Some Thoughts on Trout Management

By

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Fishery management is action designed to make the best use of a natural resource. The critical words are, of course, 'best use". It all depends on what your objectives are, on the one hand, and what sort of natural system you are dealing with. I include dams as natural systems, even though they result from human intervention. Once established, an artificial pond or lake becomes an ecosystem subject to the same biological processes as any other body of water.

Predation is the most significant process from the fishery managers' point of view. Trout are predators that depend on the production of all the different aquatic organisms that go to make up their diet. Trout are, themselves, subject to predation by other fish (even members of their own species), platanna frogs, birds, otters and, of course, humans. Anglers are normally the top predators that kill trout. Because of the effect of angling on the trout population, the practice of catch-and-release (CAR) has become a world-wide management tool (Except, I believe in Germany). CAR is regarded by many as a means of enjoying your cake without eating it, but it is subject to objection on several grounds. The main point about CAR is that it is effective only in cases where the number of trout in water cannot sustain angling pressure if each fisherman takes his catch. In heavily fished waters with a limited stock of trout, sport may be maintained at an acceptable level. In such cases, the only alternative to CAR is the highly artificial and expensive system of put-and-take.

Fortunately most club waters in South Africa are not over exploited. Indeed, the percentage of stocked trout taken by anglers indicates, in many cases, that natural mortality accounts for more deaths than angling. CAR makes sense only if there is a good chance of recapture after the fish has been caught and liberated. One might argue that sparing a female hooked in a river is worthwhile to preserve the breeding stock. Obviously that does not apply in a dam where spawning does not take place. Even in a river, there is generally no need to worry about preserving the breeding stock. Most of our Drakensberg streams provide good spawning grounds where only a few females are required to supply enough eggs to yield an ample population of young trout. After a severe drought or a catastrophic flood, such as that of May 1959, a shortage of breeders may occur. A more frequent problem is an excessive number of young fish. A 500g female carries 800 to 1000 eggs so a normal rate of survival to the fingerings stage ensures that the progeny of only a few parent trout will be competing for available food supplies. And the more severe the competition the less growth is possible for each young fish.

In a river with an oversupply of young fish, a sensible restriction is what is known as a window limit. This implies taking out fingerlings (believe me, a 15cm trout, fried crisp in hot butter is well worth putting in the pan), but liberating what are generally regarded as take-able fish. The lucky angler who lands a trophy fish should be encouraged to keep it as an exhibit to arouse the jealousy of his friends. Any trout larger than the average for a particular water may be regarded as a trophy for the purpose of the window limit. It has probably reached an age when it will not live much longer. Younger, actively-growing fish are more likely to be caught again after release.

Whether or not a window limit has merit on a dam depends on the stocking policy and whether the object is to provide consistent fishing or a few trophy fish. If the latter, care must be taken not to overstock. Heavy stocking may result in overloading the carrying capacity, with consequent stunting. Trophy fish are produced only if growth is rapid. Remember that few rainbows live more than four years. If trophy fish are to be produced, it is definitely desirable to spare the fastest growing one-to-two-year old females. Male rainbows mature

earlier than hen fish and suffer a severe set-back in growth as the milk sacks develop. Females, of course, also suffer a set-back when eggs develop. That is why a female that does not mature at the usual age of two years will reach a larger size than normal. Genetically modified trout that remain sterile have an exceptional capacity for growth.

Under-stocking to the point at which anglers can expect to hook less than one fish per day is not going to commend a club committee to the members. Even the most avid trophy hunter has limited patience. Stocking should be based on carrying capacity of each water. This can be estimated by monitoring catch returns to follow growth and condition of the fish. One important aspect of stocking is the size of the stockies. Small fish re cheaper, easier to transport and may grow out rapidly under ideal conditions. But the smaller the stockies the less predictable are the results. Experience has shown that the introduction of what seems a generous allocation of three inch trout may be a fruitless exercise. All too often the little hatchery fish that leap so hopefully into a dam simply vanish without trace. At that stage young trout tend to remain in a shoal that is vulnerable to predators or seek escape down an overflowing spillway. Some years ago a trap in the spillway of the upper dam at Himeville Nature Reserve collected a whole consignment of recently introduced fingerlings.

It has been said that trout have been kept in a hatchery pond for months have lost their natural instinct to capture live food. But there is no evidence for this. A well run hatchery produces vigorous fish that quickly adapt when released into open water. Provided the fish are still young, the bigger the stockies the higher the percentage that will survive to provide sport for the angler. Old trout, that have already spawned, are a poor option, only to be recommended for a put-and-take fishery where quality is of no concern. Younger fish may also be of poor quality if kept confined in overcrowded conditions. Worn or malformed fins are a sure sign of past overcrowding.

Dams differ in their carrying capacity, depending on the amount of available trout food in the form of Daphnia and other planktonic crustaceans, midge larvae, mayfly nymphs, tadpoles and snails. Fish, in the form of minnows or small bass may also be eaten, but they compete with trout for all the smaller items in their diet. Indeed it is well known that bass are undesirable in a trout dam, although the presence of bass should not rule out maintaining a trout population, provided fairly large hatchery trout are stocked.

South African trout waters seldom have a carrying capacity of more than 40 to 50kg/hectare. A 5ha dam cannot therefore be expected to provide for more than about 200 fish averaging 1kg. Ideally, a dam should be stocked at about 60% of carrying capacity and fished to thin out the stock so as to ensure that, as the fish grow, carrying capacity would not be exceeded. In practice, losses from natural causes cut down the populations, often to the point where not enough trout remain to give a reasonable return to the fisherman. Any attempt to “save” the fish through CAR may thus be foiled. If the one to two year old trout are not harvested by the anglers, many will simply disappear. Obviously, a greedy club member should not be allowed to kill more than a reasonable share of the catch. But failure to harvest annual production is wasteful. I well remember being given permission to cast a fly on a private dam that had not been fished since it was stocked three years before. Half a dozen trout were soon on the bank, but they were wretched old things in poor condition, not even good for smoking.

Above all, a club committee is obliged to take whatever management decisions will meet with member’s approval.