

## Amphibian Survey and Habitat Assessment Field Protocol

### **Before you begin:**

1. Determine how to standardize observer names. Observers will typically either be recorded as a unique three letter combination (first name, middle name [or x], and last name) or first initial and last name. Each group of surveyors should decide whether to only list the person who actually recorded the data on the field form or whether to include all surveyors present at the site. Survey groups may also decide to record a unique survey group ID for a set of sites that are all surveyed by the same group of observers, such as “Hogle Zoo field trip 1.” If taking this approach, be sure to compile a list of all survey groups and their associated surveyors to provide to UGS for data entry.
2. Standardize site names as much as possible. The UGS will provide a list and Google Earth file of site names and coordinates for sites they currently have in their database; use these site names whenever possible or request that UGS amend names in database as needed. Please record coordinates on the datasheet for any sites that are not on the UGS site list or where there appears to be in an error in the naming or coordinates on the UGS site list.

### **Overview of Survey Strategy:**

Record the introductory site information and weather conditions when you first arrive at site. Walk to each potential breeding waterbody and look carefully for signs of amphibians, recording data if seen. Record waterbody data at up to three waterbodies while looking for amphibians and make mental note of disturbances and fishes seen. If site only has between one and three waterbodies, you can record data for each waterbody, including water chemistry if equipment is available. For sites with multiple waterbodies, you will only be able to select three waterbodies from which to collect data. Select waterbodies where breeding is occurring or has occurred if possible. Otherwise, record data at three waterbodies that seem like they may be suitable for amphibian breeding and that are fairly representative of the site as a whole. If the site is along a stream, you may want to record waterbody data at the top, middle, and end of the stream segment. *If you do not have time to collect individual waterbody data, please at least collect data on the general waterbody characteristics in the ‘General Characteristics of All Site Waterbodies’ section at the top of the second page of the field form.*

When all potential breeding habitat has been surveyed, record data on general waterbody characteristics. These data should summarize characteristics for all waterbodies at the site, including those where no individual amphibian or waterbody data were collected. On the front of the field form, circle Yes or No to indicate whether amphibians were seen at all during the survey and then fill in the site description information summarizing your findings on fishes and disturbances at the site.

### **Page One**

#### **Introductory Information**

1. Record the survey date and the beginning and ending time of the survey. Time of day is useful for putting air and water temperature into context.

2. Record the site name, using a standardized name so that site has same name across multiple visits. The site name should be assigned before the survey (see above). If you visit a new location or a location not on the site list, be sure to record the coordinates and try to assign it a unique name.
3. Record observer information, following directions above about standardizing observer names. You should always record the name of the person physically recording the data or the name of a unique group of observers (e.g., Hogle Zoo field trip 1).
4. Record the UTM zone, making sure that your GPS is in the NAD83 datum (default zone for Utah is 12N). Record the site coordinates (for non-linear sites) or the coordinates at the beginning of a stretch of stream (for linear sites) as the start UTM. Only record the end UTM for sites along streams or other sites that are quite spread out.

### **Weather Conditions**

1. Circle the best description of the weather (cloud cover and precipitation) and wind. If multiple conditions are present during the survey, circle the most representative condition.
2. If you have a thermometer with you, hold or place it in a shady location for at least one minute or until the temperature has stabilized, then record the air temperature. Otherwise, leave blank.
3. Estimate the amount of rain over the last 72 hours (3 days) based on knowledge of recent weather events and indicators of recent rainfall, such as puddles in the road.

### **Amphibian Species Present**

Amphibian data should be recorded separately for each waterbody where amphibians are seen. At minimum, record the species and number of individuals of each age class counted or estimated per waterbody at the site. Data for each individual juvenile and adult can also be recorded separately, including weight, length, and pit tag number. Consult with the project manager for your surveys to determine what data to collect in this section.

1. Circle Yes or No to record whether any amphibian species were seen during the surveys (in greyed box at top of section).
2. Record the waterbody number (1, 2, or 3) where the amphibian was found (from back side of field form) or record a dash if sighting not associated with any of the waterbodies listed on the back of the field form.
3. Record the amphibian species seen. BT and Abb are both appropriate abbreviations for boreal toad (*Anaxyrus boreas boreas*).
4. Record the number of boreal toad egg masses, tadpoles, and metamorphs counted or estimated in the waterbody. *There should therefore be one row of data for each waterbody that has any of these age classes.*
5. Record the weight in grams and length in millimeters for each juvenile and adult boreal toad observed. *There should therefore be one row of data for each juvenile or adult boreal toad observed.* OR, if individual measurements are not being taken, record the number of juveniles and adults in the waterbody following this example: #J=1; #A=6 (indicating 1 juvenile and 6 adults). This notation can also be used if there are any juveniles or adults that were seen but not captured.
6. Circle visual or aural to indicate whether species was seen during survey or only heard calling.
7. Record unique identifying photo numbers for any photos associated with the observation.
8. Record pit tag status as recap for recaptured individual, new if new tag added, or none if no pit tag. Record the PIT tag number if recap or new in the PIT tag number field.
9. Record the total number of boreal toads seen at the site.

10. Record whether chytrid swabs were taken and, if so, the associated numbers.
11. Record any additional information as needed in the amphibian notes section.
12. Record other amphibian or reptile observations as needed.

### **Site Description**

1. Indicate whether fish are present at site and list fish species present, if known.
2. Indicate whether the entire site was searched and if not, indicate the approximate portion that was searched, such as the eastern bank of a stream or the portion of site on public land.
3. Indicate the origin of the site as natural, man-made, or uncertain.
4. Indicate whether site is in a permanent or intermittent drainage or not in a drainage at all. The drainage is permanent when the site is connected to a stream that flows year-round in most years, which could include waterbodies such as beaver ponds along streams and lakes connected to larger streams. Similarly, the drainage is intermittent when the site is connected to a stream that flows only part of the year. If a stream connected to the site has water in late summer, it is almost certainly perennial. Some sites may not be part of any larger drainage area (e.g., isolated spring); circle None for these sites.
5. Write a brief site description or any other comments for the site.
6. Rate each potential site disturbance on a scale from 0 (not present) to 5 (extreme), using the scale at the bottom of the field form for reference. Note additional disturbances seen as needed. Disturbances in bold indicate broad categories of disturbance.
  - a. Residential: homes and associated development, such as lawns and residential roads
  - b. Recreation: trails, ATV tracks, trash, and other evidence of recreational use
  - c. Agriculture and grazing: pastures, crop fields, orchards, rangeland livestock grazing, etc.
  - d. Water management: berms, piping, dams, springboxes, etc.
  - e. Mining: Mine tailings, etc.
  - f. Unnatural bare soil: areas devoid of vegetation due to man-made alterations
  - g. Livestock manure: waste from cow, sheep, etc.
  - h. Tracks >13 cm deep: pugging or livestock trails at least 13 cm (about 5 inches) in depth (approximately half the length of a piece of paper)
  - i. Grazed vegetation (by livestock): vegetation removed by livestock
  - j. ATV track: tracks made by motorized vehicle that are not along an established road or well-used path
  - k. Road: established road
  - l. Hiking trail: trail used for non-motorized recreation

### **Page 2**

#### **General Characteristics of All Waterbodies**

Collect general waterbody characteristic data at every site, even if waterbody-specific data are not collected. These data should represent the overall characteristics of waterbodies at the site.

1. Record the number of potential breeding waterbodies at the site. Defined pools within a wet meadow should be considered separate waterbodies, whereas a flooded meadow can be considered a single waterbody.
2. Record whether the water is mostly turbid, mixture of turbid and clear, or mostly clear.

3. Circle all the waterbody types present at the site, listing the waterbody type if “other” is circled.
4. Record how common emergent and submergent vegetation, surface algae, and chara are in the waterbodies (refer to the supplemental materials form for images of different vegetation types).
5. Estimate the maximum depth of the waterbodies at the site, as <1 m (approximately 3 feet), 1 -2 m (approximately 6 feet), or >2 m.
6. Record how common emergent vegetation is along the shoreline.
7. Record how common shallows are along shoreline. Shallows are areas with low slope, creating a lot of area in a waterbody with water under 20 cm in depth (versus areas with steep drop-offs into the waterbody).
8. Record how common silt/mud substrate is at the bottom of waterbodies.

### **Individual Waterbody Characteristics, Including Water Chemistry**

Record data at one or more waterbodies that are representative of the site. If a site is a mixture of waterbody types, you may choose to record data at waterbodies that reflect each waterbody type. Record data at waterbodies where amphibian breeding has been recorded if possible.

1. Circle the waterbody type of the individual waterbody, listing the waterbody type if “other” is circled.
2. Estimate the maximum depth of the waterbody, as <1 m (approximately 3 feet), 1 -2 m (approximately 6 feet), or >2 m.
3. Record the primary substrate at the bottom of the waterbody.
4. Estimate the percent of the waterbody with each vegetation or algae class, using the cover chart in the supplementary material to help with estimates (refer to the supplemental materials form for images of different vegetation types).
5. Record how common emergent vegetation is along the shoreline.
6. Record how common shallows are along shoreline. Shallows are areas with low slope, creating a lot of area in a waterbody with water under 20 cm in depth (versus areas with steep drop-offs into the waterbody).
7. Record whether the water is mostly turbid, mixture of turbid and clear, or mostly clear.
8. Collect water chemistry data near where amphibians are seen, or at one or more random location in shallow water (<20 cm) near shore.
  - a. Record the waterbody number at the location where data are collected.
  - b. Indicate whether an egg mass or tadpole sighting is located directly adjacent to location where water chemistry will be collected.
  - c. Indicate whether water is flowing or standing.
  - d. Record the depth of water where the measurements are taken.
  - e. Record pH, electroconductivity (EC), and water temperature if a multiparameter meter is available.
  - f. Record whether the water appears clear or stained.
  - g. Take a turbidity tube measurement if equipment is available. Measurement should take place somewhere where you can avoid getting bottom sediment in the tube. Avoid collecting data in areas where you have disturbed the sediment and be careful to keep duckweed and algae out of the tube. Record the height of the water column where you can see the black and white disc at the bottom of the tube. Circle > if you can see the disc without letting any water out of tube; otherwise circle =. See additional instructions at <http://extension.usu.edu/utahwaterwatch/monitoring/field-instructions/turbidity/turbiditytube/>.
  - h. Record additional notes or photo #s associated with the location.