

## Lough Carra's brown trout population

The population of brown trout *Salmo trutta* in Lough Carra is of great importance in two respects: firstly, as the dominant native fish species it performs an essential and pivotal role in the ecology of the water body and, secondly, because of the longstanding value of the lake as a recreational angling resource. As a result of this latter point, the Fisheries Board (now Inland Fisheries Ireland) has shown an active interest in monitoring the stocks of trout and in controlling the population of predatory pike *Esox lucius*, a non-native species thought to have been introduced centuries ago and believed to have a serious negative impact on the trout population.

Arising from the Fisheries Board activities are two sets of important data. The first consists of the results of their "stock assessments" carried out in 1978, 1979, 1980, 1981, 1986, 1996, 2001 and 2009. The second dataset derives from their annual gill-netting exercise to remove as many pike as possible from the lake.

It should be noted here that Dr Martin O'Grady has agreed to provide the Board's stock assessment reports in electronic form for inclusion in this website and it is hoped that this information will be forthcoming soon. Meanwhile, in order to make a summary available, I have extracted the most important information from their 1996 report and have included the 2009 results for comparison. The worrying outcome of this is that the 2009 assessment shows an approximately 50% decline from the 2001 population with stocks at their second lowest level since 1981 (see below).

### The stock assessments

Although fish stock assessments were carried out in eight years (see above), the first three occurred when Lough Carra was being artificially stocked with hatchery-reared two-year-old trout. In 1981, although some of these stocked trout would have been present in the population, the majority of trout captured were "wild" fish. Therefore, for the purposes of comparison, the assessments from 1981, 1986, 1996, 2001 and 2009 are used.

The Fisheries Board uses a standard methodology which involves setting the same number of gill nets in the same 40 locations on Lough Carra for a set period of time (overnight) at the same time of year. The fish caught are measured, scale samples taken (to determine age) and released if still alive. Those killed have their stomach contents examined.

The main outcome of this exercise is the possibility to compare stocks between assessments. This is done using a figure for "catch per unit effort" (cpue) which, in this case, consists of the total number of fish caught divided by the number of nets used. Since the number of nets used remains constant, and they are set in the same locations for the same length of time, at the same time of year (spring), the cpue figures should provide a reasonable means of monitoring changes in the trout population. The data do not permit an estimate to be made of the total number of trout in the lake.

Figure 1 shows the cpue for the five years for which data are available. These results apparently show quite clearly that the population has fluctuated considerably, with the lowest level in 1986 and the highest level in 2001. The decrease of close to 50% in cpue from 2001 to 2009, assuming the data are reliable, is a worrying trend which is

supported by much anecdotal information from anglers, as well as the data from the pike culling programme (see below).

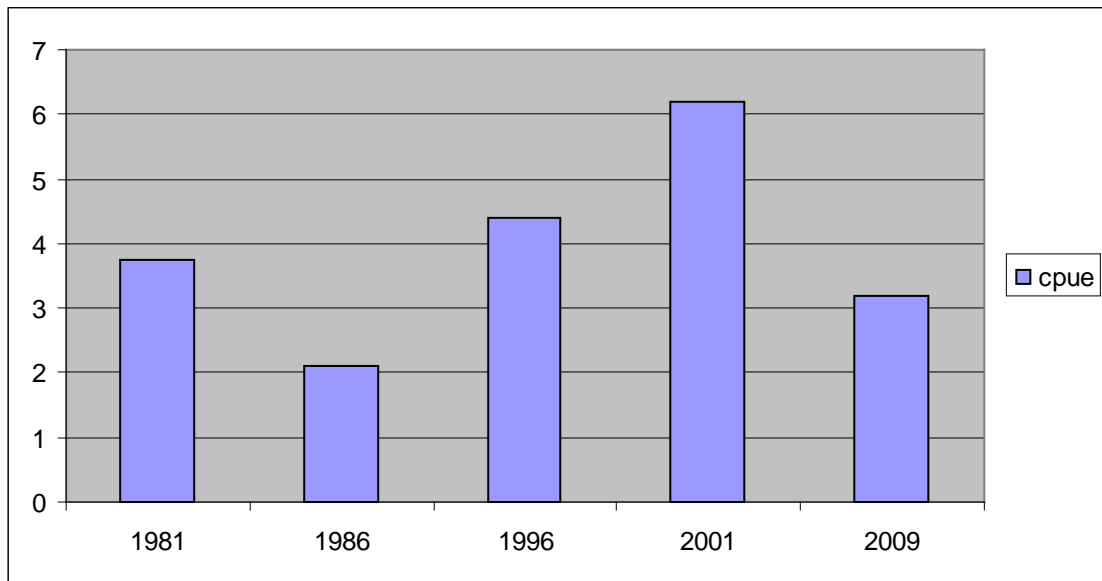


Figure 1. Trout population fluctuations illustrated by cpue data from the Fisheries Board stock assessments.

### **Pike culling data**

The Fisheries Board (now IFI) has been carrying out an annual operation to remove pike from Lough Carra. This is done by setting gill nets in suitable locations in late winter/early spring and killing all pike captured. The purpose of this exercise is to reduce the level of predation on the brown trout population. In the course of this operation, trout are also caught and their numbers recorded. The methodology used is too variable to permit a reliable estimate of fish stocks, but what is possible is to use the data to obtain an indication of what trends might be occurring with respect to the relationship between the pike and trout populations.

For each year from 1997 to 2010, inclusive, we have the data for the number of pike caught and the number of trout caught “incidentally”. Thus, we have data that might show how the trout population has varied in relation to the pike population. Although a very crude measure, the results are quite interesting in that they suggest that from 2001 there has been a steady decrease in the proportion of the catch made up by trout (see Figure 2 below). Without details of netting methodology (and any changes in this), it is not possible to draw firm conclusions from these data, especially as observations from many anglers indicate that trout behaviour has changed in recent years (perhaps due to the declining ecological status of the lough). Nonetheless, these results support the conclusion reached from the 2009 stock assessment that the trout population has declined substantially over recent years

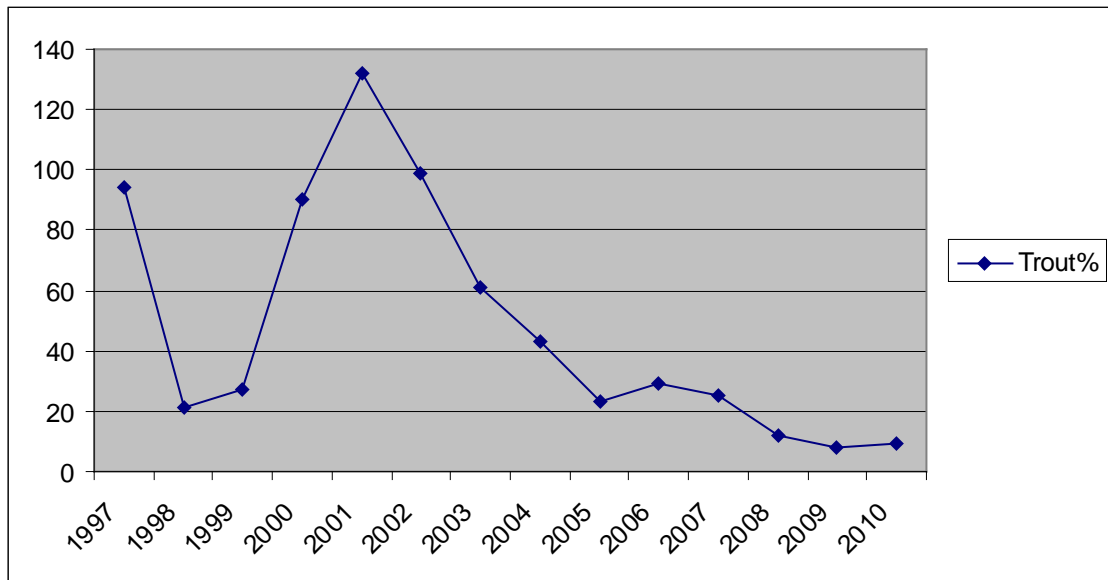


Figure 2. The changes in trout numbers caught during pike culls, shown as a percentage of the number of pike caught.

### Conclusions

Since there is only occasional, sporadic monitoring of the trout population, and the resultant data show considerable fluctuations, it is not possible to draw firm conclusions about long-term trends. However, the data that are available all indicate that in recent years the trout population has declined steadily and that in 2009 it was the second lowest recorded and around 50% down on the 2001 level.