



Remote Streamside Incubation

SALMONID HABITAT RESTORATION | Fact Sheet

Improving habitat can only go so far toward restoring salmon stocks. Habitat can be rebuilt, nutrients put into the water, and stream crossings can be improved to open streams, but without fish these projects are pointless. Raising fish in a hatchery is one solution. But increasing the population of native fish through remote streamside incubators, or egg boxes, is a proven method of improving regional salmon returns in future years once a healthy habitat has been re-established. And unlike hatchery-raised fish, salmon raised in streamside incubators are wild, healthier and better able to survive at sea.

How it Works

Remote streamside incubators, or egg boxes, are controlled environments that mimic the natural spawning grounds, or redds, where salmon eggs are hatched and incubated. Egg boxes are essentially spawning grounds self-contained within a barrel or similar tank installed alongside a stream and fed with stream water.

Streamwater enters through an intake at the bottom, and exits through an outtake at the top. The constant flow of new water provides for oxygenation, and percolates up through layers of natural gravel for filtering; artificial gravel, called substrate,

in which the newly hatched salmon will settle; and a basket filled with fertilized eggs.

When the eggs hatch, the newly hatched salmon with their egg sacs still attached—called alevin—filter through the egg basket and settle into the substrate. They'll remain there for the next month, feeding on the yolk. When they're ready, they'll come out from the gravel and get carried out the outtake into the river—at that point, they're called fry. Fry imprint on the water where they are born, which enables them to return to the same spot to spawn as adults.

Results

In its earliest remote incubation projects, Fish First put 10,000 fertilized coho salmon eggs in eight different egg boxes. Three years later, seven to 15 fish returned to each box. A few years later, when incubation projects were just one part of a complete habitat restoration program including nutrient enhancement, 250 to 400 fish returned per box. While some of the increase can be attributable to a predictable cyclic swing in ocean conditions, a healthy part of the increase can be attributed to the effectiveness of the complete restoration program.

What You'll Need

Much of the appeal of egg boxes is that they are simple, affordable and portable, and highly successful. However, no incubation project should be undertaken alone. A hydrologist familiar with the target stream and an experienced fisheries biologist should supervise the project to ensure it is both appropriate and successful. You'll also need the following:

- Egg boxes
- PVC piping
- Fertilized eggs
- Landowner permission
- Permits, where applicable

Egg boxes can be purchased from a number of manufacturers. A local hatchery can give you more information, as well as supervising the setup and installation and providing fertilized eggs. Check with your local Fish and Game department to determine what local, state and/or federal permits may be required for incubation projects.

For more detailed information see the related How-To Guide, "Remote Streamside Incubation."

Copies of this document are available through Fish First, and can be found on the Web at www.fishfirst.org. You'll also find a library of how-to guides and fact sheets as well as other resources and information to help with salmon restoration projects made possible in part by grants from:



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