

Science Project: Triploid Trout in Supported Trout Fisheries

Summary SC030207/S2

This report presents a preliminary analysis of the issues associated with stocking triploid brown trout and a project framework to undertake a risk assessment for an EA policy option to cease consent for stocking fertile brown trout from farmed stock into native trout waters, and their substitution with all-female triploid brown trout in this class of water. The output aims to inform and support the National Trout and Grayling Fisheries Strategy and its stocking policy, together with suggesting a strategy for future R&D.

Stocking of farm-reared, fertile brown trout is a common practice throughout the UK, to support natural wild brown trout populations and enhance stocks for angling. However, there is concern amongst population geneticists and conservation groups that stocking practices may cause undue risks to natural wild brown trout populations. The risks identified include: disruption of genetic integrity of wild brown trout stocks from interbreeding, as well as behavioural interactions and predation. All-female triploid brown trout are also regularly stocked to rivers and streams, but, because they do not mature sexually and thus reproduce, this potentially removes the risks to genetic disruption of natural brown trout stocks. Previous studies and recent debate identified a number of perceived potential hazards linked to stocking with triploids related to differences in behaviour and performance (i.e. survival and growth) of stocked triploid and diploid trout. However, the actual impacts of stocking triploid brown trout on the behaviour of wild brown trout, their stock dynamics and the wider environment are unknown.

Triploids are of interest to aquaculture because they are expected to be sterile, to grow faster than diploids when they reach the age of sexual maturity, and to exhibit higher survival rates than diploids because of the reduced biological costs associated with reproduction. In the UK, production of all-female triploid trout took off on southern chalk streams when use of malachite green was restricted, because triploids suffer far lower winter mortality from secondary fungal infections than farmed diploids.

However, information on the performance of adult triploids is equivocal. For some species, adult triploids outperformed diploids in growth and other production characteristics, whereas the triploids of other species did not possess superior performance traits. The literature on impacts of triploids on wild stocks compared with diploid fish was equally ambiguous, and showed the need for studies to assess the efficacy and hazards associated with stocking triploid fish (instead of diploids) to clarify the position. Potential hazards associated with stocking triploid rather than diploid trout arise from the theoretical possibility of interference with spawning activities of wild stocks, increased competition and subsequent loss of growth performance of wild stocks of brown trout, alteration of fish community structure, suppression of recruitment processes in wild populations and increased fishing pressure and mortality of wild stocks. Each of these hazards needs evaluating both individually and synergistically to determine the relative risks of stocking all-female triploid brown trout or fertile diploids. Furthermore, many of the identified hazards may be managed through control of appropriate stocking strategies to minimise their risk. Therefore, the capacity of the protective policies in the National Trout and Grayling Fisheries Strategy (Section 4.2.2 and Section 5 of the NTGFS), together with the Section 30 consenting process, to manage the risks needs to be evaluated.

A strategy and protocol for an R&D project to assess fully the risks from stocking triploid brown trout on wild fish stocks is offered. This includes a programme of activities and provisional costs, together with a logical project framework against which the research programme can be monitored. The project proposal

essentially examines the effects of stocked, female triploid brown trout on wild stocks, in support of the National Trout and Grayling Fisheries Strategy and its associated stocking policy. It evaluates the range, nature and degree of impacts of stocking triploid fish (compared with diploid) on wild trout populations.

This Summary relates to information from Science Project SC030207 reported in detail in the following output:-

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