

## **Marine Harvest's Loch Torridon Marine Fish Farming Planning Application**

**Application to the The Highland Council, application dated 20 June 2008**

**DRAFT 2 Comments for WRASFB:  
(WRASFB submission due on Friday 26<sup>th</sup> September)**

This application is for planning permission for an expansion to an existing salmon farm in upper Loch Torridon. The application is to increase the fish farm surface area from the 7962m<sup>2</sup> currently leased from the Crown Estate, to 9554m<sup>2</sup> with full planning consent for the additional area from The Highland Council; with a corresponding area of seabed to be enclosed by moorings to be increased from the 99,000m<sup>2</sup> currently leased to 125,000m<sup>2</sup>. An additional 4 'cells' (spaces for an additional 4 cages) are to be added to the southern edge of the matrix, with corresponding additions of moorings and anchors.

The proposed expansion is to accommodate a proposed increase in maximum biomass to be held at the site from 1767 tonnes to 2150 tonnes, expanding the farm's status as the largest salmon farm within the WRASFB area.

### **Implications to wild fish (salmon and sea trout)**

#### **Loch Torridon**

The MH Loch Torridon Fish Farm is located within 3km of the mouth of the mouth of the River Balgy. The River Balgy – Loch Damph system formerly supported a fishery that sustained rod catches of around 20-30+ salmon and 150-250+ sea trout (Butler, 2000). The farm is within 10km of the mouth of the Torridon River (and within 2km of migration routes of Torridon salmon smolts) which formerly supported fisheries of similar productivity.

The smaller Shieldaig River enters the sea in outer Loch Torridon (Loch Shieldaig), approximately 6km by sea from the farm. From studies based at the Fisheries Research Services [FRS] Shieldaig Field Station, much has been learned about wild (and stocked) sea trout in the Loch Torridon area, where they go, the problems they face including sea lice epizootics and predators, and their rates of marine survival. The Highland Council may also wish to ask FRS to provide a statement in relation to this planning application.

#### **Background**

Marine salmon farming began in Loch Torridon in 1987 with the establishment of three Highland Fish Farmer sites, followed by two Marine Harvest sites in 1994. In March 1995 the FRS Shieldaig Sea trout Project was set up to investigate problems facing sea trout within the area, and to demonstrate solutions. In February 2001, a pioneering 'Area Management Agreement' was established in Loch Torridon to improve the health of both wild and farmed fish. Subsequently, good relationships have built up between wild fisheries representatives and fish farm representatives with the Area Management Group, with much exchange of information.

In November 2003, WRFT responded to an application by Marine Harvest to SEPA for an increase in biomass consent in Loch Torridon by 700 tonnes [ref WPC/N/70893]. Because it was not clear that the proposed increase in biomass would not cause additional risk of adverse impacts to wild fisheries from sea lice epizootics and farm escapes, the Trust could not support that application. Because of broader concerns of an increase in Marine Harvest salmon farm biomass within the much wider WRFT area, WRFT requested that should SEPA grant the proposed biomass increase, MH consents for farmed salmon production in Loch Ewe, the most sensitive area for wild salmon and sea trout fisheries within the WRFT area, be relinquished; at least until it could be clearly demonstrated by the Loch Torridon Area Management Group [AMG], supported by Fisheries Research Services, that healthy wild fisheries for salmon and sea trout and salmon

farming could co-exist in the same area. A copy of this submission was also sent to George Hamilton, Fisheries Officer at The Highland Council.

### **Sea trout and sea lice epizootics in the Loch Torridon area**

The parasitic sea louse, *Lepeophtheirus salmonis*, can be a serious pest of both farmed salmon and wild salmonids, particularly sea trout. WRFT has not monitored sea lice levels with the Loch Torridon area. However, research published by FRS Shildaig Project has demonstrated a relationship between farm salmon production cycles in the area, planktonic larval sea lice concentrations by the river mouth, and return rates of sea trout to the Shildaig river system. In every second year except 2005, sea lice epizootics affecting sea trout have occurred correlating with the second year of production at nearby salmon farms (Raffell, *et al* 2007).

Return rates of Shildaig sea trout smolts reached a peak in 2006, with over 35% return of tagged wild sea trout and over 5% of tagged stocked sea trout (Raffell, *et al* 2007). However, a sea lice epizootic affecting wild sea trout occurred in May and June 2007; some fish had over 400 lice; lice numbers were often so large that accurate counts could not be made in the field (*ibid*). Tagging studies showed that some fish spent as little as four or five days at sea before returning to the Shildaig system. Subsequently, just over 20 finnock returned to the trap, all were of stocked origin; respective rates of marine survival for tagged fish were less than 2% for both wild and stocked fish [D. Hay, *pers comm.*].

Post-smolt tracking studies by FRS show that sea trout of Balgy origin remain in upper Loch Torridon for the first few weeks after entry to the sea; thereafter, some sea trout from the Shildaig system also move into upper Loch Torridon to feed passing within a few km of the Loch Torridon fish farm (Raffell, *et al* 2007).

### **Salmon and sea lice**

Very little is known about levels of infection by sea lice of wild salmon smolts originating from the rivers entering Loch Torridon. In years of epizootics affecting sea trout, it is probably that wild salmon are also infected. Salmon smolts are generally smaller than sea trout smolts. Studies in Norway indicate that salmon post-smolts which are infected by more than 11 lice on their seaward migration will not survive (Holst *et al* 2003).

### **Escaped farm salmon and genetic introgression**

Farm salmon are genetically different from wild stocks due to geographical origin, founding effects, and as a result of deliberate and accidental selection, and genetic drift, during domestication (Fergusson *et al* in Verspoor *et al* [eds.] 2007). Farm salmon are known to enter rivers and breed with other farmed fish, or interbreeding with wild fish. Their offspring show substantially reduced lifetime success and, as juveniles, can out-compete and displace progeny of wild fish further damaging native salmon populations (*ibid*). Escaped farm salmon contributed up to 17% of the recorded annual rod catch of salmon in the River Balgy (Butler, 2001). Butler (2001) expressed concern that the Balgy salmon population was depleted and therefore vulnerable to genetic introgression via hybridisation by the escaped farm fish.

More recent studies have suggested that a large proportion of the salmon smolts that descended the River Balgy in 2006 may have been of farmed origin, related not so much from escaped farm salmon which entered the system having escaped from marine cages, but escaped farm salmon from 'smolt' production cages operated in Loch Damph (Middlemas and Stewart, 2008). The genetic integrity of the native Balgy salmon population may thus have already been compromised. As such the Balgy salmon population may now be of greatest value to the conservation of wild, native salmon populations in Wester Ross, and in Scotland as a whole, as 'a case study' opportunity; or perhaps more precisely, as a 'worst-case scenario' study opportunity.

## Discussion and Recommendations

There is no evidence yet of a sustained recovery in wild sea trout populations within the Loch Torridon area. To the contrary, the epizootic of 2007 suggests rather strongly that salmon farming in Loch Torridon as currently practiced, remains detrimental to the health of wild fish populations. WRFT is concerned about the ability of salmon farms to control sea lice using currently available medicines, including the in-feed treatment SLICE (*emamectin benzoate*). WRFT *is aware that planning permission once granted is unlikely to be revoked*, and that subsequently it would become increasingly difficult to address wild fisheries concerns related to poorly sited or over-sized fish farms within the area.

Production of farmed salmon under existing practices in the Loch Torridon area has been detrimental to wild sea trout populations in the area. WRFT has reason (from studies in Norway) to believe that wild salmon populations may have also been affected by sea lice epizootics to a lesser degree though there is no direct data on this, and that genetic introgression of local salmon populations may have already taken place.

*The WRFT believes that there is, and has always been, a locational question mark over the Loch Torridon site. In view of the fact that a planning permission once granted is very unlikely to be revoked, it recommends that this application to firmly establish an addition to a large salmon farm in close proximity to the mouth of a river system that supports salmon and sea trout fisheries should not be accepted without a full and impartial review being conducted for the planning authorities of the case for allowing fish farming of any kind on this site, including the option for requiring relocation.*

WRFT has been informed that fisheries proprietors in the area do not wish to object to this application.

Peter Cunningham  
WRFT Biologist  
DRAFT 2: 24 September 2008

## References:

**Butler, J. (2000)** WRFT River Balgy Fishery Management Plan 2000 – 2005

**Holst, J.C., P. Jakobsen, F. Nilsen, M. Holm, L. Asplin, and J. Aure (2003)** Mortality of Seaward migrating Post-smolts of Atlantic Salmon Due to Salmon Lice Infection in Norwegian Salmon Stocks. In Mills, D. [ed.] *Salmon at the Edge*. Blackwell Publishing, 2003

**Middlemas, S.J., and D.C. Stewart (2008)** Unusually High Incidence of Large One-year-old salmon smolts trapped on a Small West Coast Scottish River. Scottish Fisheries Research Report, No 69, 2008 [http://www.marlab.ac.uk/FRS.Web/Uploads/Documents/SFRR\\_69.pdf](http://www.marlab.ac.uk/FRS.Web/Uploads/Documents/SFRR_69.pdf)

**Raffell, J., S. Buttle and D. Hay (2007)** Shieldaig Project Review June 2007 – June 2007 <http://www.marlab.ac.uk/FRS.Web/Uploads/Documents/sheildaigseven.pdf>

**Fergusson, A., I.A. Flemming, K. Hindar, Ø. Skaala, P. McGinnity, T. Cross and P. Prodöhl (2007)** Farm escapes. In Verspoor, E., L. Stradmeyer and J.L. Nielsen [eds.] *The Atlantic Salmon: Genetics, Conservation and Management*. Blackwell Publishing, 2007.