



EDITORIAL ESSAY: AN UPDATE ON PROGRESS TOWARDS AICHI BIODIVERSITY TARGET 11

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ABSTRACT

In 2010, Parties to the Convention on Biological Diversity adopted a Strategic Plan for Biodiversity with 20 Aichi Biodiversity Targets expected to be achieved by 2020. Target 11 sets out goals for protected and conserved areas in terrestrial, marine and freshwater ecosystems. This paper, prepared on behalf of the Global Partnership on Aichi Target 11, reports on progress to date in meeting the quantitative and qualitative elements of Target 11 and identifies opportunities for further progress prior to the 15th Conference of the Parties in Kunming in 2020 and beyond.

Key words: Aichi Biodiversity Target 11, coverage, representation, management effectiveness, governance, other effective area-based conservation measures (OECM)

INTRODUCTION

Protected areas are an important approach for the in situ conservation of biodiversity. Parties to the Convention on Biological Diversity (CBD) have agreed to increase both the quantity and quality of global protected area cover. Under the Strategic Plan for Biodiversity 2011-2020, Aichi Biodiversity Target 11 states:

By 2020, at least 17 per cent of terrestrial and inland water areas 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 landscape and seascape (CBD, 2010).

Analyses of Target 11 implementation have generally shown improvements for all elements¹ of the Target, though progress has been greater for the quantitative elements, especially marine coverage over the last several years (SCBD, 2014; Gannon et al., 2017; UNEP-

WCMC, IUCN & NGS, 2019). To accelerate progress on Target 11, since 2015, the Secretariat of the Convention on Biological Diversity, with partners, has undertaken a range of activities including organising workshops on the status, gaps and opportunities for elements of the Target, as well as national priority actions, and facilitating decentralised implementation of national commitments, among others (Gannon et al., 2017). A Global Partnership on Aichi Target 11 was launched in November 2018, on the margins of the fourteenth meeting of the Conference of the Parties (COP) to the Convention, in Sharm El-Sheikh, Egypt. Its main objective is facilitating accelerated and effective implementation of actions to further progress towards Target 11, including through support for regional implementation support networks.

This paper is submitted on behalf of the Global Partnership to provide an update on the status of the elements of Target 11 as the 2020 end date for the Strategic Plan approaches, and discussions around a post-2020 Global Biodiversity Framework continue. The

following sections present the status of both quantitative and qualitative elements of Target 11, and describe additional opportunities for enhancing progress over the next year.

CURRENT STATUS OF TARGET 11

Target 11 includes both protected areas and other effective area-based conservation measures (OECMs) as means of conserving biodiversity in situ. As the definition of OECM was only adopted in November 2018 (CBD, 2018), there is limited information on the global extent of OECMs or the impact they could have for elements of Target 11. As such, analysis to date has relied primarily on protected areas reported in the World Database on Protected Areas (WDPA). It is likely, however, that the status of several elements of Target 11 will improve substantially as reporting on OECMs advances.

Given the indivisible nature of the Target, for successful achievement, progress is needed on all of its elements, not only the quantitative aspects.

Quantitative elements

As of September 2019, terrestrial protected area coverage had reached 15.0 per cent (UNEP-WCMC, 2019a). Marine protected area coverage for the global ocean was 7.8 per cent (coverage is 18.1 per cent for areas under national jurisdiction [national waters] and 1.2 per cent for areas beyond national jurisdiction [ABNJ]) (UNEP-WCMC, 2019a). These figures represent a modest increase in reported terrestrial protected area cover, and a significant increase in

marine coverage, since the start of the current Strategic Plan 2011-2020. Much of this growth in marine protected area coverage has come from the recent designation of very large marine protected areas. Currently, the 20 largest marine sites now account for almost two-thirds of total global marine coverage (UNEP-WCMC & IUCN, 2019). There is some concern that recent marine protected area designations have not adequately targeted under-represented ecoregions (Jantke et al., 2018a) or where they can best abate threats (Kuempel et al., 2019). Though it is likely that both terrestrial and marine quantitative targets will be met globally by 2020, there is a recognised need for increased efforts to address the qualitative elements of Target 11. Issues pertaining to the qualitative elements of Target 11 will be addressed in the following sections.

Ecological representation

Protected area coverage of ecoregions has often been used to assess the ecological representation element of Target 11 (e.g. UNEP-WCMC, IUCN & NGS, 2019). Globally, ecoregions have been mapped for both terrestrial (Olson et al., 2001) and marine ecosystems (Spalding et al., 2007; Spalding et al., 2012). As reported in the Digital Observatory for Protected Areas (DOPA) of the Joint Research Centre of the European Commission (JRC), protected area coverage was at least 17 per cent for 344 out of 823 terrestrial ecoregions, while 102 had less than 2 per cent coverage, as of January 2019 (Figure 1; JRC, 2019a). The marine realm is divided between 232 marine ecoregions covering shallow coastal waters (<200 m in depth) (Spalding et al., 2007) and 37 pelagic provinces (Spalding et al.,

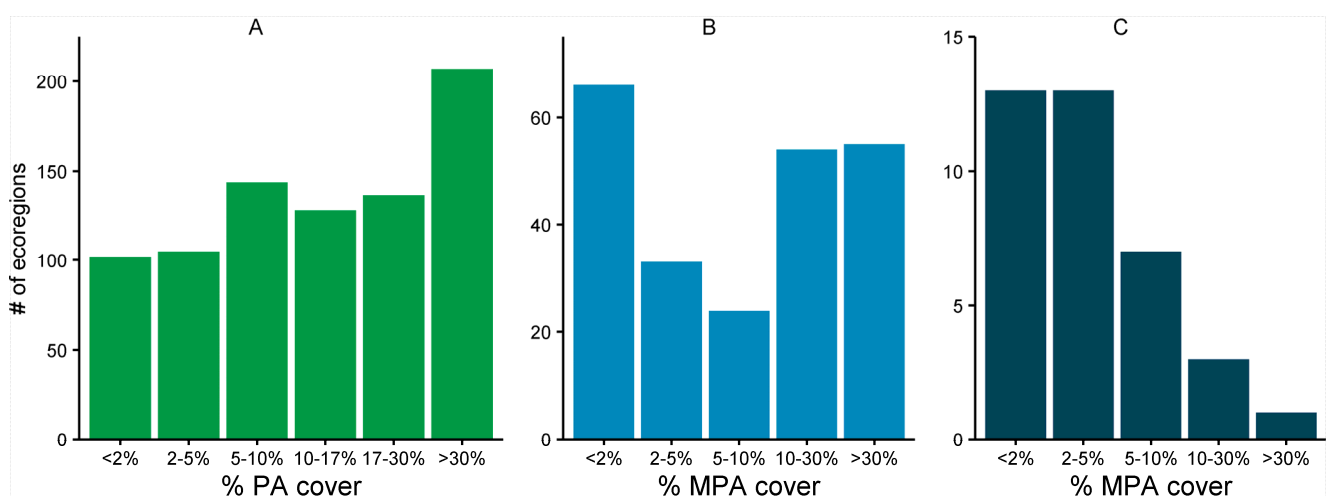


Figure 1. Protected area coverage of terrestrial ecoregions (A), marine ecoregions covering shallow coastal waters <200m (B), and pelagic provinces (C), as of January 2019; showing the number of ecoregions at varying levels of protection (JRC, 2019a).

2012). For the marine realm, 109 out of 232 marine ecoregions, and four out of 37 pelagic provinces have reached 10 per cent coverage, while 66 marine ecoregions and 13 pelagic provinces have less than 2 per cent cover by reported protected areas (Figure 1; JRC, 2019a). There are currently 21 terrestrial ecoregions, eight marine ecoregions, and four pelagic provinces that have no cover by reported protected areas (JRC, 2019a).

Mean target achievement (per Jantke et al., 2018b) ranges from 65 to 92 per cent for terrestrial ecoregions, from 62 to 82 per cent for marine ecoregions, and from 11 to 65 per cent for pelagic provinces, depending on the target applied (whether the 17 or 10 per cent targets for global coverage from the language of Target 11, or considering at least partial coverage – at least 2 per cent – for all ecoregions).

Ecological representation could also be assessed based on the proportion of species' distributions covered by protected areas (e.g. Butchart et al., 2015). For example, only 8.8 per cent of migratory birds are adequately covered across all stages of their annual cycle (Runge et al., 2015), and less than half all species assessed and mapped for the IUCN Red List of Threatened Species have adequate coverage by reported protected areas (Butchart et al., 2015).

Areas important for biodiversity

Protected area coverage of Key Biodiversity Areas (KBAs) provides one commonly used indicator for assessing the coverage of areas important for biodiversity. KBAs are sites making a considerable contribution to maintaining biodiversity, with criteria for their identification provided in the IUCN's Global Standard based on threatened status, geographically restricted distribution, irreplaceability, or other factors (IUCN, 2016). Globally, mean per cent coverage of KBAs is 46.1 per cent for terrestrial sites and 45.7 per cent for marine sites (UNEP-WCMC, BirdLife International & IUCN, 2019). Out of the 14,103 terrestrial KBAs, 19 per cent are fully covered by reported protected areas, while there is no coverage for more than one-third (Figure 2; UNEP-WCMC, BirdLife International & IUCN, 2019). For marine KBAs, 24 per cent of the 3,990 sites are fully covered, while 36 per cent have no coverage (Figure 2; UNEP-WCMC, BirdLife International & IUCN, 2019). Increased recognition and reporting of OECMs would further increase the coverage of KBAs (Donald et al., 2019).

Areas of importance for biodiversity could also include more than just KBAs, which are currently both geographically and taxonomically incomplete. Areas of

particular importance for biodiversity could also include Ecologically or Biologically Significant Marine Areas (EBSAs), Ramsar sites and equivalent national priorities. Protected area coverage for these and other types of important biodiversity sites could also be explored. For example, the coverage of species richness hotspots, centres of endemism, or intact wilderness areas. In 2017, marine protected areas covered only 5 per cent of remaining marine wilderness (Jones et al., 2018).

Areas important for ecosystem services

There is currently no single indicator identified for assessing protected area coverage of areas important for ecosystem services at the global level. However, many examples exist from national level assessments, which cover a range of ecosystem services including flood risk reduction, sediment retention, water retention and carbon sequestration, among others (e.g. Xu et al., 2017; Mandle et al., 2017).

More work is needed to identify which areas would be considered as "important for ecosystem services". Maps of various ecosystem services could be overlaid with protected area coverage to identify areas important for multiple ecosystem services, especially those important for biodiversity. Attention should, however, be paid to potential trade-offs between biodiversity and certain ecosystem services, as well as between different ecosystem services.

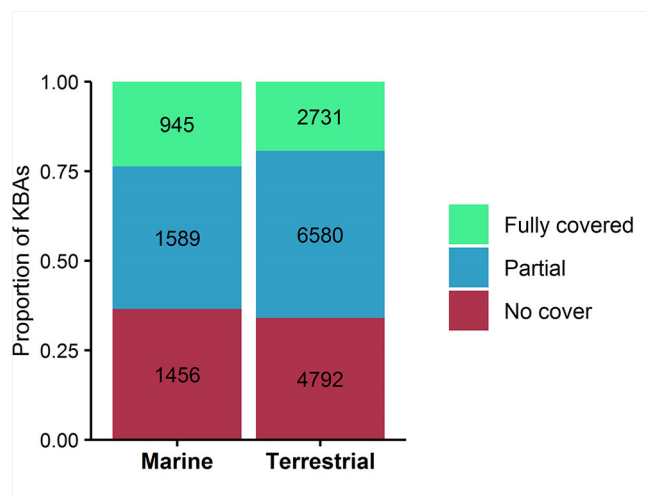


Figure 2. Proportion of marine and terrestrial KBAs fully, partially, and not covered by protected areas, based on the spatial overlap between polygons from the World Database on KBAs and the WDPA (December 2018 release), as reported in the 2019 SDG report (analysed by UNEP-WCMC in collaboration with BirdLife International and IUCN).



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Given the important role that protected areas can play in ecosystem-based approaches to climate change adaptation and mitigation (Dudley et al., 2010; Gaüzère et al., 2016; Melillo et al., 2016), global carbon storage in protected areas provides one potential option. As of May 2019, over 18 per cent of the global terrestrial carbon stock is covered by reported protected areas (JRC, 2019b).

It is likely that many OECMs are supporting the conservation of ecosystem services, as well as biodiversity. Of the OECMs identified in unprotected KBAs in 10 countries, nearly one-third listed “preserving ecosystem services” as the primary management objective (Donald et al., 2019).

Connectivity

There are two proposed indicators for assessing the connectivity of the global protected area estate, accepted for use through the Biodiversity Indicators Partnership. Protected connected land (ProtConn) applies network analysis to determine the amount of connected habitat in protected area networks, based on the size and spatial arrangement of protected areas (Saura et al., 2018). The Protected Area Connectedness Index (PARC-connectedness) applies a cost–benefit approach (per Drielsma et al., 2007) to assess the permeability to dispersal of the landscapes surrounding protected areas (CSIRO, 2019a). It accounts for the connectivity between protected areas, but also includes areas containing intact primary vegetation in the surrounding non-protected landscape (CSIRO, 2019a).

Recent assessments with both indicators show significant shortfalls in protected area connectivity at the global level (JRC, 2019a; CSIRO, 2019b). Similar shortfalls are noted for connectivity measured at the scale of individual countries or terrestrial ecoregions; in

both cases less than one-third are covered by ‘well-connected’ protected area networks, as measured by ProtConn (JRC, 2019a). However, many individual countries showed an increase in connectivity since 2010, as measured using ProtConn (Saura et al., 2019) or the PARC-connectedness Index (CSIRO, 2019b). To date, the connectivity of marine protected areas has not been assessed globally.

Effectively managed

Reporting of progress on the ‘effectively managed’ element of Target 11 has generally concentrated on the completion of management effectiveness evaluations, often measured against the 60 per cent target called for in CBD COP Decision X/31. By June 2019, as per information reported in the global database on protected area management effectiveness (GD-PAME), less than one-in-five countries had evaluated management effectiveness for at least 60 per cent of terrestrial protected areas, and less than one-in-six had done so for marine protected areas (UNEP-WCMC, 2019b) (Figure 3). Many countries have no completed assessments currently reported in the GD-PAME (Figure 3; UNEP-WCMC, 2019b).

However, simply reporting on the completion of evaluations is not sufficient. Without information on the adequacy of aspects of management, it will not be possible to properly assess progress for this element of Target 11. Future targets relating to protected area management effectiveness should require that some benchmark of quality is being met. For example, a 2010 study applied a benchmark of two-thirds indicating “effective” management across a suite of indicators, and based on the sample of protected areas included at the time (~6,000 sites, or 6 per cent of all sites reported at the time) less than one-quarter were deemed to have “sound management” (Leverington et al., 2010).

Recent studies have shown that staff and budget capacity are some of the aspects of management most related to conservation outcomes, in both terrestrial (Geldmann et al., 2018) and marine protected areas (Gill et al., 2017). For sites where this data is available (over 2,000 sites, covering 23 per cent of the total extent of terrestrial protected areas), only 22 per cent report both adequate staffing and budget resources, while almost half report inadequate resources for both staffing and budget (Coad et al., 2019). Similar results have been reported from a study of 433 marine protected areas (Gill et al., 2017).

There is also a need for more information on conservation outcomes in protected areas, and a better

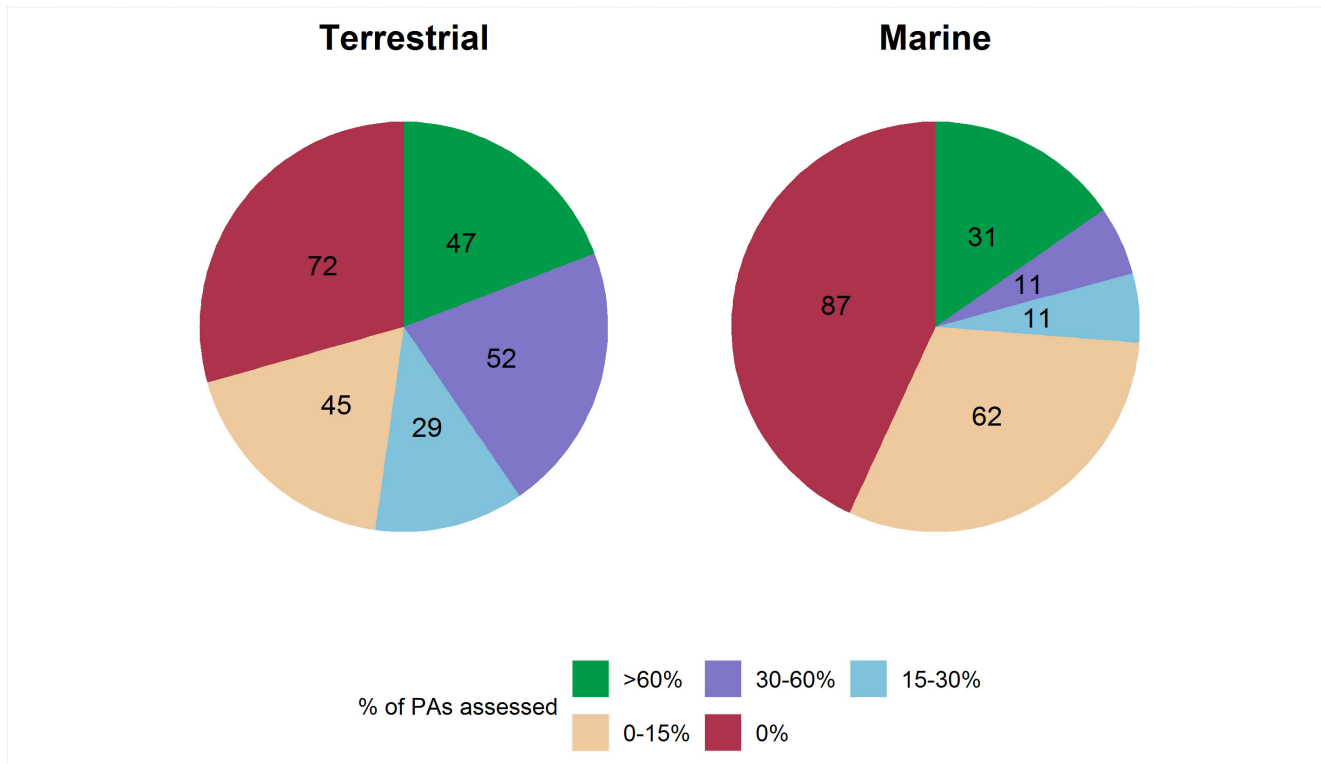


Figure 3. Number of countries or territories with completed protected area management effectiveness evaluations in the GD-PAME for terrestrial and marine areas as of June 2019 (UNEP-WCMC, 2019b). Percentage assessed is based on the area of PAs with reported evaluations.

understanding of their relation to specific management inputs (Geldmann et al., 2018); aspects which should receive greater focus in the post-2020 period.

Equitably managed

Enhancing the diversity, quality, effectiveness and equity of protected area governance is important for the achievement of Target 11 (CBD, 2018). As there is a lack of comprehensive global assessments of governance and equity in protected areas, reporting on this element has often focused on governance diversity as a means for assessing equity at a protected area system level (Bacon et al., 2019). There are four governance types recognised by the IUCN: governance by governments; governance by private individuals or organisations; governance by indigenous peoples and/or local communities (IPLC); and shared governance (e.g. between IPLC and governments or between private individuals and governments) (Borrini-Feyerabend et al., 2013). In 2018, reported protected areas were primarily governed by governments, with less than 4 per cent under shared or IPLC governance (UNEP-WCMC, IUCN & NGS, 2019).

A global survey of stakeholders in over 200 protected areas concluded that significant challenges remain in

ensuring socially equitable management (Zafra-Calvo et al., 2019). A majority of respondents felt that few protected areas adequately addressed aspects of social equity such as effective participation in decision-making, statutory and customary rights, access to justice, and transparency (Zafra-Calvo et al., 2019). However, most respondents claimed that the distribution of benefits from the establishment and management of protected areas has generally been fair (Zafra-Calvo et al., 2019).

The IUCN Green List, a voluntary global standard aimed at increasing the number of effectively and equitably managed protected areas delivering conservation outcomes, provides another potential means for tracking progress on the management elements of Target 11 (IUCN & WCPA, 2017). The four components of the Green List Standard (Good Governance, Sound Design and Planning, Effective Management, and Successful Outcomes) are underpinned by 17 criteria (IUCN & WCPA, 2017). Existing approaches for management effectiveness (Hockings et al., 2006), governance (Franks & Booker, 2018) and social assessment (Franks et al., 2018) in protected areas could be used to compile information to address these 17 criteria. This would allow for better estimates of progress in the effective and equitable management of protected areas.

Integrating protected areas in landscapes and seascapes

Indicators for this element are still lacking, and a global assessment of progress has yet to be completed. Voluntary guidance on this element has been developed (CBD, 2018), which offers a range of suggested steps for the integration of protected areas into wider landscapes and seascapes. As of 2016, few countries had identified specific plans or strategies for such integration (UNDP, 2016). It is also important that biodiversity is integrated and mainstreamed within relevant sectoral plans, strategies and programmes, as contradictory policy objectives across different sectors often jeopardise biodiversity conservation and limit the efficacy of protected areas (Ervin et al., 2010). Key sectors with likely impacts on the effectiveness of protected area systems are agriculture, forestry, water resources, mining and energy (Gannon et al., 2017).

One means to assess this element could be to look at ecological spill-over, examining 'leakage' and 'blockage' effects of protected areas on non-target areas in the surrounding landscape. A recent study of more than 3,000 tropical and subtropical forest protected areas

reported that less than 10 per cent displayed 'leakage' – where deforestation was simply displaced to the surrounding area, showing limited integration with the wider landscape (Fuller et al., 2019). 'Blockage', where deforestation was also reduced in areas surrounding the protected area, was reported for more than 40 per cent of sites (Fuller et al., 2019). The remaining protected areas showed either negligible spill-over, or did not effectively limit deforestation (Fuller et al., 2019).

Marine spatial planning represents an important tool for integrating marine protected areas with the wider seascape, and with relevant sectors to ensure more sustainable ocean management (Santos et al., 2019). Landscape approaches to biodiversity conservation and sustainable development, like the Socio-ecological Production Landscapes and Seascapes approach of the Satoyama Initiative, offer another opportunity to enable greater integration of protected areas (Leles et al., 2018).

OPPORTUNITIES FOR PROGRESS ON TARGET 11

Commitments to further increase protected area coverage have been made by Parties to the Convention



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in their National Biodiversity Strategies and Action Plans (NBSAPs), national priority actions identified through a series of regional capacity-building workshops, 2017 UN Oceans Conference, and various regional initiatives like the Micronesia and Caribbean Challenge Initiatives (Gannon et al., 2017). Many of these protected areas have already been created and reported to the WDPA (Bacon et al., 2019). Achievement of the remaining commitments by 2020 would increase global coverage by over 4 million km² terrestrial protected areas and over 11 million km² for marine protected areas. Terrestrial coverage would thus reach 18 per cent, while coverage of the global ocean would reach 11 per cent (Figure 4), surpassing both quantitative targets. However, further efforts will still be needed to ensure that the qualitative elements of Target 11 are being addressed.

The successful completion of Global Environment Facility (GEF-5 and GEF-6) projects, the recognition and reporting of territories and areas conserved by indigenous peoples and local communities (ICCAs), and especially better recording of data on OECMs, all provide further opportunities for progress on Target 11. For instance, there are 115 approved GEF-5 and GEF-6 projects with clear plans for increasing protected area coverage; together these would add over 300,000 km² in terrestrial (0.22 per cent globally), and over 500,000 km² in marine protected areas (0.14 per cent of the global ocean).

There is no global assessment of the overall contribution of ICCAs to biodiversity conservation, though it is recognised that they are underreported in the Protected Planet databases (Bingham et al., 2019). It is possible that they could cover a large part of the terrestrial environment, including a significant portion of remaining wilderness areas (Garnett et al., 2018). The Global Support Initiative for Indigenous Peoples and Community-Conserved Territories and Areas (ICCA-GSI) is currently being implemented in 26 countries, though there are very few ICCA-GSI sites currently recorded in the WDPA and/or the ICCA Registry. However, progress with the ICCA-GSI is significant in many countries, and data is currently being collected for over 100 ICCAs. For example, the ICCA-GSI projects in Colombia report 13,800 km² (over 1 per cent of Colombia's land area) under community conservation and self-recognised as ICCAs (UNDP, 2019).

As noted above, a definition for other effective area-based conservation measures (OECMs) was adopted at the fourteenth meeting of Parties to the Convention, while the same decision also welcomed scientific and technical advice on OECMs, including criteria for identification (CBD, 2018). As yet there is no global estimate of OECM coverage but it is expected that recognising and reporting on OECMs will make a significant contribution to progress on Target 11. For instance, the more than five-fold increase in marine coverage in Canada has come in large part from the

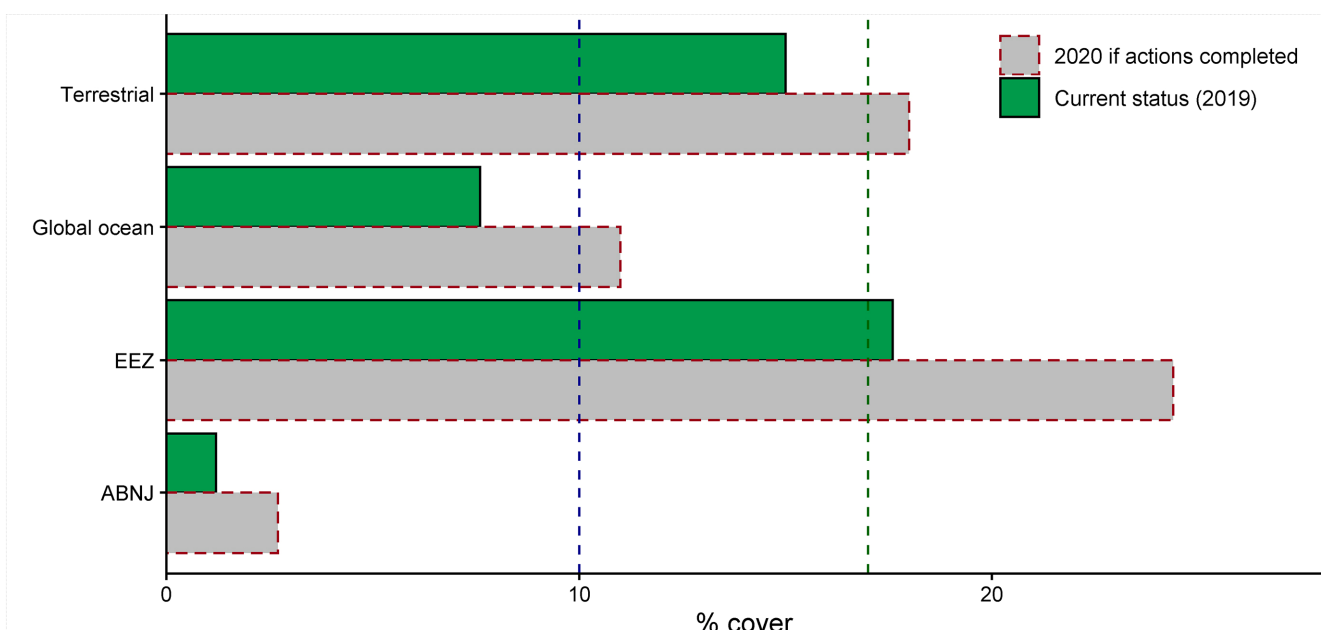
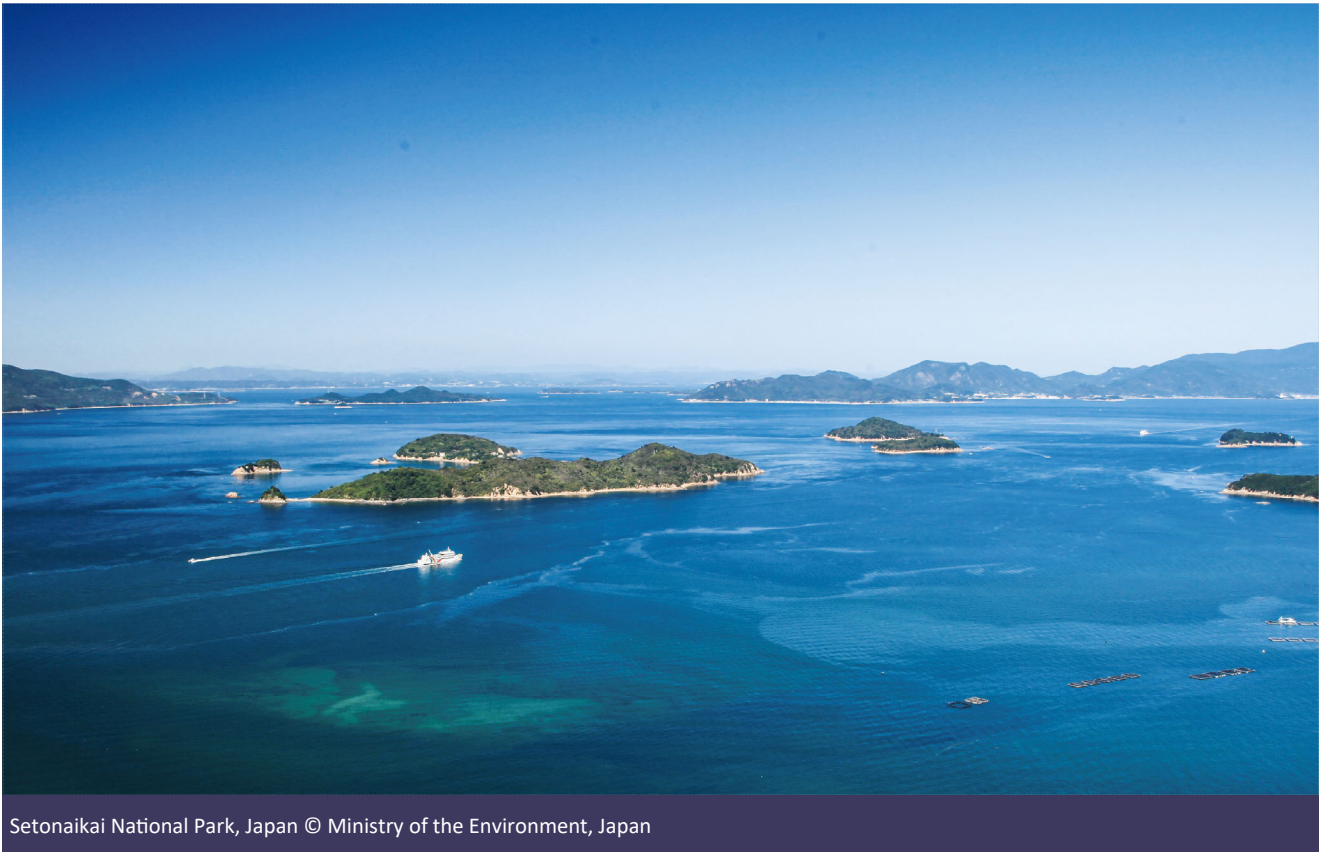


Figure 4. Current global protected area coverage (as of June 2019), and increase that is expected if national commitments are completed as proposed by 2020; dashed lines show the global coverage targets for marine (10 per cent) and terrestrial (17 per cent) areas.



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contribution of marine OECMs (ECCC, 2018). In Russia, a recent analysis showed that existing coverage of terrestrial areas was at least 25 per cent, with more than half of this coming from OECMs (Stishov & Dudley, 2018).

These additions will improve ecological representation and may also have benefits for connectivity and the coverage of areas important for biodiversity, as well as other elements of the Target. Work has recently begun to collect information on OECMs, including spatial data, to assess the impact on these elements of Target 11.

One of the largest gains for Target 11 reporting could come from more accurate reporting and updating information in the WDPA. Preliminary analysis of protected area coverage from the Sixth National Reports of 90 CBD Parties indicates that many are reporting national figures higher than those currently recorded in the WDPA. As much as 1.4 million km² in terrestrial and 480,000 km² in marine protected areas may be missing from the WDPA. Work is ongoing to facilitate updating of records in the WDPA to better reflect the current situation and contribute to 2020 reporting.

CONCLUSION

With just one year remaining until 2020 and the close of the current Strategic Plan for Biodiversity and the Aichi Biodiversity Targets, progress is clear for several elements of Target 11, with especially encouraging progress regarding the coverage of marine areas. Coverage elements are on track to be met by 2020. Delivery of commitments and other opportunities, especially the recognition and recording of OECMs, will also contribute to other elements like ecological representation, connectivity and the coverage of areas important for biodiversity. There is an urgent need to obtain information and spatial data for these sites so that they can be mapped vis-à-vis the relevant qualitative elements of the Target. The Global Partnership is supporting regional and national efforts to collate more accurate data on these elements.

For some elements of Target 11 (e.g. management effectiveness, equity, areas important for ecosystem services and integration into wider landscapes and seascapes), there is inadequate data at the global level to provide a proper assessment of progress. Many of these elements will require more emphasis and capacity building both in the run up to COP15 and as part of any new targets after 2020. Target 11 has been one of the

most successful of the Aichi targets with considerable progress in implementation. Lessons learned over the last decade in delivering Target 11 will be highly relevant to setting realistic and deliverable successor targets for area-based conservation in the post-2020 period.

ENDNOTES

¹The elements of Target 11 refer to the individual clauses in the language of the target, and include both quantitative elements (at least 17% terrestrial and 10% marine coverage) and qualitative elements (ecological representation, coverage of areas important for biodiversity, coverage of areas important for ecosystem services, connectivity, effective management, equitable management, and integration into the wider landscapes and seascapes).

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REFERENCES

- Bacon, E., Gannon, P., Stephen, S., Seyoum-Edjigu, E., Schmidt, M., Lang, B., Sandwith, T., Xin, J., Arora, S., Adham, K.N., Espinoza, A.J.R., Qwathakana, M., Prates, A.P.L., Shestakov, A., Cooper, D., Ervin, J., de Souza Dias, B.F., Leles, B., Attallah, M., Mulongoy, J. and Gidda, S.B. (2019). Aichi Biodiversity Target 11 in the like-minded megadiverse countries. *Journal for Nature Conservation* 51: 125723. DOI: 10.1016/j.jnc.2019.125723.
- Bingham, H.C., Bignoli, D.J., Lewis, E., MacSharry, B., Burgess, N.D., Visconti, P., Deguignet, M., Misrachi, M., Walpole, M., Stewart, J.L. and Brooks, T.M. (2019). Sixty years of tracking conservation progress using the World Database on Protected Areas. *Nature Ecology & Evolution* 1. DOI: 10.1038/s41559-019-0869-3.
- Borrini-Feyerabend, G., Dudley, N., Jaeger, T., Lassen, B., Broome, N.P., Phillips, A. and Sandwith, T. (2013). *Governance of Protected Areas: From understanding to action*. Best Practice Protected Area Guidelines Series No. 20, Gland, Switzerland: IUCN.
- Butchart, S.H.M., Clarke, M., Smith, R.J., Sykes, R.E., Scharlemann, J.P.W., Harfoot, M., Buchanan, G.M., Angulo, A., Balmford, A., Bertzky, B., Brooks, T.M., Carpenter, K.E., Comeros-Raynal, M.Y., Cornell, J., Ficetola, G.F., Fishpool, L.D.C., Fuller, R.A., Geldmann, J., Harwell, H., Hilton-Taylor, C., Hoffmann, M., Joolia, A., Joppa, L., Kingston, N., May, I., Milam, A., Polidoro, B., Ralph, G., Richman, N., Rondinini, C., Segan, D.B., Skolnik, B., Spalding, M.D., Stuart, S.N., Symes, A., Taylor, J., Visconti, P., Watson, J.E.M., Wood, L. and

- Burgess, N.D. (2015). Shortfalls and solutions for meeting national and global conservation area targets. *Conservation Letters* 8(5): 329–337. DOI: 10.1111/conl.12158.
- CBD (2018). *Decision adopted by the Conference of the Parties to the Convention on Biological Diversity at its fourteenth meeting. Decision 14/8. Protected areas and other effective area-based conservation measures*. Available at: <https://www.cbd.int/doc/decisions/cop-14/cop-14-dec-08-en.pdf>.
- CBD (2010a). *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*. Available at: <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-02-en.pdf>.
- Coad, L., Watson, J.E., Geldmann, J., Burgess, N.D., Leverington, F., Hockings, M., Knights, K. and Di Marco, M. (2019). Widespread shortfalls in protected area resourcing undermine efforts to conserve biodiversity. *Frontiers in Ecology and the Environment* 17(5): 259–264. DOI: doi.org/10.1002/fee.2042.
- CSIRO (2019a). *Protected area connectedness index (PARC-connectedness)*. Available at: <https://www.bipindicators.net/indicators/protected-area-connectedness-index-parc-connectedness>.
- CSIRO (2019b). *Protected area connectedness index (PARC-connectedness) v2*.
- Donald, P.F., Buchanan, G.M., Balmford, A., Bingham, H., Couturier, A.R., de la Rosa Jr, G.E., Gacheru, P., Herzog, S.K., Jathar, G., Kingston, N. and Marnewick, D. (2019). The prevalence, characteristics and effectiveness of Aichi Target 11's "other effective area-based conservation measures" (OECMs) in Key Biodiversity Areas. *Conservation Letters*: e12659. DOI: 10.1111/conl.12659.
- Drielsma, M., Ferrier, S. and Manion, G. (2007). A raster-based technique for analysing habitat configuration: The cost-benefit approach. *Ecological Modelling* 202(3–4): 324–332. DOI: 10.1016/j.ecolmodel.2006.10.016.
- Dudley, N., Stolton, S., Belokurov, A., Kruger, L., Lopoukhine, N., MacKinnon, K., Sandwith T. and Sekhran, N. (Eds). (2010). *Natural Solutions: Protected Areas Helping People to Cope with Climate Change*. Gland, Switzerland: IUCN-WCPA, TNC, UNDP, WCS, World Bank and WWF.
- ECCC (Environment and Climate Change Canada) (2018). *Canada's conserved areas*. Available at: <https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/conserved-areas.html>.
- Ervin, J., Mulongoy, K.J., Lawrence, K., Game, E., Sheppard, D., Bridgewater, P., Bennett, G., Gidda, S.B. and Bos, P. (2010). *Making Protected Areas Relevant: A guide to integrating protected areas into wider landscapes, seascapes and sectoral plans and strategies*. CBD Technical Series No. 44. Montreal, Canada: Convention on Biological Diversity.
- 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*. London: IIED.
- Franks, P., Small, R. and Booker, F. (2018). *Social Assessment for Protected and Conserved Areas (SAPA). Methodology manual for SAPA facilitators*. Second edition. London: IIED.
- Fuller, C., Ondei, S., Brook, B.W. and Buettel, J.C. (2019). First, do no harm: A systematic review of deforestation spillovers from protected areas. *Global Ecology and Conservation*: e00591. DOI: 10.1016/j.gecco.2019.e00591.
- Gannon, P., Seyoum-Edjigu, E., Cooper, D., Sandwith, T., Ferreira De Souza Dias, B., Palmer, C.P., Lang, B., Ervin, J. and Gidda, S. (2017). Status and prospects for achieving Aichi Biodiversity Target 11: implications of national commitments and priority actions. *Parks* 23(2). DOI: 10.2305/IUCN.CH.2017.PARKS-23-2PG.en.
- Garnett, S.T., Burgess, N.D., Fa, J.E., Fernández-Llamazares, Á., Molnár, Z., Robinson, C.J., Watson, J.E., Zander, K.K., Austin, B., Brondizio, E.S. and Collier, N.F. (2018). A spatial overview of the global importance of Indigenous lands for conservation. *Nature Sustainability* 1(7): 369–374. DOI: 10.1038/s41893-018-0100-6.
- Gaüzère, P., Jiguet, F. and Devictor, V. (2016). Can protected areas mitigate the impacts of climate change on bird's species and communities? *Diversity and Distributions* 22(6), 625–637. DOI: 10.1111/ddi.12426.
- Geldmann, J., Coad, L., Barnes, M.D., Craigie, I.D., Woodley, S., Balmford, A., Brooks, T.M., Hockings, M., Knights, K., Mascia, M.B. and McRae, L. (2018). A global analysis of management capacity and ecological outcomes in terrestrial protected areas. *Conservation Letters* 11: e12434. DOI: 10.1111/conl.12434.
- Gill, D.A., Mascia, M.B., Ahmadi, G.N., Glew, L., Lester, S.E., Barnes, M., Craigie, I., Darling, E.S., Free, C.M., Geldmann, J. and Holst, S. (2017). Capacity shortfalls hinder the performance of marine protected areas globally. *Nature* 543 (7647). DOI: 10.1038/nature21708.
- Hockings, M., Stolton, S., Leverington, F., Dudley, N. and Courrau, J. (2006). *Evaluating effectiveness: a framework for assessing the management of protected areas*, 2nd edition. Gland, Switzerland and Cambridge, UK: IUCN.
- IUCN (2016). *A Global Standard for the Identification of Key Biodiversity Areas*, v. 1.0. Gland, Switzerland: IUCN.
- IUCN and World Commission on Protected Areas (WCPA) (2017). *IUCN Green List of Protected and Conserved Areas: Standard, Version 1.1*. Gland, Switzerland: IUCN.
- Jantke, K., Jones, K.R., Allan, J.R., Chauvenet, A.L., Watson, J.E. and Possingham, H.P. (2018a). Poor ecological representation by an expensive reserve system: Evaluating 35 years of marine protected area expansion. *Conservation Letters* 11(6): p.e12584. DOI: 10.1111/conl.12584.
- Jantke, K., Kuempel, C.D., McGowan, J., Chauvenet, A.L. and Possingham, H.P. (2018b). Metrics for evaluating representation target achievement in protected area networks. *Diversity and Distributions* 25(2): 170–175. DOI: 10.1111/ddi.12853.
- Jones, K.R., Klein, C.J., Halpern, B.S., Venter, O., Grantham, H., Kuempel, C.D., Shumway, N., Friedlander, A.M., Possingham, H.P. and Watson, J.E.M. (2018). The location and protection status of Earth's diminishing marine wilderness. *Current Biology* 28(15), 2506–2512. DOI: 10.1016/j.cub.2018.06.010.
- JRC (Joint Research Centre of the European Commission) (2019a). *The Digital Observatory for Protected Areas (DOPA) Explorer 3.1* [On-line], [January, 2019], Ispra, Italy. Available at: <http://dopa-explorer.jrc.ec.europa.eu>.
- JRC (2019b). *The Digital Observatory for Protected Areas (DOPA) Explorer 4* [On-line], [September, 2019], Ispra, Italy. Available at: <http://dopa-explorer.jrc.ec.europa.eu>.
- Kuempel, C.D., Jones, K.R., Watson, J.E. and Possingham, H.P. (2019). Quantifying biases in marine protected area

- placement relative to abatable threats. *Conservation Biology*. DOI: 10.1111/cobi.13340.
- Leles, B., Stephen, S., Schmidt, M., Gannon, P., Seyoum-Edjigu, E., de Souza Dias, B.F., Ervin, J., Cooper, D. and Gidda, S.B. (2018). Contributions of socio-ecological production landscapes and seascapes to the achievement of Aichi Biodiversity Target 11 in the group of Like-Minded Megadiverse Countries. In: UNU-IAS and IGES (eds.), *Sustainable Use of Biodiversity in Socio-ecological Production Landscapes and Seascapes and its Contribution to Effective Area-based Conservation (Satoyama Initiative Thematic Review vol. 4)*: 110–119. Tokyo: United Nations University Institute for the Advanced Study of Sustainability.
- Leverington, F., Costa, K.L., Courrau, J., Pavese, H., Nolte, C., Marr, M., Coad, L., Burgess, B., Bomhard, B. and Hockings, M. (2010). *Management effectiveness evaluation in protected areas – a global study*. Second edition. Brisbane, Australia: The University of Queensland.
- Mandle, L., Wolny, S., Bhagabati, N., Helsingen, H., Hamel, P., Bartlett, R., Dixon, A., Horton, R., Lesk, C., Manley, D. and De Mel, M. (2017). Assessing ecosystem service provision under climate change to support conservation and development planning in Myanmar. *PloS One* 12(9): e0184951. DOI: 10.1371/journal.pone.0184951
- Melillo, J.M., Lu, X., Kicklighter, D.W., Reilly, J.M., Cai, Y. and Sokolov, A.P. (2016). Protected areas' role in climate change mitigation. *Ambio* 45(2): 133–145. DOI: 10.1007/s13280-015-0693-1.
- Olson, D.M., Dinerstein, E., Wikramanayake, E.D., Burgess, N.D., Powell, G.V., Underwood, E.C., D'amico, J.A., Itoua, I., Strand, H.E., Morrison, J.C. and Loucks, C.J. (2001). Terrestrial Ecoregions of the World: A New Map of Life on Earth. A new global map of terrestrial ecoregions provides an innovative tool for conserving biodiversity. *BioScience* 51(11): 933–938. DOI: 10.1641/0006-3568(2001)051[0933:TEOTWA] 2.0.CO;2.
- Runge, C.A., Watson, J.E.M., Butchart, S.H.M., Hanson, J.O., Possingham, H.P. and Fuller, R.A. (2015). Protected areas and global conservation of migratory birds. *Science*, 350 (6265): 1255–1258. DOI: 10.1126/science.aac9180.
- Santos, C.F., Ehler, C.N., Agardy, T., Andrade, F., Orbach, M.K. and Crowder, L.B. (2019). Marine spatial planning. In: C. Sheppard (ed.) *World Seas: An Environmental Evaluation, Volume III: Ecological Issues and Environmental Impacts*, pp. 571–592. Academic Press. DOI: 10.1016/c2015-0-04336-2.
- 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. DOI: 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. DOI: 10.1016/j.biocon.2019.07.028.
- SCBD (Secretariat of the Convention on Biological Diversity) (2014). *Global Biodiversity Outlook 4*, Montreal, Canada: SCBD.
- Spalding, M.D., Agostini, V.N., Rice, J. and Grant, S.M. (2012). Pelagic provinces of the world: a biogeographic classification of the world's surface pelagic waters. *Ocean & Coastal Management* 60, 19–30. DOI: 10.1016/j.ocecoaman.2011.12.016.
- Spalding, M.D., Fox, H.E., Allen, G.R., Davidson, N., Ferdaña, Z.A., Finlayson, M.A.X., Halpern, B.S., Jorge, M.A., Lombana, A.L., Lourie, S.A. and Martin, K.D. (2007). Marine ecoregions of the world: a bioregionalization of coastal and shelf areas. *BioScience* 57(7): 573–583. DOI: 10.1641/B570707.
- Stishov, M. and Dudley, N. (2018). *Protected areas of the Russian Federation and their categories* [Translated title]. Moscow: World Wide Fund for Nature (WWF).
- UNDP (2016). National Biodiversity Strategies and Action Plans: Natural Catalysts for Accelerating Action on Sustainable Development Goals. Interim Report. United Nations Development Programme. December 2016. New York, United States of America: UNDP, <https://www.cbd.int/doc/nbsap/nbsaps-catalysts-SDGs.pdf>.
- UNDP (2019). Women, Culture, and Territory: Safeguarding biodiversity by protecting ancestral culture in Colombia. Available at: <https://undp-biodiversity.exposure.co/women-culture-and-territory>.
- UNEP-WCMC (2019a). Global statistics from the World Database on Protected Areas (WDPA), September 2019. Cambridge, UK: UNEP- WCMC.
- UNEP-WCMC (2019b). Global statistics from the Global Database on Protected Areas Management Effectiveness (GD-PAME), June 2019, Cambridge, UK: UNEP- WCMC.
- UNEP-WCMC, BirdLife International and IUCN (2019). *Indicator 14.5.1 and Indicator 15.1.2 from SDG Report 2019, Statistical Annex: Global and regional data for Sustainable Development Goal indicators*.
- UNEP-WCMC and IUCN (2019). Marine Protected Planet [Online], [September, 2019], Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.
- UNEP-WCMC, IUCN and NGS (2019). *Protected Planet Live Report 2019*. Accessed July 2019. UNEP-WCMC, IUCN and NGS: Cambridge, UK; Gland, Switzerland; and Washington, D.C., USA.

RESUMEN

En 2010, las Partes en el Convenio sobre la Diversidad Biológica adoptaron un Plan Estratégico para la Biodiversidad con 20 Metas de Aichi para la Diversidad Biológica que se espera alcanzar para 2020. La Meta 11 establece objetivos para áreas protegidas y conservadas en ecosistemas terrestres, marinos y de agua dulce. Este artículo, preparado en nombre de la Alianza Mundial para la implementación de la Meta 11 de Aichi, informa sobre el avance alcanzado hasta la fecha en el cumplimiento de los elementos cuantitativos y cualitativos de la Meta 11 e identifica oportunidades para un mayor progreso antes de la 15ª Conferencia de las Partes en Kunming en 2020 y más allá.

RÉSUMÉ

En 2010, les parties à la Convention sur la diversité biologique ont adopté un Plan stratégique pour la diversité biologique comprenant 20 objectifs d'Aichi pour la biodiversité qui devraient être atteints d'ici 2020. L'Objectif 11 définit des directives pour les aires protégées et conservées dans les écosystèmes terrestres, marins et d'eau douce. Le présent document, préparé pour le compte du Partenariat mondial sur l'Objectif 11 d'Aichi, fait état des progrès réalisés à ce jour dans la mise en œuvre des éléments quantitatifs et qualitatifs de l'Objectif 11 et identifie des possibilités de progrès supplémentaires avant la 15e Conférence des Parties à Kunming en 2020 et au-delà.