AUCKLAND/WAIKATO FISH & GAME

TO: REPORT TO COUNCIL
FROM: DR. ADAM DANIEL
SUBJECT: **The impact of trout farming on wild fish populations in New Zealand**
DATE: MAY 23, 2013

Executive summery

Fish & Game New Zealand has a stern policy opposing fish farming and the importation of rainbow trout due to the excessive and unnecessary risk posed to the wild trout population by introduction of disease and exploitation. The enormous risks posed by the legalization of trout farming to one of our nation's most valuable assets far outweighs the miniscule profits that may be gained by a few individuals if trout farming is legalized. The following bullet points outline the most substantial risks posed by trout farming:

- **The introduction or spread of disease by farmed fish may irreversibly devastate wild trout populations.**
- **Creating a market for trout will increase poaching and reducing legitimate angler opportunities.**
- **Escaped fish pose a serious threat to the genetic health of wild trout.**
- **Water pollution from trout farm effluent has significant effects that persist for up to 12 km downstream.**
- **Antibiotics and chemical treatments used to keep overcrowded fish alive in trout farms may impact human health and make wild fish less valued by anglers due to contamination.**

Recent political history

The sale of trout is prohibited under the Conservation Act and Fisheries Act. In the early 1970s agricultural lobby groups promoted legislative changes to allow for salmon and trout farming despite the considerable risk posed to wild fish stocks. The Labour led government compromised by only allowing salmon farming. The issue of legalizing trout farming was again raised in 2010 by aquaculture companies and Federated Farmers. Fortunately the National Party recognized the overwhelming risk posed by farming to the trout fishing industry and has extended the prohibition on the importation of trout until November 2015 effectively prohibiting trout aquaculture. This ban is not unusual as other government agencies (Western Australia and the State of Alaska) have banned the importation of rainbow trout citing the high potential of disease outbreak. Fish & Game New Zealand remains strongly opposed to commercial trout farming and the importation of trout flesh into New Zealand and will vigorously defend this position if trout farming lobbyist raise the issue again.

Disease

The biggest risk of trout farming is the unintentional importation of disease that spreads to wild trout populations. If a new disease enters New Zealand it will be nearly impossible to prevent it from entering the wild population of trout and could permanently devastate the recreational fisheries. Several examples of population level impacts have been documented overseas including the introduction of Whirling disease (*Myxobolus cerebralis*) to North America and the introduction of a devastating skin parasite (*Gyrodactylus salaris*) to Atlantic salmon in Norway. The Norwegian disaster resulted in a near complete collapse in the Atlantic salmon population likely caused by importation of fish from Sweden. The Norwegian government has launched an amazing campaign to eradicate the parasite by poisoning entire rivers killing all fish. A total of 24 rivers have been poisoned with millions of litres of rotenone and then restocked with parasite free fish. Although this extremely destructive and costly treatment may ultimately work in Norway it is important to remember that in the New Zealand context the cost of treating even small rivers would far exceed the operating budget of Fish & Game.

As documented in North America and Europe it is very likely that existing and imported diseases would be spread quickly throughout New Zealand through the transfer of farmed fish. Diseases such as Whirling disease (*Myxobolus cerebralis*), currently present in Canterbury but not in the North Island, would likely spread across the county due to increased movements of trout from hatcheries, as it has done in other countries.

In addition to the risk of spreading disease to the wild population the use of treatments can have negative impacts on wild populations. Trout farming is ultimately a business for the sole purpose of making a profit and thus low overhead costs and maximum production are standard practice to make trout farming profitable. Confinement and high stocking rates are stressful on farmed fish greatly increasing the frequency of disease outbreaks that can affect both farmed and wild species.

Due to frequent disease outbreaks in aquaculture facilities antibiotics and chemical additives are commonly used. Treatment of trout disease often entails administering antibiotics that are mixed into food pellets and fed to the fish (Serdoz et al., 2011). Unconsumed feed or chemicals fall through or drift out of the pens and impact the wild population promoting antibiotic resistant bacteria and antibiotic contaminated wild fish (Björklund, Bondestam, & Bylund, 1990). The contamination of wild fish greatly reduces their palatability and can impact human health (Cabello, 2006).

Poaching

The economic incentive of legalizing the sale of trout will incentivize poaching of wild fish. As is frequently seen in high value marine fisheries, such as paua and crayfish, poaching can be widespread and difficult to detect. With the price of farmed salmon exceeding the $25/kg mark the economic incentive to poach trout is high. Unfortunately, the most likely target of poachers is spawning fish posing a substantial threat to wild trout populations. Even small-

scale poaching can devastate fisheries and opening an export market would indelibly lead to poaching placing an added burden on fish and game.

Escape

It is nearly impossible to prevent escapement from fish farms resulting in tens of thousands of farmed fish entering the wild population. The impact of trout farming on other Southern Hemisphere populations of wild rainbow trout has been substantial. A recent survey of the trout populations of Chile found that farm escapees made up 16% of all free-ranging rainbow trout and escaped farmed fish were found in 80% of the study rivers (Consuegra, Phillips, Gajardo, & De Leaniz, 2011).

Escaped trout could boost fishing opportunities in the short term but would compete directly with wild fish for habitat and food. More importantly escaped fish would freely interbreed with the wild population. Interbreeding between wild and captive trout can be detrimental to the overall genetic health of the wild population. Interbreeding, between wild and farmed fish, can reduce the overall breeding success of the wild population for multiple generations reducing the trout population and angler opportunities (Araki, Cooper, & Blouin, 2009).

Water pollution

Like any high intensity agricultural activity trout farming produces substantial amounts of effluent. Effluent from trout farms located within rivers or lakes has the added impact of contributing pollution directly into water. Sludge (faeces and excess food) from trout farms reduces oxygen levels and adds nutrients (nitrogen and phosphorus) to river that can stretch up to 12 km downstream of the trout farm (Boaventura, Pedro, Coimbra, & Lencastre, 1997)

Positive aspects

It has been shown that fish farm escapes can increase short-term angler use to areas were fish have been released. This short term increase in angler use is far outweighed by the long-term impacts of loss in wild production from escaped fish interbreeding with wild fish. Commercial put and take fishing ponds could provide fishing opportunities for urban communities but if the demand for such fisheries is high this could be accommodated by the current Fish & Game hatchery system.

Conclusion

The cultural and economic value of the wild New Zealand trout population is immense compared to modest profits shared by a few individuals who own and operate fish farms. History has shown that the importation and transfer of trout can and likely will have a negative impact on wild trout populations. Our European and North American counterparts have learned the hard way and their anglers are now suffering the consequences of poor decisions made by past managers. Auckland/Waikato Fish & Game strongly opposes commercial trout farming and the importation of trout or trout flesh.

References

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