Houston Toad

Scientific Name: *Bufo houstonensis* Federal Status: Endangered, 10/13/70 · State Status: Endangered

Description

The Houston Toad is 2 to 3.5 inches long and similar in appearance to Woodhouse's Toad (*Bufo woodhousei*), but smaller. General coloration varies from tan to brownish-black. The pale ventral surfaces often have small, dark spots. Males have a dark throat, which appears bluish when distended.



Houston Toad © Bruce G. Stewart

Habitat

The Houston Toad is a terrestrial amphibian associated with deep sandy soils within the Post Oak Savannah vegetational area of east central Texas. Since Houston Toads are poor burrowers, loose friable soils are required for burrowing. The toads burrow into the sand for protection from cold weather in the winter (hibernation) and hot, dry conditions in the summer (aestivation). Large areas of predominantly sandy soils greater than 40 inches deep are characteristic of habitat. The vegetation type of currently known Houston Toad sites can typically be described as pine or oak woodland or savannah, with native bunchgrasses and forbs (flowering plants) present in open areas. Plants that are often present in Houston Toad habitat include loblolly pine, post oak, bluejack or sandjack oak, yaupon, curly threeawn and little bluestem.

For breeding, including egg and tadpole development, Houston Toads also require still or slow-flowing bodies of water that persist for at least 30 days. These water sources may include ephemeral (temporary) rain pools, flooded fields, blocked drainages of upper creek reaches, wet areas associated with seeps or springs, or more permanent ponds containing shallow water. Shallow areas of deep water, such as the coves and inflow to Bastrop State Park Lake, are also used. The source of ephemeral or permanent water should be located within one-half to three-quarters mile of the toad's hibernation/foraging habitat (deep sands supporting woodland or savannah). Recent research indicates that mortality in toadlets is 100% if their ponds are in open pastures more than 55 yards from woodland habitat. The toads do best in ponds without predatory fish.

Life History

The Houston Toad is a yearround resident where found, although its presence can most easily be detected during the breeding season, when males may be heard calling. Males usually call in or near shallow water, from small mounds of soil or grass surrounded by water, or from floating objects such as logs or algae mats. Males occasionally call from wooded habitat located within about a 100-yard radius of breeding ponds. The call is a high clear trill that lasts an average of 14 seconds. The call is much like that of the American Toad (Bufo americanus), but usually slightly higher in pitch. The American Toad occurs in Texas, but north of the range of the Houston Toad.

Houston Toads may call from December through June. Most breeding activity takes place in February and March, and is stimulated by warm evenings and high humidity. Toads emerge from hibernation to breed only if moisture and temperature conditions are favorable. Females, responding to calling males, move toward the water to mate. The female lays her eggs as long strings in the water, where they are fertilized by the male as they are laid. The eggs hatch within seven days and tadpoles metamorphose (turn into toadlets) between 15 and 100 days, depending on the water temperature. Young toadlets are about the size of one's pinkie fingernail when they complete metamorphosis. They then leave the pond and spend their time feeding and growing in preparation for the next breeding season. Males generally breed when they are a year old, but females may not breed until they are two years old.



Houston Toads, especially firstyear toadlets and juveniles, are active year round under suitable temperature and moisture conditions. Their diet consists mainly of insects and other invertebrates.

Threats and Reasons for Decline

Habitat loss and alteration are the most serious threats facing the Houston Toad. Alteration of ephemeral and permanent natural wetlands for urban and agricultural uses eliminates breeding sites. Draining a wetland, or converting an ephemeral wetland to a permanent pond, can eventually cause the Houston toad to decline or be eliminated entirely. Conversion to permanent water not only makes them more vulnerable to predation by snakes, fish, and other predators; but also increases competition and hybridization with closely related species of toads.

Periodic drought is also a threat, particularly long-term drought such as that experienced during the 1950s. Drought may result in the loss or reduction of breeding sites as well as enhanced mortality of toadlets and adults.

Extensive clearing of native vegetation near breeding ponds and on the uplands adjacent to these ponds reduces the quality of breeding, foraging, and resting habitat, and increases the chances of predation and hybridization. Conversion of native grassland and woodland savannah to sod-forming introduced grasses, such as bermudagrass and bahiagrass, eliminates habitat because grass growth is generally too dense for the toad to move freely. Dense sod also inhibits burrowing.

High traffic roads are a barrier to Houston Toad movement, and toads are sometimes killed on roads. Other linear features such as pipelines and transmission lines can create barriers between foraging, hibernating, and breeding sites, especially if native vegetation has been removed.

Continuous grazing (not rotating cattle), heavy stocking rates, and long term fire suppression have caused loss of habitat in a significant part of the toad's range. Historically, periodic fire played an important role in maintaining native bunchgrass communities in loblolly pine and post oak savannah. Due to poor grazing management practices and fire suppression since the arrival of European man, much of the former savannah grasslands of the Post Oak region have grown into brush thickets devoid of herbaceous vegetation. Houston Toads need the herbaceous layer of bunchgrasses for cover and foraging habitat.

Although the toad is believed to be adapted to fire regimes, prescribed burning may result in toad mortality. Frequent and/or severe burns may be detrimental to the toad, particularly for small, fragmented populations. However, increased fuel loads due to prolonged periods of fire prevention may result in very hot wildfires. Additional research is needed to determine the effects of various prescribed burning programs.

The invasion of the Red Imported Fire Ant makes it harder to ensure the long-term survival of the Houston Toad. These toads occur in small, scattered populations, and may be more seriously affected by fire ants than species that are more common and widespread. Fire ants kill young toadlets (less than 7-10 days old) moving out of the breeding pond into the surrounding land habitat. Current research shows that fire ants have a devastating impact on local arthropod communities, and thus may also limit the toad's food supply.

There is no specific information on the effects of various chemicals on the Houston Toad, but it is known that amphibians in general are very sensitive to many pollutants, including pesticides and other organic compounds. These chemicals may affect the toad directly, particularly in the tadpole stage, or indirectly by lowering the abundance and diversity of its food supply. Widespread use of pesticides and herbicides from about 1950 to 1975 may also have contributed to declining populations. During this period, DDT and similar non-specific chemicals accumulated in the environment, affecting a wide variety of animal life. Although threats from persistent, non-specific chemicals are not as serious today as in the past, the use of pesticides and herbicides for agricultural and residential purposes may still pose a danger for the Houston Toad.

Although Houston Toad populations are inherently separated because they exist only in areas of deep sandy soil, further fragmentation of habitat due to human activity can be a problem. Widely scattered parcels of habitat may not easily be re-colonized by toads from nearby populations if extensive areas of unsuitable habitat exist between them, or human impacts eliminate a population.

Recovery Efforts

Research is continuing into the life history, habitat requirements, and land management practices affecting the Houston Toad. Population surveys are being conducted in areas where toads have been found and in potential habitat areas. Efforts to provide information and educational opportunities to the general public



Calling male © Bruce G. Stewart



Toads in amplexus © Jim Godwin

and landowners regarding life history and habitat requirements of the toad are a vital part of the recovery process.

Where To See The Houston Toad

The best place to visit if you want to see and learn about the Houston Toad is Bastrop State Park near Bastrop, Texas. The largest known population of the toad exists in the park and surrounding areas. For more information, contact Bastrop State Park at (512) 321-2101.

How You Can Help

You can help by protecting pond habitat. Conservation and wise management of native vegetation is important in preserving Houston Toad habitat. You can also help by landscaping with native plants to reduce water and pesticide use, and by proper storage and disposal of household, gardening, and agricultural chemicals. Hopefully, thoughtful and effective compromises

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Breeding pond in Milam County © TPWD Andrew Price



Breeding pond in Bastrop State Park

between human resource needs and habitat management will allow for the continued survival and recovery of the Houston Toad.

You can be involved with the conservation of Texas' nongame wildlife resources by supporting the Special Nongame and Endangered Species Conservation Fund. Special nongame stamps and decals are available at Texas Parks and Wildlife Department (TPWD) field offices, most state parks, and the License Branch of TPWD headquarters in Austin. Conservation organizations in Texas also welcome your participation and support.

For More Information Contact

Texas Parks and Wildlife Department Wildlife Diversity Branch 4200 Smith School Road Austin, Texas 78744 (512) 912-7011 or (800) 792-1112 or

U.S. Fish and Wildlife Service Ecological Services Field Office 10711 Burnet Road, Suite 200 Austin, Texas 78758 (512) 490-0057

Management guidelines are available from the Texas Parks and Wildlife Department and U.S. Fish and Wildlife Service for landowners and managers wishing to protect and improve habitat for the Houston Toad.

References

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