Convention on Biological Diversity

UNDP

Aichi Biodiversity Target 11 Country Dossier: SUDAN

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GLOSSARY

AZEs	Alliance for Zero Extinction sites
CEPF	Critical Ecosystem Partnership Fund
EBSA	Ecologically or Biologically Significant Marine Area
EEZ	Exclusive Economic Zone
GCF	Green Climate Fund
GD-PAME	Global Database on Protected Area Management Effectiveness
GEF	Global Environment Facility
IBA	Important Bird and Biodiversity Area
ICCAs	Indigenous and Community Conserved Area Area (may also be referred to as territories and areas conserved by Indigenous peoples and local communities or "territories of life")
IPLC	Indigenous Peoples and Local Communities
KBA	Key Biodiversity Area
MEOW	Marine Ecosystems of the World
MPA	Marine Protected Area
NBSAP	National Biodiversity Strategy and Action Plan
OECM	Other Effective Area-Based Conservation Measures
PA	Protected Area
PAME	Protected Area Management Effectiveness
PPA	Privately Protected Area
PPOW	Pelagic Provinces of the World
ProtConn	Protected Connected land indicator
SOC	Soil Organic Carbon
TEOW	Terrestrial Ecosystems of the World
WDPA	World Database on Protected Areas
WD-OECM	World Database on Other Effective Area-Based Conservation Measures

Disclaimer

The designations employed and the presentation of material in this dossier do not imply the expression of any opinion whatsoever on the part of the Secretariat of the Convention on Biological Diversity (SCBD) or United Nations Development Programme (UNDP) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The information contained in this publication do not necessarily represent those of the SCBD or UNDP.

This country dossier is compiled by the UNDP and SCBD from publicly available information. It is prepared, within the overall work of the Global Partnership on Aichi Biodiversity Target 11, for the purpose of attracting the attention of the Party concerned and other national stakeholders to facilitate the verification, correcting, and updating of country data. The statistics might differ from those reported officially by the country due to differences in methodologies and datasets used to assess protected area coverage and differences in the base maps used to measure terrestrial and marine area of a country or territory. Furthermore, the suggestions from the UNDP and SCBD are based on analyses of global datasets, which may not necessarily be representative of national policy or criteria used at the national level. The analyses are also subject to the limits inherent in global indicators (precision, reliability, underlying assumptions, etc.). Therefore, they provide useful information but cannot replace analyses at a national level nor constitute a future benchmark for national policy or decision-making.

The preparation of this dossier was generously supported by: the Government of the Federal Republic of Germany, *Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GMbH*; the European Commission; the Government of the United Kingdom of Great Britain and Northern Ireland; and the Government of Japan (Japan Biodiversity Fund). The dossier does not necessarily reflect their views.

EXECUTIVE SUMMARY

This document provides information on the coverage of protected areas (PAs) and other effective area-based conservation measures (OECMs), as currently reported in global databases (the World Database on Protected Areas (WDPA) and World Database on Other Effective Area-Based Conservation Measures (WD-OECM)). It also includes details on the status of the other qualifying elements of Aichi Biodiversity Target 11 based on this data. These statistics might differ from those reported officially by countries due to difference in methodologies and datasets used to assess protected area coverage, differences in the base maps used to measure terrestrial and marine area of a country or territory, or if global datasets differ from the criteria and indicators used at the national level. Where available, data from national statistics for the elements of Target 11 are included alongside records from these global databases. This dossier also provides a summary of commitments made under Aichi Biodiversity Target 11, and a summary of potential opportunities regarding elements of the target for future planning.

The dossier has been developed in consultation with the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), which manages the WDPA, WD-OECM and Global Database on Protected Area Management Effectiveness (GD-PAME). Parties to the CBD are requested to contact protectedareas@unep-wcmc.org with any updates to the information in these databases.

Aichi Biodiversity Target 11 Elements: Current status and opportunities for action

Coverage - Terrestrial & Marine

- **Status:** as of May 2021, terrestrial coverage in Sudan is 42,694.5 km^2 (2.3%) and marine coverage is 10,662 km^2 (16.0%); national reporting shows terrestrial coverage of 5.78% (as several designated sites are not yet reported in the WDPA).

- **Opportunities for action:** opportunities for the near-term include updating the WDPA with any unreported PAs (including El Gazelle National Park, TaiaBassinda Galabat Triangle and others) and the recognizing and reporting OECMs to the WD-OECM. In the future, focus on relatively intact areas, while addressing the elements in the following sections, could be considered when planning new PAs or OECMs.

Ecological Representativeness– Terrestrial & Marine

- **Status:** Sudan contains 9 terrestrial ecoregions, 2 marine ecoregions, and 1 pelagic province: the mean coverage by reported PAs and OECMs is 6.5% (terrestrial), 32.3% (marine), and 0.6% (pelagic); 5 terrestrial ecoregions have no coverage by reported PAs and OECMs. Coverage of terrestrial ecoregions will improve with the inclusion of designated sites that are not currently reported in the WDPA.

- **Opportunities for action:** there is opportunity for Sudan to increase protection in terrestrial and marine ecoregions and pelagic provinces that have lower levels of

coverage by PAs or OECMs. Ecoregions which currently have no coverage by PAs or OECMs are key areas for action.

Areas Important for Biodiversity

- **Status:** Sudan has 11 Key Biodiversity Areas (KBAs): the mean coverage of KBAs by reported PAs and OECMs is 25.0%, while 8 KBAs have no coverage by reported PAs and OECMs. Other important areas for biodiversity include the Nile and its tributaries, wadies and khors, reserved forests, wetland marine islands, and rangelands.

- **Opportunities for action:** there is opportunity for Sudan to increase protection of KBAs that have lower levels of coverage by PAs and OECMs; priority could be given to those with no current coverage.

Areas Important for Ecosystem Services

- **Status:** coverage of areas important for ecosystem services: In Sudan, 6.0% of aboveground biomass carbon, 8.7% of belowground biomass carbon, 3.7% of soil organic carbon, 11.9% of carbon stored in marine sediments is covered by PAs and OECMs.

- **Opportunities for action:** for carbon, there is opportunity for Sudan to increase PA and OECM coverage in both marine and terrestrial areas with high carbon stocks. Protecting areas with high carbon stocks secures the benefits of carbon sequestration in the area.

- For water, there is opportunity to increase the area of the water catchment under protection by PAs and OECMs, or in cases where there is high levels of protection, focus on effective management for these areas. Protecting the current area of forested land and potentially reforesting would have benefits for improving water security.

Connectivity and Integration

- **Status:** coverage of protected-connected lands is 1.2%. There are plans underway to develop corridors, for example, the Shoab rommi Marine area will be included in the PA system to improve connectivity between Sanganeeb and Dogonab.

- **Opportunities for action:** there is opportunity for a general increase of PAs or OECMs, to focus on PA and OECM management for enhancing and maintaining connectivity, and to complete planned corridor projects. Improving connectivity increases the effectiveness of PAs and OECMs and reduces the impacts of fragmentation.

- As well, a range of suggested steps for enhancing and supporting integration are included in the voluntary guidance on the integration of PAs and OECMs into the wider land- and seascapes and mainstreaming across sectors to contribute, inter alia, to the SDGs (Annex I of COP Decision 14/8).

Governance Diversity

- **Status:** the most common governance type(s) for designated PAs in Sudan is: 64.3% under Government (Federal or national ministry or agency). As well, a stakeholders committee has been established in the Red Sea are, and it is also planned for other areas of the country.

- **Opportunities for action:** explore opportunities for governance types that have lower representation, for Sudan this could relate to shared governance, etc. Increase efforts to identify the governance types for the 35.7% of sites that do not have their governance type reported

- There is also opportunity for Sudan to complete governance and equity assessments, to establish baselines and identify relevant actions for improvement. As well, a range of suggested actions are included in the voluntary guidance on effective governance models for management of protected areas, including equity (Annex II of COP Decision 14/8).

Protected Area Management Effectiveness

- **Status:** 37.4% of terrestrial PAs and 0.0% of marine PAs have completed Protected Area Management Effectiveness (PAME) assessments reported.

- **Opportunities for action:** the 60% target for completed management effectiveness assessments (per COP Decision X/31) **has not** been met for terrestrial PAs and **has not** been met for marine PAs. Therefore, there is opportunity to increase protected area management effectiveness (PAME) evaluations for both terrestrial and marine PAs to achieve the target.

- There is also opportunity to implement the results of completed PAME evaluations, to improve the quality of management for existing PAs and OECMs (e.g. through adaptive management and information sharing, increasing the number of sites reporting 'sound management') and to increase reporting of biodiversity outcomes in PAs and OECMs.

INTRODUCTION

The Strategic Plan for Biodiversity 2011-2020 was adopted at the tenth meeting of the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) held in Nagoya, Aichi Prefecture, Japan from 18-29 October 2010. The vision of the Strategic Plan is one of "Living in harmony with nature" where *"By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people"* (CBD, 2010). In addition to this vision, the Strategic Plan is composed of 20 targets, under five strategic goals. Aichi Biodiversity Target 11 states that *"By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes."*

With the conclusion of the Aichi Biodiversity Targets in 2020, Target 11 on area-based conservation has seen success in the expansion of the global network of protected areas (PA) and other effective area-based conservation measures (OECMs). The negotiation of the post-2020 Global Biodiversity Framework (GBF) and its future targets provide an essential opportunity to further improve the coverage of PAs and OECMs, to improve other aspects of area-based conservation, to accelerate progress on biodiversity conservation more broadly, while also addressing climate change, and the Sustainable Development Goals. This next set of global biodiversity targets are to be adopted at the fifteenth meeting of the Conference of the Parties to the Convention on Biological Diversity. These new targets must aim to build upon lessons learned from the last decade of progress to deliver transformative change for the benefit of nature and people, to realize the 2050 Vision for biodiversity.

The United Nations Development Programme (UNDP) and the Secretariat of the Convention on Biological Diversity have developed the Aichi Biodiversity Target 11 Country Dossiers, which provide countries with an overview of the status of Target 11 elements, opportunities for action, and a summary of commitments made by Parties over the last decade. Each dossier can support countries in assessing their progress on key elements of Aichi Biodiversity Target 11 and identifying opportunities to prioritize new protected areas and OECMs.

This dossier provides an overview of area-based conservation in Sudan. Section I of the dossier presents data on the current status of Sudan's PAs and OECMs. The data presented in Section I relates to each element of Target 11. Section I also presents the PA and OECM coverage for two critical ecosystem services: water security and carbon stocks. In addition, the dossier presents potential opportunities for action for Sudan, in relation to each Target 11 element. The analyses present options for improving Sudan's area-based conservation network to achieve enhanced protection and benefits for livelihoods and climate change. Section II presents details on Sudan's existing PA and OECM commitments as a summary of existing efforts towards achieving Target 11. This gives focus not only to national policy and actions but also voluntary commitments to the UN. Furthermore, where data is

available, this dossier provides information on potential OECMs, Indigenous and Community Conserved Areas (ICCAs; also, often referred to as territories and areas conserved by Indigenous peoples and local communities or "territories of life") and Privately Protected Areas (PPAs) and the potential contribution they will have in achieving the post-2020 targets.

The information on PAs and OECMs presented here is derived from the World Database on Protected Areas (WDPA) and World Database on Other Effective Area-Based Conservation Measures (WD-OECM). These databases are joint products of UNEP and IUCN, managed by UNEP-WCMC, and can be viewed and downloaded at www.protectedplanet.net. Parties are encouraged to provide data on their PAs and OECMs to UNEP-WCMC for incorporation into the databases (see e.g., Decisions 10/31 and 14/8). The significant efforts of Parties in updating their data in the build up to the publication of the Protected Planet Report 2020 (UNEP-WCMC and IUCN, 2021) were greatly appreciated. UNEP-WCMC welcomes further updates, following the data standards described here (www.wcmc.io/WDPA_Manual), and these should be directed to protectedareas@unep-wcmc.org. The statistics presented in this dossier are derived from the May 2021 WDPA and WD-OECM releases, unless explicitly stated otherwise. Readers should consult www.protectedplanet.net for the latest coverage statistics (updated monthly).

Some data from the WDPA and WD-OECM are not made publicly available at the request of the data-provider. This affects some statistics, maps, and figures presented in this dossier. Statistics provided by UNEP-WCMC (terrestrial and marine coverage) are based upon the full dataset, including restricted data. All other statistics, maps, and figures are based upon the subset of the data that is publicly available.

Where data is less readily available, such as for potential OECMs, ICCAs and PPAs, data has also been compiled from published reports and scientific literature to provide greater awareness of these less commonly recorded aspects. These data are provided to highlight the need for comprehensive reporting on these areas to the WDPA and/or WD-OECM. Parties are invited to work with indigenous peoples, local communities and private actors to submit data under the governance of these actors, with their consent, to the WDPA and/or WD-OECM.

Overall, PAs and OECMs are essential instruments for biodiversity conservation and to sustain essential ecosystem services that support human well-being and sustainable development, including food, medicine, and water security, as well as climate change mitigation and adaptation and disaster risk reduction. The data in this dossier, therefore, aims to celebrate the current contributions of PAs and OECMs, whilst the gaps presented hope to encourage greater progress, not just for the benefit of biodiversity and the post-2020 GBF, but also to recognize the essential role of PAs and OECMs to the Sustainable Development Goals and for addressing the climate crisis.

SECTION I: CURRENT STATUS

Aichi Biodiversity Target 11 refers to both protected areas (PAs) and other effective area-based conservation measures (OECMs). This section provides the current status for all elements of Aichi Biodiversity Target 11 where indicators with global data are available. Statistics for all elements are presented using data on both PAs and OECMs (where this data is available and reported in global databases like the WDPA and WD-OECM). It is recognized that statistics reported in the WPDA and WD-OECM might differ from those reported officially by countries due to differences in methodologies and datasets used to assess protected area coverage and differences in the base maps used to measure terrestrial and marine area of a country or territory. Details on UNEP-WCMC's methods for calculating PA and OECM coverage area available here. The global indicators adopted here for presenting the status of other elements of Target 11 may also differ from those in use nationally. Where available, results from national reporting are also included.

COVERAGE - TERRESTRIAL & MARINE

As of May 2021, Sudan has **23** protected areas reported in the World Database on Protected Areas (WDPA). 9 proposed PAs, 1 PA that has no spatial boundary and no area listed in the WDPA, and a further 2 UNESCO-MAB Biosphere Reserves, are not included in the following statistics (see details on UNWP-WCMC's methods for calculating PA and OECM coverage **here**).

As of May 2021, Sudan has **0** OECMs reported in the world database on OECMs (WD-OECM).

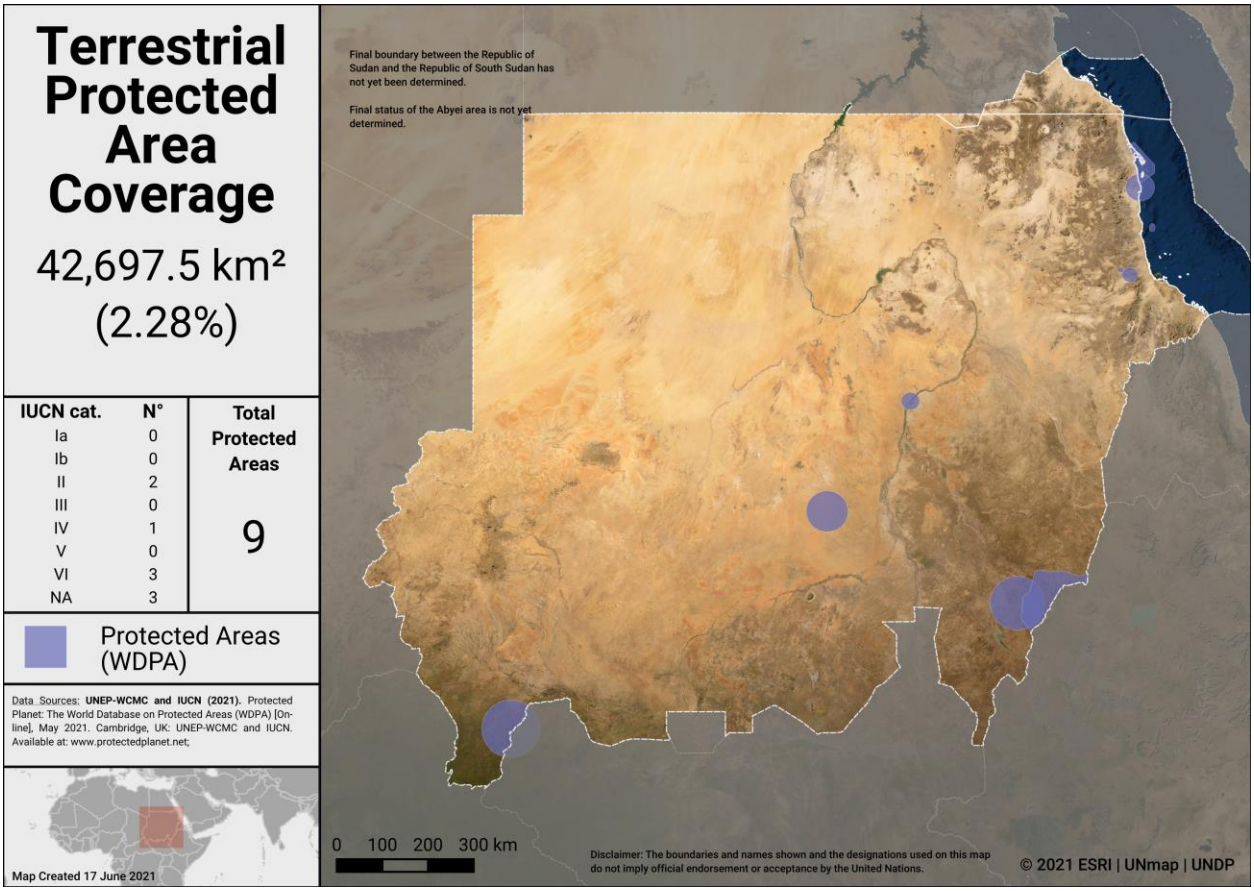
Current coverage for Sudan:

- 2.3% terrestrial (9 protected areas, 42,694.5 km^2)
- 16.0% marine (3 protected areas, 10,662 km^2)

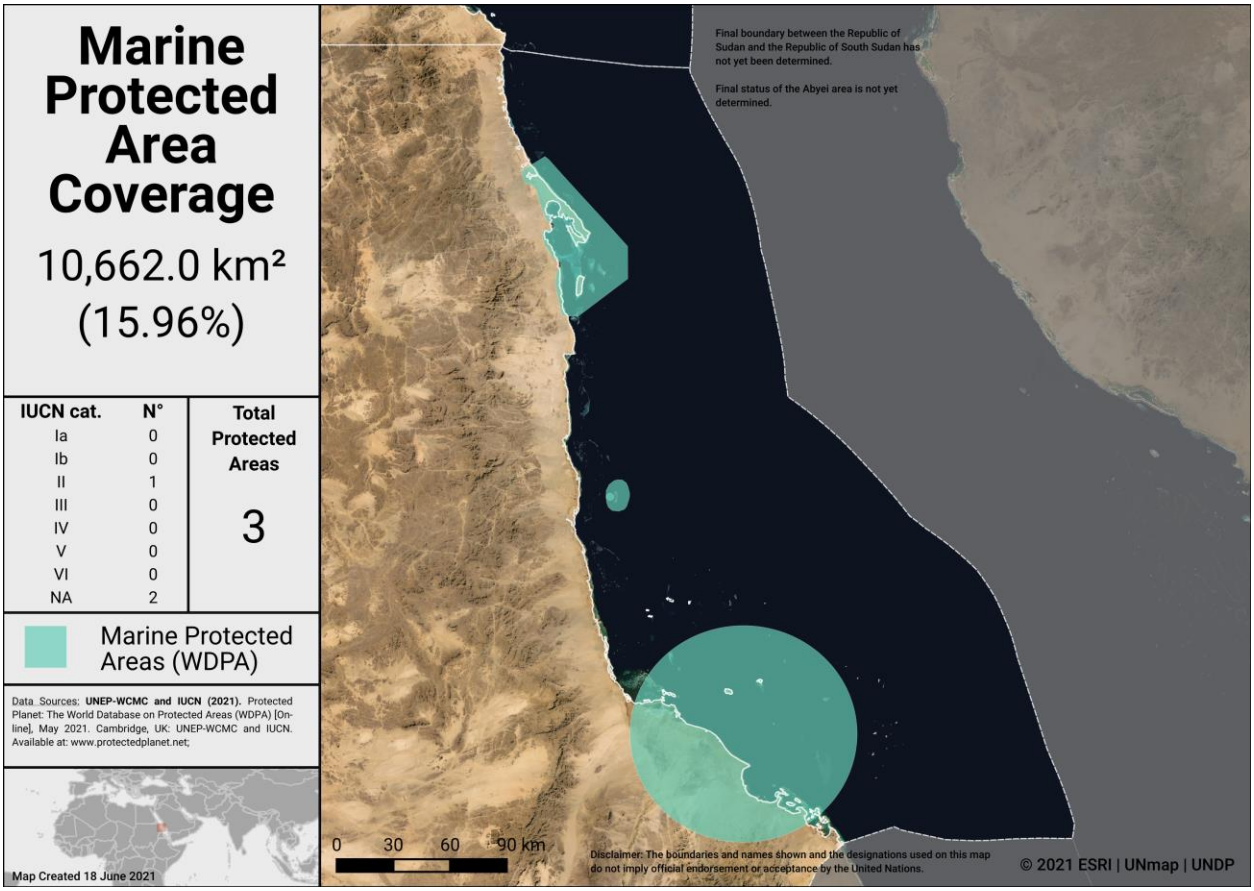
National reporting shows terrestrial coverage of **5.78%**. There are several sites that are designated, but not yet reported in the WDPA see Sudan's Sixth National Report for a map and description of these sites). Sites include:

- El Gazelle National Park (designated in 2016)
- TaiaBassinda Galabat Triangle
- Umjar Wetlands National Park
- and several smaller sites
- For Jebel Alhassania, the total area is not reported in the WDPA, and so it is not included in statistics.

The inclusion of these sites would have positive impacts for many of the terrestrial elements in the following sections (terrestrial ecoregion coverage, protection of KBAs, terrestrial connectivity, etc.)



Terrestrial Protected Areas in Sudan



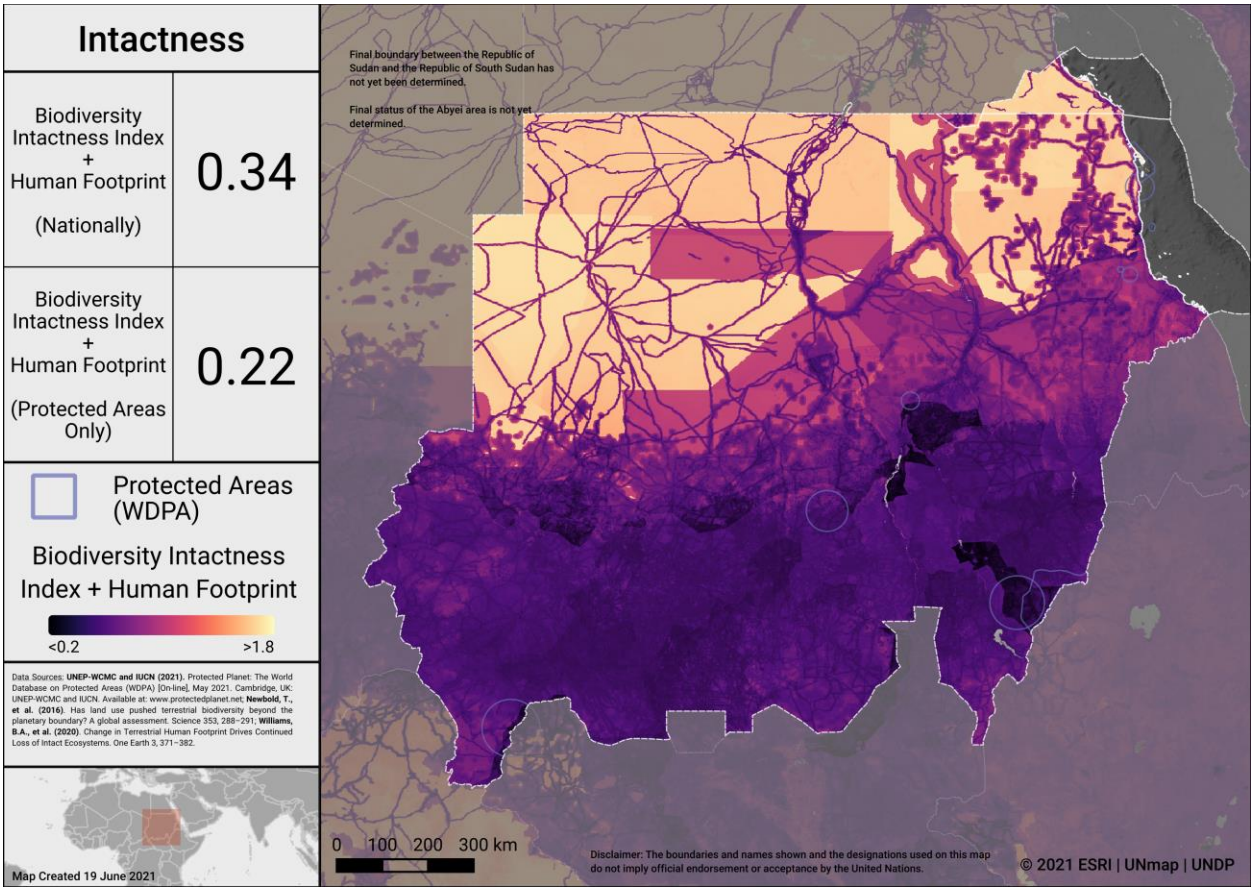
Marine Protected Areas in Sudan

Potential OECMs

There are currently no potential OECM examples for Sudan.

Opportunities for action

Opportunities for the near-term include updating the WDPA with any unreported PAs (including El Gazelle National Park, TaiaBassinda Galabat Triangle, and others), and the recognizing and reporting OECMs to the WD-OECM. In the future, as Sudan considers where to add new PAs and OECMs, the map below identifies areas in Sudan where intact terrestrial areas are not currently protected. Focus on relatively intact areas, while addressing the elements in the following sections, could be considered when planning new PAs or OECMs.



Intactness in Sudan

To explore more on intactness visit the UN Biodiversity Lab: map.unbiodiversitylab.org.

ECOLOGICAL REPRESENTATIVENESS – TERRESTRIAL & MARINE

Ecological representativeness is assessed based on the PAs and OECMs coverage of broad-scale biogeographic units. Globally, ecoregions have been described for terrestrial areas (Dinerstein et al, 2017), marine coastal and shelf ecosystems (to a depth of 200m; Spalding et al 2007) and surface pelagic waters (Spalding et al 2012).

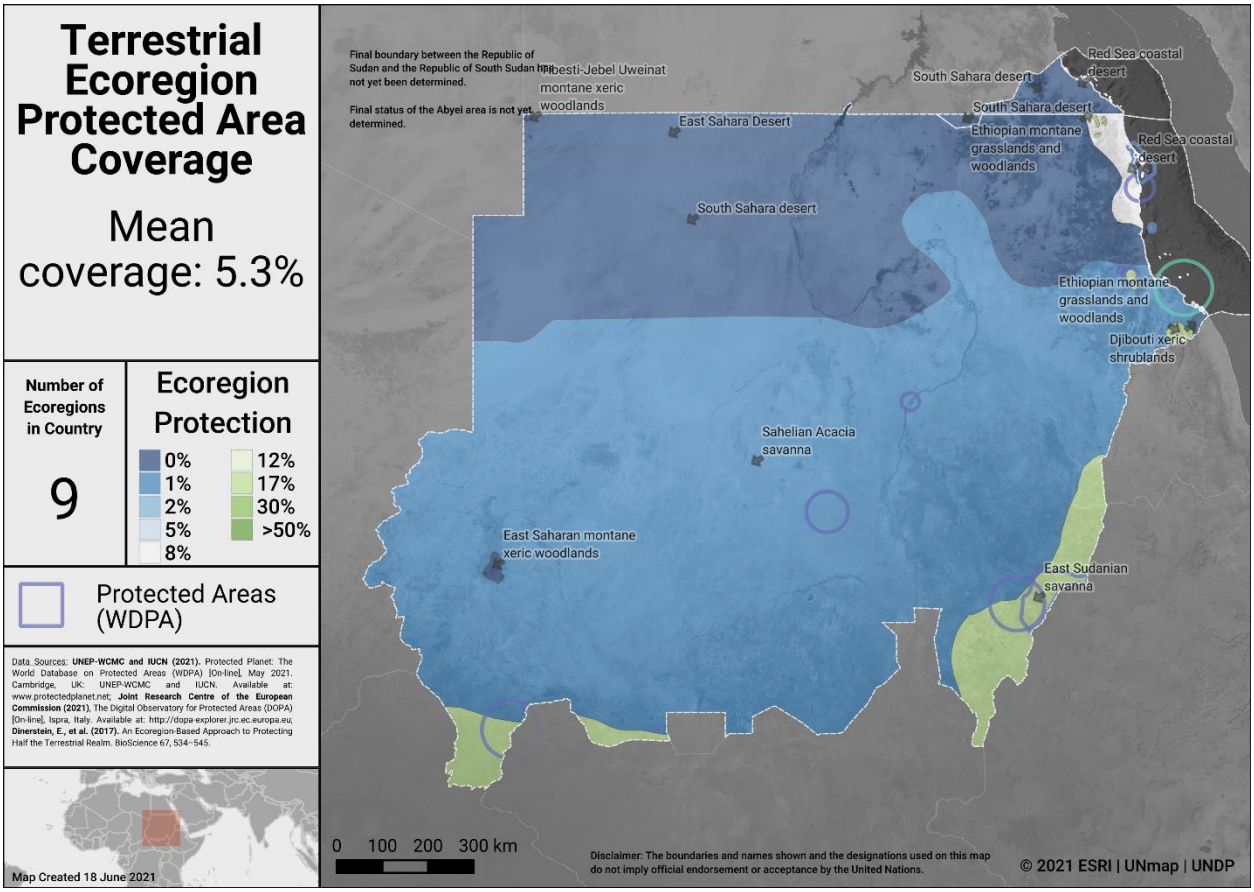
Sudan has 9 **terrestrial** ecoregions. Out of these:

- 4 ecoregions have at least some coverage from PAs and OECMs.
- 2 ecoregions have at least 17% protected within the country.
- The average coverage of terrestrial ecoregions is 6.5%.
- *Coverage for several terrestrial ecoregions will increase with the reporting of designated sites that are not currently reflected in the WDPA (e.g., El Gazelle National Park, TaiaBassinda Galabat Triangle and others)*

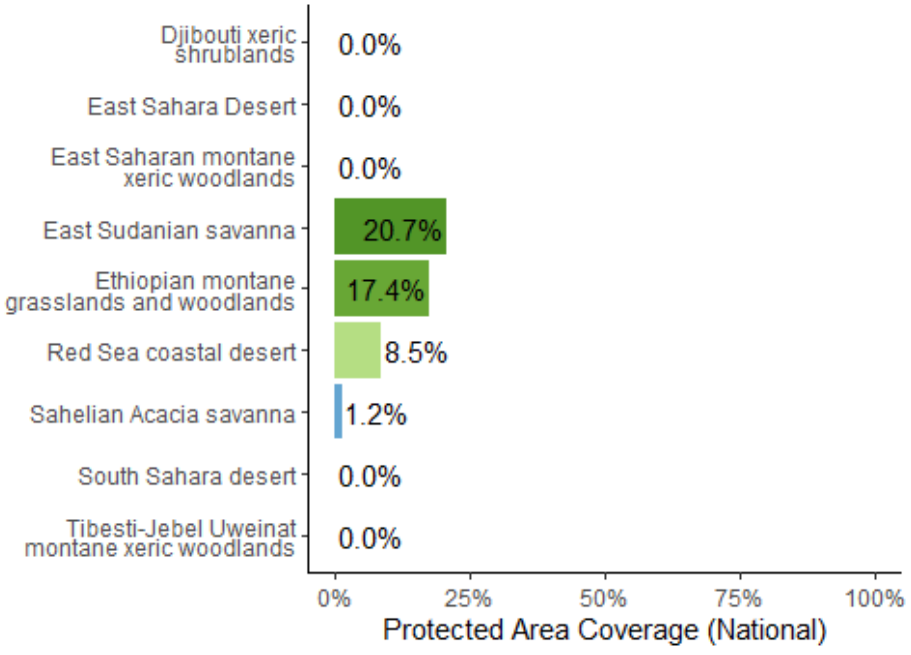
Sudan has 2 **marine** ecoregions and 1 **pelagic province**. Out of these:

- Both (2 marine ecoregions and 1 pelagic province) have at least some coverage from reported PAs and OECMs.
- 2 marine ecoregions and 0 pelagic provinces have at least 10% protected within Sudan's exclusive economic zone (EEZ).
- The average coverage of marine ecoregions is 32.3% and the coverage of the 1 pelagic province is 0.6%.

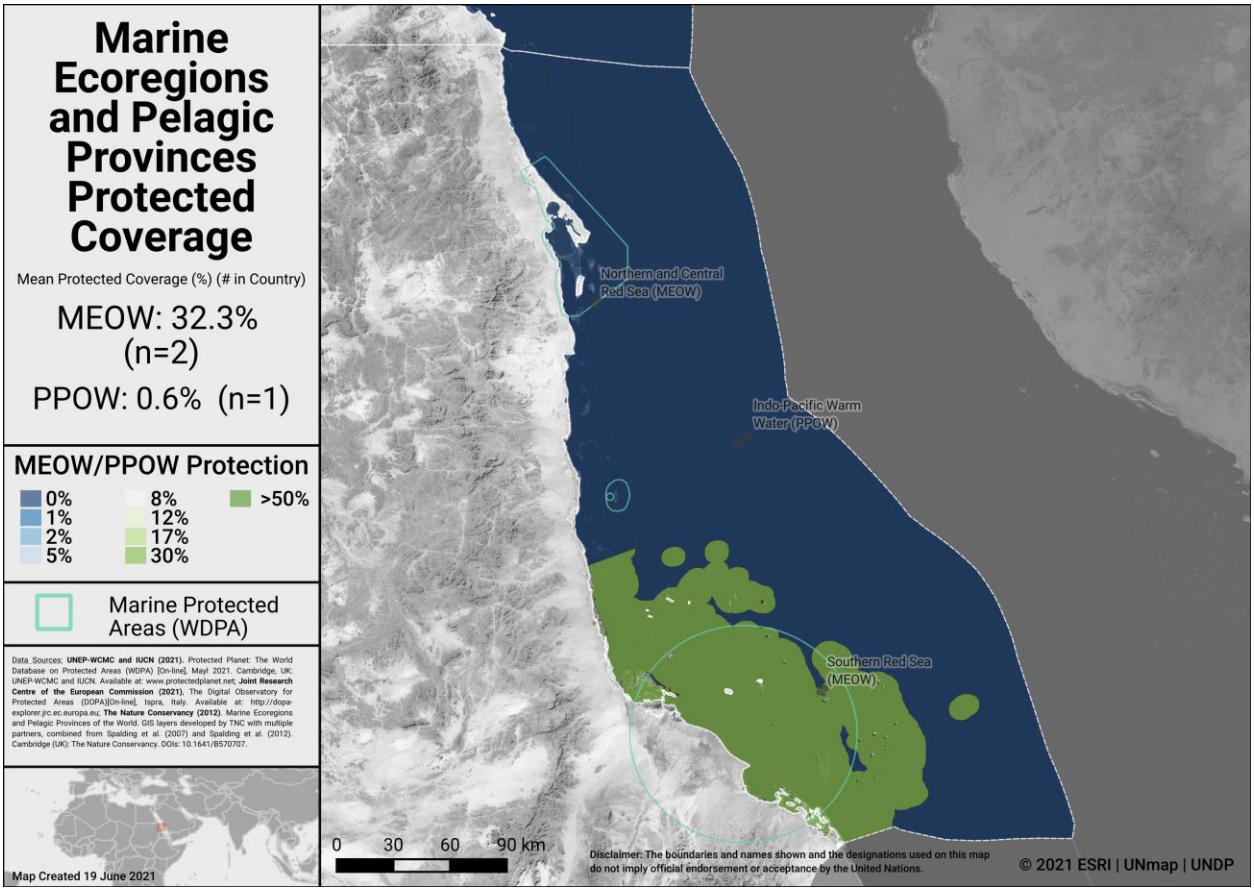
A full list of terrestrial ecoregions in Sudan is available in Annex I.



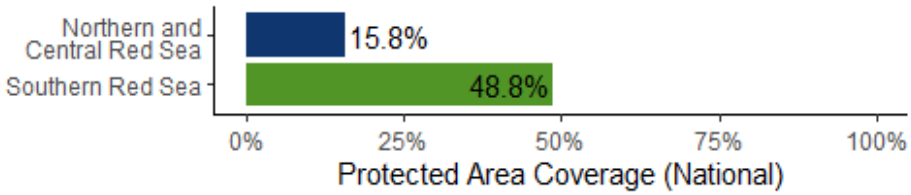
Terrestrial ecoregions in Sudan



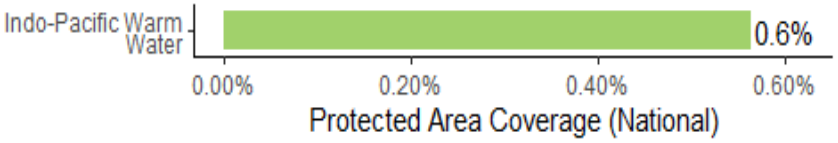
Terrestrial ecoregions of the World (TEOW) in Sudan



Marine ecoregions and pelagic provinces



Marine Ecoregions of the World (MEOW) in Sudan



Pelagic Provinces of the World (PPOW) in Sudan

Opportunities for action

There is opportunity for Sudan to increase protection in terrestrial and marine ecoregions and pelagic provinces that have lower levels of coverage by PAs or OECMs. Ecoregions which currently have no coverage by PAs or OECMs are key areas for action.

AREAS IMPORTANT FOR BIODIVERSITY

Key Biodiversity Areas (KBAs)

Protected area and OECM coverage of Key Biodiversity Areas (KBAs) provide one proxy for assessing the conservation of areas important for biodiversity at national, regional and global scales. KBAs are sites that make significant contributions to the global persistence of biodiversity (IUCN, 2016). The KBA concept builds on four decades of efforts to identify important sites for biodiversity, including Important Bird and Biodiversity Areas, Alliance for Zero Extinction sites, and KBAs identified through Hotspot ecosystem profiles supported by the Critical Ecosystem Partnership Fund. Incorporating these sites, the dataset of internationally significant KBAs includes Global KBAs (sites shown to meet one or more of 11 criteria in the Global Standard for the Identification of KBAs, clustered into five categories: threatened biodiversity; geographically restricted biodiversity; ecological integrity; biological processes; and irreplaceability), Regional KBAs (sites identified using pre-existing criteria and thresholds, that do not meet the Global KBA criteria based on existing information), and KBAs whose Global/Regional status is Not yet determined, but which will be assessed against the global KBA criteria within 8-12 years. Regional KBAs are often of critical international policy relevance (e.g., in EU legislation and under the Ramsar Convention on Wetlands), and many are likely to qualify as Global KBAs in future once assessed for their biodiversity importance for other taxonomic groups and ecosystems. To date, nearly 16,000 KBAs have identified globally, and information on each of these is presented in the World Database of Key Biodiversity Areas: www.keybiodiversityareas.org.

Sudan has **11** Key Biodiversity Areas (KBAs).

- Mean percent coverage of all KBAs by PAs and OECMs in Sudan is **25.0%**.
- **2** KBAs have full (>98%) coverage by PAs and OECMs.
- **1** KBA has partial coverage by PAs and OECMs.
- **8** KBAs have no (<2%) coverage by PAs and OECMs.

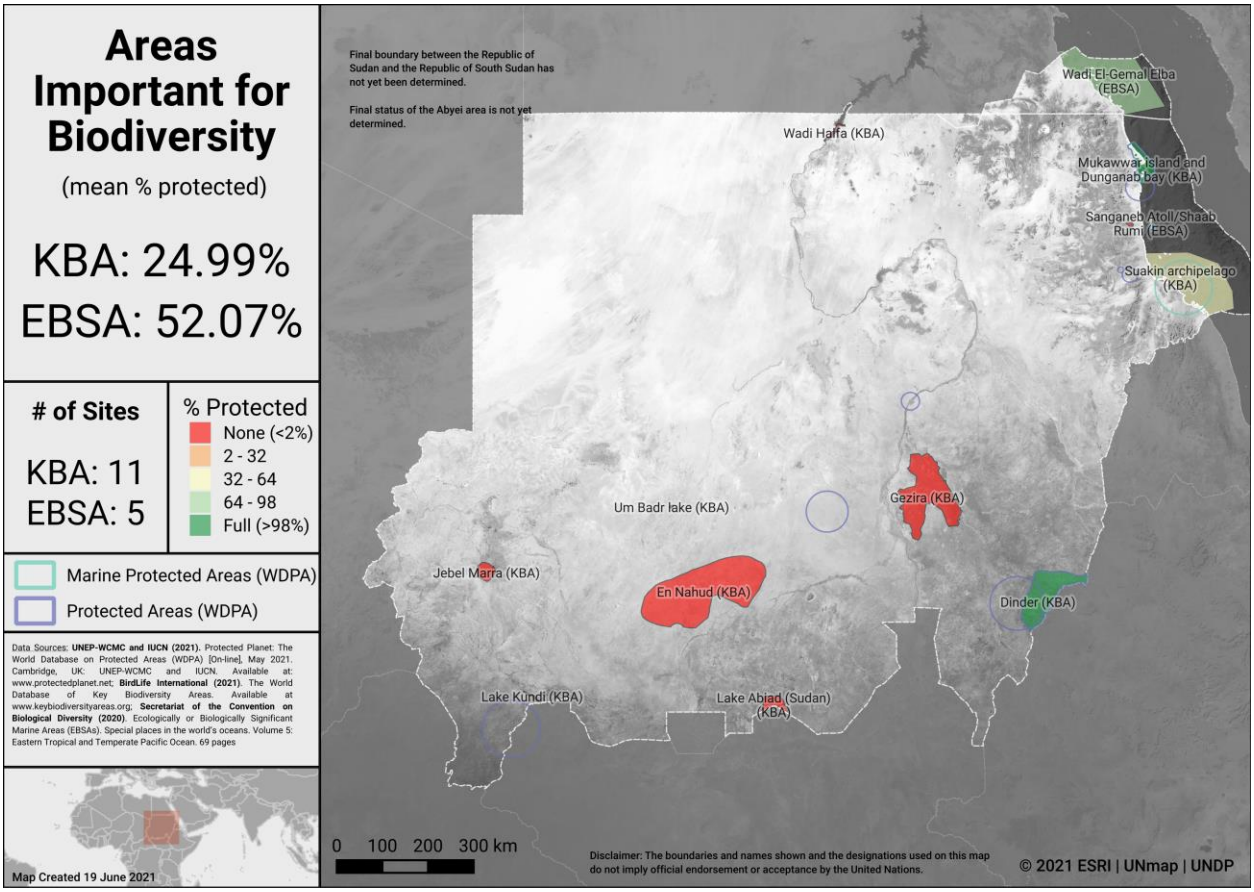
Ecologically or Biologically Significant Marine Areas (EBSAs)

Other important areas for biodiversity may also include Ecologically or Biologically Significant Marine Areas (EBSAs), which were identified following the scientific criteria adopted at COP-9 (Decision IX/20; see more at: https://www.cbd.int/ebsa/). Sites that meet the EBSA criteria may require enhanced conservation and management measures; this could be achieved through means including MPAs, OECMs, marine spatial planning, and impact assessment.

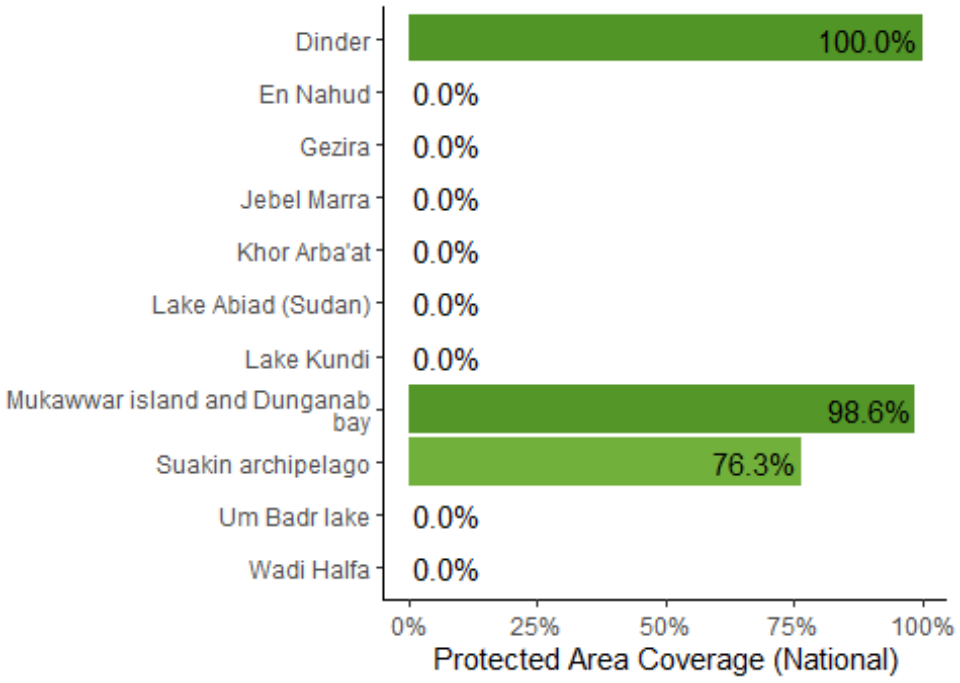
There are 5 EBSAs with some portion of their extent within Sudan's EEZ, all of which have at least some coverage from PAs and OECMs (though 1 EBSA has <0.1% coverage).

Other important areas for biodiversity

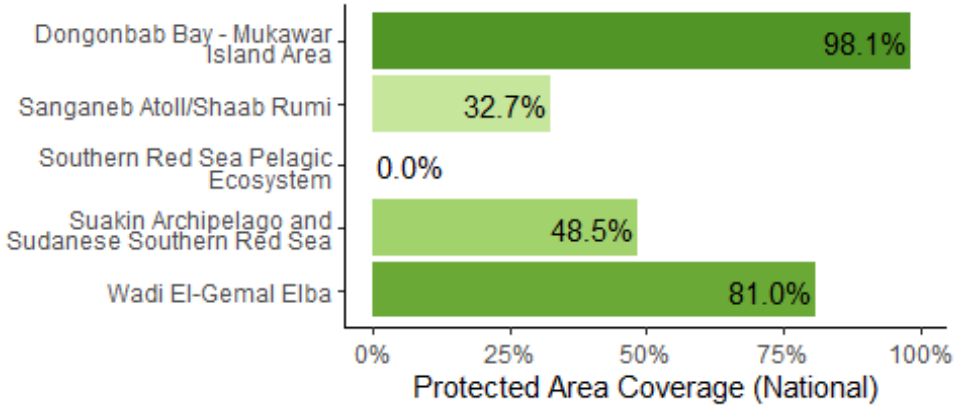
Other important areas for biodiversity include the Nile and its tributaries, wadies and khors, reserved forests, wetland marine islands, and rangelands.



Areas Important for Biodiversity in Sudan



Key Biodiversity Area Coverage (KBA) in Sudan



Ecologically or Biologically Significant Marine Areas (EBSAs) in Sudan

Opportunities for action

There is opportunity for Sudan to increase protection of KBAs that have lower levels of coverage by PAs and OECMs; priority could be given to those with no current coverage.

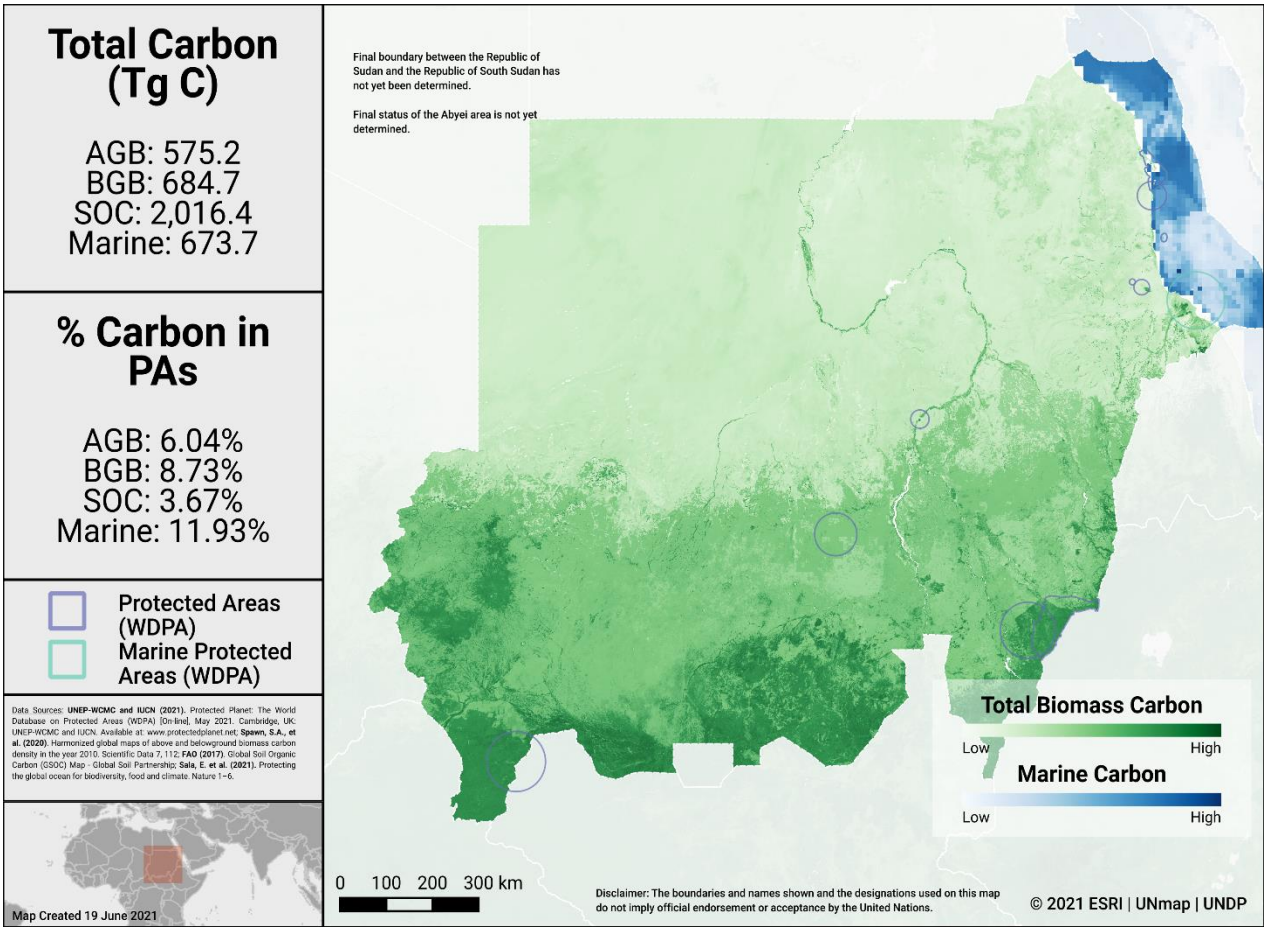
AREAS IMPORTANT FOR ECOSYSTEM SERVICES

There is no single indicator identified for assessing the conservation of areas important for ecosystem services. For simplicity, two services with available global datasets are assessed here (carbon and water). In future, other critical ecosystem services could be explored.

Carbon

Data for biomass carbon comes from temporally consistent and harmonized global maps of aboveground biomass and belowground biomass carbon density (at a 300-m spatial resolution); the maps integrate land-cover specific, remotely sensed data, and land-cover specific empirical models (see Spawn et al., 2020 for details on methodology). The Global Soil Organic Carbon Map present an estimation of SOC stock from 0 to 30 cm (see FAO, 2017). Data is also presented from global maps of marine sedimentary carbon stocks, standardized to a 1-meter depth (see Sala et al., 2021, and Atwood et al., 2020).

The map below presents the total carbon stocks in Sudan and the percent of carbon in protected areas. The total carbon stocks is 575.2 Tg C from aboveground biomass (AGB), with 6.0% in protected areas; 684.7 Tg C from below ground biomass (BGB), with 8.7% in protected areas; 2,016.4 Tg C from soil organic carbon (SOC), with 3.7% in protected areas; and 673.7 Tg C from marine sediment carbon, with 11.9% in protected areas.



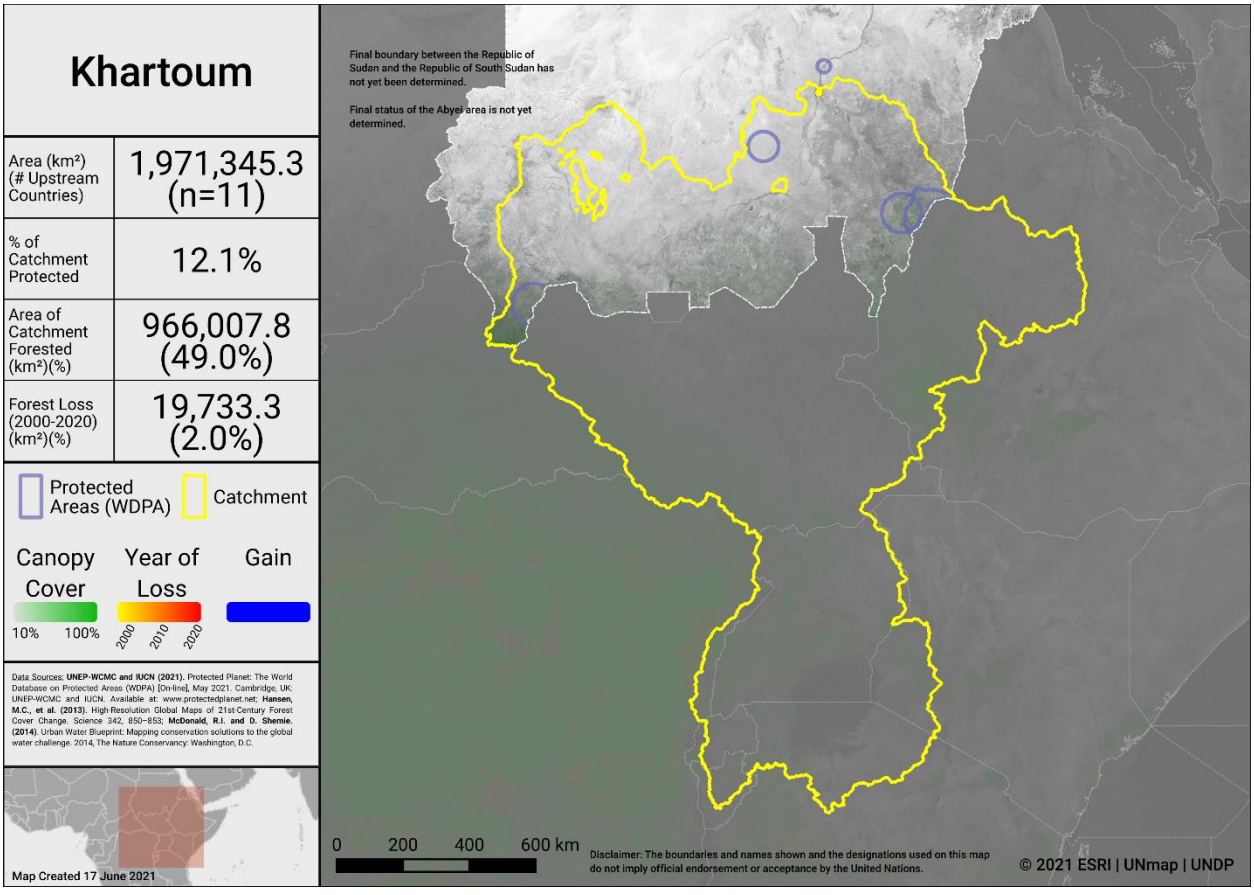
Carbon Stocks in Sudan

Water

Information on the water sources for 534 cities is available via the City Water Map (CWM) and provides details on the catchment area of the watershed that supplies these cities (see McDonald et al., 2014 for details on methodology).

Forests and intact ecosystems support stormwater management and clean water availability, especially for large urban populations. Research that has examined the role of forests for city drinking water supplies shows that of the world's 105 largest cities, more than 30% (33 cities) rely heavily on the local protected forests, which provide ecosystem services that underpin local drinking water availability and quality (Dudley & Stolton, 2003).

Drinking water supplies for cities in Sudan may similarly depend on protected forest areas within and around water catchments. The map below shows the percentage forest and PA cover and the forest loss from 2000-2020 in the most heavily populated water catchment of Sudan. Intact catchments can support more consistent water supply and improved water quality.



Water catchment in Khartoum

Opportunities for action

For carbon, there is opportunity for Sudan to increase PA and OECM coverage in both marine and terrestrial areas with high carbon stocks, as identified in the map above. Protecting areas with high carbon stocks secures the benefits of carbon sequestration in the area.

For water, there is opportunity to increase the area of the water catchment under protection by PAs and OECMs, or in cases where there is high levels of protection, focus on effective management for these areas. Protecting the current area of forested land and potentially reforesting would have benefits for improving water security.

CONNECTIVITY & INTEGRATION

Two global indicators, the Protected Connected land indicator (ProtConn; EC-JRC, 2021; Saura et al., 2018) and the PARC-Connectedness indicator (CSIRO, 2019), have been proposed for assessing the terrestrial connectivity of PA and OECM networks. To date there is no global indicator for assessing marine connectivity, though some recent developments include proposed guidance for the treatment of connectivity in the planning and management of MPAs (see Lausche et al., 2021).

Protected Connected Land Indicator (Prot-Conn)

As of January 2021, as reported in the Joint Research Centre of the European Commission's Digital Observatory for Protected Areas (DOPA) (JRC, 2021), the coverage of protected-connected lands (a measure of the connectivity of terrestrial protected area networks, assessed using the ProtConn indicator) in Sudan was 1.2%.

This figure will increase with the reporting of designated sites that are not currently reflected in the WDPA (e.g., El Gazelle National Park, TaiaBassinda Galabat Triangle and others)

PARC-Connectedness Index

In 2019, as assessed using the PARC-Connectedness Index (values ranging from 0-1, indicating low to high connectivity), connectivity in Sudan is 0.49. This represents no significant change since 2010.

Corridor case studies

There are plans underway to develop corridors; specifically, in Jabeleldiar. As well, the Shoab rommi Marine area will be included in the PA system, to improve connectivity between Sanganeeb and Dogonab.

Opportunities for action

There is opportunity for a general increase of PAs or OECMs and to focus on PA and OECM management for enhancing and maintaining connectivity. Improving connectivity increases the effectiveness of PAs and OECMs and reduces the impacts of fragmentation.

As well, a range of suggested steps for enhancing and supporting integration are included in the voluntary guidance on the integration of PAs and OECMs into the wider land- and seascapes and mainstreaming across sectors to contribute, inter alia, to the SDGs (Annex I of COP Decision 14/8).

GOVERNANCE DIVERSITY

A stakeholders committee has been established in the Red Sea are, and it is also planned for other areas.

Here, we provide data on the diversity of governance types for reported PAs and OECMs. As of May 2021, designated PAs in Sudan reported in the WDPA have the following governance types:

- 64.3% are governed by **governments** (by federal or national ministry or agency)
- 0.0% are under **shared** governance
- 0.0% are under **private** governance
- 0.0% are under **IPLC** governance
  - 0.0% by Indigenous Peoples
  - 0.0% by local communities
- 35.7% **do not** report a governance type

OECMs

As of May 2021, there are **0** OECMs in Sudan reported in the WD-OECM, therefore there is no data available on OECM governance types.

Privately Protected Areas (PPAs)

There is currently no data available on PPAs for Sudan (see Gloss et al., 2019, and Stolton et al., 2014 for details).

Territories and areas conserved by Indigenous Peoples and local communities (ICCAs)

There is currently no data available on ICCAs for Sudan (see Kothari et al., 2012 and the ICCA Registry for further details).

Other Indigenous lands

There is currently no data available on lands managed and/or controlled by Indigenous Peoples in Sudan (for details on analysis see Garnett et al., 2018).

Opportunities for action

Explore opportunities for governance types that have lower representation, for Sudan this could relate to shared governance, etc. Increase efforts to identify the governance types for the 35.7% of sites that do not have their governance type reported There is also opportunity for Sudan to complete governance and equity assessments, to establish baselines and identify relevant actions for improvement. Examples of existing tools and methodologies include: Governance Assessment for Protected and Conserved Areas (Franks & Brooker, 2018), Social Assessment of Protected Areas (Franks et al 2018), and Site-level assessment of governance and equity (IIED, 2020). As well, a range of suggested actions are included in the voluntary guidance on effective governance models for management of protected areas, including equity (Annex II of COP Decision 14/8).

PROTECTED AREA MANAGEMENT EFFECTIVENESS

This section provides information on the coverage of PAs and OECMs with completed protected area management effectiveness (PAME) assessments as reported in the global database (GD-PAME). The proportion of terrestrial and marine PAs with completed PAME assessments is also calculated and compared with the 60% target agreed to in COP-10 Decision X/31. Information is also included regarding changes in forest cover nationally within PAs and OECMs.

Protected area management effectiveness (PAME) assessments

As of May 2021, Sudan has 23 PAs reported in the WDPA; of these PAs, 3 (13.0%) have management effectiveness evaluations reported in the global database on protected area management effectiveness (GD-PAME).

- 0.8% (15,954 km^2) of the terrestrial area of the country is covered by PAs with completed management effectiveness evaluations.
  - 37.4% of the area of terrestrial PAs have completed evaluations.
- 0.0% (0.0 km^2) of the marine area of the country is covered by PAs with completed management effectiveness evaluations.
  - 0.0% of the area of marine PAs have completed evaluations.

The 60% target for completed management effectiveness assessments (per COP Decision X/31) **has not** been met for terrestrial PAs and **has not** been met for marine PAs.

As of May 2021, there are 0 OECMs in Sudan reported in the WD-OECM and no information available on the management effectiveness of potential OECMs.

Opportunities for action

The 60% target for completed management effectiveness assessments (per COP Decision X/31) **has not** been met for terrestrial PAs and **has not** been met for marine PAs. Therefore, there is opportunity to increase protected area management effectiveness (PAME) evaluations for both terrestrial and marine PAs to achieve the target.

There is also opportunity to implement the results of completed PAME evaluations, to improve the quality of management for existing PAs and OECMs (e.g. through adaptive management and information sharing, increasing the number of sites reporting 'sound management') and to increase reporting of biodiversity outcomes in PAs and OECMs.

SECTION II: EXISTING PROTECTED AREA AND OECM COMMITMENTS

PRIORITY ACTIONS FROM 2015-2016 REGIONAL WORKSHOPS

National priority actions for Aichi Biodiversity Target 11 were provided by Parties following a series of regional workshops in 2015 and 2016. The Capacity-building workshop for Africa on achieving Aichi Biodiversity Targets 11 and 12 took place 21 - 24 March 2016 in Entebbe, Uganda. Progress towards the quantitative targets for marine and terrestrial coverage has been assessed based on data reported in the WDPA and WD-OECM as of 2021. For more information, see the workshop report at: https://www.cbd.int/meetings/

Summary from the workshop:

Priority actions and identified opportunities, if completed as proposed, will increase coverage of terrestrial areas by **6,000km²** and increase coverage of marine areas by **2,000km²**. Bringing with them benefits for the other qualifying elements of Aichi Biodiversity Target 11.

The following actions were identified during the workshops:

Terrestrial coverage: 6 protected areas will be established adding 6,000 km².

Marine coverage: 3 marine areas planned - to cover about 2,000 km² (currently marine areas covers 3,033 km² which is 0.16% of Sudan area but equivalent 33% from Sudan marine territory).

Ecological representation: The suggested new protected areas will be distributed to ecological regions which are not represented in current PA network (i.e. freshwater habitats, Red Sea hills, seasonal Wadis, high rain savanna).

Areas Important for biodiversity and ecosystem services: Study of biodiversity found in following areas:

- Reserve Forest (covers 27231,350 feddan/114,400km²);
- Rangeland (Savanna zone –semi desert zone);
- River basins areas (White and blue niles, Major nile North of Khartoum and tributaries (Rahad, dindir, Atbara and seasonal streams);
- Coral Reefs;
- Inland lakes.

Connectivity:

1) 3 MPAs will be established to provide more coverage as well as connectivity
2) For terrestrial connectivity, freshwater ecosystems will be connected by a series of bird's important area protection over the Nile to provide the protection of MB.

Management effectiveness:

1) Improvements in the conservation of biodiversity in 20% of the terrestrial PAs and 30% of the Marine PA system
2) The Management effective tracking tools (METT) will be adopted as standard protected area assessment tool across the PA network.

Governance and Equity:

1) Policy and legislation reform. The major amendments of the legislation will include diversifying governance types (in addition to protected area types) to fulfill the gap in equity and governance.
2) Participatory approach applies, in which all stakeholders will be involved in the establishment of new protected areas management of existing PAs.

Integration:

1) Approximately 2,020 km^2 of land under multiple use in the periphery of Sudan PAs will be subjected to land-use reform to reduce indirect threats to target PAs.
2) Establishment of buffer zones.

OECMs: Restoration of degraded habitat in 3 sites using great green belt initiative by planting trees, residing and water harvesting.

NATIONAL BIODIVERSITY STRATEGY AND ACTION PLANS (NBSAPs)

Sudan has submitted an NBSAP during the Strategic Plan for Biodiversity 2011-2020 (most recent NBSAP is available at: https://www.cbd.int/nbsap/search/).

Component Target 11: By 2020, at least 17 percent of terrestrial and inland water, and 10 percent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services in Sudan, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

This NBSAP **did** include a quantitative target for **terrestrial** PAs or OECMs.

- As of May 2021 (based on the WDPA/WD-OECM) has the target been met: **NO**
- Accounting for other projects, actions and commitments, if this target is met, coverage in the country will increase by **265,835 km²**.

This NBSAP **did** include a quantitative target for **marine** protected areas or OECMs.

- As of May 2021 (based on the WDPA/WD-OECM) has the target been met: **YES**

Actions from the NBSAP will also address other elements of Aichi Biodiversity Target 11:

NBSAP Action number	Action (original language from NBSAP)
6.2.27	10% of proposed reserved forest registered as reserved forests and established by reforestation and mainly stocked by Indigenous species
6.2.28	Establish protected area(s) (in-situ) in representative ecosystems for the conservation of forest biodiversity
6.2.37	Evaluate the role of protected forests in protection of biodiversity
6.4.5	Spread awareness among local communities about the long-term value of establishment of new protected areas
6.4.12	Conduct training programs on community-based management for coastal and protected areas communities
6.4.13	Design and implement programs for capacity building in the planning, establishment, management and financial sustainability of protected areas and national and regional systems of protected areas
6.4.19	Promote more contribution of protected areas to local and national economies

NBSAP Action number	Action (original language from NBSAP)
6.4.26	Encourage active participation of the local communities and authorities in formulating policies and management of the protected areas
6.4.29	Conservation of Areas that constitute a unique habitat for endangered wildlife species
6.4.34	Establish new protected areas, game reserves and sanctuaries to represent all ecological zones and states and adopting international categories of protected areas with special attention to inclusion of the semi-desert, Inland fresh water (khors and wadis), Coastal and marine (salt marshes and mangroves)
6.4.35	Establishment of protected areas for the following species and habitats: a) Habitats of Nubian Ibex, Klipspringer b) One of the non-Nilotic lakes such as Kundi and Abayd. c) In low rainfall zone: Khor Yabous up to the border with Southern Sudan, South of Talodi (South Kordofan), Upper Jebel Marra, Garsila (Darfur), Shu'ab Rumi,, d) One in the north and one in the south of the Red Sea coast. e) Southern part of Lake Nubia, f) Sudanese stretch of Wadi Alalagi
6.4.36	Improve management effectiveness (Implement existing management plans and formulate management plans for areas without)
6.4.47	Developing, apply and transfer appropriate technologies for maintenance and conservation of protected areas

A new PA will be established in two states, and through the GEF-funded PA project (see next section), plans for PAs will be established, assessment will be carried out, and several other activities will be conducted.

APPROVED GEF-5, GEF-6 PROTECTED AREA PROJECTS

Approved GEF-5 and GEF-6 PA-related biodiversity projects

This includes biodiversity projects from the fifth and sixth replenishment of the Global Environment Facility (GEF-5 and GEF-6) with a clear impact of the quantity or quality of PAs; also including some projects occurring within the wider landscapes/seascapes around PAs. Only those with a status of 'project approved' or 'concept approved' as of June 2019 were considered. The qualifying elements likely benefiting from each GEF project is assessed based on a keyword search of Project Identification Forms (PIF).

GEF ID	PA increase ?	Area to be added (km^2)	Type of new protected area	Qualitative elements potentially benefitting (based on keyword search of PIFs)
5619	No	N/A	N/A	All except Areas important for biodiversity and Integration
9425	Yes	3,580	Terrestrial	All Qualitative Elements

Through the GEF-funded PA project, plans for PAs will be established, as well, assessments and several other activities will be conducted.

OTHER ACTIONS/COMMITMENTS

Two regional protocols were ratified for conservation of biodiversity in Marine areas.

ANNEX I

FULL LIST OF TERRESTRIAL ECOREGIONS

Ecoregion Name	Area (km^2)	% of Global Ecoregion in Country	% of Country in Ecoregion	Area Protected (km^2)	% Protected in Country
Djibouti xeric shrublands	1,185.9	0.5	0.1	0.0	0.0
East Sahara Desert	46,972.7	3.1	2.5	0.0	0.0
East Saharan montane xeric woodlands	2,056.9	7.4	0.1	0.0	0.0
East Sudanian savanna	82,116.7	7.8	4.5	16,972.0	20.7
Ethiopian montane grasslands and woodlands	3,183.2	1.4	0.2	552.1	17.3
Red Sea coastal desert	13,467.4	22.9	0.7	1,148.5	8.5
Sahelian Acacia savanna	1,224,067.8	33.4	66.4	14,363.6	1.2
South Sahara desert	470,286.8	16.1	25.5	0.0	0.0
Tibesti-Jebel Uweinat montane xeric woodlands	528.7	0.6	0.0	0.0	0.0

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