



Data Sources and Methods for the Global Trends in Protected Areas Indicator

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1 Introduction

The Global Trends in Protected Areas indicator (<http://ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=9DD79AE8-1>) is part of the Canadian Environmental Sustainability Indicators (CESI) program (<http://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=En&n=47F48106-1>), which provides data and information to track Canada's performance on key environmental sustainability issues.

2 Description and rationale of the Global Trends in Protected Areas indicator

2.1 Description

The Global Trends in Protected Areas indicator reports the total terrestrial and marine area afforded protection for conservation, as compared to the total terrestrial and marine area in ten different countries. Information on protected areas is collected, analyzed and made available by the World Database on Protected Areas (WDPA) to support a number of international reporting initiatives. The WDPA is a joint project of the United Nations Environment Programme (UNEP) and the International Union for Conservation of Nature (IUCN), and is the data repository for the United Nations List of Protected Areas.

The internationally accepted definition of a protected area is "a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values."¹

An annual assessment is conducted by the UNEP World Conservation Monitoring Centre (WCMC) to support reporting on progress towards the Millennium Development Goals and the targets of the Convention on Biological Diversity.

2.2 Rationale

The indicator shows the area protected and percentage of protected area for 10 selected countries, including Canada. The area of land and water that is protected is a measure of human response to the loss of biodiversity and natural habitat. The comparison set consists of the countries in the G8 (Russian Federation, United States of America, Canada, Germany, France, Japan, United Kingdom, Italy), Australia (the population, population density and territorial extent of which are similar to Canada's) and Sweden (which has a similar climate). Differences between WDPA and Canadian estimates for the national area protected are mainly due to time lags in integrating Canadian information into the WDPA. There are also significant differences in analytical approach.

¹ Dudley N (ed.) (2008) Guidelines for Applying Protected Area Management Categories. IUCN: Gland, Switzerland, page 8. Retrieved on 26 May, 2014. Available from: http://www.iucn.org/about/work/programmes/gpap_home/gpap_capacity2/gpap_bpg/?13959/Guidelines-for-applying-protected-area-management-categories.

3 Data

3.1 Data sources

The WDPA contains data from governments and non-governmental organizations. Elements of a summary analysis of the WDPA made by the IUCN and UNEP-WCMC in 2013 to assess progress toward Goal 7 (Ensure environmental sustainability) of the Millennium Development Goals (MDG) were used to create the indicator. A portion of this summary analysis is available on the official United Nations site for the MDG Indicators (<http://mdgs.un.org/unsd/mdg/Data.aspx>); note that marine data in the online table are for territorial seas only.²

Global marine totals were taken from the WDPA (2013) Official MPA Map (http://www.protectplanetoclean.org/official_mpa_map), IUCN and UNEP-WCMC.

3.2 Spatial coverage

Coverage is global.

3.3 Temporal coverage

The WDPA is continually being updated and is made available on protectedplanet.net (<http://www.protectedplanet.net/>). Information on individual protected areas includes their date of establishment.

3.4 Data completeness

The WDPA is compiled by UNEP-WCMC from data provided by protected area authorities relevant to the governance type of the protected area. For example, government agencies provide data on federal protected areas, sub-national agencies provide data on sub-national areas, non-governmental organizations may provide data on protected areas they own and manage, communities may provide data on the areas they protect and manage, and so on. The capacity, methods and formats of data management vary within and between data providers; therefore, the WDPA is a mosaic of geographic information system (GIS) data at varying levels of completeness, resolution and quality. Data accepted by the WDPA must meet a minimum standard (http://old.unep-wcmc.org/world-database-on-protected-areas-wdpa-data-standards_966.html).

Protected areas with unknown location and/or extent are excluded from the GIS analysis and statistics. Protected areas with unknown year of establishment are included in the GIS analysis and statistics for every year reported from the earliest year to the present.

Analyses of marine protection are conducted for the territorial sea and exclusive economic zone³ (EEZ) of each country, as well as for the global ocean; claimed areas of continental shelf are not considered. Disputed land and sea that are covered by protected areas are included as a group on

² Territorial sea is defined as the area of the sea from the shoreline out to 12 nautical miles. Fisheries and Oceans Canada (2014) Canada's Ocean Estate; A Description of Canada's Maritime Zones. Retrieved on 25 April, 2014. Available from: <http://www.dfo-mpo.gc.ca/oceans/canadasoceans-oceansducanada/marinezones-zonesmarines-eng.htm#terr>.

³ The exclusive economic zone is an area of the sea adjacent to and beyond the territorial sea, extending out to 200 nautical miles from low water lines. Fisheries and Oceans Canada (2014) Canada's Ocean Estate; A Description of Canada's Maritime Zones. Retrieved on 19 March, 2014. Available from: <http://www.dfo-mpo.gc.ca/oceans/canadasoceans-oceansducanada/marinezones-zonesmarines-eng.htm#ex>.

their own and are included in global totals, but not in national statistics. Similarly, the Great Lakes, Caspian Sea and Aral Sea are excluded from national but not global totals.

Man and the Biosphere (MAB) Reserves were excluded on the advice of the United Nations Educational, Scientific and Cultural Organization (UNESCO) Man and the Biosphere Program. Only the core zone of MAB Reserves may be considered protected. These zones are not well defined in the WDPA, and the effect of their exclusion is small as they often overlap with other types of protected areas.

3.5 Data timeliness

Statistics were compiled for the Millennium Development Goals Report 2013 (<http://mdgs.un.org/unsd/mdg/News.aspx?ArticleId=75>). The October 2012 version of the WDPA was used for a spatial time series analysis of protected area coverage from 1990 to 2012.

4 Methods

The WDPA is held within a geographic information system (GIS) that stores information about protected areas, including their name, type, date of designation, and documented area, as well as their geographic location as a point and/or boundary.

Quality control criteria are applied to ensure consistency and comparability of the data in the WDPA. New data are validated at the UNEP WCMC in coordination with the World Commission on Protected Areas and the data provider as well as local experts. Discrepancies between the data in the WDPA and new data are resolved in communication with data providers. Processed and validated data are fully integrated into the published WDPA once it has been approved by the data provider and formal permission has been obtained through a data contributor agreement.

Values reported here are based on a Millennium Development Goals Analysis completed by the WDPA; raw values from that analysis have been used to provide totals and percentages for areas as described below.

National totals

Methodology is provided by the WDPA; only the sections relevant to this indicator are included here. The area protected includes all areas recorded in the WDPA whose location and extent were known, with the exception of Man and the Biosphere Reserves, areas in the high seas, disputed territory, and areas in the Great Lakes, Caspian Sea and Aral Sea.

A spatial analysis was used to estimate total territorial area protected. If the boundaries of a protected area were not known, but its location and extent were known, it was modelled as a circular buffer around its point location. A global protected area layer was created by combining the boundaries (polygons) of the protected areas recorded in the WDPA. To estimate the area protected in 1990, a layer was created by combining only those polygons with an establishment date of 1990 or earlier (including any with an unknown establishment date). This was repeated for 2000, 2010 and 2012.

The protected area layers were intersected with country boundaries, including coastlines and marine boundaries to obtain the absolute coverage (in square kilometers) of protected areas by country, divided into marine and terrestrial. The total terrestrial protected area of a country or territory was divided by the total area of its land (including inland waters) to obtain the relative coverage (percentage) of protected area. The total marine protected area of a country was

calculated by adding all of the protected marine area and then dividing it by the total national marine area to exclusive economic zones (EEZ) limits in order to obtain the relative coverage of marine protected area.

Global totals

Global terrestrial and marine totals were obtained from the protected areas layers for 1990, 2000, 2010 and 2012. The global terrestrial total was divided by the global terrestrial area (total national area plus the area of Antarctica, disputed territories, Great Lakes, Caspian Sea and Aral Sea) to obtain the relative coverage (percentage) of protected area. Similarly, the global marine total was divided by the marine area, including territorial seas, exclusive economic zones, and the high seas. Increases in area protected were calculated by dividing the difference in area (later year minus earlier year) by the total area protected in the earlier year.

5 Caveats and limitations

- The extent to which the lands and waters of a country are protected is a useful indicator of conservation effort. However, it is not an indication of how well managed the terrestrial protected areas are, nor does it mean that protection measures are effectively enforced.
- There are known data and knowledge gaps for some countries/regions, due to time lags in incorporating national data into the WDPA and determining if areas conform to the IUCN definition of a protected area.
- The indicator does not include non-designated conserved areas within national boundaries that may also be important for conserving biodiversity.
- Data availability—both in terms of quantity and quality—is improving, but not evenly across the globe. Data on terrestrial protected area coverage are available for over 220 countries/territories. Data on marine protected area coverage are available for 170 countries/territories.
- Some values reported here are different from values in the Millennium Development Goals Report 2013 (<http://mdgs.un.org/unsd/mdg/News.aspx?ArticleId=75>), due to different baselines. In particular, for the Millennium Development Goals Report 2013: i) global terrestrial percentages are based on national territory only (i.e. they exclude Antarctica and large inland water bodies); and ii) national marine percentages are for the territorial seas only.

Sources of discrepancies between global and national figures

- UNEP-WCMC aggregates the global and regional figures for this indicator from the national figures calculated through geographical analysis. The global, regional and national figures provided by UNEP-WCMC are therefore consistent. However, gaps and/or time lags in reporting national protected area data to the WDPA can result in discrepancies between the national figures provided by UNEP-WCMC and national figures available from national agencies.
- For Canada, the WDPA 2012 analysis uses the October 2010 version of the Conservation Areas Reporting and Tracking System (CARTS). In addition, Canada's reporting is based on summing the official areas of protected areas, rather than geographical analysis. Finally, the WDPA analysis excludes the Great Lakes.

6 References and further reading

6.1 References

Dudley Nigel (editor) (2008) Guidelines for Applying Protected Area Management Categories. IUCN: Gland, Switzerland. Retrieved on 28 October, 2013. Available from: http://www.iucn.org/about/work/programmes/gpap_home/gpap_capacity2/gpap_bpg/?13959/Guidelines-for-applying-protected-area-management-categories.

6.2 Further reading

- World Database on Protected Areas hosted on Protectedplanet.net (<http://protectedplanet.net/>)
- Protect Planet Ocean (<http://www.protectplanetoocean.org/>)

www.ec.gc.ca

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