



## INDICATOR FACTSHEET

This factsheet describes candidate indicators proposed for tracking the progress in achieving the targets of the EU Biodiversity Strategy for 2030 (EU BDS 2030).

**Instructions for filling the template:** in the pre-filled fields please mark in bold the appropriate option and add specifications if needed. Maximum two pages.

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<b>Last updated</b>	19/09/2023
<b>BdS target and subtarget</b>	<p>Target 1 - Legally protect a minimum of 30% of the EU's land area and a minimum of 30% of the EU's sea area, and integrate ecological corridors, as part of a true Trans-European Nature Network.</p> <p>Complete the designations of Natura 2000 sites</p>
<b>Indicator name</b>	Mean Target Achievement (MTA)
<b>Indicator definition</b>	The MTA calculates, for any set of biodiversity feature of interest (e.g. habitats, species, populations) the ratio between the extent of the feature range (in area units) that is covered by protected areas and the protected range extent that is considered sufficient, or desirable.
<b>Underlying data</b>	<p>The MTA requires:</p> <ol style="list-style-type: none"> <li>1. Spatial data (either vector or raster) of the distribution of a species or habitat of interest. This could be spatial distribution data available from Article 17 and Article 12 reports, or better data (in terms of spatial accuracy, currency and resolution) if it were available, either from member states reporting (EIONET) or from scientific projects (e.g. EUROPABON, NaturaConnect, MPA Europe).</li> <li>2. A spatial vector layer of protected areas. Multiple versions of the MTA can be produced with different selection criteria for protected areas. For instance, a more inclusive MTA could be calculated using all Natura 2000 sites and national designations included in the CDDA, a more selective version could only consider Natura 2000 sites and selected national designations for which some level of management effectiveness is documented and considered acceptable. These are two possible examples but there might be more possible use-case.</li> <li>3. A quantitative area target that defines the desirable area coverage of a species or habitat distributional range by protected areas.</li> </ol>
<b>Short methodology description</b>	<p>The indicator formula is quite simple and intuitive:</p> $MTA = \frac{\sum_{i=1..N} \min(\frac{P_i}{T_i}, 1)}{N}$ <p>Where <math>P_i</math> indicates the amount of protected range for feature <math>i</math>, <math>T_i</math> is the desirable (target) amount of protected range for feature <math>i</math>. The variable <math>N</math> is the number of features considered, e.g. all habitats in annex I of the habitat directive, and/or all species in annex II of the habitat directive and annex I of the birds directive. We can define the target achievement for feature <math>i</math> <math>TA_i</math> which indicates how close is feature <math>i</math> protected range from the desirable protected range.</p> <p>The indicator takes value from 0: no feature has any amount of range protected), to 1: all features have reached the protected range target. A value of 0.5 means that in average among all features, half of the protected range target was met.</p>

	An additional indicator could be also produced from the TA data, which tracks the number of area protection targets met (for any given geographic unit and sets of habitats or species).
<b>Current data availability</b>	<p>All species in the annex of the directives have distributional data, available from EEA.</p> <p>Potential distribution of EUNIS habitats based on suitability is available from the EEA Datahub database based on work published in 2016. Ongoing work from the European Topic Centre on Biodiversity and Ecosystems, EUROPABON and NaturaConnect and MPA Europe may also provide good quality gridded, EU-wide potential EUNIS habitat distribution that could be used.</p>
<b>Spatial resolution, extent available</b>	The MTA can be calculated at any scale, as long as there is a protected range target. It could be a biogeographic region (respectively marine regions and subregions for marine systems), a country, or even sub-national level analysis. The MTA is a non-spatially explicit indicator, but the underlying distribution data from article 17 reports are typically at 10x10km projection ETRS LAEA 5210. Finer distributional data should become available by the end of 2023 from the NaturaConnect project and made freely available on Zenodo.
<b>Temporal resolution, extent available</b>	The interval could be for every reporting period of the State of Nature. i.e. 2019-2024 for the first report. However, it is technically possible to have the MTA for every year, using annual updates in the CDDA and Union List and static map of features distribution.
<b>Update frequency</b>	The update could be done any time there is a significant update in the CDDA and the Union List, the Emerald Network or regional sea conventions.
<b>Used in a policy monitoring system</b>	<p>A similar indicator, the Species Habitat Index, is an headline indicator of target 3 of the Global Biodiversity Framework. However, the MTA improves on the SHI as it allows to consider an area target for each species if it was available.</p> <p>This indicator has also been calculated globally for each of the world ecoregions under the name <a href="#">Representation Achievement Score</a> and is available in the Digital Observatory for Protected Areas (DOPA)</p>
<b>API operational</b>	We are not aware of any API being operational, but it would be easy to develop.
<b>Source</b>	<p>References:</p> <p>Adams, Vanessa M., Piero Visconti, Victoria Graham, and Hugh P. Possingham. "Indicators keep progress honest: A call to track both the quantity and quality of protected areas." <i>One Earth</i> 4, no. 7 (2021): 901-906.</p> <p>Jantke, K., Kuempel, C. D., McGowan, J., Chauvenet, A. L., &amp; Possingham, H. P. (2019). Metrics for evaluating representation target achievement in protected area networks. <i>Diversity and Distributions</i>, 25(2), 170-175.</p> <p><a href="https://naturaconnect.eu/">https://naturaconnect.eu/</a>  <a href="http://www.mpas-europe.org/">http://www.mpas-europe.org/</a></p>
<b>Pros and cons</b>	<p>The EU and global protected area targets aim to have a representative and ecologically coherent network, it is therefore important to have an indicator that tracks the ecological representativeness of a PA network. The indicator proposed does that.</p> <p>The indicator can be calculated immediately, with existing data, using for instance sufficiency assessments from the European Environment Agency to define the target of protected ranges. The NaturaConnect project and the ETC for Biodiversity and Ecosystems could produce this indicator with existing resources in weeks.</p> <p>The indicator can be disaggregated by geographic units, taxa/broad ecosystem types, type of designation, and allows to explore and track the quality of protection.</p>