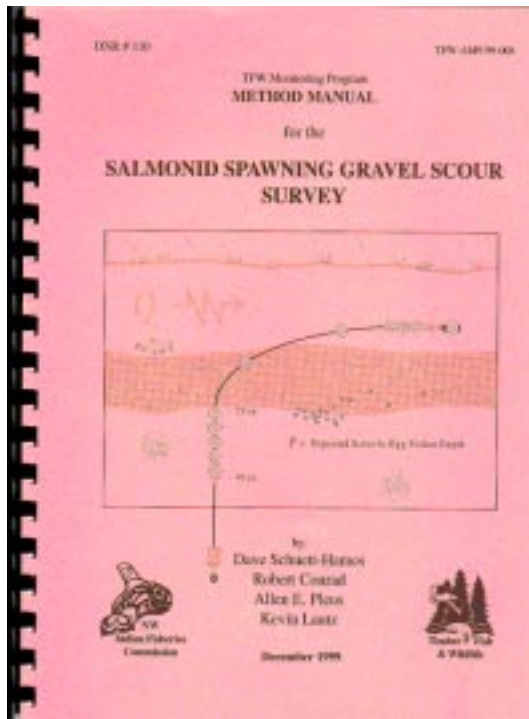


Document No.: 4

Timber-Fish-Wildlife (TFW) Method Manual for the Salmonid Spawning Gravel Scour Survey

Citation: Shuett-Hames, D., A. E. Pleus, and D. Smith. 1999. TFW Monitoring Program method manual for the salmonid spawning gravel scour survey. Prepared for the Washington State Dept. of Natural Resources under the Timber, Fish, and Wildlife Agreement. TFW-AM9-99-008. DNR #110. December. 41 pp.



Source: TFW Monitoring Program
Northwest Indian Fisheries Commission
6730 Martin Way East
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Internet: www.nwifc.wa.gov
Cost: No charge

Abstract: Provides a standard method for the assessing and monitoring changes in the depth, frequency and distribution of scour on a stream segment scale. Segments for monitoring scour are

selected on the basis of one of three monitoring objectives. Information on frequency and depth of scour is useful when there is a need to evaluate the effect of scour on salmonid incubation. It is also useful for evaluating the response of stream channels to changes in peak flow discharge, sediment input, or large woody debris loading.

The relative abundance of spawning habitat is used as an indicator of resource condition for individual monitoring projects and in the Watershed Analysis Fish Habitat Assessment process (WFPB, 1996). In segments where spawning habitat is scarce, information on hydrology, sediment supply, channel conditions, and human activities is examined to determine why.

The survey does not attempt to document or predict actual survival to emergence, nor is it oriented towards the requirements of any particular salmonid species.

If the stream has not already been segmented, pre-monitoring requirements include the TFW Stream Segment Identification Method (Document No. 9).

Once objectives are identified and segments have been selected, the spawning gravel is inventoried and categorized by spawning habitat type. Then cross sections are established in a sub-sample of randomly selected spawning gravel areas representing each habitat type. Scour monitors are inserted in potential spawning gravel along each cross-section, elevations are surveyed and substrate particle size are collected after each storm event during the monitoring period. Peak flow discharge is documented.

Scour data are analyzed in the TFW Monitoring database, which generates reports that characterize the depth, frequency and distribution of scour by cross section and spawning habitat type. Scour data are interpreted in the context of peak discharge events.

Sections are presented in order of survey application including: study design, pre-survey documentation, survey method, post-survey documentation, data management, and references. An extensive appendix is also provided that includes: copy masters of field forms, examples of completed field forms, scour monitor and inserter size and construction detail instruction, a sample size

calculation matrix, a sample site selection worksheet example, a standard field and vehicle gear checklist, and a data management example.

Target Application: Management & Research

Suitable for Volunteers: Yes, with training, or if supervised by experienced personnel

Training Recommended: Yes

Available? Not at this time.

Where? NWIFC at the address above.

Monitoring Focus: Changes and trends in stream channel morphology and scour characteristics:

- 1) Assess scour depth, frequency and distribution patterns in salmonid spawning gravel;
- 2) Detect and monitor changes in scour depth, frequency and distribution patterns over time on a stream segment scale; and

- 3) Provide information on peak discharge and physical channel characteristics to interpret scour in the context of physical channel processes.

Geographic Scale: Basin, sub-basin, stream reach, project site

Methods: Office & Field

Level of Data Quality: Level 3

Equipment and Tools (*list*): Page 8 (Survey Equipment) and Appendix F of the document

Data Forms: Appendix A of the document

Examples of Filled-in Data Forms: Appendix B of the document

Key References: Page 37 of the document

