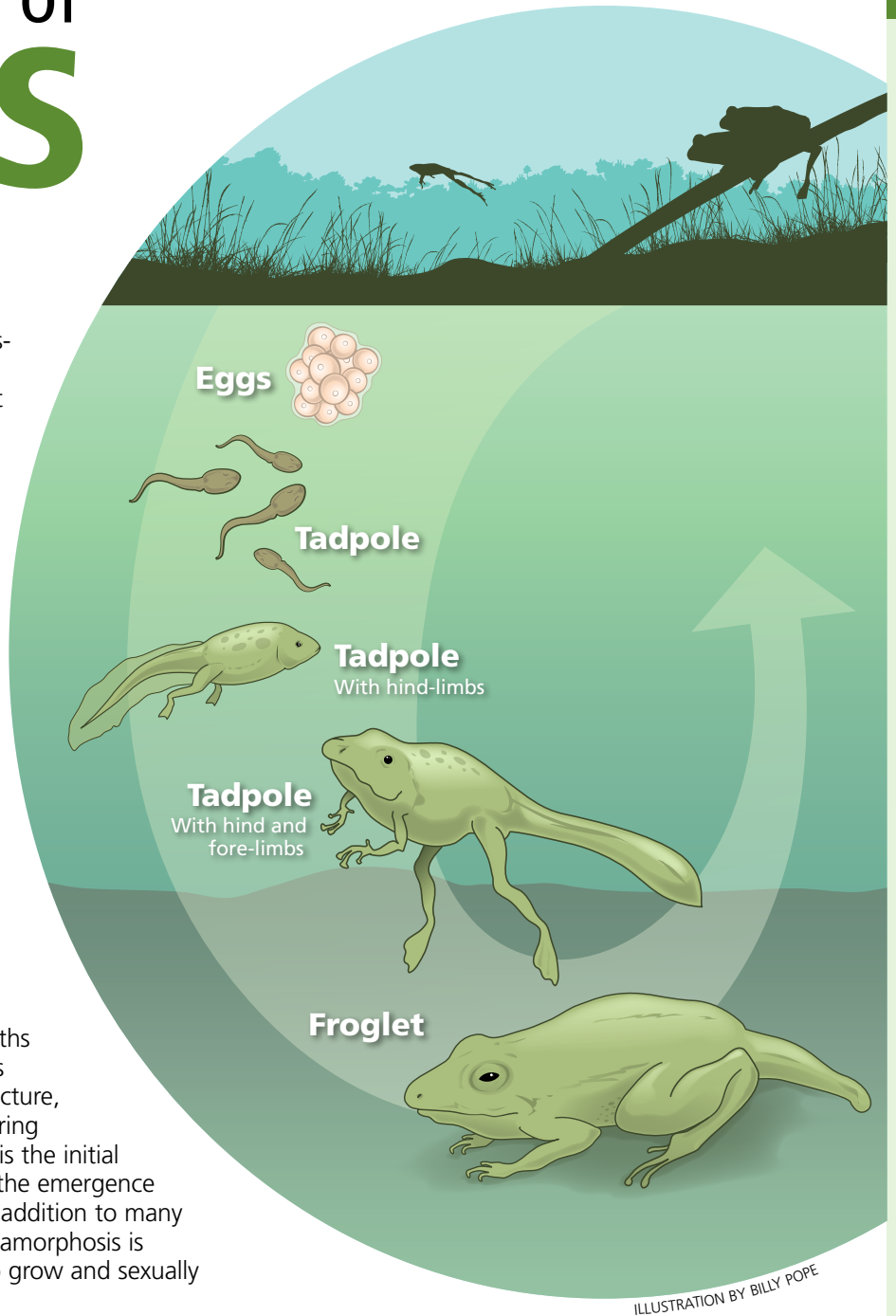
# The Life Stages of **FROGS**

## Treefrogs undergo a two-staged life cycle:

an aquatic larval stage followed by a terrestrial adult stage. Breeding begins with the males' advertisement calls. The calls attract females who subsequently approach their selected mates. The male will then climb atop the female and securely grasp underneath her armpits with his forelimbs, which is known as amplexus. Once in amplexus, the clasped female carries the male to the water, where she begins to lay eggs. As eggs are being deposited, the male releases sperm over the eggs thereby fertilizing them externally.

Generally, treefrogs lay clutches of eggs of varying numbers ranging from a few to thousands depending on the species. The egg clutches are often attached to surrounding vegetation or rest on the bottom of the pool. Larvae develop quickly within the eggs and usually emerge within a few days.

Treefrog tadpoles grow quickly in the pool and begin to transform into a more froglike shape (froglets) within 1 to 2 months through metamorphosis. Metamorphosis is defined as a series of changes in body structure, physiology, biochemistry, and behavior. During metamorphosis, the most notable change is the initial growth of hind-limbs, followed shortly by the emergence of fore-limbs, resorption of gills and tail in addition to many internal morphological changes. Once metamorphosis is complete, small froglets leave the water to grow and sexually mature into adults while living on land. **DA**



## Listen to the Frogs!

Audio recordings of the seven species of treefrogs mentioned in this article can be heard on the ADCNR Web site at:

[www.outdooralabama.com/outdoor-alabama/July2009.cfm](http://www.outdooralabama.com/outdoor-alabama/July2009.cfm)



Recordings are from the CD produced by the Georgia Department of Natural Resources: *Calls of the Wild: Vocalizations of Georgia's Frogs* by John B. Jensen and Walter W. Knapp. All recordings by Walter W. Knapp.