

20 April 2020

ID: 2019

Rasmus Gabrielsson  
North Canterbury Fish & Game Council  
595 Johns Road, Harewood  
Christchurch 8051

Dear Rasmus

We are collectively responding to your request for our opinion on North Canterbury Fish & Game Council's (NCF&G) recent decision to cease hatchery production of chinook salmon to support sea-run fisheries.

The decision to close the chinook salmon hatcheries during a time when wild salmon runs are in crisis may seem counter intuitive to some. Over the past decade, NCF&G have administered the release of about 200,000 salmon smolt annually into the Waimakariri and Rakaia Rivers, with undocumented ova planting also occurring throughout the region. The smolt releases were undertaken with the intention of augmenting angler catch and enhancing wild salmon runs. However, research both within the Canterbury region and from overseas shows that in most cases hatchery releases fail to improve fisheries in the long-term. In fact, there are many instances where hatchery release programmes have been demonstrably damaging to wild salmonid populations. Once released, hatchery salmon can breed with wild salmon and reduce recruitment rates by producing offspring with poor survival rates relative to wild fish pairings. Furthermore, hatchery fish can consume resources that would otherwise go to wild fish with higher survival rates (i.e. higher fitness).

If hatchery operations are undertaken at a vast scale they can produce good returns for anglers— albeit at the expense of the wild-run component of a fishery. For example, some hatchery release programmes in Japan and North America support commercial and recreational fisheries. However, these operations are undertaken with a level of state-subsidised resourcing that is orders of magnitude above what would ever be available in New Zealand. NIWA trialled moderate-scale hatchery releases in New Zealand during the 1990's and showed that even well-resourced hatchery programmes here produce poor return-rates relative to overseas.

The sparse data that are available from the recent NCF&G hatchery operation at Montrose suggest paltry return rates for anglers during most years. From an estimated 200,000 smolt released annually, numbers of returning adult fish (adjusted for a 40% angler catch rate and 10% strays) have varied from about 1000 to just 41 over the 2007 – 2017 period, with an average return rate of 433. In recent years, (adjusted) returns have been very low, between 260 – 41 fish over 2015 – 2017. This means that the estimated range of survival rates for released smolts is at best 0.5% and at worst 0.02%, depending on the year, with an average of 0.2%.

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Hatcheries are expensive to run and consume a substantial amount of staff time, even if they are supported by volunteers. The NCF&G licence holders ought to be aware that a substantial proportion of their licence revenue has been allocated to smolt production for returns of only 10's to 100's of adult salmon to anglers per annum. Before considering other pros and cons of running hatcheries to support sea-run salmon fisheries, NCF&G licence holders need to consider if the numbers of catchable salmon produced from hatchery releases warrant the investment.

Recently the National Fish and Game office contracted the Cawthron institute to undertake a review of Fish & Game New Zealand's hatchery release practices. Across the country we found many instances of hatcheries being put to effective use to support put-and-take style fisheries. However, our case study of NCF&G found an alarming lack of basic monitoring to assess the effectiveness of the hatchery programme and misleading reporting regarding salmon smolt production (See report online: <https://fishandgame.org.nz/dmsdocument/1418>).

Since writing that report we have become aware that commercial salmon farm ova were being used to produce salmon smolt for release into the Waimakariri and Rakaia rivers, as well as for various ova planting projects. The practice of sourcing eggs from salmon farms has been condemned internationally because it can introduce domesticated salmon traits into wild populations, reducing overall population fitness and run strength. By way of analogy, consider the survival rates of battery-farmed chickens (and their progeny) when released into the wild.

The hatchery stocking practices, including the sourcing of commercial stock ova for smolt releases, has likely reduced the resilience of the wild East Coast salmon populations at a time when they are subject to unprecedented pressures from increasing ocean and river temperature, hydropower, water abstraction, spawning and rearing habitat degradation associated with intensified agriculture and over harvest. Fish and Game can make a positive contribution to nursing the wild salmon fisheries on the road to recovery by concentrating management efforts on factors it can control (e.g. harvest regulations) or influence (e.g. advocating for better environmental flows and habitat protection) and avoiding practices that science has demonstrated to be potentially damaging (e.g. hatchery liberations).

We support the collective management direction of NCF&G and the Central South Island Fish and Game Council to reduce harvest rates. In our opinion, implementing a season bag limit with the daily bag limit is the best available short-term management option to maintain the viability of the East Coast salmon fisheries. Most salmon anglers catch only one or two fish per season and will be unaffected by the regulation changes. If anglers collectively abide by the new rules there will be more salmon available for all anglers to catch and more salmon successfully reaching the spawning grounds to improve the chance of better runs in the near future.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'R. Holmes'.

Robin Holmes  
Freshwater Ecologist  
Cawthron Institute

A handwritten signature in blue ink, appearing to read 'J. Hayes'.

John Hayes  
Senior Scientist, Freshwater Fisheries  
Cawthron Institute