



# Frog and Toad Survey

The Texas Frog and Toad Survey is part of the North American Amphibian Monitoring Program. The data collected here 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.
- a resource for identifying frog and toad calls (see page 37) and a field guide for area amphibians

**Texas Frog and Toad Survey  
is a partner with the North  
American Amphibian  
Monitoring Program (NAAMP)  
[www.pwrc.usgs.gov/naamp](http://www.pwrc.usgs.gov/naamp)**

## Setting up the route...

We provide you with a pre-selected starting point and a map of the locality. During January, you need to set up your survey route. Start at the starting point and begin 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 and coordinates (if possible) on the Ground-truthing Form using the categories described in the Data Guide on page 36. 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 route may be shifted to the nearest set of appropriate roads that travel in the same direction. Contact TPWD for more information on shifting routes. Please send a copy of your map back to us.



## 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 no earlier than 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 35 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.

Because of NAAMP data entry requirements, you need to enter your data online ([www.pwrc.usgs.gov/naamp](http://www.pwrc.usgs.gov/naamp)) or send your data sheets and maps to TPWD by **SEPTEMBER 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...

In order to increase the reliability of its data, NAAMP requires its volunteers to take an online Frog Call Quiz and receive a score of at least 65. Volunteers may take the quiz as many times as necessary and may also take practice quizzes online. To access the Frog Call Quiz for your route, please visit [www.pwrc.usgs.gov/frogquiz](http://www.pwrc.usgs.gov/frogquiz). The quiz for each year should be completed no later than Oct. 31.

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. Current NAAMP protocols can be reviewed at [www.pwrc.usgs.gov/naamp/protocol/](http://www.pwrc.usgs.gov/naamp/protocol/).



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: \_\_\_\_\_

Total volunteer time for ground-truthing (# people X # hours): \_\_\_\_\_

	Distance from starting point (miles)	Wetland type (see Data Guide)	Stop coordinates	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 Dept.  
4200 Smith School Road, Austin, TX 78744



The Texas Parks and Wildlife Department maintains the information collected through this form. With few exceptions, you are entitled to be informed about the information we collect. Under Sections 552.021 and 552.023 of the Texas Government Code, you are also entitled to receive and review the information. Under Section 559.004, you are also entitled to have this information corrected. [www.tpwd.state.tx.us](http://www.tpwd.state.tx.us) PWD 1157D-W7000 (3/07)



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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 Daytime phone: 512-847-9480

Address: 200 Hoots Holler Rd. Evening phone: 512-847-9480

Fax: 512-847-9480

City/St/Zip: Wimberley, TX 78676 E-mail: lalinam@wimberley-tx.com

Total volunteer time for ground-truthing (# people X # hours): 3 hrs.

	Distance from starting point (miles)	Wetland type (see Data Guide)	Stop coordinates	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 Dept.  
4200 Smith School Road, Austin, TX 78744



The Texas Parks and Wildlife Department maintains the information collected through this form. With few exceptions, you are entitled to be informed about the information we collect. Under Sections 552.021 and 552.023 of the Texas Government Code, you are also entitled to receive and review the information. Under Section 559.004, you are also entitled to have this information corrected. [www.tpwd.state.tx.us](http://www.tpwd.state.tx.us) PWD 1157D-W7000 (3/07)



# North American Amphibian Monitoring Program



## Texas Frog and Toad Survey

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<b>Observer Number:</b>	
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Route Information									
<b>Route Number:</b>		<b>Route Name:</b>		<b>State:</b>		<b>Survey Date:</b>		<b>Run Number:</b>	

Observer Information							
<b>First Name:</b>		<b>MI:</b>		<b>Last Name:</b>			
Please complete address or contact information in boxes below, only if it has changed.							
<b>Street Address 1:</b>				<b>Street Address 2:</b>			
<b>City:</b>				<b>State:</b>		<b>Zip:</b>	
<b>Phone:</b>				<b>e-mail:</b>			

Directions	
<p>Please 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, windspeed, 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.</p> <p>We are asking all participants to record whether the moon or moonlight was visible at each stop. Please write Yes or No for each stop. In addition, it is now requested that all participants include a car count for each stop. If you have an assistant, he or she can count cars for you. All other data should be collected by one observer.</p> <p>There are two kinds of noise disturbance questions:          "Noise index" is a numerical ranking of the level of disturbance encountered. The index descriptions are listed below.          "Did you take a time out?" is for an unexpected noise disturbance that 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.</p> <p><b>Index and Code Definitions</b>  <b>Amphibian Calling Index</b>          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</p>	<p><b>Sky Codes</b>          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</p> <p><b>Beaufort Wind Codes</b>          0 = Calm (&lt;1mph) 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</p> <p><b>Noise Index</b>          0 = No appreciable effect (e.g. owl calling)          1 = Slightly affecting sampling (e.g. distant traffic, dog barking, 1 car passing)          2 = Moderately affecting sampling (e.g. nearby traffic, 2-5 cars passing)          3 = Seriously affecting sampling (e.g. continuous traffic nearby, 6-10 cars)          4 = Profoundly affecting sampling (e.g. continuous traffic passing, construction noise)</p>

Additional Notes:		
Relative humidity – start:	Relative humidity – end:	Listened from: Inside car / Outside car (Circle one)
<small>PAPERWORK REDUCTION ACT STATEMENT: A Federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Public burden for the collection of this information is estimated to average 7 hours per response. Comments regarding this collection of information should be directed to the Bureau Clearance Officer, U.S. Geological Survey, 807 National Center, Reston, Virginia 20192. OMB NO. 1028-0078 Expiration Date: 3 / 31 /2008</small>		

--Please turn over to continue filling in survey form --

Total volunteer time (# people X # hours): \_\_\_\_\_





# North American Amphibian Monitoring Program



## Texas Frog and Toad Survey

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Observer Number:	L0413
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Route Information									
Route Number:	830157	Route Name:	Driftwood	State:	TX	Survey Date:	April 2, 1999	Run Number:	2

Observer Information							
First Name:	Lee	MI:	A	Last Name:	Linam		
Please complete address or contact information in boxes below, only if it has changed.							
Street Address 1:				Street Address 2:			
City:			State:		Zip:		
Phone:				e-mail:			

Directions	
<p>Please 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, windspeed, 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.</p> <p>We are asking all participants to record whether the moon or moonlight was visible at each stop. Please write Yes or No for each stop. In addition, it is now requested that all participants include a car count for each stop. If you have an assistant, he or she can count cars for you. All other data should be collected by one observer.</p> <p>There are two kinds of noise disturbance questions:          "Noise index" is a numerical ranking of the level of disturbance encountered. The index descriptions are listed below.          "Did you take a time out?" is for an unexpected noise disturbance that 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.</p> <p><b>Index and Code Definitions</b>  <b>Amphibian Calling Index</b>          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</p>	<p><b>Sky Codes</b>          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</p> <p><b>Beaufort Wind Codes</b>          0 = Calm (&lt;1mph) 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</p> <p><b>Noise Index</b>          0 = No appreciable effect (e.g. owl calling)          1 = Slightly affecting sampling (e.g. distant traffic, dog barking, 1 car passing)          2 = Moderately affecting sampling (e.g. nearby traffic, 2-5 cars passing)          3 = Seriously affecting sampling (e.g. continuous traffic nearby, 6-10 cars)          4 = Profoundly affecting sampling (e.g. continuous traffic passing, construction noise)</p>

Additional Notes:	
Relative humidity – start: 68%	Relative humidity – end: 72%
Listened from: Inside car <u>Outside car</u> (Circle one)	
<small>PAPERWORK REDUCTION ACT STATEMENT: A Federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Public burden for the collection of this information is estimated to average 7 hours per response. Comments regarding this collection of information should be directed to the Bureau Clearance Officer, U.S. Geological Survey, 807 National Center, Reston, Virginia 20192. OMB NO. 1028-0078 Expiration Date: 3 / 31 /2008</small>	

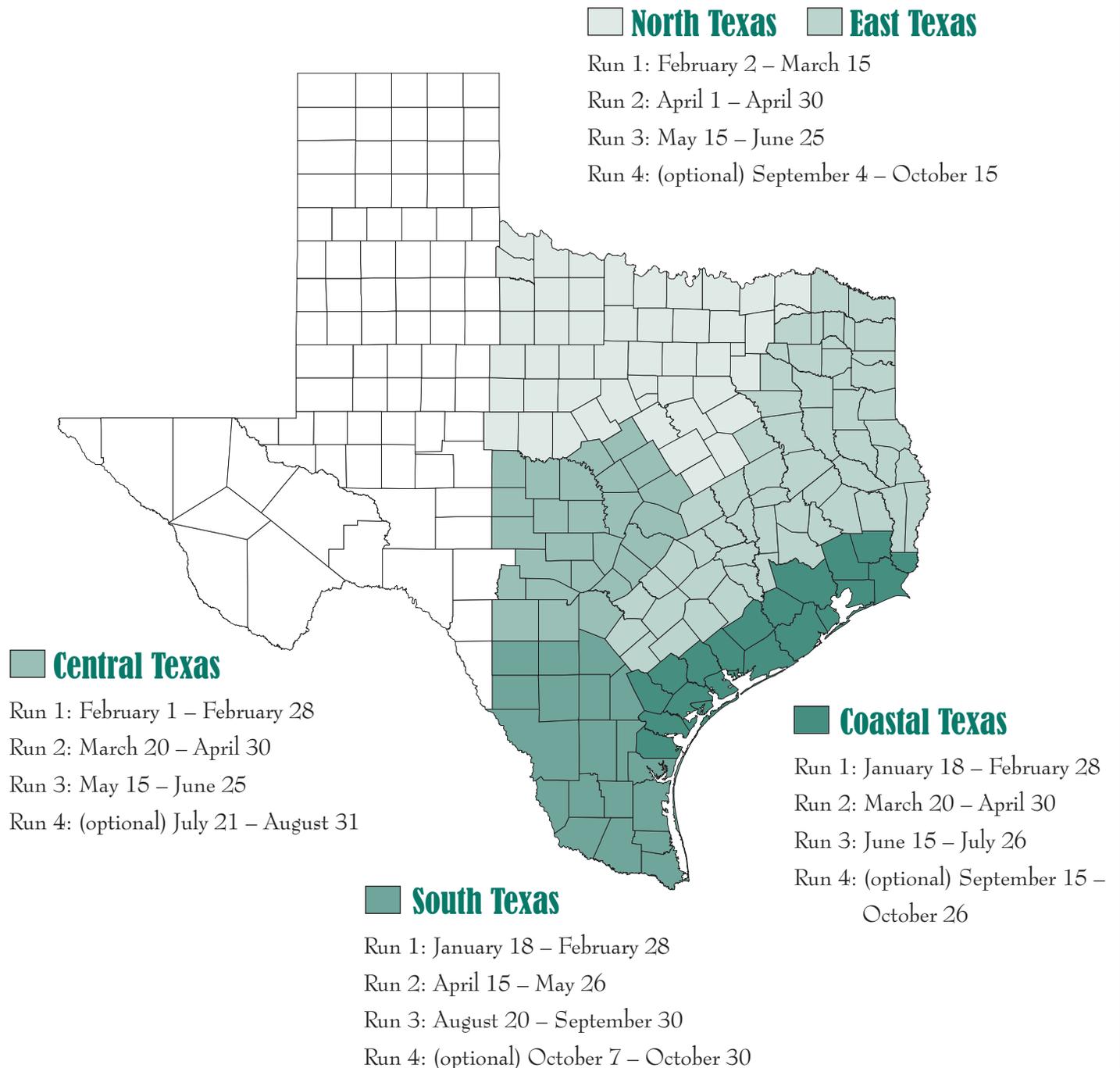
--Please turn over to continue filling in survey form --

Total volunteer time (# people X # hours): 6 hrs.



# 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 within 72 hours of a significant ( $>0.5''$ ) rainfall. Sampling seasons are indicated only for those counties for which NAAMP roadside routes have been generated.





# Ethical Frogging

As you participate in Texas Amphibian Watch, we ask you to keep in mind some of these guidelines designed to protect you, the frogs, and private landowners:

## COURTESY RULES

Ask 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 Private Lands Access Request Form to

grant you permission to gather data, send it to Texas Parks and Wildlife Department, and to allow us to use the data in preparing reports. The Private Lands Access Request Form is enclosed. Please return the form to us, even if you are working on your own private property, so that our records show that we have permission to use the data.

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, capture animals, etc.

**Use the Private Lands  
Access Request Form  
on page 33 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 Department, and to allow us to use the data in preparing reports. The form must also be submitted when monitoring your own property.



# Ethical Frogging

## LICENSING RULES

or sunscreen on your arms or clothing, do not allow frogs or other animals to come in contact with those places.

- ALWAYS put a creature back EXACTLY where you found it!
- If you work in more than one wetland location, be sure to disinfect boots and equipment before changing sites in order to prevent disease spread.

**Use the following guidelines when handling frogs for malformation monitoring.**

### Eggs:

It is best not to touch the eggs at all, but to just observe them where they are.

### Tadpoles:

Keep the tadpoles in water. Just like fish, tadpoles have gills, and can only breathe underwater. If you want to observe them closely make sure that you have a small

container of water to keep them in. You can keep them in you hands for a few seconds if you want; just be sure that your hands are damp (or even better, cup your hands so that you have a little pool of water), and make sure you don't squish them!

### Metamorphs:

A metamorph is the in-between stage, when a tadpole is changing into a frog. When all four legs of a tadpole start to show, that's when we first call it a metamorph. When it no longer has its tail, then we call it a frog. Keep the metamorphs wet. Make sure there's something in your bucket for metamorphs to crawl up on,





# Ethical Frogging

as they are beginning to breathe air and may not be effective swimmers.

## Frogs:

Keep frogs moist. Don't overcrowd them in buckets, keeping just one or two in each container. Keep your containers in the shade so that the frogs don't get too hot. When handling frogs, keep your hands moist and hold the frog by its legs—right where the legs meet the frog's body.

## RULES TO KEEP YOU SAFE

Make sure you ALWAYS conduct your volunteer work with another partner, especially any night-time activities.

## Muck:

Wetlands can sometimes have very deep, soft soils ("muck"), and it's not hard to get "stuck in the muck"! In addition, wading into deep water with soft soils can be dangerous if you are wearing

waders where water might fill your boots. Do not enter water where the bottom is unknown, and be careful of underwater hazards, such as abandoned fishing lines, broken glass, etc.

## Poisonous Plants:

Is there poison ivy near your wetland? Make sure you know what kinds of plants in your area are dangerous to touch, and know what they look like.



Poison ivy's leaves are dark green, except in the fall when they turn red, and are usually clustered in groups of three. The edges of its leaves are smooth, without teeth, but the leaves may have a few lobes (like an oak leaf). Look at a field guide at your library or bookstore to double-check your <sup>Poison Ivy</sup> identification.

## Venomous Snakes:

There are only four types of venomous snakes in Texas—water moccasins or cottonmouths, copperheads, coral snakes, and several types of rattlesnakes. The first three are



# Ethical Frogging

often found in moist habitats, but there is no need for excessive



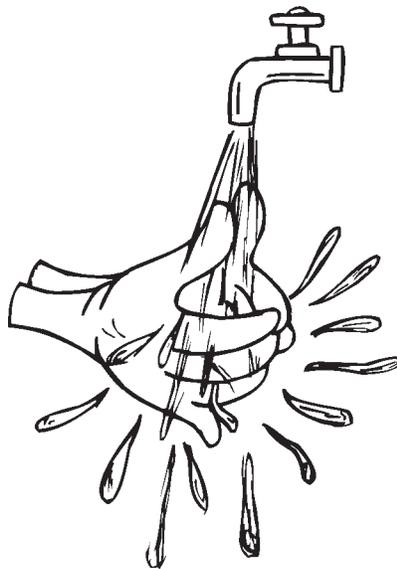
do when you see a snake is to stay very still. If you remain still, the snake may leave. If the snake doesn't move away from you after a few minutes, slowly and quietly back away from it. It's a good idea to check out your field guide to know which kinds of venomous snakes are in your area, and exactly what they look like.

## “Poisonous” Amphibians:

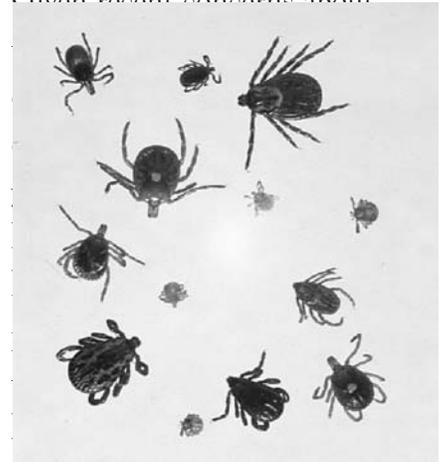
Some frogs, toads, and salamanders have toxins in their skin. Just touching or handling these animals won't hurt you, but be sure to wash your hands thoroughly before you eat or touch your eyes or face.

## Ticks:

If there are ticks in your area, you might want to wear long sleeves and pants, and keep your



pants tucked into your socks. Given recent concerns about



## Clothing and other stuff

There are some basic items that most field biologists ALWAYS have with them, and you should too!

### Long pants and shirts:

Even when it's hot out, it's a good idea to wear long sleeves and pants. This helps protect your skin from sunburn, insect bites, and scratches.

### Hat:



# Ethical Frogging

A hat with a wide brim all around keeps stuff out of your hair, keeps the sun out of your eyes, and keeps your face and ears from getting sunburned. Also, it's much easier to find tadpoles and frog eggs when the sun isn't glaring in your face!

### Drinking water:

If you're not close to home, then make sure you bring a water bottle!

### Sunscreen:

Sunburns are not fun, and they can even be dangerous! Make sure you wear sunscreen on any exposed skin, but be sure you wash your hands before handling amphibians.

### Insect repellent:

Wetlands are a good place for

frogs, but they're a good place for mosquitoes and other biting insects, too.

**IMPORTANT:** If you decide to use bug spray, then make sure you do not apply repellents containing DEET to any part of your body that will contact the water or amphibians. No matter what kind of bug spray you use, you should wash your hands thoroughly before you handle frogs or tadpoles.

**Happy and Safe Frogging!**



# Texas Amphibian Watch

## Private Lands Access Request Form

To be completed by the owner of any private tract of land where Texas Amphibian Watch data is collected.

\_\_\_\_\_ (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 Department is very pleased to have the assistance of concerned Texans in watching over the health of these native species.

Texas Parks and Wildlife Department will not accept data collected on private land without the written 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.

### 1. Use of information

This documents my approval for TPWD 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 TPWD 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):

**Optional:**

Name \_\_\_\_\_

Name of ranch or tract \_\_\_\_\_

Address \_\_\_\_\_

County \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Acreage \_\_\_\_\_

Phone numbers \_\_\_\_\_

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, although exceptions can be made for plains counties.*

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 – Simply indicate whether moonlight is visible.

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. Portable instruments are also available from garden centers and science supply catalogs.

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. Please indicate whether your wetland is natural or man-made.

- 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.

*Texas Amphibian Watch Guide to the Calls of Frogs and Toads in Texas (CD)* – Contains recordings of nearly all frogs and toads in Texas, as well as recordings of other night creatures and a guide to interpreting frog and toad choruses. Available from the TPWD Wildlife Diversity Program (800-792-1112 x7011). Cost: \$5.

*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).

*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 (800-432-8376).

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

**Field Guides** – These are available in most book stores and nature stores. Most paperback costs range from \$10 to \$20.

*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.

*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; some alternative names are given in parentheses. 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 Department.

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	USES A	SPROT
ANAXYRUS (BUFO) AMERICANUS	AMERICAN TOAD	G5	S3		
ANAXYRUS (BUFO) COGNATUS	GREAT PLAINS TOAD	G5	S5		
ANAXYRUS (BUFO) DEBILIS	GREEN TOAD	G5	S4		
ANAXYRUS (BUFO) HOUSTONENSIS	HOUSTON TOAD	G1	S1	LE	E
ANAXYRUS (BUFO) PUNCTATUS	RED-SPOTTED TOAD	G5	S5		
ANAXYRUS (BUFO) SPECIOSUS	TEXAS TOAD	G5	G5		
ANAXYRUS (BUFO) WOODHOUSII	WOODHOUSE'S TOAD	G5	S5		
ANAXYRUS (BUFO) WOODHOUSII VELATUS	EAST TEXAS TOAD	G5	S4		
CHAUNUS (BUFO) MARINUS	GIANT TOAD (MARINE TOAD)	G5	S2		
CRANOPSIS NEBULIFER (BUFO VALLICEPS)	GULF COAST TOAD	G5	S5		
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		
CRAUGASTER (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 HURTERII (HOLBROOKII)	EASTERN SPADEFOOT	G5	S5		
SPEA BOMBIFRONS	PLAINS SPADEFOOT	G5	S5		
SPEA MULTIPLICATA	NEW MEXICO SPADEFOOT	G5	S5		
LITHOBATES (RANA) AREOLATUS	CRAWFISH FROG	G4	S3		
LITHOBATES (RANA) BERLANDIERI	RIO GRANDE LEOPARD FROG	G5	S5		
LITHOBATES (RANA) BLAIRI	PLAINS LEOPARD FROG	G5	S5		
LITHOBATES (RANA) CATESBEIANUS	BULLFROG	G5	S5		
LITHOBATES (RANA) CLAMITANS	BRONZE (GREEN) FROG	G5	S5		
LITHOBATES (RANA) GRYLIO	PIG FROG	G5	S2		
LITHOBATES (RANA) PALUSTRIS	PICKEREL FROG	G5	S5		
LITHOBATES (RANA) PIPIENS	NORTHERN LEOPARD FROG	G5	S1 (extirpated)		
LITHOBATES (RANA) SPHENOCEPHALUS	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/](http://www.tpwd.state.tx.us/amphibians/)

This site provides electronic copies of all the Texas Amphibian Watch materials.

[www.nwf.org/frogwatchUSA/](http://www.nwf.org/frogwatchUSA/)

FrogWatch, an adopt-a-frog pond program sponsored by the National Wildlife Federation and the USGS, can provide more information about nocturnal monitoring, as well as on-line reporting of data.

[www.zo.utexas.edu/research/txherps](http://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.pwrc.usgs.gov/naamp/](http://www.pwrc.usgs.gov/naamp/)

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, a frog call quiz, and different state programs.

[www.frogweb.gov](http://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.

#### NOTICE:

TPWD receives federal assistance from the U.S. Fish and Wildlife Service and other federal agencies. TPWD is therefore subject to Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, in addition to state anti-discrimination laws. TPWD will comply with state and federal laws prohibiting discrimination based on race, color, national origin, age, sex or disability. If you believe that you have been discriminated against in any TPWD program, activity or event, you may contact the U.S. Fish and Wildlife Service, Division of Federal Assistance, 4401 N. Fairfax Drive, Mail Stop: MBSP-4020, Arlington, VA 22203, Attention: Civil Rights Coordinator for Public Access.

## 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 are 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 several curriculum guides 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 Department also has other citizen monitoring programs in which you may be interested.

# Amphibian



Texas Parks and Wildlife Dept.  
4200 Smith School Road  
Austin, Texas 78744