Lenfest - SE Australia case study

Linda Thomas

 www.github.com/LindaThomas009

I'm Linda Thomas from Oceans & Atmosphere in Hobart. I've had varied roles during my 14 years at CSIRO - Oracle database development, MNF Data Librarian. Before Data School I wouldn't say I could code very well, just do simple SQL scripts and my daily routine was varied involving anything from data collection, some basic data interpretation & general project activities.

My Project

The Lenfest Project is a collaboration with researchers, managers, and policymakers in four countries (Chile, India, USA and Australia) to provide guidance for selecting indicators of ecosystem structure and function, and operationalising Ecosystem Based Fishery Management (EBFM) in a diversity of contexts. The Australian case study is looking at how the chosen indicators can be applied to the Southern and Eastern Scalefish and Shark Fishery (SESSF) as this fishery has many species caught and differing gear types used. The fishery data was downloaded from an Australian Fisheries Management Authority (AFMA) Oracle database (hosted by CSIRO) and consists of 6919734 rows of data. The SESSF is made up of 11 sub-fisheries which catch at total of 469 species. One of the indicators to be looked at, is how species compostition of the catch has changed over time. To this, the imported data was filtered to removed all non-year values, then due to the large amount of data, the species that were caught over 200 times were extracted by fishery sub-type for each year.

My Digital Toolbox

I have been using R Studio to visualise the data, picking up skills in importing & tidying data, converting data to a required format, graphing the data and presenting it in Rmarkdown. I have also completed a draft Research Data Management Plan for the project

Favourite tool

I've really liked using the plotting features, especially gganimate to help bring data to life. Shiny looks good too!

My time went ...

My time went mainly on importing and filtering down my data as it is a large dataset to start with (nearly 7 million rows). I also spent time using ggplot to graph my data, then think about what I really needed to show and subset my data again, before regraphing.

Next steps

What I would like to do in the future is help develop a Shiny app that allows a user to calculate the indicators based on information provided with a tab for each indicator grouping eg biological, social, economic. This will allow managers and policy makers to get a feel of how the fisheries have changed over time.
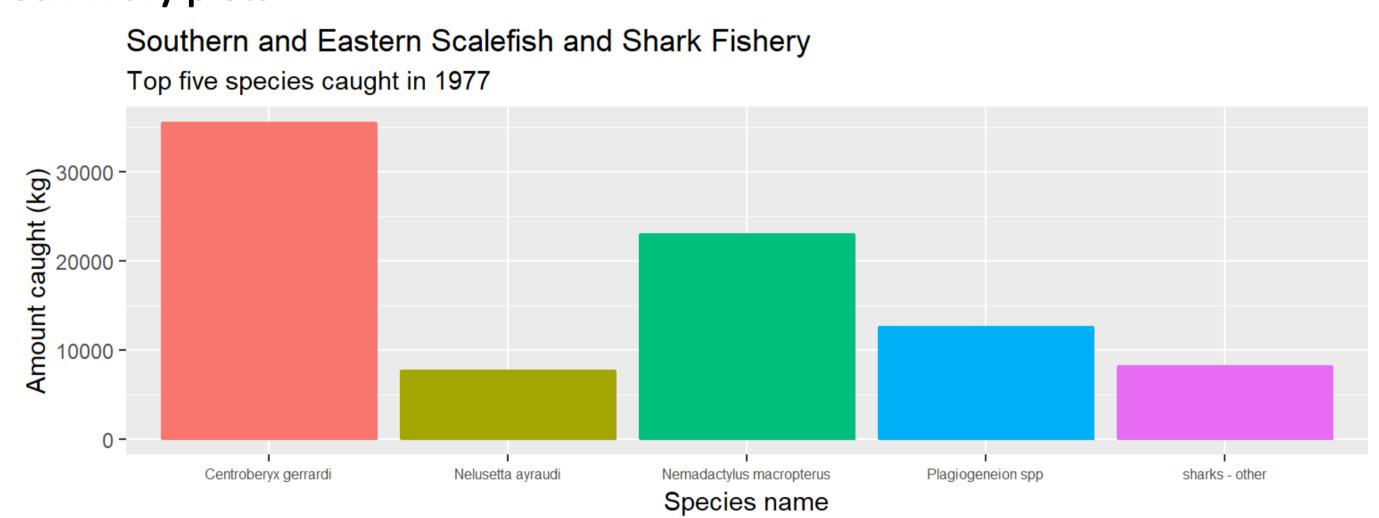

Fishing boats from Valparaiso, Chile

Example data

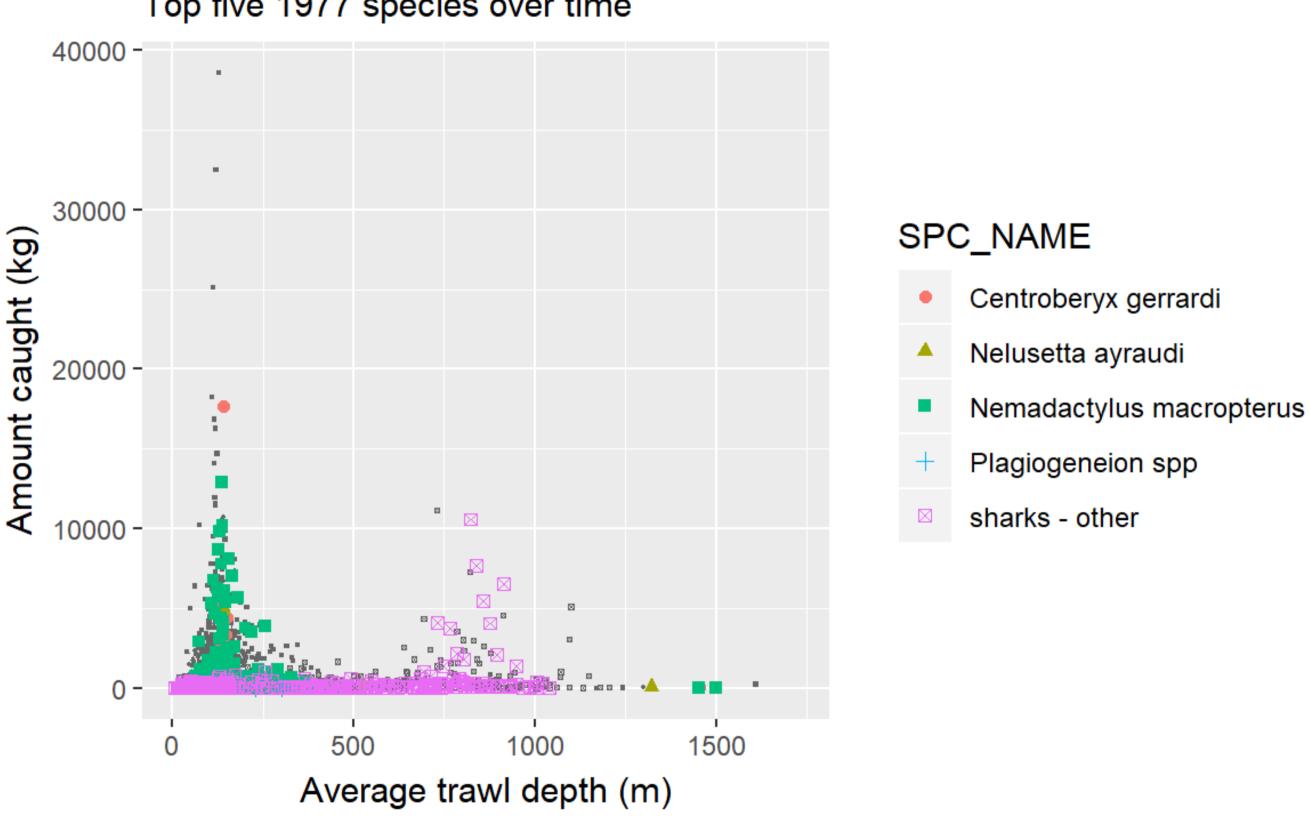| Year	Species name	Sub-fishery	Catch amount (kg)
1977	Centroberyx gerrardi	Great Australian Bight - Trawl fishery	35445
1977	Nemadactylus macropterus	Great Australian Bight - Trawl fishery	22958
1977	Plagiogeneion spp	Great Australian Bight - Trawl fishery	12596
1977	sharks - other	Great Australian Bight - Trawl fishery	8191
1977	Nelusetta ayraudi	Great Australian Bight - Trawl fishery	7671

Note:

Data taken from AFMA database

Summary plots

Year by year animation