

Deformed Frog Survey Protocols

Adapted from Robert Hay, Bureau of Endangered Resources, WI Dept of Natural Resources
and Methodology for Surveying Malformed Frogs on National Wildlife Refuges

The goal of Deformed Frog Surveys is to determine the presence or absence of deformities by species and by wetland type throughout Michigan. This information is used to help scientists target areas for further study.

Site Selection & Timing

Wetlands to be monitored for amphibian deformities should have known frog and toad breeding activity. An evening auditory survey should be conducted at least once in April and again in late May or early June to determine all of the frog species present. Deformed frog surveys should ideally occur in late-June, mid-July and mid-late August in order to sample the range of species during metamorphosis. It is best to sample froglets (with four legs and tail but still aquatic), and metamorphs (recently transformed from a tadpole) as they are leaving the water. Predation rates on deformed frogs are expected to be high. Green, mink and bullfrogs typically over-winter as tadpoles and transform in early to mid-summer.

Sampling Equipment Needed

Frog Malformity Survey forms	Rubber boots or waders
5-gallon plastic bucket with lid; half filled with water	Frog or D-frame nets
Digital camera	Clipboard & pencil
Frog ID poster (laminated)	Insect repellent (apply only on back of hands to protect frogs' skin)
Michigan Frog ID books:	

Conant, Roger and Joseph T. Collins. *Reptiles and Amphibians of Eastern and Central North America* Peterson Field Guide. Describes common reptiles and amphibians of North America.

Harding, James H., and J. Alan Hoffman, *Michigan*. 1992. *Frogs, Toads, and Salamanders*. Michigan Cooperative Extension. Describes all 22 species found in Michigan.

Sampling Instructions

The goal is to capture 50-100 froglets per wetland site. Have students work in groups of 3-5 per group. Assign responsibilities to each group member: record data, catch frogs with net, catch frogs with hands, carry live well. When approaching the water's edge, frogs will likely jump in. Wait patiently for them to resurface. Then, move your net carefully toward the frog, coming at it head-on. Flip the net over the frog quickly, plunging it several inches beneath the water surface. Pull back on the handle.

Collect all of your specimens first, then ID all of the frogs you've caught at once and look for deformities. This is to avoid counting the same frog twice. A recommended way to observe each froglet is to hold them under the front legs with the frog facing you and the hind legs dangling down. Check that both eyes, front legs, and rear legs are present and symmetrical. Count the toes (four on front feet; five on rear feet). If an observed abnormality is obviously trauma-related (predated, leg broken during capture, etc.), record as normal.

If you observe any deformed frogs, please complete: (1) an Individual Frog Deformity Description form for each deformed frog, (2) a Frog Malformity Site Survey form for the site, and (3) photograph each individual deformed frog. Then the frog may be released in the same location where it was captured. Captured frogs should be kept in a large container or 5 gallon plastic bucket, half-filled with water to prevent frogs from reaching the bottom with their legs and being able to jump out.

Send your data forms to:

Joan Chadde, Education Program Coordinator, Western U.P. Center for Science, Mathematics and Environmental Education
105 Dillman Hall – Michigan Technological University, Houghton, MI 49931-1295
Tel: (906) 487-3341 Fax: (906) 487-1620 Email: jchadde@mtu.edu

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Michigan Frog and Toad Malformation Survey SITE SURVEY DATA FORM

Name of Lead Observer _____ School: _____

School Address _____

Phone: _____ Lead Observer's Email: _____

of Observers: _____ Names of Observers: _____

Date (m/d/yr): _____ Time: _____ # Hours Site Surveyed: _____ County: _____

Directions to Site (from nearest highway): _____

Legal description (Township/Range/Section/ 1/4 Section): 5N _____ E/W _____ Sec _____ (optional)

Wetland Name: _____ Approximate size (acres): _____

Ownership: _____

Wetland Type (Circle one. See DNR *Wetland Type* definitions online: <http://www.michigan.gov/dnr>)

Bog	Wooded swamp	Vernal pond	Pond
Marsh	Lake	Wet meadow	Fen

Site General Description:

Wetland Water Sources: river groundwater precipitation
other: _____

Surrounding Land Use (total 100%): _____% cropland _____% residential _____% commercial
_____% road _____% forest _____% pasture _____% old field _____% Other: _____

SURVEY RESULTS

Species					
#Normal					
#Deformed					
Total					

Comments:

Please document all malformed frogs with digital photographs. Complete a DEFORMED FROG AND TOAD Field Data Form for *all* deformed specimens examined at this site and attach to this data sheet. Check the Center's website for annual updates on frog deformities (www.wupcenter.mtu.edu).

Mail or Email completed data forms to:

Joan Chadde, Western U.P. Center for Science, Math and Environmental Education, 105 Dillman Hall
Michigan Technological University, 1400 Townsend Dr., Houghton MI 49931-1295 Email: jchadde@mtu.edu

Frog Deformity Descriptions **Location:** _____ **Species:** _____ **Date:** _____

*These categories are for use with metamorphosing (4 legs) or adult frogs and toads.

*Start exam from the head and work toward the hind legs, noting any abnormalities seen by checking the boxes below.

*If a deformity is seen that does not fit into one of the categories below, please describe the deformity in the sections marked "other".

*Deformities that are difficult to describe can be drawn in on the frog diagram below.

*NOTE: "Left" and "Right" refer to viewing the frog from above as it would rest normally.

Eyes

L R

- eye absent
- eye smaller than normal
- pupil abnormally shaped
- eye in unusual position _____
- extra eye(s) _____
- other _____

Jaws:

L R

- lower jaw shortened
- upper jaw shortened
- other deformity _____

Front Limbs:

L R

- Entire limb missing at shoulder
- Limb partially missing _____
- Foot missing
- Complete calf (tibiobifibula) present, abnormal musculature
- enlarged
- small (atrophied) _____
- digits missing from foot _____
- digits fused or clubbed _____
- Other _____

Spine:

L R

- Curved to the left or right (scoliosis)
- Other _____

Webbing (cutaneous fusion):

L R

- between thigh and calf (femur and tibiobifibula)
- other _____

Hind Limb:

L R

- Entire limb present, unusual angle (twisted, rotated, etc.)
- Entire limb present, abnormal size (atrophied, enlarged)
- digits missing from foot _____
- digits shortened, fused or clubbed _____
- digits in abnormal location _____
- extra digits _____
- foot missing (tarsal bone)
- complete calf (tibiobifibula) present, abnormal musculature
 - enlarged
 - small (atrophied)
- portion of calf (tibiobifibula) missing:
 - estimate length present _____
- entire calf (tibiobifibula) missing
- complete thigh (femur) present, abnormal musculature
 - enlarged
 - small (atrophied)
- portion of thigh (femur) missing
 - (estimate length present) _____
- entire limb missing
- other _____

Extra Limbs:

How many extra limbs are present: _____

For each extra limb, describe location of origin (left or right, hip, knee, spine, etc.) Also specify musculature (larger or smaller than normal limb), and completeness (entire limb present, or portion of part is present (thigh, thigh and calf, foot, etc.). Draw the extra limbs on the frog diagram below.

Extra Limb #1

Location _____

Musculature _____

Completeness _____

Extra Limb #2

Location _____

Musculature _____

Completeness _____

Please describe other extra limbs below.

Retained tail

Fully: (length) _____

Partially: (length) _____

Any bleeding or fresh injuries? _____

Other abnormalities _____

Abnormal color or pattern: _____

Draw the frog and note locations of deformities: