

RIVERS AND FISHERIES TRUSTS OF SCOTLAND

AQUACULTURE-WILD FISH: WORKING TOWARDS IMPROVED MANAGEMENT 2014/15

Locational Guidance Model Version 3

1. Introduction

The Locational Guidance model (LG) provides information on factors relevant to wild salmonids when considering planning applications for new aquaculture sites. The LG model is a risk sensitivity analysis that provides contextual information on the status of wild salmonid populations in proximity to the location of a fish farm. The Rivers and Fisheries model focuses on the status of the rivers with regard to salmonid populations and quality of habitat, using a combination of data from public bodies and fisheries trusts. The LG model also provides information on the Coastal and Transitional waters; sea lice are transported in the sea primarily by surface winds, but also by tides and currents; knowledge of these factors provides further information to take into account when considering an application for a new aquaculture site.

The outputs of the Locational Guidance work are Geographical Information System (GIS) map layers and not hard copy maps. Map layers have been prepared in relation to "River and Fisheries" and "Coastal and Transitional Water" areas. Version 1 of the model was published in 2013, with version 2 published in 2014.

2. Model Information

Rivers and Fisheries

The Rivers and Fisheries model was developed using information for seven criteria. These are:

1. Designations and Features
(Natura Special Areas of Conservation for Atlantic salmon and freshwater pearl mussel)
2. Water Framework Directive Classification
(see http://www.sepa.org.uk/water/river_basin_planning.aspx for details)
3. Value of fisheries
(Rod and line fisheries on rivers are valued (the Rateable value) based on the number of salmon and sea trout caught and assessed by Local Authorities' District Assessors)
4. Nature / type of fishery
(value of angling lets/availability of angling opportunities)
5. Catchment accessibility
(presence of man-made barriers to fish migration preventing access to all of the naturally accessible catchment)
6. Juvenile salmonid populations
(fisheries trusts collect data on the health of juvenile salmonids, and can calculate how many salmonids should be present versus what actually is present)
7. Habitat quality

(fisheries trusts assess the quality of the river habitat for salmon and sea trout, noting where the habitat has degraded due to human activity such as agriculture or forestry)

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

Full details of the criteria selected and the development of the model can be found in the Locational Guidance Technical Report (<http://www.rafts.org.uk/aquaculture/>).

3. Locational Guidance Version 3

For version 3 of the model, any data gathered by the fisheries trusts during 2014 were used to update the information for catchment accessibility, habitat quality and status of juvenile populations. Public data were collected from Scottish Natural Heritage and Scottish Environment Protection Agency and updated for version 3. The extent of catchments included in the model remained at 93% for 2015 (figure 1).

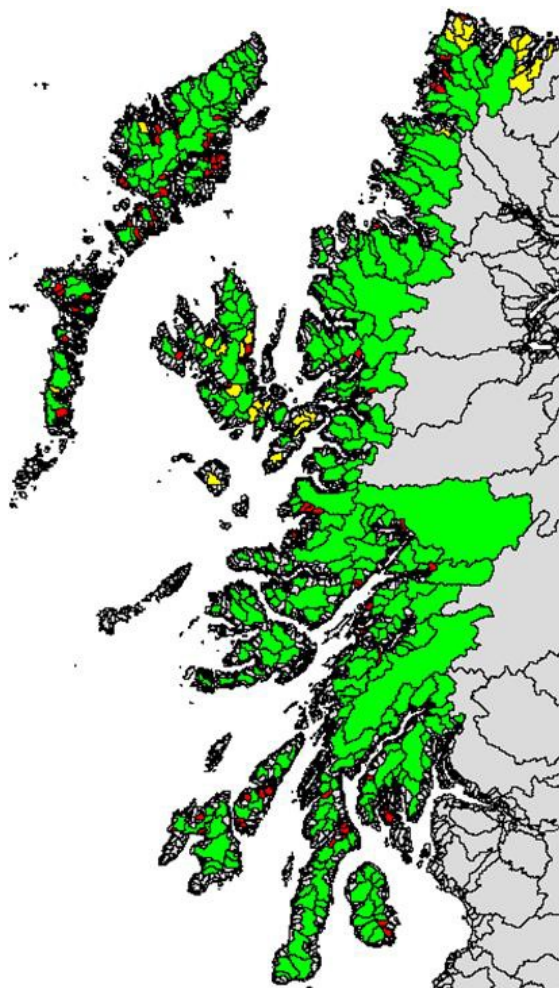


Figure 1. The data of modelled catchments in study area (green: 93%), catchments not in model due to absence of fishery trust data (yellow: 3%) and catchments not in model due to absence of both public and fishery trust data (red: 4%).

3.1 Model outputs

As with the previous versions, version 3 consists of a GIS map layer generating 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.

Version 1 of the model used weightings against the criteria scores, as it was considered by the Steering Group that not all criteria were of equal importance for the final assessment. The Locational Guidance Technical Report (2013) recognised that using weightings introduced an element of subjectivity into the models, and subsequently the use of weightings was considered for version 2. The 2014 report on version 2 of the model concluded that “Using weightings does not appear to have had an undue effect on the risk sensitivity outputs. Weightings were introduced as the Steering Group were of the opinion that equal weighting for all criteria did not represent the true assessment of the health of rivers and fisheries. “

Figure 2 displays version 3 of the Locational Guidance model. A cross-tabulation statistical assessment of the 2015 model compared to the 2014 model shows a 94% agreement between the two models, with minor sensitivity reclassifications due to the updated data. Table 1 displays with key for the Locational Guidance model, with the lower sensitivity scores associated with a reduced risk to wild salmonids, and higher sensitivity scores associated with an increased risk to wild salmonids. Version 2 of the model is displayed in figure 3 to allow comparison.

Table 1. Rivers and Fisheries Model Sensitivity Scores and Area (excluding Lochaber).

Sensitivity Colour	Sensitivity Score	Area (km ²)	Area (%)
Yellow	1	11376	39
Orange	2	7575	26
Pink	3	4400	15
Purple	4	3897	14
Blue	5	1801	6

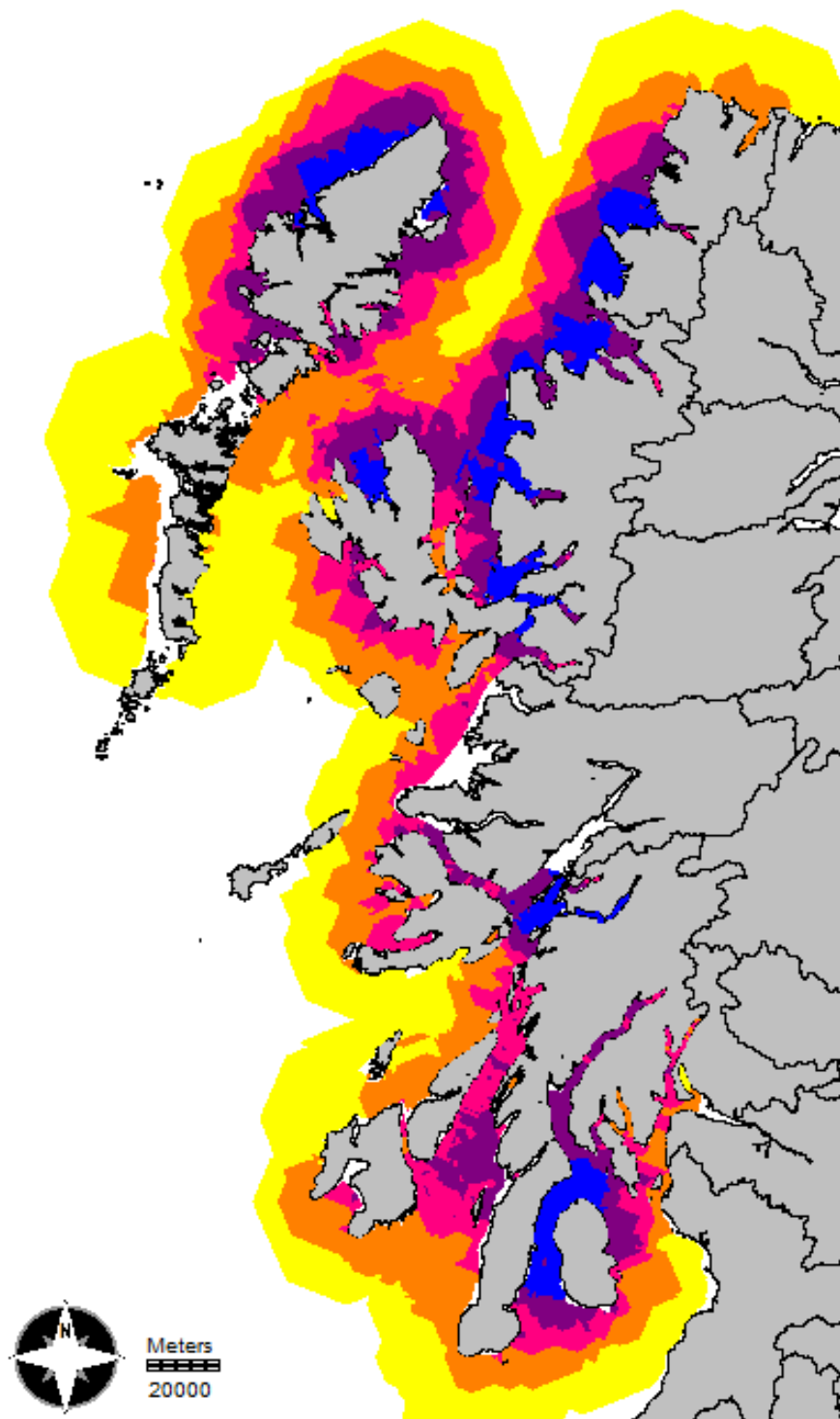


Figure 2. Rivers and Fisheries Locational Guidance Model Version 3 2015

4. Publication and Availability of the Locational Guidance Models

Version 3 of the Locational Guidance Model will be made publically available through the RAFTS website. Version 1 and 2 will remain available on the website.

RAFTS

March 2015

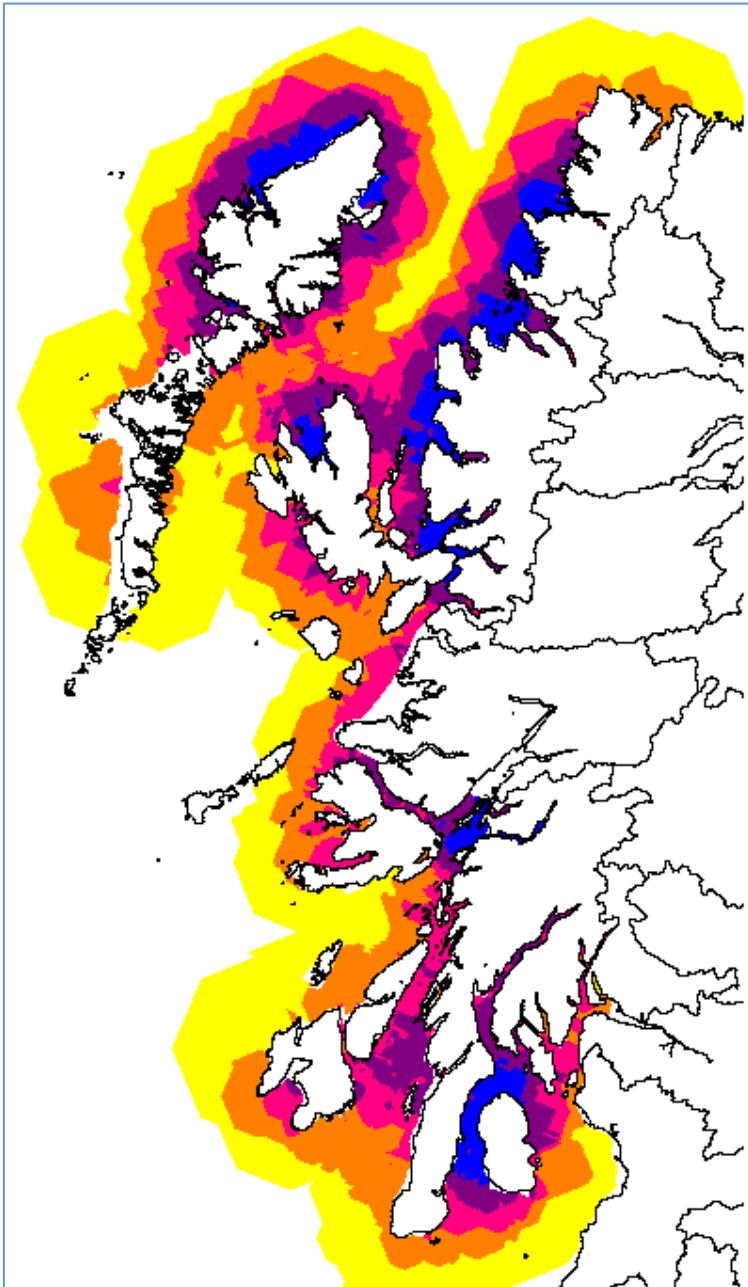


Figure 3 . Rivers and Fisheries Locational Guidance Model Version 2 2014