

The Frogs and Toads of North America



A COMPREHENSIVE GUIDE
TO THEIR IDENTIFICATION,
BEHAVIOR, AND CALLS

LANG ELLIOTT,
CARL GERHARDT,
and
CARLOS DAVIDSON

The Frogs and Toads of North America

A Comprehensive Guide to Their Identification, Behavior, and Calls



American Toad

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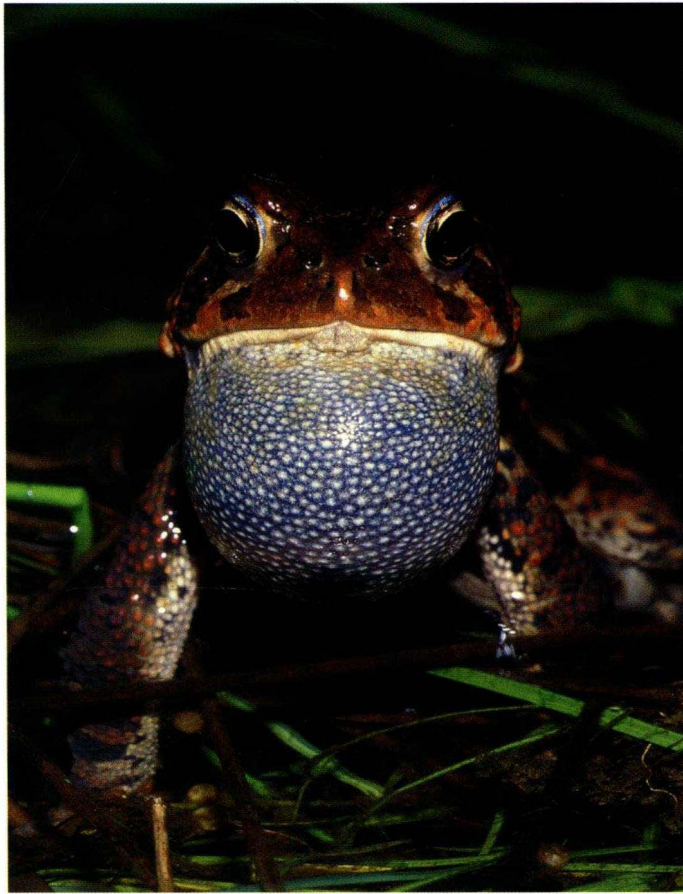
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American Toad



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Pig Frog

Lang Elliott, Carl Gerhardt, and Carlos Davidson



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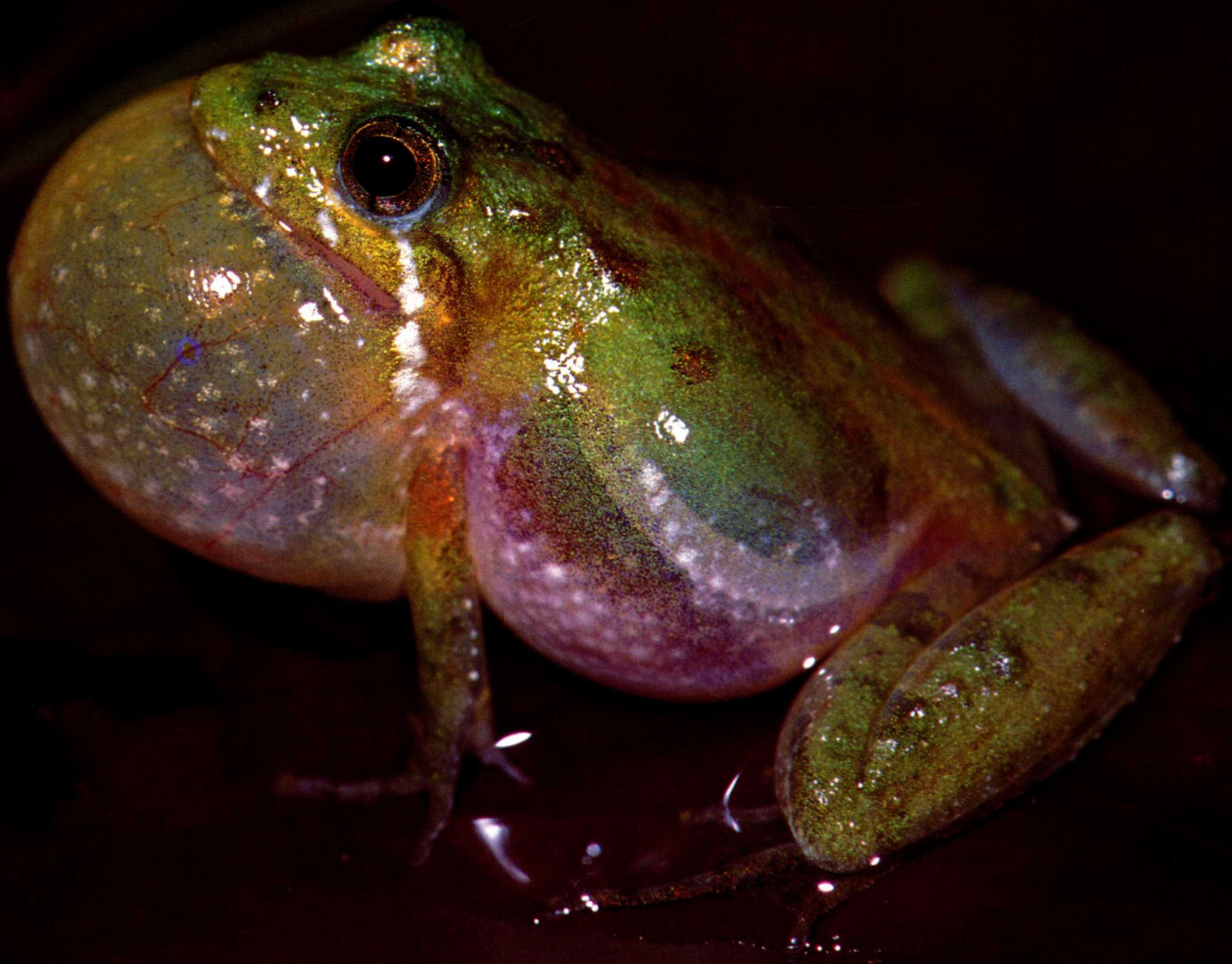
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Foreword

About a hundred species of frogs and toads are found on the North American continent north of Mexico, providing a diversity of seasonal calls that are fascinating to most people but often difficult to sort out. Lang Elliott, Carl Gerhardt, and Carlos Davidson have addressed this situation in an exemplary fashion, with excellent recordings and exquisite photography accompanied by an informative and organized text, all bundled together in a book and compact disc that will provide hours of enjoyment for people who like to spend their time outdoors.

Much of that time will be spent listening on humid nights, when male frogs and toads are active and calling in the relentless search for mates that ensures the continued existence of their kind. The very best time to encounter these amphibians is shortly after a rainstorm, when the wind and noise have relented and the ground is covered with vernal pools. At that time, anurans come into full symphony and provide an enlightening view of their abundance. Many of us have had the experience of discovering the occasional toad sitting patiently beneath a streetlamp, as it waits to snack on a fallen insect, or have been startled by the leap of a sleek frog along the edges of a pond as it sought escape into deeper waters. But few of us can appreciate the full-blown cacophony of a mixed chorus of anurans on a spring night in eastern North America, the bleating song of Great Plains Narrowmouth Toads across the central grasslands of our continent, or the raucous din of spadefoots after a flash flood on our southwestern deserts. Folks who get to hear such noises are often stunned by the intensity of these little animals, but they shouldn't be—after all, it's about

sex, and anything having to do with matters of the heart can be pretty compelling, even for a frog or toad.

In July 2003, Lang Elliott came to visit me and my wife, Suzanne, primarily so he could view and borrow some of Suzanne's amphibian images to use in this book. We were impressed by his intensity as he talked about frogs and toads and by his vision for a book about them. To be sure, Lang appreciated them, their beauty, and their unique position in the animal kingdom—we vertebrates always conducting a balancing act with one foot on land and the other in water. But he was also keenly aware of their precarious place in the world, a world where water is now a precious commodity and where many folks are less and less willing to share it with the smaller creatures of the earth, or even to keep it clean for them. One evening, he and Suzanne and I mused about this, about the prediction of Rachel Carson in her profound book *Silent Spring*, about the bleak future for amphibians. It was not an uplifting discussion; we concluded that people still do not understand that we drink and share and swim in the same water as frogs and toads.

Maybe this book will change that. Maybe. But certainly it will help us to monitor the noisy little amphibians that share our water. It's important that frogs and toads stay noisy. The alternative would be unbearable—a silence that would mean the water was gone . . . or undrinkable.

Joseph T. Collins,
coauthor, *Peterson Field Guide to Reptiles and
Amphibians of Eastern and Central North America*
Lawrence, Kansas, December 2008





Introduction

Warm rains arrive, and there is an explosion of activity in the amphibian world; frogs and toads emerge from shelter and appear as if by magic in flooded pools, ponds, and streams. Individuals of one or more species join together in what appears to be a great celebration of sound—their yearly breeding effort, when males call excitedly to attract females in the age-old quest to reproduce.

Frogs and toads produce an impressive variety of sounds, all manner of croaks, peeps, trills, snores, barks, and chuckles. Choruses often pulsate with complex rhythms; neighboring males call back and forth in tight alternation and groups erupt after long periods of silence. While scientists interpret these calls in terms of their function—mate attraction, aggression, distress, and the like—the poet listens with a different ear, judging the emotional impacts of the sounds and the feelings evoked by the choruses.

The enchanting calls of frogs and toads emanating from wetlands in the dark of the night have a primal, timeless quality and evoke in many a sentiment expressed by Sigurd F. Olson in his book *The Singing Wilderness*: “This is a primeval chorus, the sort of wilderness music which reigned over the earth millions of years ago . . . one of the most ancient sounds of the earth, it is a continuation of music from the past, and, no matter where I listen to a bog at night, strange feelings stir within me.”

In this book, we celebrate the lives and calls of more than one hundred species of frogs and toads found in North America. They are a unique and diverse group of organisms that many of us take for granted. But some species are in trouble, and others are likely to follow. Frogs and toads are indicators of environmental health.

They are affected not only by habitat destruction and global climate change but also by chemical pollution and disease. A number of western species are undergoing severe declines and could be headed toward extinction, in part because of chytrid fungus, a disease that is having enormous impacts on amphibian populations throughout the world. Now is clearly the time for an increased awareness of our frogs and toads, coupled with closer monitoring of their populations and intensive scientific study of the causes of their declines.

Our frogs and toads are a natural treasure worth saving. They excite our imaginations; their sounds stir the music within our souls. They impress us at every turn, not only during the breeding season, when their calls enliven the night air, but also during our daytime walks along the shores of ponds, lakes, and woodland pools, when we share the experience of Basho and other poets of centuries past:

Old dark sleepy pool
Quick unexpected frog
Goes plop! Watersplash.

— Basho (seventeenth-century haiku poet)



Green Frog



Classification

Frogs and toads are members of the order Anura, which is Greek for “tailless” (*an*, “without”; *oura*, “tail”). They are often referred to as anurans and there are nearly 5,300 species worldwide. In North America (north of Mexico), there are currently 97 native species and 4 introduced species of frogs and toads, for a total of 101 species. Scientific research into the taxonomy and classification of anurans continues, and the number of species is expected to grow, as new species are discovered with the help of modern genetic, biochemical, morphological, and behavioral analyses.

The frogs and toads of North America fall into nine family groups, which are described briefly below. More information about these can be found in the family introductions in the main body of the book. Refer to the photographs on the following two pages to see representative members of each group.

Hylidae: This is a large and diverse family, thirty species of which are found in North America (north of Mexico). The group includes the treefrogs, chorus frogs, cricket frogs, and several tropical species that just barely range into the United States.

Ranidae: Referred to as the true frogs, twenty-eight species live in North America. This family includes many of the familiar pond and lake frogs, including the Bullfrog, Green Frog, and various species of leopard frogs.

Bufonidae: Known as the true toads, twenty-two species are found in North America. This family includes the common hop toads, recognized by their chunky bodies, large wartlike glands on their skin, and terrestrial habits.

Scaphiopodidae: This small family is composed of seven species of North American spadefoots. They are a group of chunky, toadlike burrowing anurans with spade-like projections on their hind feet that aid in digging.

Microhylidae: This large family includes three species found in North America. Known as narrowmouth toads, they are small, burrowing amphibians with pointed snouts and narrow mouths.

Leptodactylidae: This is a large family of New World tropical frogs; only seven species range into the United States, mostly in Texas, Arizona, and Florida. Nearly all members of this group lay their eggs on the land; the larval stage is passed inside the egg.

Ascaphidae: Known as the tailed frogs because males have taillike copulatory organs, this family includes only two species, both of which are restricted to fast-flowing mountain streams in parts of the Northwest.

Rhinophrynidae: This family consists of a single species, the Mexican Burrowing Toad, which is found in the United States only in extreme southern Texas along the lower Rio Grande River.

Pipidae: Known as the tongueless frogs, this large and diverse family is represented in the United States by a single introduced species, the African Clawed Frog, which has become established in southern California and other locations.