

Lake Champlain Aquatic Habitat Connectivity

Fish Passage in the Browns River Watershed

Roaring Brook at Barrett Rd, Underhill, Vermont



Before



After

Left: A view of the Roaring Brook culvert outlet on Barrett road. This culvert is perched, allowing minimal to no fish or aquatic organism passage.
Right: New Roaring Brook culvert at the Barrett road crossing designed for fish and aquatic organism passage.

Site description: Identified as a "10 Top Waters to Watch" by the Eastern Brook Trout Joint Venture, the Browns River has an established self-sustaining population of Eastern Brook Trout. Access into cold water refugia is essential for brook trout and climate change models project an increase in summer water temperatures over the next decade. Retrofitting this culvert will allow native brook trout to access 3.5 miles of critical thermal refugia and spawning habitat.

Problems / history: Roaring Brook has a healthy population of brook trout that have been cut off from the colder headwater reaches by a perched culvert on Barrett road. The culvert was in good condition, with no damage, undermining or washouts. The estimated lifespan of the structure is > 30 years. Retrofitting the stream bed to insure fish passage was our partners preferred option. The height barrier was addressed by an instream weir and baffles added to the bottle of the culvert to slow velocity.

Partners and Funding: Funding and support for this project came from the Town of Underhill, Winooski Natural Resource and Conservation District, and the US Fish and Wildlife Service.

<u>Cost:</u>	<u>USFWS</u>	<u>WNRC</u>	<u>TOTAL</u>
	\$17,010	\$5000(in-kind)	\$22,010

Fish and AOP Passage: Before culvert replacement began fish biologists from the US Fish and Wildlife Service captured and marked fish downstream from the culvert with a fin clip. After the new culvert was installed, biologists returned and collected fish above the new structure and found fish that had a fin clip proving passage through the culvert.

Pre-construction: 10&11-July
36 Brook Trout collected
Adipose clipped
Capture/Release within 100ft downstream

Post-construction: 15-July
12 Brook Trout collected
3 Adipose clipped: 145, 142 & 115 mm
No fish 100ft upstream, shocked to 250ft