Modelling scenarios for nutrient-sensitive fisheries management

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Contents

1 Data pipeline

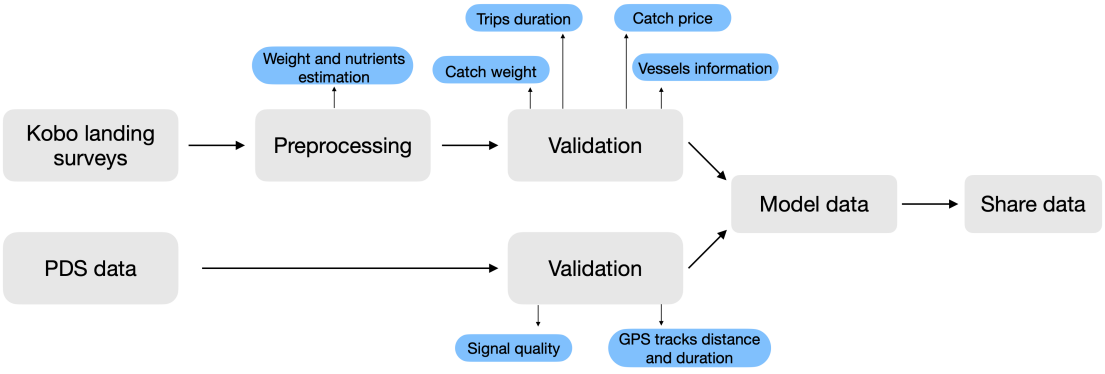

Figure 1: The main steps of Peskas' data workflow (see https://github.com/WorldFishCenter/peskas.timor.data.pipeline for more details). The initial raw data consist of the KOBO landing surveys and GPS tracks provided by Pelagic Data Systems. The landing surveys undergo a preprocessing step in which we extract further information from the data, primarily the catches' weight and the nutritional yield for each catch. Both the landing surveys and the PDS data are subjected to a validation process involving the cleaning and removal of outliers. Validated data is modelled to return the national estimates of catch prices, weight and nutrient yield. Finally, data are organized to be shared.

2 Data summary

2.1 Regions' temporal coverage

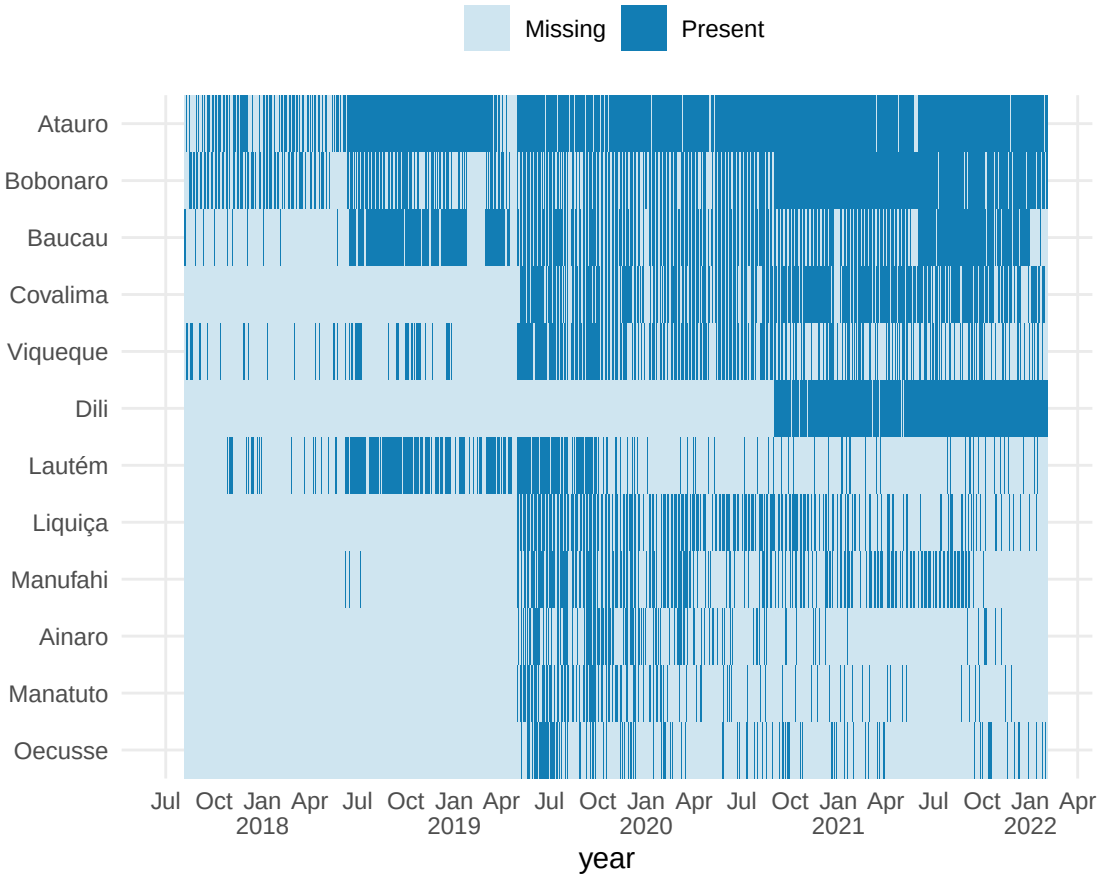

Figure 2: Temporal coverage of each municipality on the aggregated daily scale.

Atauro, Bobonaro, Bacau and Covalima are the most complete. I'll filter the following analyses on these 4 municipalities and consider the period Jun 2019 - Feb 2022.

3 Nutrients seasonality

Let's start visualizing seasonal patterns in total weight and nutrients:

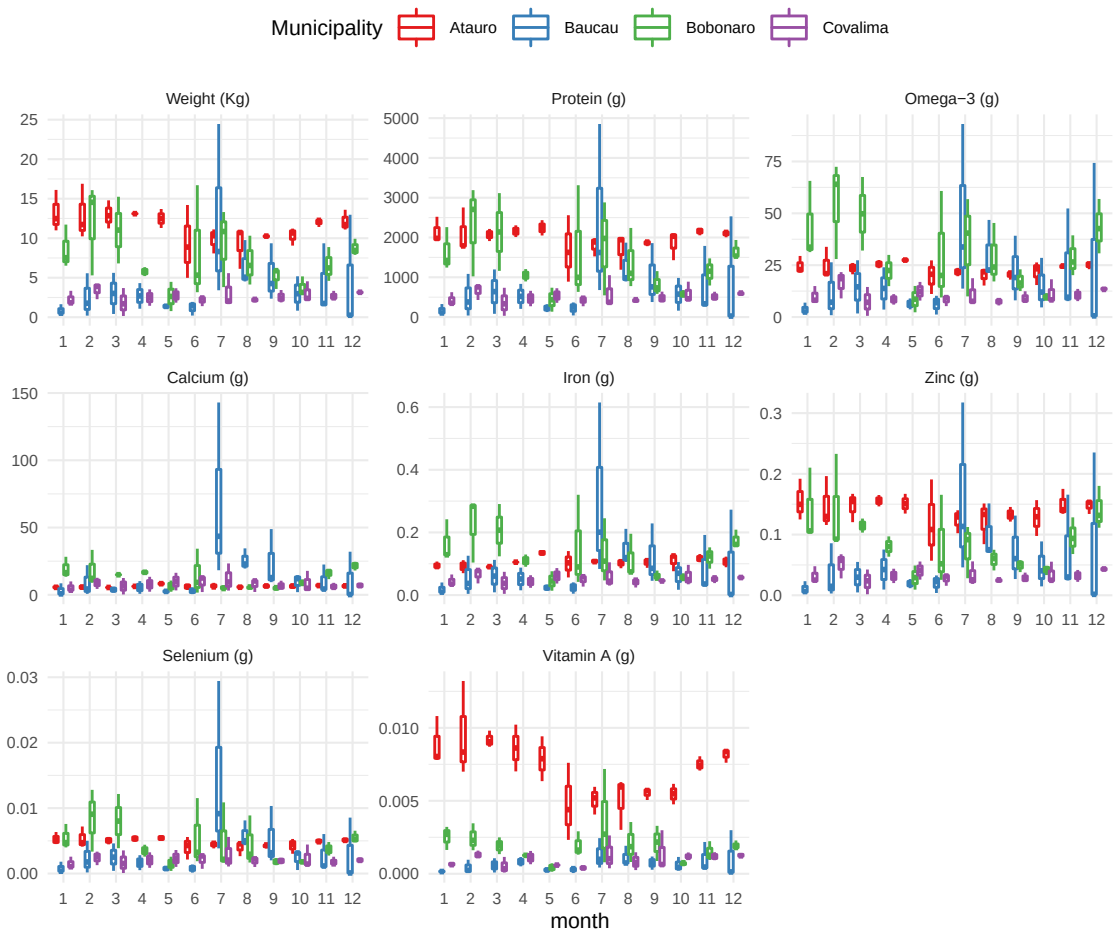

Figure 3: Seasonal distribution of catch weight and nutrients. The values are normalized on the number of trips of each municipality highlighting the average monthly yield independently from the sample size.

There is something strange with Baucau values. That something to focus on. At the moment leave it apart and continue with other municipalities.

Figure 4: Seasonal distribution of catch weight and nutrients. The values are normalized on the number of trips of each municipality highlighting the average monthly yield independently from the sample size.

What is (are) the driver (drivers) of the seasonal differences we see between municipalities? One could be differences in taxa composition.

4 Catch composition

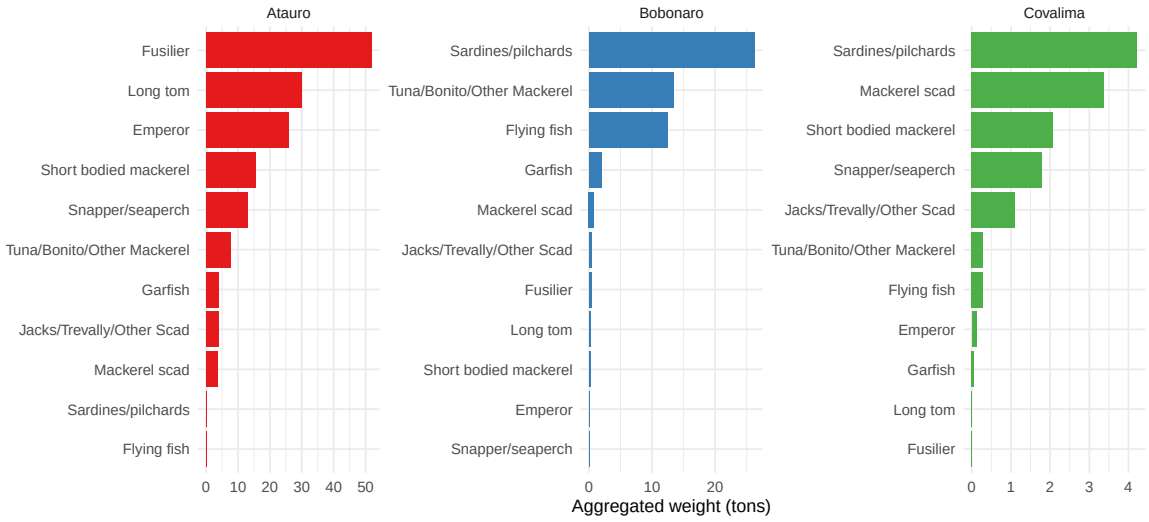

Figure 5: Aggregated stock of the 10 most important species in each municipality.

The composition of the most representative taxa is heterogeneous among the municipalities. In particular, Atauro seems to be quite different from the others.

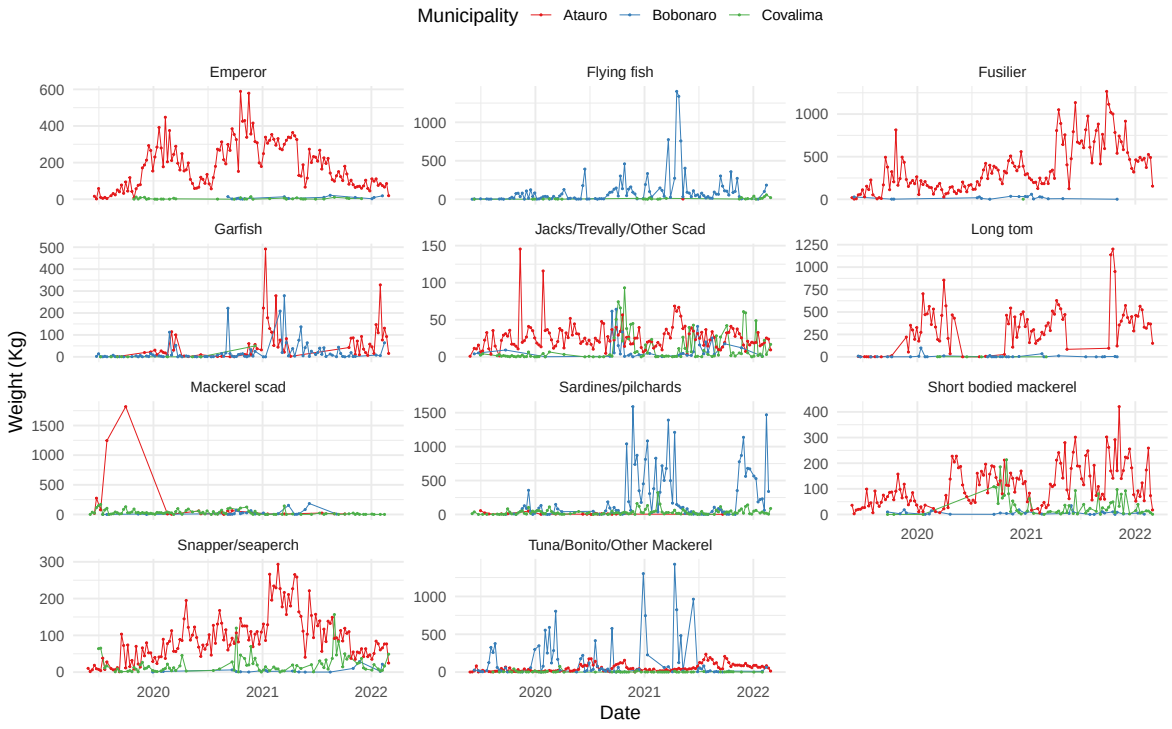

Figure 6: Interannual distribution of weekly aggregated values of the 10 most important species.