

## Helping a Salmon on its Way

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Water flow upstream and downstream past dams is especially important to migrating wild Atlantic salmon. Fish ladders are built to provide them an artificial flow upstream. Downstream passage through a tube, something like a waterslide, is used to assist their movement towards the ocean.

Angling restrictions are commonly applied to areas near dams and near these important migrational passages

### Fish ladders

Fish ladders are built with low barriers coming out into the water flow to slow it down, and provide a way for Atlantic salmon to actually gain height around the dam. It is important that the flow be sufficient to attract the salmon to the entrance of the fish ladder. Fish ladders need to be maintained, and repaired from time to time.

### Downstream passage

Downstream passage needs to have sufficient flow to attract the wild Atlantic salmon. If smolt or adult salmon are instead attracted to the flow passing through the hydro-electric dam turbines, there is a high likelihood of their not surviving.

An extra hazard is that sometimes sticks or even logs can become wedged in the downstream passage. It needs to be checked.



*Fish Ladder*

Tom Moffatt/ASF

**VEAZIE DAM ON PENOBSCOT COMING DOWN - BREACHING CELEBRATED JULY 22**



A milestone was reached on July 22 with the breaching of the Veazie Dam, lowermost obstruction for Atlantic salmon and other migratory species. This dam's removal has been the work of more than a dozen years, with ASF playing an important role.

[Read more](#) ▶

[Watch Video of Breaching of Dam](#) Click here ▶

**Veazie Dam Removal Video**



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## River Restoration

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Note: The intent of this section is not to provide full details of a very complex topic, but to introduce the idea, along with some of the basic techniques being used.

*Through the years rivers have been abused through poor logging practices, agricultural abuses and in some cases overfishing. All of these can affect the quality of habitat for young fish, spawning beds, and the ability of Atlantic salmon to migrate through a river system. For trout, many of the same issues apply, especially destruction of habitat.*

For Atlantic salmon, the single most important key to restoration may be increasing the numbers returning from the ocean. However, stream habitat restoration remains the most important action we can take to secure the future of both Atlantic salmon and natural trout species in our rivers, streams and lakes.



A PEI river in trouble. It is filled with silt, making life for Atlantic salmon and trout difficult. Changes in agriculture are needed to eliminate such heavy loads of silt, to restore this river to health.

Improving a Human-impacted Stream

A variety of techniques can be employed to improve stream habitat, and to rectify errors of the past. Basically, the intent is to have cool water, sufficient depth for travel and living, and as little silt in the water as possible.

Here are some techniques used:

**Digger Logs**

Small to medium sized logs placed in streams to create plunge pools. They are intended for small streams only.



*Digger Log being placed in a stream*

**Rock sills** – create through scouring a pool downstream from the rock where current flow is too strong for digger logs.

**Wing deflectors** – shuttles water back and forth, causing scouring. In Nova Scotia and other areas, streams have been widened due to logging, or other reasons

**Creating Pools** – Pools are required in river systems to provide spawning areas in the lower sections, locations for other salmonids, and resting areas for adults in migration upstream. They can be especially important for survival during times of extremely low water.

**Plantings** – By planting dogwood, willow species, hardwood saplings and grasses can stabilize a bank that has been subject to erosion or the effects of livestock.

**Creating Barriers to Livestock** – Cows and other livestock can literally eat away the plant life that reduces erosion along streams. In addition, they can cause siltation, along with increase “bad” nutrient loading through defecating directly into the stream. Many conservation groups work in cooperation with farmers to build fencing that keep livestock a few feet/metres away from the stream. Replanting is also a help.

**Gabions** – These are rock filled cribs created from wire mesh, that can utilize small rocks, in order to reduce erosion along a section of river.

**Rock rip-rap** – Large rocks are used for riverbank stabilization and reduction of erosion and silt entering the river in many areas, instead of the gabions mentioned above.

**Riffle Creation and the reduction of Hanging Culverts** – At times roads have been built in such a way that a culvert’s lower end is too far above the stream for Atlantic salmon to continue migration. In some cases this can be rectified by rebuilding the culvert so that it is lower. The problem can also be addressed

**Boulder clusters** – Placing a group of boulders in a stream or river, to provide shelter for juveniles, and resting area for adults in migration.

**Wing Deflector** – a triangle-shaped device which extends from the bank and used to direct current towards the middle of the river.

If paired, they will direct current towards the middle. If staggered, they will redefine the stream channel to counteract poor land use practices.

**Breaching Driftwood Barriers** – In this case it is dismantling something, instead of building it. If an accumulation of driftwood actually block a stream, there may be a need to dismantle it to allow travel of fish along the stream.



Constructed Pool

*How Can Farmers Help Restore Salmon Streams?*

1. *Keep livestock away from stream edges*
2. *Allow stream edges to regrow, or even encourage it with grasses, shrubs or tree plantings.*
3. *Maintain a buffer zone in crop agriculture and undertake any other measures needed to stop pesticide runoff.*
4. *If new land is being cleared, be very careful to maintain an effective tree buffer zone.*
5. *Work with your area salmon, trout and watershed groups in order to safeguard the future of streams for all.*

Stream enhancement by stocking fry or parr

At one time this was considered to be a positive action, but the science of Atlantic salmon has shown that there are deficiencies. Often the young fish are imprinted on a hatchery, or are adapted to a life of receiving pellets as food, rather than chasing down wild prey. If genetically they are not from a particular river, they are unlikely to be fully able to deal with the particular combination of river conditions and ocean migration route required.

Nevertheless one technique especially has had some success in restoring wild Atlantic salmon:

Satellite Rearing Tanks –

The tank is located on the edge of the stream, and juvenile Atlantic salmon raised are genetically of that particular stream. The water comes from a pipe in the river upstream, and gravity provides the only pump action required. The young fish are accustomed to the stream water from the beginning.



Is there a problem with Satellite Rearing Tanks?

While this technique can work, it does not get around the issue that the fry or parr raised in the tank are accustomed to a tank existence where they are fed, and where predation is not a factor.



Tom Moffatt/ASF

An ASF biologist monitors a smolt wheel that catches them on their journey to the sea. They are measured, a scale taken, and then sent on their way.

## Tour of the MSA Salmon Hatchery - South Esk



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## CleanUpSalmonFarming Short Videos

Below are short video clips of a few minutes in length. Each provides a window on to one aspect of salmon farming, including the need to embrace land-based closed-containment aquaculture. For the FACTS, go the three pages on [compensation](#), [endangering wild Atlantic salmon](#), and [Unsustainable in the Ocean](#).

