

parr are supported by fry. How many fry it takes to raise a parr to the smolt stage we cannot tell, but it must be an enormous number.

The shelldrakes (mergansers) are accused of devouring the salmon ova. Considering that the ova is buried in the sand immediately after being fertilized and is guarded by the male, while this is in process, it is not likely that the number taken by these birds can be a very large proportion of the whole and must be small in comparison with the number of fry taken by the parr. At this stage, the worst enemy of the salmon is undoubtedly the salmon itself.

The parr, to the smolt stage, are thus obviously limited in number by the amount of fry in the river. If it can be established that the kelt or grilse eat in fresh water they are probably the parr's worst enemy. If not, that distinction falls to the lot of the kingfisher who undoubtedly consumes considerable numbers of them.

Whether they seriously reduce the final number that go to the sea as smolt is a question of more than one aspect. A reduction of parr means an increased number of fry and, therefore, more food for the remaining parr who being better fed may be stronger and more fitted to survive later dangers. If the birth rate is markedly greater than the food capacity of the streams, kingfishers may have no harmful effect. They should not be finally condemned until this point is investigated.

The population of fry produced by the birth rate is greater than can be raised and the surplus must necessarily be reduced, if not by one agent, then by another. There is a point to be reached when even an immense increase in the number of fry introduced into the streams will be ineffective in increasing the output of smolt. As the birth rate has been evolved under present conditions of food supply and enemy factors, the natural conclusion is, that the kingfisher and the shelldrakes are compensated for in it. The natural increase was sufficient to stock the river in the past to abundance, in spite of these enemies, and there is no reason to suspect that it is less effective now. Hence if man introduces sufficient fry to compensate for the ova that should be laid by the breeding