Marine and Freshwater Research, 2021, **72**, 493–506
https://doi.org/10.1071/MF19272

Supplementary material

The effect of environmental conditions on seasonal and inter-annual abundance of two species in the Yangtze River estuary

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Estimated spatial distribution maps of the two species predicted by the best GAM

We did interpolation using environmental data for each season from 2012 to 2014 but had unsatisfying results due to the poor nature of data (sample size was too small to have satisfying results) collected in the YRE. For example, the species *L. ocellicauda*, we had just 51 rows of data, assigning this per season means 51 ÷ 3 years ÷ 4 seasons = 4.25. Meaning we just going to use four points to predict the whole area which is so small and unreasonable to an extent. We tried to plot the observed species density for each season but also could not get reliable information or a better plot as shown in the figure below.

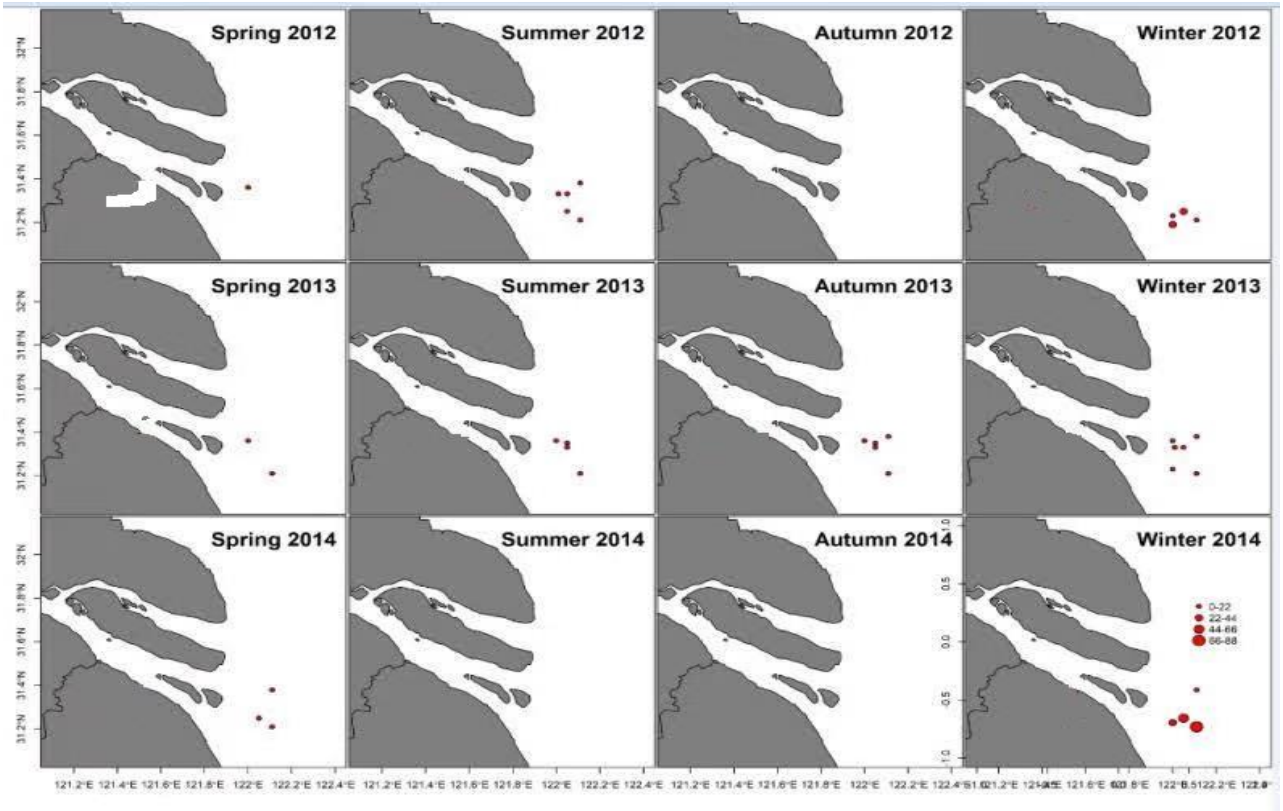

Fig. S1. Observed species density plot for each season for *Lophiogobius ocellicauda*

However, owing to the relatively small dataset used and the distribution of the sampling stations; knowing fully well that some spatial autocorrelations may exist given the station's distribution. We used Moran's I index to test the spatial autocorrelation for all candidate GAMs. The results are presented in Table 2 (in the main paper). Just the plot of *Lophiogobius ocellicauda* was presented here since it had lesser data than *Collichthys lucidus*.