

## A Modelled Global Distribution of the Kelp Biome



### Description:

This is a MaxEnt model map of the global distribution of the Laminarian kelp biome. This was modelled using 44,265 cleaned primary occurrence records from the Global Biodiversity Information Facility (GBIF), and the Ocean Biodiversity Information System (OBIS) and 13 environmental variables from the Global Marine Environment Datasets (GMED).

### Citation:

Jayathilake D.R.M, Costello M.J. (2020). A modelled global distribution of the kelp biome. *Biological Conservation*. <https://doi.org/10.1016/j.biocon.2020.108815>

### Temporal range:

1900 to 2020

### Geographic Range:

Global

### Supplementary information:

See Jayathilake and Costello (2020) for a full description of dataset creation.

### Purpose of creation:

A distribution map created as a shapefile read for use in GIS software is an essential tool for the conservation of the world's kelp forests. We have filled that technical gap by creating this map.

### Creation methodology:

We downloaded 109,824 occurrence records for the order Laminariales in 145 datasets from the Global Biodiversity Information Facility GBIF, and 47,695 records in 99 datasets from the Ocean Biodiversity Information System OBIS. After data cleaning, 44,265 occurrence records were used in a MaxEnt model. Initially, we used depth, diffuse attenuation coefficient, dissolved oxygen concentration, distance from the land, nitrate concentration, pH, phosphate concentration, photosynthetically active radiation, average sea surface temperature, maximum sea

surface temperature, salinity, slope, and wave height variables. the model had 10 replicate runs with cross-validation, a maximum number of background points 10,000, and maximum iterations 1000. The 'remove duplicate presence records' option was activated to keep one observation point per 30 arc sec grid cell. Model evaluation was carried out using another separate set of occurrence records. See Jayathilake and Costello (2020) for a full description of the methodology.

Version:	1.0 (2020)
Data lineage:	First version
Category:	Biogenic habitat
Keywords:	Marine, Laminarian, MaxEnt, kelp, seaweed, macroalgae, biome, global
Similar datasets:	-
Limitations:	This map has 30 arcsec resolution. A finer resolution such as 30 m may increase the accuracy of the predicted area. There are still issues with classifying species as kelp. Some of these species had adequate occurrence records, while others had very few. As the number of occurrence records are increased with time, a more accurate map can be created. Accurate occurrence records are in great demand for the Arctic, tropics, and islands of the Southern Ocean. With the availability of more occurrence records, it should be mapped separately and update this map.
Maintenance frequency:	Data are not being updated.
Main access/use constraint:	Creative Commons Attribution 4.0 Unported (CC BY 4.0). See <a href="https://creativecommons.org/licenses/by/4.0/">https://creativecommons.org/licenses/by/4.0/</a> for details. Free to (1) copy and redistribute the material in any medium or format, (2) remix, transform, and build upon the material for any purpose, even commercially. You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.
Other access/use constraints:	-
Organisation type:	party that created the resource
Contact Organisation:	School of Environment, University of Auckland, Auckland
City:	Auckland
E-mail:	<a href="mailto:djay782@aucklanduni.ac.nz">djay782@aucklanduni.ac.nz</a> <a href="mailto:m.costello@auckland.ac.nz">m.costello@auckland.ac.nz</a>

Dataset ID: UniAuk-004

Data format(s):	Vector (polygon);	Dataset size (uncompressed):	Variable
Webpage and/or download:	<a href="http://data.unep-wcmc.org/datasets/49">http://data.unep-wcmc.org/datasets/49</a>		
Other webpage:	-		
Web map service:	<a href="http://gis.unep-wcmc.org:6080/arcgis/rest/services/marine/UniAuk_004_ModelledKelpBiome/MapServer">http://gis.unep-wcmc.org:6080/arcgis/rest/services/marine/UniAuk_004_ModelledKelpBiome/MapServer</a>		
Factsheet:	Not available		
Resolution, scale:	30 arcsec	Reference system:	WGS 1984
West bounding:	180	East bounding:	180
South bounding:	90	North bounding:	90
Metadata standard:	ISO 19115	Date of metadata:	04-01-2020