

# RESTORATION TECHNIQUE: Stream Habitat Estuary Hooks

## HABITAT TYPE : E stuary

### Construction Techniques and Materials

Adjacent to vertical walls or high banks place a variety of stone in a hook fashion to:

- Deflect and concentrate flows
- Entrain bedload sediments
- Encourage establishment of emergent vegetation
- Provide small eddy pools for habitat and primary production.

High profile design has material that is above baseflow water levels, low profile design remains underwater at all times.

Size can be major and constrict channel width and morphology. In contrast, the size can be reduced and limited to shoreline modifications that provide localized influences to the river and

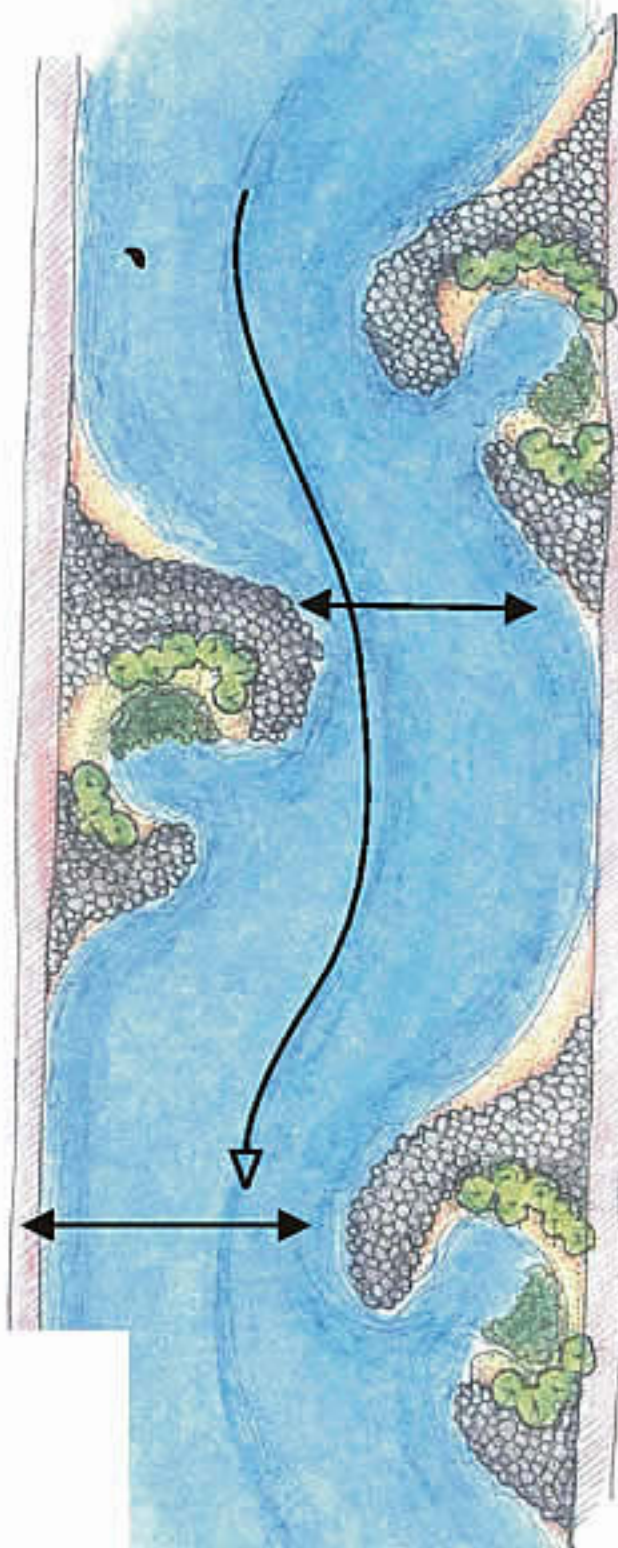
### Habitat Function and Limiting Factors

Provides staging areas for fish passage while concentrates flows, directs bedload sediments and improving currents. Eddy pool and depositional areas can be highly productive and encourage the growth of emergent vegetation.

Must be designed with hydrological analysis to determine the suite of habitat conditions under various flows.

### Targets

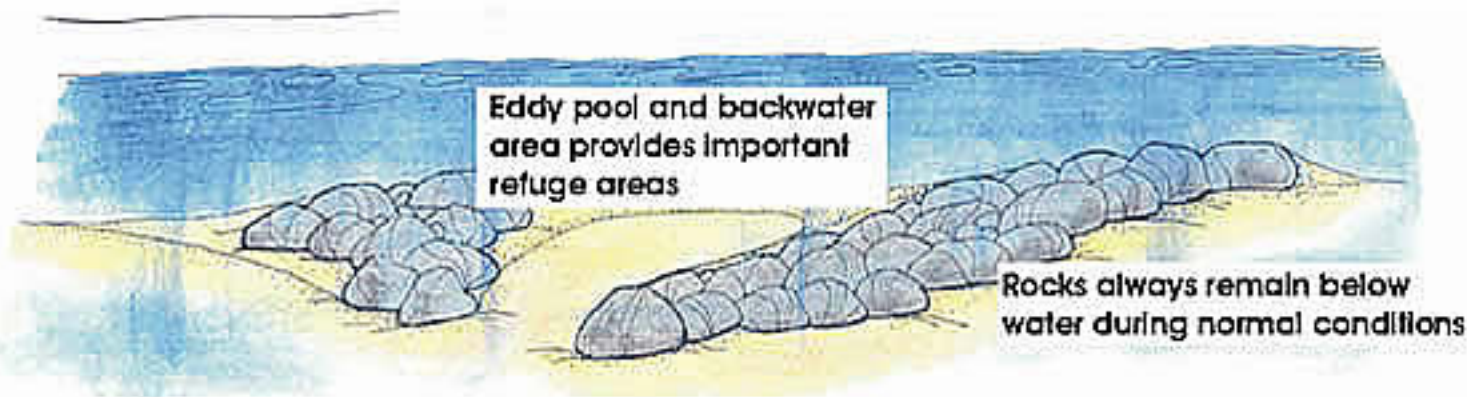
- Improve emergent vegetation
- Improve submergent vegetation
- Increase high quality riparian vegetation
- Increase areas of primary production
- Increase essential habitats for cool and cold water species
- Improve forage for aquatic and terrestrial species
- Add structural elements to improve near shore habitats



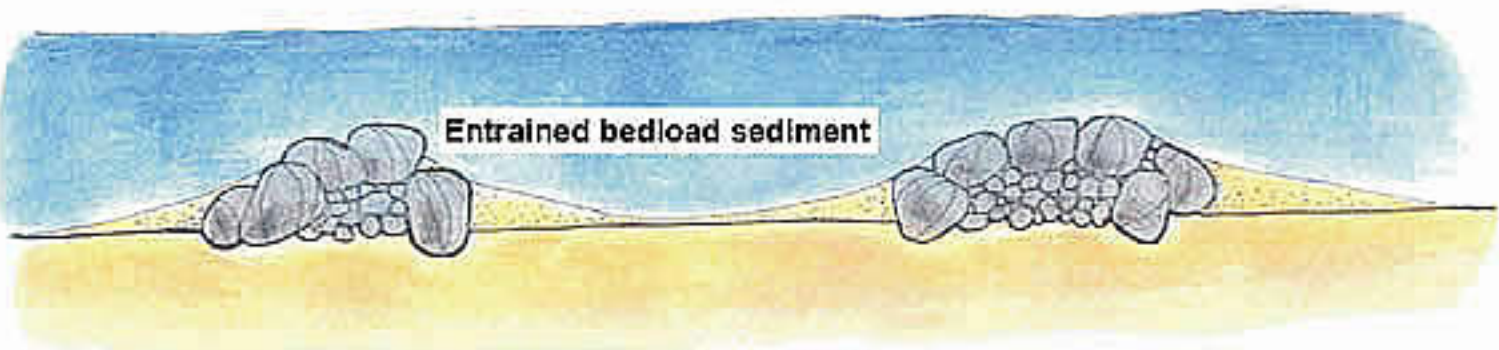
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(Low Profile)

HABITAT TYPE : Estuary



**OBLIQUE**



**SECTION**

## Habitat Function and Limiting Factors

Urban estuaries (Etobicoke Creek, Lower Humber River and the lower Don River) are commonly channelized sections of these watercourses. They lack structural habitat and significant features. Estuary hooks in various configurations (high, low, large, small) can provide the following conditions:

- Improved flows and channel morphology
- Staging areas for migratory and resident fish
- Juvenile habitat and areas of enhanced primary production
- Local pockets of lowland riparian and emergent vegetation

## Targets

- Improve emergent vegetation
- Improve submergent vegetation
- Increase high quality riparian vegetation
- Increase areas of primary production
- Increase essential habitats for cool and cold water species
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## HABITAT TYPE : Estuary

### Construction Techniques and Materials

Adjacent to vertical walls or high banks place a variety of stone in a hook fashion to:

- Deflect and concentrate flows
- Entrain bedload sediments
- Provide small eddy pools for holding fish

Low profile design has material that is below baseflow water levels.

Provides bottom structure and relief from flows

### Habitat Function and Limiting Factors

Provides staging areas for fish passage  
Entrains bedload sediments  
Eddy pool and depositional areas can be important refuge area for fish

Must be designed with hydrological analysis to determine suite of habitat conditions under various flows

### Targets

- Improve emergent vegetation
- Improve submergent vegetation
- Increase areas of primary production
- Increase essential habitats for cool and cold water species
- Improve forage for aquatic and terrestrial species
- Add structural elements to improve near shore habitats

