

FIELD PROCEDURE: EROSION/REVTMENT SURVEY

EQUIPMENT NEEDED:

- 100' tape, stretched along your baseline
- bankfull width calculation from Cross-Section data sheet
- "Summer Photos" protocol
- camera, photo log
- data sheet, clipboard, pencil

Erosion is the wearing-away of the land surface by water or wind. Here we refer specifically to the erosion of stream banks.

Revetment refers to any action taken by humans to make a streambank more resistant to erosion. A typical revetment consists of a blanket of large "riprap" rocks, but revetment may also consist of wooden or concrete bulkheads, log cribbing, cabled trees, revegetation, and a number of other technologies. Both erosion and revetment are signs of bank instability and can present a number of problems to fish (see inset below).

WHAT'S ALL THE FUSS ABOUT EROSION & REVETMENT?

A diverse mix of mature riparian vegetation growing on the banks of a stream indicates that the banks are relatively stable. An undercut bank, if well-vegetated, can still be stable and provide excellent protective habitat for fish. A certain amount of scouring or erosion generally occurs on the outside bend of stream meanders, where water velocity is greatest. In this survey, you are looking for signs of unstable banks, erosion beyond that caused by natural forces, and human intervention to stabilize the banks.

A stream bank with little or no vegetation usually indicates that excessive bank erosion is occurring. Signs of erosion include rills and gullies cut by runoff flowing down the banks into the stream channel. Sloughing or collapsing banks are another obvious sign of erosion. Unstable bank undercuts threaten fish habitat, as they are highly prone to sloughing.

Armoring banks with rock or concrete may remedy emergency erosion problems. However, artificial bank stabilization tends to deflect and concentrate the force of stream flow downstream to unprotected areas. Thus, forcing a stream into an unnatural human-preferred course may accelerate erosion downstream. It also limits the stream's ability to create a natural diversity of habitats. For this reason, you need to look for and note any signs of artificial bank stabilization.

(Adapted from Murdoch et al., 1996.)

FIELD PROCEDURE:

1. Walk your reach, looking carefully for places where the bank has either eroded or been revetted.
2. Only record eroded areas that reach bankfull height and are at least two bankfull-widths long. (See your cross-section data for your bankfull width.)
3. For eroded areas, indicate:
 - a) the approximate length (in feet) of the eroded area which lies within the monitoring reach
 - b) the highest height of the eroded area, in feet
 - c) the probable cause of the erosion (check all that seem to apply):
 - i) slope failure from above
 - ii) bank undercutting by the stream channel, i.e., where the sides of the bank have been dug out by the force of the water and the bank collapsed above the undercut
 - iii) channel scour, i.e., where the channel has dug the bed of the stream down lower and lower, until the bank has collapsed because its abutment is gone
 - iv) new-fallen large woody debris
 - v) human-made bank alteration upstream or on opposite bank
 - vi) other (indicate)
4. For revetted areas, indicate:
 - a) the approximate length (in feet) of the revetment which lies within the monitoring reach
 - b) the type of revetment (check all that apply):
 - i) continuous blanket -- layer of rock, tires, etc. on the stream bank
 - ii) bulkhead -- retaining wall made of wood, steel, or concrete
 - iii) spur dike -- structure that juts out into the stream
 - iv) check dam -- low structure crossing the stream
 - v) large woody debris placement -- trees placed, cabled, or dug into the banks or streambed
 - vi) bioengineering -- vegetation planted to protect the bank
 - vii) other -- old car bodies, etc. Describe on the data sheet.
5. Take photos of eroded and revetted areas, following the "Photos—Summer" protocol.
- 6. *If there are no eroded or revetted areas, write "None" on the data sheet.***
7. In the "Sampler's Initials" box to the right of the data boxes, put all the initials of one sampler taking responsibility for the data, even if all you wrote was "None." If more than one person worked on this data, put the initials of the person with the most experience or knowledge.