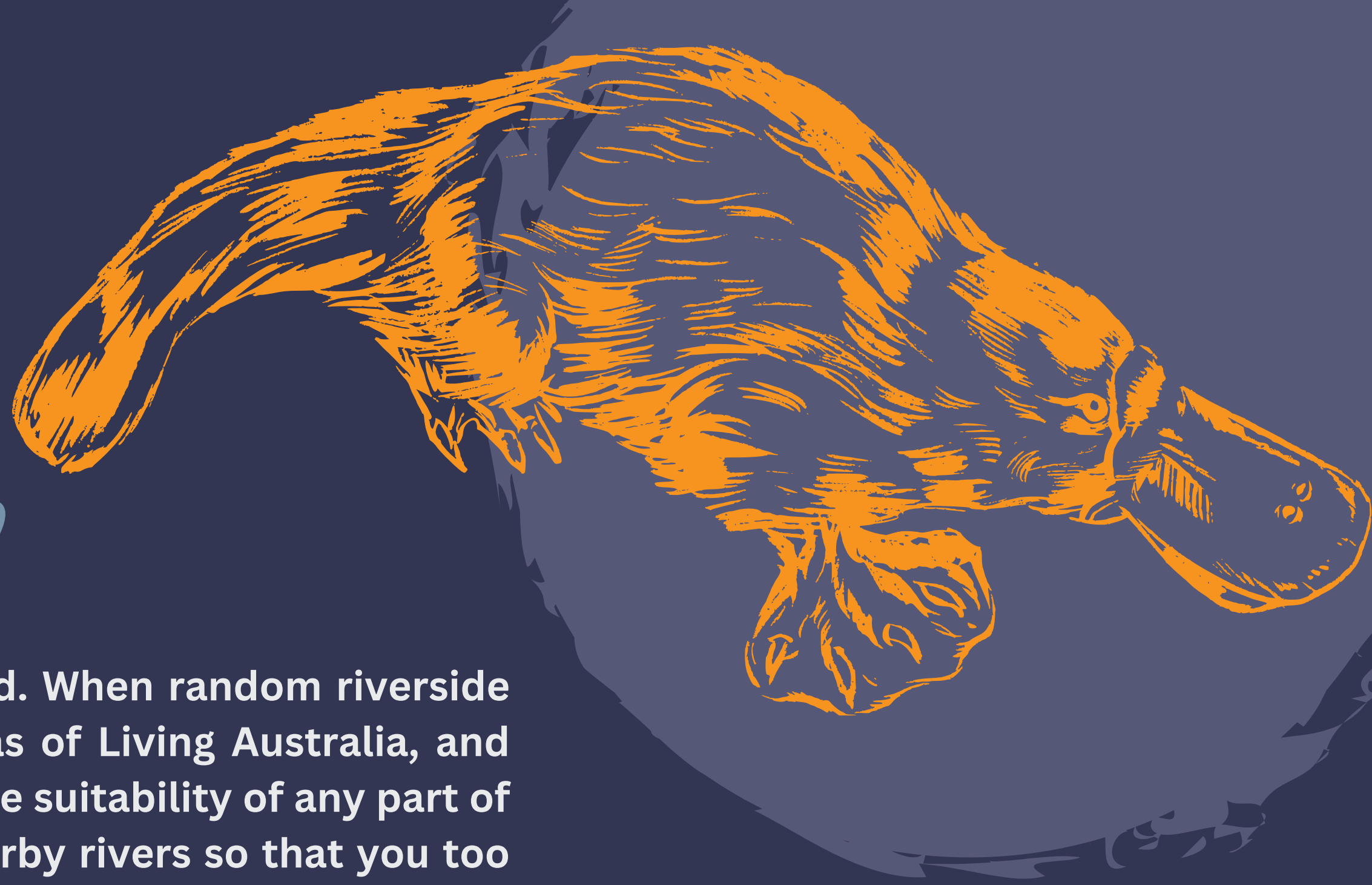# IN SEARCH OF

Platypus

This year, I have been on a quest to spot a platypus in the wild. When random riverside idling fails, I turn to computational models. Aided by the Atlas of Living Australia, and some nifty data science, I have developed a system to assess the suitability of any part of Australia to platypus habitation, and created a tool to find nearby rivers so that you too can search for Australia's most elusive aquatic monotreme.
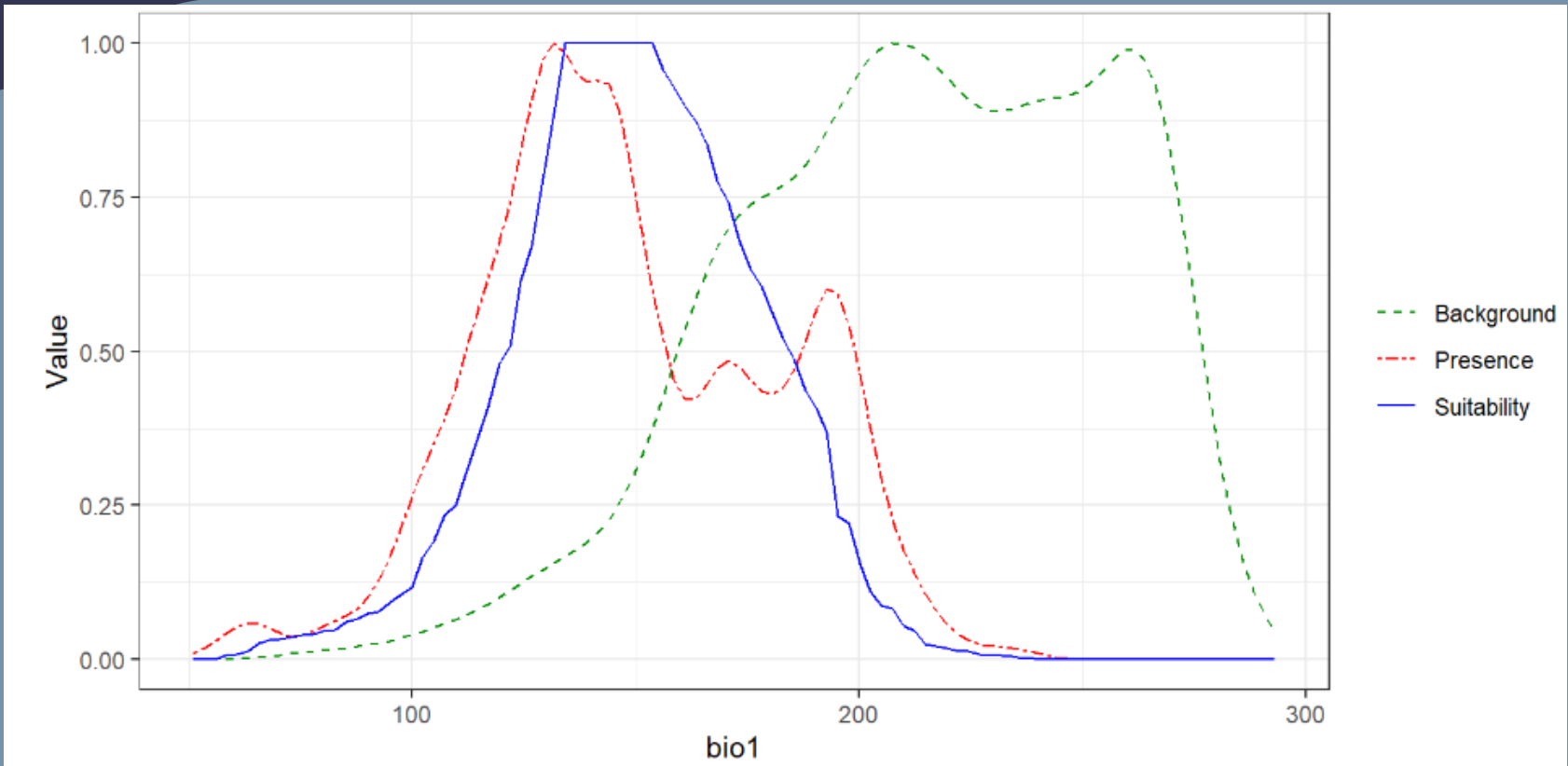
What is ENM?

ENM (Environmental Niche Modelling), commonly referred to as Species Distribution Modelling (SDM) is the use of computational models to predict habitat suitability for particular species, and thus where they may be found.

The best way to utelise the suitability function is through relative comparison. Try out a few locations, and have a look what the function determines is more suitable out of the options.

BioClim Model of Platypus Environmental Suitability

Understanding Bioclim Plots:

The x-axis in these plots signifies specific climatic variables, such as Annual Mean Temperature. Each plot assesses the relationship between the climatic variable and the presence of platypus.
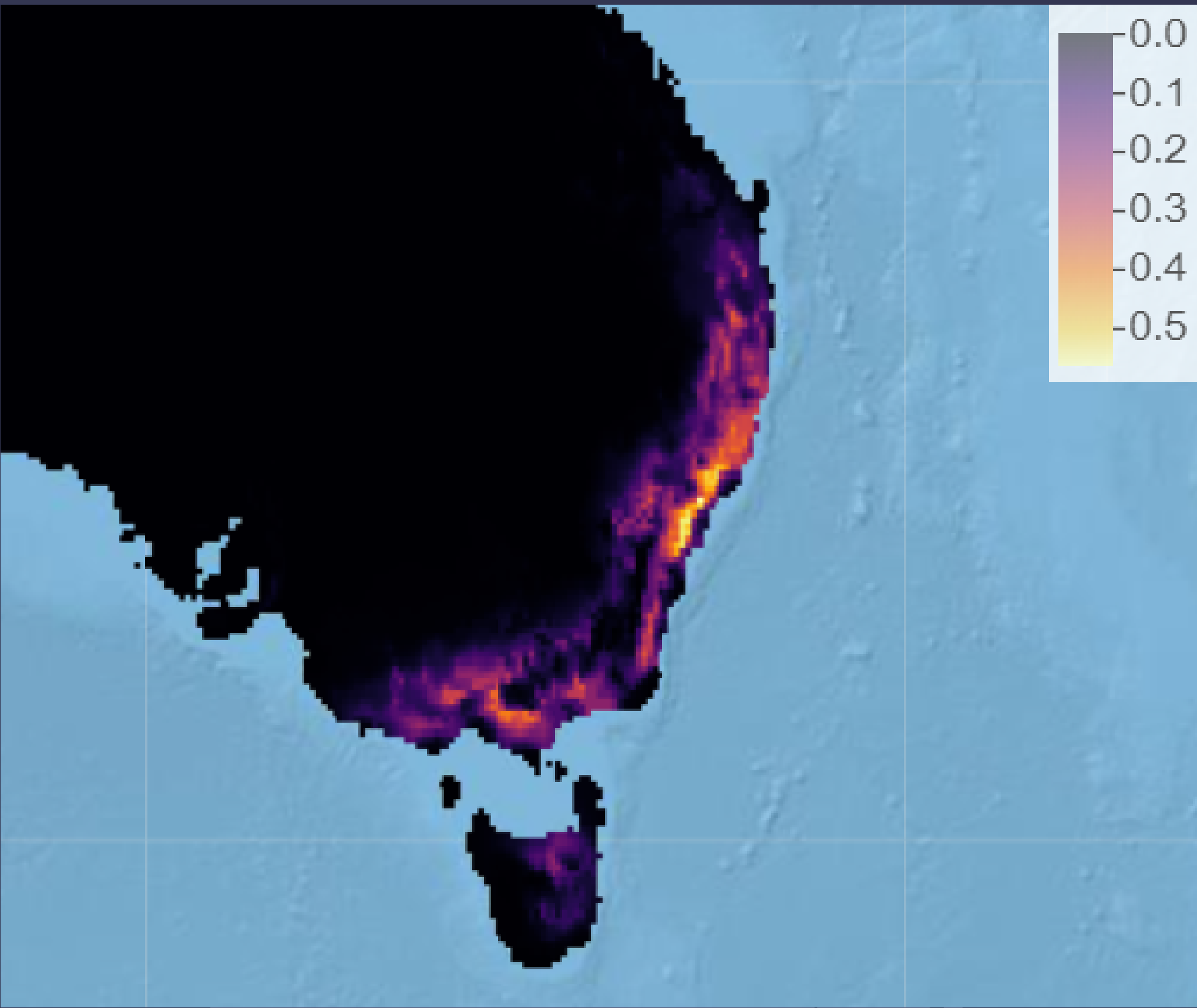

Annual Mean Temperature (BIO1) Response Plot

Overall I assessed 19 different environmental conditions. I will outline some of the interesting findings.

Platypus can withstand a decently wide range of climates, being found in Australia's coldest environments (BIO1), but also in the warmer of regions of Queensland, all the way up to Cape York (Barungguan). Being aquatic, they are found commonly in climates with decent rainfall around all months and are found more commonly in climates with less fluctuation in monthly temperatures (BIO3) and less temperature seasonality (BIO4).

Road Trip!

Lets say we're planning a road trip from Canberra to Coffs Harbour, and we really want to spot a platypus. Where would we be most likely to do so? Should we travel through Dubbo, or camp a night at Barrington Tops?

Canberra	Dubbo	Barrington Tops	Coffs Harbour
Murrumbidgee River	Castlereagh River	Karuah River	Bellinger River
Distance (in km): 2.444379	Distance (in km): 9.551319	Distance (in km): 8.026624	Distance (in km): 8.364607
Locations suitability value: 0.08401697	Locations suitability value: 0.01867044	Locations suitability value: 0.1783121	Locations suitability value: 0.1144743