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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)**	**Goal Monitoring Elements** **(copy/paste text from CBD/SBSTTA-24/post-2020-monitoring.en.pdf)**	**Indicator name**	**Responsible Institution for the indicator**	**Available today (X) or under active developmen t (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. *Increased 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	iDiv Carsten 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 ecosystems Trends 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*	*Trend in the area of degraded terrestrial ecosystems restored*	*GERI - Global Ecosystem Restoration Index*	*iDiv - German Centre for Integrative*	*Y*		*2019*	*Every 5 years*	*Y*	*Y*		*N*	*N*		UPDATED INFORMATION FOR GERI Indicator.

(terrestrial, freshwater and marine ecosystems)	*Trends in habitat connectivity* *Trend in the area of degraded wetlands restored* *Trend in the area of converted agricultural lands restored*		*Biodiversity Research* (nestor.fernandez@idiv.de)											*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*
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*
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 ecosystems Trends 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, GBIKE shoban@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	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

			Conservation Genetic Specialist Group, GBIKE shoban@mortonarb.org											
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, GBIKE shoban@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)	NHM Andy 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	NHM Andy 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 Newfoundland Tyler 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*	*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

regulation, disaster prevention and other														
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