WESTER ROSS AREA SALMON FISHERY BOARD
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14th May 2013

Dear Proprietors

The attached briefing paper formed the basis of RAFTS' further presentation of MIAP to the board at the board meeting on 30th April. Following its own analysis, the board is now distributing that paper to proprietors within the board area, consistently with its statement released following the RAFTS' presentation made on Jan 24th.

At this further presentation and during the board meeting on 30th April, further issues relating to MIAP were discussed. The board was broadly encouraged by the presentation, albeit subject to some reservations. The board understands that MIAP is still in development, particularly with regard to important interpretative criteria to inform a proper application of the mapping tool.

The board welcomes feedback on your views as to the suitability of MIAP as a mapping tool for planning applications within or affecting the board area. The board will make a decision on whether or not to support MIAP when RAFTS' work on the planning tool has been completed, which is expected to be soon. Proprietors will have a further opportunity to provide feedback to the board in advance of any decision by the board with respect to the suitability of MIAP once RAFTS has published MIAP in its final form for this year.

Would you kindly respond with your feedback by 31st May 2013?

Yours faithfully,

Bill Whyte
WRASFB Chairman

Rivers and Fisheries Trusts of Scotland

Managing Interactions Aquaculture Project

Briefing Paper for Wester Ross DSFB

April 2013

1. Introduction:

When Rivers and Fisheries Trusts of Scotland (RAFTS) staff attended and presented the Managing Interactions Aquaculture Project (MIAP) to the Wester Ross DSFB in January 2013 it was requested that RAFTS provide a briefing paper to the Board when the v1 outputs from the Locational Guidance part of MIAP were available. This would be possible following collation and analysis of the initial information provided by trusts to support the model which was to take place over the period February-March 2013.

This short briefing paper is provided to fulfil this commitment and to accompany the presentation to be provided to Wester Ross DSFB on 30/04/13.

It should be noted that the technical manual and guidance to accompany the Locational Guidance models is in preparation and will be made available after review and sign off by the MIAP Steering Group. RAFTS and the MIAP will provide a refined summary paper in due course to accompany the technical guidance manual and which will be made publicly available on the RAFTS website; all of these documents and outputs will be available to trusts and boards in the project area.

This paper is a non-technical briefing provided to inform the discussions of the Wester Ross DSFB only. It is not expected that the contents of this paper are to appear in the press and mis-represented as part of attacks against RAFTS or the MIAP itself.

2. The Managing Interactions Aquaculture Project:

MIAP is made of three component parts:

1. An annual programme of sea-trout post smolt sweep netting and reporting of this;
2. A programme (2011) of wild fish sampling and subsequent genetic analysis to assess levels of introgression of aquaculture / Norwegian strain genetic materials in wild fish; and
3. Development of a locational guidance model to support fishery trust and board representations to aquaculture development planning to seek to better protect wild fish populations from inappropriate development.

The results of 1. and 2. are both reported separately on the RAFTS website[1]

[1] http://www.rafts.org.uk/aquaculture/

The rest of this paper will briefly summarise the current position in respect of the development and outputs of the Locational Guidance of the project.

3. Locational Guidance

The Locational Guidance work within MIAP has been the subject of much debate and publicity. Much of this has been negative and fuelled by the distribution of, often deliberately, mis-representative comment and mis-interpretative assessments of the work. However, the work has been supported by many to this stage and, now that v1 model outputs are available, a genuine consideration of the work can begin.

The model outputs have been prepared in relation to "River and Fisheries" and "Coastal and Transitional Water" areas.

3.1 River and Fisheries

A large area, 13,757km^2, of the west coast of Scotland is included in the model and information has been collated against a total of seven criterion to populate it:

1. Designations and Features
   (SACs for Atlantic salmon and freshwater pearl mussel)
2. WFD Classification
3. Value of fisheries
   (Rateable value)
4. Nature / type of fishery
5. Catchment accessibility
6. Juvenile salmonid populations
   (from e-fishing records)
7. Habitat quality

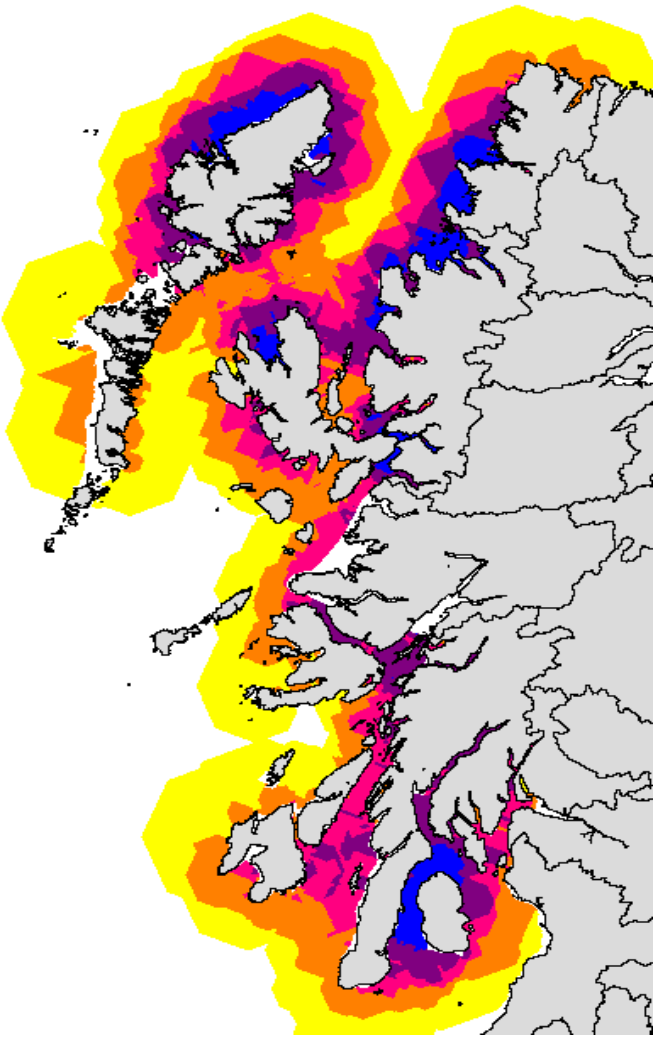
For a catchment or river to be included in the model a minimum of five of the seven criterion must have information against it. Catchments or rivers with insufficient information to fulfil this criterion are not included in the model.

Five fisheries trusts (Outer Hebrides, Skye, Argyll, Wester Ross and West Sutherland) have provided information to the model with Lochaber Fisheries Trust having removed themselves from the Locational Guidance part of MIAP in January 2013. An alternative approach has been developed for the systems in Lochaber which used publicly available information only to ensure that waters in other trust areas bounding Lochaber are fully represented in the sensitivity analysis. Waters solely in Lochaber are excluded from the model and publicly available maps. Statistical assessments of this approach have been undertaken to confirm that this twin track analysis approach is appropriate and reasonable.

3.1.1 Outputs:

The v1 output of the model has been prepared (see **Map 1**). This has been provided to participating trusts in GIS map layer format and the map presented is simply an image of this entire layer. The model generates a 5 class sensitivity assessment of coastal waters which is a function of the combined river scores of all rivers and their intersections with each other at 1km, 5km, 15km and 31km distances from each river mouth. There is no ranking of individual rivers available or generated and scores from all rivers are combined into an overall sensitivity of the receiving coastal waters.

Map 1: v1 Output of River and Fisheries Locational Guidance



A summary of this analysis is provided in **Table 1**. This shows that the large majority of the waters included in the analysis are in the lower sensitivity scores 1 and 2 (65%) (largely a function of the large areas of offshore water included in the assessment by running the model to 31km from each river mouth) with the higher sensitivity scores 4 and 5 making up 19% of the total area. When the

map is viewed it is clear that the most sensitive areas are largely inshore areas with multiple rivers draining to these and, often, with protected sites amongst the catchments.

Table 1: Summary of sensitivity scores by area and of % of total area

Colour Code	Sensitivity Score	Area km^2	Area %
Yellow	1	11479	39
Orange	2	7585	26
Pink	3	4625	16
Purple	4	4009	14
Blue	5	1569	5

However, when the analysis is considered in relation to the location of fish farm sites (**Table 2**) it is clear that a disproportionately high level of current aquaculture developments operate in the areas identified as most sensitive from the model analysis. A total of 57% of all aquaculture operates in the 19% of most sensitive waters identified.

Table 2: Showing distribution of aquaculture sites in sensitivity score categories

Colour Code	Sensitivity Score	Area km^2	Area %	Active Farm (Ex. Lochaber)	% Active Farm (Ex. Lochaber)
Yellow	1	11479	39	5	4
Orange	2	7585	26	24	18
Pink	3	4625	16	28	21
Purple	4	4009	14	53	39
Blue	5	1569	5	24	18

In addition to the model analysis outputs context information (analysis of catch statistics per fishery district) will be provided and prepared. This work is ongoing and will allow fishery boards and trusts to represent the local context of the individual river catch trends to support their position in any overall planning representation.

3.1.2 Next steps:

A large majority (88%) of the study area is already included in the model analysis. Additional areas where new data would best be collected by trusts to support v2 of the model have been identified. In addition, data and information inputs from "boundary trusts" in Clyde, Ayrshire and Loch Lomond have been identified and quantified. The standard analysis and presentation of catch statistics (salmon and sea trout) for each fishery district is to be completed.

3.1.3 Summary Conclusions:

- This is work in progress but offers a way to consistently represent fish and fisheries in the aquaculture development and planning processes.
- It **does not** highlight individual rivers as more or less important than another as priorities are combined and applied to coastal waters.
- It allows and supports the flexible use of context information by trusts and boards to reflect local circumstances and priorities.
- It **does not** prevent trusts or boards highlighting additional factors or information to planners if they wish.
- Planners, Crown Estate etc are interested in this system and approach as an evidence or information based system to support contributions to planning.
- Presentations are being scheduled to show the current work to these parties as well as Boards and Trusts in the MIAP area.
- It would be desirable to include Information such as smolt migration routes within the model. However, this data does not exist. This is likely to be the case for many years.

3.2 Coastal and Transitional Waters

A large area, 12,855km^2, of the west coast of Scotland is included in the model and information has been collated against a total of four criterion to populate it:

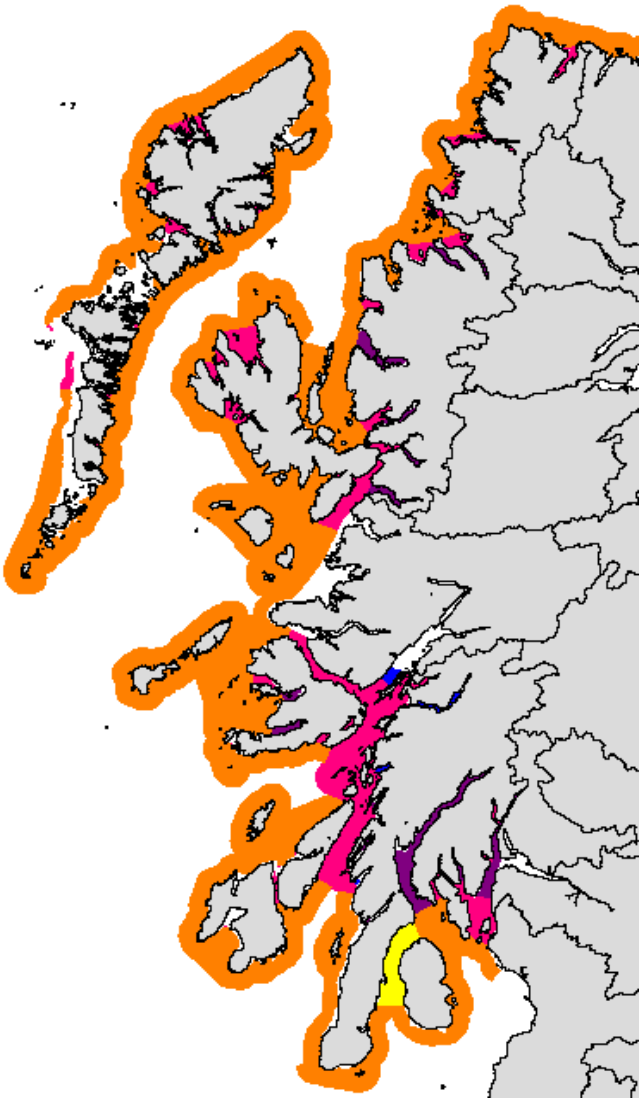
1. Type of Loch System
2. Orientation of Loch System
3. Flushing Rate Of Loch System
4. Monitoring Data (from post smolt sweep netting)

The Coastal and Transitional Model input information is all publicly available (criterion 1-3) or available through the reporting of the sweep netting results by the overall MIAP project (criterion 4). Water Framework Directive (WFD) water bodies are used in this model as opposed to the distance rings or arcs from river mouths used in the rivers and fisheries model. All water bodies identified have been fully included in the model analysis. These criterion are all, essentially, related to the sensitivity of the coastal and transitional waters to sea lice related risks.

3.2.1 Outputs

The v1 output of the model has been prepared (see **Map 2**). This has been provided to participating trusts in GIS map layer format and the map presented is simply an image of this entire layer. The model generates a 5 class sensitivity assessment of coastal and transitional waters.

Map 2: v1 Output of Coastal and Transitional Waters Locational Guidance



A summary of this analysis is provided in **Table 3**. This shows that the large majority of the waters included in the analysis are in the lower sensitivity scores 1 and 2 (84%) (largely a function of the orientation and type of coastline along much of the study area) with the higher sensitivity scores 4 and 5 making up only 4% of the total area. When the map is viewed it shows that the most sensitive areas are largely made up of fjordic, south west facing sea lochs which often have low flushing rates.

Similar to the rivers and fisheries model, when the analysis is considered in relation to the location of fish farm sites (**Table 3**) it is clear that a disproportionately high level of current aquaculture developments operate in the areas identified as most sensitive from the model analysis. A total of

24% of all aquaculture operates in the 4% of most sensitive waters identified. However, a disproportionately small % of aquaculture activities (22%) are found in the 84% of waters identified as least sensitive. Some 54% of aquaculture operates in the middle sensitivity analysis banding which represents only 12% of the area included in the model.

Table 3: Showing summary of sensitivity areas and % and distribution of aquaculture sites in sensitivity score categories

Colour Code	Sensitivity Score	Area km^2	Area %	Active Farm (Ex. Lochaber)	% Active Farm (Ex. Lochaber)
Yellow	1	172	1	1	1
Orange	2	10664	83	28	21
Pink	3	1584	12	72	54
Purple	4	395	3	26	19
Blue	5	40	1	7	5

In addition to the model analysis outputs context information (WFD Classification, Marine Scotland Science Aquaculture Waterbody Characterisation and SNH Marine Conservation Areas) has been prepared and is available. This context information can be used by fishery boards and trusts to support their position in any overall planning representation.

3.2.2 Next steps:

This is a more straightforward model to re-run and this will take place annually using revised WFD Classification and sea-trout post smolt survey information available each year.

3.2.3 Summary Conclusions:

- This is work in progress but offers a way to consider, essentially, sea lice risks and sensitivities in the aquaculture development and planning processes.
- It allows and supports the flexible use of context information by trusts and boards to reflect local circumstances and priorities.
- It **does not** prevent trusts or boards highlighting additional factors or information to planners if they wish.
- Planners, Crown Estate etc are interested in this system and approach as an evidence or information based system to support contributions to planning.
- Presentations are being scheduled to show the current work to these parties as well as Boards and Trusts in the MIAP area.

- It would be desirable to include data and information on sea lice dispersal models within the model. This data does not exist in anything other than local and incomplete coverage areas. This is likely to be the case for many years.

4. Summary

- The v1 Locational Guidance outputs of the MIAP have been run for both "Rivers and Fisheries" and "Coastal and Transitional Waters" and these sensitivity maps are available in GIS format.
- These models seek to make best and ordered use of the information which does exist and is available to the fisheries sector to support representations to aquaculture development planning.
- Desirable information on smolt migration routes and lice dispersal models, for example, does not exist and so cannot be included.
- There is significant interest in this work within Local Authority planners, the Crown Estate and others who consider that this approach will allow them to better consider responses from fishery trusts and boards to aquaculture development applications (new development or expansions).
- The fact that significant and disproportionately high %s of current aquaculture activities take place in areas identified by the model confirm that, to date, we as a sector have failed to prevent aquaculture developments taking place in important locations. The Locational Guidance may provide a basis both to protect these areas from further future development within the planning process and may provide a basis to begin dialogue on the potential for relocation of production from particularly sensitive locations if political and industry support for this is generated.
- Given the economic value of the aquaculture industry and the significant Government support for its continuation and expansion in Scotland it is not possible to have the industry removed from large areas of the west coast simply by wishing that to be the case.
- In the longer term the removal of aquaculture production offshore and/or to closed containment is the stated policy objective of RAFTS and ASFB to better protect wild fish stocks from the impacts of sea lice and aquaculture escapes in particular. In the meantime, the Locational Guidance model may provide a mechanism to achieve some traction within the planning system to prevent development in particularly sensitive locations.

Callum Sinclair
RAFTS
30 April 2013