2001 Fish and Amphibian Inventory Data Sheet Instructions
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California Department of Fish & Game
Fish/Amphibian Survey Protocols
Revised from original protocols of Roland A. Knapp
Sierra Nevada Aquatic Research Laboratory, University of California
Star Route 1, Box 198, Mammoth Lakes, CA 93546

Overview

Fill out a separate data sheet for **every** lake and pond that has a Site ID, regardless of how un-lake like the site is. If the site is dry, frozen, part of another sampled water body, or is a widening of a stream (i.e., there is a current flowing through the site), fill out the top portion of the first page of the datasheet, indicate why a full datasheet was not filled out on the map portion of the datasheet (e.g., "pond was dry"), and leave the rest blank. If you encounter ponds not shown on the 7.5' maps, fill out a data sheet (if they contain fish, amphibians, and/or fairy shrimp). It is critical that all relevant portions of each data sheet be filled out, and that non-relevant portions be indicated as such, not simply left blank. Remember, if the data sheet is improperly filled out, the visit was a complete waste of time and money. Meadows and marshes should always be surveyed, even if they do not have Site IDs. When you visit non-lake habitat such as marshes that contain extensive ponded water, fill out a single data sheet for the entire area.

When you complete surveys in habitat that does not contain any ponded water (e.g., streams), record the start and ending UTM coordinates in the amphibian/reptile visual survey section and complete all other pertinent sections. Many stream sections that will be surveyed are associated with other Site IDs (e.g., 200 m of each inlet and outlet) and the survey data should be entered on the associated Site ID's data sheet. Record all observations in ball point pen. Keep data notebooks and otoliths in separate Ziplock bags to prevent labels from being erased by leaking alcohol.

General Lake Description

Site ID: This is a *critical* number, as it will be used to link the data sheet to a particular body of water and to identify all samples. This ID is written on the 7.5' maps available for crews to take into the field. Check the Site ID carefully before recording it on the data sheet. If you encounter a lake or pond that is not shown on the 7.5' map or a marsh or meadow that does not have a Site ID, its Site ID will be the number of the nearest lake or pond that has a Site ID plus a decimal place identifier (e.g., 70377.1). Additional Site ID's for nearby unnumbered lake features will be made using consecutive numbers (e.g., 70377.1, 70377.2).

Date: Write as month-day-year (Aug-10-01) and always use the three letter abbreviation for month.

Water type: Circle the appropriate descriptor for the water type you are surveying (lake, unmapped pond, stream, marsh, spring seep). The determination of whether a water body is perennial or ephemeral should be made based on the visual description given on the topographic maps. Perennial lakes and ponds are shown in dark blue, ephemeral lakes and ponds are shown in white with blue diagonal lines, and marshes are indicated by a marsh symbol. If you encounter an unmapped pond that is of sufficient size to be sampled, circle water type = 3 (unmapped pond). If the water body indicated on the map is frozen, dry, not found, part of another lake, or is a stream widening, your sampling will be limited to filling out the top box on the data sheet. Circle the appropriate reason why the water body was not sampled: stream widening, frozen, dry, not found, or part of another water body. Stream widenings are those water bodies shown as perennial ponds but that have more than 10% of their surface area with noticeable current, i.e., these are more like stream pools than ponds. If the water body of interest is actually part of another water body, sample and complete a data sheet for the larger water body, and fill out only the top box of the second data sheet for the smaller water body, indicating that it is actually part of the larger water body in the "Location" box.

Lake name: Obtain lake names from the 7.5' topographic map. If the lake is unnamed, put a line through the space. Please do not write "unnamed".

Planning Watershed: The watershed name for all lakes is given on the "Lakes Checklist." Do not use the name of the outlet creek given on the 7.5' map as the drainage name, as this may not be a complete description.

Location: This description should always be provided, and must be detailed enough to allow someone not familiar with the area to pinpoint the lake on a topographic map. This information is particularly critical for unnamed lake features, where it is used to identify lakes for which the incorrect Site ID was recorded on the datasheet. Do not leave this space blank, no matter how obvious the lake feature is. At a minimum, give the distance and the compass direction from the site to two nearby prominent named geographical features (e.g., lakes, peaks, etc.). Lake and peak names, distances, and compass directions should be taken from 7.5' maps.

County: Record the county (from 7.5' map) in which the lake feature lies.

Elevation: Record the elevation from the 7.5' map. On the data sheet, circle the units used (m or ft). Although elevations will generally be shown in feet, some maps give elevations in meters. Look for labeled contour lines to determine contour interval distance and units. If the exact lake elevation is not given, record the average elevation of the first contour line below the lake and the first contour line above the lake.

UTM Coordinates: This is a pair of numbers that are basically x and y coordinates. In our area, they are North and East. These numbers need only be obtained for lake features not shown on the 7.5' maps or for those features lacking a Site ID. Use the Garmin GPS unit to obtain the UTM coordinates. These coordinates are critical as they will be used to locate the lake feature on the Geographic Information System.

Topographic map: Record the name of the 7.5' topographic map (or "quad") that contains the lake feature. These are listed in the legend on our CDFG navigation maps.

Maximum lake depth: Measure maximum lake depth with the Speedtech SM-5 Depthmate Portable Sounder. Do not spend inordinate amounts of time sounding every part of the lake to find exactly the deepest part. By sounding the deepest-looking piece of the lake, you will quickly get a feel for where the deepest spot actually is. Precise measurements (± 0.5 m) of "maximum depth" are very important, however, in shallow lakes (< 5 m).

Lake Characteristics

Crew leaders will generally conduct the surveys of lake characteristics on all lakes with surface areas ≥0.5 hectares. The habitat characterization is perhaps the most subjective of the measurements made using this protocol, and we hope to reduce the potentially high observer bias in these larger lakes by having the information collected by a smaller pool of people. Although priority should be given to crew leaders in surveying lakes with surface areas ≥0.5 hectares, other crew members should survey these lakes if doing so would save time (e.g., if the crew leader is busy surveying another large lake, and there are no small ponds to survey or samples to collect).

Littoral zone substrate composition: Record the name of the person conducting the survey of lake characteristics ("Person recording habitat information"). While walking around the lake perimeter during the amphibian/reptile survey (see Amphibian/Reptile Surveying, below), stop after a set number of paces (see below) and categorize the substrate at the lake edge as one of the following: silt, sand (<2mm), fine gravel (2-32mm), coarse gravel (32-64mm), cobble (64-256mm), boulder (>256mm), or bedrock. Categorize the substrate along an imaginary transect line starting at the lake edge, extending perpendicular from shore, and lying along the first 3 m of the lake bottom. Put a dot in front of the substrate category that occupies the greatest proportion of the imaginary transect line. Use the dot-line method for recording the no. of "hits" in each substrate category (4 hits:  ; 8 hits:  ; 10 hits: ), instead of the more typical four vertical lines and a slash. The dot-line method is much more space-efficient and is easier to read. In addition to categorizing the substrate type at each spot, record the presence or absence of aquatic vegetation at each spot (record hits using the dot-line method). Record this information under "Substrate transects with aquatic vegetation". Increase the number of paces between transects when surveying large lakes and decrease the number of paces for small ponds. Shoot for fifty transects, as this is a sufficient number to provide an accurate description of the littoral zone of lakes. If you generated a Site ID checklist with lake perimeter information from the fpb_lakes.shp coverage, you can divide the perimeter distance given by 50 to approximate the number of paces between transects. For very small sites where you can observe the entire littoral zone substrate from a single location, it is permissible to estimate the littoral substrate composition by size category visually, and then to record your estimates as percent values for each size category (make sure the total of all substrate categories equals 100%). If the lake contains large numbers of amphibians, conduct the amphibian/reptile survey first and then walk around the lake a second time to measure substrate composition.

Shoreline terrestrial substrate composition: At each of the littoral zone transects, also record the dominant substrate along an imaginary line starting at the lake shore and running for 1.5 m perpendicular and away from the lake shoreline. As with the littoral zone substrate composition for very small sites, it is permissible to estimate the terrestrial substrate composition by size category visually, and then to record your estimates as percent values for each size category (make sure the total of all substrate categories equals 100%).

Width and depth of inlets: While walking the lake perimeter, record the average width and depth of each inlet. Inlets generally are widest at the point at which they enter the lake, so obtain the average width and depth upstream of this point. If there are no inlets, circle "no inlets".

Width and depth of outlets: While walking the lake perimeter, record the average width and depth of each outlet. Outlets generally are widest at the point at which they leave the lake, so obtain the average width and depth downstream of this point. If there are no outlets, circle "no outlets".

Presence of fish in inlets and outlets: Record whether there are fish present in the first 200 m of each inlet and outlet stream by circling "Y" or "N" for each feature. If the stream habitat in a particular inlet or outlet is such that seeing fish would be difficult and you don't see any fish, circle "?". If there are no inlets or outlets, leave this section blank.

Distance to first barrier on inlets: Pace off 200 m of each inlet, recording the distance to the first impassable barrier that a fish swimming upstream from the lake would encounter. The barrier location should be recorded as the number of meters from the lake. Barriers are falls >0.75 m high if there is no pool at the base, falls >1.5 m if there is a pool at the base, or steep cascades higher than approximately 1.5 m. Logjams can float during high water, and should generally not be considered barriers. Because fish can often get over remarkable obstacles, be conservative in what you call a barrier. Provide a description of each barrier on page 2 of the data sheet (see Detailed lake and inlet/outlet description, below). If there are no barriers on the first 200 m of an inlet, write "none". If there are no inlets, leave this section blank.

Distance to first barrier on outlets: Pace off 200 m of each outlet, recording the distance to the first barrier that a fish swimming upstream toward the lake would encounter. The barrier location should be recorded as the number of meters from the lake. If there are no barriers on the first 200 m of an outlet, write "none". If there are no outlets, leave this section blank.

Description of fish barrier(s), UTM coordinates, photo number: Provide a GPS UTM coordinate, photo number, and a brief description of each barrier in the spaces provided. If additional space is needed, use page 2 of the data sheet (see Detailed lake and inlet/outlet description, below). Note: our convention for numbering photos will look like this: Pdd-mm-yy-# ("P" is just a prefix that the cameras add to the file name, "dd" is the day, "mm" is the month, "yy" is the year, and "#" will indicate the number of the photo taken from the camera).

Spawning habitat in inlets and outlets: For the first 100 m of each inlet and outlet, make a visual estimate of the amount of the streambed between the lake and the first barrier (or for all 100 m of stream if there is no barrier) that is suitable trout spawning habitat. The amount of spawning habitat should be recorded in terms of the number of square meters of stream bottom with the following characteristics: gravel 0.5-4 cm in diameter and not cemented into the streambed, water depths of 10-50 cm, and water velocities of 20-60 cm/s for successful spawning.

Evidence of spawning in inlets and outlets: Check the first 100 m of each inlet and outlet for evidence of spawning. This could be spawning trout, redds (nests), or newly-hatched fry (20-30 mm). Redds are often very obvious, being patches of freshly cleaned gravel 0.5-1 m in length. If you aren't sure if what you are seeing is in fact a redd, dig into the downstream portion of the disturbed gravel while holding a net downstream. If it is a redd, you should find eggs in the net after disturbing the gravel. For each inlet and outlet, circle all types of evidence that you find. If you don't find any evidence of spawning, circle "None".

Area of in-lake spawning habitat: Estimate the amount of suitable spawning habitat (using the spawning habitat criteria given above) in the lake at the mouth of each inlet and outlet. Look for the presence of spawning trout and completed redds.

Description of other in-lake spawning habitat: On the map of the lake that you draw on page 2 of the datasheet (see below), describe any other potential spawning habitat you find in the lake. Restrict your description of "other in-lake spawning habitat" to areas where you observe spawning fish, redds, or large numbers of fry in areas of the lake away from inlets and outlets.

Fairy shrimp: During the amphibian survey, be on the look out for schools of fairy shrimp. The distribution of these 2-3 cm crustaceans is poorly known for the Sierra Nevada, so we are interested in describing localities. Look for them in all bodies of water you sample. When walking around a lake, take a few minutes to also look in small pools and ponds adjacent to the lake. If you find fairy shrimp either in your samples or during the survey of lake characteristics, indicate this on the data sheet by circling "Y" or "N" to the questions about fairy shrimp locations ("Present in lake?", "In lake-associated pools?", "Other locations?"). "Lake associated pools" are pools within 2 m of the lake. Be specific in your location descriptions! On the lake map you've drawn (see below), indicate the locations of fairy shrimp populations, and provide a brief description of these locations (e.g., "1 m^2 pool 0.5 m from lakeshore on N side of lake 70675, pool is 10 cm deep"). Information on the fairy shrimp populations should include, at a minimum, location, surface area, and depth of the habitats. For all habitats that contain mature fairy shrimp (1.5-3 cm long, females carrying eggs) and are separated by ≥1 km from other fairy shrimp samples in the same drainage, collect approximately 10 adults, being sure to collect at least 5 large non-egg bearing individuals (these are likely to be males, and males are needed to key these animals out to species). Preserve the fairly shrimp in a 20 ml vial using 95% ethanol. Make an internal label out of a page from your notebook. The label should contain the date, the Site ID, and the drainage name (in pencil). To simplify the process of determining whether a population is ≥1 km away from the last fairy shrimp population from which a collection was made, on the topographic map write "(F)" next to the Site ID from which fairy shrimp collections were made.

Amphibian/reptile surveying

We will be conducting amphibian and reptile surveys at all bodies of water shown on 7.5' topographic maps and at sites not shown on the map but found during surveys and while traveling between sites.

Amphibian/reptile observers: Record the names of all people involved in the amphibian/reptile survey. This survey typically is conducted by a single observer, and this observer will generally be the same person who conducted the survey of lake shoreline characteristics.

Survey start time and end time: Record the time at which the survey began and ended. The start time is the time the amphibian survey began, not the time you arrived at the site. Record time as 24 hr time.

Total survey duration: Record the total time spent searching for amphibians/reptiles. Do not include time spent surmounting lake-side obstacles (e.g., cliffs), identifying specimens, or recording notes. If two people survey the same site by walking in opposite directions around the lake perimeter, the total survey duration should include the time spent surveying by each person.

Weather/wind/color/turbidity: Circle the appropriate descriptor for each.

Stream survey: Using the GPS unit, record the UTM locations at the beginning and end of your stream survey.

Stream order: Stream order is a classification based on branching of streams. On a map showing all intermittent and permanent streams, the smallest unbranched tributaries are designated order 1. Where two first order streams meet, a second order stream is formed. Where two second order streams meet, a third order stream is formed (and so on...). Using your 7.5' topo map, identify which order of stream you are surveying, and record it in the box provided.

Survey description: To conduct an amphibian survey, walk **slowly** around the perimeter of the site, or along the stream, counting the number of adults, sub-adults, larvae, and egg masses you find of each species. Species abbreviations are given on the data sheet. Use the D-net to catch amphibians and reptiles for identification if necessary. Consult the field guide provided for adult and larval identification. Under "Comments", record any interesting observations made during the survey (e.g., mountain yellow-legged frog larvae found only in shallow lagoon on NW side of lake). Also record locations of interesting observations on the map of the lake that you draw (see below). If you are surveying inlets or outlets of a lake and encounter amphibian species, record your

observations on a separate line on the data sheet and note the approximate locations and species on the inlet and/or outlet diagrams on page two.

Calling?: Were any frogs calling during your survey? Circle yes or no.

Voucher specimens/tissue samples: For sites that contain ≥100 mountain yellow-legged frog larvae and/or adults and that are separated by ≥1 km from other such populations in the same drainage, we will be collecting a single voucher specimen and several tissue samples for an ongoing study of the genetic structure of this species in the Sierra Nevada. To collect the voucher specimen, capture one large larvae with the D-net and euthanize it by immersing it in the bottle of anesthetic until all movement ceases. Remove the larvae from the bottle, clip a 0.5 cm^2 piece out of the bottom or top of the mid-section of the tail using the small scissors, place this tissue sample into a cryo-vial with an internal label containing the date, the Site ID, and the drainage name (in pencil), and fill the vial with 95% ethanol. Place the larva into a 60 ml bottle labeled externally with labeling tape containing the date, the Site ID, and the drainage name, and fill with enough formalin to cover at least ½ of the animal. Capture an additional 4 larvae using the D-net, and while gently restraining each larva individually in the net bag with your fingers, clip a 0.5 cm^2 piece from the tip of the tail using the small scissors, and place these tissue samples into the same cryo-vial that contains the first tissue sample. Screw the top of the vial on tightly. On the datasheet, indicate whether a voucher specimen was collected, and if so, indicate the number of tissue samples collected. To simplify the process of determining whether a population is ≥1 km away from the last mountain yellow-legged frog population from which a collection was made, on the topographic map write "(RM)" next to the lake ID on the map from which frog collections were made. If you are surveying a drainage in which mountain yellow-legged frog populations are rare and/or small and you are therefore unable to collect voucher specimens, collect a tail tip tissue sample from one larva from each of the larger populations that are separated by ≥1 km from similar populations and release the larvae alive. Label the cryo-vial as described above.

Diseased/Checked (mouthpart inspection): Recent studies indicate that a chytrid fungus is the likely proximate cause of amphibian declines in several parts of the world. Little is known about this fungus, although we know that it is occasionally found on frogs in the Sierra Nevada. When the fungus attacks the larvae, it deforms their mouthparts. Therefore, for all sites that contain frog larvae, capture 10 larvae with the D-net and inspect their mouthparts for deformities. If you collected voucher/genetic samples, the five larvae used for this should also be used for the mouthpart inspection. On the datasheet, indicate the number of larvae evaluated and the number of these with deformed mouthparts. Release the larvae back into the lake after you have completed your inspections. Note: chytrid does not show up on toad mouth parts, but does on *Rana*.

Survey Method: Circle the method used. Note: Mountain yellow-legged frogs do not have a significant call, so aural surveys will not apply.

Air and Water Temperatures: Measure the air temperature from the lake shore at 1 meter above the lake surface. Measure water temperature approximately 0.5m out from shore and 10cm under the water surface. When possible, temperatures should be measured during midday (1100 – 1500). Record the time that temperatures were measured after the @ symbol and the temperature units (C or F).

Detailed Lake and Inlet/Outlet Description

Drawing of lake perimeter, inlets, outlets, in-lake spawning areas, locations of fairy shrimp populations, and areas of special interest: Based on the 7.5' map, draw the lake perimeter. Add the numbered inlets and outlets from the data sheet. Inlets should be indicated with arrows pointing toward the lake, and outlets should be indicated with arrows pointing away from the lake. If you find in-lake spawning areas or other areas of interest (concentrations of amphibians, locations of adjacent ponds containing fairy shrimp, etc.), indicate these on the map. Also indicate general terrestrial habitat types found around the lake (meadows, talus fields, etc.). If the lake feature is not shown on the 7.5' map, record the approximate dimensions (length, width).

Description of inlets/outlets: Provide a detailed description of the physical characteristics of inlets, outlets, and barriers. For example, are inlets and outlets very steep cascades or meandering streams? How high are the barriers? Are they falls or cascades? If fish were present in inlets, were they found only below any barriers, or were they also found above the barriers? Note locations of any amphibians observed. Provide a similar description for the outlets.

Photo Numbers: Our convention for numbering photos will look like this: Pdd-mm-yy-# ("P" is just a prefix that the cameras add to the file name, "dd" is the day, "mm" is the month, "yy" is the year, and "#" will indicate the number of the photo taken from the camera).

Fish Surveying

We will be conducting fish surveys at all bodies of water shown on 7.5' topographic maps and at sites not shown on the map but found during surveys and while traveling between sites.

Fish survey: Record whether fish were surveyed visually or using gill nets. Except for small, shallow (<2 m) bodies of water in which the surveyor can see the entire lake bottom, we typically sample fish populations using gill nets. If there is any question as to whether fish are present in a lake, set a net. The only other exception is lakes/ponds where populations of yellow-legged frogs are present. The decision whether to set a gill net in a shallow pond is up to the crew leader, but keep in mind that fish can live in some very marginal habitats. If only a visual fish survey is needed (e.g., because the lake is < 2 m deep and you can see the entire bottom, or because there is a healthy population of frogs), you need not fill out the third and fourth pages of the datasheet.

Justification: If you surveyed for fishes visually, provide a brief justification as to why you chose this method (e.g., "pond only 50 cm deep, entire bottom visible, no fish seen, or frog population present").

Site ID: If you are setting a gill net to survey a fish population, fill out pages 3 and 4 of the datasheet. First, record the Site ID again. This identifier will ensure that both sheets of the datasheet are associated with the correct lake. Make sure that the Site ID you record is the correct one and matches the Site ID on the first page of the datasheet.

Water temperature: Measure water temperature approximately 0.5 m out from shore and 10 cm under the water surface. Record temperature in Celsius. Temperature should be measured during midday (1100-1500) when possible.

Description of net location/setting nets: Circle the appropriate location and provide a brief description of the area in which the net was set ("Comments"). Our fish survey methods are designed to provide an accurate representation of fish species composition and size structure in lakes and ponds, as well as provide an estimate of catch per unit effort (CPUE) at each location. In order to quantify the size structure of each fish species present at a particular location, we need a sample of at least 20 fish, and preferably not more than 50. Obviously, in lakes that have a very small fish population, capturing even 10 fish may not be possible. Nets should be stored and transported in stuff sacks to keep them from getting tangled and to keep them out of the sun. When moving from basin to basin, be sure to dry nets thoroughly to prevent the spread of disease. We will set one net in each lake for 8-12 hours. Nets can be set at any time of day. To minimize logistical problems and safety hazards, do not pull nets at night. Time your net sets appropriately. For example, don't set a net at 5 PM, since this would mean either pulling the net at 1-5 AM or waiting until morning and exceeding the 12 hour maximum set duration. You should plan on setting nets in the late evening or early morning. If you are setting a net in a lake with an extremely dense trout population (typically lakes with brook trout), you may want to paddle over the net with a float tube after 4 hours and get a rough count of the number of fish captured. If you have 40 or more fish after 4 hours, pull the net to avoid capturing an inordinate number of specimens. Use this 4 hour net set duration only when absolutely necessary. If gill-netting a lake that contains amphibians, you need not worry that the net will trap them. If turtles are present, set the gill nets during the day only and check the nets frequently to ensure that these species are not getting entangled.

Gill nets should always be set at the lake outlet, if present and if conditions allow. If an outlet does not exist, or is located in an area that is difficult to net (water <2 m deep, log jams, etc.), set nets at the inlet. If an inlet is not present or is not suitable, set the net in a suitable location anywhere along the lake shore. If possible, choose an area that is 3-8 m deep. Before setting a gill net, submerge the entire net (still contained on the handle); dry nets are much more susceptible to tangling. To set the net, put a small rock into each of two mesh bags and clip one bag to the shore end of the net (end with loop). Get in your float tube and wedge the bag between rocks at the lake shore and pull on it gently to ensure that it is firmly anchored. With the net lying across the float tube (lead-line on your left and net handle in your right hand or vice versa), paddle backwards slowly while feeding out the net. The net should be set perpendicular to the shore. If you encounter a tangle while feeding out the net, shake the net. Do not pull on the net as this will often tighten the tangle. Shaking will nearly always rid the net of the tangle. When you

get to the end of the net, attach a float to the handle and then clip the second bag to the bottom of the net. Paddle backwards until the net is taught, and then drop the bag. Record the time when you finish setting the net.

After 8-12 hours, retrieve the net by pulling the mid-lake end of the net up by the float. Detach the float and the bag. Pull the net toward you, placing the float line on one side of the float tube and the lead line on the other. Continue pulling in the net until you reach the shore. Remove the second bag. To carry the net to an area for fish removal, cradle the net over your arms keeping the lead line on one side and the float line on the other. Lay the net down in a meadow or on a sandy flat (a meadow is preferable, but nearly any place will work; stay away from areas with lots of woody vegetation, pine needles, pine cones, and sharp rocks since they will get snagged in the net). Spread out the first 10 feet of net and remove the fish. After removing all fish from the first 10 feet of net, spread the next 10 feet of net and fold up the first 10 feet. Continue until you have removed all fish from the net. Restring the net onto the handle, rinse the net in the lake, dry the net in the shade, tie the net in a knot to prevent tangling, and stuff it into a sack.

If no fish were captured, write "no fish" across the fish portion of the data sheet. If fish were captured, record the species, length, and weight of all fish. Species abbreviations are given at the bottom of the data sheet. Measure fish using the vinyl tape laid out on the ground. Measure fish total lengths to the nearest mm. Weigh fish using a Pesola spring scale. Before weighing fish, ensure that all debris (small rocks, etc.) are removed from the fish. Use the 60g scale for all fish <100 g, and the 300g scale for larger fish.

All fish will need to be cut open to determine sex. If someone on your crew is able, also note the general contents of fish stomachs (e.g., chironomid pupae, terrestrial insects, etc.). If you encounter a lake that contains both fish and amphibians, look through the fish stomachs very carefully for amphibian remains.

Female fish will have eggs ranging from very small (early) to large and flaccid (late, deflated looking). Make a check mark in the appropriate box for each female fish sampled.

Fish age-analysis can be used to determine if a population that has been supported by biennial (or less frequent) stocking is self-sustaining. Otoliths (ear-bones) should be collected from up to ten of the sampled fish, only from lakes where it is difficult to determine whether fish are self-sustaining (young-of-the-year are not visibly present in tributaries or around margins of lake). Do not collect otoliths from brook trout, since the Department no longer stocks them in most waters. Place otoliths from each fish into a separate vial labeled with the Fish #. Label the vial with a fine-tip Sharpie. Keep all vials for a particular lake's otolith sample in a small Ziplock bag with an internal paper label that includes the date, the Site ID, the drainage, and the species of fish.

Be careful about disposing of fish carcasses, as we don't want the carcasses attracting the attention of backpackers or bears. The best disposal method is to pop the fishes swim-bladders, put the fish in a sack, paddle out into the lake until you reach a relatively deep area, and dump them. Burial of fish on land should generally be avoided, as animals can smell the fish and will dig them up (no matter how deep you bury them).

Net set time and date: Record the time when you completed the net setting process, not the time when you started setting the net. Record the time as 24 hr time. Record the date on which the net was set.

Net pull time and date: Record the time when you began pulling the net. Record the date on which the net was pulled.

Field review of datasheets

At the end of each day, the crew leader should review all datasheets for completeness and clarity. Once review of a datasheet is completed, the crew leader should initialize the field review box on pages 2 and 3 of the datasheets. Make sure all of the spaces on the data sheets have been filled in. These data sheets are all the state has to show for the time and money that went into each survey. Protect the data sheets as if they were your most prized possession!