# Eastern Brook Trout Joint Venture
# Completed Project Report Form

**Project Title:** Restoring Stream Connectivity in the WB Machias River, ME. EBTJV/NFHAP-USFWS FONs 53371-2009-350

- **Location:** T36MD BPP Washington County, Maine

- **Lat / Long Coordinates:** **-67.889 45.028 Knox Lake**
  **-69.948 44.950 39:30:0 Road Trib Site 2007-225**

- **Sponsor:** Project SHARE

- **Completion Date:** October 20, 2011

- **Partners involved:** US Fish and Wildlife Service Maine Fisheries Resources Office, American Forestry Management

- **Project costs:** Costs for Knox Lake Outlet Project (63' x 12' x 6' Open Arch)

1. Total cost: $39,947
2. Non federal amount: $2,000
3. Federal amount: $37,947

- **Final Funding:** Costs for Knox Lake Outlet Project
  NFHAP Funding Through EBTJV: $20,000
  Total Federal Contributions: $37,947.73
  Total Non-Federal Contributions: $2,000

- **Action strategy implemented in the project (according to EBTJV range wide, regional, or state level habitat strategies).**
  This project addresses Regional Habitat Objectives: 1 – Maintain the status of 477 Northern subwatersheds classified as Healthy; 2 – Strengthen brook trout populations in 20 Northern subwatersheds classified as Healthy; 7 – Validate the predictive status model by contributing toward the assessment of 700 Northern predicted status subwatersheds.

- **Priority score of the sub-watershed where the project took place.**
  Protection of a 1.63 "best of the best" subwatershed (230471).

- **Describe any additional species of greatest concern or the state wildlife action plan listed habitat conservation goal (s) supported by the project.**
  Atlantic salmon are federally listed as an endangered species. There are 1.2 miles of salmon rearing habitat upstream of site.
  American eel has been petitioned to be listed under the Endangered Species Act and are found within the project area.

- **Description: project objective(s):**
  The project replaced two undersized and failing stream crossings. The originally proposed project (39:30:0 logging road tributary) was replaced in 2010 by the landowner whom installed a 6 foot wide (1.2 x bankfull) open arch structure. EBTJV funds were utilized (with additional landowner funds) to restore fish passage at Knox Lake outlet, a tributary to Fletcher Brook, in the Machias River watershed. Native brook also inhabit this stream. The old Knox Lake Outlet crossing had experienced several catastrophic road washouts as evidenced by accumulated road sediment and debris downstream of the crossing. This crossing was also replaced with a 1.2 bankfull spanning open bottom arch culvert (12ft wide) designed to allow fish passage at all flows.

- **Methods used:**
  New crossings were designed using stream simulation techniques to ensure proper sizing and placement of new structures. 1.2 x bankfull width open bottom arch culverts replaced undersized and damaged round culverts.

- **Project outcomes: Describe outcomes and whether or not the objectives were met. If not why? What lessons were learned?**
  Projects restored natural stream function at two highly degraded stream-road crossings.

- **What is the Brook trout population response to the project outcome?**
  Aquatic organisms now have unhindered access upstream and downstream. Brook trout have been observed at both project sites. Stream habitat below and above the roads are showing marked improvement as high flows are beginning to sort sediment. Brook trout now utilize quality stream habitat under the road.

- **If applicable, what is the number of stream miles and or acres of brook trout habitat?:**
  This project opened two miles of stream habitat. Knox Lake Outlet 1.4 and 0.6 miles on the 39:30:0 logging road tributary

- **If applicable what is the number of stream miles and or lake/pond acres of brook trout habitat gained access to as a result of removing a fish barrier. Include the # of fish barriers removed?**
- This project opened two miles of stream habitat on two separate streams. Knox Lake Outlet 1.4 and 0.6 miles on the 39:30:0 logging road tributary

- **If applicable, what is the number of stream miles and or lake or pond acres of brook trout habitat with sediment, phosphorous, or nitrogen inputs that were rehabilitated to within 25% of natural or other desired levels such as numeric state water quality criteria?**
- This project opened 2.0 miles of stream habitat.

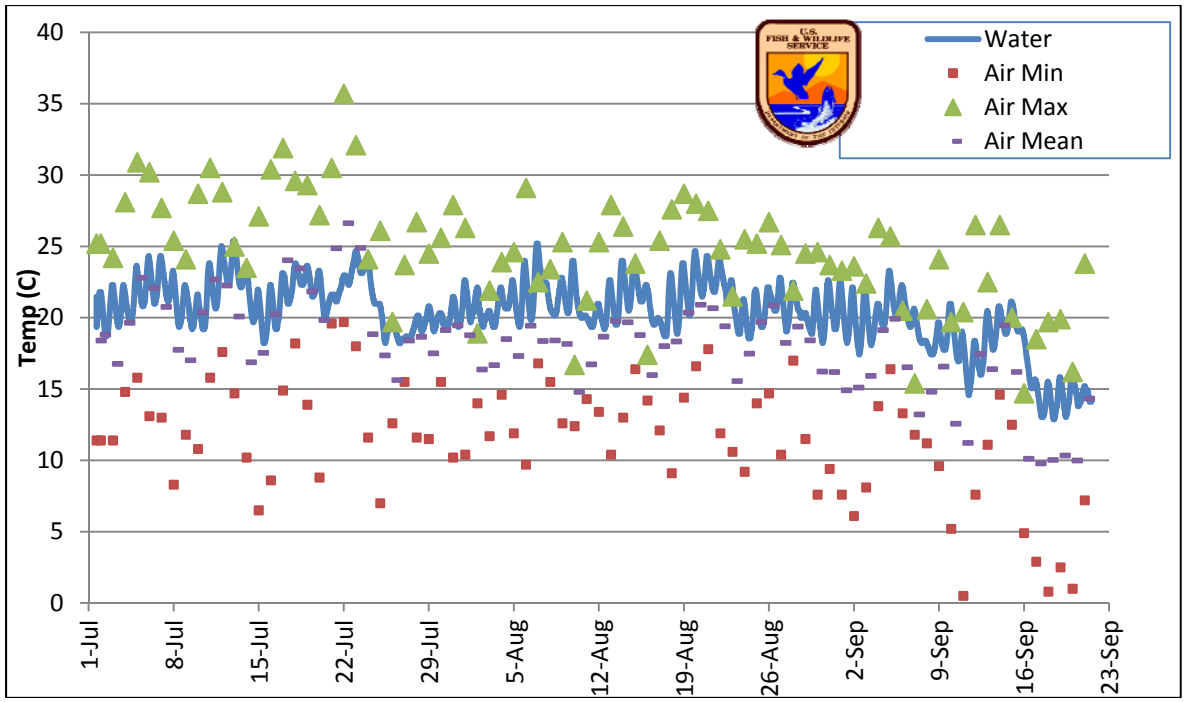
*******<u>*Please include before and after photos of the project with a photo release form and appropriate credit line for the photos.*</u>*********

Looking downstream to old culverts at the outlet stream to Knox Lake (n=2 culverts).

Looking Downstream to the new 12 ft wide Open Arch on Knox Lake Outlet Stream . Oct 31, 2011

Photo Credits- Scott Craig USFWS

Time-lapse photography during construction is available from Scott Craig




Water and air temperature at Knox Lake Outlet tributary (above road) during summer 2011. Data courtesy USFWS Maine Fishery Resources Office.

Before:
39:30:0 logging road.
Looking downstream to inlet

Notice large impoundment above the road. Culverts blocked with debris.

Before:
39:30:0 logging road.
Looking upstream to outlet

Photo Credits- Scott Craig USFWS

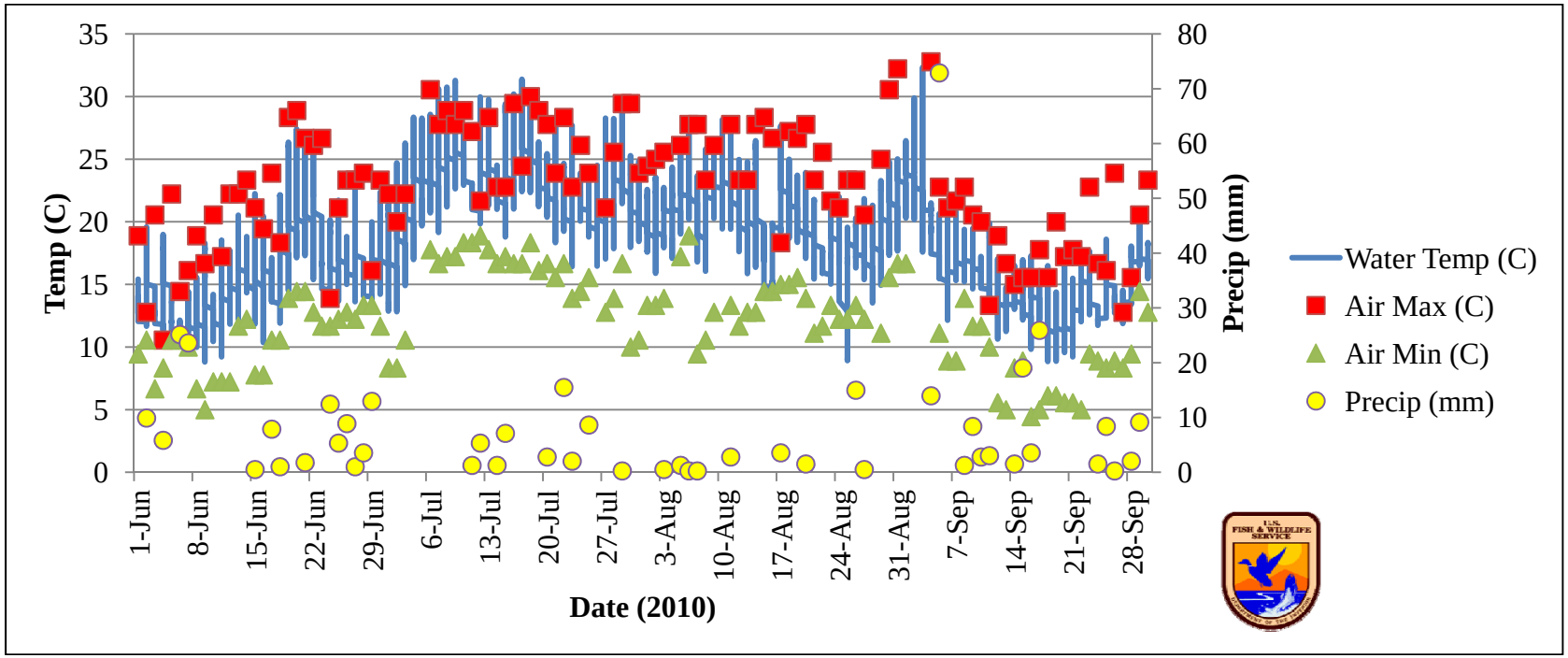
After:
39:30:0 logging road.
Looking downstream from outlet.

Beaver had built a small dam below the road- in the tree's.

After:
39:30:0 logging road.
Looking upstream from inlet.

Rocks were covered by water before project!

Photo Credits- Scott Craig USFWS




Water and air temperature including daily precipitation during summer 2010.
Data courtesy USFWS Maine Fishery Resources Office.
Note: The summer of 2010 was extremely hot and dry!