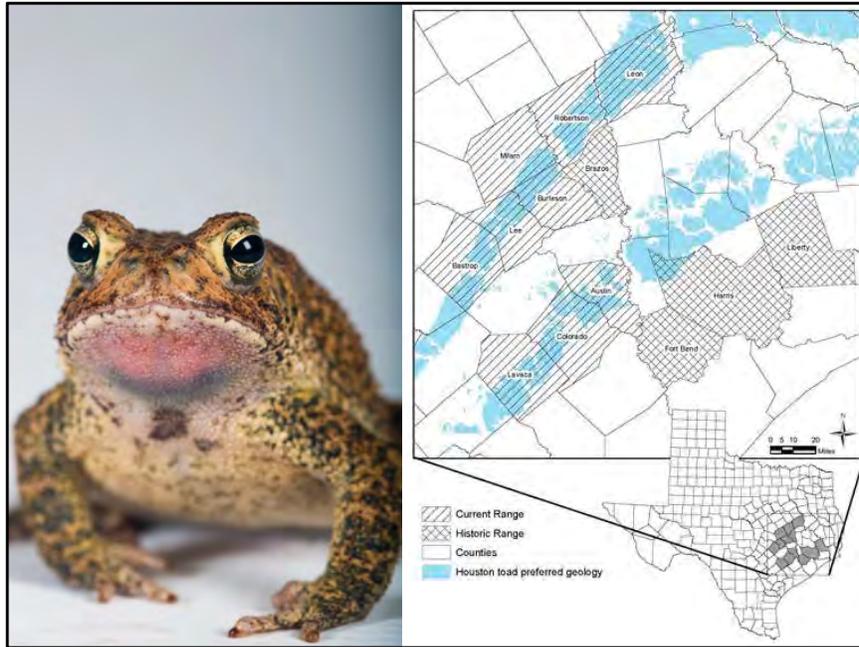
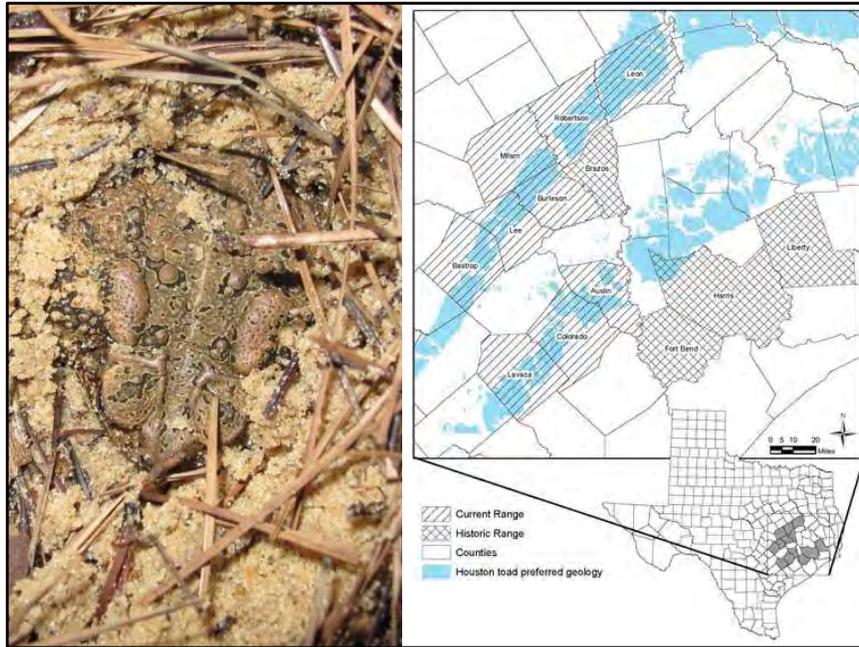


Introduction to the Houston toad
El Camino Real TMN





the Houston toad is one of 9 toad species that occur in Texas, but it is the only toad that only occurs in Texas, all others occur in other states. Even the Texas toad sneaks off into New Mexico. Within Texas it has a very small range and is currently known from only 9 counties here in the east-central Texas area. Extirpated from Liberty, Harris, and Fort Bend.



What the map shows here in blue is one of the keys to understanding the Houston toad, the geological formations that lead to deep sandy soils that allow this toad to survive. The working theory is that, as the deep sands store water they provide a cool shelter that prevents the toads from dying out during hot and dry conditions. The toads burrow easily into the loose sand but have a very hard time in soils with more clay as it toughens up after drying out.

Houston Toad Habitat

- 3 distinct “management” components
 - Breeding habitat (wetlands/ponds)
 - Juvenile habitat (upland/riparian corridors)
 - Adult habitat (upland forest/savannah)

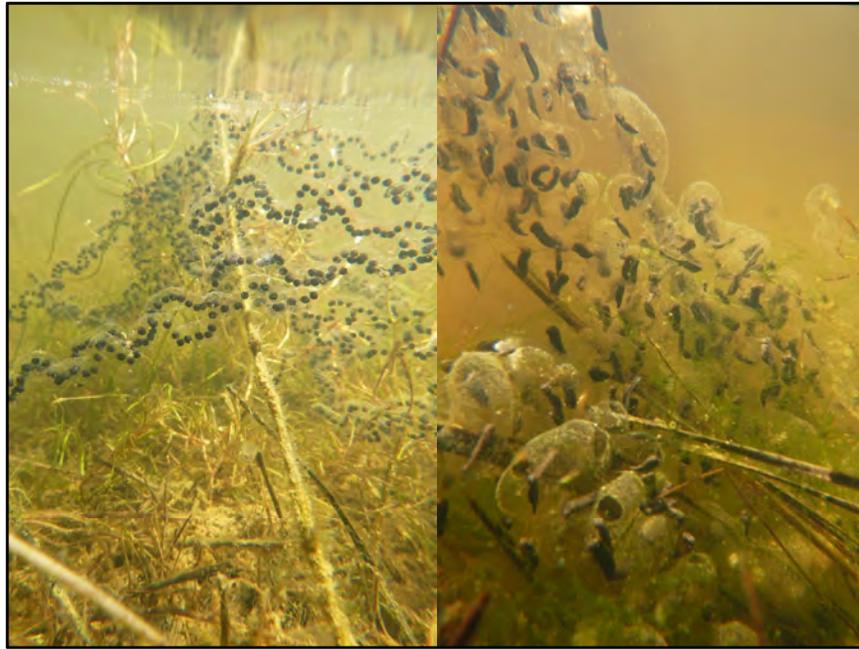
While the geology and deep sands define the habitat at a large scale, there are other factors within these sand bands that are necessary for Houston toad populations to persist. We can divide these into 3 management categories based on what the toads do there, first is the breeding habitat, second is the juvenile or dispersal habitats and then finally is adult habitat.



like most frogs and toads, during the breeding season males gather around ponds and sing to attract females. The breeding season for Houston Toads is from late winter to early summer, really any time from January to June, but the peak is Feb, March, and April. It really comes down to when we get the right weather conditions. This picture shows a male Houston toad with its blueish-black vocal sac fully extended as it makes its call. One cool thing about toad calls, and it's totally lost on our ears, is that the pitch of the call is related to the size of the toad, with larger toads having lower pitches. Females can thus obtain information about the size of the male toad from the call and decide whether they want to check him out further.



If one of the males gets lucky, then a female will approach him and they will enter into the sexual embrace known as “amplexus”, what a romantic name we have labelled it.



From there, the female lays eggs and the male fertilizes them. The eggs look like long strands of jelly with little black dots in them and can contain up to 10,000 eggs. Interestingly, larger females lay larger clutches, which means bigger females, on average produce more offspring. The eggs only take 2 or 3 days to hatch into wee tadpoles.



The very small tadpoles are almost entirely black and it's almost impossible to tell the difference between different toad species tadpoles. It takes between 10 days at really warm temperatures to up to 60 days at cooler temperatures to complete development and go through metamorphosis.



When we talk about breeding habitat, this is what we mean, the aquatic habitat where males gather, females lay eggs, and the larvae develop, and eventually leave to become little toads move into the terrestrial environment. Although this is what we look for when we survey for Houston toads, ironically, this is probably the least important of the 3 management components I mentioned earlier. The wide variety of aquatic habitats used hint at the fact they don't really care and the water body itself is not really critical. We've found them breeding in tire ruts and in large multi-acre lakes. The requirement that the water body holds water long enough to complete metamorphosis is the main factor. Now, they do seem to prefer these mid sized ponds and stock tanks, but that is probably because that is the most common water body on the landscape.



As the toadlets move away from the pond and into the woods they are very susceptible to predation by all manner of animals and birds, as well as desiccation due to the hot and dry conditions typical of the Texas summer. They often hide in leaf litter or under logs and other cover objects in the woods. At this stage they can't burrow like the adults do.



Because they congregate at the waters edge prior to dispersing, the conditions at the edge of the pond can be pretty critical, as can the distance between the edge of the pond and the woods. Ponds in or close to the woods probably result in more toadlets surviving than ponds which are far away from the woods. Ponds with lots of cover and leaf litter up to the edge probably do better. Ponds with little cover and/or with livestock access can do poorly because a toadlets can get tramped and there is often little vegetation cover.



After about a year for males and two years for females, the toad mature into adult breeders. Because they need to reach different sizes before they can breed, with females needing to achieve a larger size, females take longer to mature.



Probably the most important and impactful habitat is the upland woods that the juveniles and adults use for 10-11 months of the year. In optimal conditions, this habitat is a woodland or savannah with little midstory vegetation, like yaupon, and a diverse and copious ground cover layer. The ground cover layer is critical because it creates the base of the food chain that then provides food, in the form of insects, for the toads. Once the forest understory becomes choked up with a shrub understory, light can't get to the ground layer and the food chain is disrupted, the insects go away, and the toads too.



The exact type of canopy in the forest doesn't seem that important, in some areas toads do real well with pine canopy cover and in others its oak, and everything in between. The key seems to be sandy soil, with a forest on top to provide shade, with leaf litter, woody debris like fallen limbs, and a diverse ground cover layer. Cedar is probably the least valuable and dense stands of cedar tend to suppress the ground cover layer.



Now one of dangers with allowing the creep of understory vegetation in central Texas woodlands is also the risk of wildlife. This photo shows the aftermath of the large Bastrop County Complex fire in September 2011 in Bastrop State Park. The Houston toad was doing okay inside these woods prior to the fire, and its effectively disappeared after the fire.

From this perspective, the Houston toad is an indicator of a healthy and safe woodland. A robust and sustainable population of Houston toads means the forest is well managed, either with fire or mechanical understory thinning and at low risk or catastrophic wildfire.



Houston toads can survive low intensity and regular fires easily because they burrow into the sandy soils. Who knows, maybe this is one of the reasons they do burrow because historically fire was much more frequent than it is today.



After a few years of hiding from the heat, eating insects, and avoiding predators in the woods, the toad matures and the circle of life repeats its self. We've discovered that very few Houston toads actually survive to breed more than once. The pinch point in the Houston toads life cycle is actually how many toadlets survive to maturity.



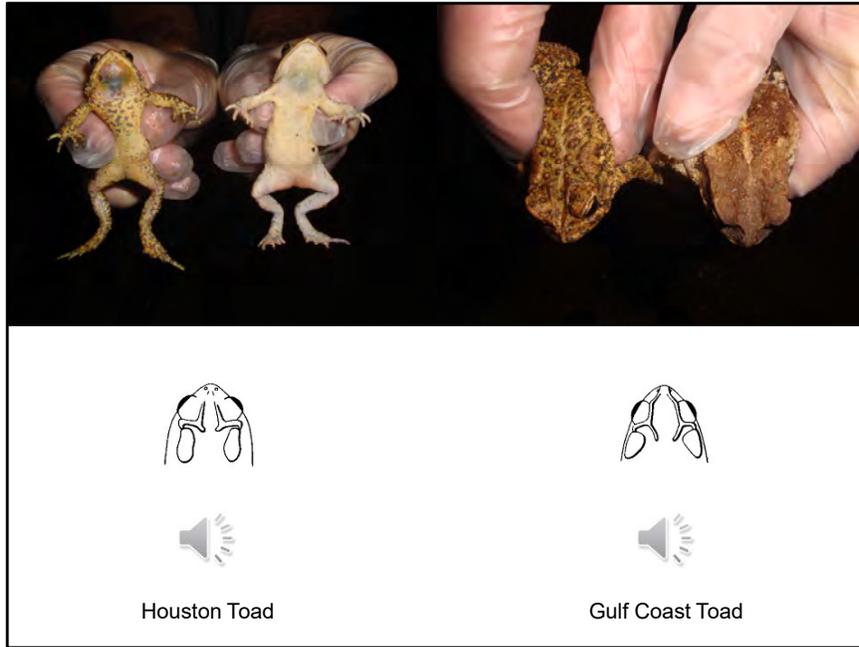
Now that we have covered the Houston toads life history and habitat preferences, its worth mentioning that there are 4 species known historically from Milam Co.....however only one other toad is ever seen regularly, the gulf coast toad, and it's easy to confuse the two species.

Top left – gulf coast toads in amplexus

Top right – Texas toad

Bottom right – woodhouse toad

Bottom left – Houston toad

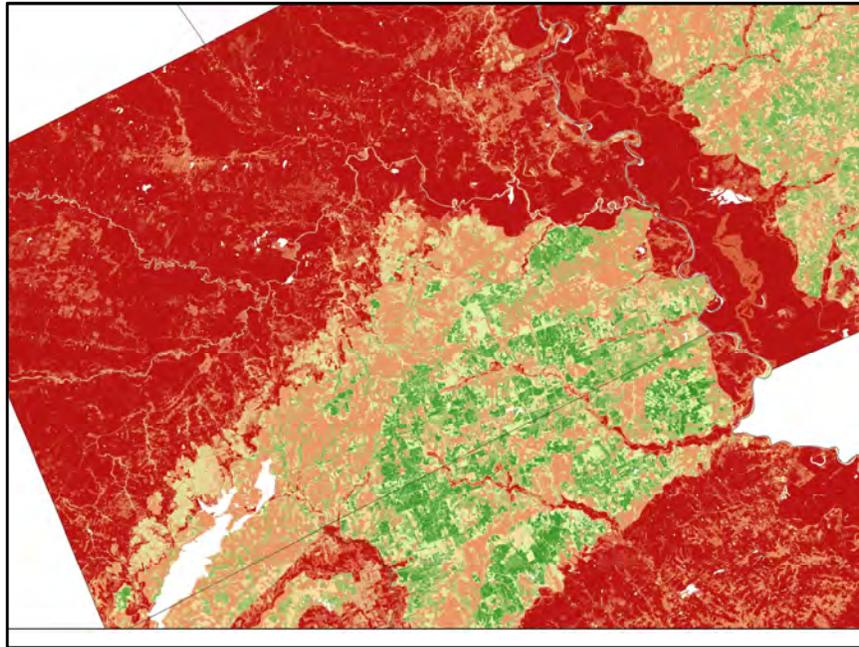


Check out these features – the cranial crests (ridges) and paratoid glands, and then the belly colors

Also, because all species of toad make different mating calls, you can easily tell them apart.



I am aware of only 5 observations of Houston toads in Milam county since 1990. The last one was seen in 2007. There hasn't been a concerted effort though, at least in the last 10 years.



This map shows the potential distribution of adult Houston toad habitat in Milam county at a coarse level. Green is good, red is not good. You can see that the most habitat occurs in south eastern part of the county. Again, this picking up on forested sandy soils with the appropriate geology. So, if you have property in this part of the county, we'd love to hear from you.



Here is another view of the area of Milam co. with toad habitat. We are interested in everything within the red lines, in the south and eastern part of the county.

Please let us know if you are interested in talking with us.

Photo Credits

- Rachel Rommel-Crump
- Maddy Marsh
- Wade Carruth
- Houston Zoo
- U.S. Fish and Wildlife Service