Standard Operating Procedure (SOP) 4.5.1.1
Standard Operating Procedure (SOP) 4.5.1.2

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Visual Fish Surveys-Stream Bank (SOP 4.5.1.1) and Snorkel Observation (SOP 4.5.1.2)

Assessment surveys of watershed and stream habitat should include descriptions of flora and fauna. This protocol is a technique to collect information on the fishes that inhabit these watersheds. In order to describe the fishery the following data needs to be collected: species composition, juvenile rearing areas or general distribution, sizes of adults and juveniles, age classes, relative abundances, biomass, habitat utilization, timing of spawning activity, timing of juvenile emigration.

Some of this information can be obtained using non-capture techniques such as visual observation from a bank (above water observation) or while snorkeling (direct or underwater observation).

The data collected by these methods are intended for useful descriptions of fish presence, relative abundance and habitat utilization in the context of planning restoration or enhancement projects.

This informational paper is only a cursory description of how these techniques can be applied. A similar underwater observation protocol has been developed for citizens monitoring marine habitat. Reef Check Foundation has this protocol available for observing of fishes while scuba diving along fish belt transects.

Stream Bank Observation
Observation of fish from the stream bank or other vantage point is a commonly used technique to determine presence or absence of fish. It also provides "gross" estimates of fish numbers in sampled habitats. This method can be accomplished quickly and the only equipment required is polarized glasses and record forms.

The primary drawback to observation is difficulty with species identification. If conducted simultaneously observation data including species identification can be compared with species confirmation techniques (capture) to improve species identification skills. Numbers of fish observed are very rough estimates of relative abundance in selected habitats or stream reaches and should be used with caution. However, this type of information has many uses from observer conditions and comparing observations over several years. Useful data stems from observer consistency and careful attention to accuracy.

Opportunities for observation are usually best in pools (deeper portions within a stream marked by slower moving water than in neighboring shallow portions) and runs (sections of stream with relatively high velocity and little turbulence on the surface) where the visibility is better than in riffles (portions of a stream that are of high velocity and turbulence) . Habitats to be observed should be approached slowly and quietly from downstream; most fish orient themselves heading upstream when feeding. Patience is required to adjust observer's eyes to the light conditions and to allow the fish to recover from any fright response caused by the observer's approach.

Juvenile salmonids should be placed in general age categories according to length:
0+ young of the year, 3 inches or less
1+ 3-6 inches
2+ 6 inches or greater

These lengths are approximate and depend on stream system and time of year. Generally, these size categories are obvious when groups are observed together. In most cases, the smaller size group will be more numerous.

Underwater Observation
Use of this method allows for the determination of fish distribution and species composition and also permits close observation of fish behavior and habitat utilization. Experienced divers can learn to identify, count, and record fish in a relatively short period of time. The effectiveness of this method can be improved when combined with capture techniques to calibrate the diver's observations.

One or more divers, equipped with a mask, snorkel, and wet or dry suit, enter a habitat unit at the downstream end and swim or crawl to the upstream end, counting, identifying, and recording all the fish they see. In small streams or habitat units, a single, experienced diver can effectively count and identify all fish in a single pass. In larger streams or complex habitat units, a combination of divers working together systematically may be necessary to determine fish numbers. Since it is difficult to dive and count fish in riffles, underwater observation is usually only conducted on sample pool and run units.

Tools needed: Wet or dry suit, fins or wading boots, snorkel, mask, plastic slate board, Waterproof felt pen.

Instructions for completing the Steam Bank or Underwater Observation Field Form

1) Form No.: Enter the form number. Number the forms sequentially.

2) Date: Enter the day's date:mm/yy.
3) Stream Name: Enter the name of the stream.
4) T-R-S: Enter the township-range-and section at the mouth of the stream
5) Drainage: Enter the name of the drainage.
6) Lat: Record the latitude of the stream at the confluence determined from a 7.5 minute USGS quadrangle.
7) Long: Record the longitude of the stream at the confluence determined from a 7.5 minute USGS quadrangle
8) Quad: Record the name of the 7.5 minute USGS quadrangle on which the confluence of the stream is located.
9) Observer(s): Enter the names of the observers.
10) Time: Enter the time the survey began in military time (24hr clock).
11) Air Temperature: Enter the air temperature to the nearest degree.
12) Water Temperature: Enter the Water temperature to the nearest degree.
13) Reach Number: Record the sequential number of the stream reach being sampled. This reach number should be the same as the reach number on the Habitat Inventory Data Form, which is based on sequential changes in channel type.
14) Habitat Unit No.: Record the habitat unit number from the Habitat Inventory Data Form.
15) Habitat Type: Enter the number or abbreviation for the individual habitat type being sampled. The number/abbreviation should correspond to the Habitat Unit Type on the Habitat Inventory Data Form.
16) Reference Point: Stream confluence, a tributary, a road crossing, or any other permanent feature identified on the 7.5 minute USGS quadrangle.
17) Distance from the Confluence or other Known Location: Enter the distance in feet from the reference point.
18) Length of Stream Sampled: Enter the length of stream sampled.
19) Observation Method: Check method used in the survey.
20) Comments: Enter any comments regarding the above observations.

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STREAM BANK OR UNDERWATER OBSERVATION FIELD FORM

Form No. _____ of _____   Date ____/____/____

Stream Name _____ T_____ R_____ S_____

Drainage _____

Lat: _____ Long: _____ Quad: _____

Observer(s) _____

Time _____ Air Temperature _____ Water Temperature _____

Reach No. _____ Habitat Unit No. _____ Habitat Type _____

Reference Point _____

Distance from the confluence or other reference point _____

Length of stream sampled in feet _____

Observation Method: _____ Stream Bank   _____ Underwater

Species	Size Class	Numbers	Species	Size Class	Numbers

Comments _____

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