

A Modelled Global Distribution of the Seagrass Biome



Description: This is a MaxEnt model map of the global distribution of the seagrass biome. Species occurrence records were extracted from the Global Biodiversity Information Facility (GBIF), United Nations Environment Programme-World Conservation Monitoring Centre (UNEP-WCMC) Ocean Data Viewer and Ocean biogeographic information system (OBIS). This map shows the suitable habitats for the seagrass distribution at global scale.

Citation(s): Jayathilake D.R.M., Costello M.J. 2018. A modelled global distribution of the seagrass biome. *Biological Conservation*.
<https://doi.org/10.1016/j.biocon.2018.07.009>

Temporal range: 1900-2017

Geographical range: Global

Supplementary information: See Jayathilake and Costello (2018) for a full description of dataset creation.

Purpose of creation: Existing seagrass distribution datasets still suffer from known spatial gaps in knowledge, for instance, the north east Pacific, the coastal area of Scandinavia and the Northern African coast, are at best characterised by point occurrence records, whilst extensive meadows are known to occur. Point occurrence datasets cannot be used in area surface calculations as they do not indicate the spatial extent of seagrass beds. In the absence of in-situ mapping of seagrass extent at a global scale, existing occurrence data can be used in species distribution models to map the biome in unsurveyed areas, and indeed some regional attempts have been made. This polygon layer is a result of a MaxEnt model of the global distribution of seagrass using all available point records.

Creation methodology: Species occurrence records were extracted from the Global Biodiversity Information Facility (GBIF), United Nations Environment Programme-World Conservation Monitoring Centre (UNEP-WCMC) Ocean Data Viewer and Ocean biogeographic information system (OBIS). After data cleaning, 39045 occurrence records (combining all seagrass species) were used in species distribution model. 13 environmental variables from Global Marine Environment Datasets (GMED) were interpolated into 30 arc seconds resolution (1 km at the equator) and used in species distribution models. MaxEnt models were generated using 10 cross-validate replicate runs with parameters: convergence threshold = 10⁻⁵, regularization

Dataset ID: UniAuk-002

multiplier = 1, maximum number of background points = 10,000 and maximum iterations = 1000. The methodology is fully described in the paper Jayathilake and Costello (2018).

Version: 1.0

Data lineage:

Category: Species habitat

Keywords: marine, ocean, seagrass, biome, habitat, MaxEnt

Similar datasets: WCMC-013-014, WCMC-015

Limitations: The spatial resolution of the map is plus or minus 1 km (30 arc second). The predicted extent is based on past data records and environmental distribution modelling. The present distribution at local scales would need confirmation from field observations.

The methods to create this layer should be repeated as more primary data become available, especially on the western coast of South American, Africa, Indian Ocean and Indo-Pacific region. Furthermore, the map only indicates the potential distribution and whether seagrass still occurs in these areas should be validated using more recent distribution data. Thus the map represents the potential geographic extent of seagrass should other variables (e.g. human impacts due to dredging or sediment runoff) not be limiting its occurrence.

Maintenance frequency: Data are not being updated.

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Data format(s): Vector (polygon; .shp)

Dataset ID: UniAuk-002

Distribution format(s): Vector (polygon; .shp) Dataset size (uncompressed): 4323kb

Webpage and/or download: <http://data.unep-wcmc.org/datasets/46>

Other webpage: <http://www.arcgis.com/home/webmap/viewer.html?webmap=b59fb51ac734473d990452529f5d711b>

Web map service: https://gis.unep-wcmc.org/arcgis/rest/services/marine/UniAuk_002_MaxentModelledSeagrassExtent/MapServer

Factsheet: <http://wcmc.io/seagrass>

Resolution, scale: 30 arc seconds

Reference system: Cylindrical Equ. Ar.

West bounding: -176.1

East bounding: 180.0

South bounding: -43.5

North bounding: 69.6

Metadata standard: UNEP-WCMC Specific

Date of metadata: 31/07/2018