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BENTHIC TRAWL

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The following standard operating procedure for use of a benthic trawl is taken from Grisak (1994) with only slight modifications.

Material & Methods:

Specifications

Trawl
- width = 2 m (6.4 ft)
- height = 0.5 m (1.6 ft)
- length=5.5 m (18 ft)
- inner mesh size = 0.3175 cm (1/8 in)
- outer chafing mesh size = 3.81 cm (1.5 in)
- cod-end opening=16.5 cm (6.5 in)
- roller rock lead line

Vendor

Research Net Inc.

Procedure

Trawling will be conducted in large tributary mouths, deep secondary connected channels, outside bends, channel borders on inside bends, and main channel cross overs. Three trawls of 300 m or less (minimum 75 m) will be conducted at each sampling location (Table 1) in the upper river (Segments 1 - 16). In the lower river (segments 17 - 27) two trawls will be conducted on channel crossovers and outside bends and three trawls will be conducted at all other locations if velocities permit. Trawls should be longitudinal along the macrohabitat if possible (except large tributary mouths where the trawls are parallel) but may be parallel (side by side) if the macrohabitat is not of sufficient distance.

1. Attach the trawl to two attachment hardpoints at the base of the electrofishing rack with 1 cm (3/8 inch) braided nylon rope. Use 12.2 m (40 feet) of rope for depths 6.1 m (20 feet) or less and 18.2 m (60 feet) of rope for depths greater than 6.1 m (20 feet). A small float should be attached to the crossbar with a braided nylon rope. The rope should be longer than the

maximum depth to be sampled. In the event the trawl has to be disconnected from the boat, the float will mark the location of the trawl, facilitating recovery.

2. Define the reach to be sampled. To estimate distance trawled, set an anchored line with a float attached to a floatline of known length with additional small floats marking increments of known distance. Catch Per Unit Effort (CPUE) will be fish/100 m.

3. The boat operator then begins to accelerate the boat in reverse at approximately 2000 rpm (varying flow conditions will require different boat speeds).

4. As the boat accelerates, two persons wearing gloves remove the resting trawl from the shocking rack and set only the net portion in the water. When the boat is perpendicular to the upstream buoy, the inflated net is gradually lowered into the water until the sled frame is submerged. The trawl is then deployed by releasing both ropes at the same rate, while maintaining tension to avoid tipping.

5. Once the ropes are completely out, considerable resistance will be felt as the trawl contacts the bottom. The boat operator then begins timing the trawl by using a stop watch. Boat speed is then adjusted to keep the unit moving slightly faster that the velocity of the river.

6. When the boat is perpendicular to the downstream buoy, the boat operator backs off the throttle, stops the stop watch, and the two trawl operators begin to draw the ropes in evenly and quickly.

7. When the trawl reaches the boat but is still in the water, the boat operator begins to back up to avoid the trawl being entangled in the prop or drawn into the jet unit.

8. The two trawl operators lift the sled frame and place it on the shocking rack. Trawl contents are then flushed into the cod end of the net. The collection cup is then removed or the end of the net is untied and the contents are emptied into a container of water.

9. Process fish.

10. In the event that the trawl becomes snagged, try to remove the trawl by keeping tension on the ropes and not allowing the trawl to tip. If the trawl becomes snagged in the first 75 m, do not count the run. If the snag occurs after at least 75 m and the net has not turned over, mark the location with a weighted buoy and measure the distance from the upstream buoy with a range finder. If the net has turned over, do not count the run. Target species captured from aborted runs may still be processed for age and growth data, but should not be used for CPUE calculations.

References:

Grisak, G. G. 1994. Procedure for using a trawl to sample deep water zones of the Missouri River in Montana. Unpublished Report. Montana Department Fish, Wildlife and Parks.

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Table 1. Locations to be sampled by benthic trawl by habitat type. Location 1, 2, and 3 are relative and order should be determined randomly. Channel width and top, middle and bottom of bends are estimated visually or from maps. Location of subsample two should be determined randomly in the lower river where three subsamples are not conducted.

Trawl location Habitat	**Location 1**	**Location 2**	**Location 3**
CHXO	Thalweg, middle 1/3 of channel crossover*	Thalweg, right 1/3 of channel crossover*	Thalweg, left 1/3 of channel cross-over*
TRM-LRGE	Thalweg 300 m upstream from the mouth	Offset from thalweg towards right bank 300 m upstream from mouth	Offset from thalweg towards left bank 300 m upstream from mouth
SCC-DEEP	Thalweg, top 1/3 of channel	Thalweg, middle 1/3 of channel	Thalweg, bottom 1/3 of channel
OSB	Top 1/3 of bend*	Middle 1/3 of bend*	Bottom 1/3 of bend*
ISB-CHNB	Top 1/3 of bend	Middle 1/3 of bend	Bottom 1/3 of bend

* Channel Cross-Overs and Outside bends will only have 2 subsamples for segments 17-27, the 2 subsamples should be randomly selected from the three locations