

Hatching and moving eggs to the first-feeding trays

Materials for initiating the hatching process

- Modified incubator(s) and hatching tray for collecting larvae (hereafter termed collecting tray; Figure 1)
- Water connection to the incubator (of the same quality/temperature as that of the rearing water)
- Egg pipettes (Ø 6 and 7 mm)
- Aquarium nets (a set of 5, 7.5 and 10 cm) for each modified incubator
- First-feeding trays and raceways must be prepared in advance (waterflow of 160-200 L/h)
- The trays must be placed in the raceway (Figure 2) in such a way that the water flows in from the side, and out from the bottom part of the tray. If the trays are not placed as described above, the larvae will tend to get stuck to the outlet on the sidewall.
- Disinfect all equipment before, in between, and after every operation

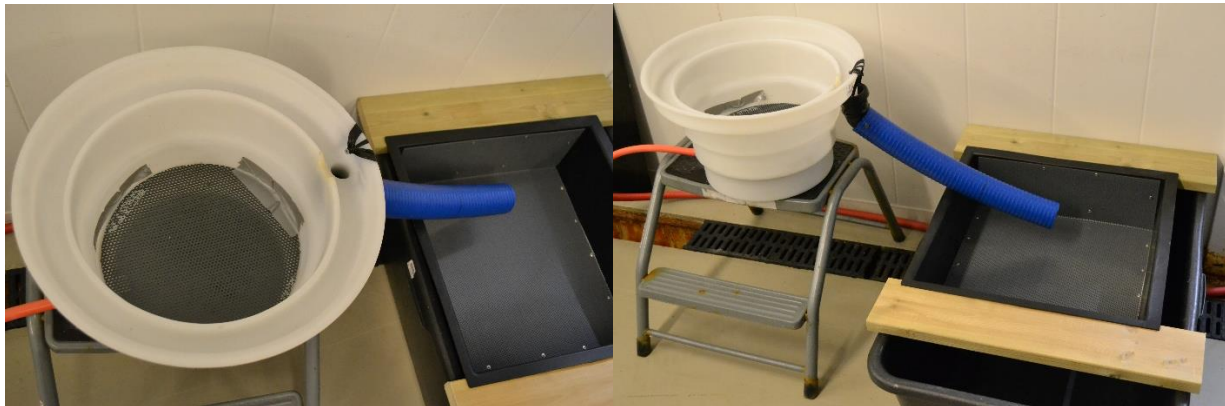


Figure 1: Modified incubator that was employed for the hatching process. It had a low mesh bottom to prevent eggs from sinking too much, and a tube connected to the run-off water for the fry to swim through into the collecting tray. The collecting tray was placed over a larger basin to collect the run-off water from the hatching tank and to keep the fry in water during the operation.

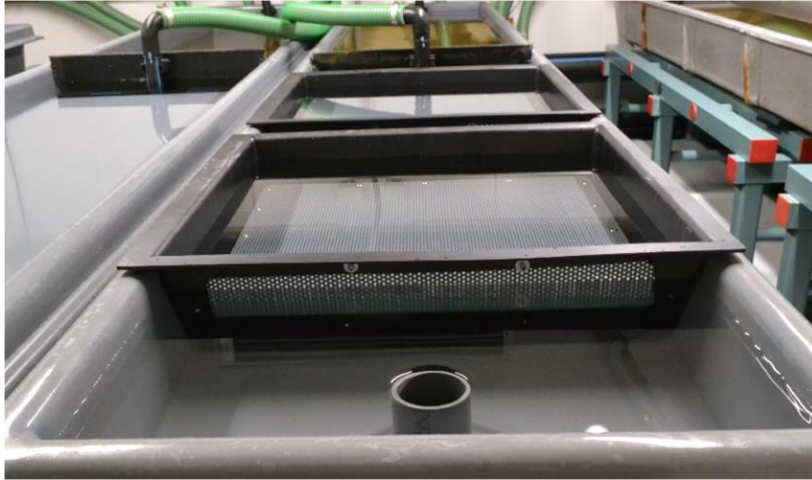


Figure 2: Regular hatching trays mounted in a standard raceway. Water inlet at the back (green tube) and outlet in the front. Reverse-mounted trays are recommended, to prevent larva getting stuck to the outlet on the sidewall.

The “Hatching-test”

Before evoking a synchronized hatching of all the egg batches, check if the larvae are ready to be fed, by following the below procedure:

- Pick a few eggs from the incubator and transfer them to a bowl of water
- Induce hatching by stirring the eggs or squeezing them gently to destroy the eggshell
- Check the larvae
- If the larvae have well-defined and big yolk sack, it is not ready to be fed
- Wait for a few days, and repeat the previous steps
- The yolk sack should be almost or completely invisible before the larvae are ready to be fed

Synchronized hatching

The first step in evoking synchronized hatching is by disturbing the eggs by swirling them. There are two ways to further the hatching, either through mechanical disturbance or by increasing the temperature of water. As for the mechanical disturbance, the eggs must be transferred to a plastic beaker filled with water at 6 °C. Next, they should be poured, back and forth, a few times quite briskly, between two beakers. As for the temperature-induced hatching, after the swirl-induced shock, the eggs must be transferred to the modified hatching incubator (Figure 1), maintained at 9

°C. The hatched larvae must be transferred to first-feeding trays. The feeding trays should be covered with a lid and there should be a light near the outlet of the incubator to lure the fry to drop down in the attached collecting tray, through the connected pipeline. This approach will prompt the larvae to follow the path towards the light, i.e., rise up to the surface of the incubator, then go via the connecting pipe and softly land on the attached collecting tray. The eggs are supposed to hatch within 24 hours, and those that do not hatch during this time can be re-treated (mechanically) and left for another 24 hours. Eggs that do not hatch after 48 hours will be of poor quality and should be discarded.

Transferring larvae to the first-feeding trays (regular salmon egg trays)

To transfer the larvae further from the collecting tray to the first feeding trays, use either a small aquarium net (fine mesh) or an egg pipette (7 mm). Both these methods do not usually harm the larvae. Nevertheless, when using a net, make sure that you do not collect too many larvae at a time, thereby avoiding damage to the larvae. Care should be taken to minimize the time that the larvae are out of water. Furthermore, for the first feeding phase, there should not be more than 1000 larvae in a tray. During the first few days, one could expect that the larva will lie on their side on the bottom of the tray. However, as days pass, they will become more active, especially during the feeding time.

First-feeding - See the first-feeding protocol

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