COVERAGE AND CONNECTIVITY

Wallis Island (© Stacy Jupiter/WCS)

AUTHORS

Heather C. Bingham, Vainuupo Jungblut, Paul van Nimwegen, Bastian Bertzky, Lucy Bastin and Hans Wendt

ACKNOWLEDGEMENTS

The authors would like to thank Andrew Cottam, Andrea Mandrici, Ben Lucas, Giacomo Delli, Luca Battistella, Stuart Butchart, Mark O'Brien, Hugh Govan, John Kaitu'u, Nate Peterson, Edward Lewis, Claire Vincent, Amanda Wheatley, Theresa Sandmann, Trudiann Dale, Manuel Mendes, Rolenas Tavue Baereleo, Tilia Tima, Huggard Tongatule, Joyce Beouch, Malcolm Keako, Agnetha Vave Karamui, Gwen Sisior, Haden Talagi, Richard Siataga and Tahirih Hokafonu.

COVERAGE AND CONNECTIVITY

CHAPTER 2

Coverage and connectivity

2.1 Introduction

The countries and territories of Oceania have increasingly recognised the need to dedicate areas for protection and management, and have organised and coordinated themselves to fulfil this goal. Notably, the Micronesia Challenge is a commitment by three states (the Federated States of Micronesia, Republic of the Marshall Islands and Palau), together with the territories of Guam and Northern Mariana Islands, to preserve the natural resources that are crucial to the survival of Oceania's traditions, cultures and livelihoods. The goal of the Challenge is to "effectively conserve at least 30% of the near-shore marine resources and 20% of the terrestrial resources across Micronesia by 2020" (Micronesia Challenge, 2020). The Micronesia Challenge has been widely commended and set an unprecedented example of collaborative, sustainable marine and terrestrial conservation for the international community. Furthermore, the Cook Islands, New Caledonia, Pitcairn Islands and Palau have placed all or most of their Exclusive Economic Zones (EEZ) under some level of protection (UNEP-WCMC & IUCN, 2021a).

The region's ambitions are not limited to the marine realm. For example, as the largest land mass in the region, Papua New Guinea has made commitments to conserve its biodiversity for the benefit of nature and people. In addition to coverage targets, these commitments take into account representativeness (with a goal of capturing 80% of all identified vegetation types and landforms in protected areas by 2025), and coverage of threatened species' ranges (with a goal of protecting 30% of the range of all rare, threatened and restricted-range species by 2025). These commitments have been made while recognising the historic and ongoing leadership of local communities in managing the country's biodiversity, and with consideration of the need to respect customary land ownership (Independent State of Papua New Guinea, 2014). They are underpinned by international agreements such as the Convention on Biological Diversity and the Sustainable Development Goals, as described earlier in this report.

According to the World Database on Protected Areas (WDPA) and World Database on Other Effective Area-based Conservation Measures (WD-OECM) (Box 2.1), global terrestrial and freshwater coverage stood at 16.6% and marine coverage at 7.7% in May 2021 (UNEP-WCMC & IUCN, 2021a). Protected areas have expanded since the inception of Aichi Target 11, with many areas of vital importance to biodiversity now managed for conservation. Gaps remain, however, and at the global level there are disparities in the level of protection of different ecoregions, and of areas of importance for biodiversity (UNEP-WCMC & IUCN, 2021b). While global marine coverage is approaching 8%, this figure drops to 1.2% in areas beyond national jurisdiction, leaving the vast majority of the planet's ocean with limited protection. Likewise, the extent to which the world's growing protected area network is effectively managed and equitably governed remains unclear (see Chapter 4). The contribution of other effective area-based conservation measures (OECMs) cannot be known until these measures have been identified and mapped.

Protected and conserved area priorities for Oceania countries are embodied in their *National Biodiversity Strategies and Action Plans (NBSAPs)* and other national policies. In July 2016, the CBD Secretariat together with eleven Pacific Island countries and regional partners formulated lists of national priority

BOX 2.1 THE WORLD DATABASE ON PROTECTED AREAS AND WORLD DATABASE ON OTHER EFFECTIVE AREA-BASED CONSERVATION MEASURES

The World Database on Protected Areas (WDPA) is the most comprehensive global database of protected areas, containing almost 266,000 records. The database has existed in various forms and under various names since 1959 and is now made available as a spatial database through www.protectedplanet.net.
The WDPA is used to track progress towards global commitments, including Aichi Target 11 and elements of Sustainable Development Goals 14 and 15.

The WDPA is now accompanied by a parallel database, the World Database on Other Effective Area-based Conservation Measures (WD-OECM). In line with the CBD definition of an OECM, this database stores information on measures that are not protected areas, but nevertheless achieve long-term positive outcomes for biodiversity conservation (CBD, 2018).

Since the WD-OECM does not yet contain data for the Pacific region, this chapter is based solely on the WDPA. In line with the global Protected Planet Report 2020 (UNEP-WCMC & IUCN, 2021b), the May 2021 version has been used for count and coverage statistics and the January 2021 version has been used for most other statistics. The May 2021 version has been modified to incorporate pending updates from Vanuatu and Timor-Leste.

For all analyses involving spatial analysis, points have been buffered to their reported area, the data has been flattened to remove overlaps, and certain records have been removed in line with the usual method for generating coverage statistics from the WDPA. The following records have been removed: UNESCO Man and the Biosphere Reserves; points with no reported area; and records with the status 'Proposed' or 'Not Reported'. There are certain limitations associated with the WDPA that will be discussed in detail later in the chapter.

Protected Planet website.
Source: https://www.protectedplanet.net

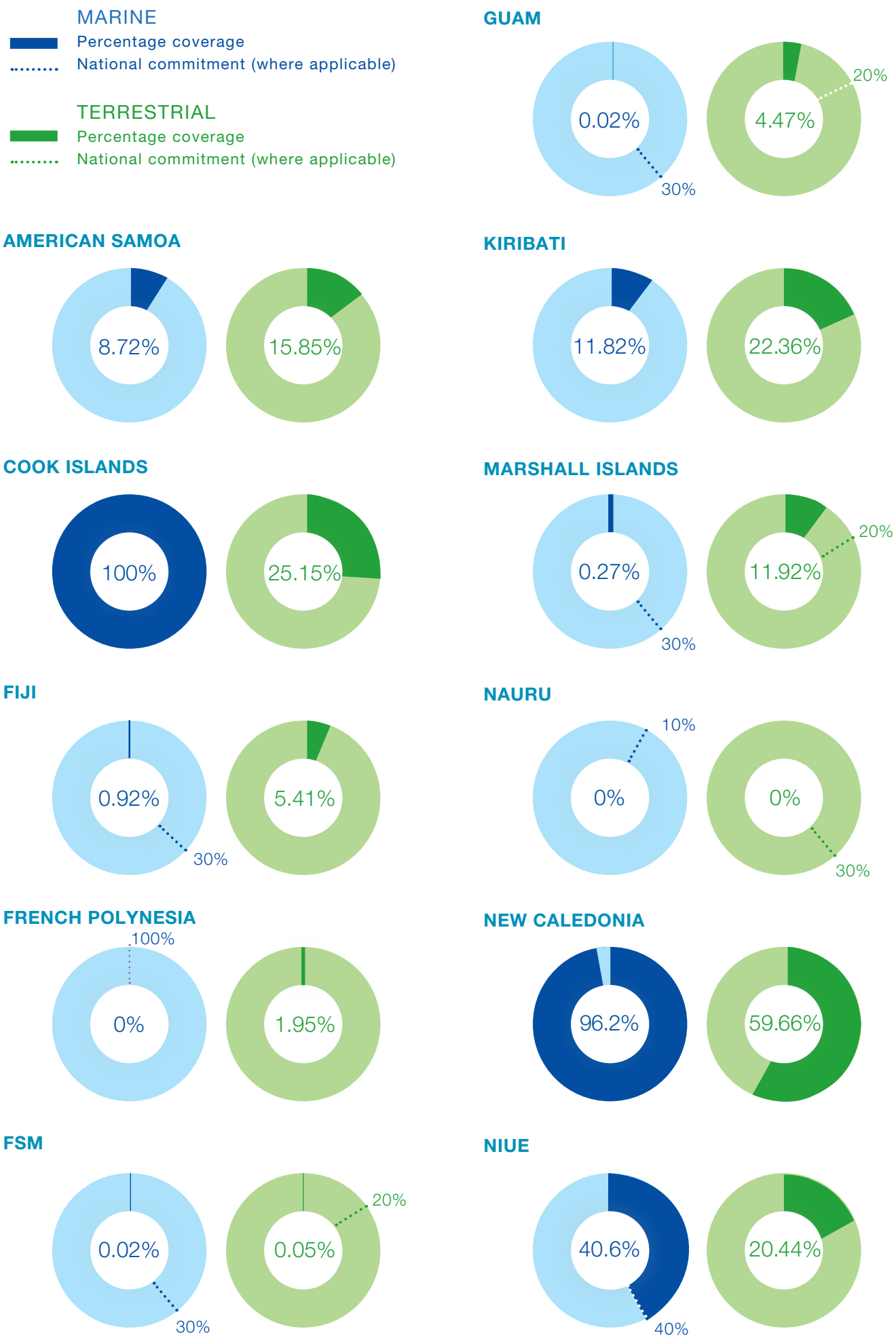
actions to be undertaken up to 2020, in support of the achievement of Aichi Biodiversity Targets 11 and 12[4] – often referred to as 'national roadmaps' (CBD Secretariat, 2017). For this process, country experts referred to existing national commitments for Aichi Biodiversity Targets 11 and 12 to be achieved by 2020, in line with their revised *NBSAP, Programme of Work on Protected Areas (PoWPA) Action Plan* or other national protected area planning documents, commitments of relevant national projects and gaps in commitments. These were compared with actual actions undertaken, and opportunities were identified to address gaps. The resulting national priority actions were intended to be undertaken in the subsequent four years, with the aim of improving the status of the elements of Aichi Biodiversity Targets 11 and 12 by 2020 at the national, regional and global levels.

This chapter explores the extent to which Oceania has met its international commitments, alongside national and territory level targets. It assesses the spatial elements of Aichi Target 11, including general coverage, coverage of important areas for biodiversity, ecological representativeness and connectivity.

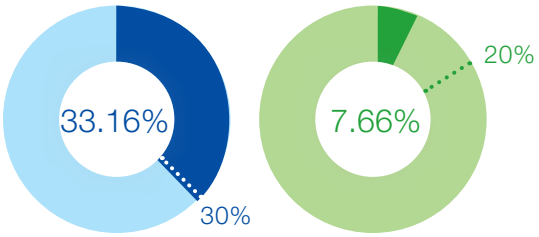
Endangered Grey Reef Shark (*Carcharhinus amblyrhynchos*) (© Stacy Jupiter/WCS)

[4] By 2020, the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

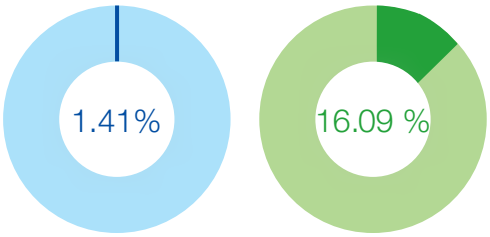
FIGURE 2.1 Protected area percentage coverage. *Source: Compiled using data from UNEP-WCMC and IUCN (2021a)*



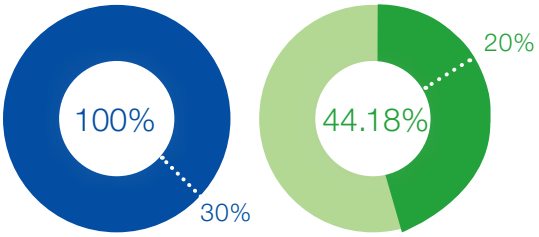
NORTHERN MARIANA ISLANDS



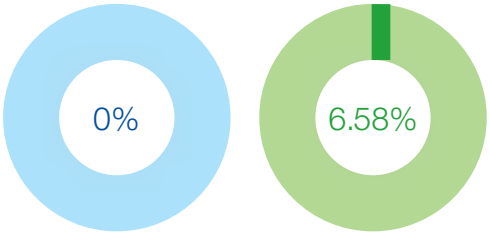
TIMOR-LESTE



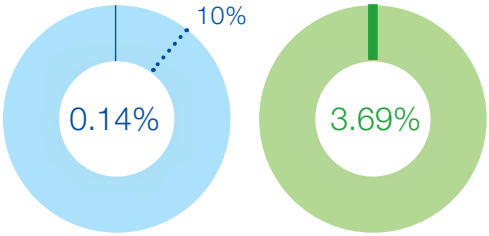
PALAU



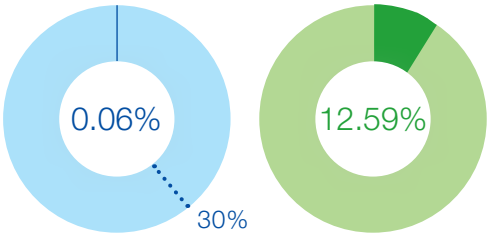
TOKELAU



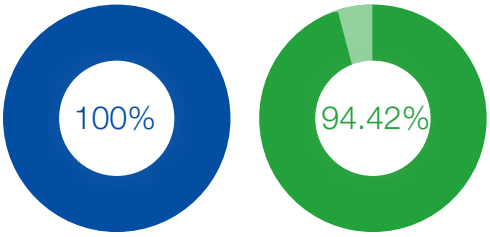
PAPUA NEW GUINEA



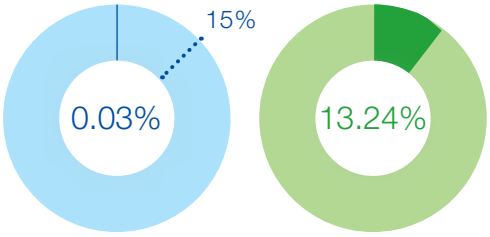
TONGA



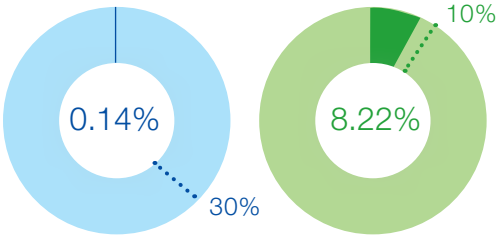
PITCAIRN ISLANDS



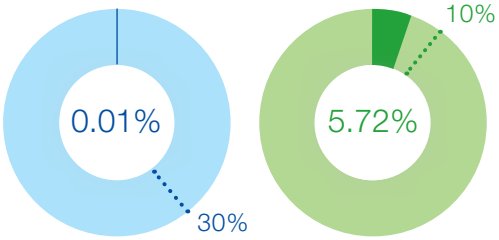
TUVALU



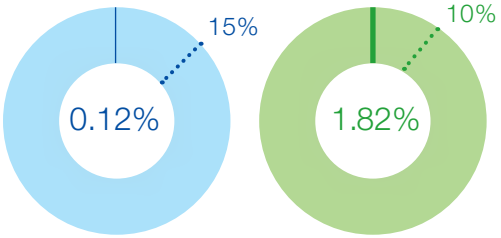
SAMOA



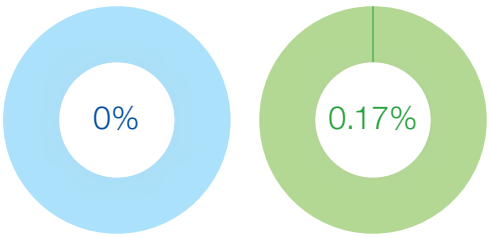
VANUATU



SOLOMON ISLANDS



WALLIS AND FUTUNA



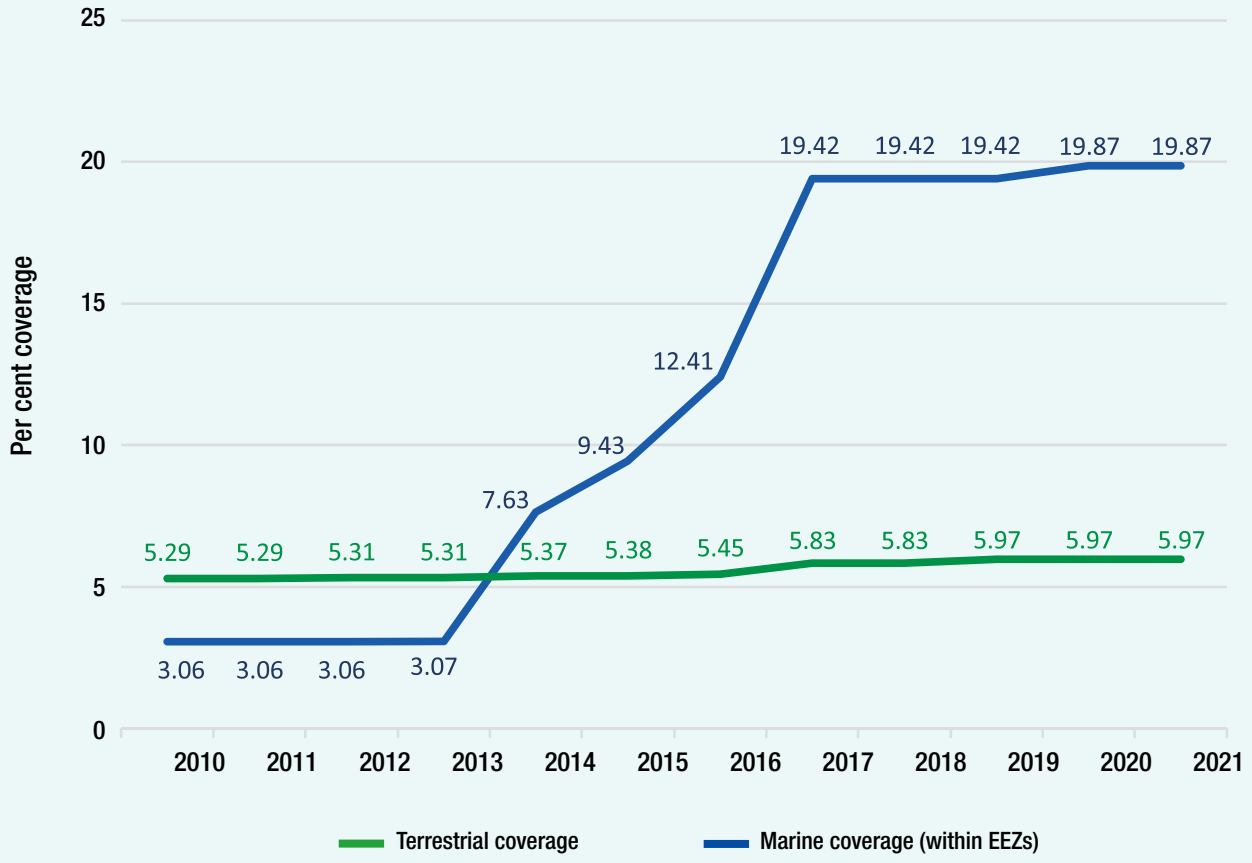


FIGURE 2.2 Increases in overall terrestrial and marine protected area coverage in Oceania since 2010.
Source: UNEP-WCMC and IUCN (2021a)

2.2 Coverage

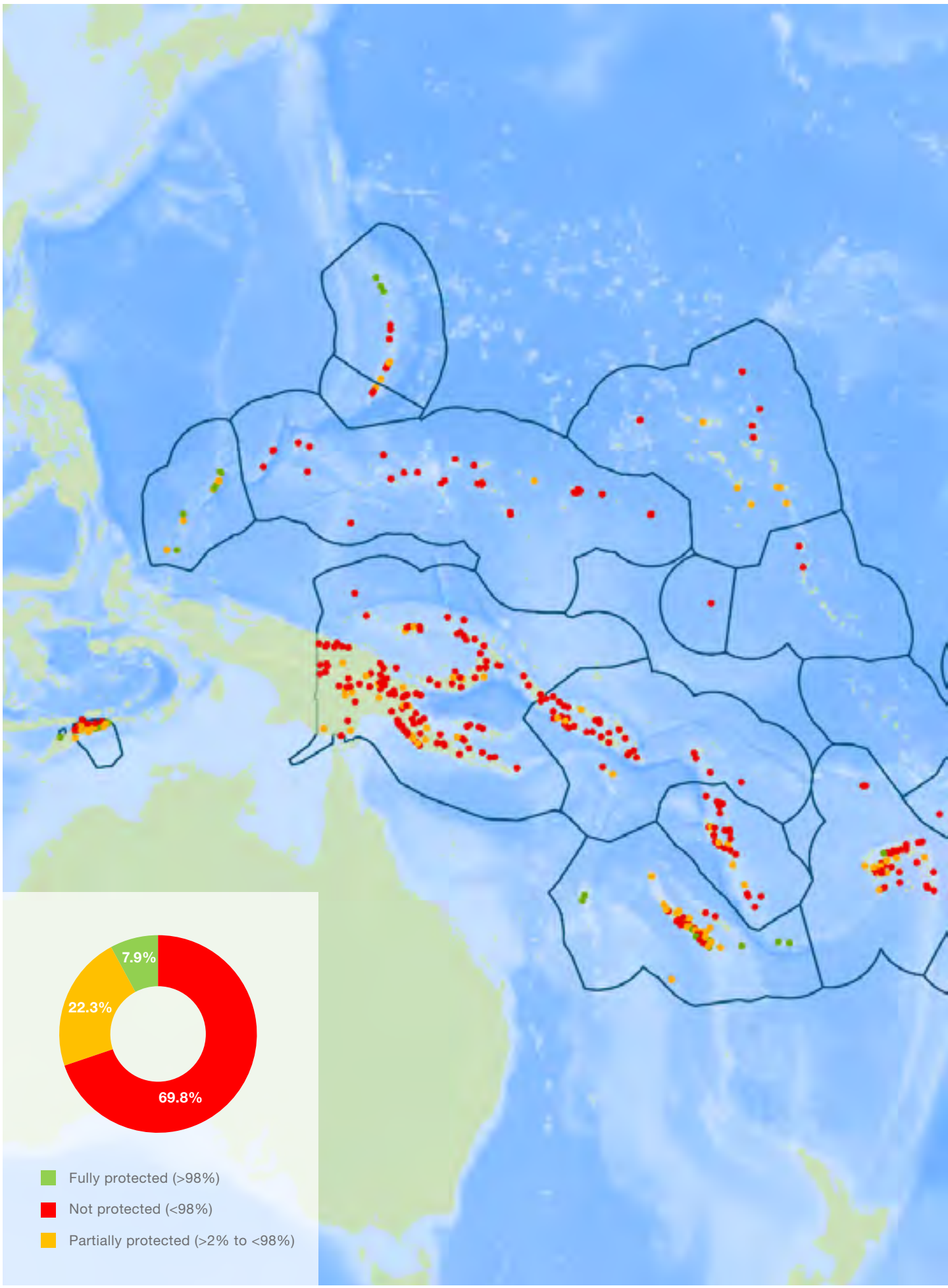
METHODOLOGY: The modified May 2021 WDPA was dissolved by country code (ISO3) and overlaid with the land and EEZ components of the base layer to determine the level of terrestrial and marine protection.

DATA SOURCE: Modified May 2021 WDPA (UNEP-WCMC & IUCN, 2021a) and World Vector Shoreline (base layer).[5]

Protected area coverage is the most commonly referenced indicator associated with Aichi Target 11, offering a simple measure of efforts contributing to halting biodiversity loss. The region-wide coverage of marine protected areas within EEZs is 19.9%, which is slightly higher in relative terms than the global figure of 17.8% (or 18% with OECMs) within national jurisdictions (UNEP-WCMC & IUCN, 2021b). The high level of marine coverage in Oceania is predominately the result of a small number of large-scale marine protected areas[6], designated by seven countries and territories, which constitute 96% of the area protected. In contrast, the region-wide terrestrial protected area coverage of 6% is well below the global level (15.7%, or 16.6% with OECMs) (UNEP-WCMC & IUCN, 2021b). The extent of protected area coverage varies greatly among the region's countries and territories, ranging from 0 to 100% in the marine realm and 0 to 94.4% on land (Figure 2.1). Three of the region's 23 countries and territories have achieved their nationally defined percentage coverage targets in their terrestrial or marine jurisdictions, or in both. Over the past decade, there has been a modest increase in terrestrial coverage in the region, while marine coverage has increased dramatically (Figure 2.2).

5 This dataset combines Exclusive Economic Zones (EEZ; VLIZ, 2014) and terrestrial country boundaries (World Vector Shoreline, 3rd edition, National Geospatial-Intelligence Agency). A simplified version of this layer has been published in Nature Scientific Data journal (Brooks et al., 2016) and is available at: http://datadryad.org/resource/doi:10.5061/dryad.6gb90.2

6 Marae Moana; Parc Naturel de la Mer de Corail; Niue Moana Mahu Marine Protected Area; Pitcairn Islands Marine Reserve; Palau National Marine Sanctuary; Phoenix Islands Protected Area; Marianas Trench Marine National Monument; and Mariana Trench National Wildlife Refuge.


7.9%
22.3%
69.8%
Fully protected (>98%)
Not protected (<98%)
Partially protected (>2% to <98%)

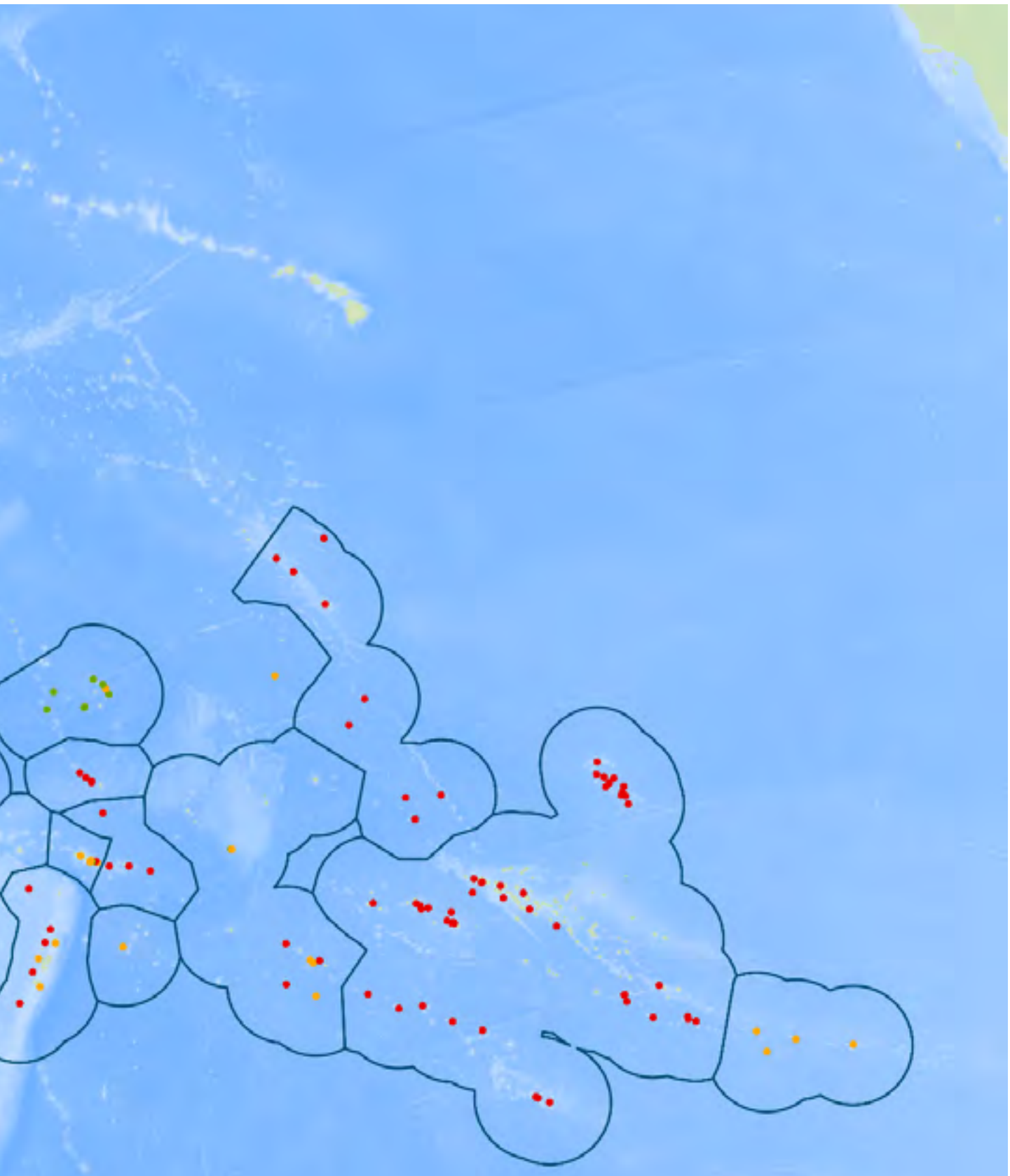


FIGURE 2.3 Protected area coverage of KBAs across Oceania (fully protected equates to ≥ 98% overlap with protected areas = green dots on map; partially protected equates to ≥ 2% to < 98% overlap = orange dots; not protected equates to < 2% overlap = red dots). *Source: Compiled using data from BirdLife International (2020) and UNEP-WCMC and IUCN (2020)*

2.3 Areas important for biodiversity

METHODOLOGY: All Key Biodiversity Areas (KBAs) with a mapped boundary in the World Database of KBAs were overlaid with protected areas with a mapped boundary in the November 2020 WDPA to determine their level of protection.[7]

DATA SOURCE: BirdLife International (2020); UNEP-WCMC and IUCN (2020) based on September 2020 World Database of Key Biodiversity Areas (polygons only) and November 2020 WDPA (polygons only).

Biodiversity is unevenly spread across the planet. Prioritising the protection of areas with higher species richness, endemism, concentrations of threatened species and diversity is a recognised and effective conservation strategy. Key Biodiversity Areas (KBAs) represent the global standard for identifying areas important for biodiversity, and are defined as "sites contributing significantly to the global persistence of biodiversity" (see Box 2.2). Although protected areas can contribute to conserving the important biodiversity within KBAs (Butchart et al., 2012), they may not always be the most appropriate conservation strategy in every situation.

In Oceania, approximately 8% of mapped KBAs are fully protected (≥ 98% covered by protected areas) and 22% are partially protected (≥ 2 to < 98% coverage) (Figure 2.3). The remaining 70% of KBAs are not included in protected areas (< 2% coverage), which is considerably higher in relative terms than the global figure of 34.5% (UNEP-WCMC & IUCN, 2021b). The mean percentage of each KBA that is covered by protected areas varies greatly between countries and territories in the region (Figure 2.4).

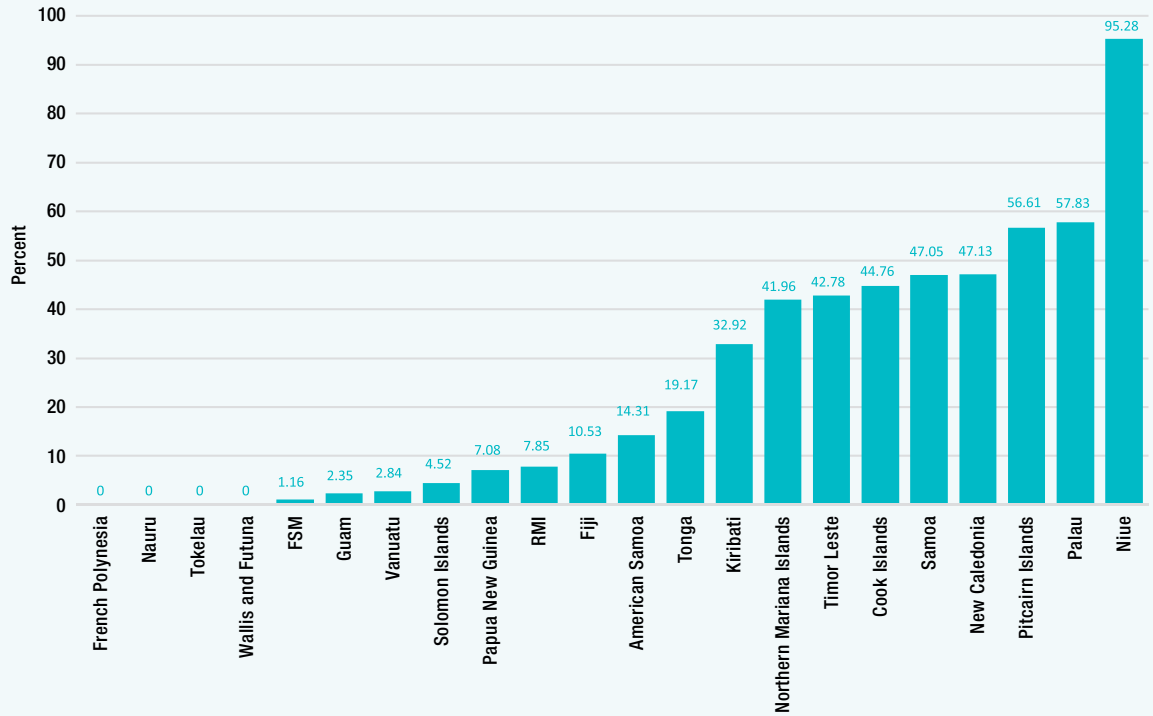


FIGURE 2.4 Mean percentage of each KBA overlapping with protected areas in the country or territory of the region. *Source: Compiled using data from BirdLife International (2020) and UNEP-WCMC and IUCN (2020)*

[7] For further information, see the metadata for the corresponding SDG Indicators (available at https://unstats.un.org/sdgs/metadata/)

BOX 2.2 KEY BIODIVERSITY AREAS PARTNERSHIP IN THE PACIFIC

Dr Mark O'Brien, Pacific Regional KBA Focal Point, BirdLife International

The *Global Standard for the Identification of Key Biodiversity Areas* sets out globally agreed criteria for the identification of important areas for biodiversity worldwide (IUCN, 2016). In the Pacific, the KBA concept was first applied in the early 2000s. Today, there are around 600 KBAs across the region – many of which were identified as a) *Important Bird and Biodiversity Areas*, b) *Alliance for Zero Extinction sites* or c) through the Ecosystem Profiles prepared by the *Critical Ecosystem Partnership Fund* (CEPF) for the Polynesia/Micronesia and East Melanesian Islands biodiversity hotspots.

The KBA partnership, comprising 13 of the world's leading nature conservation organisations, was established at the World Conservation Congress, Hawaii, in 2016. The new Global Standard was published in the same year, but has yet to be applied widely in Oceania. Nevertheless, preliminary assessments suggest that most existing KBAs will continue to meet the standard, and further research will likely lead to the delineation of new KBAs. The process of updating KBA assessments and identifying new sites will be undertaken through National Coordination Groups, reviewed by the KBA regional focal point and then independently assessed and validated prior to being included on the official World Database of Key Biodiversity Areas: http://www.keybiodiversityareas.org/.

KBA
KEY BIODIVERSITY AREAS

Central Savai'i Rainforest KBA, Samoa (© Stuart Chape)

2.4 Ecological representativeness

METHODOLOGY: The January 2021 WDPA was overlaid with a combined ecoregion layer (terrestrial, marine and pelagic provinces) from the below mentioned data sources. The marine ecoregions were clipped to the coastline of the terrestrial ecoregions and an outer boundary corresponding to the 200-metre isobath (Spalding et al., 2007).

DATA SOURCE: January 2021 WDPA (UNEP-WCMC & IUCN, 2021c) and Terrestrial Ecoregions of the World (Olson et al., 2001), Marine Ecoregions of the World (Spalding et al., 2007) and Pelagic Provinces of the World (Spalding et al., 2012).

As well as protecting important areas and species, protected areas should include viable samples of the full range of ecosystem and habitat types. This is important to ensure that the diversity of life and of landforms is conserved into the future. Ecoregions are categorised geographical regions with similar ecological characteristics such as habitat, fauna and climatic conditions. Analysing the extent to which protected areas cover ecoregions allows ecological representativeness to be measured at a broad scale.

Thirty-six terrestrial ecoregions lie partially or fully within the Oceania region. Seven of these have more than 17% of their extent within protected areas, while eight have less than 1% (Figure 2.5). Beyond the water's edge, 33 marine ecoregions and pelagic provinces lie partially or fully within the EEZs of the region. Fourteen of these have 10% or more of their extent within protected areas (Figure 2.6). The results suggest significant disparities in the extent to which ecoregions are protected in Oceania, reflecting a broader global pattern (UNEP-WCMC & IUCN, 2021b). Box 2.3 describes how marine spatial planning techniques, combined with stakeholder consultations, can be used to ensure that marine protected area networks are representative.

Funafuti Conservation Area, Tuvalu (© Vainuupo Jungblut)

BOX 2.3 TONGA IS LEADING THE WORLD IN ACHIEVING MARINE PROTECTION

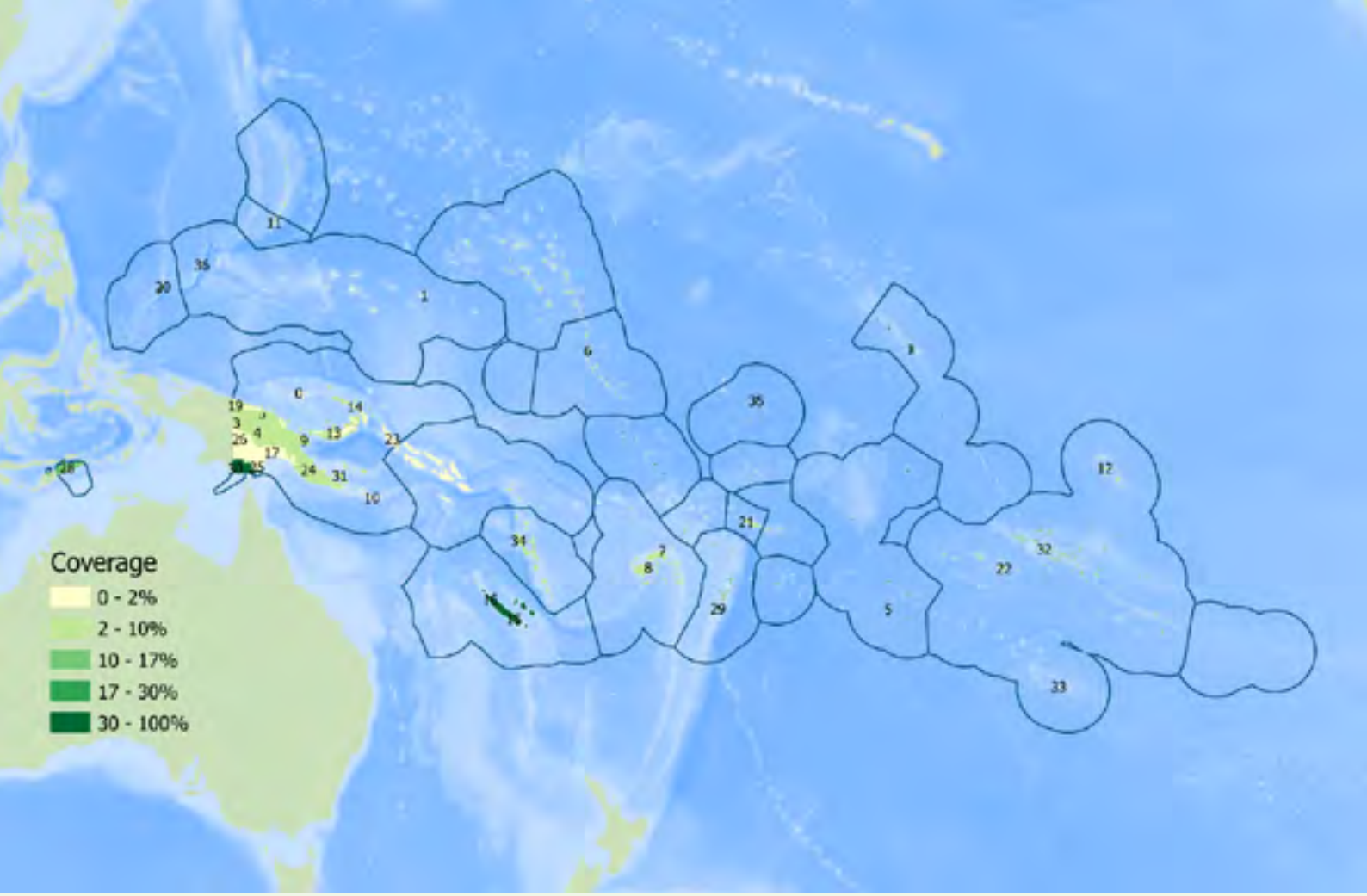
Marian Gauna and Hans Wendt (IUCN Oceania, Marine Programme)

The Kingdom of Tonga has an Exclusive Economic Zone (EEZ) estimated at nearly 700,000 km^2, which is used for both domestic and international activities such as inshore and offshore fisheries, shipping and transportation, tourism and potential future activities like deep-sea mining. Many marine resources in Tonga have long been identified as being at risk or already in decline (Thaman et al., 1997). The Tongan Government is taking steps to address threats to their inshore marine resources by supporting the more widespread establishment of inshore Special Management Areas, which allow local communities to manage their adjacent inshore marine environment, including through the establishment of no-take areas. However, in the deeper offshore areas, Tonga is experiencing increasing pressure from shipping, export fisheries from long-lining for tuna, underwater cabling, cruise ship tourism, whale-watching tourism, deep sea mineral exploration and other exploitative uses.

In July 2015, Tonga's Cabinet recognised this problem and decided to implement Oceania's first marine spatial plan. In 2016 at the Pacific Ocean Summit in Hawaii, Tonga's Deputy Prime Minister, Hon. Siaosi 'O. Sovaleni, announced Tonga's commitment to designating a network of marine protected areas covering 30% of its EEZ through a Marine Spatial Planning (MSP) process. After cabinet approval, a high-level technical committee known as the 'Ocean7' (see photo) was established and tasked to lead the process for Tonga and its people.

With technical advice from the IUCN Oceania Office and funding support from the German Ministry for Environment, Nature Conservation and Nuclear Safety and Oceans 5, Tonga has, over the years, collated relevant data and built the foundation for the MSP. The first round of nationwide consultation was completed between September 2018 and March 2019 with the aim of introducing 'ocean planning' to communities and stakeholders. This was conducted through workshops, meetings and the gathering and sharing of information relating to 1) ocean activities in both offshore and inshore areas, 2) Tonga's ocean plan and 3) marine spatial planning tools. A key achievement for both the Kingdom and IUCN was the development of a draft MSP map for Tonga, which included at least 20% of every marine bioregion (ensuring a completely ecologically representative network of marine protected areas) and including 30% coverage overall. With significant review from national experts and the Ocean7 committee, achieved through a technical workshop held in-country, the draft MSP map was finalised with at least 30% coverage achieved overall. In addition, three of four reef-associated marine bioregions and 12 of 21 deepwater bioregions achieved 20% protection. Tonga has completed the second round of consultations on the draft MSP plan with all communities. In July 2021, the final plan was approved by Cabinet and preparations are underway to launch the Marine Spatial Plan by December 2021.

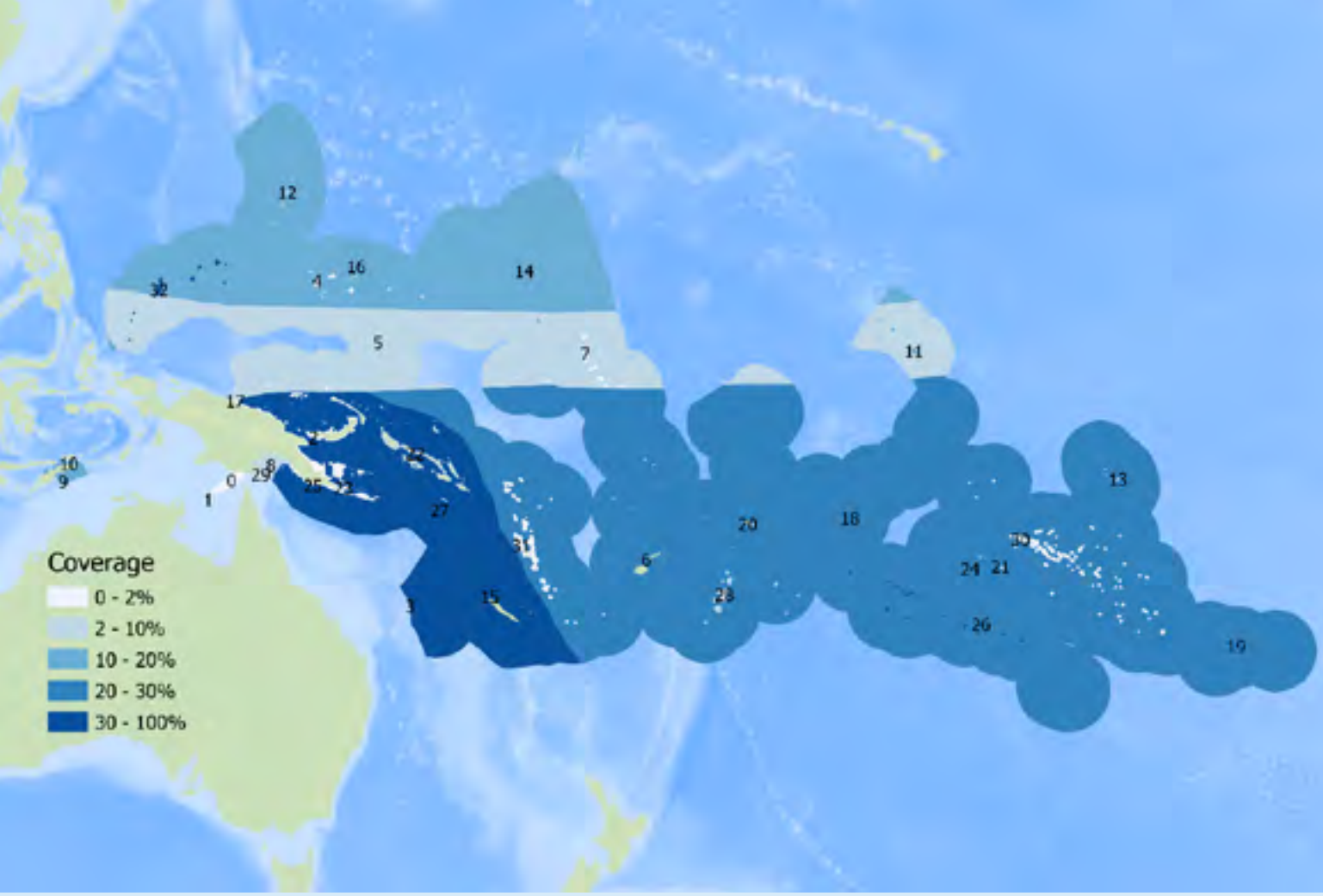
Marine spatial planning discussion by the Ocean 7 Committee (© Tonga Ocean 7) Committee)



Key	Ecoregion name	% of ecoregion protected in Oceania	% of ecoregion within Oceania
0	Admiralty Islands lowland rainforests	1.66	100
1	Carolines tropical moist forests	0.03	100
2	Central Polynesian tropical moist forests	87.62	91.34
3	Central Range montane rainforests	3.57	56.49
4	Central Range sub-alpine grasslands	3.61	37.3
5	Cook Islands tropical moist forests	18	100
6	Eastern Micronesia tropical moist forests	3.86	97.52
7	Fiji tropical dry forests	2.77	100
8	Fiji tropical moist forests	4.98	100
9	Huon Peninsula montane rainforests	3.54	100
10	Louisiade Archipelago rainforests	0	100
11	Marianas tropical dry forests	3.94	100
12	Marquesas tropical moist forests	3.47	100
13	New Britain-New Ireland lowland rainforests	2.91	100
14	New Britain-New Ireland montane rainforests	0.54	100
15	New Caledonia dry forests	56.2	100
16	New Caledonia rainforests	60.16	100
17	New Guinea mangroves	1.6	20.57

Key	Ecoregion name	% of ecoregion protected in Oceania	% of ecoregion within Oceania
18	Northern New Guinea lowland rain and freshwater swamp forests	2.72	55.89
19	Northern New Guinea montane rainforests	0	28.46
20	Palau tropical moist forests	35.95	100
21	Samoan tropical moist forests	8.07	100
22	Society Islands tropical moist forests	2.32	100
23	Solomon Islands rainforests	1.28	100
24	Southeastern Papuan rainforests	3.31	100
25	Southern New Guinea freshwater swamp forests	0	49.19
26	Southern New Guinea lowland rainforests	1.59	38.37
28	Timor and Wetar deciduous forests	15.96	44.88
29	Tongan tropical moist forests	13.55	100
30	Trans Fly savannah and grasslands	33.25	68.66
31	Trobriand Islands rainforests	6.98	100
32	Tuamotu tropical moist forests	12.63	100
33	Tubuai tropical moist forests	0	100
34	Vanuatu rainforests	4.31	100
35	Western Polynesian tropical moist forests	74.75	97.94
36	Yap tropical dry forests	0	100

FIGURE 2.5 Protected area coverage of terrestrial ecoregions. *Source: Compiled using data from UNEP-WCMC and IUCN (2021c) and Olson et al. (2001)*



Key	Ecoregion name	% of ecoregion protected in Oceania	% of ecoregion within Oceania
0	Arafura Sea	0.02	7.61
1	Arnhem Coast to Gulf of Carpentaria	0	<0.01
2	Bismarck Sea	0.61	100
3	Coral Sea	99.94	0.29
4	East Caroline Islands	1.33	100
5	Equatorial Pacific*	9.97	42.82
6	Fiji Islands	21.26	100
7	Gilbert/Ellice Islands	1.15	100
8	Gulf of Papua	4.47	98.14
9	Indonesian Through-Flow*	10.77	1.05
10	Lesser Sunda	10.06	9.38
11	Line Islands	14.37	52.97
12	Mariana Islands	9.08	100
13	Marquesas	0.88	100
14	Marshall Islands	12.1	99.32
15	New Caledonia	84.52	100
16	North Central Pacific*	10.03	13.1
17	Papua	0	0.55

Key	Ecoregion name	% of ecoregion protected in Oceania	% of ecoregion within Oceania
18	Phoenix/Tokelau/Northern Cook Islands	68.31	95.41
19	Rapa-Pitcairn	58.23	100
20	Samoa Islands	5.89	100
21	Society Islands	2.39	100
22	Solomon Archipelago	3.05	100
23	Solomon Sea	0.24	100
24	South Central Pacific*	22.02	36.87
25	Southeast Papua New Guinea	0	100
26	Southern Cook/Austral Islands	57.92	100
27	Southwest Pacific*	31.83	42.52
28	Tonga Islands	6.68	100
29	Torres Strait Northern Great Barrier Reef	0.13	0.14
30	Tuamotus	0.05	100
31	Vanuatu	0.16	98.58
32	West Caroline Islands	60.52	100

FIGURE 2.6 Protected area coverage of marine ecoregions and pelagic provinces (within the EEZ of the countries and territories of the region). Pelagic provinces are indicated by *. *Source: Compiled using data from UNEP-WCMC and IUCN (2021c), Spalding et al. (2007) and Spalding et al. (2012)*

2.5 Terrestrial connectivity

METHODOLOGY: The ProtConn indicator (Saura et al., 2018) was used for the connectivity analysis. This indicator calculates the percentage of a country or territory covered by protected and connected land. The indicator considers the spatial arrangement, size and coverage of protected areas, and accounts for both the land area that can be reached by species moving within protected areas and that which is reachable through the connections between different protected areas. The analysis includes all protected areas in the January 2021 WDPA (polygons and buffered points) not smaller than 1 km^2, except protected areas with a 'proposed' or 'not reported' status, sites reported as points without an associated reported area, and UNESCO Man and Biosphere Reserves (Saura et al., 2018). The indicator is calculated through network analysis, with the Probability of Connectivity and the Equivalent Connected Area as the underlying metrics. The analysis assumes that dispersal between sites follows a negative exponential distribution (i.e. that movement between more widely spaced sites is progressively less probable). The statistics presented in this chapter assume a reference species median dispersal distance of 10 km. In other words, it is assumed that half of the individuals or propagules of the species of interest would be able to travel between two patches spaced 10 km apart, and that progressively smaller numbers would be able to cross larger separation distances. The ProtConn indicator, as applied here, considers all protected lands to be favourable for species movement and all unprotected lands to be equally hostile to movement. As a result, it does not take into account the characteristics of the landscape matrix and of the variable species-specific responses to these. For further details see Saura et al. (2017, 2018, 2019), JRC (2019) and the indicator website: https://www.bipindicators.net/indicators/protected-connected.

DATA SOURCE: January 2021 WDPA; and Global Administrative Unit Layers (GAUL) revision 2015 (2017-02-02).

Well-connected systems of protected areas allow natural processes such as species dispersal to continue across land- and seascapes. The ProtConn indicator, developed for global CBD reporting, quantifies how well terrestrial protected area systems support connectivity. Importantly, the indicator excludes the influence of natural isolation caused by the sea (Saura et al., 2018). This allows for fair comparisons even between island states.

In Oceania, the extent to which terrestrial protected areas are connected – purely based on their spatial arrangement, size and coverage – varies greatly. Pitcairn Islands (58%) and New Caledonia (56%) have the highest level of land both protected and connected (Figure 2.7). From 2010 to 2018, compared to other regions of the world, Oceania experienced the largest increase in terrestrial protected area connectivity (Saura et al., 2019). A corresponding indicator for the connectivity of marine protected areas is not yet available. Addressing this gap is crucial to understanding the contribution of protected and conserved areas to biodiversity conservation in maritime states and territories.

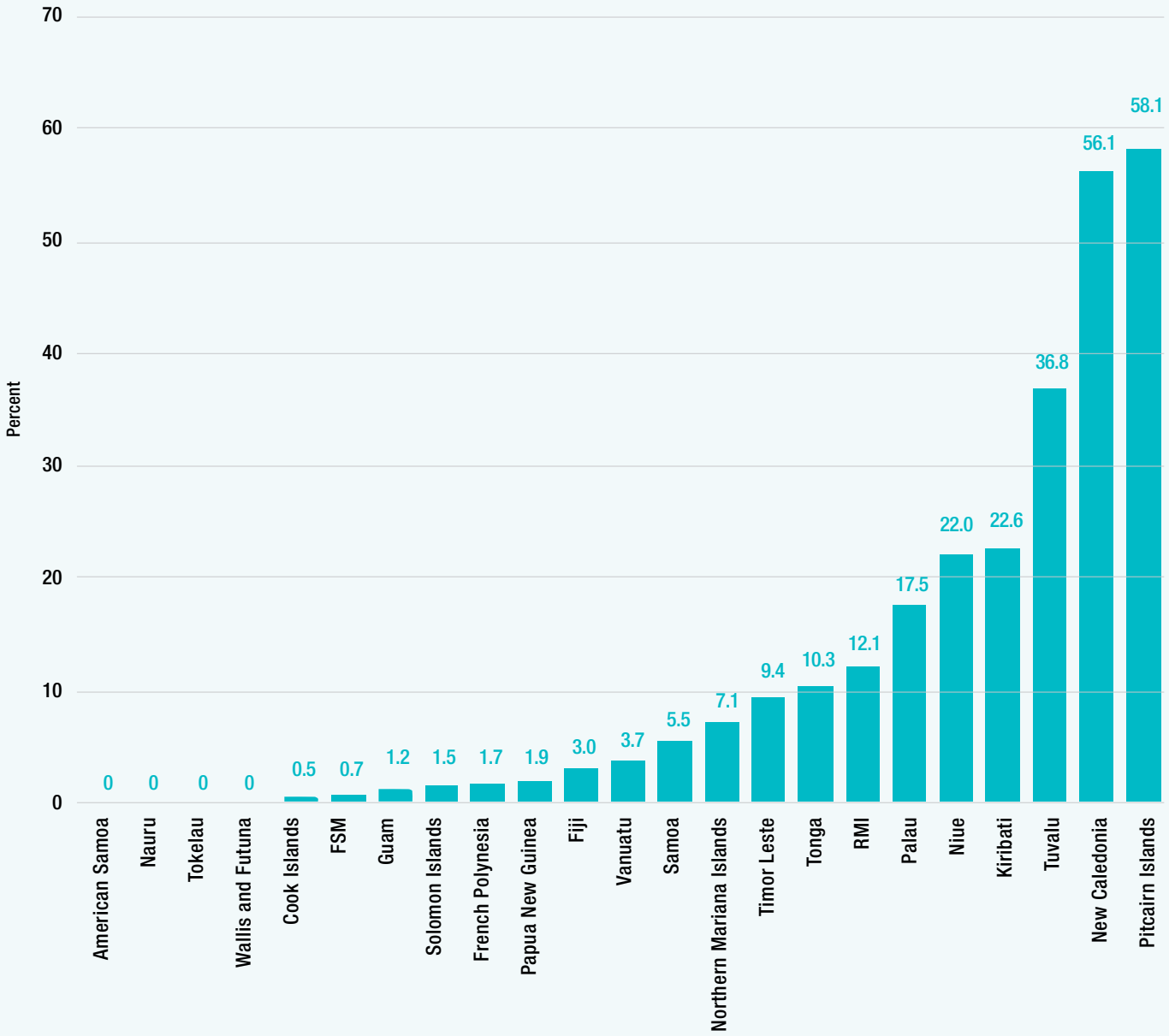


FIGURE 2.7 Percentage of country or territory covered by protected and connected land for a reference species median dispersal distance of 10 km.[8] *Source: UNEP-WCMC and IUCN (2021c)*

[8] Since the ProtConn indicator represents the percentage of land that is both protected and connected, it should never be greater than a country's terrestrial percentage coverage by protected areas. Where this does occur, it is due to variations in the terrestrial boundaries used in the ProtConn and protected area coverage analyses.

2.6 State of the WDPA data for Oceania

The analysis within this chapter is predominantly based on the WDPA, which is the most comprehensive and standardised dataset for the region. However, this data does have limitations with some countries reporting different figures in their sixth CBD national reports (Table 2.1). The most notable of these limitations are the following:

- Although 70% of countries and territories in the region have at least partially updated their WDPA data in the last five years, subsets of the data remain out of date (Table 2.1; Figure 2.8).
- A considerable number of protected areas in the region do not have boundary data in the WDPA. Six of the 23 countries and territories covered in this analysis (or about 26%) have more point than polygon (boundary) data. This indicates that many areas are not formally mapped, or their boundary data not shared. Importantly, within the modified May 2021 WDPA, 47% of points have the governance type 'local communities' or 'indigenous peoples' (compared to 35% of polygons). This may indicate a correlation between the lack of boundary data and community governance arrangements.
- It is widely recognised that protected areas under the governance of private actors, indigenous peoples and local communities are under-reported to the WDPA (Bingham et al., 2017; Corrigan et al., 2016). This is particularly relevant for Oceania, where community-based management is the most common mode of area-based conservation, owing to extensive customary ownership in the region. As Govan (2015) highlights: "with the exception of Tonga, between 81–98 per cent of the land in independent Melanesia and Polynesia remains under some form of customary tenure". For example, in a dataset recently submitted by Samoa's government for review by SPREP, 73.5% of 200 sites are designated as 'community-based' or 'community conserved'.
- Some communities and governments are reluctant to share their protected area data, fearing that this may lead to tenure disputes or increased encroachment. Communities may also be concerned about formalising their conservation areas, perceiving that it could lessen their autonomy and rights over customary lands (Govan & Jupiter, 2013).
- Conflicting datasets sometimes exist across different agencies, and in certain cases a lack of inter-agency coordination has made the task of consolidating one agreed national dataset difficult.
- As with most of the world, OECMs have yet to be formally mapped in Oceania and therefore could not be fully taken into account for this chapter. If identified through participatory processes and given appropriate support, OECMs may provide an opportunity to recognise the contributions of an even more diverse range of conservation actors across the region.

SPREP is working with governments and other partners in the Pacific to address these gaps, an effort which in recent years has been supported by BIOPAMA in partnership with UNEP-WCMC (Box 2.4). SPREP has now facilitated the submission of new or updated data for eight Pacific Island countries (Niue, Palau, Papua New Guinea, Cook Islands, Samoa, Solomon Islands, Tonga and Tuvalu) (Figure 2.8). Further updated data for Pitcairn Islands, Timor-Leste, Guam, American Samoa, Northern Mariana Islands and New Caledonia have been submitted directly to UNEP-WCMC since 2019. There is a continuing need to update national datasets to ensure global targets can be accurately tracked, and to inform planning and decision-making at national levels. Moreover, many countries in the region rely on the WDPA to support their national CBD reporting requirements. Box 2.5 illustrates the importance of this work.

TABLE 2.1 Year of most recent WDPA update and comparison of coverage figures between the WDPA and sixth national reports to the CBD Secretariat[9]

		Percentage coverage			
		Terrestrial		Marine (within EEZ)	
Country / territory	Year of most recent update WDPA	Modified May 2021 WDPA	6th National Report	Modified May 2021 WDPA	6th National Report
Nauru^#		0	2	0	
Papua New Guinea	2019	3.69	3.98	0.14	0.21
Tonga	2019	12.59	16	0.06	
Tuvalu	2019	13.24	19	0.03	0.03
Timor-Leste	2019	16.09	15.89	1.41	0.57
Niue	2020	20.44	20	40.6	40
Palau#	2019	44.18		100	
Solomon Islands	2020x	1.82	5.04	0.12	6.00[0]
New Caledonia*	2019x	59.66		96.2	
Pitcairn Islands	2021x	94.42		100	100
Kiribati*	2017x	22.36		11.82	
Cook Islands*	2020	25.15		100	
Federated States of Micronesia	2016	0.05	15	0.02	39
Northern Mariana Islands*	2021	7.66		33.16	
American Samoa*	2021	15.85		8.72	
Guam*	2021	4.47		0.02	
Fiji*	2015	5.41		0.92	
RMI	2015	11.92	12	0.27	29
Vanuatu#	2010x	5.72		0.01	
Samoa#	2020x	8.22		0.14	
French Polynesia#	2008x	1.95		0	
Tokelau#	2008	6.58		0	
Wallis and Futuna#	2003	0.17		0	

^ No protected areas;

6th National Report completed but did not report on protected area coverage;

* 6th National Report has yet to be prepared by the country;

x Partial update of WDPA;

0 Coastal and marine protected areas.

Source: UNEP-WCMC and IUCN, 2021a; Sixth national reports to the CBD Secretariat

9 Where figures were given in km^2 or ha in the reports, they have been converted to percentages using the base layer. National coverage targets are also shown, in addition to the year of most recent update in the WDPA (as at May 2021. Excludes international designations).

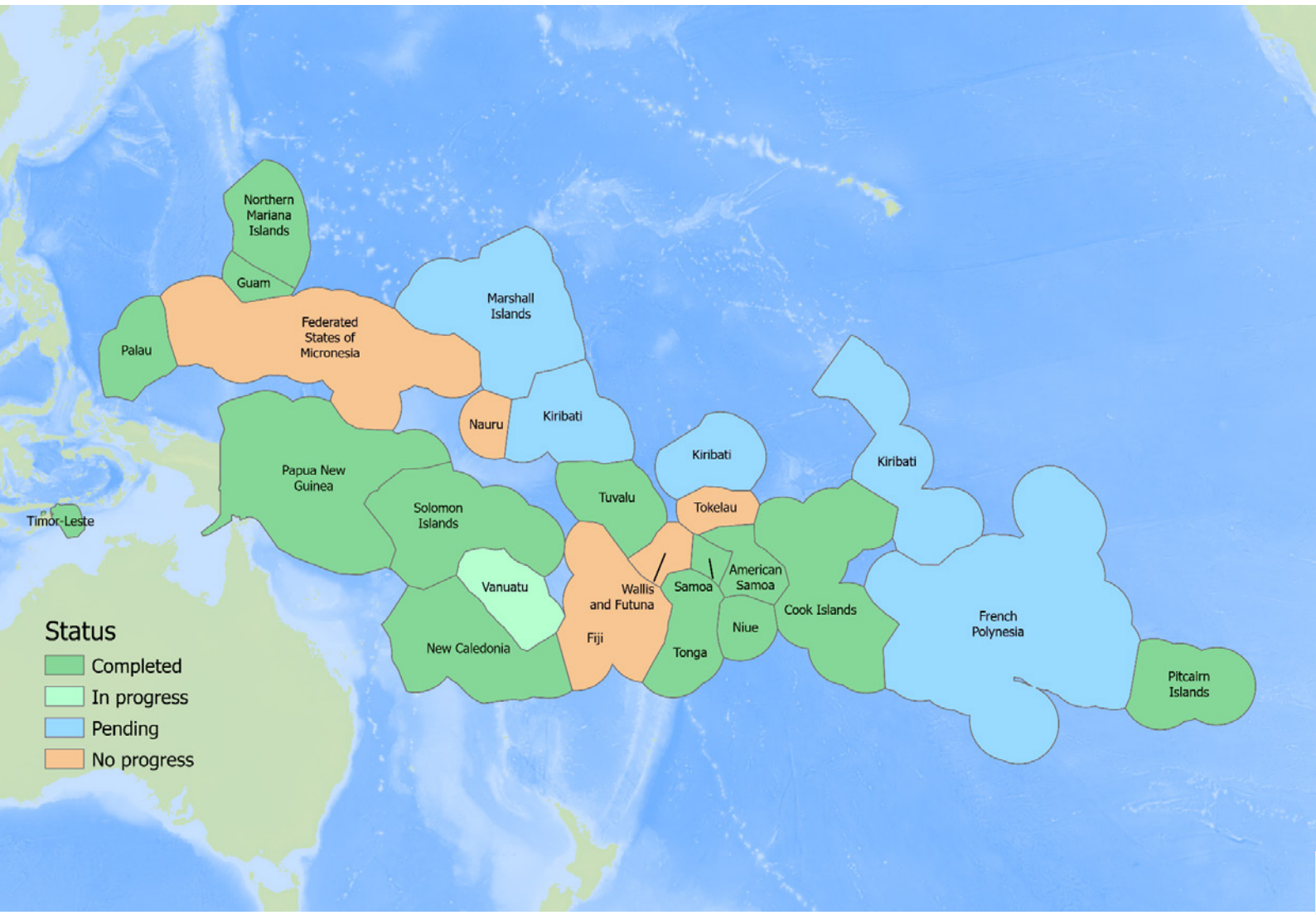


FIGURE 2.8 Status of protected area data updates in the WDPA (May 2021). *Source: UNEP-WCMC and IUCN, 2021a*

BOX 2.4 SECRETARIAT OF THE PACIFIC REGIONAL ENVIRONMENT PROGRAMME (SPREP) – SUPPORTING PROTECTED AREA DATA COLLATION AND COORDINATION

The Secretariat of the Pacific Regional Environment Programme (SPREP) is the recognised regional data collation, coordination and resource hub for protected areas in Oceania. This work is currently being supported by BIOPAMA (see Box 1.1). SPREP collaborates closely with the Secretariat of the Convention on Biological Diversity (CBD). This collaboration is formalised through recurring memoranda of understanding, which recognise SPREP as the coordination focal point for CBD activities and initiatives. SPREP also has a formal agreement with UNEP-WCMC to be the regional collator of WDPA data.

In this role, SPREP is assisting its members to implement CBD protected area-related decisions (including the Programme of Work on Protected Areas) and national protected area priorities (such as NBSAPs). It is also supporting countries to collect and collate protected area data to inform improved decision-making. In addition, SPREP provides coordination support for regional partner organisations, through the Pacific Islands Roundtable for Nature Conservation (PIRT), to align their activities towards a coherent implementation of the Pacific Islands Framework for Nature Conservation and Protected Areas 2021–2025 (see Box 1.2).

Moreover, the regional organisation has joined the Global Partnership on Aichi Target 11, which was launched in November 2018 on the margins of the fourteenth meeting of the Conference of the Parties to the CBD, in Sharm El-Sheikh, Egypt. The Target 11 Partnership aims "to facilitate the achievement of Target 11 in a concerted manner. The Partnership is expected to stimulate regional implementation support networks and donors to align their activities towards the decentralized implementation of focused actions for the achievement of Target 11" (CBD Secretariat, 2019).

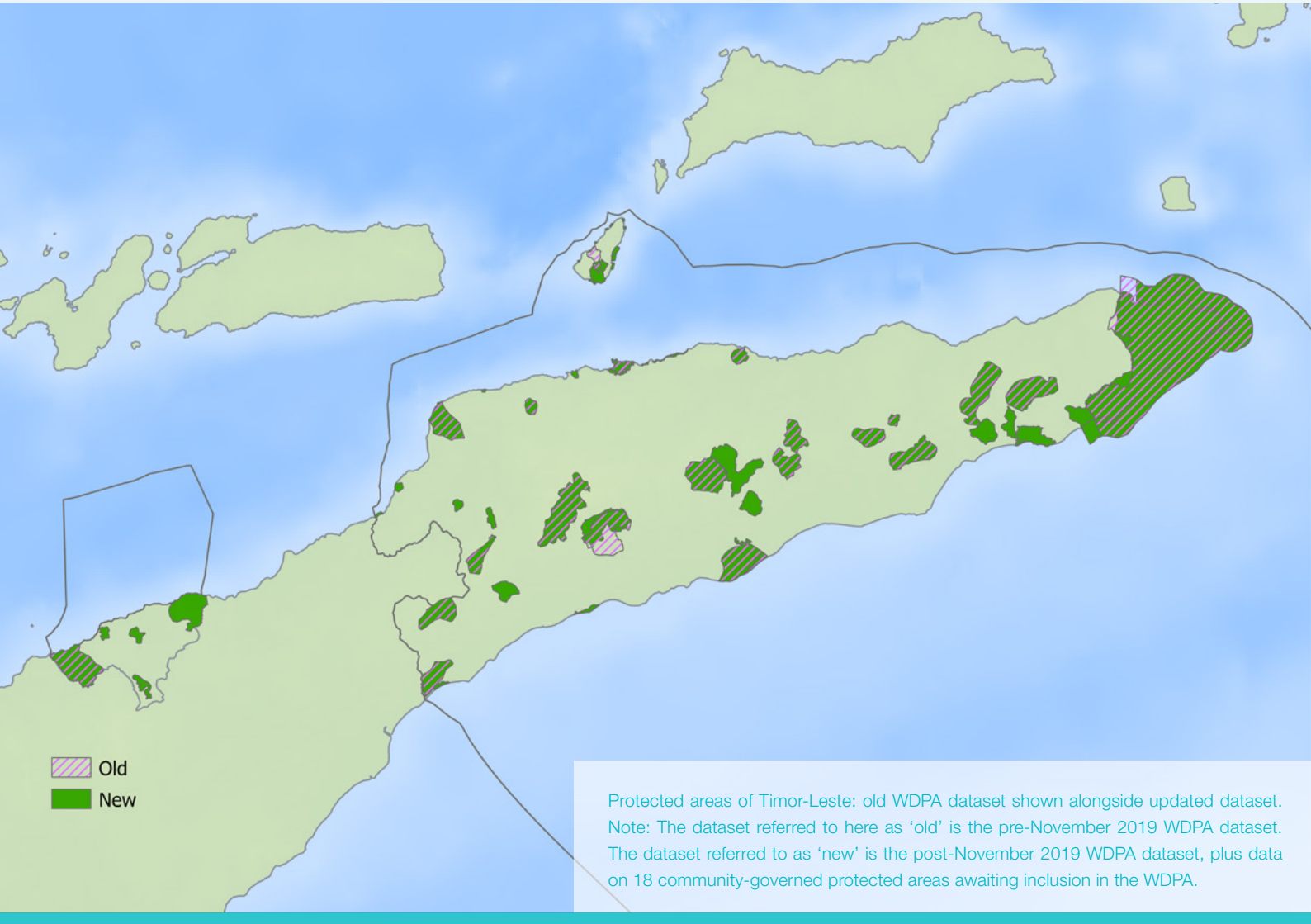
Technical workshop convened by SPREP with protected area stakeholders in Palau (© SPREP)

BOX 2.5 THE IMPORTANCE OF REGULARLY UPDATING THE WDPA

Timor-Leste's WDPA dataset was updated in November 2019. Although the previous dataset was only three years old, making it relatively up to date, the recent update had a significant impact on Timor-Leste's national statistics (see map).

The new dataset sees Timor-Leste's protected areas almost triple from 22 to 63. As a result, the country's terrestrial protected area coverage increases from 13% to 16.1%. Marine coverage increases more modestly, from 1.37% to 1.41%. Although the total coverage of marine KBAs is reduced slightly, it remains high at 61.6%. Total coverage of terrestrial KBAs, however, increases from 42.9% to 48.3%. Finally, there is a distinct increase in the proportion of Timor-Leste's 30 KBAs (for which boundaries are available) with at least partial protection, rising from 53% to 70%.[10]

Beyond providing a more accurate picture of conservation in Timor-Leste, the update significantly enhances the dataset's utility to decision-makers, ranging from those seeking to avoid causing damage to protected areas to those aiming to expand conservation initiatives into the areas where they are most needed.



Protected areas of Timor-Leste: old WDPA dataset shown alongside updated dataset. Note: The dataset referred to here as 'old' is the pre-November 2019 WDPA dataset. The dataset referred to as 'new' is the post-November 2019 WDPA dataset, plus data on 18 community-governed protected areas awaiting inclusion in the WDPA.

[10] This analysis uses the September 2019 World Database of Key Biodiversity Areas.

2.7 Conclusion

Oceania is making a significant contribution to the global effort to conserve the planet's biodiversity, with 30% of countries and territories in the region exceeding the Aichi Target 11 benchmarks for either terrestrial or marine coverage (Northern Mariana Islands, Niue, Kiribati, Cook Islands, Palau, New Caledonia and Pitcairn Islands). Marine coverage has increased significantly over the last decade, almost exclusively due to seven countries and territories protecting large parts of their maritime zones.

Despite the significant progress made, further effort and investment is needed to create networks of fully connected and representative protected and conserved areas. For example, in relative terms region-wide terrestrial protected area coverage is almost 10 percentage points below the global figure, 70% of Key Biodiversity Areas remain unprotected and numerous ecoregions are below representation targets. Moreover, a method for assessing marine connectivity, while needed worldwide, is particularly important to assess the contribution of protected and conserved areas to marine conservation in the region.

Shortfalls can be partly attributed to underfunding, competing development priorities, and lack of capacity and available mechanisms to support community-based governance. Moreover, many indigenous peoples' and community-based protected and conserved areas are still to be formally mapped. The subsequent chapters explore these issues in more detail. Regional coordination will continue to be important, particularly technical support and channelling of funds to national and on-the-ground initiatives. Multilateral collaborations such as the Micronesia Challenge can inspire, encourage and catalyse tangible progress among participating countries. Lastly, more accurate data is critical for enhancing our understanding of the state of protected and conserved areas in the region. Further mapping of area-based conservation measures is required to support national level decision-making and reporting, and to inform sustainable use planning across the landscape and seascape. This process should be carried out in collaboration with, and with the informed consent of, local communities and rightsholders.

Nino Konis Santana National Park, Timor-Leste (© Paul van Nimwegen/IUCN)

2.8 References

Bingham, H., Fitzsimons, J.A., Redford, K.H., Mitchell, B.A., Juan Bezaury-Creel, J. and Cumming, T.L. (2017). Privately protected areas: advances and challenges in guidance, policy and documentation. *PARKS* 23(1):13–28. https://doi.org/10.2305/IUCN.CH.2017.PARKS-23-1HB.en

BirdLife International (2020). *Digital boundaries of Key Biodiversity Areas from the World Database of Key Biodiversity Areas.* September 2020 Version. Available at: https://www.keybiodiversityareas.org/

Brooks, T.M. et al. (2016). Analysing biodiversity and conservation knowledge products to support regional environmental assessments. *Scientific Data* 3(1):1–14. https://doi.org/10.1038/sdata.2016.7

Butchart, S.H.M. et al. (2012). Protecting Important Sites for Biodiversity Contributes to Meeting Global Conservation Targets. *PLoS ONE* 7(3): e32529. https://doi.org/10.1371/journal.pone.0032529

Convention on Biological Diversity (CBD) Secretariat (2017). *Report of the capacity-building workshop for the Pacific region on achieving Aichi Biodiversity Targets 11 and 12,* Nadi, Fiji, 11–13 July 2016. https://www.cbd.int/doc/c/eb51/b02b/2a4b5bcb1eda198c9332c040/paws-2016-03-03-en.pdf

CBD Secretariat (2019). *Report of the Stocktaking, Coordination and Development of Monitoring Plan Meeting for Achieving Aichi Biodiversity Target 11 by 2020,* Island of Vilm, Germany, 24–27 April 2019. https://www.cbd.int/protected/partnership/vilm/report%20of%20the%20%20vilm%20meeting%20final.pdf

Corrigan, C., Bingham, H., Pathak Broome, N., Hay-Edie, T., Tabanao, G. and Kingston, N. (2016). Documenting local contributions to Earth's biodiversity heritage: the Global Registry. *PARKS* 22(2):55–68. https://doi.org/10.2305/IUCN.CH.2016.PARKS-22-2CC.en

Govan, H. (2015). *Area-Based Management Tools for Coastal Resources in Fiji, Kiribati, Solomon Islands, Tonga and Vanuatu. Volume 1: Status, capacity and prospects for collaborative resource management. Volume 2: Country reports.* Suva, Fiji: Marine and Coastal Biodiversity Management in the Pacific Island Countries (MACBIO) project.

Govan, H. and Jupiter, S. (2013). Can the IUCN 2008 protected areas management categories support Pacific Island approaches to conservation? *PARKS* 19(1):73–80. https://doi.org/10.2305/IUCN.CH.2013.PARKS-19-1.HG.en

Independent State of Papua New Guinea (2014). *Papua New Guinea Policy on Protected Areas.* Conservation and Environment Protection Authority, October 2014, Waigani, National Capital District, Papua New Guinea.

International Union for Conservation of Nature (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/node/46259

Joint Research Centre (JRC) (2019). *Connectivity of terrestrial protected areas: DOPA Factsheet C1.* https://dopa.jrc.ec.europa.eu/dopa/documentation/en (Accessed on 14 February 2021).

Micronesia Challenge (2020). *About the Challenge.* http://themicronesiachallenge.blogspot.com/p/about.html (Accessed on 12 August 2020)

Olson, D.M. et al. (2001). Terrestrial ecoregions of the world: A new map of life on Earth. *BioScience* 51:933–938. https://doi.org/10.1641/0006-3568(2001)051[0933:TEOTWA]2.0.CO;2

Saura, S., Bastin, L., Battistella, L., Mandrici, A. and Dubois, G. (2017). Protected areas in the world's ecoregions: how well connected are they? *Ecological Indicators* 76:144–158. https://doi.org/10.1016/j.ecolind.2016.12.047

Saura, S., Bertzky, B., Bastin, L., Battistella, L., Mandrici, A. and Dubois, G. (2018). Protected area connectivity: shortfalls in global targets and country-level priorities. *Biological Conservation* 219:53–67. https://doi.org/10.1016/j.biocon.2017.12.020

Saura, S., Bertzky, B., Bastin, L., Battistella, L., Mandrici, A. and Dubois, G. (2019). Global trends in protected area connectivity from 2010 to 2018. *Biological Conservation* 238:108183. https://doi.org/10.1016/j.biocon.2019.07.028

Spalding, M.D., Agostini, V., Rice, J. and Grant, S.M. (2012). Pelagic provinces of the world: a biogeographic classification of the world's surface pelagic waters. *Ocean and Coastal Management* 60:19–30. http://dx.doi.org/10.1016/j.ocecoaman.2011.12.016

Spalding, M.D., et al.(2007). Marine ecoregions of the world: A bioregionalization of coastal and shelf seas. *BioScience* 57:573–583. https://doi.org/10.1016/j.ocecoaman.2011.12.016

Thaman, R.R., Gillet, R.D. and Faka'osi, S. (1997). *Ha'apai Conservation Area biodiversity survey and Community-based Biodiversity Conservation Action Plan.* Report to the South Pacific Biodiversity Conservation Program. Apia, Samoa: SPREP.

United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) and International Union for Conservation of Nature (IUCN) (2020). *Protected Planet: The World Database on Protected Areas (WDPA).* Online, November 2020. Cambridge, UK: UNEP-WCMC and IUCN. www.protectedplanet.net

UNEP-WCMC and IUCN (2021a). Protected Planet: The World Database on Protected Areas (WDPA). Online, May 2021. Cambridge, UK: UNEP-WCMC and IUCN. www.protectedplanet.net

UNEP-WCMC and IUCN (2021b). *Protected Planet Report 2020.* UNEP-WCMC and IUCN: Cambridge, UK; Gland, Switzerland. https://livereport.protectedplanet.net/

UNEP-WCMC and IUCN (2021c). *Protected Planet: The World Database on Protected Areas (WDPA).* Online, January 2021. Cambridge, UK: UNEP-WCMC and IUCN. www.protectedplanet.net

Flanders Marine Institute (VLIZ) (2014). *Maritime Boundaries Geodatabase, version 8.* https://www.marineregions.org/