Wild Trout Trust

View on Stocking - Summary

Many fisheries stock farmed trout as a means of boosting catches. These include (but are not limited to) reservoir trout fisheries with no natural trout production. However, stocking fish into waters that support wild populations could cause damage through inter-breeding and competition.

Inter-breeding

Salmo trutta, the brown trout or sea trout*,* is one of the world's most extensively studied species for its genetic and physical variability. The species exists as a hugely varied collection of characteristic forms and this differentiation and local adaptation is maintained across distinct breeding populations. The wealth of peer-reviewed, published science highlights a number of key findings:

- Stocking with fertile, domesticated (farmed) fish does not make a positive contribution to wild populations. Instead it reduces the genetic variation of wild brown trout populations;
- Reduced genetic variation, both between different populations and within a given population of wild brown trout, has been demonstrated to reduce their local adaptation and fitness (fitness being their ability to survive and reproduce) – it may also dilute or eradicate characteristics that have particular interest to anglers (e.g. sea trout and ferox trout);
- Domestic strain (farmed) fish do not have the equivalent genetic potential to adapt to survival and reproduction in the wild (when compared to undomesticated fish);
- Even when there has been extensive historical stocking with fertile domesticated fish, it is frequently still beneficial to cease such stocking. Recovery of a locally-adapted population may be possible via natural selection once the system no longer has to cope with the influence of domesticated fish.

Avoiding some of the detrimental impacts of stocking farm-bred, fertile, domesticated trout is *potentially* possible by using native broodstock schemes, where parent fish are caught from the wild locally and their offspring reared for stocking. However, in many situations, such schemes carry their own risks. This is because:

- A good understanding of the existing native population genetic structures is required to avoid causing more harm than good (for example by inadvertently mixing co-existing but distinct wild populations);
- There will be some loss of in-stream breeding by removing wild broodstock from donor populations;
- Inevitable domestication via artificial breeding and rearing from wild broodstock results in offspring that differ significantly from the wild populations; this has been demonstrated to occur over just a single generation.

Using all-female, sterile, triploid trout as stock fish is another way of avoiding the detrimental impacts of inter-breeding. Triploid trout have been treated with heat or pressure at the egg stage to induce infertility, hence the risk of interbreeding with wild fish is removed.

Competition

Stocked and wild trout may compete. Trout are territorial and compete for the best positions (lies) where they can find food whilst expending the least energy. Often the number of favourable lies in a water is limited, so an influx of fish increases the number of "fights" for territory, increases energy expended, displaces fish (both stocked and wild), and causes fish to take up unfavourable lies making them more vulnerable to predation or exhaustion. Stocking the right number of fish is therefore important to minimise competition and get best value from the stocked fish.

Scientific evidence suggests that overall introduced biomass (weight) of trout is more important than their precise nature (domestic or wild) in determining impacts by competition. Given that, for competition, "numbers stocked" trumps "characteristics"; the large number of stock fish added to some of our rivers is likely to make "triploid versus diploid" comparisons irrelevant *when assessing only competitive impacts*.

Summary

Overall, the best option for wild trout and their rivers is to operate as a catch-and-release wild fishery. If, on the other hand, it is decided to add supplemental fish - it is far better to use sterile (triploid) stock in preference to fertile (diploid) stock. With fertile fish, there are potential competitive impacts *as well as* genetic impacts. With infertile fish, only potential competitive impacts exist and these can be minimised by simple control of the density and the management of stocking.

Simple "Dos" and "Don'ts"

- **DO** *consider whether you need to stock your fishery* (or whether it could operate on a wild catch and release basis)
- If you stock, **DO** *try to assess the density of adult trout that your fishery can realistically support and match your stocking densities appropriately*. This will minimise any negative competitive impacts (as well as reducing wastage of stock fish and money). The WTT can advise on broad "upper realistic limits" in terms of density of adult fish per m^2
- **DO** add fish in small batches on frequent occasions throughout the season (rather than as one or two bulk stocking events). This will help to avoid damaging "peaks" in competitive/predation impacts from stock fish and should maximise your catch returns on your costly stock fish
- **DO** try to get the majority of stock fish out of the river by the end of the fishing season. They are unlikely to over-winter successfully, may well compete with wild fish whilst they struggle to survive the lean winter months and could also attract cormorants and saw-bill ducks.
- **DO** *use only infertile stock fish*
- **DO** *ensure that the habitat, water quality and quantity in your fishery are all as good as they can be*; both wild fish and stock fish need a good home in order to survive (WTT can advise here too)

- **DON'T** *kill wild fish for the table* – for every wild adult fish that exists; many hundreds of its brethren will have perished as eggs and particularly during juvenile stages. Wild populations are consequently very sensitive to over-exploitation. Fish suppliers can mark your stock fish so that anglers can quickly tell them apart.