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\* The name and email of data providers are listed in the table for each suggested indicator.

**Table 1. Indicators for monitoring elements of the draft goals**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| **Components of the draft Goals****(copy/paste text from** [**CBD/SBSTTA-24/post-2020-monitoring.en.pdf**](https://www.cbd.int/sbstta/sbstta-24/post2020-monitoring-en.pdf)**)** | **Goal Monitoring Elements****(copy/paste text from** [**CBD/SBSTTA-24/post-2020-monitoring.en.pdf**](https://www.cbd.int/sbstta/sbstta-24/post2020-monitoring-en.pdf)**)** | **Indicator name** | **Responsible Institution for the indicator** | **Available today (X) or under active development (Y)** | **Date of availability for indicator in development (Year)** | **Year of last update (e.g. 2019)** | **Time series and frequency of updates (e.g. 1985-2019, annually)** | **Methodology available for national use (Y/N)** | **Global indicator can be disaggregated for national use (Y/N)** | **National data aggregated to form global indicator (Y/N)** | **Used in GBO-4 (Y/N)** | **SDG indicator (Y/N)** | **Indicator used to measure other MEAs or processes (e.g. Ramsar Convention, IPBES, CMS)** | **Comments - key literature** |
| GA1. I*ncreased extent of natural ecosystems (terrestrial, freshwater and marine ecosystems)* | * *Trends in area of forest ecosystems*
* *Trends in area of other terrestrial ecosystems*
* *Trends in area of mangroves*
* *Trends in area of other marine and coastal ecosystems*
* *Trends in wetlands*
 | Extents/areas of 59 standardized ecosystem types globally | iDivCarsten Meyer(carsten.meyer@idiv.de)  | Y |  2020/2021 |  2018 | 1992-2018, annually |  Y |  Y |  N |  N | N  | N  | Remelgado & Meyer (submitted)<https://portal.geobon.org/ebv-detail?id=10> |
| GA1. Increased extent of natural ecosystems (terrestrial, freshwater and marine ecosystems)  | Trends in area of forest ecosystemsTrends in area of other terrestrial ecosystems | Biodiversity Habitat Index (BHI) | CSIRO | X |  | 2015 | 2005-2015, every 5 years | Y | Y | N | N | N | IPBES | <https://doi.org/10.1016/j.envsoft.2020.104806> |
| GA1. I*ncreased extent of natural ecosystems (terrestrial, freshwater and marine ecosystems)* |  Trends in area of other marine and coastal systems | Kelp canopy extent. Spatial coverage primarily US west coast, gradually expanding, eventually to global | SBC-LTER, KEEP, Zooniverse, &Kyle Cavanaugh (kcavanaugh@geog.ucla.edu) | Y  |   | 2020 | 1984-present | Y  |  Not global yet |  N |  N | N  |   | <https://portal.edirepository.org/nis/mapbrowse?scope=knb-lter-sbc&identifier=74&revision=newest> <https://www.zooniverse.org/projects/zooniverse/floating-forests/about/results><https://www.kelpecosystems.org/>https://www.kelpecosystems.org/Bell, T. W. et al. (2020). *Remote Sensing of Environment*, *238*, 110811.Cavanaugh et al. MEPS 403, pp. 13327 2010. |
| GA1. I*ncreased extent of natural ecosystems (terrestrial, freshwater and marine ecosystems)* |  Trends in area of other marine and coastal systems | Seascape Ecosystem Distribution | Oregon State University Maria Kavanaugh (maria.kavanaugh@oregonstate.edu) | X |   |   | 2002-present |   |   |   | N  |   |   | Kavanaugh et al., 2014 (Progress in Oceanography); Kavanaugh et al., 2016 (ICES); Kavanaugh et al., 2018 (Frontiers in Marine Science) |
| GA1. I*ncreased extent of natural ecosystems (terrestrial, freshwater and marine ecosystems)* |   | Live Cover via Vegetation Continuous Fields | NASA | X |  2000 |  2019 | 2000-present annually | Y  | Y-  |  N |   |   |   | https://lpdaac.usgs.gov/products/mod44bv006/ |
| GA1. I*ncreased extent of natural ecosystems (terrestrial, freshwater and marine ecosystems)* |  Trends in area of forest ecosystem | Forest distribution (presence and absence; fragmentation) | Temple University Victor Gutierrez (tug61163@temple.edu) | X |   | 2019 | 2000-2018 |   |   |   | N | N |  | R-package to derive EBV on forest distribution using data from Hansen, et al(2013). High-resolution global maps of 21st-century forest cover change. Science, 342(6160), 850-853. |
| GA1. I*ncreased extent of natural ecosystems (terrestrial, freshwater and marine ecosystems)* |   | Ecosystem live cover | Temple University Victor Gutierrez (tug61163@temple.edu) | X |   |   | 2000-2015 |   |   |   |   |   |   | R-package to derive EBV on tree cover using data from Sexton, Joseph O., et al. "Global, 30-m resolution continuous fields of tree cover: Landsat-based rescaling of MODIS vegetation continuous fields with lidar-based estimates of error." International Journal of Digital Earth6.5 (2013): 427-448. |
| GA2. *Ecosystem Integrity and connectivity (terrestrial, freshwater and marine ecosystems)* | *Trend in the area of degraded terrestrial ecosystems restored**Trends in habitat connectivityTrend in the area of degraded wetlands restoredTrend in the area of converted agricultural lands restored* | *GERI - Global Ecosystem Restoration Index* | *iDiv - German Centre for Integrative Biodiversity Research* (nestor.fernandez@idiv.de) | *Y* |  | *2019* | *Every 5 years* | *Y* | *Y* |  | *N* | *N* |  | UPDATED INFORMATION FOR GERI Indicator.*Torres et al. (2018). Phil. Trans. Roy. Soc. B, 373:20170433**Fernández et al. (2020). Boosting Ecological Restoration for a Wilder Europe. DOI:10.978.39817938/57* |
| *GA2. Ecosystem Integrity and connectivity (terrestrial, freshwater and marine ecosystems)* | *Trends in fragmentation and quality of forest**ecosystems**Trends in**fragmentation and quality of dry and**sub-humid lands, grasslands and other**terrestrial ecosystems**Trends in integrity for**all ecosystems* | *Biodiversity Habitat Index (BHI)* | *CSIRO* | *X* |  | *2015* | *2005-2015, every 5 years* | *Y* | *Y* | *N* | *N* | *N* | *IPBES* | [*https://doi.org/10.1016/j.envsoft.2020.104806*](https://doi.org/10.1016/j.envsoft.2020.104806) |
| *GA2. Ecosystem Integrity and connectivity (terrestrial, freshwater and marine ecosystems)* | *Trends in fragmentation and quality of forest**ecosystems**Trends in**fragmentation and quality of dry and**sub-humid lands, grasslands and other**terrestrial ecosystems**Trends in integrity for**all ecosystems* | *Bioclimatic Ecosystem Resilience Index (BERI)* | *CSIRO* | *X* |  | *2015* | *2005-2015, every 5 years* | *Y* | *Y* | *N* | *N* | *N* |  | [*https://doi.org/10.1016/j.ecolind.2020.106554*](https://doi.org/10.1016/j.ecolind.2020.106554) |
| GA2. *Ecosystem Integrity and connectivity (terrestrial, freshwater and marine ecosystems)* |  Trends in fragmentation and quality of other marine and coastal systems | Phytoplankton functional types and size distribution | Oregon State University Maria Kavanaugh (maria.kavanaugh@oregonstate.edu) | X |   |   |   |   |   |   |   |   |   | Kostadinov et al 2009 (JGR-oceans; doi: 10.1029/2009jc005303) |
| GA2. *Ecosystem Integrity and connectivity (terrestrial, freshwater and marine ecosystems)* |  Trends in fragmentation and quality of inland waters | Algal Blooms | PBL Jan Janse (Jan.Janse@pbl.nl) | X |   |   | (1900-)1970-2015(-2070) |   |   |   |   |   |   | Beusen et al. 2015; Janssen et al., 2019 (https://doi.org/10.1016/j.cosust.2018.09.001) |
| GA2. *Ecosystem Integrity and connectivity (terrestrial, freshwater and marine ecosystems)* |   | Productivity Seasonality | Clark University Florencia Sangermano (fsangermano@clarku.edu) | Y | 2021  |  2019 | 2001-2019 annually |   |   |   |   |   |   | Eastman, Sangermano, Machado-Machado, et al. 2013.Remote Sensing 5(10):4799-4818 (https://doi.org/10.3390/rs5104799); Eastman, Sangermano et al. 2009. International Journal of Remote Sensing 30(10): 2721-2726 (https://doi.org/10.1080/01431160902755338) |
| GA2. *Ecosystem Integrity and connectivity (terrestrial, freshwater and marine ecosystems)* |   | Net primary production | UBC William Cheung (w.cheung@oceans.ubc.ca) | X |   |   | 1981-2100 |   |   |   |   |   |   |   |
| GA2. *Ecosystem Integrity and connectivity (terrestrial, freshwater and marine ecosystems)* |   | Distribution of Ecosystem Functional Types;Ecosystem Functional Diversity [richness, rarity, Shannon Index] | Virginia University Howard Epstein (hee2b@virginia.edu) | X |   |   | 2001-2020 (operational) |   |   |   |   |   |   | Alcaraz-Segura et al. (2013). "Environmental and Human Controls of Ecosystem Functional Diversity in Temperate South America". Remote Sensing. 5: 127–154. (https://doi.org/10.3390/rs5010127)Paruelo et al. (2001). "Current distribution of ecosystem functional types in temperate South America". Ecosystems. 4 (7): 683–698. |
| GA2. *Ecosystem Integrity and connectivity (terrestrial, freshwater and marine ecosystems)* |  Trends in fragmentation and quality of forest ecosystemsTrends in fragmentation and quality of dry and sub-humid lands, grasslands, and other terrestrial ecosystems | Relative Magnitude of Fragmentation (RMF) | University of Amsterdam W. Daniel Kissling (wdkissling@gmail.com) | X |   | 2020  | 1992-2018 |  Y |  Y |  N |  N | N  | N  | Naimi, B. & Kissling, W.D. (2020): Relative magnitude of fragmentation (RMF). EBV Data Portal (<https://portal.geobon.org/ebv-detail?id=4>) Paper on metric (not indicator calculation):Naimi, B. et al. ELSA: Entropy-based local indicator of spatial association.Spat. Stat.29, 66–88 (2019) |
| GA2. *Ecosystem Integrity and connectivity (terrestrial, freshwater and marine ecosystems)* |   | Area of habitat | Sapienza University Carlo Rondinini (carlo.rondinini@uniroma1.it) | X |   |   | current |   |   |   |   |   |   | Rondinini et al. 2011 PTRSB; Brooks et al. 2019 |
| GA5. Maintain Genetic diversity | Trends in the genetic diversity of wild species | Number of populations within species with effective population size (Ne) above 500 versus those with Ne below 500. | GEO BON Genetic Composition Working Group, IUCN Conservation Genetic Specialist Group, GBIKEshoban@mortonarb.org | Y |  | 2021 | annually | partly (Hoban et al 2020) | Y | Y | N | N | N | <https://doi.org/10.1016/j.biocon.2020.108654>, <https://doi.org/10.1126/science.abb2748>  |
| GA5. Maintain Genetic diversity | Trends in the genetic diversity of wild species | The proportion of distinct populations maintained within species | GEO BON Genetic Composition Working Group, IUCN Conservation Genetic Specialist Group, GBIKEshoban@mortonarb.org | Y |  | 2021 | annually | partly (Hoban et al 2020) | Y | Y | N | N | N | <https://doi.org/10.1016/j.biocon.2020.108654>, <https://doi.org/10.1126/science.abb2748>  |
| GA5. Maintain Genetic diversity | Trends in the genetic diversity of wild species | Number of species and populations in which genetic diversity is being monitored using DNA based methods | GEO BON Genetic Composition Working Group, IUCN Conservation Genetic Specialist Group, GBIKEshoban@mortonarb.org | Y |  | 2021 | annually | partly (Hoban et al 2020) | Y | Y | N | N | N | <https://doi.org/10.1016/j.biocon.2020.108654>, <https://doi.org/10.1126/science.abb2748>  |
| Ax |   | Terrestrial Mean species abundance | PBL Aafke Schipper (Aafke.Schipper@pbl.nl) | X |   |   | 1850 - 2050 |   |   |   |   |   |   | Schipper et al., 2019 |
| Ax |   | Species richness / Changes in local terrestrial diversity (PREDICTS) | NHMAndy Purvis (Andy.Purvis@nhm.ac.uk) | X |   |   | 01.1000-12.2015 |   |   |   |   |   |   | Newbold et al. 2015 Nature; Hill et al. 2018 bioRxiv; Kim et al. 2018 GMD |
| Ax |   | Overall organism abundance | NHMAndy Purvis (Andy.Purvis@nhm.ac.uk) | X |   |   | 01.1000-12.2015 |   |   |   |   |   |   | Newbold et al. 2015 Nature; Hill et al. 2018 bioRxiv; Kim et al. 2018 GMD |
| Ax |   | Current global functional diversity of mammals and birds | Sapienza University Carlo Rondinini (carlo.rondinini@uniroma1.it) | Y |   |   | current |   |   |   |   |   |   | Rondinini et al. 2011 PTRSB; Brooks et al. 2019 |
| Ax |   | Current global phylogenetic diversity of mammals and birds | Sapienza University Carlo Rondinini (carlo.rondinini@uniroma1.it) | Y |   |   | current |   |   |   |   |   |   | Rondinini et al. 2011 PTRSB; Brooks et al. 2019 |
| Ax |   | Freshwater mean species abundance | PBL Jan Janse (Jan.Janse@pbl.nl) | X |   |   | (1900-)1970-2015(-2070) |   |   |   |   |   |   | Janse et al, 2015 |
| Ax |   | Marine Biomass density by size class | Memorial University of NewfoundlandTyler Eddy (Tyler.Eddy@mi.mun.ca) | X |   |   | 1950-2005 |   |   |   |   |   |   | Tittensor et al. 2018 GMD; Lotze et al. 2019 PNAS |
| Ax |   | Marine Species richness | UBC William Cheung (w.cheung@oceans.ubc.ca) | X |   |   | 1950 - 2100 |   |   |   |   |   |   |   |
| GB1. *Nature's regulating contributions including climate regulation, disaster prevention and other* |  *Trends in pollination and dispersal of seeds and other propagules* | Pollination | PBL Rob Alkemade(Rob.Alkemade@pbl.nl) | X |   |   | 1970-2050 |   |   |   |   |   |   | Stehfest et al., 2014 |
| GB1. *Nature's regulating contributions including climate regulation, disaster prevention and other* |  *Trends in regulation of climate* | Carbon storage | PBL Rob Alkemade(Rob.Alkemade@pbl.nl) | X |   |   | 1970-2050 |   |   |   |   |   |   | Stehfest et al., 2014 |
| GB1. *Nature's regulating contributions including climate regulation, disaster prevention and other* |  *Trends in regulation of climate* | Carbon storage | Stanford University Becky Chaplin-Kramer (bchaplin@stanford.edu) | X |   |   | 2000-2018 (tbc) |   |   |   |   |   |   |   |
| GB1. *Nature's regulating contributions including climate regulation, disaster prevention and other* |  *Trends in pollination and dispersal of seeds and other propagules* | Pollination | Stanford University Becky Chaplin-Kramer (bchaplin@stanford.edu) | X |   |   | 2015 land cover (but can do annually), crop types are year 2000 |   |   |   |   |   |   | Chaplin-Kramer et al. 2019 Science, https://dx.doi.org/10.1126/science.aaw3372 |
| GB1. *Nature's regulating contributions including climate regulation, disaster prevention and other* |  *Trends in formation, protection and decontamination of soils and sediments* | Sediment retention | Stanford University Becky Chaplin-Kramer (bchaplin@stanford.edu) | X |   |   | 2015 land cover (but can do annually), population (every 5 years) |   |   |   |   |   |   |   |
| GB1. *Nature's regulating contributions including climate regulation, disaster prevention and other* |  *Trends in regulation of hazards and extreme events* | River flood protection | PBL Jan Janse (Jan.Janse@pbl.nl) | X |   |   |   |   |   |   |   |   |   | Ward et al. 2015 |
| GB1. *Nature's regulating contributions including climate regulation, disaster prevention and other* |  *Trends in formation, protection and decontamination of soils and sediments* | Nitrogen retention | Stanford University Becky Chaplin-Kramer (bchaplin@stanford.edu) | X |   |   | 2015 land cover (but can do annually), population (every 5 years) |   |   |   |   |   |   | Chaplin-Kramer et al. 2019 Science, https://dx.doi.org/10.1126/science.aaw3372 |
| GB1. *Nature's regulating contributions including climate regulation, disaster prevention and other* |  *Trends in regulation of hazards and extreme events* | Coastal risk reduction  | Stanford University Becky Chaplin-Kramer (bchaplin@stanford.edu) | X |   |   | 2017 (as far back as UNEP-WCMC maps) |   |   |   |   |   |   | Chaplin-Kramer et al. 2019 Science, https://dx.doi.org/10.1126/science.aaw3372 |
| GB1. *Nature's regulating contributions including climate regulation, disaster prevention and other* |  *Trends in regulation of freshwater quantity, quality, location and timing* | Water quality: N, P | PBL Jan Janse (Jan.Janse@pbl.nl) | X |   |   | 1900-2050 |   |   |   |   |   |   | Beusen et al. 2015; Janssen et al 2019 |
| GB1. *Nature's regulating contributions including climate regulation, disaster prevention and other* |   | Pest control | PBL Rob Alkemade(Rob.Alkemade@pbl.nl) | X |   |   | 1970-2050 |   |   |   |   |   |   | Stehfest et al., 2014 |
| GB1. *Nature's regulating contributions including climate regulation, disaster prevention and other* |  *Trends in formation, protection and decontamination of soils and sediments* | Erosion Control | PBL Rob Alkemade(Rob.Alkemade@pbl.nl) | X |   |   | 1970-2050 |   |   |   |   |   |   | Stehfest et al., 2014 |
| GB2.*Nature's material contributions including food, water and others* |   | Water provision | PBL Jan Janse (Jan.Janse@pbl.nl) | X |   |   | 1900-2050 |   |   |   |   |   |   |   |
| GB2.*Nature's material contributions including food, water and others* |  *Trends in the provision of food and feed from biodiversity* | Maximum catch potential | UBC William Cheung (w.cheung@oceans.ubc.ca) | X |   |   | 1950-2100 |   |   |   |   |   |   | Cheung et al 2016 |
| GB2.*Nature's material contributions including food, water and others* |  *Trends in the provision of food and feed from biodiversity* | Food production (plant based) | PBL Rob Alkemade(Rob.Alkemade@pbl.nl) | X |   |   | 1970-2050 |   |   |   |   |   |   | Stehfest et al., 2014 |