TEXAS PARKS AND WILDLIFE

What's in the Texas Amphibian Watch Monitoring Packet?

TEXAS PARKS & WILDLIFE

4200 Smith School Road
Austin, Texas 78744

PWD BK W7000-0493 (12/01)

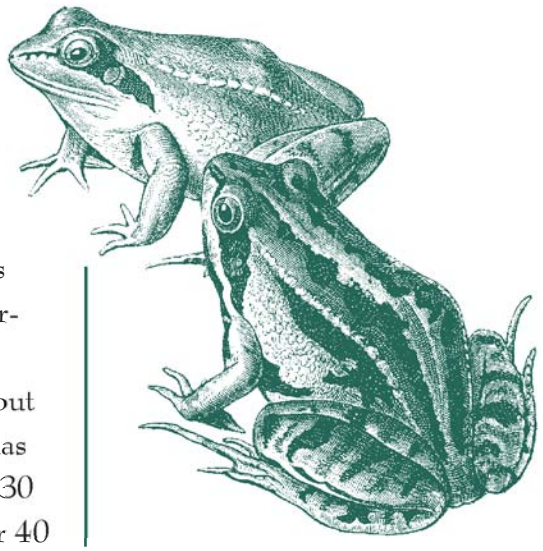
Texas Amphibian Watch

MONITORING PACKET

Amphibians are more important than you might think–no, not as the sources of warts and princes, but as a barometer of the health of the environments we all share. At an international conference in 1989, scientists from all over the world became alarmed at what appeared to be dramatic declines in some amphibian populations. Then, in 1995, a group of school children in Minnesota were the first to notice an alarming rate of malformed limbs in some frog populations. Because amphibians use wetland habitats during at least part of their life cycle and because they have permeable skin, ecologists believe that declines in amphibian populations and malformations may serve as early warning indicators of broader changes in ecosystems.

Texas Amphibian Watch gives you a chance to help us understand what frogs, toads, and salamanders are telling us about the world around us. Texas has an interesting array of about 30 types of salamanders and over 40 anurans (frogs and toads), ranging in diversity from the albino cave-dwelling Texas Blind Salamander to the bleating Sheep Frog of South Texas to the sausage-like Amphiuma of East Texas streams. You can participate in Texas Amphibian Watch at several levels, depending on your time and interest.

For more information about Texas Amphibian Watch or for additional materials, call:
1-800-792-1112 x7011
or e-mail:
lalinam@wimberley-tx.com
or visit:
www.tpwd.state.tx.us/amphibians/



Amphibians in Texas

Amphibians have been around for some 350 million years and were the first vertebrates to leave the waters for dry land. The 80-odd species of Texas' frogs, toads and salamanders, some of their modern representatives, still demonstrate a suite of anatomical, behavioral and ecological adaptations, unique "tricks-of-the-trade," that allow amphibians to use both aquatic and terrestrial habitats.

The word "amphibian" comes from a combination of two Greek words which literally means "two lives," and refers to the distinct two-stage life-history pattern characteristic of most members of this group. Most amphibians reproduce by laying eggs. These eggs lack any protective membranes, including a shell, and therefore must be laid in moist situations. Most amphibian eggs hatch into free-swimming, gill-breathing larvae. In most species these strictly aquatic larvae undergo a radical alteration of their body structure (metamorphosis), including the development of lungs, in order to live on land. Even on land, the skin of adult amphibians differs from other terrestrial vertebrates in being more-or-less freely permeable to water. Amphibians have successfully exploited this strategy of using quite different habitats at different times during their lives, and today occur on every continent except Antarctica. They are the dominant vertebrates in some habitats, both in the number of species and the number of individuals present.

Texas has a diverse set of species, the greatest abundance and diversity in the relatively wet habitats of the eastern third of the state. Many salamanders, such as the sirens, amphiumas, waterdogs, and spring- and cave-dwelling salamanders of the Texas Hill Country, never metamorphose and spend all their lives in water. Some frogs, including the "true frogs" (such as Bullfrogs and Leopard Frogs), are basically tied to permanent wetlands, whereas others, like the treefrogs, can use wetlands which are more seasonal in nature. Mole salamanders and spadefoot toads may spend their entire lives underground, emerging only when rainfall creates sufficient standing water in which to breed. One species, the Cliff Chirping Frog, that lives in the eroded limestone of central and west Texas, probably lays eggs that skip the larval stage and develop directly into small froglets.

Marine toad

Amphibians, because of their two-stage life cycle and water-permeable eggs and skin, are sensitive to climatic factors (such as drought), habitat changes, and to a wide variety of environmental pollutants like pesticides, petroleum hydrocarbons, and heavy metals. The introduction of non-native species such as fish in some habitats and, ironically, the Bullfrog in others has had profound negative effects on many other species of frogs and toads. Amphibians, as a consequence of their unique characteristics, can serve as excellent bioindicators of the environmental health of a number of terrestrial and freshwater aquatic ecosystems worldwide.

Amphibians in Texas

Unfortunately, they are sending us the same message as many other species of animals and plants: ecosystems worldwide are changing faster than many organisms can adapt, and the consequent extinction rate is significantly higher than the normal background levels throughout the long history of life on earth. Add in the alarming rate of malformations in some amphibian populations, and it seems amphibians may have much to tell us about the quality of our environments.

How do Texas amphibians fit into this picture? The short answer is, no one really knows. Many Texas species are naturally adapted to drought, but the addition of habitat alteration at the same time may hasten their demise. Data on the endangered Houston Toad strongly suggests this as the primary reason for this species' disappearance from Harris County in the 1950s. One species native to the El Paso area, the Northern Leopard Frog, has disappeared from Texas due to habitat alteration. Others have disappeared or become rare in large parts of the state where they were once common. In all but a handful of cases the baseline data with which to verify and understand population trends of these species do not exist. We are in danger of letting this portion of our natural heritage slip away almost unnoticed.

What can you do to help amphibians in Texas? First, become familiar with the kinds that occur in your area; learn about their habits, habitats and life-histories. Second, learn to recognize potential threats to amphibian populations and work to help prevent them. If you own land with native wetlands, maintain some in their natural state. Build your stock ponds with shallow areas where amphibians can breed, or don't stock them with fish. Don't dam up or cap that spring; let it run for a distance and then take the water out. Don't fill in or dump trash and chemicals into that wet cave or sinkhole. Avoid deliberately or inadvertently introducing species of plants and animals, including amphibians, into areas where they are not native. Work with local civic authorities and organizations to promote amphibian-sensitive development. If you live in an urban or suburban setting, install an amphibian-friendly pond in your backyard. You can even create a "toad house" by knocking a hole in a flower pot and turning it upside down near your water faucet.

Bullfrogs

One of the best things you can do is to join with other people in Texas Amphibian Watch to gather the long-term data without which it is impossible to really understand what is happening to our amphibian populations. Keep a map and field guide handy and watch for amphibians wherever you go. Pick a favorite pond or wetland and start counting the kinds and numbers of each species that use it. Develop your skills and join the national North American Amphibian Monitoring Program. It's the least you can do–for where would we be without amphibians...?

Three Ways to Get Involved

Amphibian-Spotter

Being an Amphibian-Spotter is simple. Anytime you hear or see an amphibian of any type, you record the amphibian on data sheets we provide. We are especially interested in whether you document the presence of any deformities in the amphibians you encounter. At the end of the year you simply mail your data sheets and any maps you create to us. Your information will help us to better understand the distribution of amphibians in our state, and you will be serving as a "watchful eye" to detect any malformations in our state's frogs, toads, and salamanders.

NOTE:
You must possess a Texas hunting license or attend a monitoring workshop to actually capture amphibians.

Adopt-a-Frog Pond

If you have regular access to a wetland–ranging from a backyard ornamental pond to a river-bottom hunting lease, then you may want to participate by adopting your wetland for amphibian surveys. You have the option of conducting daytime monitoring for malformations or nighttime call surveys (or both!).

Nighttime Call Surveys

Several times throughout the year (the more the better!) you visit your wetland in the evening to listen for frog calls. You'll record the species and their estimated abundance, as well as environmental conditions. By monitoring your wetland frequently we can gain information about the effects of weather and season on amphibian breeding in Texas. In addition, your data over many years could reveal trends in amphibian abundance and possibly ecosystem health.

Malformation Monitoring

One time per year you can make an effort to capture as many frogs, toads, and tadpoles as possible. By examining each animal and then releasing it, you will collect statistically useful information about the percent of malformed anurans at your site.

Frog and Toad Surveys

Ultimately we would love for you to become involved in the formal North American Amphibian Monitoring Program (NAAMP). As a NAAMP participant, you conduct a nocturnal frog-call count along a randomly-selected route in your area at least three times per year. The NAAMP counts consist of stops at 10 wetlands where you will listen for frog calls and record habitat and climatic conditions. Because the NAAMP surveys are standardized and designed with random sampling in mind, the data you collect along these routes can be combined with data from all over the country to recognize local, regional, and national patterns of amphibian stability or decline. As you prepare to participate in NAAMP you can also set up a transect call count route in your own area. Before adopting a NAAMP route you'll want to attend an amphibian monitoring workshop (p. 35).

Amphibian-Spotter Guidelines

What you need to get started...

- this information sheet, plus a data sheet and map for each county where you may be spotting amphibians
- a field guide that depicts the amphibians that occur in your area. See page 33 for suggestions.
- a tape recorder and a resource for identifying frog and toad calls. Since many frogs and toads are "heard and not seen" during the breeding season, it would be helpful for you to be able to identify their calls. See page 33 for sources of anuran voice tapes.
- a camera to record any unusual amphibians you find (especially rare species or those with deformities).

How to get started...

The techniques for being an amphibian spotter are simple: Look for amphibians wherever you go! Of course, you might be most successful if you plan some trips to some wetland habitats, especially during the moist, warm conditions in the spring (both during the day–when you can see amphibians and at night–when you can hear them). In addition to the obvious habitats for frogs and toads along wetland edges, you could try some special search techniques. Turn over logs and rocks in wooded areas to look for salamanders (be sure to watch out for snakes and return all logs and rocks to their original positions). Use a mask to look underwater for spring-dwelling salamanders hiding in the rocky substrate of springs in the Hill Country. Use a seine in slow-moving water bodies in East and South Texas to capture amphiuma, sirens, or newts.

Try your best to identify the species of amphibians you encounter. If you are uncertain of the identification, then you can take a photo or record its call for later research. Estimate the number of individuals present (if you can see the animals, then record your number under abundance; if you only hear the frogs or toads, then you can write down a call index value). Record as much data as you can about the species and its habitat, because that can help us to identify it as well. Return the animal to the location where you found it.

Record your data on the data sheet throughout the year (feel free to make additional copies). Record sighting numbers on a map if possible. Take photos of any rare amphibians (see list provided) or of any amphibians with malformations. If you do spot any malformed amphibians, then you should also report your findings to the "Frog Force" project. Information on this nation-wide monitoring project is located at www.frogweb.gov. Return your Amphibian Spotter Data Sheet to Texas Parks and Wildlife by **NOVEMBER 30** of each year, and we'll provide you with an annual report.

Amphibian-Spotter Guidelines

Some special notes...

Several amphibians in Texas are listed as threatened or endangered (see list below). It is unlawful to capture these amphibians without a permit, although you may observe and photograph them. Regardless of the status of the amphibians, try to leave the animal and its habitat just as you found it.

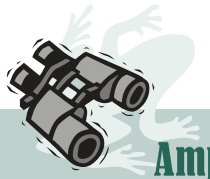
Barton Springs Salamander

San Marcos Salamander

Endangered and Threatened Amphibians in Texas *(does not include subterranean salamanders)*

Common Name	Scientific Name	Federal Status	State Status
San Marcos salamander	*Eurycea nana*	T	T
Barton Springs salamander	*Eurycea sosorum*	E	
black-spotted newt	*Notophthalmus meridionalis*		T
South Texas siren	*Siren* sp. 1		T
Houston toad	*Bufo houstonensis*	E	E
Mexican treefrog	*Smilisca baudinii*		T
white-lipped frog	*Leptodactylus labialis*		T
sheep frog	*Hypopachus variolosus*		T
Mexican burrowing toad	*Rhinophrynus dorsalis*		T

T = threatened
E = endangered



To aid us in conserving paper and reducing printing costs, you may wish to photocopy this page.

Amphibian-Spotter Data Sheet

Please feel free to photocopy forms.

INSTRUCTIONS:
Please use this sheet to submit sight or call records of any Texas amphibian species. Use a separate line for each species and for each visit to a particular site. Mark location and number of each sighting on a county map if possible.

County: _____ Daytime phone: _____

Name: _____ Evening phone: _____

Address: _____ Fax: _____

City/St/Zip: _____ E-mail: _____

Sighting Number	Date	Location (distance & direction from nearest town or Lat-Long)	Habitat Type[1]	Species Name	Abun-dance	Calls[2] (C.I. Value)	Notes (especially note malformations)

[1] Please describe as upland forest, bottomland forest, grassland, savannah, brushland, agricultural, residential, or as one of the wetland types on page 32.

[2] Call Index values of frog and toad calls: 1 = individuals can be counted and there is some space between calls;
2 = calls of individuals distinguishable but there is some overlapping of calls;
3 = full chorus–calls are constant, continuous, and overlapping.

Please return data sheets by **NOV. 30** to:
Texas Amphibian Watch
Texas Parks and Wildlife
3000 IH-35 South , Suite 100
Austin, TX 78704

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Amphibian-Spotter Data Sheet

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INSTRUCTIONS:
Please use this sheet to submit sight or call records of any Texas amphibian species. Use a separate line for each species and for each visit to a particular site. Mark location and number of each sighting on a county map if possible.

County: San Jacinto
Name: Ima Prince
Address: 201 Hopalong Way
City/St/Zip: Coldspring, TX 78542

Daytime phone: 123-456-7890
Evening phone: 123-098-7654
Fax: 123-456-7899
E-mail: toadlove@aol.com

Sighting Number	Date	Location (distance & direction from nearest town or Lat-Long)	Habitat Type[1]	Species Name	Abun-dance	Calls[2] (C.I. Value)	Notes (especially note malformations)
1	2/15/2000	roadside park, 4 mi. NE of Shepherd	man-made ponds	spring peeper		3	heard from the roadside
2	3/10/2000	Sam Houston Nat'l Forest, 6 mi. W of Coldspring	bottomland forest	tiger salamander	1		6 in. long - found under log
3	4/5/2000	Coldspring Elementary School	residential	Gulf Coast toad	3		under streetlight in evening
4	6/11/2000	Trinity River oxbow, 4 mi. W of SH 59	swamp	amphiuma	1		seined up with fish; 12 in. long

[1] Please describe as upland forest, bottomland forest, grassland, savannah, brushland, agricultural, residential, or as one of the wetland types on page 32.

[2] Call Index values of frog and toad calls: 1 = individuals can be counted and there is some space between calls;
2 = calls of individuals distinguishable but there is some overlapping of calls;
3 = full chorus–calls are constant, continuous, and overlapping.

Please return data sheets by **NOV. 30** to:
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3000 IH-35 South , Suite 100
Austin, TX 78704

Adopt-a-Frog Pond

Selecting a site...

Your frog pond can be any spot where you've seen or heard frogs recently–from your backyard ornamental pond to your river bottom hunting lease to the wet spot at the back of the school yard. Many public parks might be amenable to having you adopt a wetland on their property–just be sure to obtain permission first if you'll be entering the property after hours or if you want to get into some wetland habitat that's normally off-limits. If you'll be working on private land that belongs to someone else, then you'll first have to obtain the written permission of the land-owner. A permission form is enclosed (page 29). Mark your site location on a map if possible.

What you need to get started...

- this information sheet, plus a data sheet and map of your frog pond location
- a pencil and clipboard
- a flashlight
- a field guide that depicts the amphibians that occur in your area. See page 33 for suggestions
- a tape recorder and a blank tape for recording calls that you do not recognize
- a resource for identifying frog and toad calls (see page 33)
- an outdoor thermometer. Other gauges would be useful if available, including an anemometer (for measuring wind speed), a hygrometer (for measuring relative humidity), and a barometer (for measuring barometric pressure). See data guidelines on page 31 for suggestions regarding these measurements.

Rio Grande Leopard frog

How to conduct your counts...

Your basic goal is to visit your frog pond as many evenings as possible to listen for frogs and toads calling. Surveys may be conducted whenever anurans are calling, but moonless evenings following a rainy period are especially popular among our moist-skinned friends. At a minimum, you should try to visit your site at least once/month between February and November.

You'll want to begin listening about 30 minutes after dark. First, record environmental

Nocturnal Call Count Guidelines

Adopt-a-Frog Pond

conditions on the form. The data guide provides suggestions for obtaining this environmental data.

Now, listen for the frogs and toads. Listen for five minutes. Record each species you hear, as well as an indication of its abundance. Abundance is estimated by a call index (CI) based on three levels: CI = 1 – only a few individuals of the species are distinctly heard; CI = 2 – calls of several individuals overlap; CI = 3 – so many individuals of the species are calling that calls are overlapping and indistinguishable. (See page 31 for more information). If you cannot identify a call at the time, then you can record it, compare it to the call resources you have at home, or send it to TPW and we can help you identify it. Space is also provided if you hear any nocturnal birds and want to record them on your data sheet.


Bullfrog

You can listen as long into the evening as you like (some species may begin calling later than others, more frogs may begin calling as it grows darker, etc.). For each 5-minute interval you can create new columns on the form under Visit 2, Visit 3, etc.


Gulf Coast toad

Again, the more often you can visit the site, the more that you and we will learn about the amphibians in your area–simply keep recording data in sequential columns of your data sheet. If your site is in your backyard, then go ahead and make multiple copies of the form and record data every night! Feel free to write down any comments or additional observations you have. If you would like to adopt more than one site, then simply mark that site on your map and start another data sheet.

Send your data sheets and maps into TPW by **NOVEMBER 30**. We'll compile all the data, send you a report, and assign a number to your adopted site. Then we hope you'll continue to monitor the activities of the frogs and toads at your pond for many years to come.

To aid us in conserving paper and reducing printing costs, you may wish to photocopy this page.

Adopt-a-Frog Pond • Nocturnal Call Count Data Sheet

Please feel free to photocopy forms.

Site Data

Site number: _____ (to be assigned by TPW) County: _____ Wetland type: _____

Name: _____ Daytime phone: _____

Address: _____ Evening phone: _____

_____ Fax: _____

City/St/Zip: _____ E-mail: _____

Location of site (Lat-Long or distance & directions from nearest town): _____

INSTRUCTIONS: Please use this sheet to record data each night you visit your adopted wetland site. There is no limit to the number of times you may record data at each site; however, we encourage you to visit the site at least monthly between the months of February and November. Use a separate data sheet for each site. See page 31 for suggestions for completing the data sheet. Mark site location on a map if possible.

	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5
Date					
Time					
Air Temp					
Water Temp					
Wind					
Sky					
Moon					
Water Level					
Barometric Pressure					
Relative Humidity					
Rainfall in past 48 hours? Y or N					
Background Noise					
Frogs and Toads – Species Name	**CI Value**	**CI Value**	**CI Value**	**CI Value**	**CI Value**
Nocturnal Birds – Species Name					

Please return data sheets and map by **NOV. 30** to: Texas Amphibian Watch, Texas Parks and Wildlife
3000 IH-35 South, Suite 100, Austin, TX 78704

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Adopt-a-Frog Pond • Nocturnal Call Count Data Sheet

Please feel free to photocopy forms.

Site Data

Site number: _____ (to be assigned by TPW) County: San Jacinto Wetland type: Lake, 25-acre, man-made

Name: Ima Prince Daytime phone: 123-456-7890

Address: 201 Hopalong Way Evening phone: 123-098-7654

Fax: 123-456-7899

City/St/Zip: Coldspring, TX 78542 E-mail: toadlove@aol.com

Location of site (Lat-Long or distance & directions from nearest town): Double Lake Rec. Area, Sam Houston Nat'l Forest, 4 mi S of Coldspring

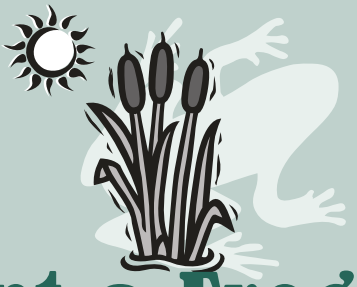
INSTRUCTIONS: Please use this sheet to record data each night you visit your adopted wetland site. There is no limit to the number of times you may record data at each site; however, we encourage you to visit the site at least monthly between the months of February and November. Use a separate data sheet for each site. See page 31 for suggestions for completing the data sheet. Mark site location on a map if possible.

	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5
Date	2/10/2000	3/3/2000	4/1/2000	5/9/2000	6/6/2000
Time	7:30 pm	8:00 pm	8:00 pm	9:00 pm	9:30 pm
Air Temp	51° F	57° F	62° F	75° F	80° F
Water Temp	55° F	58° F	60° F	67° F	78° F
Wind	B1	B2	B2	B1	B0
Sky	2	0	1	2	1
Moon	1st quarter	new moon	new	1st quarter	1st quarter
Water Level	above avg.	average	average	above avg.	above avg.
Barometric Pressure	29.85	30.51	30.02	28.96	29.81
Relative Humidity	70%	60%	75%	80%	80%
Rainfall in past 48 hours? Y or N	Y	N	N	Y	Y
Background Noise	low	low	low	low	med
Frogs and Toads – Species Name	**CI Value**	**CI Value**	**CI Value**	**CI Value**	**CI Value**
spring peepers	3				
upland chorus frog	2				
cricket frog	1	2	3	3	2
Southern leopard frog	1	1	2	2	1
bullfrog		2	2	2	1
Gulf Coast toad			1	3	2
green treefrog			1	3	2
gray treefrog			2	2	1
Eastern narrowmouth toad					2
Hurter's spadefoot toad					3
Nocturnal Birds – Species Name					
barred owl	1	1	1	1	1
screech owl			2	2	2

Please return data sheets and map by **NOV. 30** to: Texas Amphibian Watch, Texas Parks and Wildlife
3000 IH-35 South, Suite 100, Austin, TX 78704

Adapted from NBII Frog Force Web site – www.frogweb.gov

Malformation Monitoring Guidelines



Adopt-a-Frog Pond

By conducting this activity you will be participating in a volunteer nationwide malformation monitoring effort called "Frog Force." Knowing where deformed frogs are found is the first step towards determining possible causes of frog malformations. To estimate the number of deformed frogs in a population, IT IS NECESSARY TO COUNT BOTH THE NUMBER OF MALFORMED FROGS AND THE NUMBER OF NORMAL FROGS FOUND. With your help, scientists will have a more complete picture of population levels and the number of deformed frogs in each area. You will be collecting data that is useful to Texas Parks and Wildlife and to NARCAM, which is the North American Reporting Center for Amphibian Malformations (www.npwrc.usgs.gov/narcam/). They are keeping track of the information volunteers and scientists find about deformed frogs.

What you need to get started...

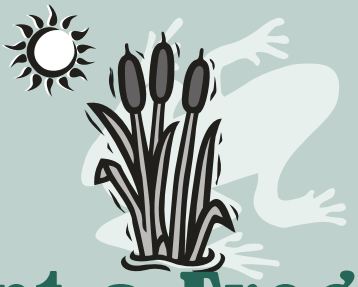
- this information sheet, several copies of the data sheet, and a map of your frog pond location
- a clipboard and pencils
- a small to medium aquarium net
- several buckets or small aquaria with lids
- hand-held magnifying lens (optional)
- appropriate clothes– be sure to wear old sneakers or a pair of mud boots, because amphibian habitat can be muddy!
- a field guide that depicts the amphibians in your area. See page 33 for suggestions.
- optional– a camera to record any unusual amphibians or abnormalities you encounter

Licensing Rules

Texas Parks and Wildlife requires that anyone who captures a nongame animal be licensed or permitted. If you would like to participate in an activity that actively involves capturing amphibians (such as malformation monitoring), then you have two options:

1. You can purchase a State of Texas Hunting License (a $6 license is available for anyone under age 16.)
2. You can attend a TPW amphibian monitoring workshop and we will issue you a scientific permit.

You do *not* have to have a permit or license to conduct call count surveys or to observe amphibians as an Amphibian Spotter.



Adopt-a-Frog Pond

What to do in the field...

First, make sure you don't wear insect repellents containing DEET to your site, and wash your hands to remove any repellents, sunscrrens, cosmetics, etc. Place ½ inch of water from your collection site in each bucket. You should also place 1-2 sticks or some floating plants in there so that the frogs and metamorphs have somewhere to rest. Make sure your bucket lids have air holes. Place your buckets in the shade to keep your captives cool.

Collect as many individuals from one site as possible. Several buckets are needed, because large frogs may eat small frogs. You will need another bucket for Pickerel Frogs (if you live an area where they are found). Pickerel frogs carry a substance toxic to other frogs in their skin (These frogs are NOT toxic to humans and will cause you no harm). Try to find young frogs and metamorphs (or metamorphasing tadpoles) especially, since deformed frogs do not tend to live very long. Generally the smaller the frog, the younger it is (although the Bullfrog can be quite large when young, since it grows much larger than most frogs).

The best way to catch these critters on land is with the help of a few people, using your net to either trap them or herd them into an area that is not covered with thick brush and plants. You can either pick them up by hand or use your net. Turn the net so the seams are on the outside: The small toes of frogs could get tangled in the seam. Use a net to capture metamorphs from the water. Needless to say, small frogs and metamorphs are very fragile, so handle them gently and be careful not to catch them under the metal frame of your net.

Once you have finished collecting, you will examine each frog individually to look for deformities. Look over the data sheet to learn what kinds of things you are looking for. Remove each frog from the bucket one at a time and hold it gently but firmly behind the front legs. A thumb on one side and index finger on the other will give you the best control and greatest viewing. REMEMBER, WE WANT TO HEAR ABOUT ALL THE FROGS YOU FIND, NOT JUST THOSE WITH ABNORMALITIES.

Once you have examined a frog, you can release it immediately; BUT, if you carry your bucket some distance from the capture site to survey the frogs, be sure to return the frogs to the area where you found them (rather than releasing them in the area you're using to record the data). You might want to have some extra buckets to hold individuals you've already examined.

How to send your data...

Now that you have completed your survey please send your information to TPW. If possible, you can also send your information to NARCAM using the Internet (www.npwrc.usgs.gov/narcam/form/form1.htm). If your Internet access is limited, you can report your data by calling them at 1-800-239-9801.

Another survey?...

- If you would like to survey at this site again, you'll need to wait until next year to avoid collecting the same individuals more than once.
- If you want to survey at a new location, you should make sure that it is at least a mile away...frogs can actually travel fairly long distances!
- Don't forget you can learn more about this site by conducting nocturnal call counts.

Some special notes...

Please read the *Rules of Frogging* at www.npwrc.usgs.gov/narcam for guidance on courtesy, ethics, and safety when working with amphibians. In addition, you may want to read over the DAPTF Field-work Code of Practice (www.npwrc.usgs.gov/narcam/techinfo/daptf.htm). Scientists still do not know what causes deformities or amphibian declines; these guidelines will help to prevent us from accidentally spreading disease or other harmful things.

To aid us in conserving paper and reducing printing costs, you may wish to photocopy this page.

Adopt-a-Frog Pond • Malformation Monitoring Data Sheet

Please feel free to photocopy forms.

Site Data

Site number: _____ to be assigned by TPW

County: _____

Location of site (Lat-Long or distance & direction from nearest town):

_____

_____

Observer Data

Name: _____ Daytime phone: _____

Address: _____ Evening phone: _____

_____ Fax: _____

City/St/Zip: _____ E-mail: _____

Amphibian Observation Information

Date of Observation: _____

If there is more than one species present, use a different data sheet for each species

Species name (or description): _____

Total number of normal individuals: _____ Total number of malformed individuals: _____

Record number of individuals in each malformation category

- These categories can be used with adult or metamorphosing (4 legs) frogs and toads.
- Normal frogs and toads have four digits (”fingers”) on their front (”fore”) limbs, and five on their hind limbs.
- If possible, please photograph any deformed animals you find; use a ruler or coin in the photo to give a size perspective.
- For photographic examples of deformities in frogs and toads, go to the *What Do Malformations Look Like?* links at the NARCAM site– www.npwrc.usgs.gov/narcam/index.htm#contents

Record data below or on the drawings on next page.

Malformation	Code	Number	Malformation	Code	Number	Malformation	Code	Number
Missing Eye(s)	ME		Extra Hind Limb(s)	EHL		Missing Fore Digit(s)	MFD	
Displaced Eye(s)	DE		Extra Fore Limb(s)	EFL		Partial Hind Limb(s)	PHL	
Retained Tail	RT		Abnormal Hind Limb(s)	AHL		Partial Fore Limb(s)	PFL	
Split Hind Limb(s)	SHL		Abnormal Fore Limb(s)	AFL		Cranial Shortening	CRS	
Split Fore Limb(s)	SFL		Extra Hind Digit(s)	EHD		Abnormal Mandible (jaw)	ABM	
Missing Hind Limb(s)	MHL		Extra Fore Digit(s)	EFD		Webbing Cutaneous Fusion	WCF	
Missing Fore Limb(s)	MFL		Missing Hind Digit(s)	MHD		Other (describe below)		

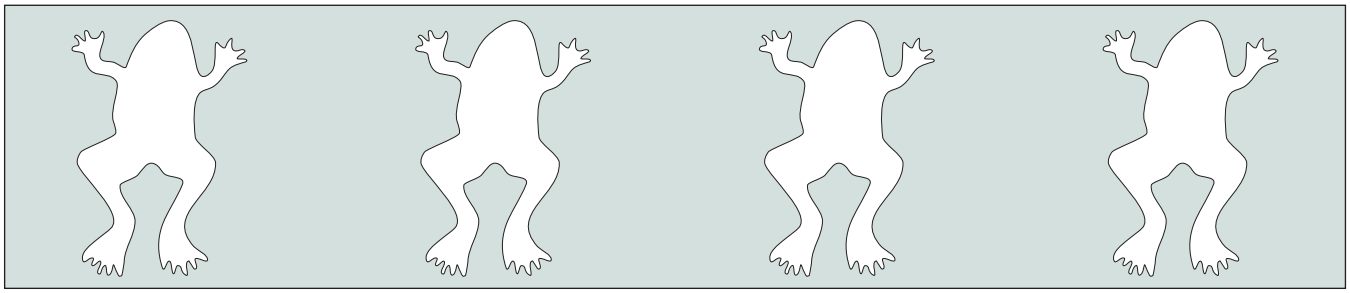
_____

_____

Adopt-a-Frog Pond • Malformation Monitoring Data Sheet

Please feel free to photocopy forms.

Or, if you prefer, circle a limb if it is split, place an X through a missing limb or eye, draw in an extra limb, tail, or skin if present. Place the number of frogs found with an abnormality next to that image. Note any other deformities.



Habitat Description

Habitat where you found the amphibian(s):

Wet meadow Swamp Pond Lake Stream Marsh Land

Other (please describe): _____

If it was on land, how close was the nearest wetland that may be an amphibian breeding habitat?

Remember: Amphibians can breed in a variety of wetland types, including ponds that dry up every year ("vernal pools") and wet meadows. _____

Please answer the following questions about the wetland the amphibians were in, or about the wetland nearest to the on-land locations of the amphibians you found:

What land uses are directly adjacent to the wetland? Check all that apply:

- ☐ Undisturbed natural area
- ☐ Suburban residences
- ☐ Urban residences
- ☐ Rural residences
- ☐ Recreation area (describe)

_____

_____

- ☐ Cropland (list types)

_____

- ☐ Rangeland (pasture) for cattle
- ☐ Rangeland (pasture) for other livestock (list types)

_____

- ☐ Industry/Manufacturing (describe)

_____

- ☐ Other

_____

What is the area like in general? Check all that apply:

- ☐ Wilderness
- ☐ Relatively undisturbed natural area
- ☐ Suburban residential area
- ☐ Urban residential area
- ☐ Other (describe)

_____

_____

- ☐ Rural residential area
- ☐ Recreational area
- ☐ Farming/ranching community
- ☐ Industrial area

Please return data sheets and map by **NOV. 30** to:

Texas Amphibian Watch, Texas Parks and Wildlife
3000 IH-35 South, Suite 100, Austin, TX 78704

To aid us in conserving paper and reducing printing costs, you may wish to photocopy this page.

Adopt-a-Frog Pond • Malformation Monitoring Data Sheet

Please feel free to photocopy forms.

Site Data

Site number: to be assigned by TPW

County: San Jacinto

Location of site (Lat-Long or distance & direction from nearest town): Double Lake Recreation Area, Sam Houston Nat'l Forest, 4 mi. S of Coldspring

Observer Data

Name: Ima Prince

Address: 201 Hopalong Way

City/St/Zip: Coldspring, TX 78542

Daytime phone: 123-456-7890

Evening phone: 123-098-7654

Fax: 123-456-7899

E-mail: toadlove@aol.com

Amphibian Observation Information

Date of Observation: 6/7/2000

If there is more than one species present, use a different data sheet for each species

Species name (or description): Southern leopard frog

Total number of normal individuals: 6

Total number of malformed individuals: 1

Record number of individuals in each malformation category

- These categories can be used with adult or metamorphosing (4 legs) frogs and toads.
- Normal frogs and toads have four digits ("fingers") on their front ("fore") limbs, and five on their hind limbs.
- If possible, please photograph any deformed animals you find; use a ruler or coin in the photo to give a size perspective.
- For photographic examples of deformities in frogs and toads, go to the *What Do Malformations Look Like?* links at the NARCAM site– www.npwrc.usgs.gov/narcam/index.htm#contents

Record data below or on the drawings on next page.

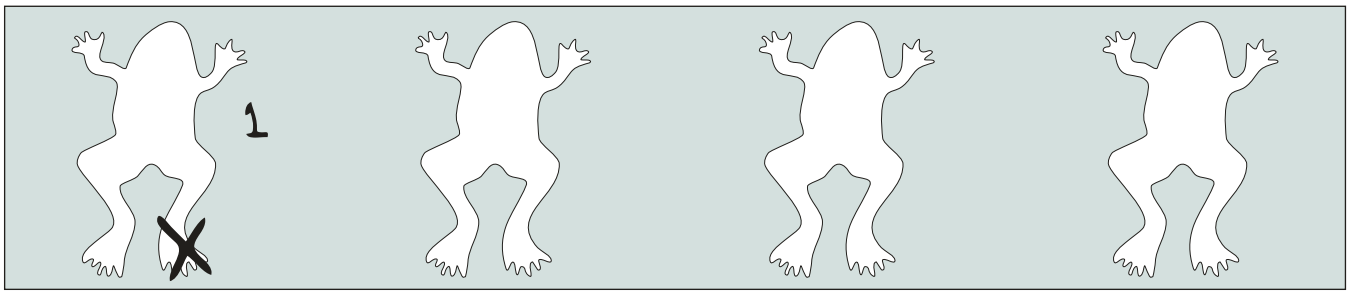
Malformation	Code	Number	Malformation	Code	Number	Malformation	Code	Number
Missing Eye(s)	ME		Extra Hind Limb(s)	EHL		Missing Fore Digit(s)	MFD	
Displaced Eye(s)	DE		Extra Fore Limb(s)	EFL		Partial Hind Limb(s)	PHL	
Retained Tail	RT		Abnormal Hind Limb(s)	AHL		Partial Fore Limb(s)	PFL	
Split Hind Limb(s)	SHL		Abnormal Fore Limb(s)	AFL		Cranial Shortening	CRS	
Split Fore Limb(s)	SFL		Extra Hind Digit(s)	EHD		Abnormal Mandible (jaw)	ABM	
Missing Hind Limb(s)	MHL	1	Extra Fore Digit(s)	EFD		Webbing Cutaneous Fusion	WCF	
Missing Fore Limb(s)	MFL		Missing Hind Digit(s)	MHD		Other (describe below)		

right hind foot was missing

Adopt-a-Frog Pond • Malformation Monitoring Data Sheet

Please feel free to photocopy forms.

Or, if you prefer, circle a limb if it is split, place an X through a missing limb or eye, draw in an extra limb, tail, or skin if present. Place the number of frogs found with an abnormality next to that image. Note any other deformities.



Habitat Description

Habitat where you found the amphibian(s):

Wet meadow Swamp Pond (Lake) Stream Marsh Land

Other (please describe): 25 acre, man-made

If it was on land, how close was the nearest wetland that may be an amphibian breeding habitat?

Remember: Amphibians can breed in a variety of wetland types, including ponds that dry up every year ("vernal pools") and wet meadows. _____

Please answer the following questions about the wetland the amphibians were in, or about the wetland nearest to the on-land locations of the amphibians you found:

What land uses are directly adjacent to the wetland? Check all that apply:

- ☐ Undisturbed natural area
- ☐ Suburban residences
- ☐ Urban residences
- ☐ Rural residences
- ☒ Recreation area (describe) national forest picnic ground
- ☐ Cropland (list types) _____
- ☐ Rangeland (pasture) for cattle
- ☐ Rangeland (pasture) for other livestock (list types) _____
- ☐ Industry/Manufacturing (describe) _____
- ☐ Other _____

What is the area like in general? Check all that apply:

- ☐ Wilderness
- ☒ Relatively undisturbed natural area
- ☐ Suburban residential area
- ☐ Urban residential area
- ☐ Other (describe) _____
- ☐ Rural residential area
- ☐ Recreational area
- ☐ Farming/ranching community
- ☐ Industrial area

Please return data sheets and map by **NOV. 30** to:
Texas Amphibian Watch, Texas Parks and Wildlife
3000 IH-35 South, Suite 100, Austin, TX 78704

Nocturnal Roadside Count Guidelines

Frog and Toad Survey

Thanks for your interest in participating in the Texas Frog and Toad Survey, part of the North American Amphibian Monitoring Program. The data you collect is part of a carefully-designed system whose purpose is to assess whether there are any trends in amphibian abundance across the United States as well as in Texas. Given your skills and dedication, we hope that you will be able to monitor your route for many years and thus add even more consistency and credibility to this monitoring effort. And in the process, we hope you have a safe, fun time getting to know the amphibians around you!

What you need to get started...

- this information sheet, plus a data sheet and map of your route location
- a flashlight
- a clipboard and several pencils
- a watch
- a tape recorder and a blank tape for recording calls you do not know
- an outdoor thermometer. Other gauges would be useful if available, including an anemometer (for measuring wind speed), a hygrometer (for measuring relative humidity), and a barometer (for measuring barometric pressure). See data guidelines for suggestions regarding these measurements.
- at home, a resource for identifying frog and toad calls (see page 33) and a field guide for area amphibians

Setting up the route...

We have provided you with a pre-selected starting point and a map of the locality. During January or early February you need to set up your survey route. Driving along public roads in the direction provided, locate the first 10 wetlands you encounter along either side of the road. Wetlands can include ponds, temporary pools, ditches, etc.–basically any site which holds some standing water at some time. These wetlands will be your "listening posts" for the call counts. *Each wetland must be at least 0.5 miles apart.* This ensures that you do not hear overlapping calls from two adjacent listening posts. Record the wetland types on the Ground-truthing Form using the categories described in the Data Guide on page 32. Mark the listening posts with an "X" on the map provided. While looking for stops it is also important to make sure the roads are appropriate for stopping. If they are too busy, too dangerous, private roads, or poorly maintained, then the routes may be shifted to the nearest set of appropriate roads that travel in the same direction. Contact TPW for more information on shifting routes. Please send a copy of your map back to us.

Nocturnal Roadside Count Guidelines

Frog and Toad Survey

How to conduct your counts...

Conduct one count during each of the survey periods recommended for your region (a map is shown on page 27). You should run the route during periods of high humidity and within 72 hours after rain. Start the survey 30 minutes after sunset, and complete the survey by 1 a.m. Approach the listening post cautiously, listening for frogs and toads as you approach (close your car doors quietly!).

After arriving at Stop 1, fill out portions of the data sheet, including the date, beginning time, and weather data. The Data Guide offers you suggestions on completing these sections. Next, listen for 5 minutes, recording a call index for each species heard. The call index (CI) is based on three levels: CI = 1 – only a few individuals of the species are distinctly heard; CI = 2 – calls of several individuals overlap; CI = 3 – so many individuals of the species are calling that calls are overlapping and indistinguishable. (See page 31 for more information.) Also note any frogs and toads that you happen to see and record any night birds that you hear. Record your observations, move on to the next stop, and follow the same steps. Repeat this until you have finished the route. At the end record your final weather conditions.

You'll need to run your route at least three times each year according to the map on page 27.

Send your data sheets and maps into TPW by **NOVEMBER 30**. We'll compile all the data and send you an annual report. Then we hope you'll continue to monitor the activities of the frogs and toads on your route for many years to come.

Some special notes...

The North American Amphibian Monitoring Program assigns the location of these random routes; however, you are welcome to set up additional routes of your own in other locations. In fact, if you would like to participate in the NAAMP program in Texas, then practicing the techniques on a route of your own for a year or two might be a good idea.

The Texas Frog and Toad Survey is designed as a roadside survey. Please respect the rights of private property owners during the course of your volunteer efforts and do not leave road rights-of-way when setting up or conducting your counts.

Be sure to take safety precautions. When setting up your route avoid high-traffic roads, for safety reasons and because traffic will interfere with your ability to hear calls. Be sure to park well off the road and watch for traffic as you exit your car. You may also listen from inside your car with the windows down if that is a safer option. Simply note which option you choose and stay consistent each time you run your route. It is recommended that at least two people conduct each count.

If wetland sites along your route are destroyed, please continue to maintain your listening posts there–your data will give us information on amphibian habitat trends. You should, however, note changes along your route, whether it is the creation or destruction of wetlands.

To aid us in conserving paper and reducing printing costs, you may wish to photocopy this page.

Frog and Toad Survey • Ground-truthing Form

Please feel free to photocopy forms.

Site Data

Route number: to be assigned by TPW

County: _____

Directions to starting point: _____

_____

_____

Observer Data

Name: _____ Daytime phone: _____

Address: _____ Evening phone: _____

_____ Fax: _____

City/St/Zip: _____ E-mail: _____

	Distance from starting point (miles)	Wetland type (see Data Guide)	Notes
Stop 1			
Stop 2			
Stop 3			
Stop 4			
Stop 5			
Stop 6			
Stop 7			
Stop 8			
Stop 9			
Stop 10			

Be sure to mark all stops on your map. Remember, all stops must be at least 0.5 miles apart.

Please return map and form by **MARCH 30** to:

Texas Amphibian Watch
Texas Parks and Wildlife
3000 IH-35 South, Suite 100
Austin, TX 78704

To aid us in conserving paper and reducing printing costs, you may wish to photocopy this page.

Frog and Toad Survey • Ground-truthing Form

Please feel free to photocopy forms.

Site Data

Route number: (to be assigned by TPW) 83157

County: Hays

Directions to starting point: ~5 mi. NE of Driftwood @ intersection of FM 1826 and FM 967

Observer Data

Name: Lee Ann Linam

Address: 200 Hoots Holler Rd.

City/St/Zip: Wimberley, TX 78676

Daytime phone: 512-847-9480

Evening phone: 512-847-9480

Fax: 512-847-9480

E-mail: lalinam@wimberley-tx.com

	Distance from starting point (miles)	Wetland type (see Data Guide)	Notes
Stop 1	0.35	stream (large, ~20 ft)	Onion Creek @ Salt Lick
Stop 2	1.8	stream (intermittent, 8 ft. wide)	wet weather creek
Stop 3	2.5	stream (large, ~20 ft.)	Onion Creek is about 100 yd. off right-hand side of road
Stop 4	3.15	stream (intermittent)	Onion Creek - stop before bridge
Stop 5	5.1	stream (5 ft, intermittent)	wet weather creek
Stop 6	6.2	pond (man-made)	stock tank on left side
Stop 7	7.0	stream (small, 15 ft)	Onion Creek - stop after bridge
Stop 8	7.7	pond (man-made)	impoundment in creek on left
Stop 9	8.4	stream (10 ft, intermittent)	pull over to left shoulder
Stop 10	9.85	stream (8 ft, intermittent)	

Be sure to mark all stops on your map. Remember, all stops must be at least 0.5 miles apart.

Please return map and form by **MARCH 30** to:

Texas Amphibian Watch
Texas Parks and Wildlife
3000 IH-35 South, Suite 100
Austin, TX 78704

To aid us in conserving paper and reducing printing costs, you may wish to photocopy this page.

Frog and Toad Survey Form

North American Amphibian Monitoring Program

Observer number: _____ to be assigned by NAAMP

ROUTE INFORMATION

Route number: _____ Route name: _____ State: _____ Survey date: _____ Run number: _____

OBSERVER INFORMATION

First name: _____ Middle initial: _____ Last name: _____

Please complete address or contact information below only if it has changed.

Address: _____ Phone: _____

_____ E-mail: _____

City: _____ State: _____ Zip: _____ _____

DIRECTIONS

Be sure to complete the whole datasheet, don't forget the Date and Run Number above. At the start and finish of each run record the time, wind speed, and sky code. At each stop listen for 5 minutes, then record the amphibian calling index for each species heard and the additional requested information.

There are two kinds of noise disturbance questions:

"Was noise a factor?" Means did background noise impact your ability to hear.

"Did you take a timeout?" If an unexpected noise disturbance happens (such as a train) that lasts a minute or more, you may interrupt the 5 minute listening period to ignore the sudden disturbance, finish up the listening time after the disturbance has passed. Do not include this type of noise in the "was noise a factor" question.

INDEX AND CODE DEFINITIONS

Amphibian Calling Index

1 = Individuals can be counted; there is space between calls
2 = Calls of individuals can be distinguished but there is some overlapping of calls
3 = Full chorus; calls are constant, continuous and overlapping

Sky Codes

0 = Few clouds
1 = Partly cloudy (scattered) or variable sky
2 = Cloudy or overcast
4 = Fog or smoke
5 = Drizzle or light rain (not affecting hearing ability)
7 = Snow
8 = Showers (is affecting hearing ability) *do not conduct survey*

Beaufort Wind Codes

0 = Calm (<1 mph) smoke rises vertically
1 = Light Air (1-3 mph) smoke drifts, weather vane inactive
2 = Light Breeze (4-7 mph) leaves rustle, can feel wind on face
3 = Gentle Breeze (8-12 mph) leaves and twigs move around; small flag extends
4* = Moderate Breeze (13-18 mph) moves thin branches, raises loose papers
** do not conduct survey at Level 4 unless in Great Plains region*
5**= Fresh Breeze (19 mph or greater) small trees begin to sway
*** do not conduct survey at Level 5 ALL REGIONS*

Noise Index

0 = No appreciable effect (owl calling)
1 = Slightly affecting sampling (distant traffic, dog barking, 1 car passing)
2 = Moderately affecting sampling (nearby traffic, 2-5 cars passing)
3 = Seriously affecting sampling (continuous traffic nearby, 6-10 cars)
4 = Profoundly affecting sampling (continuous traffic passing, construction noise)

ADDITIONAL NOTES

Moon phase: _____ Relative humidity – start: _____ Relative humidity – end: _____

Listened from *(circle one)*: Inside car / Outside car

Other notes: _____

_____

_____

Please continue filling in survey on other side

RUN INFORMATION

	Start	Finish
Time (military)		
Wind (Beaufort Scale) mark X in appropriate box	0 1 2 3 4 5	0 1 2 3 4 5
Sky (see code explanation) mark X in appropriate box	0 1 2 4 5 7 8	0 1 2 4 5 7 8
# of days since last rainfall		

PER-STOP INFORMATION

Stop #	1	2	3	4	5	6	7	8	9	10
Start Time (military)										
Air Temp. (stops 1 & 10) circle one °C °F										
Was noise a factor? Check if yes										
Did you take a timeout? Check if yes										
Species ▼ Stop # ▶	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Noise scale										
Number of cars that passed										

If you have any additional notes, please write them at the bottom on the front of this sheet. Thank you for your participation!

To aid us in conserving paper and reducing printing costs, you may wish to photocopy this page.

Frog and Toad Survey Form

North American Amphibian Monitoring Program

Observer number: _____ to be assigned by NAAMP

ROUTE INFORMATION

Route number: 830157 Route name: Driftwood State: TX Survey date: April 2, 1999 Run number: 2

OBSERVER INFORMATION

First name: Lee Middle initial: A Last name: Linam

Please complete address or contact information below only if it has changed.

Address: _____ Phone: _____

_____ E-mail: _____

City: _____ State: _____ Zip: _____

DIRECTIONS

Be sure to complete the whole datasheet, don't forget the Date and Run Number above. At the start and finish of each run record the time, wind speed, and sky code. At each stop listen for 5 minutes, then record the amphibian calling index for each species heard and the additional requested information.

There are two kinds of noise disturbance questions:

"Was noise a factor?" Means did background noise impact your ability to hear.

"Did you take a timeout?" If an unexpected noise disturbance happens (such as a train) that lasts a minute or more, you may interrupt the 5 minute listening period to ignore the sudden disturbance, finish up the listening time after the disturbance has passed. Do not include this type of noise in the "was noise a factor" question.

INDEX AND CODE DEFINITIONS

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2 = Cloudy or overcast
4 = Fog or smoke
5 = Drizzle or light rain (not affecting hearing ability)
7 = Snow
8 = Showers (is affecting hearing ability) *do not conduct survey*

Beaufort Wind Codes

0 = Calm (<1 mph) smoke rises vertically
1 = Light Air (1-3 mph) smoke drifts, weather vane inactive
2 = Light Breeze (4-7 mph) leaves rustle, can feel wind on face
3 = Gentle Breeze (8-12 mph) leaves and twigs move around; small flag extends
4* = Moderate Breeze (13-18 mph) moves thin branches, raises loose papers
** do not conduct survey at Level 4 unless in Great Plains region*
5**= Fresh Breeze (19 mph or greater) small trees begin to sway
*** do not conduct survey at Level 5 ALL REGIONS*

Noise Index

0 = No appreciable effect (owl calling)
1 = Slightly affecting sampling (distant traffic, dog barking, 1 car passing)
2 = Moderately affecting sampling (nearby traffic, 2-5 cars passing)
3 = Seriously affecting sampling (continuous traffic nearby, 6-10 cars)
4 = Profoundly affecting sampling (continuous traffic passing, construction noise)

ADDITIONAL NOTES

Moon phase: between 1st quarter & full Relative humidity – start: 68% Relative humidity – end: 72%

Listened from *(circle one)*: (Inside car) / Outside car

Other notes: _____

_____

_____

Please continue filling in survey on other side

RUN INFORMATION

	Start	Finish
Time (military)	21:43	23:36
Wind (Beaufort Scale) mark X in appropriate box	0 | 1 X | 2 | 3 | 4 | 5	0 | 1 X | 2 | 3 | 4 | 5
Sky (see code explanation) mark X in appropriate box	0 X | 1 | 2 | 4 | 5 | 7 | 8	0 | 1 | 2 X | 4 | 5 | 7 | 8
# of days since last rainfall	<1	

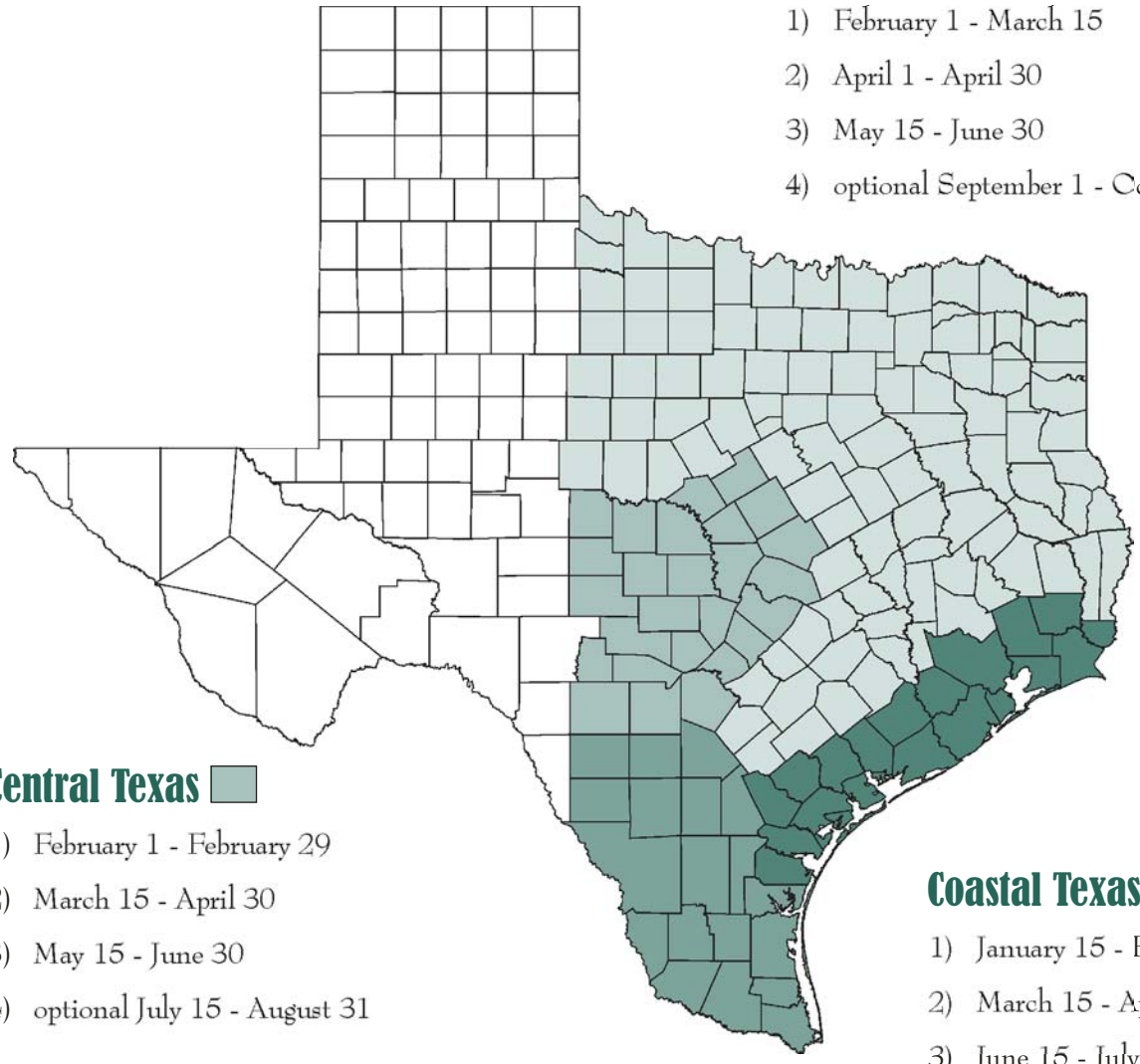
PER-STOP INFORMATION

Stop #	1	2	3	4	5	6	7	8	9	10
Start Time (military)	21:43	21:55	22:07	22:20	22:35	22:49	23:00	23:08	23:20	23:36
Air Temp. (stops 1 & 10) circle one °C (°F)	72									65
Was noise a factor? Check if yes	✓	✓			✓					
Did you take a timeout? Check if yes										
Species ▼ Stop # ▶	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Cricket frog	3	0	2	2	0	2	2	3	0	0
Gray treefrog	0	1	0	1	0	0	0	1	1	1
Gulf Coast toad	0	0	0	2	0	1	0	2	1	0
Cliff chirping frog	0	1	0	0	1	0	0	0	0	0
Noise scale	4	3	2	1	3	1	2	2	0	2
Number of cars that passed	8	6	3	0	7	1	4	2	0	2

If you have any additional notes, please write them at the bottom on the front of this sheet. Thank you for your participation!

NAAMP Anuran Sampling Periods in Texas

Breeding seasons are considered to be year-round for most of the state. Sampling at all sites is recommended following a significant (>0.5") rainfall. Sampling seasons are indicated only for those counties for which NAAMP roadside routes have been generated.



North/East Texas

1) February 1 - March 15
2) April 1 - April 30
3) May 15 - June 30
4) optional September 1 - October 15

Central Texas

1) February 1 - February 29
2) March 15 - April 30
3) May 15 - June 30
4) optional July 15 - August 31

Coastal Texas

1) January 15 - February 29
2) March 15 - April 30
3) June 15 - July 31
4) optional September 15 - October 31

South Texas

1) January 15 - February 29
2) April 15 - May 31
3) August 15 - September 30
4) optional October 15 - November 30

Courteous Frogging

Ask Permission!

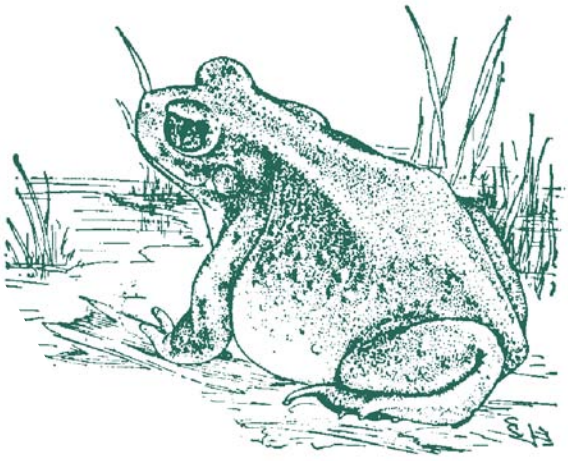
Some of you are lucky enough to have a pond or wetland with frogs in your own backyard! If that's the case you only need to collect the data and send to us. We'll assume that we have your permission to store the data, analyze it, and produce reports based on the data from that location. However, if you would like to gather information on property other than your own, then you'll have to seek permission.

Legislation in Texas protects the rights of private property owners during the course of your volunteer efforts. You should approach the property owner and explain what you're doing and why and when you'd like to visit their property. You'll then need to get the landowner to sign a Landowner Access Form to grant you permission to gather data, to provide it to Texas Parks and Wildlife, and to allow us to use the data in preparing reports. The Landowner Access Form is on the next page. Landowner permission forms are not required when you do roadside call counts surveys, as long as you are on public roads.

If you will be working on public property, then you won't have to get a signed permission form, but you should seek verbal permission from the site manager. Once again, explain what you're doing and why and when you'll be visiting the property. They're likely to be very supportive of your efforts, but they may have to issue you a special permit to enter the area after dark, to capture animals, etc.

Use the Landowner Access Form on the next page if you wish to gather information on private property!

A signed Landowner Access Form will grant you permission to gather data, to provide it to Texas Parks and Wildlife, and to allow us to use the data in preparing reports.



Texas Amphibian Watch
Private Lands Access Request Form

To the landowner:

_____ (volunteer name) is participating as a volunteer in Texas Amphibian Watch. Texas Amphibian Watch is a monitoring program that uses citizen volunteers to gather data about the status and health of frogs, toads, and salamanders in Texas. Although very few of these species are considered threatened or endangered, they can be valuable indicators of the health of our environment. Texas Parks and Wildlife is very pleased to have the assistance of concerned Texans in watching over the health of these native species.

We have, however, instructed our volunteers that they cannot collect data on private land without the approval of the private landowner. Accordingly, we have prepared this form for your approval. The sections described below are the releases that we and our volunteers are required to obtain from you under Section 12.103 of the Texas Parks and Wildlife Code. If you approve, then please sign one or both sections and provide a copy to our volunteer.

1. **Use of information**
   This documents my approval for TPW volunteers and employees to use (such as in analyses) site specific information from the property I own or manage. This may include placing that information onto a topographic map and entering the information into a Department database. Thus, the information could be viewed by the public.

   _____ _____
   (Landowner or authorized agent signature) *(Date)*

2. **Reporting information**
   This also documents my approval for TPW volunteers and employees to report (such as in publications or technical reports) the above approved information in a manner that permits identification of the location of the specific parcel of property that I own or manage.

   _____ _____
   (Landowner or authorized agent signature) *(Date)*

3. **Other conditions**
   If there are any conditions that apply to this approval, please specify and initial below.

   _____

   _____

   _____

Name and Address *(of landowner or authorized agent)*:

Name _____

Address _____

City, State, Zip _____

Phone numbers _____

_____

Optional:

Name of ranch or tract _____

County _____

Acreage _____

Location _____

Data Guide for Amphibian Surveys

Climatic Conditions:

Air temp

The best option is to have an outdoor thermometer. You can also call time/temp phone numbers or obtain temperatures from local radio or TV; however, temperatures in rural settings often differ significantly from temperatures in nearby urban settings.

Wind – Record the actual wind speed or use the Beaufort scale described below. Indicate the direction from which the wind is coming. (for example: B2 SW) *Surveys should not be conducted when wind speeds exceed 12 mph.*

B0 (less than 1 mph) – calm/still: smoke will rise vertically.
B1 (1-3 mph) – light air: rising smoke drifts; weather vane is inactive.
B2 (4-7 mph) – light breeze: leaves rustle; can feel wind on your face; weather vane is inactive
B3 (8-12 mph) – gentle breeze: leaves and twigs move around; light weight flags extend.
B4 (13-18 mph) – moderate breeze: moves thin branches, raises dust and paper.
B5 (19-24 mph) – fresh breeze: medium tree branches move.

Sky – use the following National Weather Bureau guide:

0 – Few clouds	2 – Cloudy or overcast	5 – Drizzle
1 – Partly cloudy or variable sky	4 – Fog or smoke	8 – Showers

Counts may be very effective in light rain, but avoid heavy rain which may impair your ability to hear calls.

Moon – check a calendar to record the closest moon phase (New moon, First quarter, Full moon, Third quarter)

Water level – describe as average, below average, above average, much below average, or much above average.

Barometric Pressure and Relative Humidity – these two variables may be very important in amphibian calling activity. If your site is located near a National Weather Service station, then you can obtain current data from the Internet. Some local radio and television news programs will also provide these numbers, although they can change quickly over the course of an evening.

Background Noise

low – does not impair ability to hear calls; medium – some noise; may obscure some calls; high – definitely affects effectiveness of call count

Amphibian Call Index:

This index is used to give a very rough relative abundance for each amphibian species calling at a site.
Index Value 0: No individuals calling
Index Value 1: Individuals can be counted. There is space between calls.
Index Value 2: Calls of individuals can be distinguished, but there is some overlapping of calls.
Index Value 3: Full chorus. Calls are constant, continuous, and overlapping.

Data Guide for Amphibian Surveys

Texas Wetland Types:
Texas boasts a wide variety of wetland types–both natural and man-made. The list below includes the types most likely to be encountered during amphibian surveys, but may not be exhaustive. Feel free to describe your wetland type if it does not fit the descriptions below.

Bog – Found in East Texas, these are sites found on acid peat soils that are low in nutrients. They have essentially no water flow in or out. Vegetation includes low shrubs, herbs, and a few tree species, with the ground cover dominated by sphagnum moss. Some are very overgrown with vegetation, while others may contain areas of open water.

Ditch – Ditches are obviously man-made linear wetland habitat, with a wide array of native and non-native vegetation. Despite their artificial nature, many ditches are used by amphibians as breeding habitat.

Lake – Lakes are described as any body of water over 20 acres in size dominated by deep open water. Vegetation and anuran habitat is usually limited to the shallow areas along the shore. With only one natural freshwater lake in Texas, most lakes are actually man-made reservoirs.

Marsh – Marshes are any wetland characterized as maintaining water year round and dominated by herbaceous, non-woody vegetation. Water depths can vary but are not usually greater than 3 feet. Common plant species include cattails, rushes, sedges, and grasses, along with submergent plants in the more open water areas. In West Texas spring-fed marshes are known as cienegas.

Pond – These are lakes smaller than 20 acres in size. Vegetation can vary, but anuran habitat is usually restricted to shallow areas near the shore. Please indicate whether *natural* or *man-made*.

Swamp – Found most frequently in East Texas, these wetlands are dominated by woody vegetation. Standing water is usually present year-round.

Stream – Streams include a variety of wetland habitats from small, intermittent drainages to large rivers in Texas. Anurans are most likely to utilize the edges of slow-moving stream bodies, but some salamanders are adapted to using deeper water (for example, amphiuma and sirens in East Texas streams) or faster flow areas (for example, the spring-dwelling Eurycea salamanders found in Central Texas streams). Streams should be characterized on the data form as *intermittent*, *small* (less than 15 feet in width), or *large* (more than 15 feet in width). *Spring-fed* stream habitat should also be noted.

Temporary Pool – This category includes "puddles." A temporary pool is defined as any non-permanent water body that is not part of a larger wetland complex as described above. Temporary pools most often result from spring rains, although they may occur in the summer and fall in West Texas.

Wet Meadow – These areas are dominated by grasses, sedges, and rushes and may appear prairie-like for most of the year. In areas with water-logged soils, however, water can stand during the spring and support breeding amphibians.

Amphibian References

Tapes and CDs – except where noted below, these are often available in nature stores.

Voices of the Night – contains recordings of 36 frog and toad species found in eastern North America, including the eastern half of Texas, along with information about the species. Distributed by Cornell Laboratory of Ornithology (607) 266-7425. Cost approximately $11.

Frog and Toad Calls of the Rocky Mountains and Southwest – contains species found in the western part of Texas, among others. Distributed by Cornell Laboratory (607) 266-7425.

The Calls of Frogs and Toads - Eastern and Central North America – contains recordings and written information about 42 species of frogs and toads found east of the Great Plains. Side two contains a guide to variations in calls and interpretation of mixed species choruses. Distributed by One Good Tern 1-800-432-8376. Cost approximately $14.

A Guide to Night Sounds – contains recordings of night birds and insects (useful for comparison to anuran calls.) Distributed by One Good Tern 1-800-432-8376.

Frogs and Toads of North Central Texas – This tape contains recordings of frogs and toads of the Dallas-Fort Worth metroplex and surrounding areas. Side two contains recordings of other night creatures and a guide to interpreting frog and toad choruses. Contact TPW Urban Fish and Wildlife Program (972-293-3841).

Texas Amphibian Watch Guide to the Calls of Frogs and Toads in Texas – contains recordings of frogs and toads in Texas. Side two contains recordings of other night creatures and a guide to interpreting frog and toad choruses. Available from Wildlife Diversity Program, Texas Parks and Wildlife (1-800-792-1112 x7011). Cost: $5.

Field Guides – these are available in most book stores and nature stores. Most paperback costs range from $12 to $16.

A Field Guide to Reptiles and Amphibians of Eastern/Central North America – by Roger Conant and Joseph T. Collins. Color drawings, maps, and text for all Texas species. Part of the Peterson Field Guide series, published in 1991 by Houghton Mifflin Company, Boston.

Reptiles and Amphibians (Golden Series) – by H.S. Zim & H. M. Smith. Color drawings, maps and text for most Texas species. Published by Golden Books. Cost is $5-7.

The Audubon Society Field Guide to North American Reptiles and Amphibians – by J.L. Behler and F. W. King. Photos, maps, and text. Published in 1985 by Alfred A. Knopf.

Amphibians and Reptiles of Texas with Keys, Taxonomic Synopses, Bibliography, and Distribution – by J. Dixon. A more technical book, with distribution maps by county, but fewer illustrations. Published by Texas A&M Press.

List of Frogs and Toads Found in Texas

The following species have all been recorded in Texas, along with subspecies of some of the species listed below. The first column lists the scientific name, while the second column lists the common name. The third column gives an indication of the species' rarity on a global scale, while the fourth column indicates its rarity within the state (G5 and S5 species are the most common, while G1 and S1 species are the most rare). The fifth column indicates whether the species is listed by the U.S. Fish and Wildlife Service as threatened (LT) or endangered (LE), while the sixth column indicates whether the species is listed by Texas Parks and Wildlife.

We are especially interested in whether you encounter any S1 or S2 species during the course of your frog-watching activities. It would be helpful if you could photograph or record any of these rare species. Please note that permits are required to collect species listed as threatened or endangered by the state or federal government.

SCIENTIFIC NAME	COMMON NAME	GRANK	SRANK	USESA	SPROT
BUFO AMERICANUS	AMERICAN TOAD	G5	S3		
BUFO COGNATUS	GREAT PLAINS TOAD	G5	S5		
BUFO DEBILIS	GREEN TOAD	G5	S4		
BUFO HOUSTONENSIS	HOUSTON TOAD	G1	S1	LE	E
BUFO MARINUS	GIANT TOAD	G5	S2		
BUFO PUNCTATUS	RED-SPOTTED TOAD	G5	S5		
BUFO SPECIOSUS	TEXAS TOAD	G5	G5		
BUFO VALLICEPS	GULF COAST TOAD	G5	S5		
BUFO WOODHOUSII	WOODHOUSE'S TOAD	G5	S5		
BUFO VELATUS	EAST TEXAS TOAD	G5	S4		
ACRIS CREPITANS	CRICKET FROG	G5	S5		
HYLA ARENICOLOR	CANYON TREEFROG	G5	S4		
HYLA CHRYSOSCELIS	COPE'S GRAY TREEFROG	G5	S5		
HYLA CINEREA	GREEN TREEFROG	G5	S5		
HYLA SQUIRELLA	SQUIRREL TREEFROG	G5	S5		
HYLA VERSICOLOR	NORTHERN GRAY TREEFROG	G5	S5		
PSEUDACRIS CLARKII	SPOTTED CHORUS FROG	G5	S5		
PSEUDACRIS STRECKERI	STRECKER'S CHORUS FROG	G5	S5		
PSEUDACRIS TRISERIATA	STRIPED CHORUS FROG	G5	S5		
PSEUDACRIS CRUCIFER	SPRING PEEPER	G5	S5		
SMILISCA BAUDINII	MEXICAN TREEFROG	G5	S3		T
LEPTODACTYLUS LABIALIS	WHITE-LIPPED FROG	G5	S1		T
SYRRHOPHUS CYSTIGNATHOIDES	RIO GRANDE CHIRPING FROG	G5	S3		
SYRRHOPHUS GUTTILATUS	SPOTTED CHIRPING FROG	G4	S3		
SYRRHOPHUS MARNOCKII	CLIFF CHIRPING FROG	G5	S5		
ELEUTHERODACTYLUS (HYLACTOPHRYNE) AUGUSTI	BARKING FROG	G4	S4		
GASTROPHRYNE CAROLINENSIS	EASTERN NARROWMOUTH TOAD	G5	S5		
GASTROPHRYNE OLIVACEA	GREAT PLAINS NARROWMOUTH TOAD	G5	S5		
HYPOPACHUS VARIOLOSUS	SHEEP FROG	G5	S2		T
SCAPHIOPUS COUCHII	COUCH'S SPADEFOOT	G5	S5		
SCAPHIOPUS HOLBROOKII (HURTERII)	EASTERN SPADEFOOT	G5	S5		
SPEA BOMBIFRONS	PLAINS SPADEFOOT	G5	S5		
SPEA MULTIPLICATA	NEW MEXICO SPADEFOOT	G5	S5		
RANA AREOLATA	CRAWFISH FROG	G4	S3		
RANA BERLANDIERI	RIO GRANDE LEOPARD FROG	G5	S5		
RANA BLAIRI	PLAINS LEOPARD FROG	G5	S5		
RANA CATESBEIANA	BULLFROG	G5	S5		
RANA CLAMITANS	GREEN FROG	G5	S5		
RANA GRYLIO	PIG FROG	G5	S2		
RANA PALUSTRIS	PICKEREL FROG	G5	S5		
RANA PIPIENS	NORTHERN LEOPARD FROG	G5	S1		
RANA SPHENOCEPHALA	SOUTHERN LEOPARD FROG	G5	S5		
RHINOPHRYNUS DORSALIS	MEXICAN BURROWING TOAD	G5	S2		T

Some Useful Information

There are several excellent Web sites that provide information about amphibians and amphibian monitoring programs.

www.tpwd.state.tx.us/amphibians/
This site provides electronic copies of all the Texas Amphibian Watch materials, as well as photos and calls for most of the frogs and toads of Texas.

www.mp2-pwrc.usgs.gov/frogwatch
FrogWatch, an adopt-a-frog pond program sponsored by the USGS, can provide more information about nocturnal monitoring, as well as on-line reporting of data.

www.zo.utexas.edu/research/txherps
This site, provided by the University of Texas, provides descriptions of all the amphibians and reptiles in the state, photos of most species, and recordings of calls for most of the frogs and toads.

www.mp1-pwrc.usgs.gov/amphibs.html
This site, provided by the Biological Resource Division of the U.S. Geological Survey, provides information on the North American Amphibian Monitoring Program, including background on amphibian declines, monitoring guidelines, and different state programs.

www.frogweb.gov
This site, provided by a variety of partners under the leadership of the U.S. Geological Survey, is an education-oriented site designed to gather information about the occurrence of malformations in amphibians.

Also of Interest

Amphibian Monitoring Workshops
One of the best ways to get started is to attend an amphibian monitoring workshop. Texas Amphibian Watch will offer several workshops each year. We highly recommend that you attend a workshop before joining the program (participants in NAAMP will be required to attend a workshop). Workshops will present information about the biology and characteristics of amphibians in your area and detailed instructions for conducting amphibian monitoring.

Classroom guides
Texas Amphibian Watch has also adapted a curriculum guide about amphibians for use in Texas classrooms. The curriculum guide offers classroom activities that allow teachers to expand upon the field activities described above.

Other monitoring programs
Finally, don't forget that the Texas Amphibian Watch activities can mesh well with some other monitoring programs, such as Adopt-a-Wetland and Texas Watch water quality monitoring. Texas Parks and Wildlife also has other citizen monitoring programs in which you may be interested.

Texas Amphibian Watch

Texas Parks and Wildlife
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Austin, Texas 78704