



The Girnock and Baddoch fish-traps on Deeside



Figure 1. The Girnock traps. The fence in the foreground guides adult fish into the adult trap on the left. The smolt trap can be seen in the background.

The Girnock and Baddoch Burns

Fisheries Research Services operates two sets of fish-traps on spawning streams in the upper catchment of the Dee. The first, which began operating in 1966, is located on the Girnock Burn near Ballater. The other, which is sited on the Baddoch Burn, near Braemar, was installed in 1988.

The traps catch adult salmon migrating upstream and juvenile salmon migrating downstream. Fish are counted, examined and tagged before being released to continue their journeys. Adults migrate into the streams only in October and November, close to spawning time. The juveniles they produce leave as smolts after either two or three years of stream life.

Spawning in both streams is dominated by early-running, 2-sea-winter fish (i.e. spring salmon). A few small 1-sea-winter fish are also present (i.e. early-running grilse). In recent years, the number of early-running fish has fallen markedly across all the Scottish rivers and, in some places, insufficient fish may be returning to re-populate rivers and streams. The Dee fish-traps provide important information about survival rates, the number of fish returning to spawn and the importance of catch and release.

Survival to spawning

The proportion of smolts that survived to spawn each year is shown for both the monitored streams in Figure 2. In the early years, fisheries in the ocean, on the coasts, and in the Dee estuary killed fish before they could spawn. Anglers also caught and killed a considerable number of salmon. However, by 1995, the net fisheries had been stopped or severely curtailed, and anglers were releasing many of the salmon they caught. Some key dates for fishery management are indicated in Figure 2. Each of the management measures was expected to result in an increase in the number of fish returning to the traps. Unfortunately, however, the effect of each successive measure was matched or exceeded by increasing in natural mortality in the ocean.

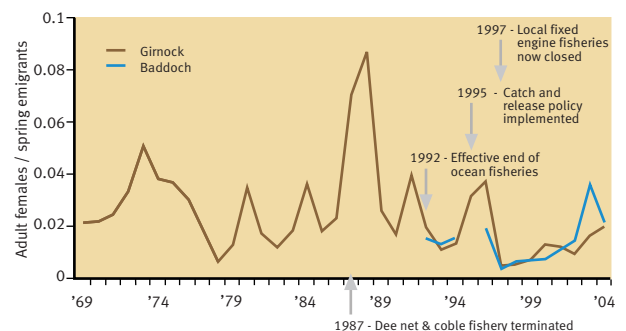


Figure 2. The proportion of the smolts from each year that survived to spawning.



In 1997, the proportion of smolts surviving to spawn reached its lowest level. Since then, however, survival has gradually increased. This increase is due, in part, to a gradual improvement in marine conditions and, in part, to the increasing practice of catch-and-release.

Numbers of spawners

Analysis of the Girmock trap data shows that 30-40 females spawners are required to stock the stream fully with young salmon. From 1997 until 2004 the number of female spawners fell below the minimum required each year (Fig. 3).

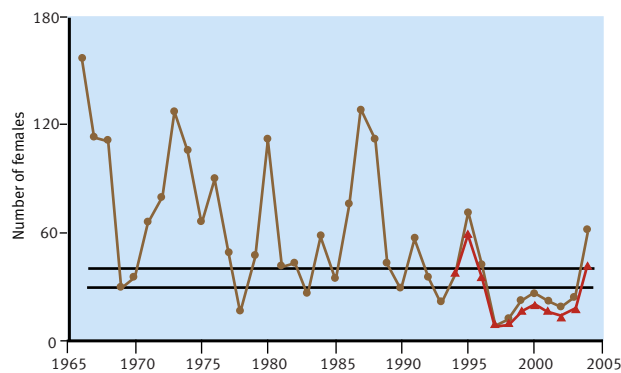


Figure 3. The number of adult female fish returning to the Girmock Burn (brown) and the numbers expected without catch-and-release (red). The target level of 30-40 spawning females is indicated.

Catch-and-release

Tagging studies show that catch-and-release is effective. Released fish survive and they go on to spawn. A variety of different studies indicate that anglers catch about 30% of early-running salmon. Knowing the proportion of salmon that were released by Dee fishers, we can therefore estimate the number of fish that would have returned in the absence of catch-and-release. These numbers are also shown in Figure 3. It can be seen that catch-and-release has contributed a substantial number of fish to spawning at a time when they were sorely needed.

Future prospects

Figure 3 shows that in 2004, the number of spawning fish in the Girmock Burn was more than adequate for the first time since 1996. The increase was due to the combined effects of three factors — the increasing practice of catch-and-release, an unusually large run of smolts in 2002, and gradual decreases in natural mortality in the ocean in recent years. It is possible that the decreases in marine mortality are early signs of a welcome trend — although several more years must elapse before this can be established.

If a trend does exist, then future returns and future fisheries will be more likely to increase than to decrease year on year. However, changes are unlikely to be consistently in the desired direction. Continued monitoring will therefore be necessary and, in spite of the success of the 2004 fishery, a cautious approach is still appropriate.

Anglers also will probably conclude that it is still too soon to risk any reduction in the effectiveness of the catch-and-release policy. Hopefully, one of the rewards for continuing restraint will be that populations of spring salmon recover their former vitality at the earliest possible time.

Summary

- Survival rates for Girmock and Baddoch spawners have been very low in recent years although they have improved slowly since the low point in 1997.
- In 2004, the number of spawners exceeded the minimum requirement for the first time since 1996.
- Over recent years, catch-and-release has contributed spawners that were badly needed to safeguard the future of the monitored salmon populations.