

Rearing of Freshwater Fish Larvae in Illuminated Net Cages

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Over the last 14 years a system for rearing the fry of pike, zander and coregonids has been developed that is highly efficient and inexpensive. Further tests have shown that many other fresh water fish such as perch, which rely on a diet of zooplankton, can also be used. Even species such as brown trout, which, as fry, are not so dependent on a diet of zooplankton, have proved to be easily adapted to this technique.

Many zooplankton species are attracted by light. This phenomenon can be used for rearing fish larvae by equipping fish cages with insulated underwater lights to attract zooplankton into the cages. Once inside the cages, the zooplankton provide a perfect diet for the fry. Eutrophic lakes are most suitable for this method because of their high zooplankton concentrations.

A basic model consists of a central floating platform from which 4 eight cubic meter net cages are suspended. Several modules can be linked together by torsion hinges to form a multi-unit production system, which although firmly coupled, is still free to move independently according to wave action. A pulley system enables the farmer to raise or lower the cages independently for occasional stock inspection, for thinning out and for net cleaning. An insulated low voltage direct current bulb is suspended in the center of each cage and operated 24 hours a day. Measurements have shown that the concentrations of zooplankton in the vicinity of the lamp are about 400 times greater than the natural zooplankton concentration.

In spring, each 8 cubic meter cage is stocked with 40,000 recently hatched coregonid larvae, each about 12 mm in length. In 8 weeks, after a steady diet of zooplankton, the average individual length is 4-5 cm. Due to the increased feed requirements at this stage of their lives, the rearing of coregonids in tanks or trays is very difficult. With the illuminated cage ensuring a constant supply of concentrated zooplankton, this critical period in the life of the fish presents fewer problems. An 80 percent survival rate has been achieved.

Net cleaning once a week, to prevent the build-up of detritus and algal growth on the mesh, as well as a weekly inspection of the lights and the stock means the farmer need only spend an average of one to two hours per day to rear 400,000 fry in 12 cages. During 11 years of continuous use, these modules have never broken down with a subsequent loss of valuable stock, even when pounded by 2 m waves which occur on Lake Kellerssee from time to time. This system is now being used with similar success at fresh water sites in Germany and Switzerland for restocking programs. Wider application of this system could well have far reaching benefits to commercial and recreational fisheries in North America.,