Aichi Biodiversity Target 11 Country Dossier: CUBA

With generous support from:

TABLE OF CONTENTS

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 (per the WDPA), terrestrial coverage in Cuba is 18,118.7 km^2 (16.2%) and marine coverage is 14,089.8 km^2 (3.9%); National reporting in Cuba indicates terrestrial coverage of 19,676.6 km^2 (17.9%) and marine coverage of 18,106.2 km^2 (26.9% of nearshore marine areas).

- **Opportunities for action:** the analysis of the National Protected Areas System in Cuba is in the process of being updated, as the process is completed, opportunities include updating the WDPA with any unreported PAs, 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:** Cuba contains 6 terrestrial ecoregions, 1 marine ecoregion, and 1 pelagic province (all of which have at least partial coverage from PAs and OECMs): the mean coverage by reported PAs and OECMs is 27.8% (terrestrial), 19.4% (marine), and 0.1% (pelagic).

- **Opportunities for action:** a national analysis should be carried out according to the parameters and cartographic baselines used by UN Biodiversity Lab. Based on these

analyses, ecoregions could be identified that could increase the representativeness of Cuba's protected area network.

Areas Important for Biodiversity

- **Status:** Cuba has 42 Key Biodiversity Areas (KBAs): the mean protected coverage of KBAs by reported PAs and OECMs is 54.5%, while 15 KBAs have no coverage by reported PAs and OECMs.

- **Opportunities for action:** A national analysis should be conducted and KBA sites reconciled officially in Cuba. Based on these analyses, new protected areas could be identified to be incorporated into the National System of Protected Areas.

Areas Important for Ecosystem Services

- **Status:** coverage of areas important for ecosystem services: In Cuba, 21.5% of aboveground biomass carbon, 22.1% of belowground biomass carbon, 14.4% of soil organic carbon, 6.0% of carbon stored in marine sediments is covered by PAs and OECMs.

- **Opportunities for action:** A national analysis should be carried out according to the parameters and cartographic base used by UN Biodiversity Lab.

- For carbon, there may be opportunity for Cuba 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 may be 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 7.3%.

- **Opportunities for action:** A national analysis of PA and OECM connectivity should be carried out according to the parameters and cartographic base used by UN Biodiversity Lab. Regarding corridors, work has been done through the GEF / UNDP Connecting Landscapes Project, which will provide the necessary information when it is completed. 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 reported PAs (in the WDPA) in Cuba is: 64.3% under Government (63% Sub-national ministry or agency; 0.4% Federal or national ministry or agency; 0.9% Government-delegated management).
- **Opportunities for action:** explore opportunities for governance types that have lower representation, for Cuba 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 Cuba 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:** In 2020, 103 of the 119 PAs approved by the Council of Ministers were evaluated for Protected Area Management Effectiveness (PAME) (covering 49.51% of terrestrial PAs and 50.49% of marine PAs). Of the 103 evaluated PAs: 69% of PAs were deemed to have 'effective management', which is recognized as acceptable. Data still needs to be reported to the GD-PAME, which currently lists 0.0% of terrestrial PAs and 0.0% of marine PAs with completed PAME assessments reported.
- **Opportunities for action:** there is opportunity to report all completed protected area management effectiveness (PAME) evaluations in the GD-PAME. If the 60% targets for completed management effectiveness assessments (per COP Decision X/31) have not been met for terrestrial or marine PAs, there is opportunity to increase PAME evaluations 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 Cuba. Section I of the dossier presents data on the current status of Cuba'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 Cuba, in relation to each Target 11 element. The analyses present options for improving Cuba's area-based conservation network to achieve enhanced protection and benefits for livelihoods and climate change. Section II presents details on Cuba'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, Cuba has **230** protected areas reported in the World Database on Protected Areas (WDPA). 93 proposed PAs, and a further 6 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, Cuba has **0** OECMs reported in the world database on OECMs (WD-OECM).

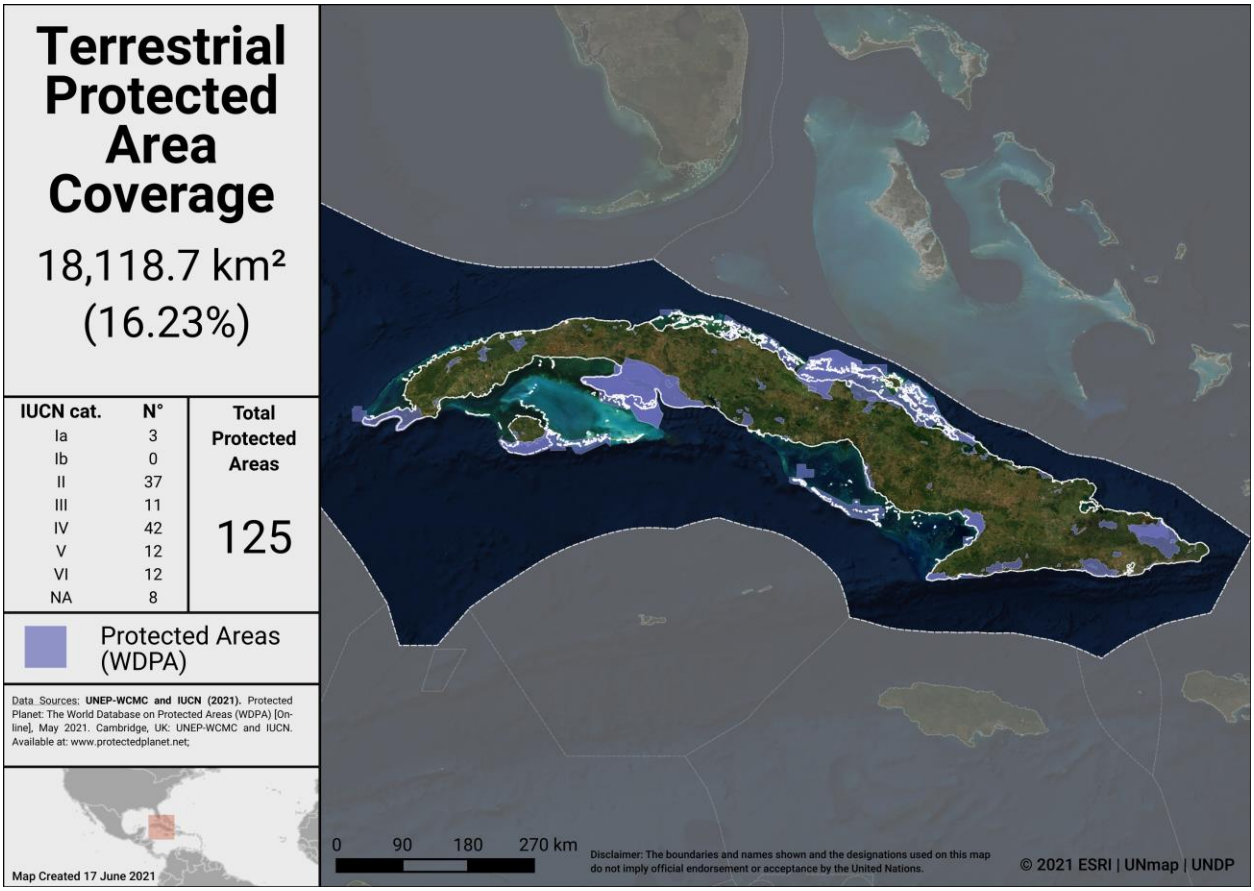
Current coverage for Cuba (per the WDPA):

- 16.2% terrestrial (125 protected areas, 18,118.7 km^2)
- 3.9% marine (54 protected areas, 14,089.8 km^2)

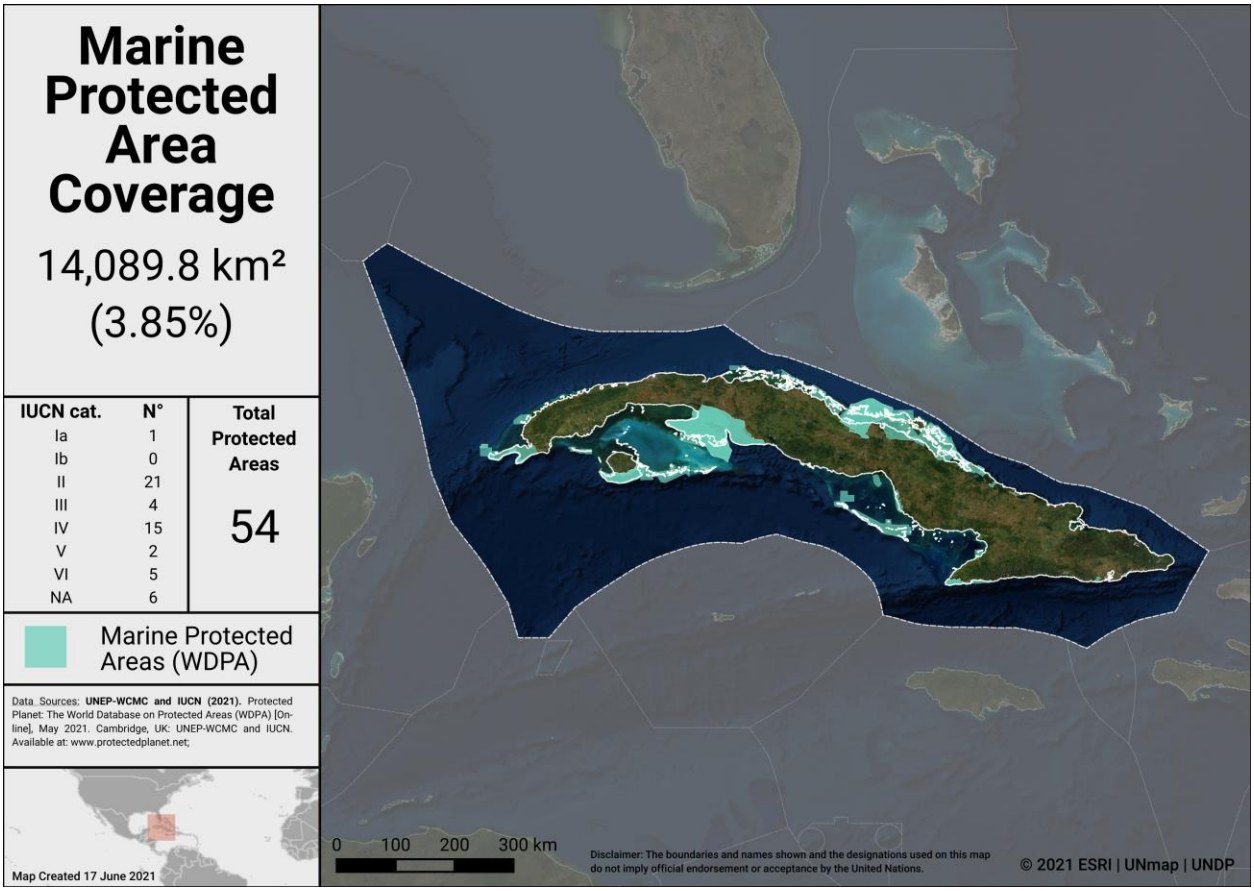
Cuba reports 215 nationally designated PAs, of which 110 areas are solely terrestrial, and 105 have some marine area.

National reporting in Cuba indicates terrestrial coverage of 19,676.6 km^2 (17.9% of the official land area of Cuba) and marine coverage of 18,106.2 km^2 (26.9% of nearshore marine areas[1]).

[1] In Cuba, the indicator used to determine marine coverage, adopts as official data a total surface of the Republic of Cuba equivalent to 177,699.91 km^2, of which of which 109,884.01 km^2 is terrestrial, and 67,851.90 km^2 are inland waters (Decree Law No. 001 of 1977 that determines the baseline of the Republic of Cuba). The global indicator refers to the Exclusive Economic Zone, which is not officially determined for Cuba, which is still lacking negotiations to reconcile the limits. In addition, it is impossible for Cuba to drive so far from the coast, the important thing being effective management of any designated PAs.



Terrestrial Protected Areas in Cuba



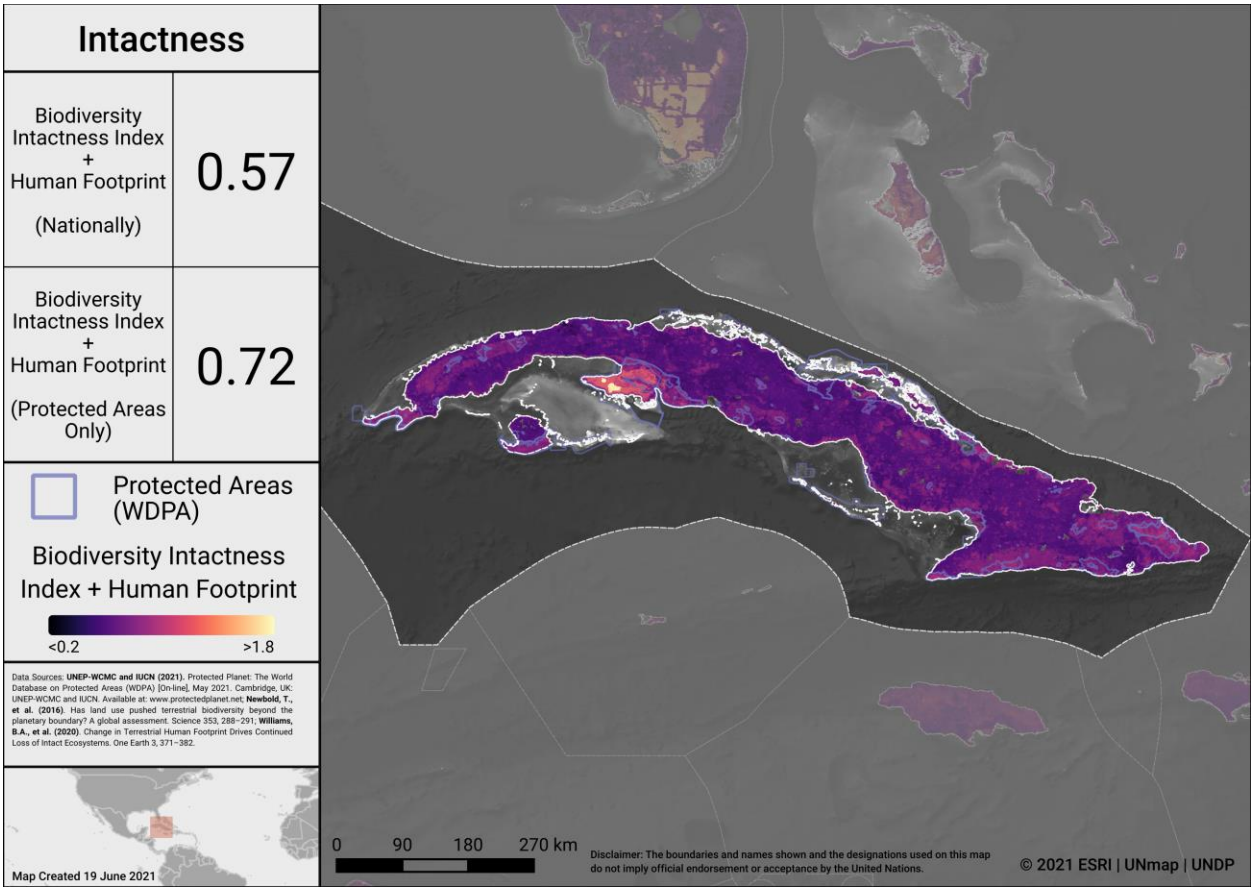
Marine Protected Areas in Cuba

Potential OECMs

OECMs have not been identified and reported in Cuba, to date.

Opportunities for action

The analysis of the National Protected Areas System in Cuba is in the process of being updated, as the process is completed, opportunities include updating the WDPA with any unreported PAs, and the recognizing and reporting OECMs to the WD-OECM. In the future, as Cuba considers where to add new PAs and OECMs, the map below identifies areas in Cuba 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 Cuba

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).

Cuba has 6 **terrestrial** ecoregions. Out of these:

- All 6 ecoregions have at least some coverage from PAs and OECMs.
- 4 ecoregions have at least 17% protected within the country.
- The average coverage of terrestrial ecoregions is 27.8%.

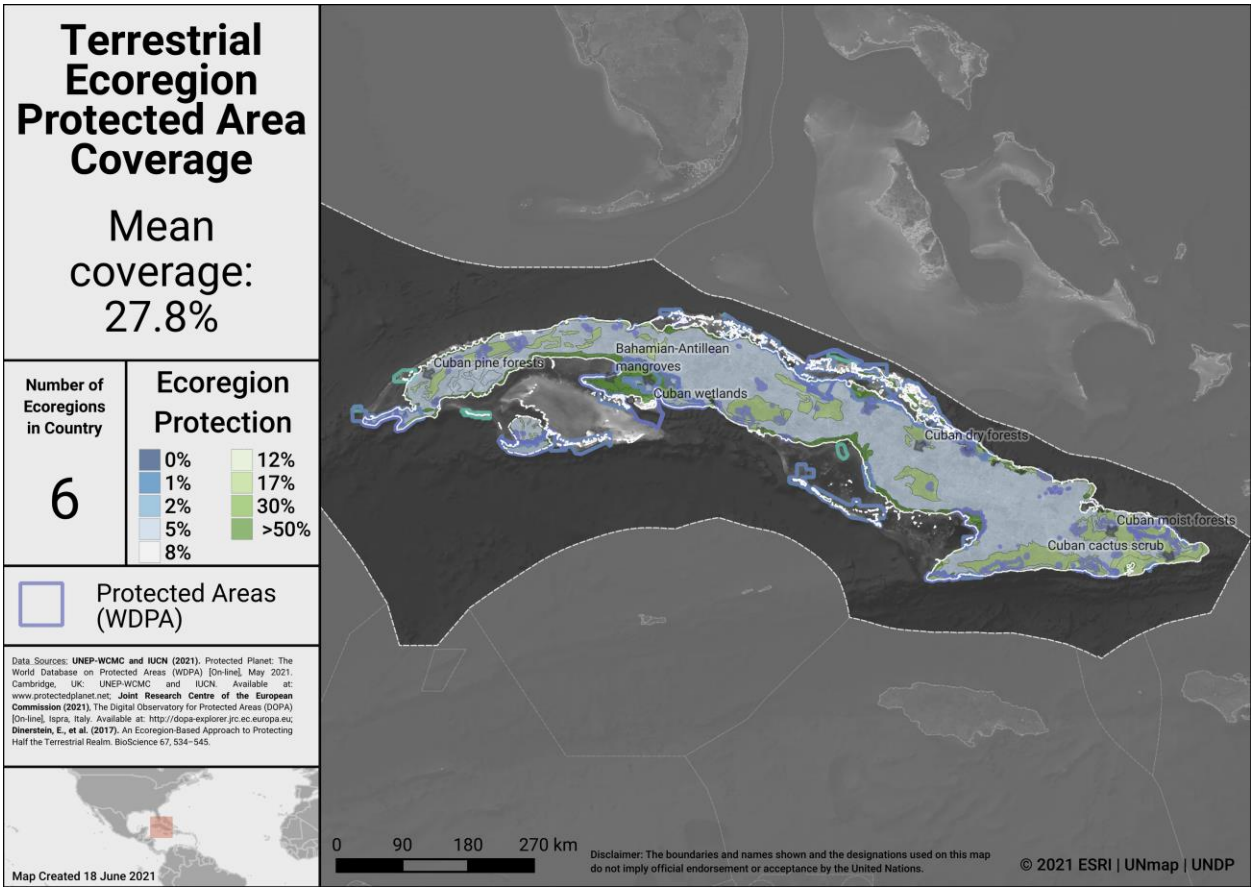
Cuba has 1 **marine** ecoregion and 1 **pelagic province**:

- Coverage from reported PAs and OECMs is 19.4% (marine ecoregion) and 0.1% (pelagic province[2])

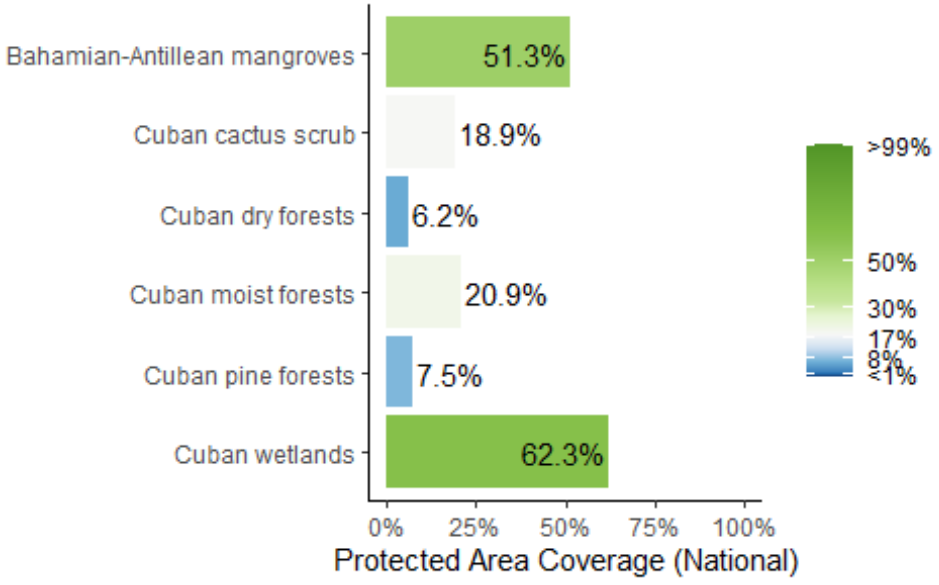
A full list of terrestrial ecoregions in Cuba is available in Annex I.

Ecological representativeness has not been evaluated according to these parameters in Cuba (see **below** for updates on national progress for ecological representativeness). There is an analysis of gaps in the Cuban National System of Protected Areas, provided in Cuba's last Strategic Plan (it is in the process of updating).

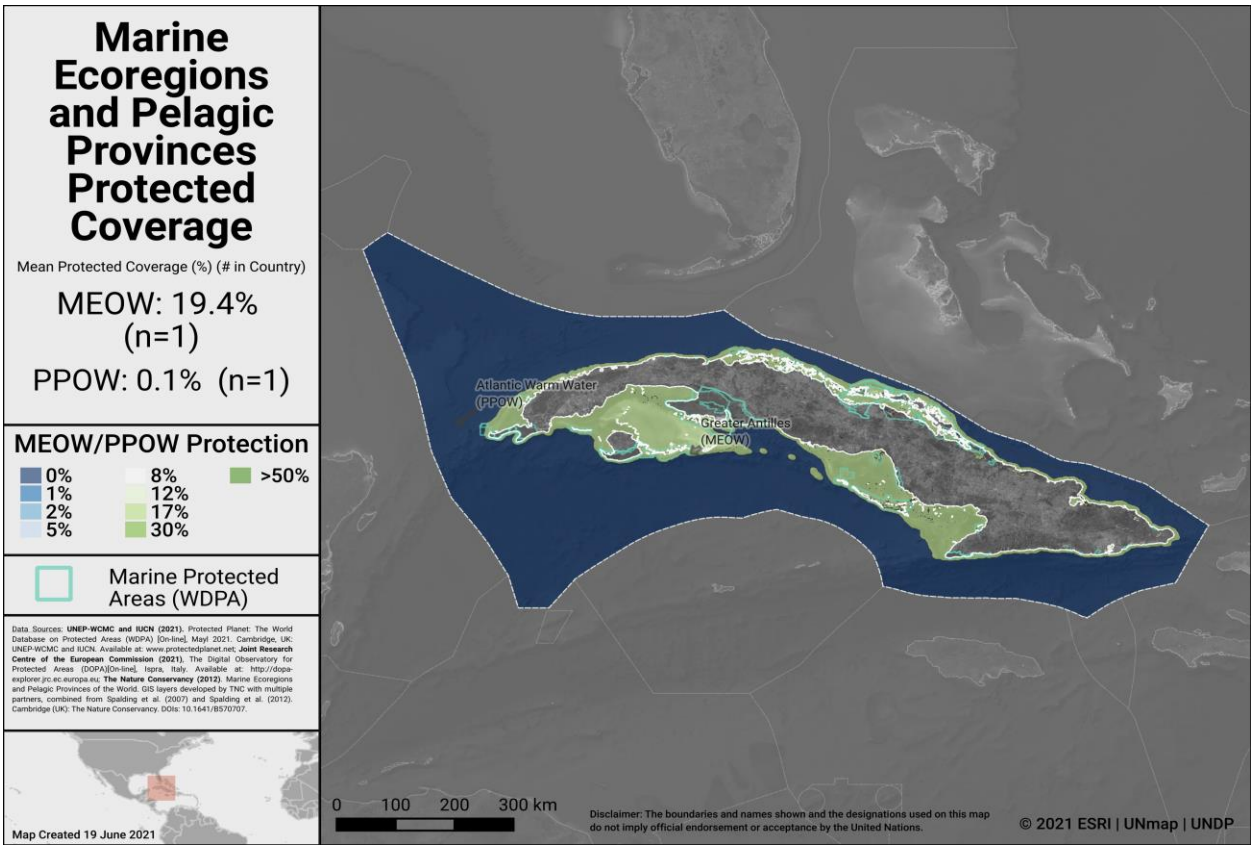
[2] Much of the area of this pelagic province lies beyond the nearshore marine areas/ inland waters where Cuba designates MPAs.



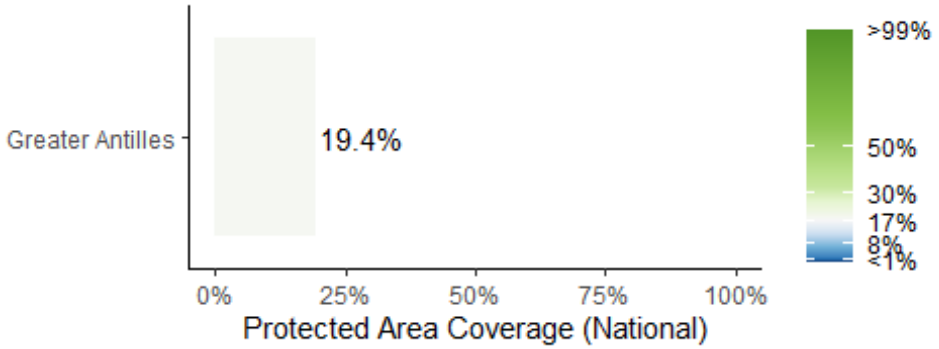
Terrestrial ecoregions in Cuba



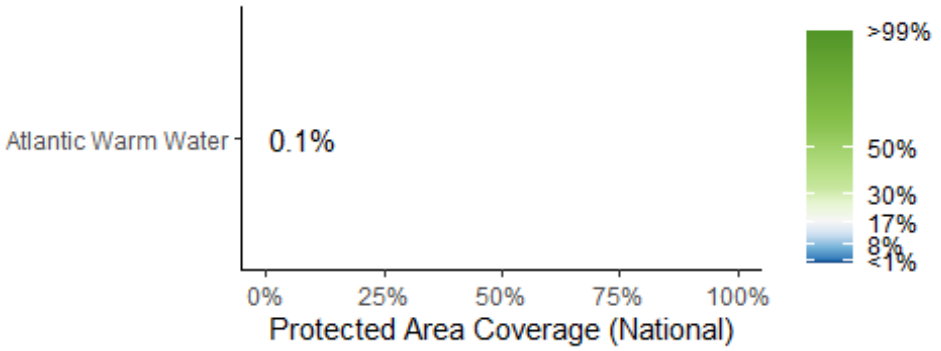
Terrestrial ecoregions of the World (TEOW) in Cuba



Marine ecoregions and pelagic provinces



Marine Ecoregions of the World (MEOW) in Cuba



Pelagic Provinces of the World (PPOW) in Cuba

Opportunities for action

A national analysis should be carried out according to the parameters and cartographic baselines used by UN Biodiversity Lab. Based on these analyses, ecoregions could be identified that could increase the representativeness of Cuba's protected area network.

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.

Cuba has 46 Key Biodiversity Areas (KBAs) [**42 KBAs** included in analysis]

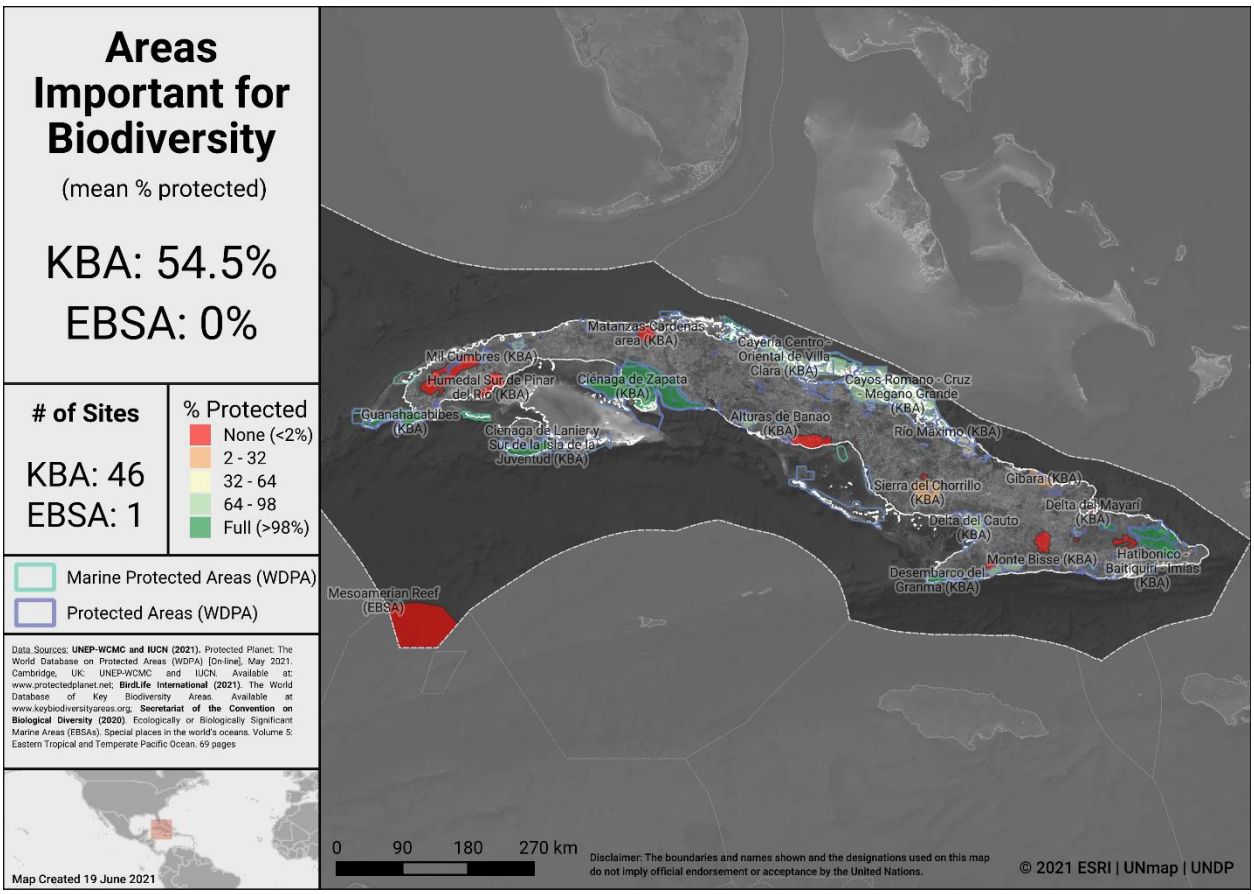
- Mean percent coverage of all KBAs by PAs and OECMs in Cuba is **54.5%**.
- **12** KBAs have full (>98%) coverage by PAs and OECMs.
- **15** KBAs have partial coverage by PAs and OECMs.
- **15** KBAs have no (<2%) coverage by PAs and OECMs.
- *4 KBAs lack spatial data to allow PA and OECM coverage to be determined*

Officially, Cuba has not reported protected areas as KBAs. There are declared PAs that coincide with several of the identified KBAs listed below (Alejandro de Humboldt, Alturas de Banao, Ciénaga de Lanier and Sur de la Isla de la Juventud, Delta del Cauto, Desembarco del Granma, Great North Wetland of Ciego de Ávila, Mil Cumbres, Pico Cristal, Sierra del Rosario, Topes de Collantes, Turquino - Bayamesa, Ciénaga de Zapata, Cuchillas de Moa y Toa, Guanahacabibes, La Mensura, Las picúas - Cayos de Cristo, Limones Tuabaquey, Máximo river, Siboney - Juticí), though coverage is not presented as 100% [the differences may be related to cartography and / or changes in projections].

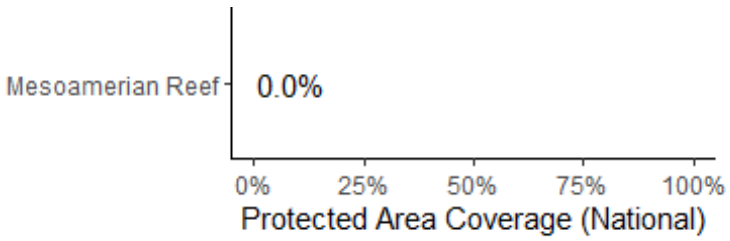
Ecologically or Biologically Significant Marine Areas (EBSAs)

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.

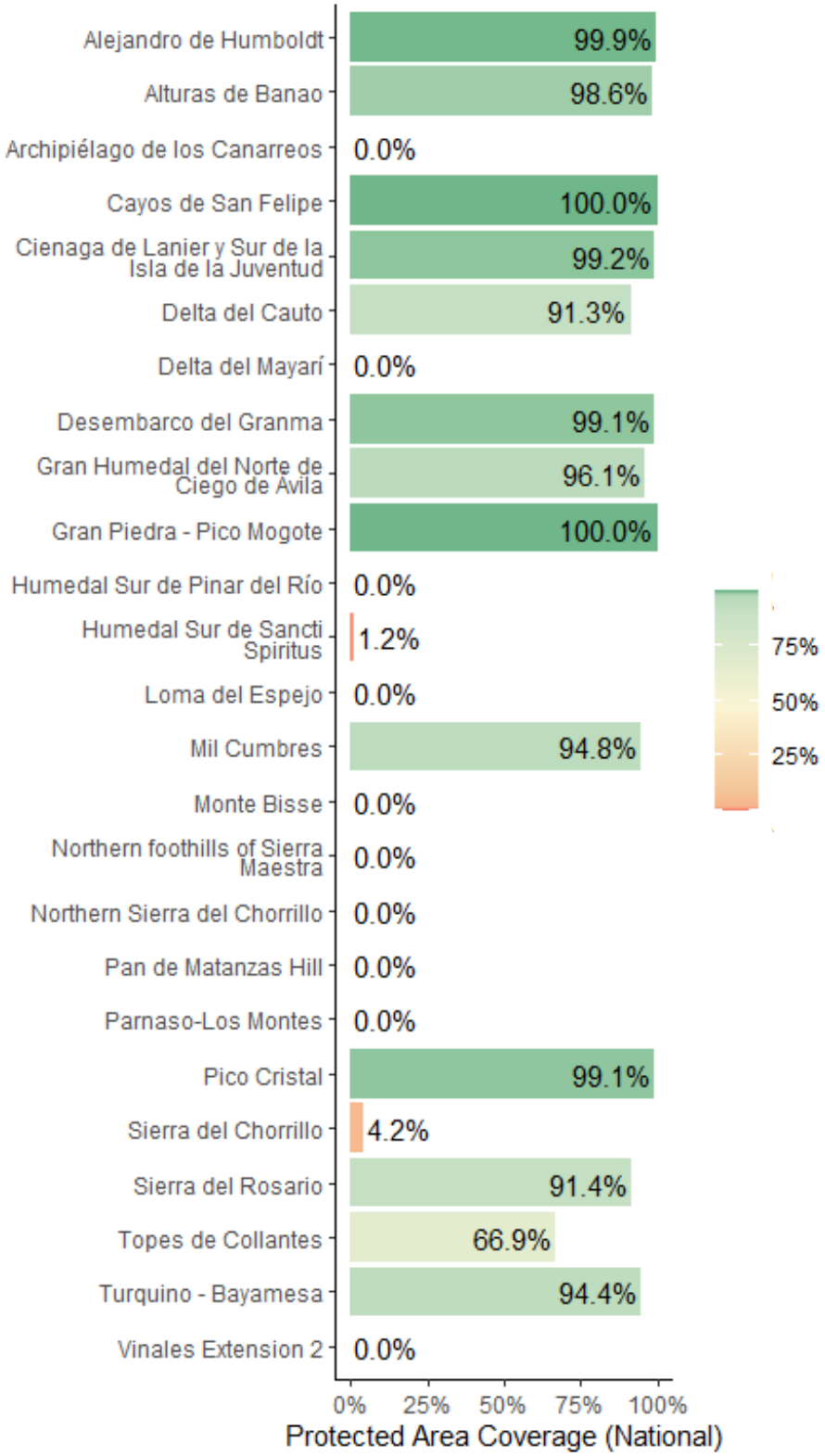
There is 1 EBSA with some portion of its extent within Cuba's hypothetical EEZ, coverage from PAs and OECMs is <0.1%.



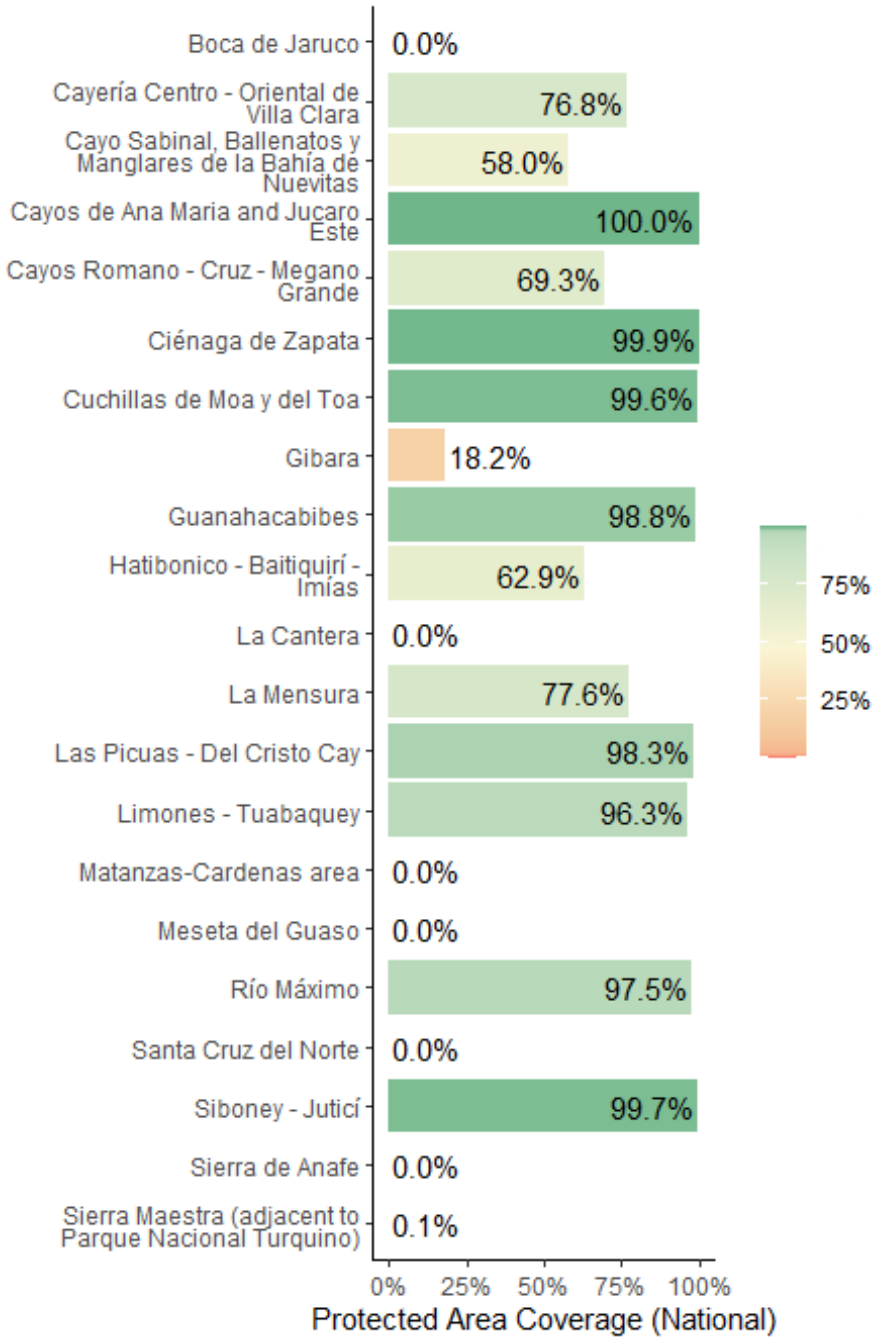
Areas Important for Biodiversity in Cuba



Ecologically or Biologically Significant Marine Areas (EBSAs) in Cuba



Key Biodiversity Area Coverage (KBA) in Cuba



Key Biodiversity Area Coverage (KBA) in Cuba (continued)

Opportunities for action

A national analysis should be conducted and KBA sites reconciled officially in Cuba. Based on these analyses, new protected areas could be identified to be incorporated into the National System of Protected Areas.

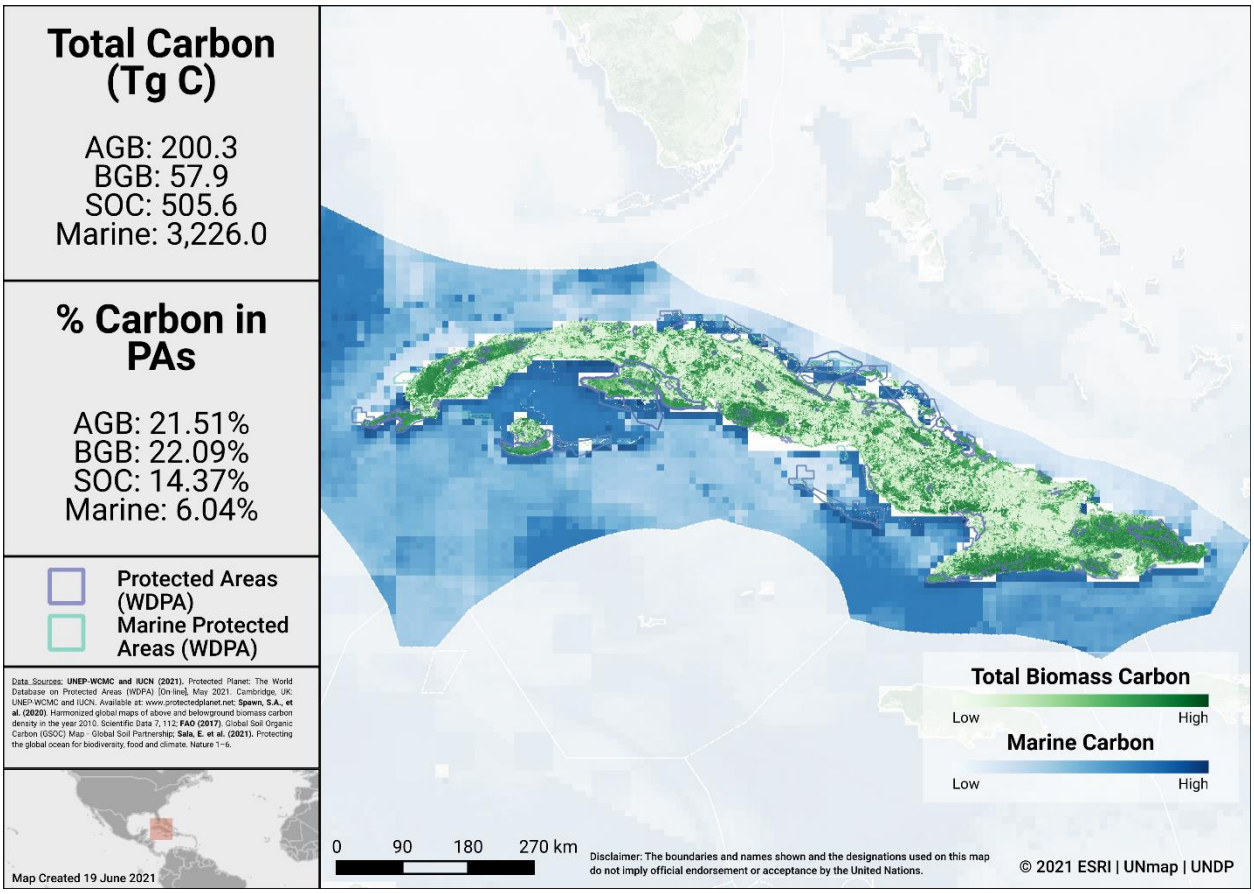
AREAS IMPORTANT FOR ECOSYSTEM SERVICES

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 Cuba and the percent of carbon in protected areas. The total carbon stocks is 200.3 Tg C from aboveground biomass (AGB), with 21.5% in protected areas; 57.9 Tg C from below ground biomass (BGB), with 22.1% in protected areas; 505.6 Tg C from soil organic carbon (SOC), with 14.4% in protected areas; and 3,226 Tg C from marine sediment carbon, with 6.0% in protected areas.



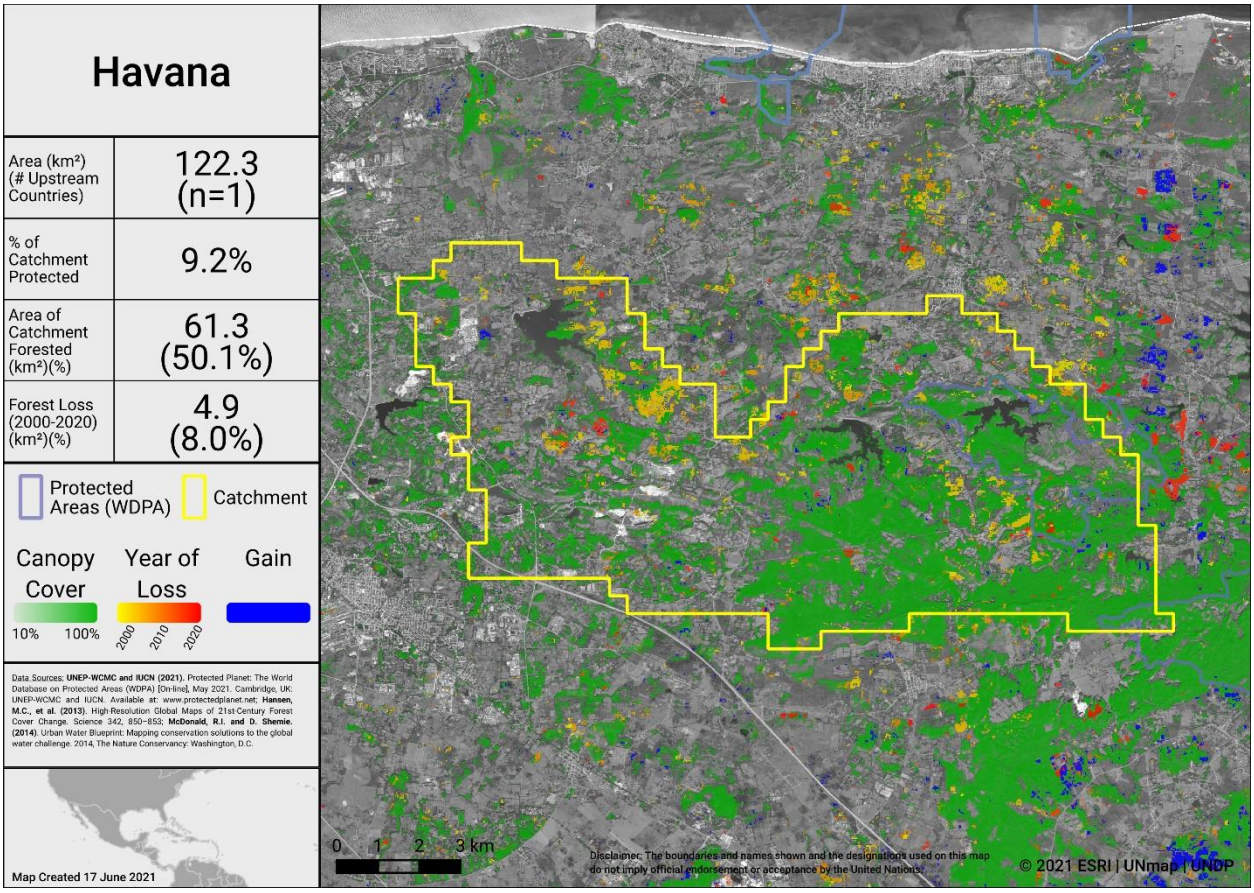
Carbon Stocks in Cuba

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 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 Cuba 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 Cuba. Intact catchments can support more consistent water supply and improved water quality.



Water catchment in Havana

Opportunities for action

A national analysis should be carried out according to the parameters and cartographic base used by UN Biodiversity Lab.

For carbon, there may be opportunity for Cuba 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 may be 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).

Connectivity has not been evaluated nationally in Cuba, based on these indicators. However, work has been done through the GEF/UNDP *Connecting Landscapes Project*, which will provide the necessary information when completed.

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 Cuba was 7.3%.

PARC-Connectedness Index

In 2019, as assessed using the PARC-Connectedness Index (values ranging from 0-1, indicating low to high connectivity), connectivity in Cuba is 0.49. This represents an increase from 0.48 in 2010.

Corridor case studies

There are currently no corridor case studies available for Cuba (but see general details on conserving connectivity through ecological networks and corridors in Hilty et al 2020).

Opportunities for action

A national analysis of PA and OECM connectivity should be carried out according to the parameters and cartographic base used by UN Biodiversity Lab. Regarding corridors, work has been done through the GEF / UNDP Connecting Landscapes Project, which will provide the necessary information when it is completed. 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

There is a lack of comprehensive global data on governance quality and equity in PAs and OECMs. Here, we provide data on the diversity of governance types for reported PAs and OECMs.

Cuba has protected areas administered by the Government, Administration Boards and national Non-Governmental Organizations. According to Cuba's national reporting, of the 119 PAs approved by the Council of Ministers:

- 14 PAs are under shared or joint government (11.8%)
- 103 PAs are governed by **governments** (86.54%)
- 2 are under **private** governance (by national NGOs) (1.68%)

As of May 2021, PAs in Cuba reported in the WDPA have the following governance types:

- 64.3% are governed by **governments**
  - 0.4% by federal or national ministry or agency
  - 63.0% by sub-national ministry or agency
  - 0.9% by government-delegated management
- 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 Cuba reported in the WD-OECM, therefore there is no data available on OECM governance types.

Privately Protected Areas (PPAs)

Based on the response from Cuba's PoWPA focal point (as reported in Stolton et al 2014):

- 2 PPAs have been established or recognized.

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

There is currently no data available on ICCAs for Cuba (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 Cuba (see Garnett et al 2018 for details).

Opportunities for action

Explore opportunities for governance types that have lower representation, for Cuba 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 Cuba 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

Nationally, Management Effectiveness Evaluation is carried out in approved protected areas.

In 2020, 103 of the 119 PAs approved by the Council of Ministers were evaluated (equivalent to 86.55% of PAs) [there were difficulties with the evaluation given the existing situation regarding Covid-19 in Cuba].

These evaluations are equivalent to:

- 49.51% of terrestrial PAs
- 50.49% of marine PAs.

Of the 103 evaluated PAs: 69% of PAs were deemed to have 'effective management', which is recognized as acceptable.

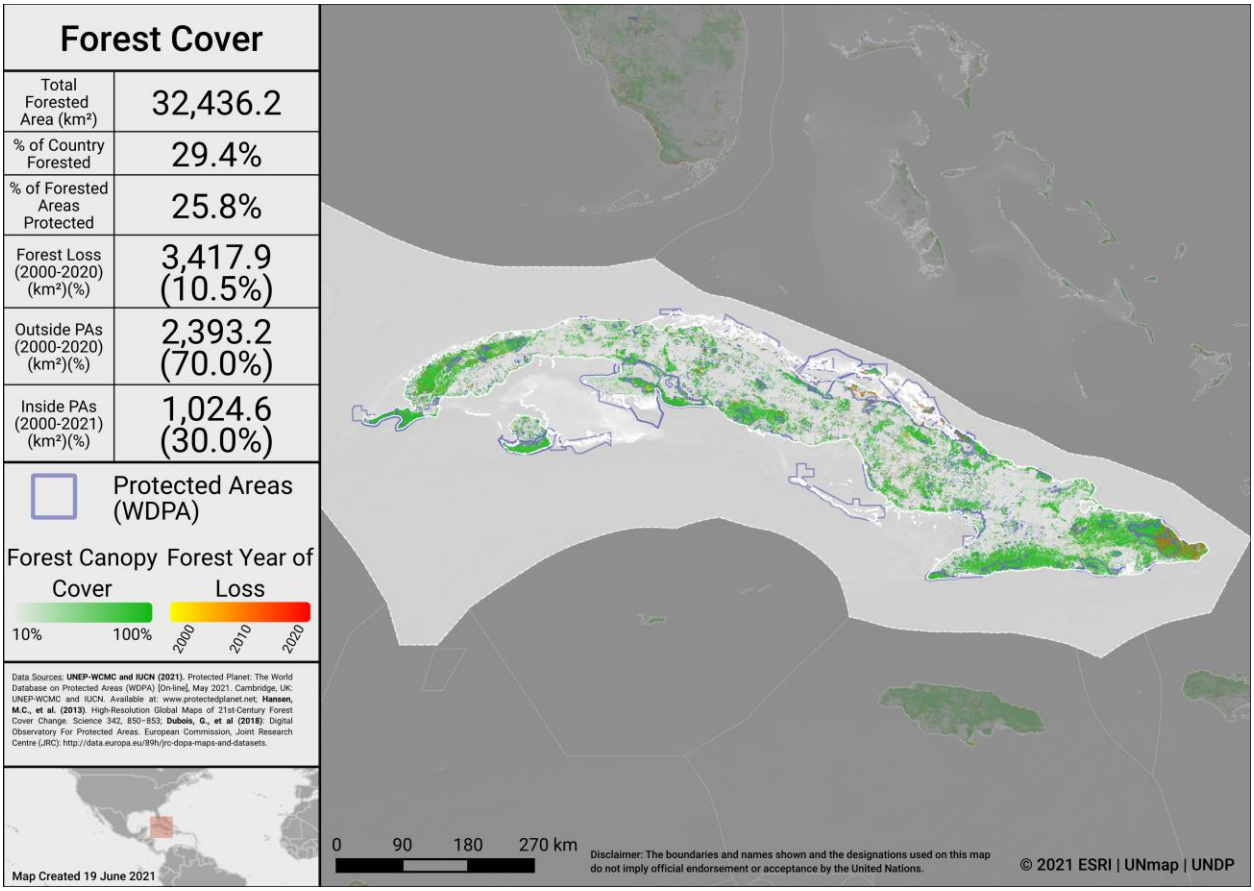
As of May 2021, 0 (0.0%) PAs have completed management effectiveness evaluations reported in the global database on protected area management effectiveness (GD-PAME).

- There is a need to report completed assessments on the GD-PAME, to reflect the current situation (86.55% of PAs with assessments completed in 2020) in Cuba.

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

Changes in forest cover in protected areas and OECMs

Forested areas in Cuba cover approximately 29.4% of the country, an area of 32,436.2 km^2. Approximately 25.8% (8,361.6 km^2) of this is within the protected area estate of Cuba. Over the period 2000-2020 loss of forest cover amounted to over 3,417.9 km^2, or 3.1% of the country (10.5% of forest area), of which 1,024.6 km^2 (30.0% of forest loss) occurred within protected areas. The map below shows how forest cover has changed in Cuba from 2000-2020 both inside and outside of PAs. This can indicate how effective PAs are in reducing forest cover loss.



Forest Cover and Forest Loss in Cuba

Opportunities for action

There is opportunity to report all complete protected area management effectiveness (PAME) evaluations in the GD-PAME. If the 60% targets for completed management effectiveness assessments (per COP Decision X/31) have not been met for terrestrial or marine PAs, there is opportunity to increase PAME evaluations 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 Latin America and the Caribbean on achieving Aichi Biodiversity Targets 11 and 12 took place 28 September - 1 October 2015 in Curitiba, Paraná, Brazil. 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/

Actions from the workshop:

Terrestrial coverage: Achieving administrative and legal approval of 70 protected areas of national significance and 63 protected areas of local significance (terrestrial and marine)

Marine coverage: Increase the number of submission of areas for official PA designation (70 of national significance and 63 of local significance including terrestrial PAs)/ and increase marine ecosystem representation of 3% (10,973 km^2)

Ecological representation:

1) Add 4% of protection for the different landscape types
2) Add 3% of natural vegetation
3) Add 2% of endemic plants 4) Add 3% of key areas for marine species
4) Add 3% of areas for endemic or endangered terrestrial vertebrates
5) Add 3% of protected natural wetlands
6) Add 3% of protected marine waters.

Areas Important for biodiversity and ecosystem services: Enhance the recovery of degraded mountain ecosystems considering its elevated patrimonial and endemism value.

Connectivity: Designate biological corridors and/or connection zones between protected areas.

Management effectiveness: Create a management effectiveness assessment methodology.

Governance and Equity: Strengthen the local participation programs of rural communities in protected areas.

Integration into the wider landscape and seascape:

1) Integrated management of ecosystems
2) Ecological and landscape connectivity.

OECMs:

1) Protection of marine ecosystems and fisheries regulation
2) Integrated management between local governments and communities in coastal zones.

Updates on progress

Terrestrial coverage: During the period, 16 protected areas (5 APSN and 11 APSL) were declared by agreement of the Council of Ministers, reaching 65 Protected Areas of National Significance, APSN (82.3%) and 54 Protected Areas of Local Significance, APSL (40.3%) legally approved, totaling 119 approved protected areas at the end of the Plan.

At the end of the previous cycle, 103 areas had been approved, of which 60 were of national significance (77.9%) and 43 of local significance (32.1%). The increases correspond to 4.4% and 8.2%, respectively with respect to APSN and APSL.

Marine coverage: During the period, 16 protected areas (5 APSN and 11 APSL) were declared by agreement of the Council of Ministers, reaching 65 Protected Areas of National Significance, APSN (82.3%) and 54 Protected Areas of Local Significance, APSL (40.3%) legally approved, totaling 119 approved protected areas at the end of the Plan.

The representativeness of marine ecosystems in managed protected areas increased by 11.2%, from 73.7% to 84.9%. The increase in the coverage of these ecosystems was possible by achieving the administration of 15 MPAs that cover 15,239.83 km2 ha of marine ecosystems, which represents 85% of the marine biotopes of the SNAP.

Ecological representation:

1) The representativeness of landscape types in managed protected areas increased by 7%, from 83% to 90%. With representation with more than 10% in the SNAP.
2) The coverage of the semi-deciduous mesophilic forest, the evergreen swamp forest and the mogotes vegetation complex was increased by 5% of its extension, with the legal approval of the Pico San Juan and Sierra La Güira Ecological Reserves, the Laguna Larga and Matamoros-Dos Ríos Managed Floristic Reserves and the Yaguanabo Protected Natural Landscape, as well as with the administration and approval proposal of the Pico Galano Natural Reserve, and five other Managed Floristic Reserves, among others.
3) Of the 215 areas, the coverage per managed protected area increased, in 64 areas (82.05%), living in them 46 endemic untypical genera for 97.8%. It is increased in relation to the previous analysis, in 7 endemic genera present in PA. administered,

for a 26.6% compliance. In addition, among the 50 species considered highly threatened, 47 species are represented in the SNAP for 94% in 30 managed protected areas.

4) The representativeness of key sites for marine species in managed protected areas increased by 28.6%, from 73.7% to 84.9%. The increase in the coverage of these ecosystems was possible by achieving the administration of 15 MPAs covering 15,239, 83 km2. Management of key marine species was strengthened in important spawning sites, where aggregations of marine fish species of interest for conservation occur. One of the areas managed during the previous period (RF Corona de San Carlos) represents almost 5% of the spawning sites of snappers and groupers in the SNAP. The administration of two other areas (RF Punta Caribe and RF Golfo de Batabanó) also guarantee the conservation of sites with the presence of sea turtle species.

5) The representativeness of endemic or threatened species of terrestrial vertebrates in managed protected areas increased by 2.86%, from 86.5% to 88%. At the end of the planning period (year 2020), the protection of four species (Eleutherodactylus blairhedgesi, Tropidophis celiae, Anolis pigmaequestris, and Cubatyphlops Ampliaurus) is more effective with the administration of three protected areas (RFM Boca de Canasí, RF Cayo Francés and PNP Maisí-Yumurí).

6) The representativeness of Cuba's natural wetlands in managed protected areas increased by 3.5%, from 35% to 38.5%. The increase in the coverage of these ecosystems was made possible by the legal approval and administration of the Ciénaga de Lanier wildlife refuges on Isla de la Juventud, Correa and Macurije-Santa María, in Camagüey.

7) The representativeness of marine ecosystems in managed protected areas increased by 11.2%, from 73.7% to 84.9%. The increase in the coverage of these ecosystems was possible by achieving the administration of 15 MPAs that cover 15,239.83 km2 ha of marine ecosystems, which represents 85% of the marine biotopes of the SNAP.

Areas Important for biodiversity and ecosystem services: Accomplished

Connectivity: Accomplished

Management effectiveness: Accomplished

Governance and Equity: Accomplished

Integration into the wider landscape and seascape: Accomplished

OECMs: Accomplished

NATIONAL BIODIVERSITY STRATEGY AND ACTION PLANS (NBSAPs)

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

National Target 11: Conservation of 20% of land areas and 27% of marine and coastal areas of importance to biological diversity and ecosystem services by ecologically representative protected areas, managed effectively and equitably or otherwise Effective conservation, area-based, well-connected and integrated into broad landscapes

Based on national data, the 215 protected areas of the National System represent 21.3% of the surface of the Republic of Cuba. Terrestrial protected areas represent 17.9% of the terrestrial surface and marine protected areas represent 26.7% of the nearshore marine surface of interior waters of the Republic of Cuba.

APPROVED GEF-5, GEF-6, & GCF 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). Where spatial data for the proposed PAs was available, further details (based on an analysis by UNDP) regarding their impacts for ecological representation, coverage of KBAs, and coverage of areas important for carbon storage is included.

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)
4846	Yes	66	Terrestrial	All except Ecosystem services

Based on spatial data available for GEF project 4846, benefits will arise for several elements of Target 11:

Coverage of Terrestrial and Marine Ecoregions:

- 4 Terrestrial Ecoregions will have improved coverage. These Ecoregions are: Cuban cactus scrub; Cuban dry forests; Cuban moist forests; Cuban pine forests.
  - The average increase in coverage of Terrestrial Ecoregions will be 3.27%.
- 1 Marine Ecoregions will have improved coverage. These Marine Ecoregions are: Greater Antilles.
  - The increase in coverage of Marine Ecoregions will be 2.26%.

Coverage of KBAs:

- Coverage will improve for 9 KBAs.

Ecosystem services:

- 0.13 % increase in the PA coverage of aboveground biomass.
- 0.13 % increase in the PA coverage of important aboveground biomass areas.
- 0.09 % increase in the PA coverage of soil organic carbon (SOC).
- 0.015 % increase in the PA coverage of areas important for SOC.

Approved Green Climate Fund (GCF) Protected Area-related biodiversity projects

The Green Climate Fund's investments listed as approved projects as of May 2021 were considered. The GCF supports paradigm shifts in both climate change mitigation and adaptation that may impact quality of PAs or contribute to better integration within the wider land- and seascapes around PAs. Only projects with result areas for either or both *Forest and Land Use and Ecosystems and Ecosystem Services result areas* were included.

GCF ID	Project theme	Result area	Target 11 element
FP157	Adaptation	Ecosystems and ecosystem services	All elements

UN OCEAN CONFERENCE VOLUNTARY COMMITMENTS

Voluntary commitments for the UN Ocean Conference are initiatives voluntarily undertaken by governments, the UN system, non-governmental organizations, among other actors—individually or in partnership—that aim to contribute to the implementation of SDG 14 (here we focus in particular on SDG 14.5). The registry of commitments was opened in February 2017, in the lead up to the first UN Ocean Conference (5 to 9 June 2017).

Ocean Actions improving MPA or OECM coverage:

#OceanAction16178: Protecting 1 million sq kms through the $15 million WCS Marine Protected Area Fund, by Wildlife Conservation Society (Non-governmental organization (NGO)).

- Area to be added: 2000 km^2 (**Completed**)
- Notes on area added: 2 new proposed sites have been prepated (Los Colorados Archipelago; Cabo Lucrecia-Punta de Mulas"), and support provided for 2 existing sites (Jardines de la Reina National Park, Ciénaga de Zapata National Park); see details in WCS MPA project country profile: https://mpafund.wcs.org/
- Progress report: Yes (2019), status=On Track (as of 2021, **Completed)**
- Further details available at: https://oceanconference.un.org/commitments/?id=16178.

OTHER ACTIONS/COMMITMENTS

Cuba's statement at the 2020 UN Biodiversity Summit mentions PAs, OECMs or corridors:

The national system of protected areas which covers 20.4% of our national territory has been bolstered.

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
Bahamian-Antillean mangroves	8,028.8	36.6	7.2	4,120.0	51.3
Cuban cactus scrub	3,255.7	100.0	2.9	615.6	18.9
Cuban dry forests	65,611.8	99.8	59.2	4,049.2	6.2
Cuban moist forests	21,339.3	100.0	19.3	4,464.1	20.9
Cuban pine forests	6,404.7	100.0	5.8	479.6	7.5
Cuban wetlands	5,646.5	100.0	5.1	3,517.5	62.3

REFERENCES

Atwood, TB, Witt, A, Mayorga, J, Hammill, E, & Sala, E. (2020). Global patterns in marine sediment carbon stocks. *Frontiers in Marine Science*. https://doi.org/10.3389/fmars.2020.00165

BirdLife International (2021). World Database of Key Biodiversity Areas. Available at: http://www.keybiodiversityareas.org

CBD (2010). Decision adopted by the Conference of the Parties to the Convention on Biological Diversity at its tenth meeting. Decision X/2. Strategic plan for biodiversity 2011–2020. Retrieved from https://www.cbd.int/doc/decisions/cop-10/cop-10-dec02-en.pdf.

CSIRO (2019). Protected area connectedness index (PARCconnectedness). https://www.bipindicators.net/indicators/protected-area-connectedness-index-parcconnectedness

Dinerstein, E., et al. (2017). An ecoregion-based approach to protecting half the terrestrial realm. BioScience 67(6), 534-545.

Donald et al., 2019, The prevalence, characteristics and effectiveness of Aichi Target 11′ s "other effective area-based conservation measures" (OECMs) in Key Biodiversity Areas. Conservation Letters, 12(5).

EC-JRC (2021). DOPA Indicator factsheets: http://dopa.jrc.ec.europa.eu/en/factsheets

FAO (2017). Global Soil Organic Carbon (GSOC) Map - Global Soil Partnership [WWW Document]. URL http://www.fao.org/global-soil-partnership/pillars-action/4-information-and-data/global-soil-organic-carbon-gsoc-map/en/.

Franks, P and Booker, F (2018). Governance Assessment for Protected and Conserved Areas (GAPA): Early experience of a multi-stakeholder methodology for enhancing equity and effectiveness. IIED Working Paper, IIED, London. https://pubs.iied.org/17632IIED

Franks, P. et al. (2018). Social Assessment for Protected and Conserved Areas (SAPA). Methodology manual for SAPA facilitators. Second edition. IIED, London. https://pubs.iied.org/14659iied

Garnett et al. (2018). A spatial overview of the global importance of Indigenous lands for conservation. Nature Sustainability, 1(7), 369.

Global Environment Facility (GEF-5 and GEF-6); all projects can be found online at: https://www.thegef.org/projects

Gloss, L. et al. (2019). International Outlook for Privately Protected Areas: Summary Report. International Land Conservation Network (a project of the Lincoln Institute of Land Policy) and United Nations Development Programme. Summary report, and individual country profiles, available at: https://nbsapforum.net/knowledge-base/resource/international-outlook-privately-protected-areas-summary-report

Hansen, M.C., Potapov, P.V., Moore, R., Hancher, M., Turubanova, S.A., Tyukavina, A., Thau, D., Stehman, S.V., Goetz, S.J., Loveland, T.R., Kommareddy, A., Egorov, A., Chini, L., Justice, C.O., Townshend, J.R.G., (2013). High-Resolution Global Maps of 21st-Century Forest Cover Change. Science 342, 850–853. https://doi.org/10.1126/science.1244693

Hilty, J et al. (2020). Guidelines for conserving connectivity through ecological networks and corridors. Best Practice Protected Area Guidelines Series No. 30. Gland, Switzerland: IUCN. https://portals.iucn.org/library/sites/library/files/documents/PAG-030-En.pdf

IIED 2020. Site-level assessment of governance and equity (SAGE) https://www.iied.org/site-level-assessment-governance-equity-sage.

IUCN (2016). A Global Standard for the Identification of Key Biodiversity Areas, Version 1.0. First edition. Gland, Switzerland: IUCN. https://portals.iucn.org/library/sites/library/files/documents/2016-048.pdf

IUCN-WCPA (2017). IUCN-WCPA Task Force on OECMs collation of case studies submitted 2016-2017. https://www.iucn.org/commissions/world-commission-protected-areas/our-work/oecms/oecm-reports

Joint Research Centre of the European Commission (JRC) (2021), The Digital Observatory for Protected Areas (DOPA) Explorer 4.1 [On-line], [Apr/2021], Ispra, Italy. Available at: http://dopa-explorer.jrc.ec.europa.eu

Kothari, A., et al. (Eds) (2012). Recognising and Supporting Territories and Areas Conserved By Indigenous Peoples And Local Communities: Global Overview and National Case Studies. Secretariat of the CBD, ICCA Consortium, Kalpavriksh, and Natural Justice, Montreal, Canada. Technical Series no. 64.

Lausche, B., Laur, A., Collins, M. (2021). *Marine Connectivity Conservation 'Rules of Thumb' for MPA and MPA Network Design*. Version 1.0. IUCN WCPA Connectivity Conservation Specialist Group's Marine Connectivity Working Group.

McDonald, R.I., Weber, K., Padowski, J., Flörke, M., Schneider, C., Green, P.A., Gleeson, T., Eckman, S., Lehner, B., Balk, D., Boucher, T., Grill, G., Montgomery, M., (2014). Water on an urban planet: Urbanization and the reach of urban water infrastructure. Global Environmental Change 27, 96–105. https://doi.org/10.1016/j.gloenvcha.2014.04.022

National Biodiversity Strategy and Action Plan (NBSAPs); most recent NBSAP is available at: https://www.cbd.int/nbsap/search/

Newbold, T., Hudson, L.N., Arnell, A.P., Contu, S., Palma, A.D., Ferrier, S., Hill, S.L.L., Hoskins, A.J., Lysenko, I., Phillips, H.R.P., Burton, V.J., Chng, C.W.T., Emerson, S., Gao, D., Pask-Hale, G., Hutton, J., Jung, M., Sanchez-Ortiz, K., Simmons, B.I., Whitmee, S., Zhang, H., Scharlemann, J.P.W., Purvis, A., (2016). Has land use pushed terrestrial biodiversity beyond the planetary boundary? A global assessment. Science 353, 288–291. https://doi.org/10.1126/science.aaf2201

Sala, E. et al. (2021). Protecting the global ocean for biodiversity, food and climate. Nature, 592(7854), 397-402. https://doi.org/10.1038/s41586-021-03496-1

Saura, S. et al. (2018). Protected area connectivity: Shortfalls in global targets and country-level priorities. Biological Conservation, 219, 53-67.

Saura, S. et al (2017). Protected areas in the world's ecoregions: How well connected are they? Ecological Indicators, 76, 144-158.

Spalding, M.D., et al. (2012). Pelagic provinces of the world: a biogeographic classification of the world's surface pelagic waters. Ocean & Coastal Management 60, 19–30.

Spalding, M.D., et al. (2007). Marine ecoregions of the world: a bioregionalization of coastal and shelf areas. BioScience 57(7): 573–583.

Spawn, S.A., Sullivan, C.C., Lark, T.J., Gibbs, H.K., (2020). Harmonized global maps of above and belowground biomass carbon density in the year 2010. Scientific Data 7, 112. https://doi.org/10.1038/s41597-020-0444-4

Stolton, S. et al. (2014). The Futures of Privately Protected Areas. Gland, Switzerland: IUCN.

UNEP-WCMC and IUCN (2021) Protected Planet Report 2020. UNEP-WCMC and IUCN: Cambridge UK; Gland, Switzerland.

UNEP-WCMC and IUCN (2021), Protected Planet: The Global Database on Protected Area Management Effectiveness (GD-PAME) [On-line], [May/2021], Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.

UNEP-WCMC and IUCN (2021), Protected Planet: The World Database on Protected Areas (WDPA) [On-line], [May/2021], Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.

UNEP-WCMC and IUCN (2021), Protected Planet: The World Database on Other Effective Area-based Conservation Measures (WD-OECM) [On-line], [May/2021], Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.

UN Ocean Conference Voluntary Commitments, available at: https://oceanconference.un.org/commitments/

Williams, B.A., Venter, O., Allan, J.R., Atkinson, S.C., Rehbein, J.A., Ward, M., Marco, M.D., Grantham, H.S., Ervin, J., Goetz, S.J., Hansen, A.J., Jantz, P., Pillay, R., Rodríguez-Buriticá, S., Supples, C., Virnig, A.L.S., Watson, J.E.M., (2020). Change in Terrestrial Human Footprint Drives Continued Loss of Intact Ecosystems. One Earth 3, 371–382. https://doi.org/10.1016/j.oneear.2020.08.009

This document was created using the knitr package with R version 4.0.5.

For any questions please contact support@unbiodiveristylab.org.