



ROCKY MOUNTAIN AMPHIBIAN PROJECT

DUAL OBSERVER METHOD

These surveys were designed to accommodate occupancy modeling of amphibians which will be used to assess long-term trends in Wyoming's amphibian populations. Estimating the probability of detecting a species during a survey is critical to occupancy modeling. Thus, protocols are designed maximize the ability to estimate detection probability. Because egg and larval stages of amphibians are most sensitive to environmental conditions, recording evidence of breeding is critical to any amphibian monitoring program. Survey protocols and datasheets allow surveyors to detect and record evidence of breeding.

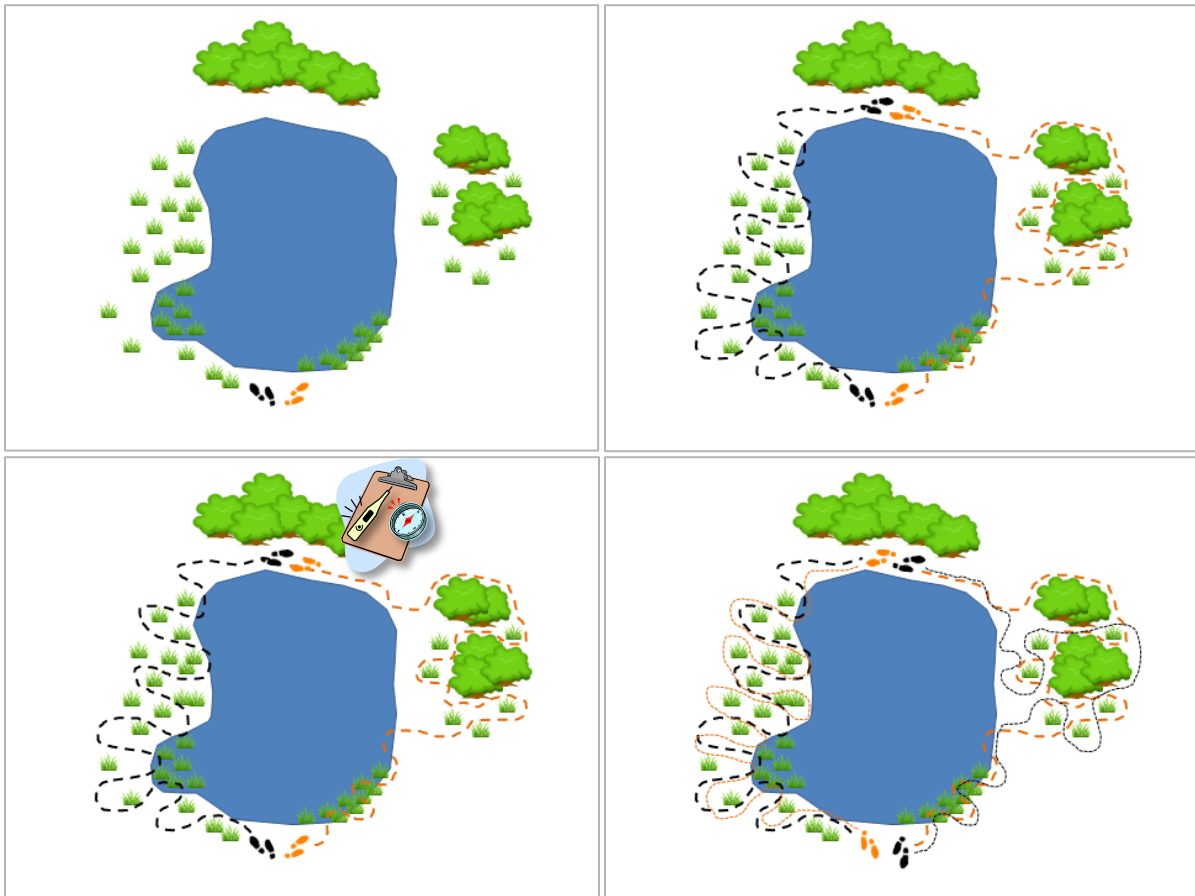
General Instructions:

1. Check your catchment information sheet for dates between which you should conduct your surveys. In general, surveys are conducted from early June through late July depending on elevation.
2. Sites should be visited at least twice during the spring/early summer if possible.
3. Do not conduct surveys when it is very windy, snowing, or raining hard.
4. Beware of dead trees! There are a large number of dead trees in Wyoming's forests due to the mountain pine beetle infestation. These trees **WILL** fall in strong winds. Try to park away from trees and avoid hiking or traveling in the forest on windy days or during thunderstorms!
5. Surveys should be conducted between approx. 8AM and 3PM as amphibian activity tends to slow down during the afternoon on hot days.
6. Each survey area (catchment) has multiple wetland sites to be surveyed. **Consult your catchment map for the location of all survey sites in your catchment.** Coordinates for navigation points on your map will be provided and should be used to guide surveys.
7. It is extremely important that **all wetland sites within a catchment be surveyed.** Approximate survey times for each site are listed on your datasheets. Pay attention to your pace and adjust as necessary to finish all sites by mid-afternoon.
8. Survey all amphibian habitat in your catchment. See *Important Tips for Surveyors* for tips on where to survey (i.e. what is habitat). Note if mapped sites are dry. Use a blank datasheet and fill in appropriate information for any new unmapped wetland sites that may be present (e.g. new beaver pond).
9. Record all species detected during surveys, and the number adults, metamorphs, tadpoles (OK to estimate!), and egg masses found. **It is important to record any evidence of breeding (metamorphs, tadpoles, egg mass, or adults in amplexus (mating behavior)).**
10. Photographs should be taken of animals or egg masses that cannot be identified. Photos can be sent to WGFD or WYNDD for possible ID. If possible photos should include a head, belly, and dorsal (back) photo.
11. Tadpoles should be identified to species if possible. Specimens of unidentified tadpoles can be stored in vials with ethanol and sent to WGFD or WYNDD for possible ID. Only a few tadpoles from each aggregation should be collected for this purpose.

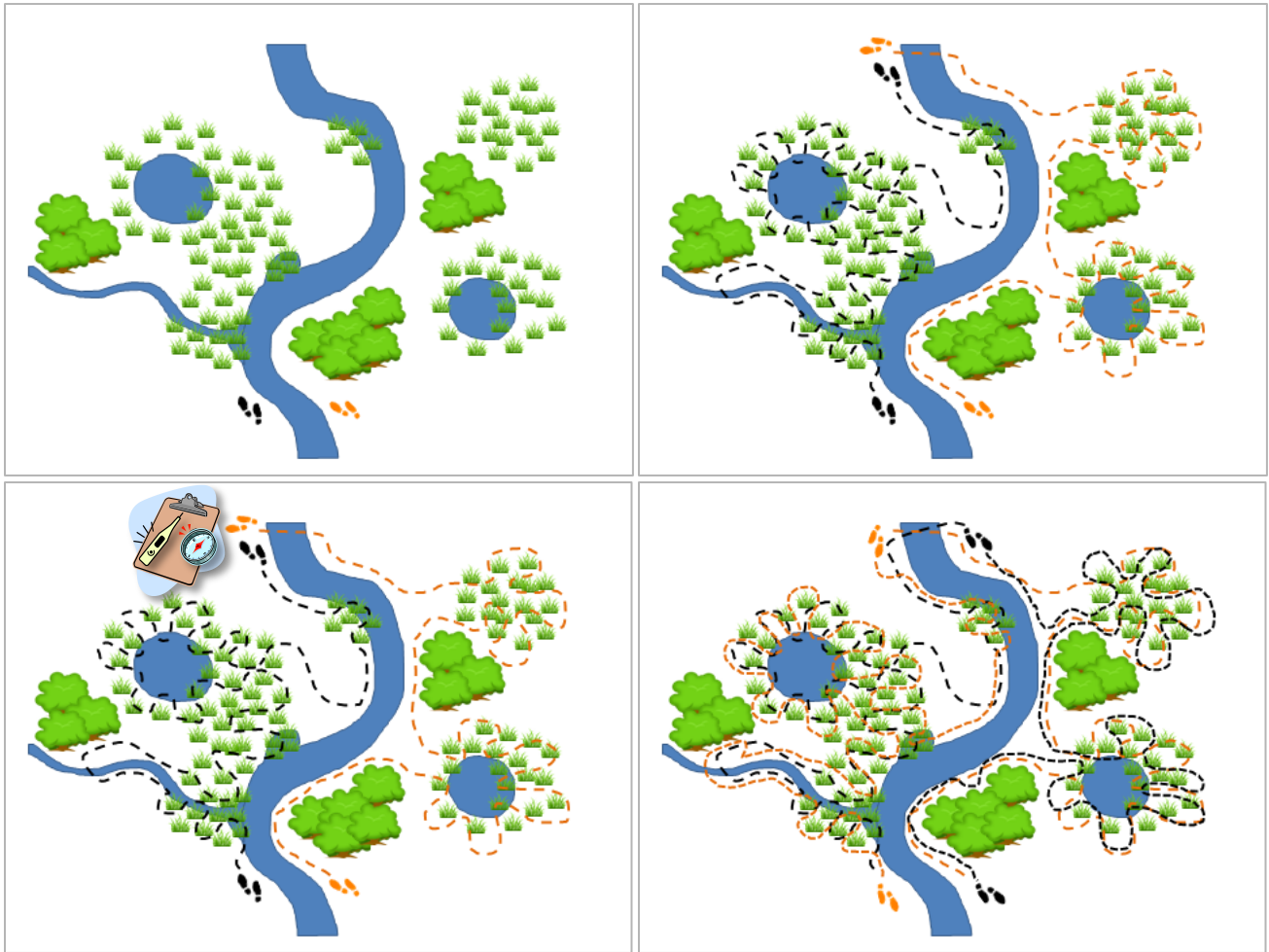
12. Within your catchment, sample **up to 5** individuals of each species for chytrid fungus (see chytrid sampling procedure). Try to collect chytrid samples from several sites in your catchment rather than all taking all 5 samples from 1 site.

Dual Observer Protocols:

1. Under the Dual Observer Method, two people conduct **separate** surveys at a site. This provides 2 independent surveys of each site for each visit to the catchment and allows us to estimate detection probability. **Each surveyor fills out a separate datasheet!**
2. You will be given 2 datasheets for each site - one for each of the 2 surveyors. Use the appropriate datasheet for each site within a catchment.
3. Each site should be surveyed **independently** by each surveyor with **no discussion of amphibians found**. Do not alter your datasheet based on what your partner found. Knowing how often amphibians present are actually detected is **CRITICAL** to estimating trends in amphibian populations.
4. Walk slowly in a zig-zag pattern, surveying evenly across accessible moist habitat to cover as much potential habitat as possible. Consult catchment maps for any “hidden” water bodies.
5. At pond/lake sites, surveyors should walk in opposite directions around the pond searching for amphibians. When surveyors meet at the far end, stop for 10 minutes and quietly **fill out the site and survey conditions** on the main site datasheet before continuing with searches. This procedure allows amphibians disturbed by the first surveyor to resume normal behavior before the second surveyor searches that shore.



6. Along streams and in complex wetlands, surveyors should walk on either shore without discussing what species they find or adding amphibians brought to their attention by their partner. Each surveyor must survey both sides of the stream, so a surveyor should survey down a stream on the opposite side he/she walked up it.



7. Dipnet every 5-10m or in patches of good habitat for amphibian larvae (quiet inlets/backwater areas or patches of emergent vegetation). Each dipnet event should consist of at least five sweeps with the net.
8. **Surveyors should make sure that datasheets are completely filled out and that all site and survey conditions have been recorded before leaving the site.**
9. Surveyors **MUST** follow chytrid fungus decontamination procedures after leaving the sites and before surveying another site **in a different watershed**. Decontamination should also occur between isolated sites (i.e. upland ponds and potholes) within a catchment whenever possible.

Equipment List:

- Tall boots/waders
- Dip net
- Watch
- GPS unit
- Compass
- Camera
- Datasheets & survey protocols
- Pencil or pen
- Thermometer for air and water temperature
- Sterile swabs and vials for chytrid sample collection
- pH indicator strips
- Powder-free latex or nitrile gloves

- Decontamination equipment (kept in vehicle unless surveying in different watersheds). Includes 10% bleach solution, water, scrub

brush, sprayer/bucket. Commercial fungicides such as Virkon can be used as well.

Important Tips for Surveyors!

***** You will likely get wet! ☺ Bring a change of clothes (at least extra socks)!! *****

- ***Where do I look for amphibians?***

- Different amphibians and life stages prefer different habitat. But during the spring and early summer, most are found in moist areas near water bodies.
- Survey from the shoreline out to the edge of the riparian area or to where the soil is no longer moist.
- Make sure to sample different habitat types within the survey site (i.e. emergent vegetation along the shoreline, mud flats, sedges, meadow grasses, willows).
 - ❖ Tadpoles and egg masses will be found in the water along the shoreline.
 - ❖ Tadpoles love warm water and can also be found in several inches of water in wet meadows.
 - ❖ Metamorphs (toadlets and froglets) like warm moist areas where they can bask in the sun but that also offer some cover (grasses, sedges, willows) to hide them from predators.
 - ❖ Adults only need water for breeding. After that, they can be found across a range of moist habitats within the riparian area depending on the species, time of day, and weather.

- ***How will I see amphibians?***

- Most amphibians are not seen until they move, and many are quite small. Look for movement in the grass (even tall grass) and water to help you find amphibians.
- Most amphibians won't move until you get close to them. You can increase your chances of seeing an amphibian by walking in zig-zags rather than straight lines and by using your dip net to part the grass or poke under willows, stream banks, etc.

- ***How do I hold an amphibian?***

- Carefully and only when you need to (for identification or chytrid sampling)!
- If necessary to catch an amphibian to ID it, catch and hold it in your dip net while you look at it.
- NEVER HANDLE AN AMPHIBIAN WITH YOUR BARE HANDS IF YOU HAVE BUG-SPRAY ON YOUR HANDS!!!
 - ❖ Amphibians are VERY sensitive to chemicals in bug spray and even those in many lotions and sunscreens.
 - ❖ Use powder-free latex or nitrile gloves...or keep hands free of chemicals and rinse well in pond or creek water before and after handling.

- ❖ Use a different set of gloves for each amphibian handled to reduce the risk of transferring chytrid among individuals.