



**Figure 1**  
A listening buoy, an acoustic tag and a small salmon with an acoustic transmitter operated into its stomach.

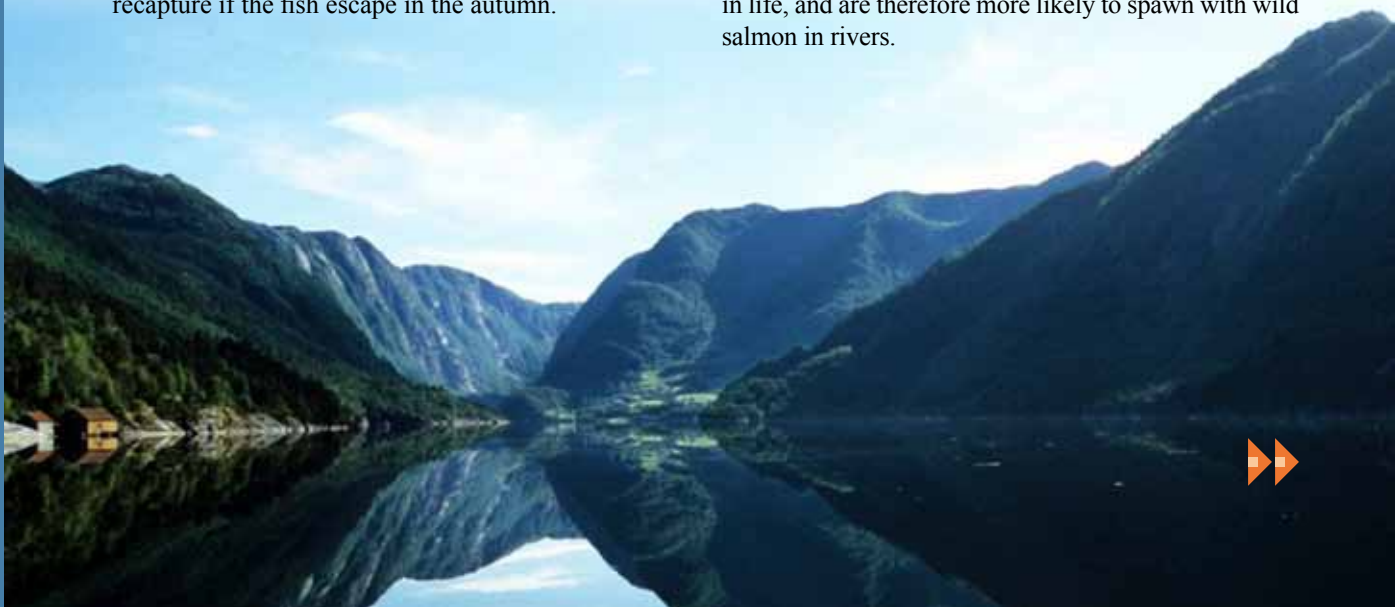
## The migratory instinct of escaped salmon smolts

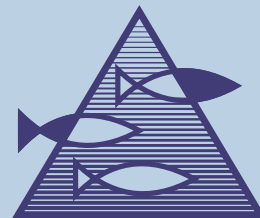
*Particular effort to prevent escapees should have high priority throughout the smolts first summer in the sea. Farmed smolts that escape in the spring follow in the footsteps of wild smolts, quickly migrating towards the ocean, before returning to the area where they were hatched to spawn in the rivers along with the wild salmon.*

BY OVE T. SKILBREI

Recent research reveals that this migratory instinct of smolts also remains strong in farmed fish (post-smolts) that escape several months later. The migratory instinct does, however, reduce over time, slowing migration and increasing the probability of recapture if the fish escape in the autumn.

From a number of release experiments, we know that farmed salmon smolts, like their wild cousins, migrate towards the sea if they are released or escape in the spring. There is reason to believe that fish that escape as smolts behave more naturally than fish escaping later in life, and are therefore more likely to spawn with wild salmon in rivers.





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## ►► The migratory instinct of escaped salmon smolts

### HOW LONG DOES THE MIGRATORY INSTINCT LAST?

If we have to take particular care to prevent the escape of young fish, as it increases the risk of interbreeding between wild and farmed salmon, we need to know more about how the migratory instinct changes with the seasons and the development stage of the fish. In order to answer this question, a study was performed in Masfjorden in 2008. First the migration patterns of farmed smolts released in May were observed, before new groups were released every six weeks over the summer and autumn. The smolts and post-smolts were fitted with acoustic transmitters, making it possible to monitor them using listening buoys located from Matre Research Station to the mouth of Masfjorden.

### RAPID MIGRATION IN MAY AND JUNE – SLOWER IN THE AUTUMN

The smolts released in May and June left the fjord surprisingly quickly, in just a couple of days. By mid-August, however, it was clear that the fish's urge to leave the fjord was gradually waning. This trend intensified over the course of September and October, at which time most of the fish remained in the inner fjord basin without showing any signs of wanting to leave the fjord.

### SLOW FISH GET CAUGHT IN THE AUTUMN

Over the course of the experiment, the fish in cages grew a great deal. The smolts released in May weighed an average of 160 grammes,

whilst the average weight of the fish released in October was 1.5 kg. In the autumn it was much easier to catch the fish, both because they were bigger and because they stayed longer in the fjord. The proportion being caught in the local area therefore increased gradually over the course of the releases in August, September and October, finally reaching tens of percent. They were either caught in nets, trolled or by angling.

### HIGH RISK THROUGHOUT THE SUMMER

The results of these migration studies show that salmon retain their migratory instinct for many weeks after leaving fresh water and being put in cages in the sea. This very much fits in with the adult salmon that have been recaptured returning from the sea from a batch of tagged fish released at Matre from May to August 2005. Over the period 2006–2009, at least as many large salmon have returned from the releases in June and July 2005 as from the smolt release in May 2005. The results mean that there is good reason for fish farmers to make a particular effort to prevent escapes throughout the first summer after the smolts have entered the sea. Both the size of the fish and the speed at which they leave the location suggest that it is very difficult to recapture fish that escape at such an early stage of development. Preventing escape is therefore the only practicable solution.

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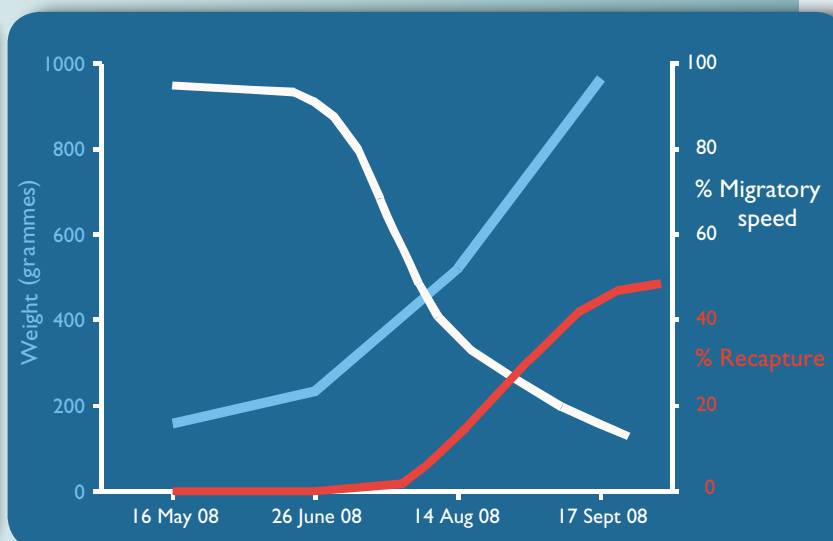


Figure 2  
Schematic summary of the migration experiments in Masfjorden in 2008.

