Estadísticas de Ecosistemas y Biodiversidad (Temas 1.2.2)

- Misión en apoyo para el desarrollo de estadísticas e indicadores de cambio climático en Lima, Perú

- Taller Nacional de Estadísticas Ambientales y Cambio Climático en Perú 13 al 15 de diciembre 2022

¿Qué son las estadísticas de Ecosistemas y Biodiversidad?

- Los ecosistemas y su biodiversidad son esenciales para la vida: proporcionan servicios de aprovisionamiento, servicios de regulación, servicios de apoyo y servicios culturales

- Ecosistemas naturales: actualmente amenazados por el cambio climático, la contaminación, el cambio de uso de la tierra, la invasión de asentamientos humanos, la sobreexplotación y las especies invasoras (sexta extinción masiva)

- El último informe de IPBES (Global Assessment Report on Biodiversity and Ecosystem Services 2019) "concluye que alrededor de 1 millón de especies de animales y plantas ahora están amenazadas de extinción, más que nunca antes en la historia humana"

- El 75% de la tierra y alrededor del 66% del ambiente marino han sido alterados significativamente por acciones humanas (menos severos o evitados en áreas mantenidas o manejadas por Pueblos Indígenas y Comunidades Locales... al menos una cuarta parte del área terrestre, 35% de que está formalmente protegido)

- Más de un tercio de la superficie terrestre del mundo y casi el 75% de los recursos de agua dulce ahora se dedican a la producción agrícola o ganadera..

- La degradación de la tierra ha reducido el 23% productividad de la superficie terrestre mundial

- En 2015, el 33 % de las poblaciones de peces marinos se extrajeron a niveles insostenibles; el 60 % se pescaron al máximo de forma sostenible, y solo el 7 % se cosechó a niveles inferiores a los de la pesca sostenible.

- Las áreas urbanas se han más que duplicado desde 1992.

¿Por qué son necesarias las estadísticas de Ecosistemas y Biodiversidad?

- Contexto político: las Metas de Aichi para la Biodiversidad del CDB y la Agenda 2030 para el Desarrollo Sostenible (ODS 15)

- Usos: subsistencia, apoyo al turismo

- Brechas: brechas de datos, las estadísticas de biodiversidad no son comunes en los sistemas nacionales de estadísticas

- Necesidades: integrar y agilizar los procesos de producción de estadísticas oficiales

ODS en biodiversidad y ecosistemas

Indicator 6.6.1 Change in the extent of water-related ecosystems over time

Indicator 14.1.1 Index of coastal eutrophication and floating plastic debris density
Indicator 14.3.1 Average marine acidity (pH) measured at agreed suite of representative sampling stations
Indicator 14.5.1 Coverage of protected areas in relation to marine areas

Indicator 15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
Indicator 15.3.1 Proportion of land that is degraded over total land area
Indicator 15.4.1 Coverage by protected areas of important sites for mountain biodiversity
Indicator 15.5.1 Red List Index
Indicator 15.9.1 Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011–2020 (Tier III)

Biodiversidad y ecosistemas en el Conjunto Global de Estadísticas e Indicadores de Cambio Climático

Number	Indicator			Statistic	Tier	Themes	Method	FDES Reference	SDG Reference	Sendai Framework Reference	UN-ECE Reference	[possible] National data sources
62	Proportion of populations maintained within species				2	Biodiversity						
				Species population	2	Biodiversity	FDES	FDES 1.2.2.c.4 Species population				
63	Red List index				2	Biodiversity	SDG		15.5.1 Red List Index			
				Number of red list species	2	Biodiversity						
64	Species habitat index				2	Biodiversity						
				Area of ecosystems	2	Biodiversity	SEEA-EA; FD	FDES 1.2.2.a.1 Area of ecosystems				
				Known flora and fauna species	2	Biodiversity	FDES	FDES 1.2.2.c.1 Known flora and fauna species				
65	Rate of invasive alien species spread				2	Biodiversity	SDG		[Related to] 15.8.1 Proportion of countries adopting re			
				Invasive alien flora and fauna species	2	Biodiversity	FDES	FDES 1.2.2.c.3 Invasive alien flora and fauna species				
66	Reduction in the extent of natural and semi-natural ecosystems				2	Biodiversity	SEEA-EA; UN				[Similar to] UN-ECE 3: Losses of	
				Area of ecosystems	2	Biodiversity	SEEA-EA; FD	FDES 1.2.2.a.1 Area of ecosystems				
				Expansion of built-up areas	2	Biodiversity	SEEA-CF; FD	[Similar to] FDES 5.1.5.a Extent of urban sprawl				
				Expansion of agriculture areas	2	Biodiversity	SEEA-CF; FD	[Similar to] FDES 2.3.1.a Area under land use categories				
69	Ecosystem integrity index				3	Biodiversity	SEEA-EA					
70	Ecosystem connectiv	88	Vulnerable or fragile ecosystems		3	Biodiversity	SEEA-EA					
71	Proportion of land th			Red list of ecosystems	2	Biodiversity						
		89	Vulnerable ecosystem services		3	Biodiversity						
				Crop provisioning services	2	Biodiversity	SEEA-EA					
				Livestock provisioning services	2	Biodiversity	SEEA-EA					
				Water supply	2	Biodiversity	SEEA-EA					
73	Increase in area affec	90	Ecosystem carbon stocks		2	Biodiversity	SEEA-EA					
				Carbon stock in soil	3	Biodiversity	SEEA-EA; UN				UN-ECE 20: Carbon stock in soil	
87	Vulnerable species			Carbon stocks in biomass	2	Biodiversity	IPCC; SEEA-E	[Similar to] FDES 1.2.3.b.2 Carbon storage in living forest biomass				
				Forest biomass: Total	2	Biodiversity	FDES	FDES 1.2.3.b.1 Forest biomass: total				
		143	Nature-based adaptation		3	Ecosystem ser	SEEA-EA					
				Area (length) of storm mitigation ecosystem services	2	Ecosystem ser	SEEA-EA					
				Area of coastal protection services	2	Ecosystem ser	SEEA-EA					
				Area of river flood mitigation services	2	Ecosystem ser	SEEA-EA					
		144	Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem t		1	Biodiversity	SDG		15.1.2 Proportion of important sites for terrestrial and			
				Key biodiversity areas	2	Biodiversity						
				Protected terrestrial and marine area	1	Biodiversity	FDES	FDES 1.2.2.d.1 Protected terrestrial and marine area				
		146	Proportion of degraded area of ecosystems that has been restored		3	Biodiversity	SEEA-EA					
				Area of restored ecosystems	3	Biodiversity	SEEA-EA					
		150	Biodiversity information monitoring index		3	Biodiversity						
				Number of species monitored	2	Biodiversity						

Biodiversidad y ecosistemas en SCAE Cuentas de ecosistemas

Table 5.1. Total biophysical supply per ecosystem type 2005

Resource \ Biome	Freshwater ecosystems	Grassland	Indian Ocean Coastal Belt	Savanna	Forests	Estuaries	Cultivated	Urban green space	Total
Wood products (m³)	3 523	695 638	235 125	787 294	267 047	169			1 988 796
Non-wood products (tonnes)	834	46 494	11 489	34 952	2 911	38			96 718
Livestock production (LSU)	1 716	684 698	52 162	289 663	2 010	340			1 030 589
Crop production (tonnes)							43 305 781		43 305 781
Experiential value (R millions)	14	237	179	218	55	24	85	885	1 698
Carbon storage (Tg C)	5	512	61	348	33	0	279		1 237
Pollination (R millions)	0	12	6	31	2	0			51
Flow regulation (million m³)	78	3 315	421	2 198	634	36			6 682
Flood attenuation (R millions)								31	31
Sediment retention (million tonnes)	2	45	6	27	18	2			99
Water quality amelioration (tonnes P)	-	3 829	525	5 394	97	6			9 850

Source: Turpie et al. 2021

Biodiversidad y ecosistemas en el MDEA: tablas BSES

Topic 1.2.3: Biodiversity	a. Flora - terrestrial, freshwater and marine (also in 1.2.2.c)			▪ By class (e.g., mammals, fishes, birds, reptiles, etc.) ▪ By status category (e.g., extinct, extinct in the wild, threatened, near threatened, least concern) ▪ National ▪ Sub-national	▪ Millennium Ecosystem Assessment ▪ CBD ▪ IUCN Red List of Threatened Species ▪ UNECE Standard Statistical Classification of Flora, Fauna and Biotopes (1996) ▪ FAO FISHSTAT (Species population and number of invasive alien species)
		1. **Number of known species by status category**	Number		
		2. Species population	Number		
		3. Number of endemic species	Number		
		4. Number of invasive alien species	Number		
		5. *Habitat fragmentation*	Area, Description, Location, Number		
	b. Fauna - terrestrial, freshwater and marine (also in 1.2.2.c)				
		1. **Number of known species by status category**	Number		
		2. Species population	Number		
		3. Number of endemic species	Number		
		4. Number of invasive alien species	Number		
		5. *Habitat fragmentation*	Area, Description, Location, Number		
	c. Protected areas			▪ By location ▪ By management category (c) ▪ By ecosystem ▪ National	▪ IUCN Protected Area Management Categories ▪ UNSD: Millennium Development Goal (MDG) Indicator 7.6 Metadata
		1. **Protected terrestrial (including inland water) and marine area** (also in 1.2.4.a)	Area		
	d. Protected species			▪ By relevant species ▪ By ecosystem ▪ By status category	▪ IUCN Red List of Threatened Species ▪ UNSD: MDG Indicator 7.7 Metadata
		1. Number of terrestrial, freshwater and marine protected flora	Number		
		2. Number of terrestrial, freshwater and marine protected fauna species	Number		
(a) (b)					
(c) IUCN reporting categories: Strict natural reserves; Wilderness areas; National parks, Natural monuments and features; Habitat (species) protected areas; Protected landscapes; and Protected areas with sustainable use of natural resources					

United Nations Statistics Division

¿Cómo son las estadísticas de los ecosistemas?

Plantilla de tabla básica

		1.2.2 Ecosystems	2000	2005	2010	2015
a.		General ecosystem characteristics, extent and pattern				
	1	**Area of ecosystems**	Area	Area	Area	Area
		Mangroves	Area	Area	Area	Area
		…	Area	Area	Area	Area
		…	Area	Area	Area	Area
		…	Area	Area	Area	Area
		…	Area	Area	Area	Area
	2	*Proximity of relevant ecosystem to urban areas and*	Distance	Distance	Distance	Distance
b.		Ecosystems' chemical and physical characteristics				
	1	*Nutrients*				
	2	*Carbon*				
	3	*Pollutants*	Concentration	Concentration	Concentration	Concentration
c.		Biological components of ecosystems (also in 1.2.3.a-b)				
	1	Flora and fauna species	Number	Number	Number	Number
	2	Number of endemic species	Number	Number	Number	Number
	3	**Number of known species by status category**	Number	Number	Number	Number

¿Qué son los Ecosistemas y la Biodiversidad?

- 'Un ecosistema se define como un complejo dinámico de comunidades de plantas, animales y microorganismos y su entorno no vivo que interactúan como una unidad funcional'

- 'La biodiversidad es "la variabilidad entre los organismos vivos de todas las fuentes, incluidos, entre otros, los ecosistemas terrestres, marinos y otros ecosistemas acuáticos y los complejos ecológicos de los que forman parte; esto incluye la diversidad dentro de las especies, entre las especies y de los ecosistemas'

Defininiciones

- Area of ecosystem (FDES 1.2.2.a.1): The area covered by an individual ecosystem; also termed 'Ecosystem extent'

- Proximity of ecosystem to urban areas and cropland (FDES 1.2.2.a.2): The distance from the urban or cropland ecosystems to other types of ecosystem within a geographical area

- Nutrients (FDES 1.2.2.b.1): Amount of nutrient found in soil, freshwater and marine water

- Carbon (FDES 1.2.2.b.2): Amount of soil organic carbon stock. Soil organic carbon is the amount of organic carbon stored in the soil

- Pollutants (FDES 1.2.2.b.3): Amount of pollutants found in soil, freshwater and marine water

- Known flora and fauna species (FDES 1.2.2.c.1): Number of known flora and fauna species present in the specific ecosystem

- Endemic flora and fauna species (FDES 1.2.2.c.2): Population of a species that is native to the region, and which area of distribution is restricted to a small place

- Invasive alien flora and fauna species (FDES 1.2.2.c.3): A subset of introduced species or non-native species that are rapidly expanding outside of their native range

- Species population (FDES 1.2.2.c.4): Number of individuals from the same wild species that share the same habitat

- Habitat fragmentation (FDES 1.2.2.c.5): Section the process and result of breaking an area of contiguous habitat into distinct patches

- Protected terrestrial and marine area (FDES 1.2.2.d.1): An area of land and/or sea especially dedicated to the protection of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means

- Protected flora and fauna species (FDES 1.2.2.d.2): Number of protected flora and fauna species designated in the country.

Clasificaciones

- Clasificaciones más relevantes: Clasificación de áreas protegidas de la UICN

| Category	Description
Ia: Strict Nature Reserve	Category Ia are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring.
Ib: Wilderness Area	Category Ib protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.
II: National Park	Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.
III: Natural Monument or Feature	Category III protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.
IV: Habitat/Species Management Area	Category IV protected areas aim to protect particular species or habitats and management reflects this priority. Many category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.
V: Protected Landscape/Seascape	A protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.
VI: Protected area with sustainable use of natural resources	Category VI protected areas conserve ecosystems and habitats, together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.

Clasificaciones

■ Clasificaciones más relevantes: Clasificación de áreas protegidas de la UICN
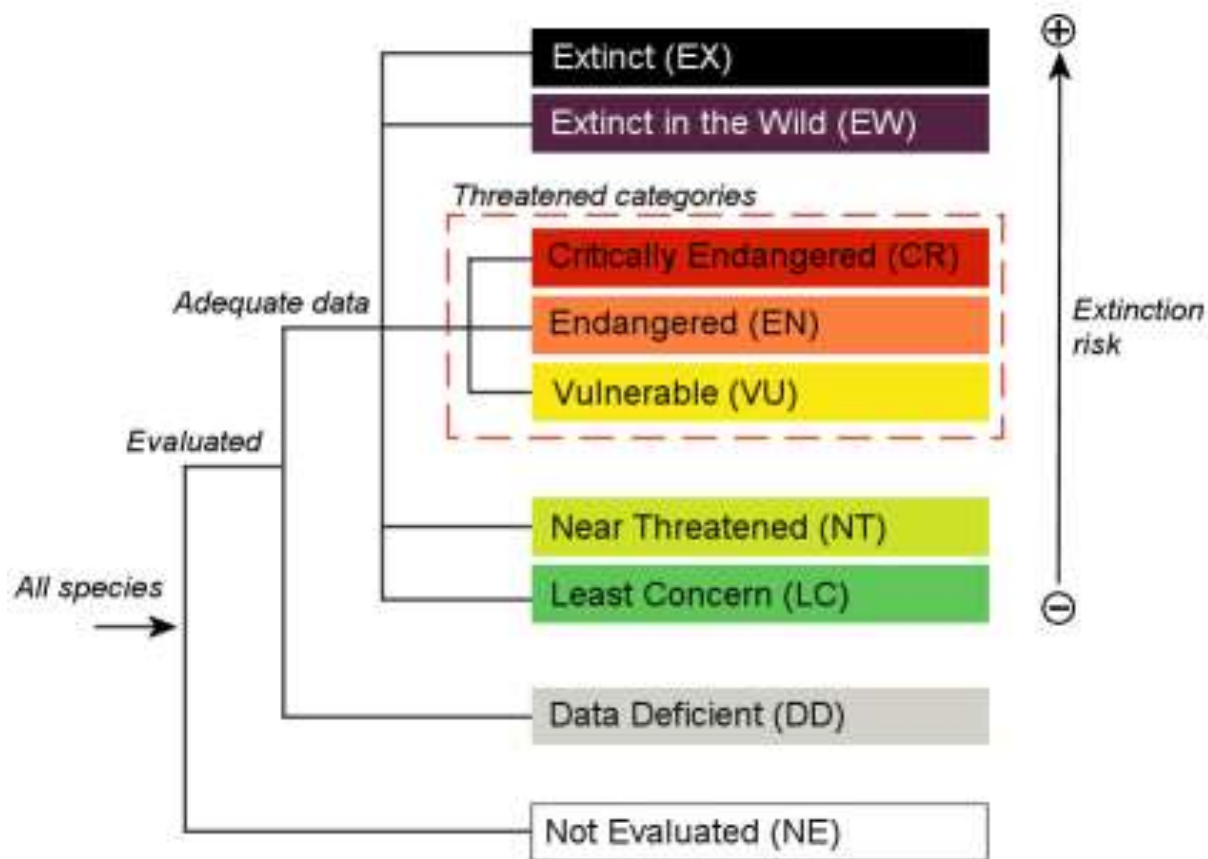
Datos de entrada sobre especies y ecosistemas

1. Producto Nacional de Datos Espaciales, plataforma GIS: ArcGIS, qGIS, R, Python

2. Recuentos de especies, con tamaño de población y distribución.

3. Instrumentos de observación terrestre: ESA Sentinels, NASA MODIS, Landsat
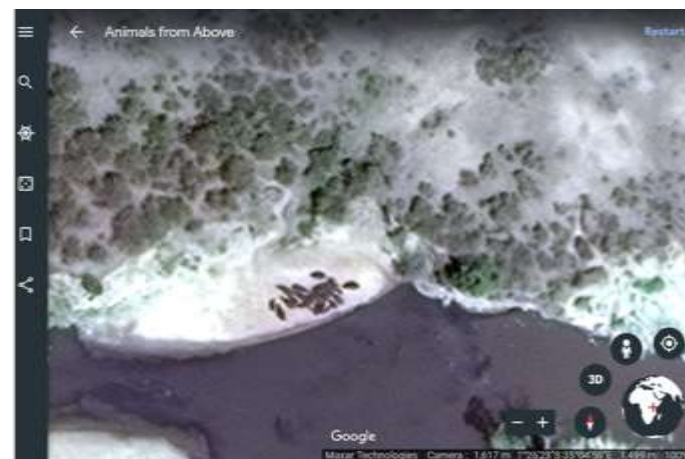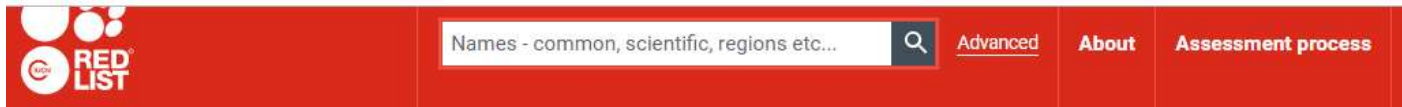

Unidades administrativas, límites: límite del país, costa e islas

Otros datos espaciales útiles: deforestación, áreas protegidas, infraestructura

Bases de datos internacionales

The IUCN Red List of Threatened Species™ contains global assessments for 105,732 species. More than 75% of these (81,323 species) have spatial data.

- IUCN data: https://www.iucnredlist.org/resources/spatial-data-download

■ WWF Ecorregiones Terrestres

worldwildlife.org/biomes/tropical-and-subtropical-grasslands-savannas-and-shrublands

OUR WORK   **SPECIES**   **PLACES**   ABOUT US   HOW TO HELP   Search

TERRESTRIAL ECOREGIONS

Tropical and subtropical grasslands, savannas and shrublands

Large expanses of land in the tropics do not receive enough rainfall to support extensive tree cover. The Tropical and Subtropical Grasslands, Savannas, and Shrublands are characterized by rainfall levels between 90-150 centimetres per year.

However, there may be great variability in soil moisture throughout the year. Grasses dominate the species composition of these ecoregions, although scattered trees may be common. Large mammals that have evolved to take advantage of the ample forage typify the biodiversity associated with these habitats.
These large mammal faunas are richest in African savannas and grasslands. The most intact assemblages currently occur in East African Acacia savannas and Zambezian savannas comprised of mosaics of miombo, mopane, and other habitats. Large-scale migration of tropical savanna herbivores, such as wildebeest (*Connochaetes taurinus*) and zebra (*Equus*

SPECIES

African Elephant

More Species

Un conjunto oficial de estadísticas para múltiples usos

- Las fuentes de datos y los estudios sobre biodiversidad son numerosos

- Tema rezagado en las estadísticas oficiales

- El objetivo clave es acordar un conjunto de estadísticas de especies y ecosistemas (o hábitats) seleccionados que puedan servir para múltiples propósitos políticos.

- La coherencia con las fuentes internacionales facilitará la presentación de informes

Referencias y recursos de información
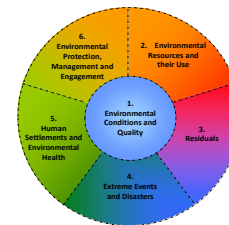
- CBD Development of a monitoring framework for the post-2020 global biodiversity framework, https://www.cbd.int/nbsap/monitoring.shtml

- IPBES. 2019. Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science- Policy Platform on Biodiversity and Ecosystem Services. E. S. Brondizio, J. Settele, S. Díaz, and H. T. Ngo (editors). IPBES Secretariat, Bonn, Germany.

- SEEA e-learning resources | System of Environmental Economic Accounting

- ARIES for SEEA | System of Environmental Economic Accounting

- IUCN Red List of Ecosystems, https://iucnrle.org/

Thank you for your attention!

For more information please contact the Environment Statistics Section at the UN Statistics Division:

E-mail: envstats@un.org
website: http://unstats.un.org/unsd/ENVIRONMENT/