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SALMON WATCH IRELAND
"Dedicated to the restoration of salmon abundance in Ireland"

Renewal and Review of Marine Finfish Aquaculture Licence at Inishfarnard, Co. Cork

Licence Site Ref: T05-233

Dear Minister,

1. Introduction

The documentation submitted by, Comhlucht Iascaireachta Fanad Teoranta trading as MOWI Ireland, seeking a renewal and review of licence T05/233 for an open cage salmon farm to be sited at Inishfarnard falls far short of what is required pursuant to Article 6(3) of the Habitats Directive. Nor can there be reliance on Article 6 (4) thereof, as there are no stated 'imperative reasons of overriding public interest', (IROPI), which could justify continuation at the Inishfarnard site.

The site is within close proximity to many important salmonid rivers which are ecologically sensitive to any disturbance. It should also be noted that angling tourism in the Waterville / Kenmare Bay catchment areas has in the past been a substantial driver of economic activity in the localised and regional economy.

This economic importance has been systematically eroded caused principally by salmon farming activities in Kenmare Bay and Ballinskelligs Bay. These farms have caused a significant reduction of wild salmon stocks and the virtual extinction of sea trout stocks.

The unique genetic strain of sea trout and their size and numbers particularly in the Waterville system has in the past brought many angling tourists from all areas of Ireland, UK and internationally and has been the bedrock of the local economy from April to October.

The absolute crash in sea trout stocks and significant reduction of salmon stocks coincided with the reopening of the Deenish and Inishfarnard sites and indeed the enormous overstocking of both sites carried out illegally by MOWI Ireland. The fish counter statistics in Waterville and the Kerry Blackwater and angling returns in all rivers in the area demonstrate a substantial decline since 2011 with the tourist angling industry now functionally extinct in all areas

Salmon Watch Ireland
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surrounding the Kenmare Bay region. There is certainly a collapse and is linked to these farms. This should be no surprise as without exception sea trout stocks have collapsed in every jurisdiction and area where salmon farming exists, and Atlantic salmon stocks have demonstrated a significant decline.

As the Marine Institute runs the salmonid index system at Burishoole in County Mayo it should come as no surprise that they have totally ignored their own census data concerning sea trout which have effectively been eradicated by salmon farming in Clew Bay[1]. This is nothing short of a disgraceful abandonment of their duty to protect wild salmonids and certainly we do not have any confidence in their repeated assertions concerning the impact of sea lice on wild salmonids. Angling tourism is a sustainable product which can be revitalised but only in the absence of open cage salmon farming in Kenmare Bay and Ballinskelligs Bay.

The Waterville system and other catchments flowing into Kenmare Bay have become a source of embarrassment both in terms of their ecological destruction and collapse of economic activity in that fish stocks have collapsed with little angling activity taking place and it is impossible to bypass the salmon farming issue as being the principal driver of the decline of wild salmonid stocks.

2. Past Failures of MOWI- Inishfarnard

It is absolutely clear that MOWI has in the past ignored the operating conditions of their licence (Expired). There has been a consistent and at times downright disrespect by MOWI of environmental and operating conditions associated with the expired licence.

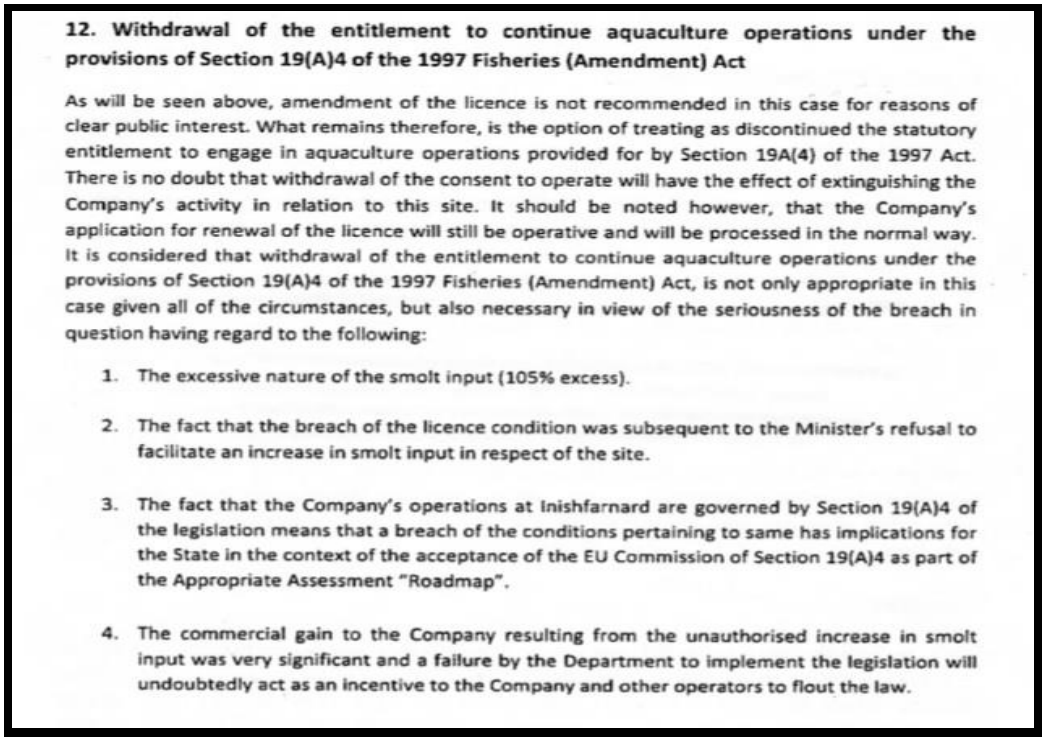
The illegal and gross over stocking of the site would certainly result in closure in any other state licensing scenario as is demonstrated by DAFM's approach to transgressions in other areas of its remit. The decision of ALAB to determine that the over stocking of the site should result in a situation of rewarding the operator is certainly beyond belief. Essentially the determination effectively allowed a doubling of stocking to over 800,000 smolts from the original licence. Operating under Section 19 (a) only allows continuation of activities based on original licence conditions.

A freedom of information request by Friends of the Irish Environment[2] resulted in an exposure of transgressions by MOWI surrounding this licence. It makes a mockery of the powers of the Department of Agriculture, Food and the Marine and is essentially a situation where MOWI appear to be able to drive policy within the Department to ensure their economic viability over environmental concerns. We find the contents of the material released under FOI to be embarrassing in that legal argument appears to suggest that "smolts" cannot be defined legally.

[1] Newport Annual Report Page 2021, Page 28 https://drive.google.com/file/d/1l5-HFewsA7IEagjKKQiLsjLTXaYy9297/view?usp=sharing

[2] FOI Friends of Irish Environment – Partial Text - https://drive.google.com/file/d/1PqLodX9alOfOgVH_djDnCDHt08eKVSMo/view?usp=sharing

It is also abundantly clear that the Department clearly suggested that the permission should be withdrawn as can be ascertained from the following:



12. Withdrawal of the entitlement to continue aquaculture operations under the provisions of Section 19(A)4 of the 1997 Fisheries (Amendment) Act

As will be seen above, amendment of the licence is not recommended in this case for reasons of clear public interest. What remains therefore, is the option of treating as discontinued the statutory entitlement to engage in aquaculture operations provided for by Section 19A(4) of the 1997 Act. There is no doubt that withdrawal of the consent to operate will have the effect of extinguishing the Company's activity in relation to this site. It should be noted however, that the Company's application for renewal of the licence will still be operative and will be processed in the normal way. It is considered that withdrawal of the entitlement to continue aquaculture operations under the provisions of Section 19(A)4 of the 1997 Fisheries (Amendment) Act, is not only appropriate in this case given all of the circumstances, but also necessary in view of the seriousness of the breach in question having regard to the following:

1. The excessive nature of the smolt input (105% excess).
2. The fact that the breach of the licence condition was subsequent to the Minister's refusal to facilitate an increase in smolt input in respect of the site.
3. The fact that the Company's operations at Inishfarnard are governed by Section 19(A)4 of the legislation means that a breach of the conditions pertaining to same has implications for the State in the context of the acceptance of the EU Commission of Section 19(A)4 as part of the Appropriate Assessment "Roadmap".
4. The commercial gain to the Company resulting from the unauthorised increase in smolt input was very significant and a failure by the Department to implement the legislation will undoubtedly act as an incentive to the Company and other operators to flout the law.

13. Recommendation

Having regard to all of the above, it is recommended:

1. That the Minister determine that a breach of Condition 2(d) of the applicable aquaculture licence has occurred as described above.
2. That the Minister treat the statutory entitlement of Silver King Seafoods Ltd (Subsidiary Company of Marine Harvest Ireland) to continue aquaculture operations under the provisions of Section 19(A)4 of the 1997 Fisheries (Amendment) Act as discontinued for the following reason:

   - Breach of condition 2(d) of the applicable aquaculture licence with states:-

     "the stock of fish in the cages shall not exceed such quantity as may be specified by the Minister from time to time, the number of smolts to be stocked at the site should not in any event exceed 400,000. Licensed stocking densities are not to be exceeded and will be subject to inspection at any time by the Department of the Marine;"

Submitted please for approval.

21/12/16

John Quinlan
Principal Officer
Aquaculture and Foreshore Management Division

However, this recommendation was not acted on and a subsequent amendment of the expired licence by the Department as follows was appealed to ALAB by MOWI:

It is recommended that:

1. The following amendment be made to the Company's licence with immediate effect:

   The existing condition 2(d) be replaced by a new condition 2(d) which states as follows:

   no more than 400,000 fish of any growth category may be input to the site in any twelve month period and will be subject to inspection at any time by the Department of Agriculture, Food and the Marine;

The appeal to ALAB was successful in achieving a stocking rate of 800,000 fish through a system of Maximum Allowable Biomass which gave effect to this stocking rate.

Overall, an inexplicable decision by ALAB which only reinforces the perception that they are not independent of the industry and are essentially in their composition structurally biased.

As all this information is available to the Department[3], we are acutely aware that you already have the knowledge of how disrespectful this company has acted in coastal areas causing enormous damage to salmon and sea trout stocks and the wider environment and should under no circumstances be allowed to succeed in this current application. We also remind the Department that MOWI has acted in a similar fashion in the nearby Deenish Island site and has essentially ignored all conditions imposed on them.

We will be appending this submission to our complaint to the EU.

3. Natura Sites

The Inishfarnard farm site is located within the Kenmare Bay SAC (002158).

Adjacent SACs include the Blackwater River (Kerry) SAC (IE0002173), Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (IE0000365) Ballinskelligs Bay and Inny Estuary SAC, (000335) and the Glanmore Bog SAC (001879)

The qualifying interests of two of these SAC's include both wild Atlantic salmon, *Salmo salar* and Pearl Mussel, *Margaritifera margaritifera.* The two SACs in question are the Blackwater River (Kerry) SAC (IE0002173), Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (IE0000365). The Glanmore Bog SAC qualifying interests includes *Margaritifera margaritifera.*

In regard to wild salmon the rivers with a hydrological connection to these sites include the following designated salmon rivers, Sneem River, Owreagh, Kerry Blackwater and the Waterville or Currane catchment. However, there are other rivers and smaller catchments which may be affected by the Inishfarnard site which also enjoy the protection status for wild salmon as a consequence of a hydrological connection to the above-mentioned SAC's but are not designated as salmon rivers. These include the following, Staigue, Bunnow and Coomnahorna and other lesser numerous streams on Northwest shore of Kenmare Bay which may be impacted by the farm at Inishfarnard.

These smaller catchments are unassessed but, in all probability, support small unique and vulnerable stocks of Atlantic salmon. It is important to note that the Kerry Blackwater has not met its conservation limit in any year since 2012 but is marginally above conservation limit for 2024 (Surplus of 38 fish), and the Owreagh has not been deemed to be attaining its conservation limit since 2007 and thus both are extremely vulnerable to continued or further deterioration from sea lice or disease emanating from Inishfarnard or from a combination of other farms operating in Kenmare Bay and Ballinskelligs Bay. Another catchment which is a designated

[3] ALAB Minister File - https://www.alab.ie/appealsarchive/2018/scheduleofdocuments/inishfarnardscheduleofdocuments/ap1-2018ministersfile/

salmon river is Lough Fadda (Ownagappal) which has also a hydrological connection to the Glanmore Bog SAC. This catchment is deemed not to be attaining its conservation limit for Atlantic salmon.

In regard to *Margaritifera margaritifera* it is evident that activities at Inishfarnard will have a significant effect on the internationally important populations contained within the Currane system, Kerry Blackwater and Owenagappal (All by reducing salmonid juvenile populations as a consequence of sea lice and disease vectors thereby reducing viability of mussel populations. It is also important to note that other smaller catchments bordering Kenmare Bay have extant populations of *Margaritifera margaritifera* including the Owreagh Bunnow, Sneem, Tahilla, Finnihy, Sheen, Roughty, Owenshagh, and Dromoghty

The Glanmore Bog SAC (001879) has *Margaritifera margaritifera* as a qualifying interest. The Lough Fadda system which incorporates Glenbeg Lake and Ownagappul river flows through this SAC. It is noteworthy that this designated salmon river is located within 12 Km of the Inishfarnard site.

Any continuing or further impact from sea lice or disease will certainly reduce adult salmonid returns thus directly affecting juvenile salmon and trout numbers within the SAC with consequent erosion of mussel populations.

The recent (2020) electro fishing on the Lough Fadda system by Inland Fisheries Ireland noted that there was a total collapse in Atlantic salmon stocks in comparison to previous surveys in 2007 and 2015.

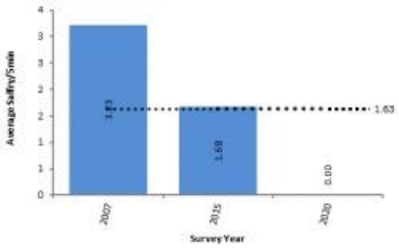
A.4.5. Lough Fada.

IFI Salmon Catchment #: 83
2020 survey dates: 23/7/2020
Mean Salmon Fry/5 min (2020): 0.00 fry/5min.
CWEF Index: 1.68 fry/5min.

Sampling carried out by:
Keith Nolan
Tony Holmes

Fish Species Present:
Brown Trout
European Eel
Salmon

Figure A.4.5.2: Comparison of mean salmon fry/5min for all surveys on the Lough Fada catchment to 2020.



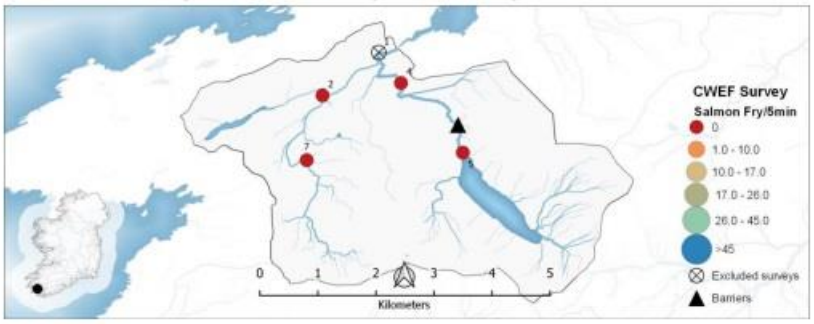
The survey in the Lough Fada catchment took place on the 23rd of July. It consisted of five sites. Salmon were observed at one site. Four sites were included in the analysis (table A.4.5.2). The mean catch of these sites was 0.00 salmon fry/5min.

Conclusion
Taking all three surveys on the Lough Fada into account the CWEF index is 1.68 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.4.5.2: Site specific results of CWEF on the Lough Fada catchment in 2020.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	V 68631 55590	5	1	0	3	Eff <60%		
002	V 67661 54852	2	2	8	0	Include	11.00	0.00
004	V 69013 55065	5	2	9	0	Include	15.00	0.00
005	V 70078 53869	5	2	13	0	Include	15.00	0.00
007	V 67390 53739	3	3	8	0	Include	11.00	0.00

Map A.4.5.1: Showing locations of 2020 survey sites on the Lough Fada catchment.



The 2017[4] report to identify fish host specific to catchments reported on the Owenagappal and suggested that the host species in one tributary, Barries Stream, to be brown trout but on the Ownagappal River to be Atlantic salmon.

[4] Electrofishing survey to identify fish hosts for the freshwater pearl mussel Margaritifera margaritifera in 12 populations in the Republic of Ireland 2017 survey https://drive.google.com/file/d/1oWMFNj-wqVi97fPzb7rwxM3pbX2vXqiO/view?usp=sharing

The same report noted that the Kerry Blackwater and the Waterville system were reliant on Atlantic salmon as the host species for glocidia. It is very important to note that the Kerry Blackwater has not met its conservation limit in any year since 2012 but is marginally above conservation limit for 2024 (Surplus of 38 fish). There has also been a very significant decline in Atlantic salmon stocks in the Waterville catchment.

The limited assessment contained in the NIS of these catchments is entirely unsatisfactory and does not conform to what is required pursuant to Article 6(3) of the Habitats Directive.

There has been an effort by the Marine Institute on occasions to suggest that brown trout juveniles would be able to fill any shortfall in salmon numbers or shortfall of anadromous trout in catchments. There is no scientific basis or study for this contention and thus should be discounted.

4. Sea Lice

It is clear that there is a substantial conflict between Inland Fisheries Ireland and the Marine Institute[5] in regard to the impact of sea lice on wild Atlantic salmon and sea trout. The legal basis of the precautionary principal and case law is as follows.

"The precautionary principle is an approach to risk management, where, if it is possible that a given policy or action might cause harm to the public or the environment and if there is still no scientific agreement on the issue, the policy or action in question should not be carried out."[6]

It is evident that this specifically applies and is acknowledged in the NIS documents as supplied by MOWI.

As discussed above there are a large number of catchments which have a hydrological connectivity with the two SAC's which have *Salmo salar* as a qualifying interest.

The modelling of dispersal of sea lice from Inishfarnard as submitted by MOWI is certainly flawed as the following study carried out by the Marine Institute[7] and **MOWI** demonstrated substantially different outcomes. The study demonstrates a radically different outcome and the modelling presented in the NIS as submitted by MOWI should be viewed as unreliable and misleading.
It should be noted that the Marine Institute study is a physical study rather that a computer-generated study.

The Inishfarnard site has two conditions attached to the original expired licence which affect sea trout stocks specifically and we wish to expand on the necessity that both conditions are examined in the light of the absolute collapse of sea trout stocks in Lough Currane and indeed

[5] Correspondence Minister Eamonn Ryan and Reply by Minister Charlie Mc Conologue https://drive.google.com/file/d/1XPpqoROj6iwwd0SHE8c5Wddz1q72EfrL/view?usp=sharing
[6] Precautionary Principal - https://eur-lex.europa.eu/EN/legal-content/glossary/precautionary-principle.html#:~:text=The%20precautionary%20principle%20is%20an,should%20not%20be%20carried%20out.
[7] Marine Institute Aqua Plan - https://drive.google.com/file/d/1GtbIvtDyFksK6pGd-zYQw5iBwvsV5y38/view?usp=sharing

throughout the catchments flowing into Kenmare Bay and Ballinskelligs Bay. These conditions are:

"This licence will remain subject to ongoing review in light of continued monitoring of, and research into, the two marine sites and neighbouring sea trout fisheries which may be undertaken by the Salmon Research Agency and/or the Fisheries Research Centre."

"In the event of proven contra-indications for sea trout stocks causatively linked to the fish farming operations permitted under this licence, the Minister may exercise his discretion to take any necessary protective measures ranging from reduction in permitted production levels to revocation of the licence and harvesting of all stock."

We would also like to draw your attention to the following scientific papers which reflect damage to sea trout stocks with specific detailed references to Kenmare Bay rivers and the Waterville system. It should be noted that these studies were carried out when production levels were substantially lower than they are in modern times.

It is also noteworthy that the premise in the NIS that copepod lice have to reach nearby estuarine waters to infect wild salmon and sea trout is entirely without foundation and does not consider the movement of juvenile salmon and sea trout smolts during migration.

The first study relates to a paper published in 2017 [8]which demonstrates the different infestation pressures between areas where salmon farms are present and farms which are over 30km from salmonid rivers.

The second study is ***" The Relationship Between Sea Lice Infestation, Sea Lice Production and Sea Trout Survival in Ireland, 1992-2001."***[9]

A paragraph from this study adequately demonstrates the link between salmon farms and proximity to sea trout catchments.
"It is clear from the data presented that there is a strong relationship between high infestation of juvenile lice stages on sea trout and proximity to salmon farms and the patterns of infestation and infestation levels change markedly beyond about 25-30 km from salmon farms. There is also a decrease in risk of osmoregulatory imbalance and mortality from sea lice infection at distances greater than 25-30 km from farms. From these relationships we therefore conclude that sea lice from marine salmon farms were a major contributory factor in the sea trout stock collapses observed in salmon aquaculture areas in western Ireland, western Scotland, and western Norway."

The distance of 30 km is relevant in the context of Inishfarnard as it encompasses the Waterville catchment, Sneem catchment and the Kerry Blackwater and considering the narrowness of

[8] 2017 Report Sea Trout Symposium -https://drive.google.com/file/d/19PeLini6w6opCL9uZIYXW2Ne7aeKzT_c/view?usp=sharing
[9] The Relationship Between Sea Lice Infestation, Sea Lice Production and Sea Trout Survival in Ireland, 1992-2001. https://onlinelibrary.wiley.com/doi/10.1002/9780470995495.ch10

Kenmare Bay and the location of Inishfarnard it is more than probable that elevated levels of infestation will occur on fish migrating from all designated Atlantic salmon rivers within the bay.

It is also probable that smaller catchments which may depend on sea trout to produce the necessary density of juvenile trout to host *Margaritifera margaritifera* glocidia are at substantial risk of extinction if indeed it has not taken place already.

In regard to evidence of premature returning sea trout post smolts, we have secured footage on two dates which demonstrate high infestation pressure in the Waterville Catchment and the Kerry Blackwater. The Waterville catchment video is from June 2017[10] and demonstrates elevated levels of juvenile lice on premature returning sea trout. The second video is from Kerry Blackwater[11] in June 2021 which demonstrates a high level of infestation by juvenile and adult lice.

It is important to note that sea lice levels on Deenish and Inishfarnard are reported as low during these periods and below trigger levels. We contend that the trigger levels, as set out in the sea lice monitoring protocol, are arbitrary and have no basis in science and there is essentially no proof that the trigger levels or indeed lower levels of lice on farms result in no increase in normal background levels within bays.

We also contend that the sites in Kenmare Bay are marine in nature with high salinity and are affected by *Caligus elongatus* and *Lepeophtheirus salmonis.* It is essential that the impact of *Caligus elongatus* is included in the NIS submitted by MOWI. It is evident that this particular species can be dominant in full marine conditions and may be particularly harmful to migrating salmon and sea trout smolts.

There are a number of separate migration patterns in the sea trout stock in Waterville. One occurs in the spring with sea trout smolts migrating predominantly in April and May and post spawned sea trout adults also going to sea in early spring. There is a separate migration of non-maturing trout in the autumn which can also be affected by sea lice emanating from Deenish and other farms in Kenmare Bay.

It must be stressed that the presence of large numbers of farmed salmon in farms in Kenmare Bay result in a situation whereby they become a strong vector for the production and spread of both species of sea lice.

While sea trout are not a protected species under the Habitats Directive, they may have a significant role in protecting the life cycle of *Margaritifera margaritifera, (Pearl Mussel).* The rivers within the Killarney, Macgillycuddy's Reeks and Caragh SAC and the Blackwater River (Kerry SAC) and Glanmore Bog SAC have large population of mussels which are listed as a qualifying interest. The Currane catchment is one of eight priority catchments[12]nationally for

[10] Waterville June 2017 Video - https://drive.google.com/file/d/0B3onXoqc0rJtbE42dUhTV3dLcmM/view?usp=sharing&resourcekey=0-Nr2ThD8rsvNdpUE-sxNCvg
[11] Kerry Blackwater Video - https://drive.google.com/file/d/1nKsER0D-pRxNHzWyJvZoCp1u_Z_sLEcT/view?usp=sharing

[12]Pearl Mussel Project https://www.pearlmusselproject.ie/catchments-approach/

important populations of very endangered freshwater pearl mussels. However, the population is of poor conservation status and its viability will be further threatened by impacting it's glochidial host – juvenile migratory salmon. As mentioned before a large number of these rivers will be affected by sea lice impact on migrating salmonids. Consequently the 'indirect effect' of these salmon farms, including Inishfarnard, is having a detrimental effect on FPM populations and abundance, which has not been capable of assessment or quantification'.

As mentioned in the introduction the absolute crash in sea trout stocks coincided with the reopening of the Deenish and Inishfarnard sites and indeed the enormous overstocking of both sites carried out illegally by MOWI Ireland. The fish counter statistics and angling returns demonstrate a substantial decline since 2011 with the tourist angling industry now functionally extinct. This is certainly a collapse and is linked to these farms. This should be no surprise as without exception sea trout stocks have collapsed in every jurisdiction and area where salmon farming exists.

As previously explained the Marine Institute runs the salmonid index system at Burishoole in County Mayo it should come as no surprise that they have totally ignored their own census data concerning sea trout which have effectively been eradicated by salmon farming in Clew Bay[13]. This is nothing short of an apparent inconsideration of their full responsibility in the matter, namely, to protect wild salmonids and certainly we do not have any confidence in their repeated assertions concerning the impact of sea lice on wild salmonids.

In regard to wild salmon, we are not satisfied with the level of scrutiny of peer reviewed material concerning the impact of sea lice on wild salmon. While the NIS does discuss the different interpretation of data, it totally ignores the effect on returning adults. We have prepared a document which outlines the various peer reviewed papers concerning the impact of sea lice on adult salmon returns[14]

The European Court of Justice (ECJ) in several judgments[15] have ruled that the test to be applied must be based on the 'best available scientific knowledge in the field.' We take issue, therefore, with the failure of the application to have regard to independent peer reviewed scientific reports which challenge the conclusions of the small and select number of reports which are the only ones that have been consistently considered by DAFM.

It is unacceptable that the Natura Impact Assessment as presented ignores the ECJ jurisprudence and only considers a narrow range and indeed interpretation of scientific literature concerning the impact of sea lice from salmon farms on wild salmonids.

[13] Newport Annual Report Page 2021, Page 28 https://drive.google.com/file/d/1l5-HFewsA7IEagjKKQiLsjLTXaYy9297/view?usp=sharing
[14] Salmon Loss Calculation Adult Returns https://docs.google.com/spreadsheets/d/1EuepvI1wJKDoGUFFd-vKzgr4APL2q8-B/edit?usp=sharing&rtpof=true&sd=true
[15] Court of Justice of the European Union (CJEU):
C-258/11 - Sweetman and Others v ABP (Galway Bypass)
C-258/11 - AG opinion, Sweetman and Others v ABP (Galway Bypass)
C-127/02 - Waddenzee
C-521/12 - T.C. Briels and Others v Minister van Infrastructuur en Milieu
C-323/17 - People Over Wind and Sweetman v. Coilte Teoranta

Assessment of applications for grants of licences, and grants of renewal of licences, by the Minister for Agriculture Food and the Marine, have in the past relied exclusively on a limited number of scientific papers from the Marine Institute [16] in respect of sea lice impacts on wild salmonids in the marine setting.

Salmon Watch Ireland strongly asserts that DAFM must consider the application by MOWI as flawed and thus not in compliance with Article 6 subsections (3) and (4) of the Habitats Directive.

The Jackson *et al*, studies have been relied upon by MOWI in their NIS associated with this application and are once again at considerable variance with both national and international studies in relation to the impact of salmon farming and the impacts of sea lice emanating from these farms on wild salmonid stocks. The Marine Institute papers imply falsely in their interpretation that the impact of sea lice emanating from salmon farms are a minor and irregular component of wild salmon survival. This has been relied upon by MOWI in this application to minimize the effects caused by salmon farming.

While other peer reviewed papers concerning sea lice appear in the NIS it is obvious that a bias is towards the Marine Institute papers and that the Competent Authority in its examination of same is not independent in this matter as the resources of the Marine Institute were utililised to carry out the Jackson studies. Salmon Watch Ireland strongly suggests that an independent review be considered to examine the studies carried out by Jackson which have already been widely dismissed as defective[17]. Simply put there is an impact on vulnerable salmon stocks and to licence open cage farming is effectively ignoring the inevitable outcome of this practice, less adult returns.

It is alarming to note the dependence of MOWI on sea lice treatments and the use of cleaner fish to mitigate the effects of sea lice on wild salmon as the studies concerning impacts were carried out while mitigation was in place. As mentioned previously we reiterate that trigger levels for treatment are arbitrary and have no scientific basis to suggest that background natural levels are maintained in the presence of salmon farms.

It is essential to note that there is a substantial difference in impact aligned with biomass, period fish are in farms and environmental conditions. There are significant differences in impacts if farms in bays are recently stocked with smolts during spring, grower fish in second year of production and bays that are fallowed. The situation in Kenmare Bay presently has fish in second year of production at all times in that Deenish or Inishfarnard are in production in

[16] Jackson et al. 2013. Impact of Lepeophtheirus salmonis infestations on migrating Atlantic salmon, Salmo salar L., smolts at eight locations in Ireland with an analysis of lice-induced marine mortality.
https://oar.marine.ie/bitstream/handle/10793/849/Impact%20of%20Lepeophtheirus%20Salmonis%20on%20Migrating%20Atlantic%20Salmon%20(Jackson,%20D.%20et%20al.).pdf?sequence=1
3 Jackson et al. 2011. An evaluation of the impact of early infestation with the salmon louse Lepeophtheirus salmonis on the subsequent survival of outwardly migrating Atlantic salmon, Salmo salar L., smolts.
https://www.sciencedirect.com/science/article/pii/S004484861100247X

[17] 4 M Krkosek et al. (2013) Comment on Jackson et al. 'Impact of Lepeophtheirus salmonis infestations on migrating Atlantic salmon, Salmo salar L., smolts at eight locations in Ireland with an analysis of lice-induced marine mortality'
https://drive.google.com/file/d/1TtsD1Ra3R7bczcNtJZ2IMT6LS3BUpD1G/view?usp=sharing

alternate years. There is no whole-bay fallowing and there is a consistent source of sea lice larval distribution 12 months per year.

The impacts are readily recognisable from Passive Integrated Transponder (PIT) studies carried out by Inland Fisheries Ireland on the Erriff river in County Mayo. [18] These studies clearly demonstrate that there is a substantial effect on salmon and sea trout survival and all times but is substantially greater when farms are in second year of production.

The following peer reviewed papers although not exhaustive demonstrate the impact of sea lice on wild salmon and must be considered in order to comply with the standards required what is required pursuant to Article 6(3) of the Habitats Directive. [19]

5. Amoebic Gill Disease

This disease has become established in all farming areas and is a direct threat to wild salmonid stocks. It is noteworthy that the Marine Institute has chosen to alert NASCO in the NASCO Implementation Plan for the period 2019-2024 EU – Ireland (Revised version submitted November 2021)[20] to the fact that wild salmon smolts may become infected on their migration through areas with infected salmon farms. It notes that AGD is particularly prevalent at temperatures above 10^0 C.

It is noteworthy that this temperature is breached in all months at Deenish Island on the seaward side of Inishfarnard. A recent monitoring buoy has been installed at Deenish Island which demonstrates live temperature and salinity readings.[21]

AGD would also be a considerable threat to sea trout. The Marine institute notes that the "threat of these diseases to wild salmon is unknown at present" thereby introducing scientific doubt.

It is also a concern that sea trout also may become infected during their smolt migration both in spring and autumn. The farms at Deenish and Inishfarnard are particularly affected by AGD and thus act as a reservoir to increase exponentially the causative agent.

The failure to analyse the impact of outbreaks of AGD on wild salmonids is certainly not in compliance with the provisions of required pursuant to Article 6(3) of the Habitats Directive.

These outbreaks and the potential of rapid increases in the causative agent as a consequence of farm induced exponential growth cannot be discounted. This is a very real issue and has not been adequately researched.

[18] Inland Fisheries Ireland Annual Report Page 96/97 https://drive.google.com/file/d/15VACohitPK9vjm-tSAhj9GOzXm1eBL94/view?usp=sharing

[19] Scientific Papers Sea Lice https://drive.google.com/drive/folders/14pkmp_eiA4zA_yE-_w1wXrXJCyWdPQNr?usp=sharing

[20] Implementation Plan Ireland NASCO Page 25 https://nasco.int/wp-content/uploads/2021/11/IP1915rev2_Revised-Implementation-Plan_EU-Ireland.pdf

[21] Marine Institute Buoy - https://eurosea.marine.ie/Deenish-Island

The following paper illustrates the difference between the mortality rate between farmed salmon smolts, farmed / wild hybrids smolts and wild smolts. It is apparent that wild salmon smolts suffer much greater mortality than the other categories.[22]

6. Escapees

The issue of farmed salmon escape is poorly evaluated in the NIS. Escapes of farmed fish into rivers with small wild stocks can have a significant effect. This trickle effect is certainly problematic as there are many rivers in the vicinity which may have small populations with distinct genetic attributes which would be compromised.

It is also noteworthy that a Marine Institute[23] paper has strongly noted the negative impact of escapees on wild stocks. Escaped farmed salmon have been observed sporadically in the Kenmare Bay area and captured by anglers.

The prospect of genetic introgression between farmed and wild populations gives rise to lower survival amongst the mutant strain progeny with lower marine survival.

It is agreed that salmon which are mature or near to maturation pose the most significant risk, but a scenario whereby escapes occur on a large scale cannot be ruled out as climatic influences become more problematic in regard to damage to infrastructure, particularly in winter.

The scenario whereby large escapes are described as problematic (tens of thousands) is not considering the wild spawning stocks of the various rivers in and around Kenmare Bay. The number of wild salmon spawning is many multitudes lower than even a “minor” escape.

It is essential to realise that the farms presently operating in the environs of Kenmare Bay dwarf the total run of wild salmon back to Ireland by a factor of four. Thus, an escape of mature salmon numbering in hundreds could effectively overrun wild salmon populations in the Kerry Blackwater and Currane systems as well as numerous smaller catchments.

Introgression is a problem in salmon farming areas which has implications for both salmon populations and pearl mussel populations. Introgression studies should have been undertaken to provide an analysis of existence of introgression in the area and this failure to adequately address this issue demonstrates a further flaw in this application.

7. Benthic Studies

Salmon Watch Ireland contends strongly that benthic studies which are carried out annually are not a sufficient indicator especially in light of the location of this farm. Oceanic current and exposure to high winds at this site would certainly negate the results of the benthic studies due

[22] Links between host genetics, metabolism, gut microbiome and amoebic gill disease (AGD) in Atlantic salmon https://animalmicrobiome.biomedcentral.com/articles/10.1186/s42523-022-00203-x

[23] Mcginnity, Philip & Stone, C. & Taggart, J. & Cooke, Declan & Cotter, Deirdre & Hynes, Rosaleen & McCamley, C. & Ferguson, Andrew. (1997). Genetic impact of escaped farmed Atlantic salmon (Salmo salar L.) on native populations: Use of DNA profiling to assess freshwater performance of wild, farmed, and hybrid progeny in a natural river environment. Ices Journal of Marine Science - ICES J MAR SCI. 54. 998-1008. 10.1016/S1054-3139(97)80004-5. m

to underwater inspection sites being effectively located within a short distance of farms. Due to conditions at this site and the open coastal area, effluent and other materials can travel widely from this site and will certainly not be picked up by localised inspection.

It is also noted that the most recent Benthic Reports note that Inishfarnard was in an unacceptable condition.[24] The site failed on two categories, Bacterial Mat >50% within AZE and accumulated food within AZE.

It is our contention that the protocol is totally insufficient to examine wider impacts of salmon farms outside the allowable zone of impact.

8. Nutrient Pollution

In light of the study by the Marine Institute with MOWI (Marine Institute Aqua Plan) at footnote [4] it would be difficult to reconcile with the modelling presented in the NIS. It is abundantly obvious that it is unreliable and frankly not believable. There is also a requirement to design and designate a mixing zone for Dissolved Inorganic Nitrogen (DIN) and is explicitly contained in Irish Legislation. SI 272 of 2009.

9. Consideration of Alternatives

There has been no attempt to integrate modern closed containment technologies in this application. The obvious reason for this is that economic considerations are being given precedence over environmental damage. It is obvious that this industry will not survive without innovation particularly in view of warming oceans. Open cage farming will not survive economically or environmentally.

10. Animal Welfare

The total mortality figures contained in the Aquaculture Stewardship Council (ASC) reports [25]note exceptional rates of up to 46.9% on Inishfarnard which obviously demonstrate a substantial animal welfare issue at the site.

The mortality rate on Inishfarnard has fluctuated widely with the 2014 cycle (46.19%), 2016 (12.3%), 2018 (398,975 fish), 2020 (44.1%). This could in all probability be in the region of up to one million, five hundred thousand fish (1,500,000) over an eight-year period. This essentially averages to 4700 fish per week based on an eighty-week production cycle.

[24] A Review of Benthic Monitoring at Irish Finfish Aquaculture Sites During 2021
https://drive.google.com/file/d/1e4w56uTw1sJIbC_rb_AVy48kVI5sylUI/view?usp=sharing
[25] ASC Reports Inishfarnard: https://asc-aqua.org/find-a-farm/ASC01174/

While environmental challenges exist presently due to higher water temperatures it is abundantly clear that this will only get worse as climatic conditions deteriorate. Harmful algal blooms, sea lice and jellyfish infestation will only be amplified by declining marine conditions.

Ireland is certainly not suitable for open cage farming at sea. The veracity of these figures may be questionable as they are self-reported and with obvious anomalies with stocking and harvest figures may in fact be understated. This is a substantial animal welfare issue and is highly suggestive that farming should not continue as a matter of public concern.

These figures are under-reported in the application by MOWI.

11. Conclusion

Salmon Watch Ireland has expressed our views on this application in the light of the alarming collapse of both sea trout and salmon locally and nationally but also in regard to one of the few remaining areas where sustainable angling tourism could be revitalised while preserving economic activity in the area.

The fact that the licensee, MOWI, has been in constant significant breach of the terms of its licence at this site should be taken as indicating that such breaches will continue at this site, as well as at its other sites off the West Coast, if the licence is renewed.

A strong refusal for blatant contempt for the terms of the licence needs to be delivered to the licensee if the integrity of the licencing system is to be upheld.

In addition to the forgoing serious consideration must be given to the weight of scientific evidence of the impact of open cage salmon farming on the survival rates of migrating salmon and sea trout smolts and we contend therefore that the precautionary principle needs to be invoked in respect of the decision as to whether to renew the marine finfish aquaculture licence at this site. As outlined in this submission the Inishfarnard site is in close proximity to a number of SAC's, and this further underlines the imperative of invoking the precautionary principle.

John Murphy
Chair Salmon Watch Ireland

Salmon Watch Ireland
07 March 2024