



FrogWatch USA: Listening to the Songs of Nature





FrogWatch USA

- Program ran by the Akron Zoo
- Hosted by local Chapters
- Began in 1998
- Collects data on frog and toad breeding calls

Community Science

- A research collaboration between scientists and volunteers
- Expands opportunities for scientific data collection, while providing access to scientific information to community members
- Appropriate for large-scale, long term data



Benefits of the Data

- Describe local species diversity
- Detect rare and invasive species
- Suggest shifts in species diversity, range, and phenology over time
- Serve as an indicator of wetland health
- Inform the development of land management strategies



Anurans: Frogs and Toads

- Frogs
 - Smooth and/or slimy skin
 - Lay eggs in clusters
 - Usually live in or near water
 - Skinny bodies with long legs
 - Move in leaps and jumps
 - Upper jaw with teeth



© Rachel Gauza



Photo by Doug Marcum

Anurans: Frogs and Toads

- Toads
 - Warty, dry skin
 - Lay eggs in long strands
 - Usually live on dry land
 - Fat bodies with short legs
 - Move in short hops
 - No teeth



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Photo by Doug Marcum

FROG
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Frog and Toad Breeding Basics

- Males generally arrive at breeding sites first.
- Males advertise by calling to attract females to breeding sites, and some species establish and defend a territory.
- Once the male encounters a female, he will attempt to clasp her in amplexus.
- If successful, eggs are deposited in the water and are fertilized by the male externally as they are laid.



Frogs and Toads are Important



- Benefit the natural world and humans:
 - Predators and prey in the ecosystem, Pest Control, Food, Medicine, Education and research, Culturally significant.
- Serve as indicators of environmental health
 - Sensitive to environment because of:
 - Permeable skin
 - Life cycle that includes time in water and on land



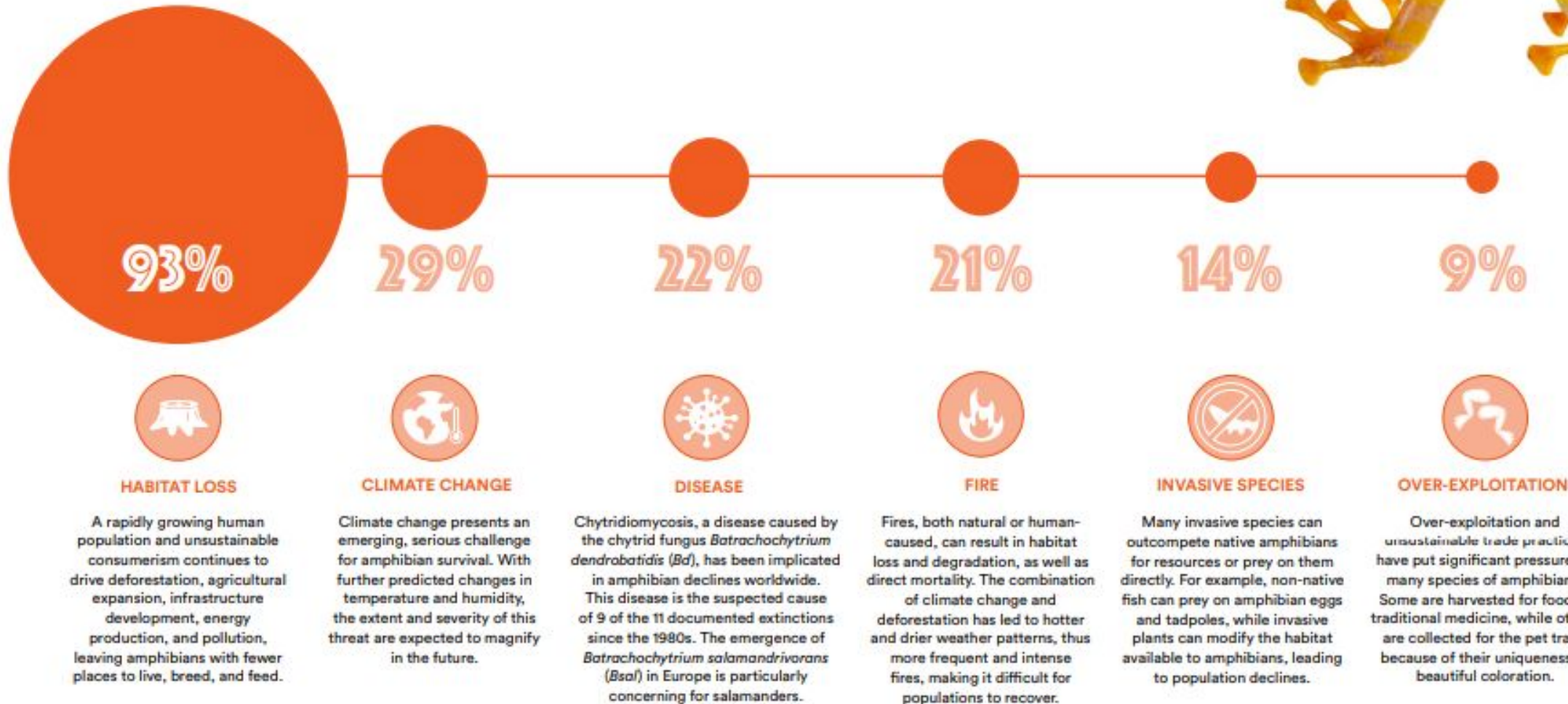
Amphibian Declines

- Over past 20 years, scientists have reported dramatic declines in amphibian populations around the world
- As reported by the IUCN in their Second Global Amphibian Assessment (8011 amphibians):
 - 41% are threatened with extinction (2873)
 - 222 amphibians are believed to have gone extinct (either are extinct or have no known surviving populations)
 - 11% are data deficient (909) – down since first assessment!
 - At least 1/3 of all species are declining in population
- In the United States, 44 amphibians are listed as Critically Endangered, Endangered, or Vulnerable.

Threats Driving Amphibian Declines

The IUCN Red List provides a clear and compelling picture of the many ways in which human activities are driving amphibians towards extinction. Every major threat, from the conversion of habitats to climate change to disease, affects amphibians. In many cases species are impacted by multiple and potentially compounding threats, thereby exacerbating their vulnerability.

2873 TOTAL THREATENED SPECIES



The Ornate Rainfrog *Pristimantis ornatus* is Endangered because of a population decline, suspected to be at a rate of more than 50%, due to habitat loss driven by industrial agriculture and commercial logging on the Pacific slopes of the Ecuadorian Andes.

© James Collins





Ways to Address the Threats

- Education and Engagement
- Regulations
- Management
- Research
- Monitoring



In Your Backyard

- Clean up Pet Waste
- Leave Leaves and Sticks
- Don't use Chemicals on Lawn
- Add a Pond
- Watch Pets in Yard
- Plant Natives
- Conserve Water
- Reduce Fossil Fuel Use



Frogs and Toads of Ohio

15 Species

4 Families

- Ranidae: True Frogs
- Pelobatidae: Spadefoots
- Hylidae: New World Treefrogs
- Bufonidae: True Toads



Ranidae: True Frogs (6)

Shared Features

- Powerful hind legs
- Can move in long leaps
- Webbed feet
- Stout waist
- Large, broad mouth
- Smooth skin without bumps or tubercles (generally)

Species List

- American Bullfrog
- Northern Green Frog
- Southern Leopard Frog
- Northern Leopard Frog
- Pickerel Frog
- Wood Frog

American Bullfrog



Size: 3 – 8 inches.

- The largest frog in North America.
- Have a white throat
- Will eat anything including small birds and young snakes
- Very aquatic species
- Mating Season: Late April to end of summer
- Habitat: Ponds , lakes, slow moving streams with vegetation. Usually found on the bank at water's edge.



Green Frog



Size: 2 - 4 inches

- Similar in appearance to the Bullfrog but has two dorsolateral ridges on its back
- Mating Season: Early May to mid July
- Habitat: Lives close to shallow water, streams, swamps, and at the edges of ponds and lakes.





Northern Leopard Frog



Size: 2 - 5 inches

- Has a dorsolateral ridge that is white
- Named for its round irregular spots that resemble a leopard's
- Mating Season: Mid March through May
- Habitat: Wide variety ranging from freshwater with profuse vegetation to brackish marshes and moist fields.





Southern Leopard

Size: 2 – 3 1/2 inches
Frog



- Has a dorsolateral ridge that is white
- Named for its round irregular spots that resemble a leopard's
- Has a pointed snout with no spots, but has a distinctive white spot on tympanic membrane
- Mating Season: March (but no record of it in Ohio)
- Habitat: Wide variety ranging from freshwater with profuse vegetation to brackish marshes and moist fields.



© Judy Gallagher



Pickerel Frog



Size: 1¾ - 3 inches

- Other spotted frog in Ohio, spots are more square
- Two parallel rows down their backs
- Skin secretions are reported to be somewhat toxic (may be reason for flash of color inside hind leg)
- Mating Season: late March through early May
- Habitat: Slow-moving waters and other damp areas preferably with low, dense vegetation; streams, swamps, and meadows



© Peter Paplanus

Wood Frog



Size: 1 3/8-3 1/4 inches

- Dark mask across it's eyes and a white strip under their eyes
- The only North American frog found north of the Arctic Circle.
- Currently being studied for their ability to partially freeze its tissues
- Mating Season: Late February to early April
- Habitat: Most terrestrial frog preferring moist woodlands rather than ponds. They are vernal pool breeders.





Hylidae:

New World Treefrogs (6)

Shared Features

- Slim waist
- Long, thin limbs
- Distinctly enlarged toe pads
- Ability to climb

Acris sp.: Cricket Frogs
Blanchard's/Eastern
Cricket Frog

Pseudacris sp.: Chorus Frogs
Western Chorus Frog
Mountain Chorus Frog
Northern Spring Peeper

Hyla sp.:
Gray Treefrog
Cope's Gray Treefrog



Gray Treefrog



Size: 1 ¼ - 2 ½ inches

- Change color with their environment from green to gray.
- Two species of gray treefrog are identical in appearance. The difference is the call.
- Mating Season: Late April through late July
- Habitat: Trees or shrubs growing in or near permanent water. Breed in ponds.





Cope's Gray Treefrog



Size: 1 ¼ - 2 ½ inches

- Two species of gray treefrog are identical in appearance. Can be identified by counting chromosomes or measuring red blood cells.
- Calls can be distinguished by trill rates, but they vary by temperature. Cope's has a faster, raspier sound.
- Mating Season: Late April through late July
- Habitat: Trees or shrubs growing in or near permanent water. Breed in ponds.





Mountain Chorus Frog



Size: 1 - 1 ½ inches

- Has a wide stripe on each side of the back that go from the shoulder to the groin that are curved and almost touch to form an “X” on the back
- Another dark stripe extends from the nostril through the eye and down the side of the body
- Triangle between eyes and white line on lip
- Mating Season: Mid-March through early June
- Habitat: Forested hillsides around springs and seeps



Northern Spring Peeper



Size: $\frac{3}{4}$ - $1\frac{1}{2}$ inches

- Easily identified by the dark “X” on its back.
- One of the first signs of spring
- Mating Season: March through late May
- Habitat: Prefers to breed in vernal pools and then retreats to moist wooded areas for the rest of the summer.



© Doug Marcum

Western Chorus Frog



Size: 3/4 to 1 1/2 inches

- Easily confused with the Spring Peeper because of similar size and breeding times and locations.
- Has three black racing stripes on back
- Mating Season: Late February to early May
- Habitat: Marshes, swamps, open forests, and field. Breed in ponds and then burrow in the mud to escape the hot temperatures.



TODD PIERSON 2008

Blanchard's Cricket Frog

Size: 2/3 to 1 1/2 inches

- Only Ohio tree frog that has warts on its back.
- White belly
- Has a dark triangle between the eyes that points backwards and a jagged, dark line on the back of each thigh.
- When viewed from the side, the upper jaw extends past the lower jaw.
- Adhesive discs on toes never exceeds the width of the toes.
- Mating Season: Early May – Early August
- Habitat: Sparsely vegetated, sandy, or muddy shores (ponds and streams). They can also use flooded agricultural fields, depressions, and ditches if near permanent bodies of water.



Bufonidae: True Toads (2)



Shared Features

- Relatively thick, dry, warty skin
- Enlarged (paratoid) glands at the shoulder region
- Stout-bodied and move in short hops
 - Ground-dwelling

Species List:

American Toad
Fowler's Toad

American Toad



Size: 2- 4 inches

- Toads lay eggs in a long string while frogs lay them in clumps.
- Has one or two warts in their dark dorsal spots and mottled markings on chest.
- Explosive breeders who breed in shallow pools of water.
- Mating Season: Early April through June
- Habitat: Mowed grassy yards to forested mountains. Wherever there is abundant moisture and insects.



© Doug Marcum

Fowler's Toad



Size: 2 ½ - 3 ¾ inches

- Similar to American Toad except:
- Calls are different
- Three or more warts in their dorsal spots
- Single dark spot on their white chest and belly
- Can cross breed with American Toads
- Likes to burrow into the ground during hot, dry periods and during the winter
- Mating Season: Late April through early July
- Habitat: Sandy areas near marshes, irrigation ditches, backyards, and temporary rain pools



TODD PIERSON 2010

Pelobatidae: Spadefoots(1)

Species List

- Eastern Spadefoot

Shared Features

- Smooth-skinned
- Large eyes with vertically elliptical pupils
- Dark, sharp-edged tubercle on bottom of each hind foot (spade)



Eastern Spadefoot



Size: 1 ³/₄ - 2 ¹/₄ inches

- Two yellow lines run from the eyes down the back to meet at vent – forms an hourglass shape
- Has a hard, black sickle-shaped spade on the underside of each hind foot
- Eyes have horizontally elliptical pupils
- Mating Season: April through August (tied to rain)
- Habitat: Some forested areas, but mainly open fields in valleys with loose, sandy soil.



State endangered frog

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TODD PIERSON 2009

Can you do it? Time to Practice!



© Shawn George



Wetlands



Wetlands

FrogWatch USA data are collected at wetlands

- Frogs and toads need water to breed and advertise by calling

Wetlands are defined by three characteristics:

1. The presence of plants that are known to grow in saturated conditions
2. Soils that lack oxygen
3. Water at or near the surface during some part of the growing season.



Types of Wetlands

Marshes

- Frequently covered in water; emergent soft stemmed vegetation

Vernal Pools

- Form in spring from melting snow or rain; often dry in summer

Swamps

- Saturated soil, sometimes with standing water; plant life dominated by woody plants

Bogs

- Include spongy peat, derive water from precipitation; highly acidic waters support low plant diversity

Fens

- Like bogs, but also receive water from sources like groundwater, and therefore gain nutrients to support more diverse plant life



Types of Wetlands cont'd

Wet Meadows

- Type of marsh that is common in low-lying farmland, may resemble grasslands but soils remain saturated throughout the year

Ponds

- Smaller than a lake but are also a permanent primarily open body of water that is often bordered by vegetation

Ditches

- Have a variable depth and permanence of water, include roadsides, railroad tracks , irrigation, and tire ruts

Urban Wetlands

- Include ponds and lakes in city parks, housing developments, and golf courses which can be diverse for frogs and toads



Monitoring Protocol:

- Use the same wetland site all season
- Complete Observations at least once a month February-August
- 2 minute acclimation period
- After acclimation period listen for PRECISELY 3 minutes to the frog calls
- Listen to, identify, and remember all the breeding calls occurring during the session
- Record the call intensity of the species on your data sheet
- Record the weather variations for your observation along with the times of your observation
- Input data into online database



National Statistics - 2025

- Number of Chapters

- 155

- New Chapters

- 15

Number of Observers

- 441 people inputting data into FieldScope

- Individual Observations put in (as of 12/1/25)

- 8,928 (last year: 9,165)



By the Month

February

- 128 Observations
- 88 sites (13 states)
- 8 frogs heard

March

- 1419 Observations
- 474 sites (25 States)
- 30 frogs heard

April

- 1889 Observations
- 561 Sites (26 States)
- 36 frogs heard

May

- 1993 Observations
- 488 sites (26 States)
- 35 frogs heard

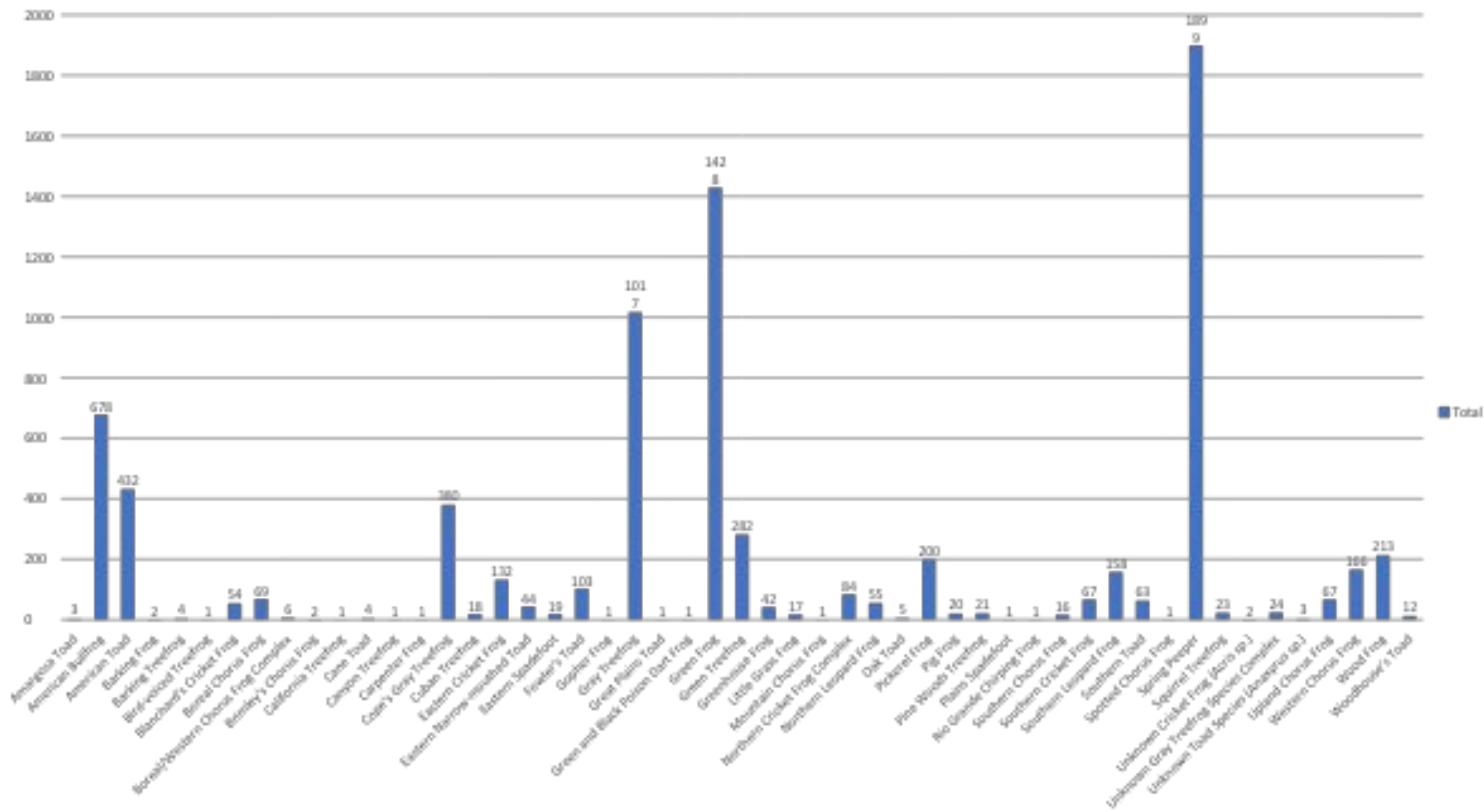


June

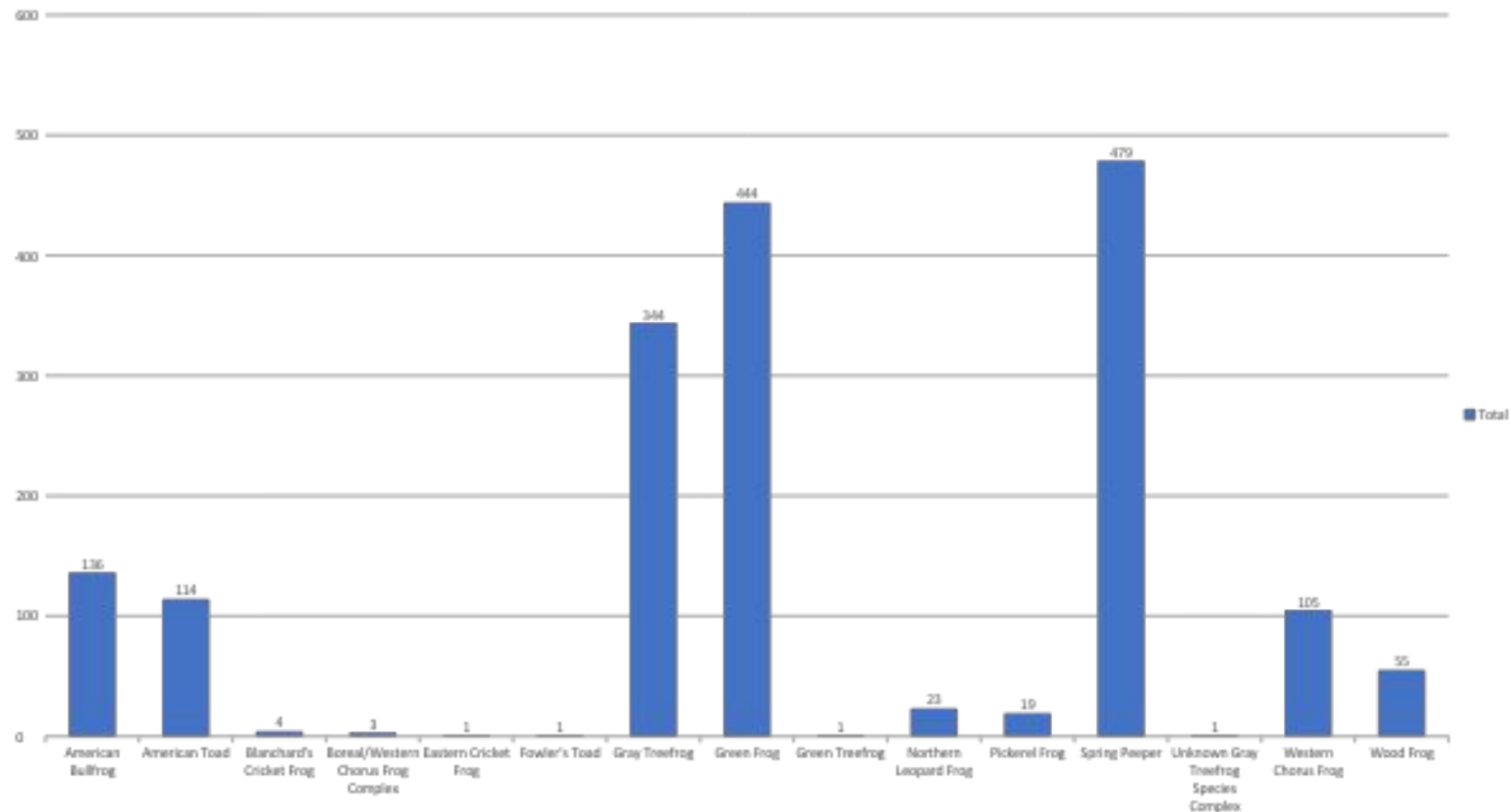
- 1627 Observations
- 407 sites (24 States)
- 33 frogs heard



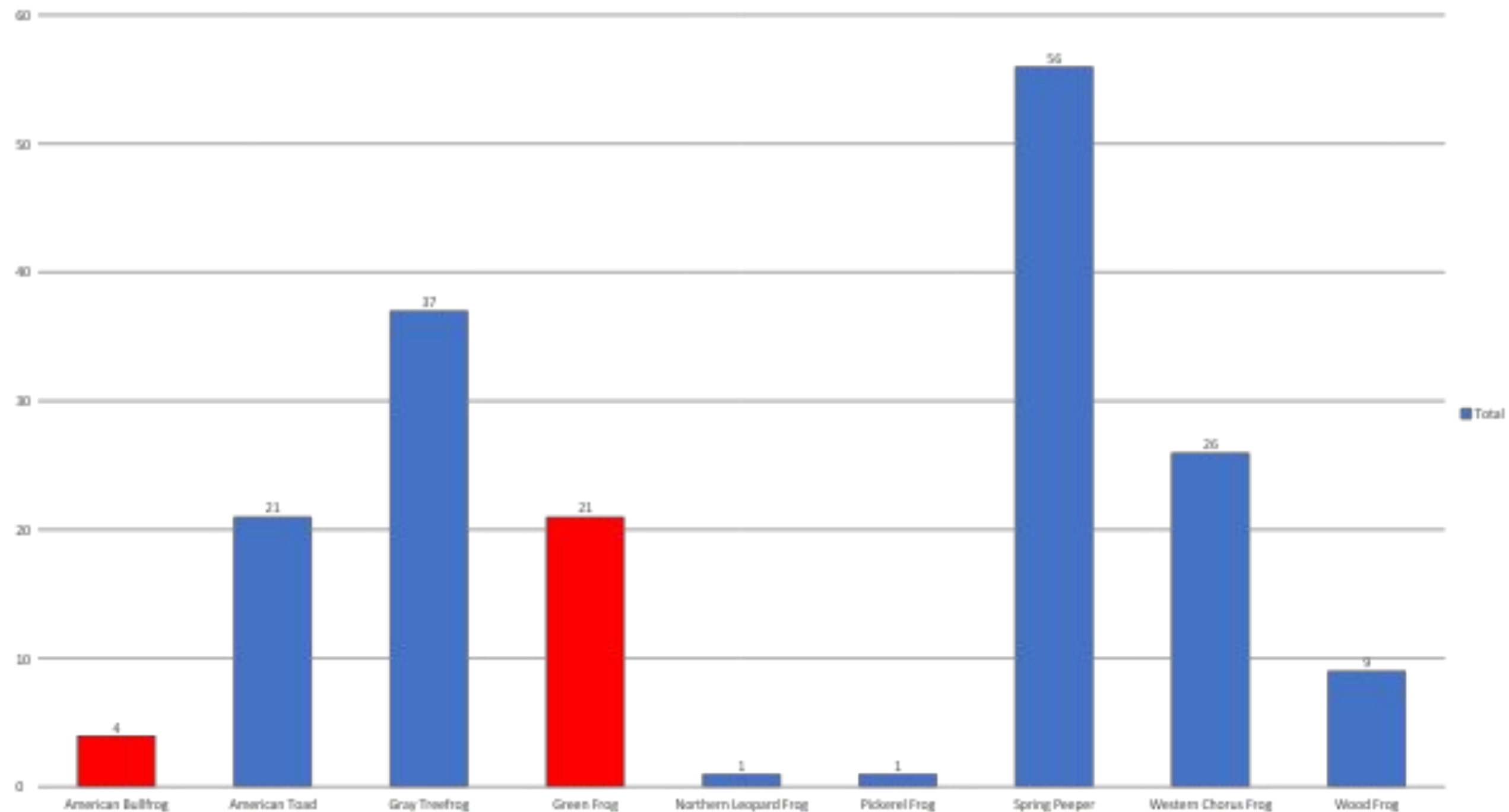
National Frog and Toad Calls 2025



2025 Ohio Frogs and Toads



2025 Ohio Vernal Pool Reports



Contact Information

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To learn more about FrogWatch USA, visit
akronzoo.org/frogwatch

Contact your local chapter at
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