# Aquatic Habitat Restoration in Nova Scotia

## Projects by East Coast Aquatics Inc.

**Nictaux River**
**Fish Habitat Restoration**


Stream habitat restoration structures installed in the Nictaux River during the early 1990's had structurally failed. ECA rebuilt a number of the rock sill and deflectors, and added new habitat complexing structures such as boulder clusters and large woody debris placements. The former establish primary pool and riffle sequencing, while the latter improve overall habitat productivity for salmon and trout found within the system.

**Black Brook**
**Fish Passage Restoration**


An old collapsed culverted road crossing at the head of tide on Black Brook was impeding fish passage and posing a risk of significant sediment/debris impacts to habitat. ECA removed the culvert and roadway and recontoured the channel and floodplain to align with the natural annual and multi-year flood return profiles respectively. Hawthorn and alder clumps were salvaged and planted to provide quick woody plant growth within the seeded and mulched restoration site.

**Sutherlands River**
**Tidal Marsh Channel Restoration**

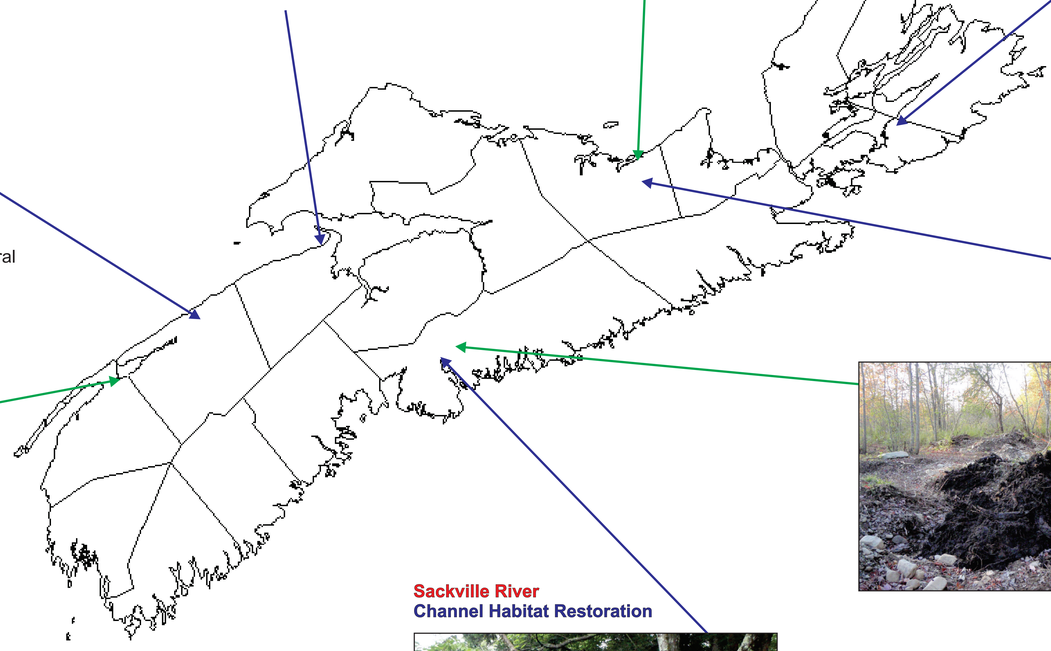
As part of Highway 104 twinning over the Sutherlands River a tidal marsh channel was infilled as a temporary construction pad. Following completion of the highway bridge construction and removal of the pad, ECA excavated a new tidal marsh channel (center) based on the natural template, and innoculated the area with transplanted native marsh plants (right).

**Irish Cove**
**Stream Channel Remediation**

A storm deposit of heavy bedload filled the natural Irish Cove Brook channel. ECA excavated the deposited material to recreate a channel with pools and meander patterns (left) before diverting flow back into its natural pathway (right).

**Wilmot**
**Floodplain Restoration**

After years of local development encroachment on this small watercourse, chronic flooding affected Highway 1 in Wilmot. ECA used natural templates, watershed calculations, and historic air photo analysis to determine the natural flood plain had been eliminated and the channel constricted. Provincial Transportation used the ECA restoration design to re-establish a flood plain wetland and alleviate risk of highway flooding.



**Grants Lake**
**Outlet Control Remediation**

An old wooden outlet control structure at Grants Lake was failing beyond repair (left). This was resulting in a loss of productive lacustrine wetland and fish habitat. ECA used a coffer dam to isolate the work area before constructing a naturalized control using various sized washed boulder, cobble, and pebble materials (center). Using natural lake edge zone elevations, the outlet structure elevation was established to maintain productive aquatic habitats.

**Bishop Farm**
**Wetland Restoration**

As part of our design of an impending project we have assessed soil profiles and installed shallow water monitoring wells to help determine both how to construct restoration structures, and whether we have achieved biological targets in the long run post construction. Restoring natural drainage and water retention at this 7 ha site will be part of the approach to returning it to a productive natural marsh.

**Sackville River**
**Wetland Restoration**

Using a variety of techniques, ECA enhanced soil forming and hydrology functions in an abandoned gravel pit to create a diversity of productive wetland habitat types. In one area gravels were excavated to the water table and replaced with organic soils that had been salvaged from a nearby construction site (left). The soils were then innoculated with a live harvest of moss species and covered with mulch in order to establish a wetland type known as a fen. Swamps and bogs were also enhanced in other areas of the 17 ha project site.

## Our approach

ECA undertakes aquatic habitat projects, creating diverse and productive habitats. We use proven techniques along with natural templates to design our projects so they are both stable yet naturally dynamic. We use small equipment, which takes a little longer, but with fewer impacts on the environment. Rubber tracks and wheels are more gentle on roots, and don't pinch vines and herbs the way metal tracks will. Our excavator uses 100% canola oil in its hydraulics to protect the environment in case of accidental leaks. Our narrow and lighter machinery limits the need to clear working area of trees, resulting in a minimal construction footprint.

**Sackville River**
**Channel Habitat Restoration**

With the use of a small excavator, ECA was able to work between trees to help stabilize a critical section of rapidly eroding river bank (left). Various sizes of rip rap were used to armour the bank and locked in place with smaller angular substrate. Deadman anchors were constructed(center) and buried to cable fallen trees in a position where they would add further protection and fish habitat value to the stabilized channel section (right). These techniques, along with boulder clusters that helped dissipate river energy, were used to remediate approximately 250 m of river bank.


East Coast Aquatics
"Restoring our Streams and Wetlands"

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