

Fish Habitat Restoration Methods Concept Specification

Kickers

Purpose:

- To stabilize eroding stream banks.
- To protect property or to prevent damage.
- To create cover for fish.

Conditions Where Applicable:

- Instream location and size must be approved by an Adopt-A-Stream Biologist.
- In low to moderate gradient stream reaches (up to 3%).
- Typically in larger streams or rivers (> 8 m wide).
- In streams where flooding is light or moderate.
- In streams where ice damage is not a potential hazard.
- Avoid streams that exhibit a shifting substrate or hard rock rubble substrate.
- Normally associated with a stabilized bank i.e. riprap or other technique.

Habitats Created:

- Fish cover immediately downstream of the boulders.

Advantages:

- It improves instream cover habitat for juvenile and adult fish.
- Reduces the potential for bank erosion, for part of the water is redirected into the thalweg.
- Little maintenance is required.

Disadvantages:

- Access to site for heavy machinery may be difficult, as the installation usually requires a backhoe or excavator for placing of larger material.
- It may interfere with the natural, lateral movement of the stream.

Design Criteria:

- The type of rock used depends on local availability (quarried stone including shot rock, field stone, rubble). Angular material is preferred over round rock. All rock must be washed clean of sand and silt. Avoid shales and other “soft” rocks as they can break up with the ice.
- The rock size is a function of several variables including stream flow velocity. Rock

size is determined by the AaS staff during the design stage.

- Failure of the structure can result from improper rock size, shape, and failing to "tie" the structure into the stabilized bank.
- Construct during low flow period.
- The ability of kicker to withstand the high flows depends on a number of variables and requires proper design.

Implementation Steps:

- These are only suggested steps and may be modified.
- Prepare the site.
- Clear area of debris.
- Blend or "feather" the ends of the kicker into the upstream and downstream banks.
- Stabilize any exposed soils.

References:

Charles MacInnis and Danielle Goff, DFO Antigonish area office. Personal communication.

Adapted from Ecological Restoration of Degraded Aquatic Habitat: A Watershed Approach
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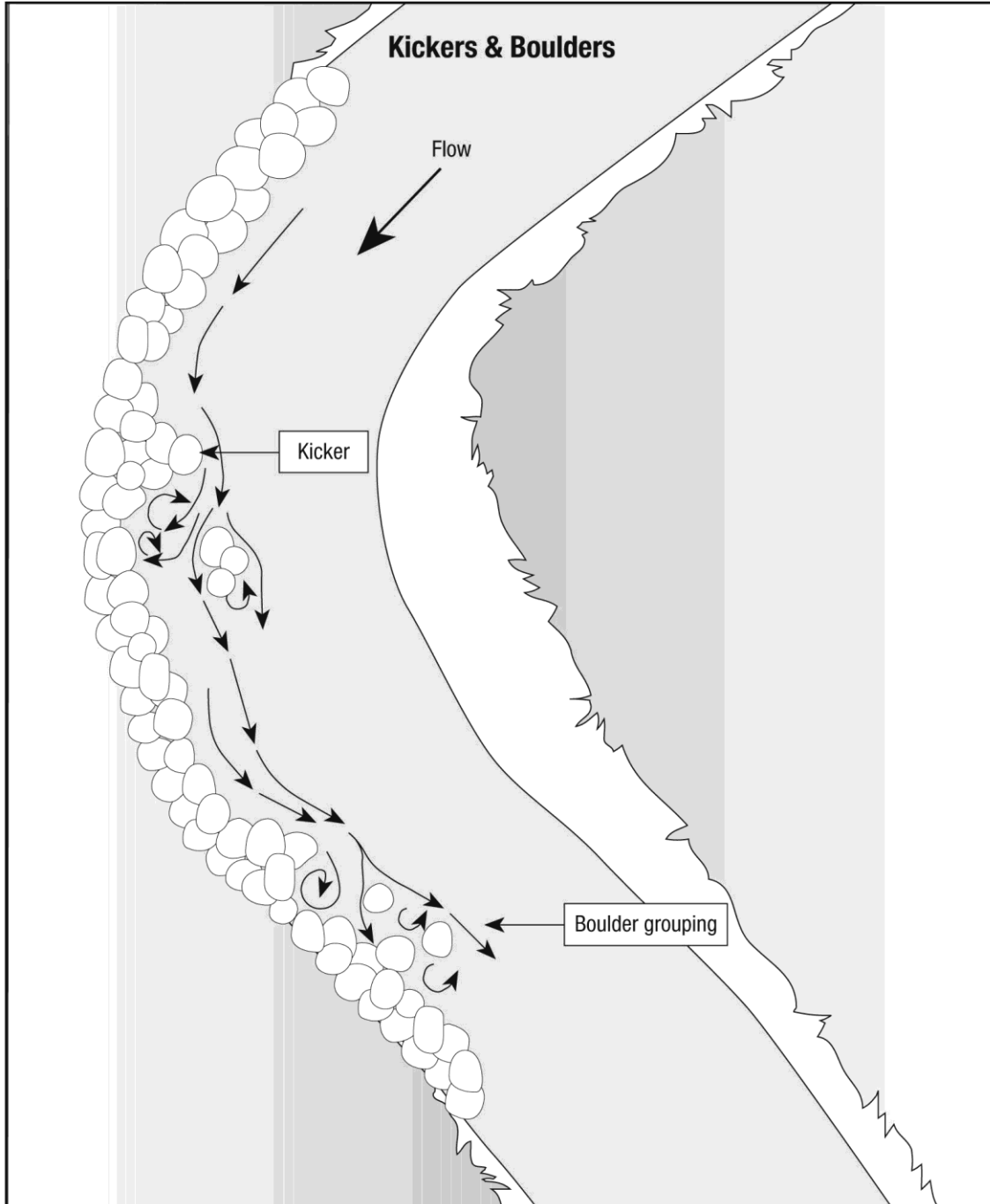


Figure 1. Conceptual drawing of kickers and boulders used to create instream cover and to reduce bank erosion (DFO, 2005).