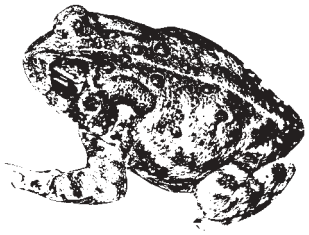
"A HOME FOR THE TOADS"

Classroom Activity About The HOUSTON TOAD HABITAT



This classroom activity for grades three to six is best used after students have already become familiar with the Houston toad's natural history (see other activities).

HABITAT is defined as the locality in which a plant or animal lives. In other words, it is the arrangement of food, water, shelter or cover, and space suitable to a species needs. Examples of what's included are places to find food throughout the year, places to rest and hide from predators and places to find a mate and raise a family.

WHAT IS YOUR PERSONAL HABITAT? Ask students to define their own personal habitat by identifying what they need to live from day to day. This includes a home, clean water to drink, place to buy food, school, places for entertainment, and medical and dental offices. (The teacher may want to help students draw boundaries of a few habitats on a city or county map.)

DISTRIBUTION RANGE is defined as the geographic area in which all members of a species and their habitat are found. The amount of space is highly variable from a few inches (in the case of a bacterium) to most of the land of the planet (the human being).

WHAT IS THE DISTRIBUTION RANGE FOR YOUR SPECIES? All people belong to the species *Homo sapiens* (our scientific name). How many individuals of your species are there in the world? (5.5 billion is the estimated world population.) Even though people are often of different sizes and colors, we all belong to the same species. What is the distribution range of your species? Look at a world map and identify where the human species lives. In what areas don't humans live?

An **ENDANGERED SPECIES**, is an animal or plant that is in danger of becoming extinct. The loss of its habitat (living space) is often the reason why there aren't many individuals left.

The **HOUSTON TOAD** has the scientific name *Bufo houstonensis*. There are only about 3,000 to 4,000 wild members of this species in the entire world. (Write and compare the numbers of humans and Houston toads on the chalk board.) Its habitat (where it lives) is **PINE OR OAK WOODLAND OR SAVANNAH** with deep sandy soils. Savannahs are grassy areas with scattered trees and bushes. The Houston toad's **HISTORIC DISTRIBUTION RANGE**, where they used to be found, was in the Post Oak Savannah and Coastal Prairie regions of Texas. Today Houston toads are found in only nine counties in the Post Oak region of east central Texas. The largest population of Houston toads is found in Bastrop State Park and surrounding lands. (See diagram of historic and present

ranges). Using the diagram, have a student go to the large classroom world and state maps and outline to the class the Houston toad's historic and present ranges. How does its present distribution range compare to that of the human species?

Within the Post Oak region, what are the Houston toad's **HABITAT NEEDS?** Based on what you already know about the life history of the Houston toad, what specifically does this endangered species need to survive? Ask students to make a list. The list should include: deep, sandy soil to burrow into when it is hot and dry (aestivation) or cold and dry (hibernation); places to find food (food is insects and other invertebrates); safe places in tall grasses to hide from predators; and small natural ponds where they can lay their eggs.

LOSS OF HABITAT is the most severe threat to the survival of the Houston toad. What are some of the reasons habitat is gone? Ask students to think about what kinds of human activities alter natural areas. The following are the most important threats for this species. **URBANIZATION**, or the growth of cities (such as Houston), replaces natural vegetation with buildings and roads. **LOSS OF NATIVE PLANTS,** from the conversion of native vegetation into cropland and introduced (not native) grass pastures, reduces the kinds and numbers of insects needed for food. Introduced sod-forming grasses, like bermudagrass, grow too dense for the toad to move through it. **LOSS OF BREEDING POND HABITAT** (when small natural ponds are drained or altered) leaves Houston toads without good places to breed and lay their eggs. **UNCONTROLLED HEAVY GRAZING** by livestock can remove the tall grass cover the toads need to hide from predators, and makes it easier for brush and trees to take over the natural openings. A very important problem for the Houston toad and for most Texas endangered species is **LACK OF AWARENESS** about their natural history and habitat needs. Many people have never heard of the Houston toad.

PROBLEM SOLVING ACTIVITY

(This exercise should be done after students have become familiar with Houston toads by completing other activities.)

Instructions to the Students: Now that you have completed several Houston toad activities in this unit you are now ready to be a **HOUSTON TOAD BIOLOGIST**. You understand a great deal about the natural history of Houston toads and what they need to survive. As a biologist, you must now **MAKE RECOMMENDATIONS** to city, county and state officials about how to save this endangered species. We will now do an exercise to come up with some ideas.

Instructions to the Teacher: Break the class into groups and instruct them to spend fifteen minutes **BRAINSTORMING** ideas about how to help Houston toads. Appoint a

recorder for each group to list the five best ideas the group has. When time is up, reassemble the class and share ideas. As the teacher you may want to lead the student's suggestions toward the following management practices that are being used today to help save the Houston toad.

PROTECT EXISTING HABITAT

Houston toad habitat is being protected in Bastrop State Park and on private ranches within the toad's range. Homeowners and developers are learning more about how to build homes and businesses while also maintaining habitat for the Houston toad.

HABITAT MANAGEMENT -- WORKING WITH LANDOWNERS

Some landowners are doing a good job of protecting Houston toads. State and federal resource managers are working with landowners to conserve native vegetation and breeding ponds, while offering a variety of management options which will maintain Houston toad habitat. Examples include brush control, prescribed burning, rotational grazing and determining appropriate stocking rates.

RESEARCH PROGRAMS

Texas Parks and Wildlife biologists are studying populations of Houston toads within Bastrop State Park. Biologists count the numbers of males and females at the breeding ponds. They implant tiny electronic tags into the toads' bodies. A hand held electronic device, similar to a supermarket bar code reader, is used to read the tags and identify individual toads. By doing this, biologists learn more about the toads' movements. For example, by catching a toad twice, biologists can tell how far that toad has moved.

ENVIRONMENTAL EDUCATION

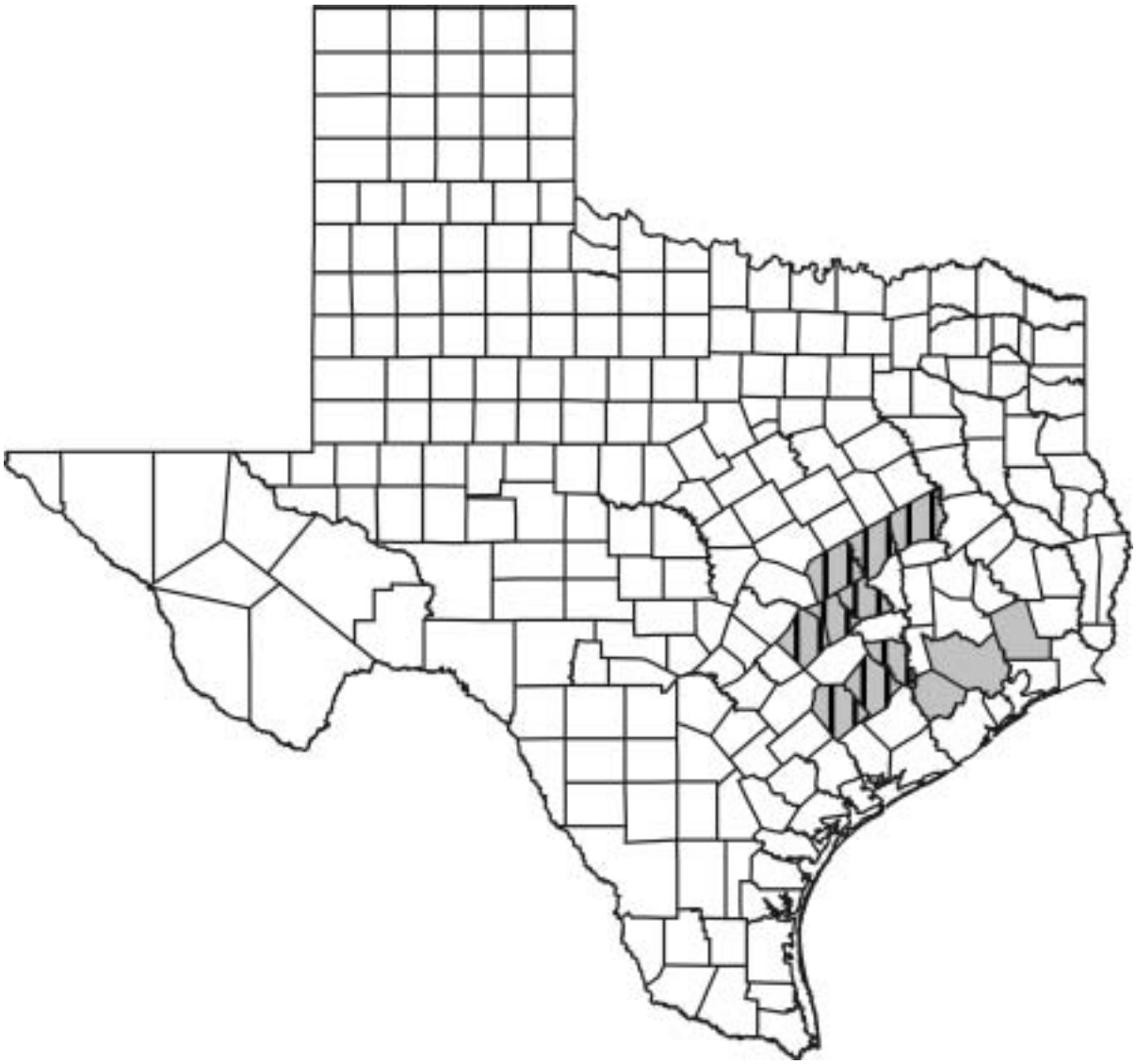
Everyone can help Houston toads by learning about their natural history and conservation needs and sharing this information with others. Well informed students can teach their parents, brothers and sisters and friends all about this fascinating toad. Understanding the life history of the Houston toad will help build support for efforts to help this endangered species survive.

Following the presentation of ideas and subsequent discussion, you may want to have the students **TAKE ACTION** and write to government officials or write a letter to the editor of the newspaper expressing their concerns for the Houston toad along with the recommendations they have for saving this endangered species.

Prepared by
Texas Parks and Wildlife Department
Endangered Resources Branch

HOUSTON TOAD HABITAT

Bufo houstonensis



Present Range

Historic Range

Houston Toad Wordfind

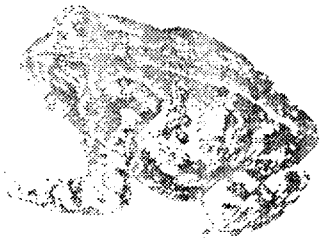
The **HOUSTON TOAD** is an endangered **AMPHIBIAN** that lives in the **POST OAK SAVANNAH** region of east central **TEXAS**. Areas of **DEEP SANDY SOIL** provide **HABITAT** for this toad. Houston Toads burrow into loose sandy soil when the weather is cold and dry **(HIBERNATION)** or hot and dry **(AESTIVATION)**. Plants that often grow in Houston Toad habitat include post oak, **LOBLOLLY PINE, YAUPON**, and native **BUNCHGRASSES** such as **LITTLE BLUESTEM**. Houston Toads need native plants for **COVER** and **FORAGING** (feeding) habitat.

When it begins to warm up in February and March, Houston Toad males begin calling from small, shallow, **PONDS**. Females hear these calls and begin moving toward the breeding ponds. Females lay long strings of **EGGS** in the water. Within seven days, the eggs hatch and the **TADPOLES** emerge. During the next 15 to 100 days, the tadpoles grow legs, lose their tails, and slowly turn into tiny **TOADLETS** about one-half inch long. This process is called **METAMORPHOSIS**. Now the toadlets are ready to leave the pond to begin life on land. Houston Toads eat mainly **INSECTS** and other **INVERTEBRATES**.

Loss of habitat is the reason for the decline of the Houston Toad. Sandy post oak and pine woodland and savannah that used to provide a home for the toads is now used as **CROPLAND** or **PASTURE**. **SOD-FORMING** grasses such as **BERMUDAGRASS** are too dense for the toads to move through easily. Many small, natural ponds which provide the best breeding habitat have been drained or altered. The growth of **CITIES** such as Houston has caused additional losses of habitat.

Today, biologists and landowners are working together in seeking ways to help the Houston Toad. **CONSERVATION** of native vegetation and natural breeding ponds, and management of the remaining habitat using planned **GRAZING** and controlled **FIRE**, is important. Since the largest population of Houston Toads occurs in **BASTROP** County, communities such as Bastrop are working hard to prevent urban development from harming the Houston Toad.

WORDFIND



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Directions: Read the following story to learn about the Houston Toad. The words in black capital letters are hidden in the wordfind. Can you find them? Good luck!

PWD LF R3000-021A (04/95)

Prepared by
Endangered Resources Branch
Texas Parks and Wildlife

Houston Toad Wordfind

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WORDFIND

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Suggested for Grades 6 - 8

HOUSTON TOAD MATH ACTIVITY

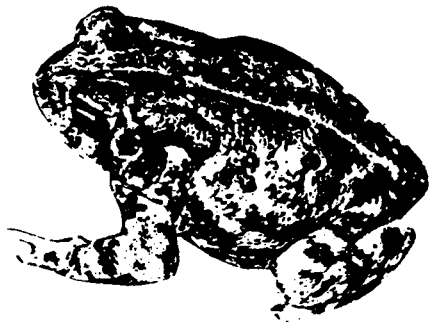

Table 1. Numbers of endangered Houston Toads at two breeding ponds in Bastrop State Park

YEAR	1990	1991	1992	1993	1994
No. of Male Toads	256	310	241	325	280
No. of Female Toads	73	85	51	62	75

1. The numbers in the table are actual population estimates for Houston Toads at two breeding ponds in Bastrop State Park. Construct a line graph showing the total number of Houston Toads each year at these ponds.
   x axis: 1990-1994; y axis 200-400

2. Construct a bar graph comparing the number of males and females for each year.

3a. For the years shown, find the average number of male toads in this population. **282 male toads**

3b. For the years shown, find the average number of female toads in this population. **69 female toads**

4. You are a biologist studying the Houston Toad. Based on the data you have collected from 1990-1994, do you think the Houston Toad population at these breeding ponds is: **a**

   a. staying about the same
   b. increasing, or
   c. decreasing

Challenge Question:

5a. Biologists often compare the number of males to females in an animal population to understand more about the ability of that population to increase in number. What is the ratio of male to female Houston Toads for each year shown? Round your answer to the nearest whole number. **1990 - 4:1 (3.51), 1991 - 4:1 (3.65), 1992 - 5:1 (4.73), 1993 - 5:1 (5.24), 1994 - 4:1 (3.73)**

5b. Based on your data, what is the average male to female ratio for the toads at these ponds? **4:1 (4.17)**

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