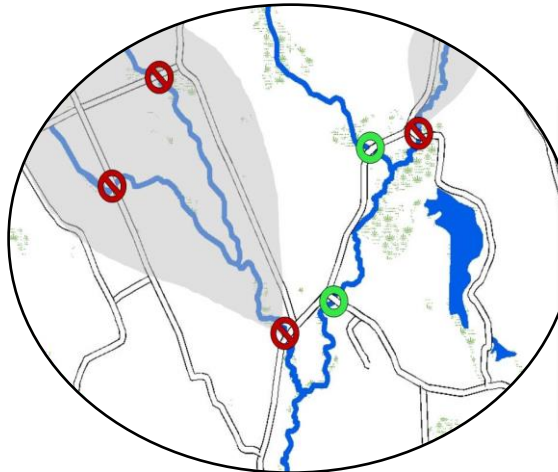


Aquatic Organism Passage

What is Aquatic Organism Passage (AOP)? This identifies whether aquatic animals such as fish, turtles or amphibians can move through a stream crossing without restrictions such as:

- A large vertical drop between the outlet and the stream (known as a perched culvert).
- Water in the crossing that is either too shallow or too fast.
- Physical barriers that block the crossing inlet or outlet.
- A lack of natural substrate in the crossing.



Fish and wildlife need a connected landscape to get where they need to go! And deficient culverts can block access to important aquatic habitat!

How do we know if a culvert is a barrier to animals?

Information is collected on the culvert and river channel in the field and the data is used to assign a score.

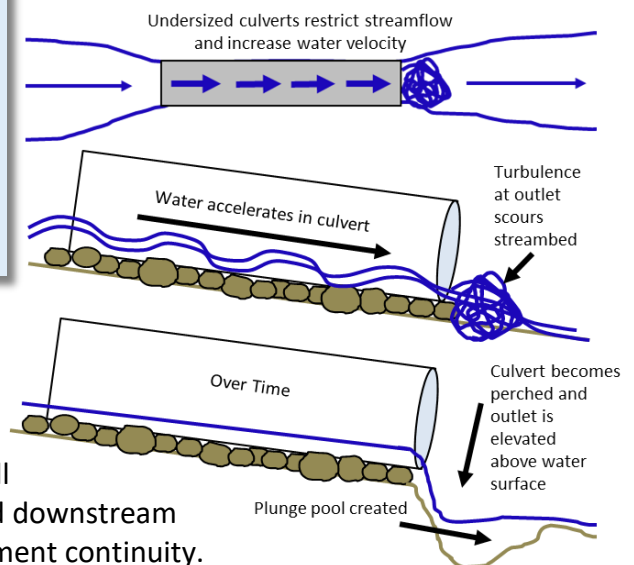
Full Passage – The crossing functions like the natural stream for all aquatic organisms, maintaining a connection between the up- and downstream environment without changes in slope, a drop in height, and sediment continuity.

Reduced Passage – The crossing can have any of these conditions: (1) the stream cascades over steep rocks on the downstream side; (2) consists of multiple culverts; (3) have a partial obstruction at the entrance; or (4) lacks natural sediment through the inside. These conditions limit AOP for some species or life stages, but may allow strong and moderate swimming fish to pass.

Passage Only for Adult Trout – The outlet is perched with a vertical drop of ≤ 1 foot to the water surface and there is a > 1 -foot-deep pool immediately downstream. Only strong swimming and leaping fish such as brook trout can jump into and pass through these crossings.

No Passage – The outlet is perched with a > 1 foot drop to the water surface, or the drop is < 1 foot and downstream water depth is < 1 foot, or water depth in the culvert is < 0.3 feet, or if a screen is blocking the inlet or outlet.

How a culvert becomes perched



Fish-friendly culvert

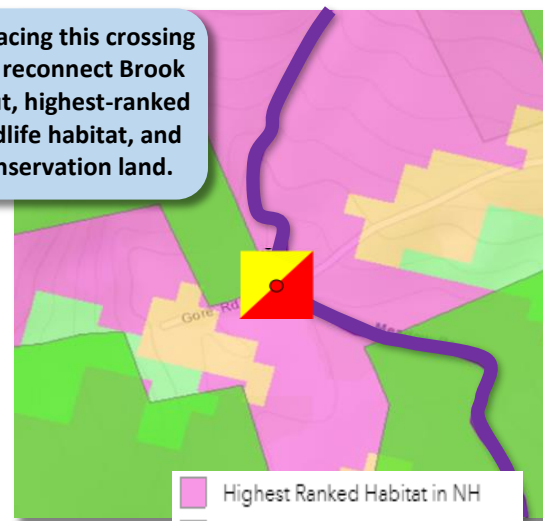
Stream Habitat and Aquatic Connectivity

Aquatic Barrier Prioritization to Improve Aquatic Connectivity

Projects to remove and upgrade stream crossings should target areas that will connect important aquatic habitats, improve infrastructure, and increase flood resiliency.

- **Restore** instream habitat for sensitive aquatic species.
- **Reconnect** critical spawning habitat for coldwater fisheries and migratory corridors for fish and turtles.
- **Establish** connections between important conservation land and high quality wildlife habitat to support landscape connectivity.

Replacing this crossing will reconnect Brook Trout, highest-ranked wildlife habitat, and conservation land.



- Highest Ranked Habitat in NH
- Highest Ranked Habitat in Region
- Supporting Landscape
- Permanent conservation land

New Hampshire Fish and Game [Wildlife Action Plan](#)- Fish Priorities

View important habitat information on the [NH Aquatic Restoration Mapper](#). These layers highlight important streams identified by the F&G Inland Fisheries Division based on over 4,000 field surveys.

Stream Reach Label	Symbol	Description of Fish Habitat
American Brook Lamprey	■	American Brook Lamprey occupied stream based on survey data.
Bridle Shiner Habitat	■	Stream reach is has confirmed Bridle Shiner from survey data.
Springfed Wild Brook Trout	■	Presence of a springfed Brook Trout population that is vulnerable due to its geographic isolation and local coldwater conditions.
Wild Brook Trout	■	Wild Brook Trout are present in the stream based on field surveys.
Fishery Restoration Interest	■	Rivers with past, ongoing, or planned restoration and conservation work that is supported by the NH Fish and Game Department.
Coldwater Fishery Temperature Model	■	Displays stream reaches predicted to be suitable for coldwater fish communities based up the NH Department of Environmental Services' coldwater fishery model.
Herring Stock Location or Migratory Path	■	Stream where river herring is stocked by F&G or there is a migratory path downstream to the Merrimack River.
Seacoast Anadromous Fish Habitat	■	Anadromous fish habitat accessible to river herring and sea lamprey for spawning on the seacoast.
American Shad Spawning Habitat	■	An area that has potential American shad spawning or juvenile rearing habitat.
Species of Concern	■	Confirmed presence of a fish or mussel species of conservation concern that is included in the NH Wildlife Action Plan.

Wildlife Action Plan (WAP)- Abbreviations of species present in streams from F&G field surveys.

AE- American Eel	AS- American Shad	AW- Alewife	BDS- Banded Sunfish	BRB- Burbot
BF- Brook Floater	BS- Bridle Shiner	EBT- Brook Trout	LT- Lake Trout	FD- Finescale Dace
LW- Lake Whitefish	SL- Sea Lamprey	RFP- Redfin Pickerel	SD- Swamp Darter	NRD- Northern Redbelly Dace
RS- Rainbow Smelt	DWM- Dwarf Wedge Mussel		ABL- American Brook Lamprey	



For more information on the **Stream Crossing Initiative** contact NHDES:
 Cheryl Bondi: Cheryl.Bondi@des.nh.gov, (603) 271-0727
 Information on **NH F&G Fishery Priority Classifications** contact NHFG:
 Matthew Carpenter: Matthew.Carpenter@wildlife.nh.gov, (603)271-2612

