

A diverse collage of marine organisms including various species of crabs, starfish, sea anemones, nudibranchs, mollusks, and other invertebrates, arranged around the central text boxes.

Cosa sappiamo—e cosa non sappiamo— sulla biodiversita' del pianeta

Giovanni Strona

*European Commission
Joint Research Centre
Nature Conservation and Observations
Knowledge Centre for Biodiversity*

giovanni.strona@ec.europa.eu



☀ Buon pomeriggio, Giovanni

Come posso aiutarti oggi?

+

Sonnet 4.6 Estesa ▾ ||||

</> Codice

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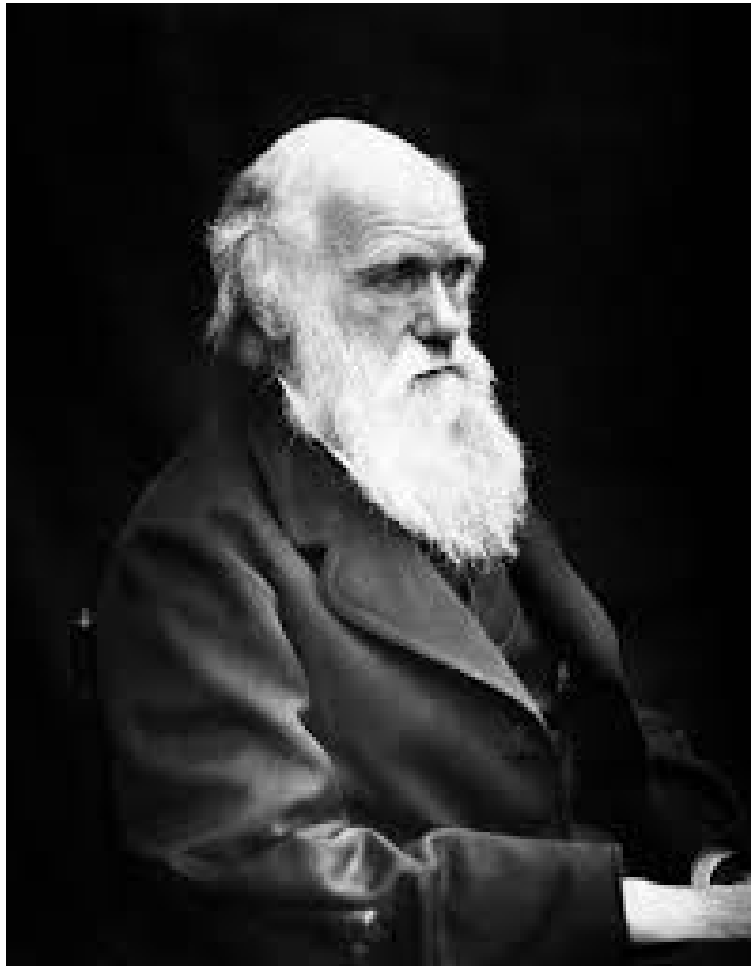
☕ Vita quotidiana

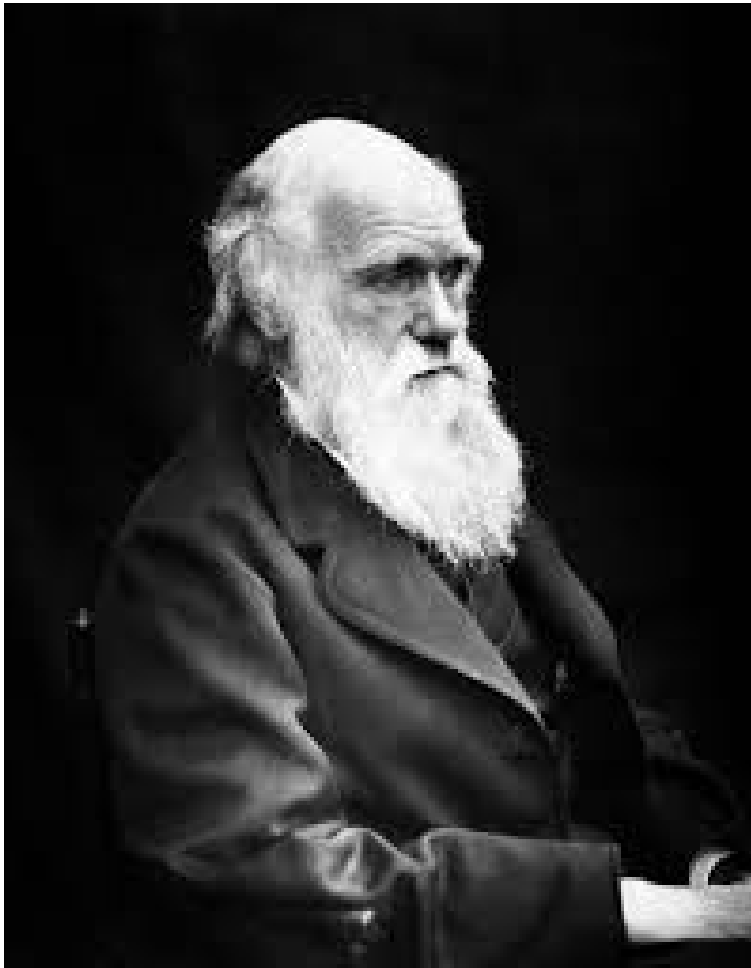












Charles Darwin,
20 Specie



Carlo Linneo,
10,000 Specie



ISSUE: VOL. 5776 NO. 1: 16 MAR. 2026

TYPE: MONOGRAPH

PUBLISHED: 2026-03-16

DOI: [10.11646/ZOOTAXA.5776.1.1](https://doi.org/10.11646/ZOOTAXA.5776.1.1)

PAGE RANGE: 1-775

ABSTRACT VIEWS: 669

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Massive radiation in *Ammopelmatus* Jerusalem crickets (Orthoptera: Stenopelmatoidea: Stenopelmatinae): Phylogenomics, revision, and biology of 105 new species from the United States and Mexico

DAVID B. WEISSMAN[†] , DANIEL W. WEISSMAN[†] , AMY G. VANDERGAST[†] , NORIHIRO UESHIMA[†] , ELŻBIETA WARCHAŁOWSKA-ŚLIWA[†] , HOJUN SONG[†] 

ORTHOPTERA • STENOPELMATUS • COLOR POLYMORPHISM • ADULT REPRODUCTIVE DORMANCY • BAJA CALIFORNIA • CALIFORNIA FLORISTIC PROVINCE • CRYPTIC SPECIES • DRUMMING • INCOMPLETE LINKAGE SORTING • INTEGRATIVE TAXONOMY • KARYOTYPES • MALE-COMPLICIT POSTCOITAL SEXUAL CANNIBALISM • PARASITOID • OR-TE ANALYSIS



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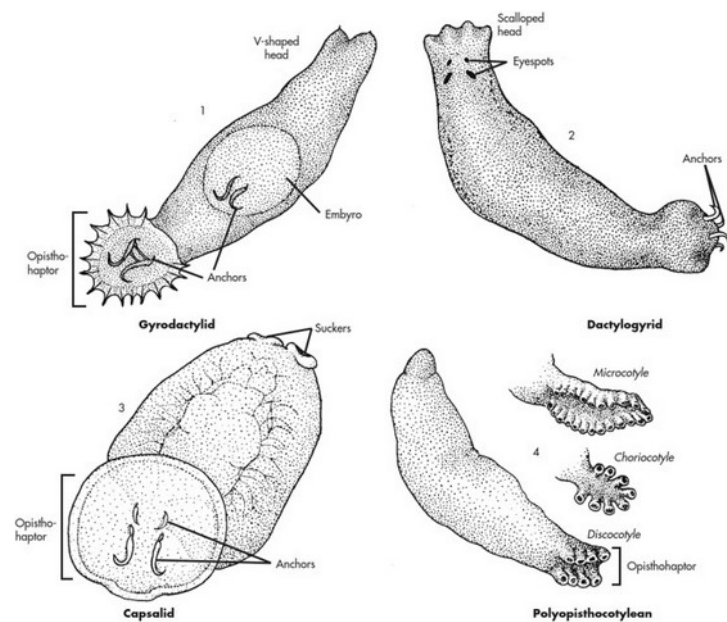
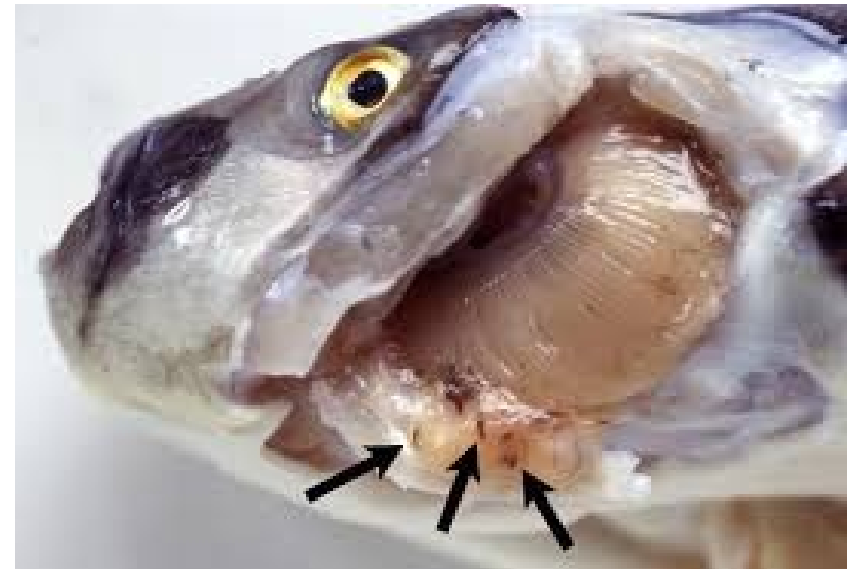
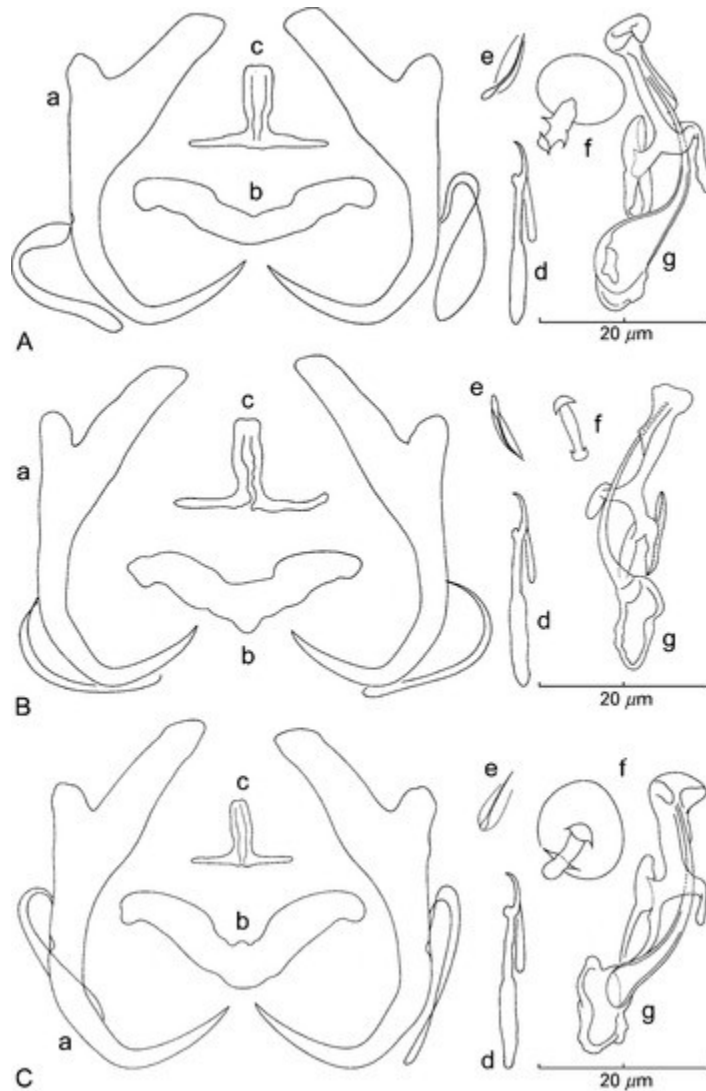
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Massive radiation in *Ammopelmatus* Jerusalem (Orthoptera: Stenopelmatoidea: Stenopelmatinae): Phylogenomics, revision, and biology of 105 new species from the United States and Mexico

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Tassonomia di parassiti monogenei



Correspondence | Published: 01 July 2015

Species naming

Taxonomic glory easier on eBay?

[Giovanni Strona](#) 

[Nature](#) **523**, 35 (2015) | [Cite this article](#)

2810 Accesses | **1** Citations | **24** Altmetric | [Metrics](#)

One of zoology's highest honours may now, it seems, be purchased on eBay (see go.nature.com/ziq152). For a few thousand dollars, you are offered the privilege of naming a 'small, rare' species. A species name will last forever, says the vendor – even as taxonomists themselves struggle to survive.



Credit: Mark Gurney

Taxonomists invest months confirming that a specimen is new to science. They sift through obscure literature – often in a different language and lamentably illustrated. More months are spent on the species' description, which must be accurate enough to enable future taxonomists (should they survive the sixth mass extinction) to confirm that their 'new' species is different. Eventually, they publish their work in a systematics journal with an impact factor typically below 2 – even when the species is a previously undescribed mammal (the olinguito *Bassaricyon neblina*, pictured; see K. M. Helgen *et al. ZooKeys* **324**, 1–83; 2013).

Catalogue of Life



DATA ▾ HOW TO ▾ TOOLS ▾ BUILDING COL ▾ ABOUT ▾

The most complete authoritative list of the world's species - maintained by hundreds of global taxonomists - [Learn more](#)



CURRENT VERSION

Issued: 2026-02-13

DOI: [10.48580/dgwnl](https://doi.org/10.48580/dgwnl)



DOCUMENTATION

The Catalogue of Life includes information with different gradients of quality. The base release is verified by taxonomic experts specifically for COL. The eXtended Release includes extra data from other sources (indicated with the  icon). Read about the [different releases](#) COL provides.

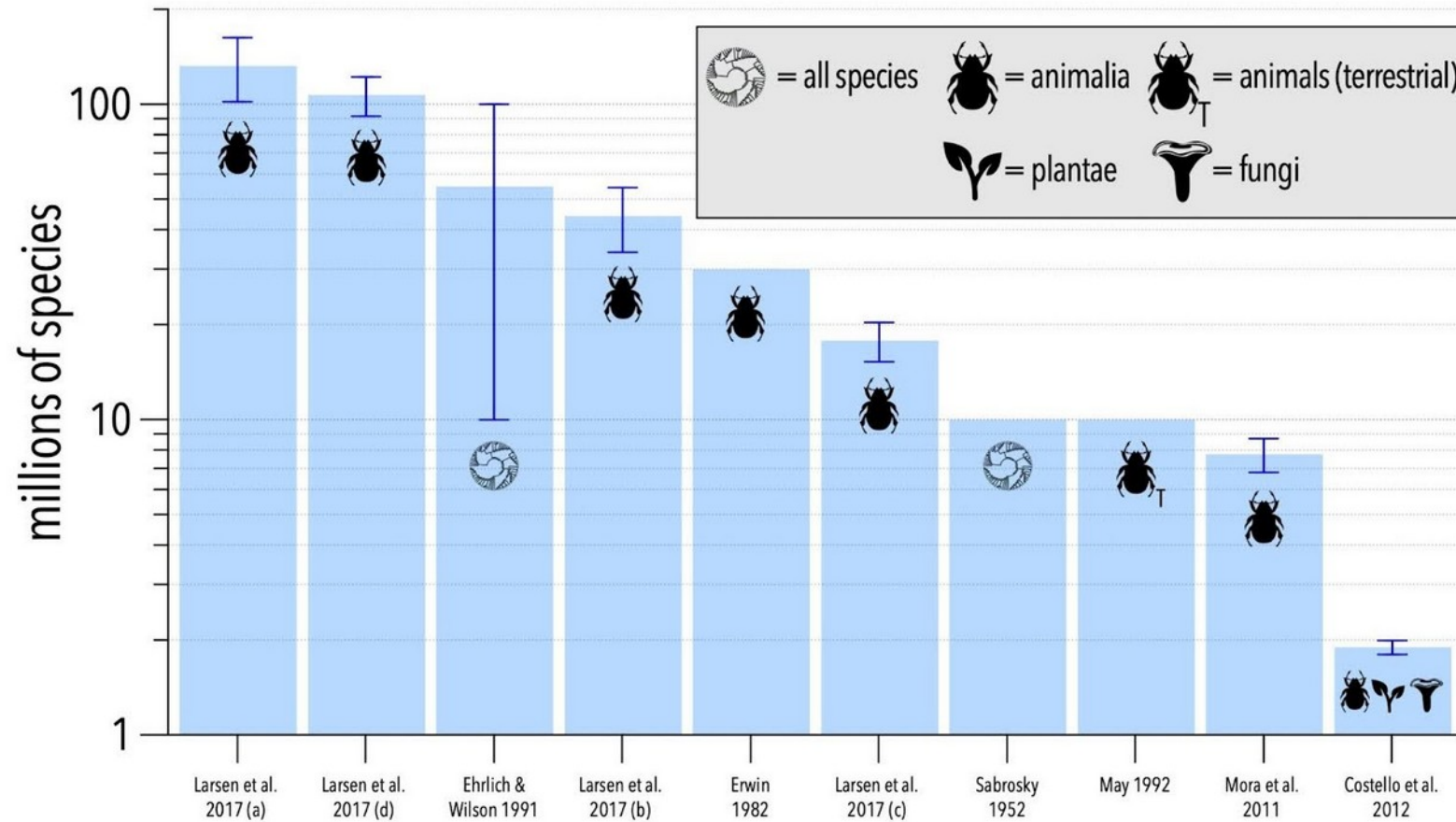
RECENT NEWS

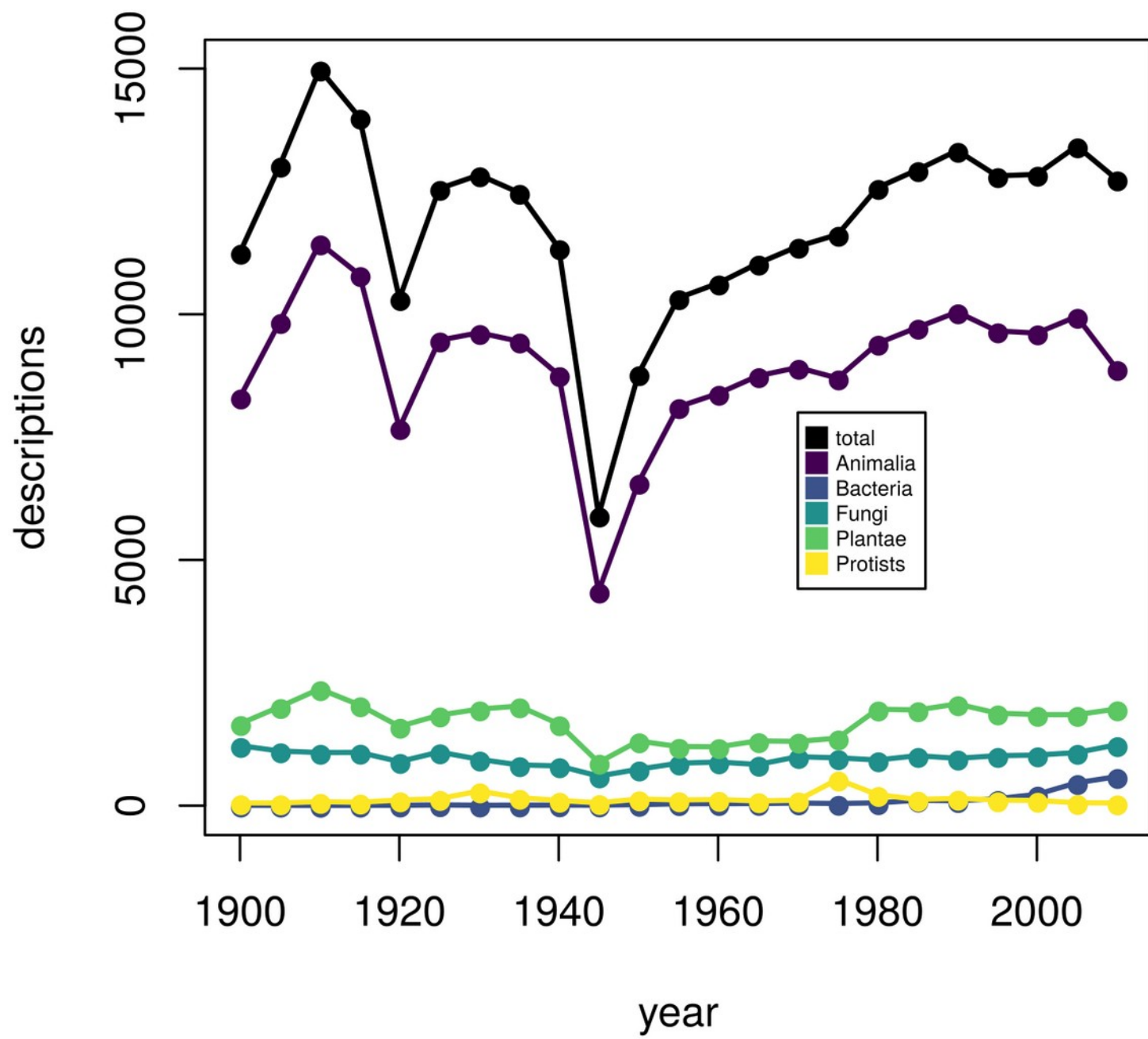
- A more comprehensive Catalogue of Life now Live!
- Catalogue of Life 2025
- Biodiversity Heritage Library's Call for Support & integration with COL
- COL DOIs & ORCIDs
- Meet the Libroscope
- The first data manager of the Catalogue of Life
- Annual Release 2024
- GBIF to serve as administrative host for Species 2000 Secretariat

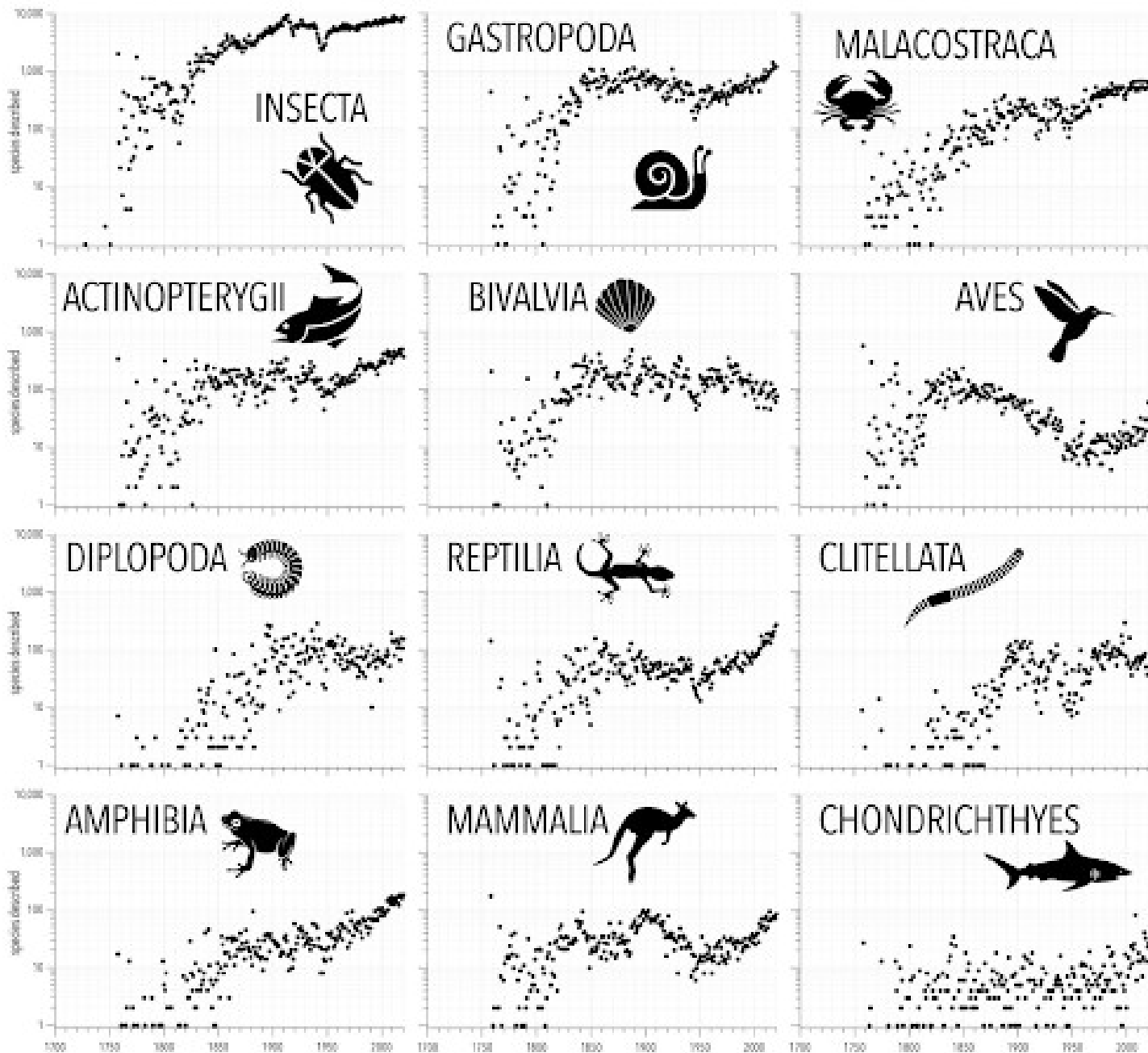
☐ Source ☐ Extant only ☒ Placeholder

- ▶ domain: [Archaea Woese et al., 2024](#) • 765 spp.
- ▶ domain: [Bacteria Woese et al., 2024](#) • 26,009 spp.
- ▼ domain: [Eukaryota \(Chatton, 1925\) Whittaker & Margulis, 1978](#) • 2,468,094 spp.
 - ▶ kingdom: [Animalia](#) • 1,810,294 spp.
 - ▶ kingdom: [Chromista](#) • 72,355 spp.
 - ▶ kingdom: [Fungi](#) • 172,052 spp.
 - ▶ kingdom: [Plantae](#) • 409,115 spp.
 - ▶ kingdom: [Protozoa](#) • 4,275 spp.
 - ▶ kingdom: Not assigned
- ▶ domain: Not assigned

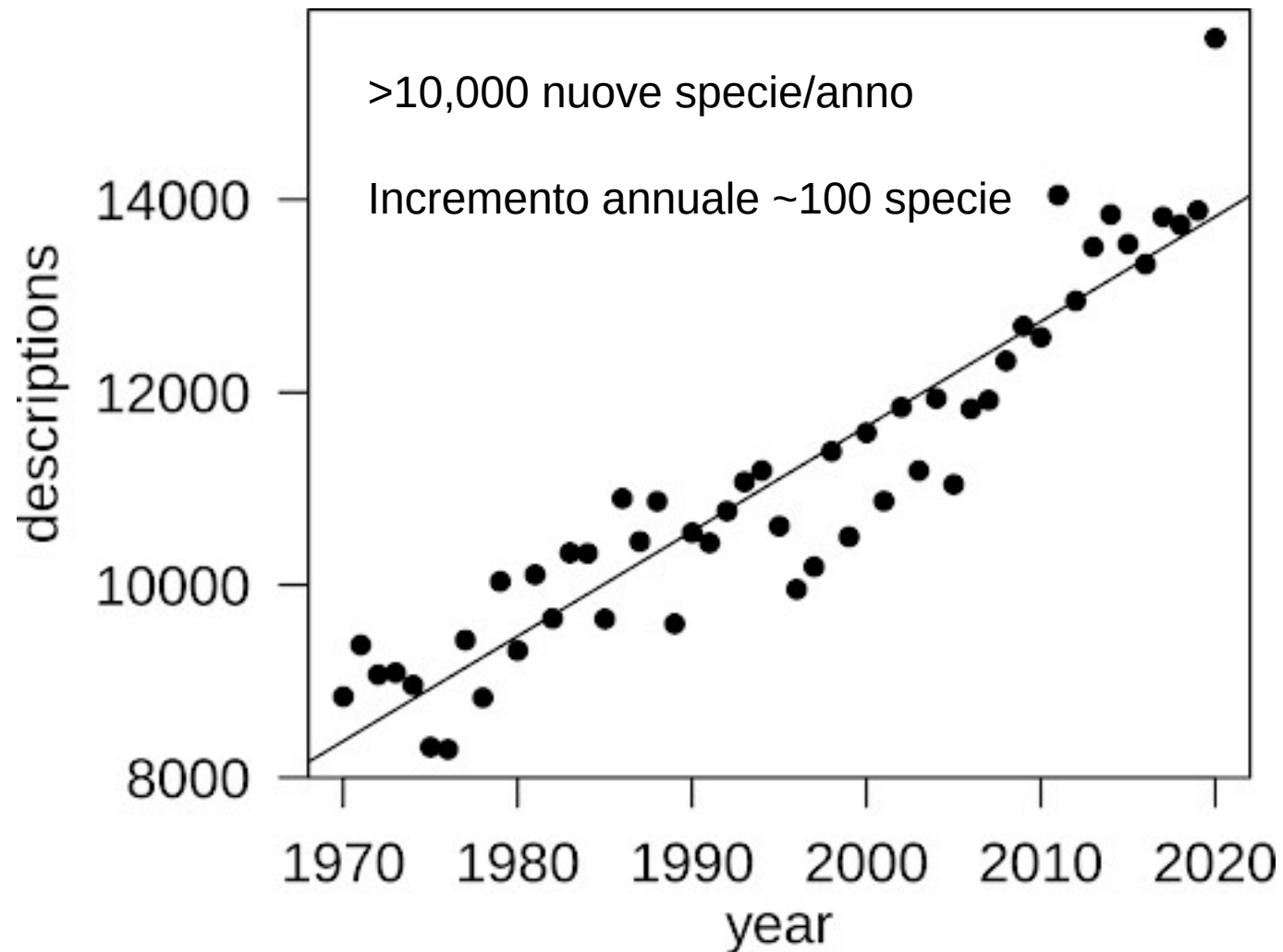
Stime di biodiversita' globale

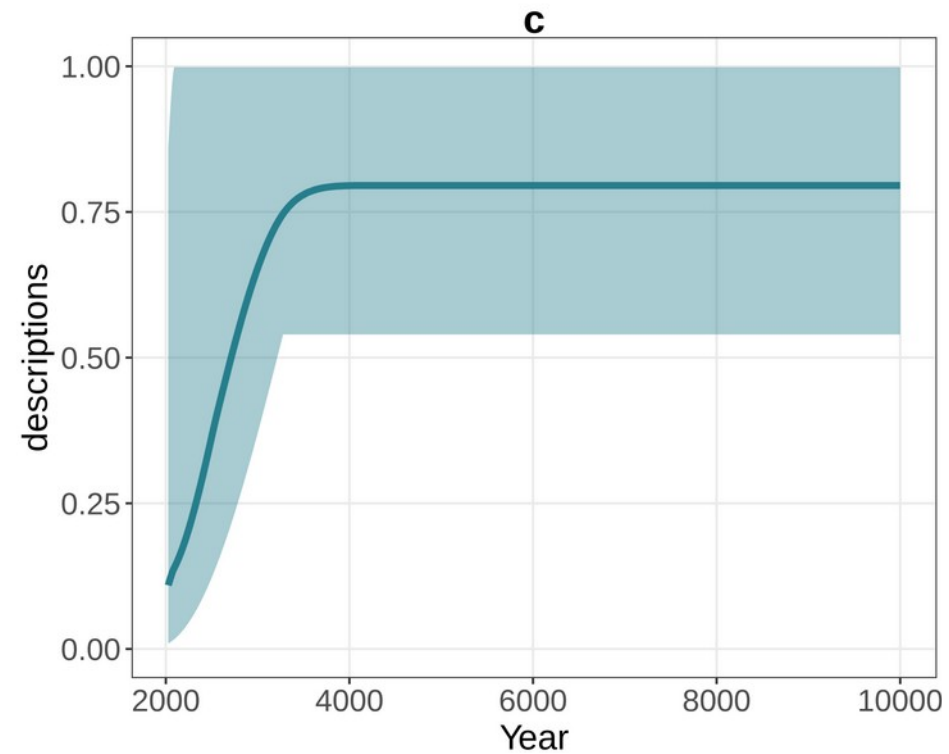
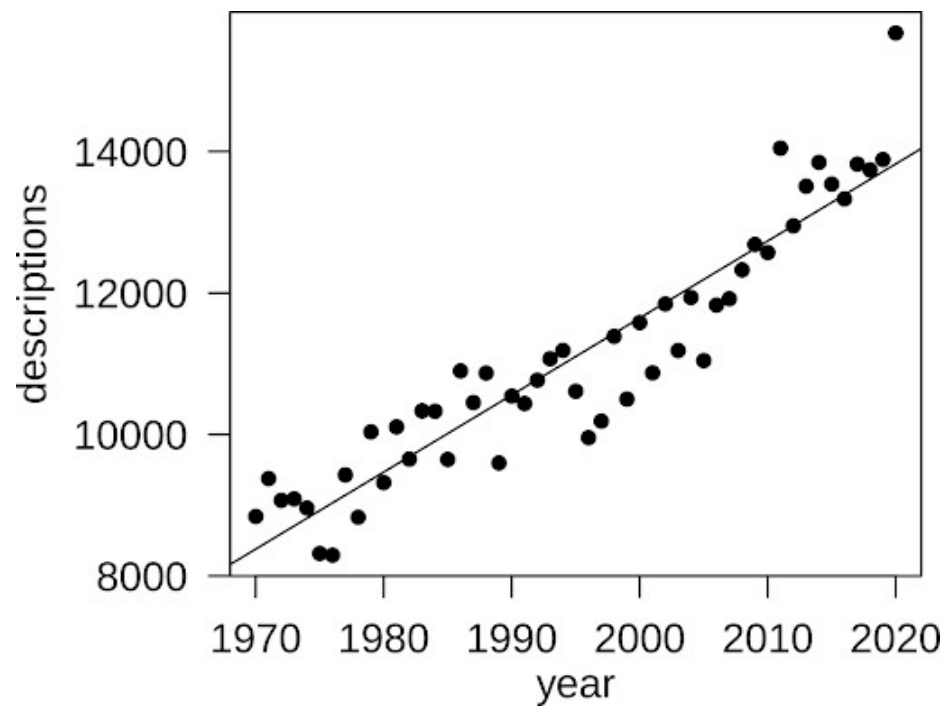
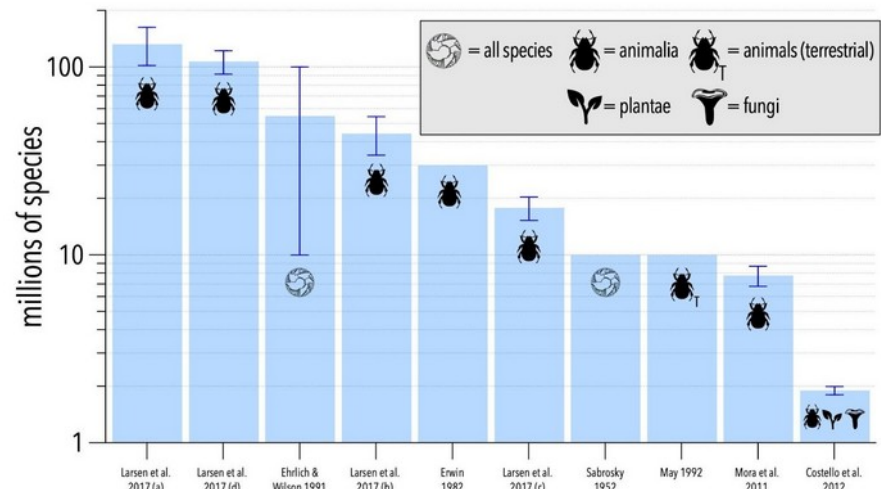


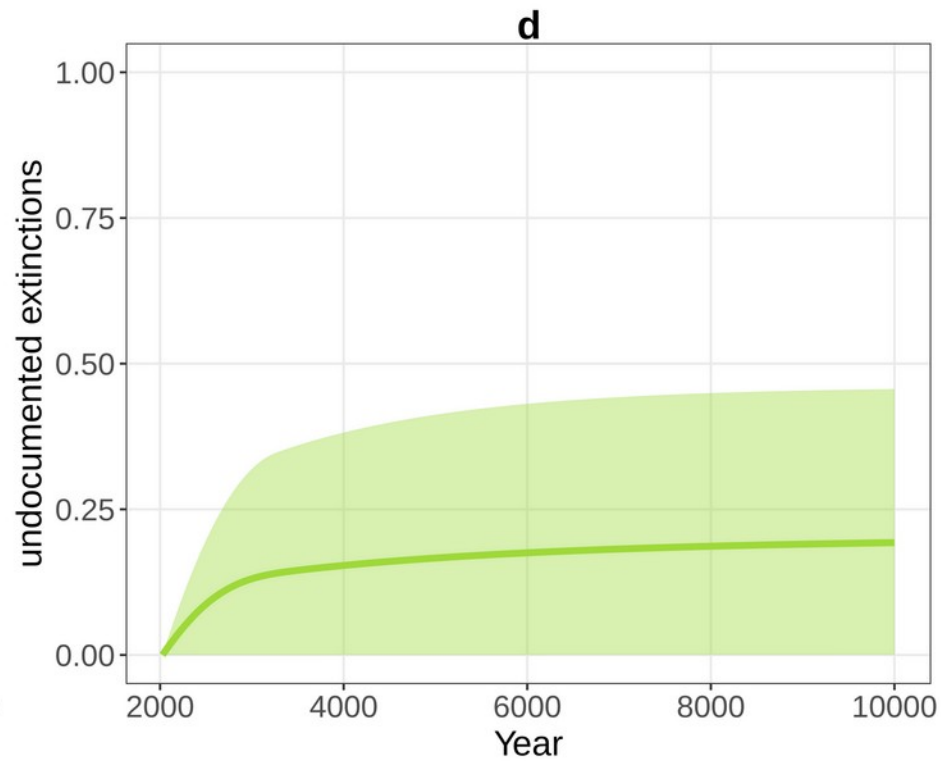
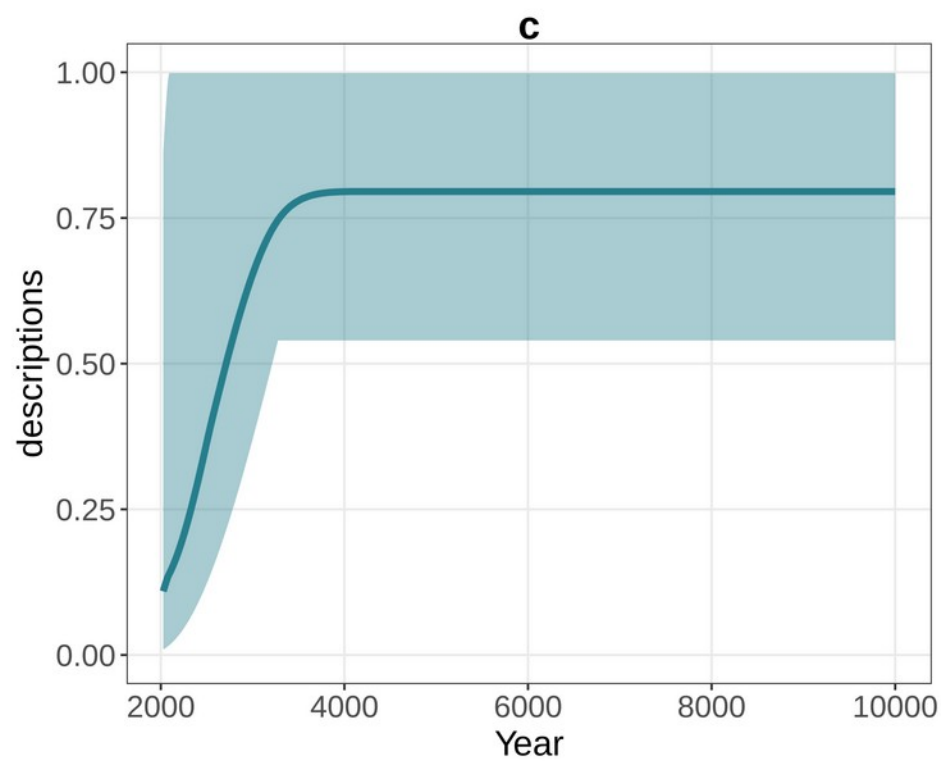
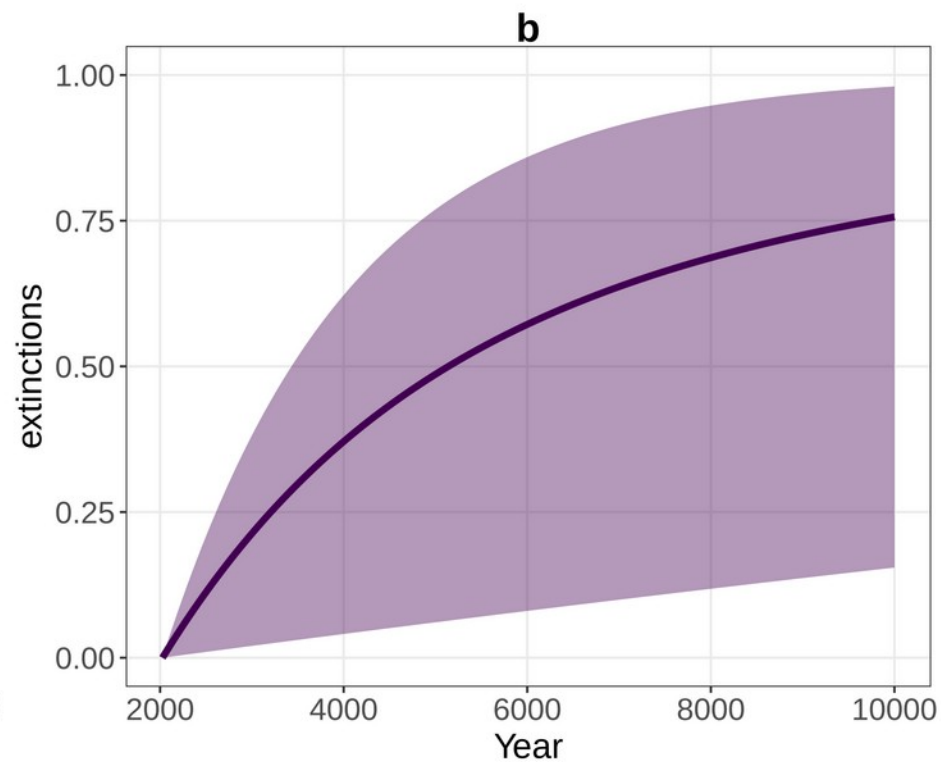
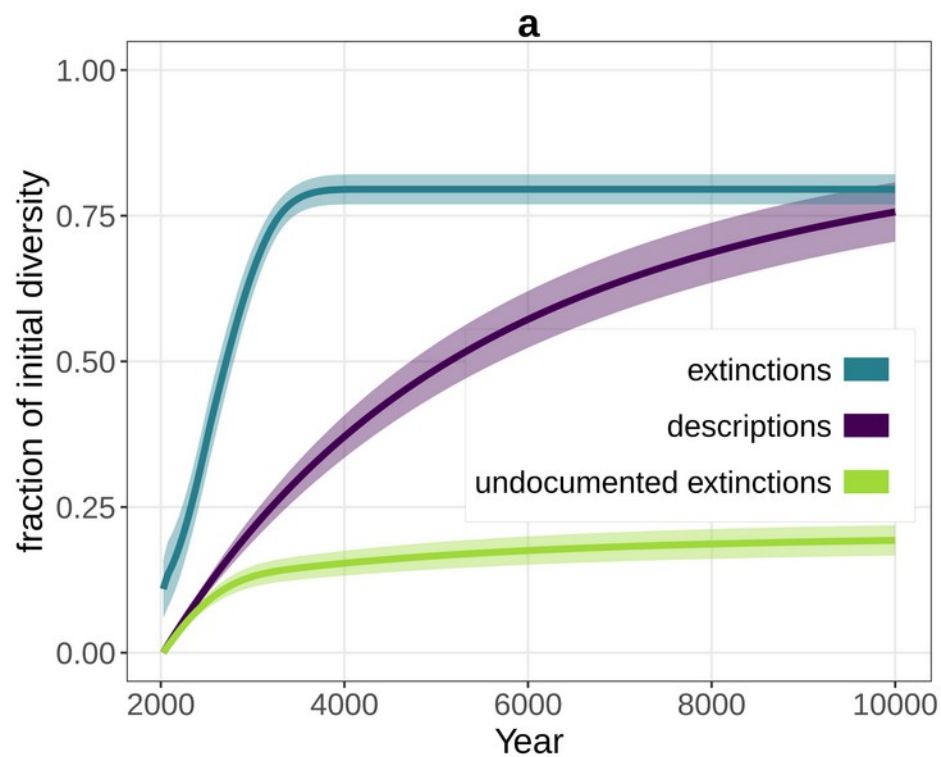




Trend recente di descrizione di nuove specie animali

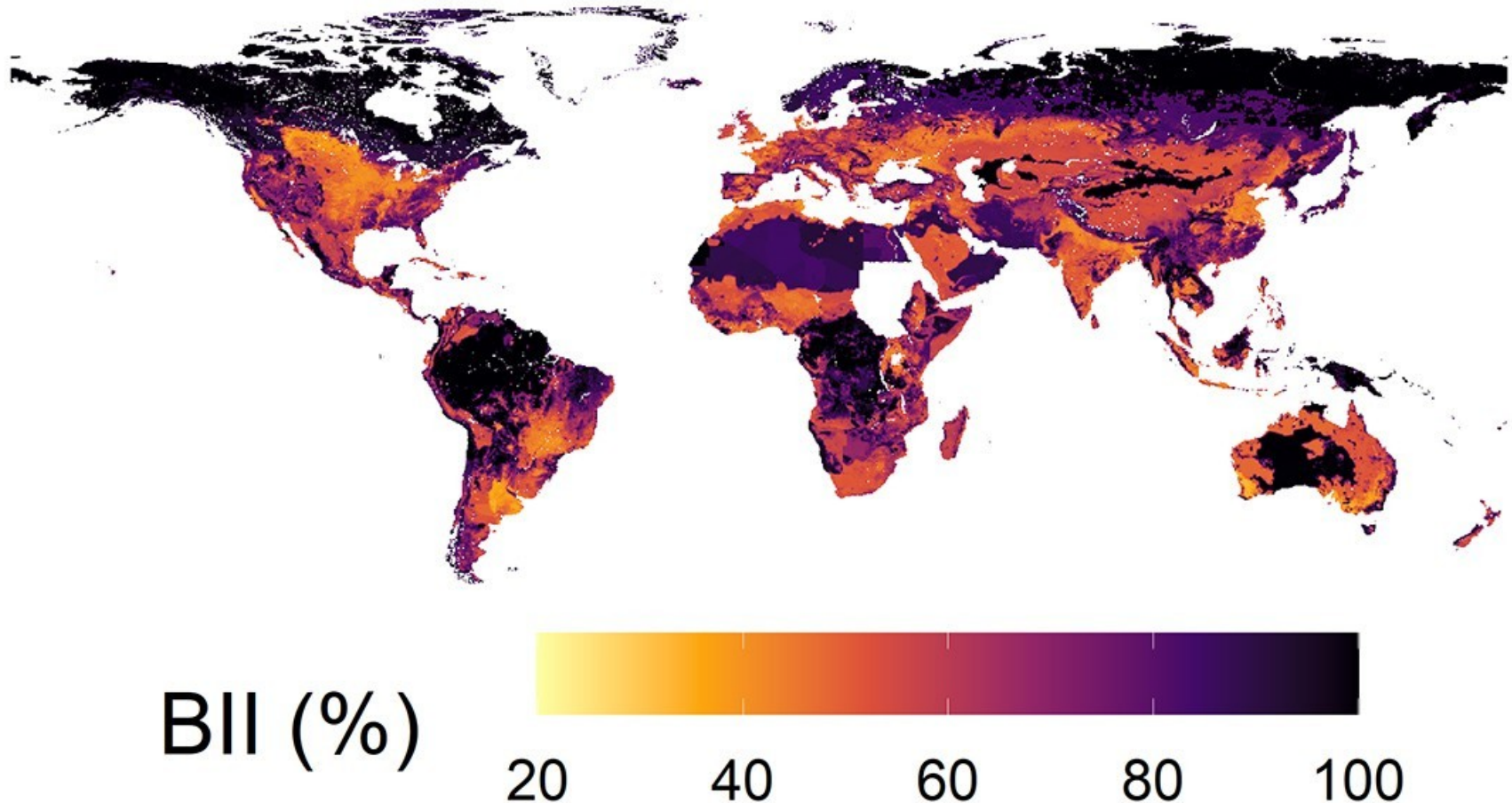






Perdita di diversita' locale vs Estinzioni globali

<https://www.nhm.ac.uk/our-science/services/data/biodiversity-intactness-index.html>



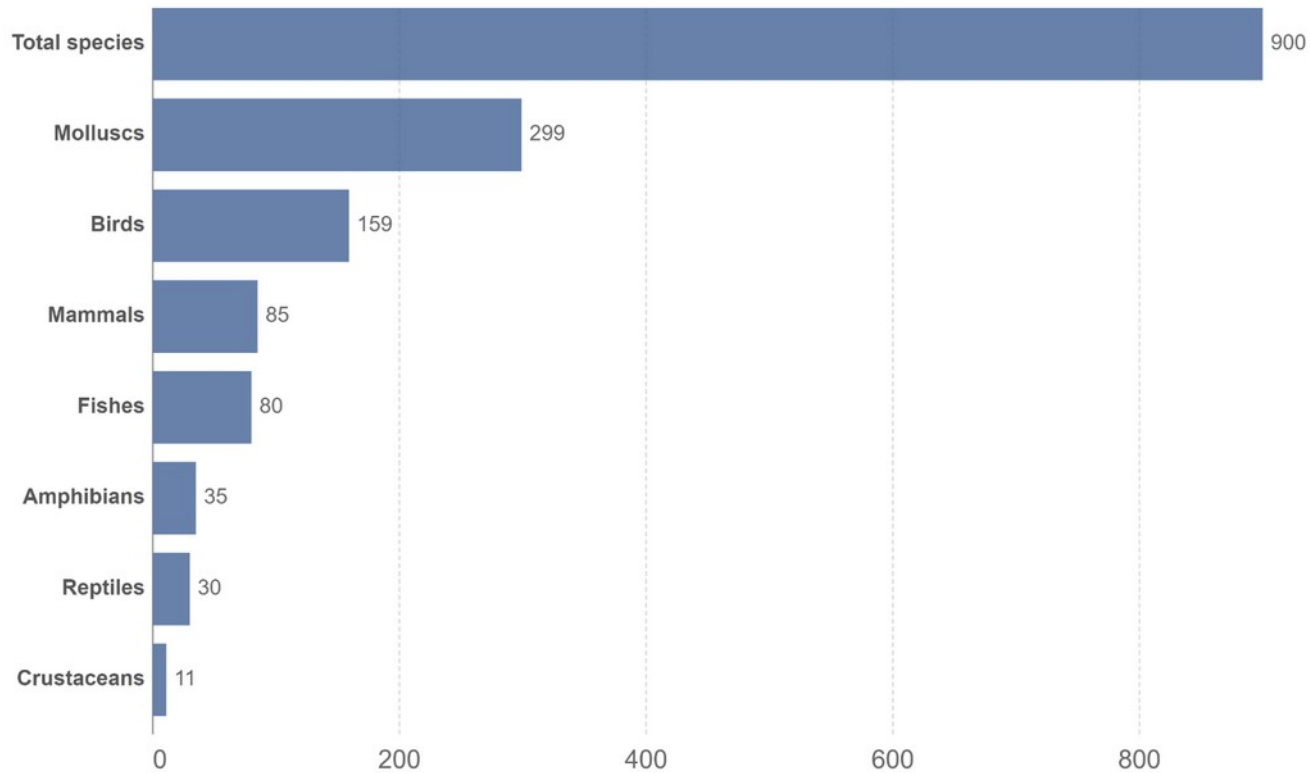
Biodiversity Intactness Index (BII) stima quanta biodiversita' e' rimasta in media in una regione

Perdita di diversita' locale vs Estinzioni globali



Number of species that have gone extinct since 1500, 2020

Our World
in Data

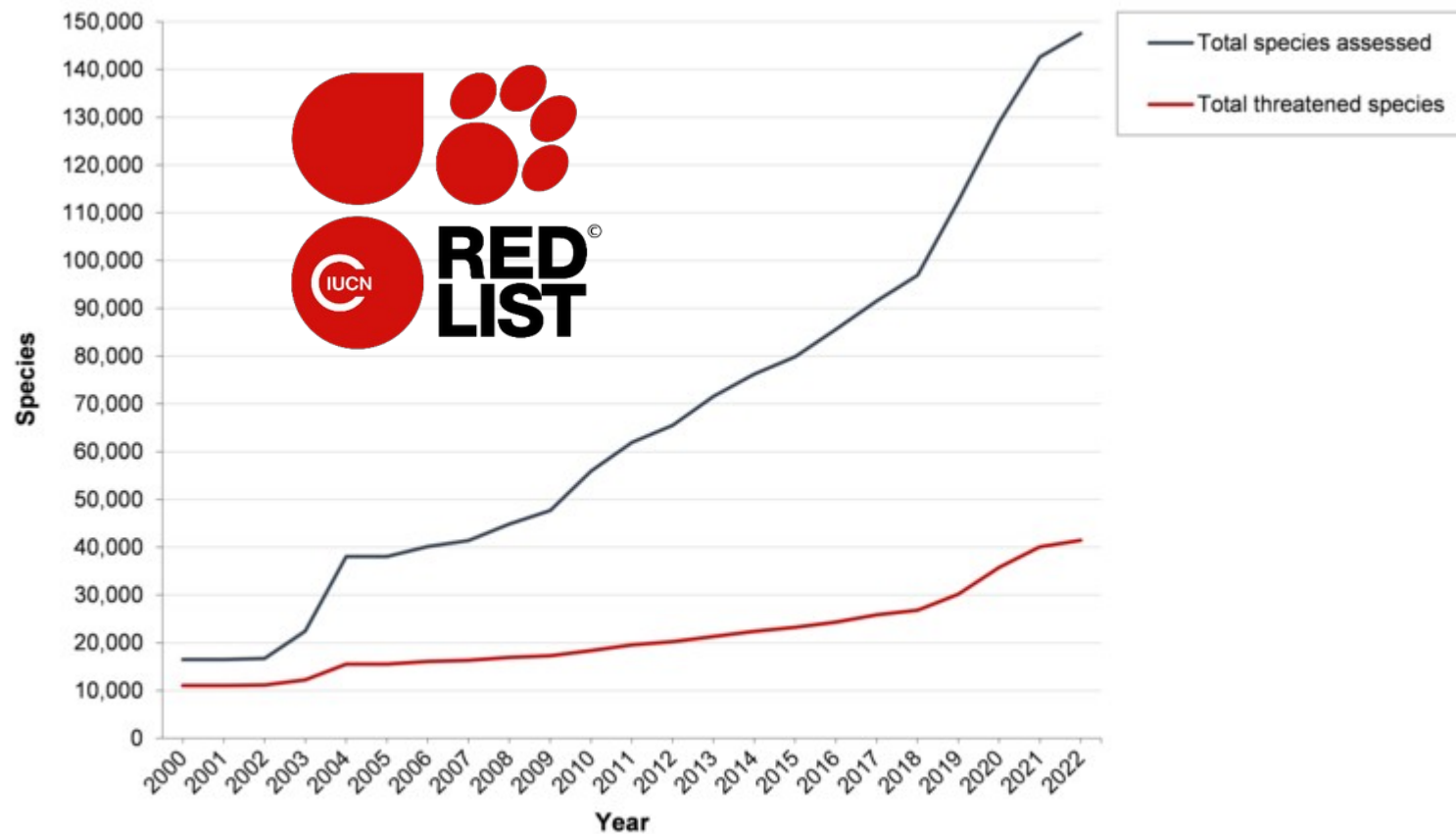


Source: IUCN Red List

OurWorldInData.org/biodiversity • CC BY

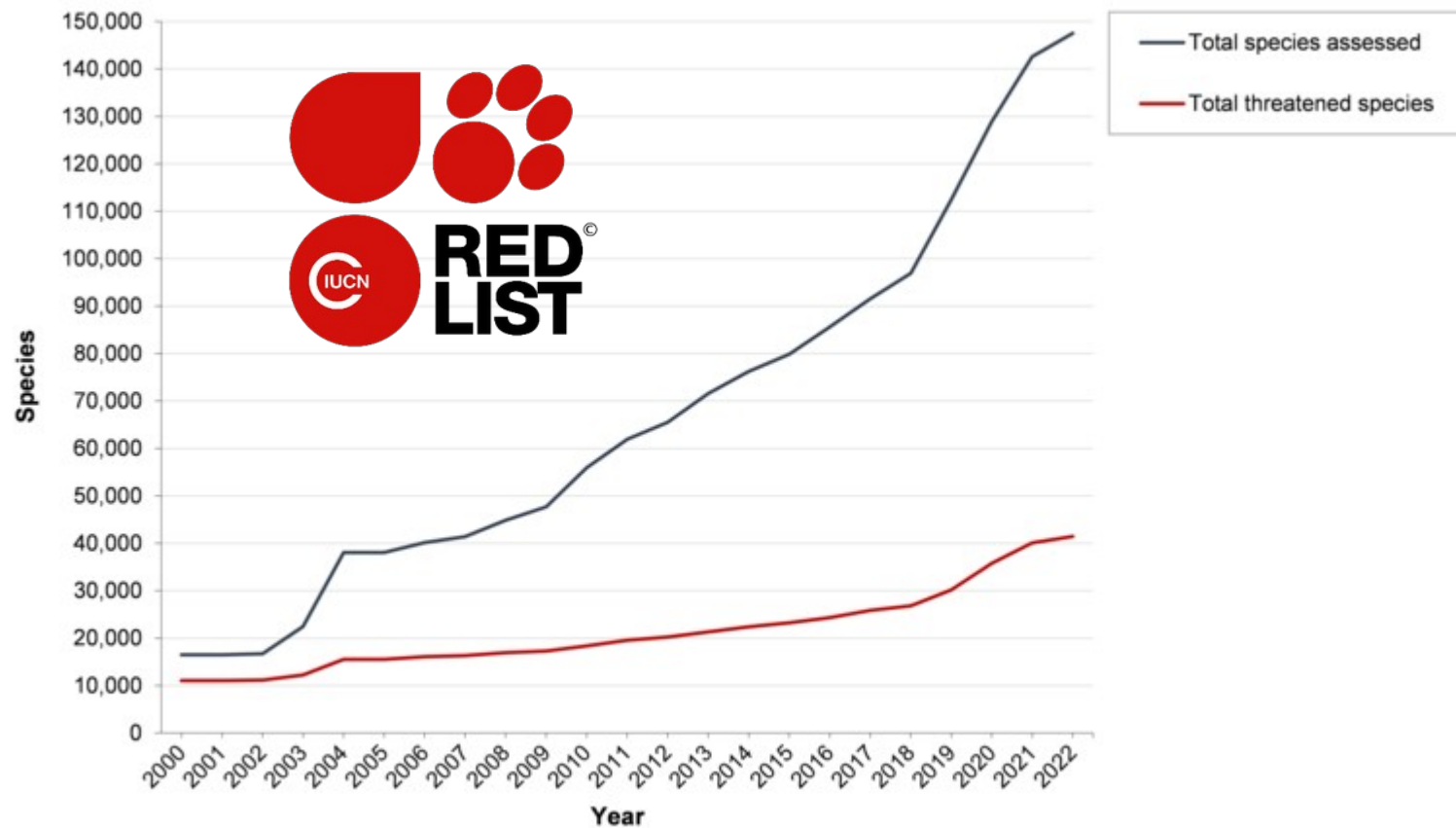
<https://www.iucnredlist.org/statistics> (Retrieved 25th March 2021)

7.5% della diversita' nota

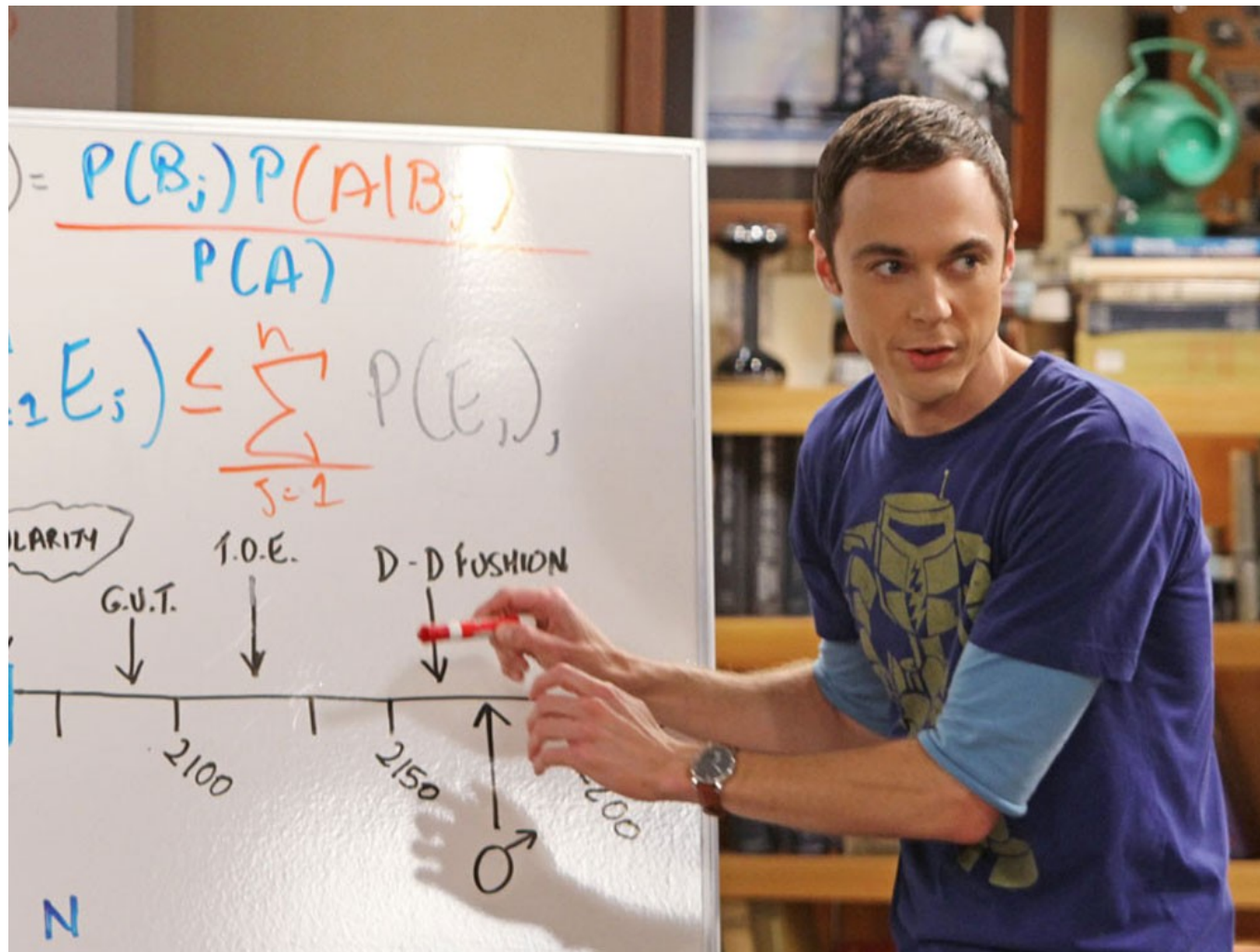


(circa 2M di specie descritte)

<2% della diversita' totale stimata



Diversita' eucariotica stimata $\approx$ 8M (Mora et al. 2011)



Ceballos, G., Ehrlich, P. R., Barnosky, A. D., García, A., Pringle, R. M., & Palmer, T. M. (2015). Accelerated modern human-induced species losses: Entering the sixth mass extinction. *Science advances*, 1(5), e1400253.

Calcolo per i vertebrati:

**477 estinzioni documentate dal 1900 al 2015 su 39,223
specie valutate**

Tasso di estinzione osservato = $477 / (39,223 \times 115) = 0.00011$

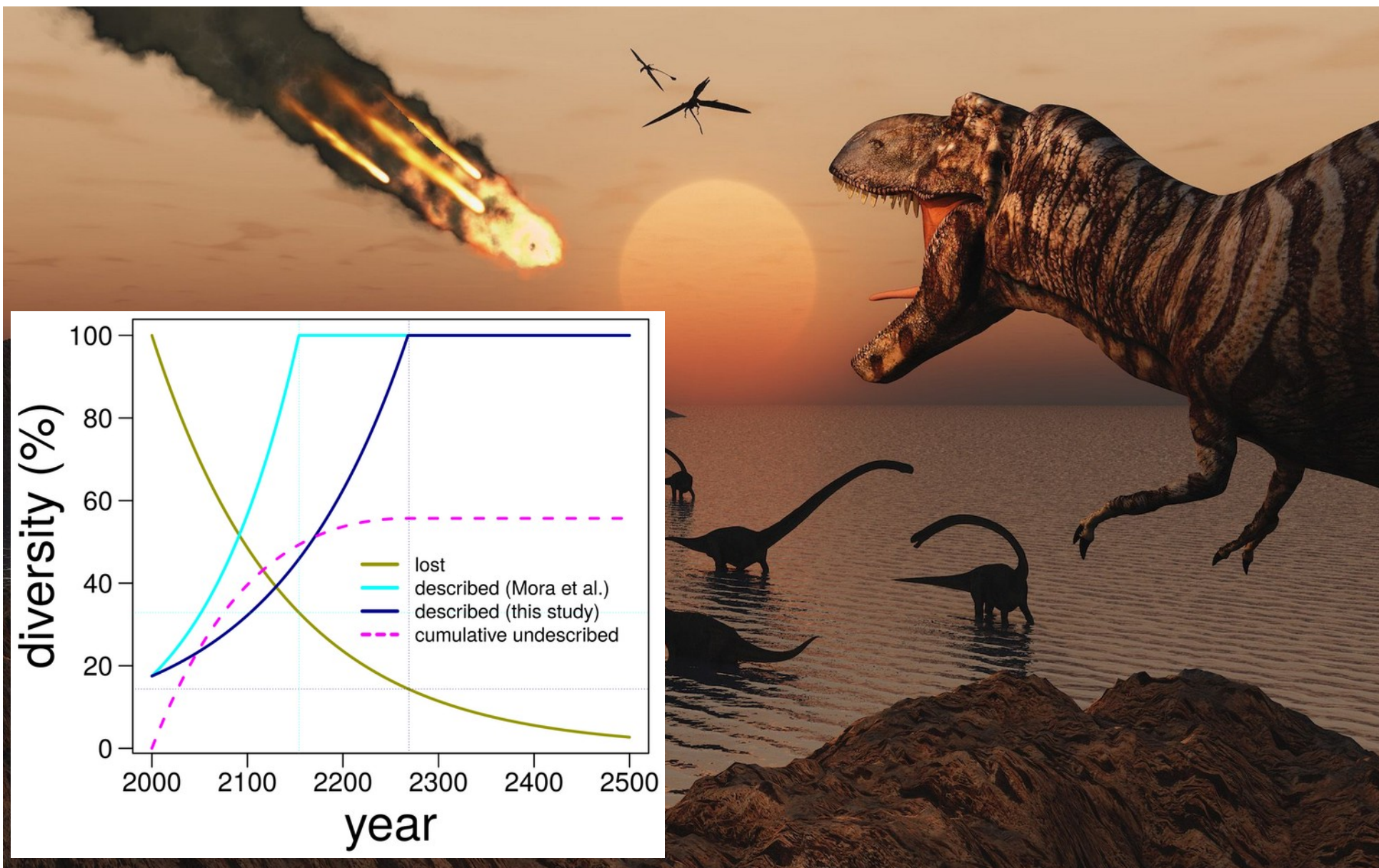
**Tasso di estinzione “background” osservato nel record
fossile:**

2 estinzioni / 10,000 specie / 100 anni = 0.000002

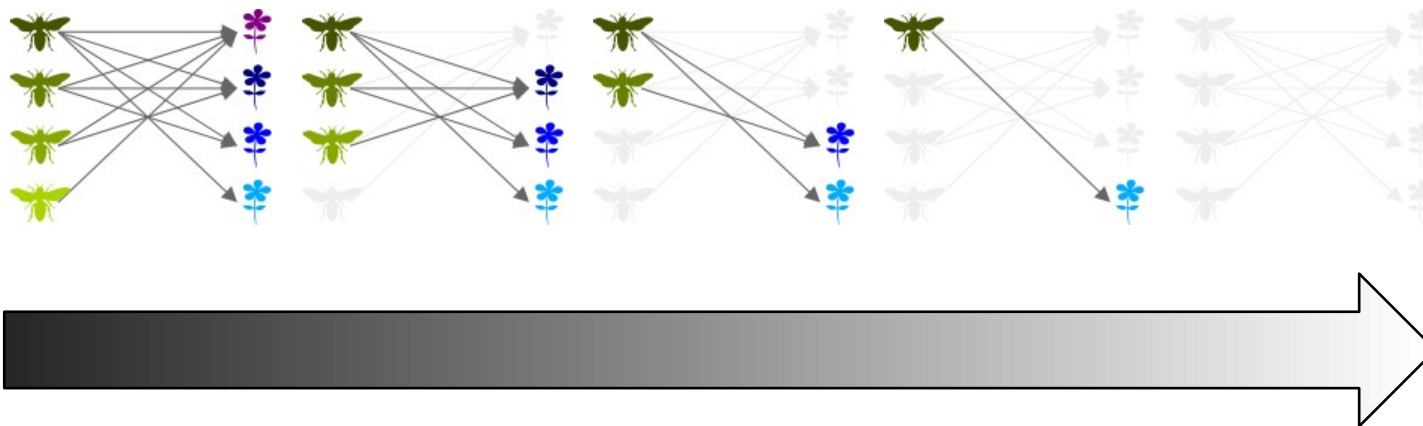
Tasso estinzione attuale/tasso background:

$0.00011 / 0.000002 = 53$

**Quindi il tasso di estinzione attuale e' di 53 volte superiore al
tasso background!!!**



Le co-estinzioni possono essere una delle forme piu' comuni di perdita di diversita'



Strona, G., & Lafferty, K. D. (2016). Environmental change makes robust ecological networks fragile. *Nature communications*, 7(1), 1-7.

Dunn, R. R., Harris, N. C., Colwell, R. K., Koh, L. P., & Sodhi, N. S. (2009). The sixth mass coextinction: are most endangered species parasites and mutualists?. *Proceedings of the Royal Society B: Biological Sciences*, rspb20090413.













Strona, G. (2015). Past, present and future of host–parasite co-extinctions. *International Journal for Parasitology: Parasites and Wildlife*, 4(3), 431-441.



Justin Hofman / Alamy

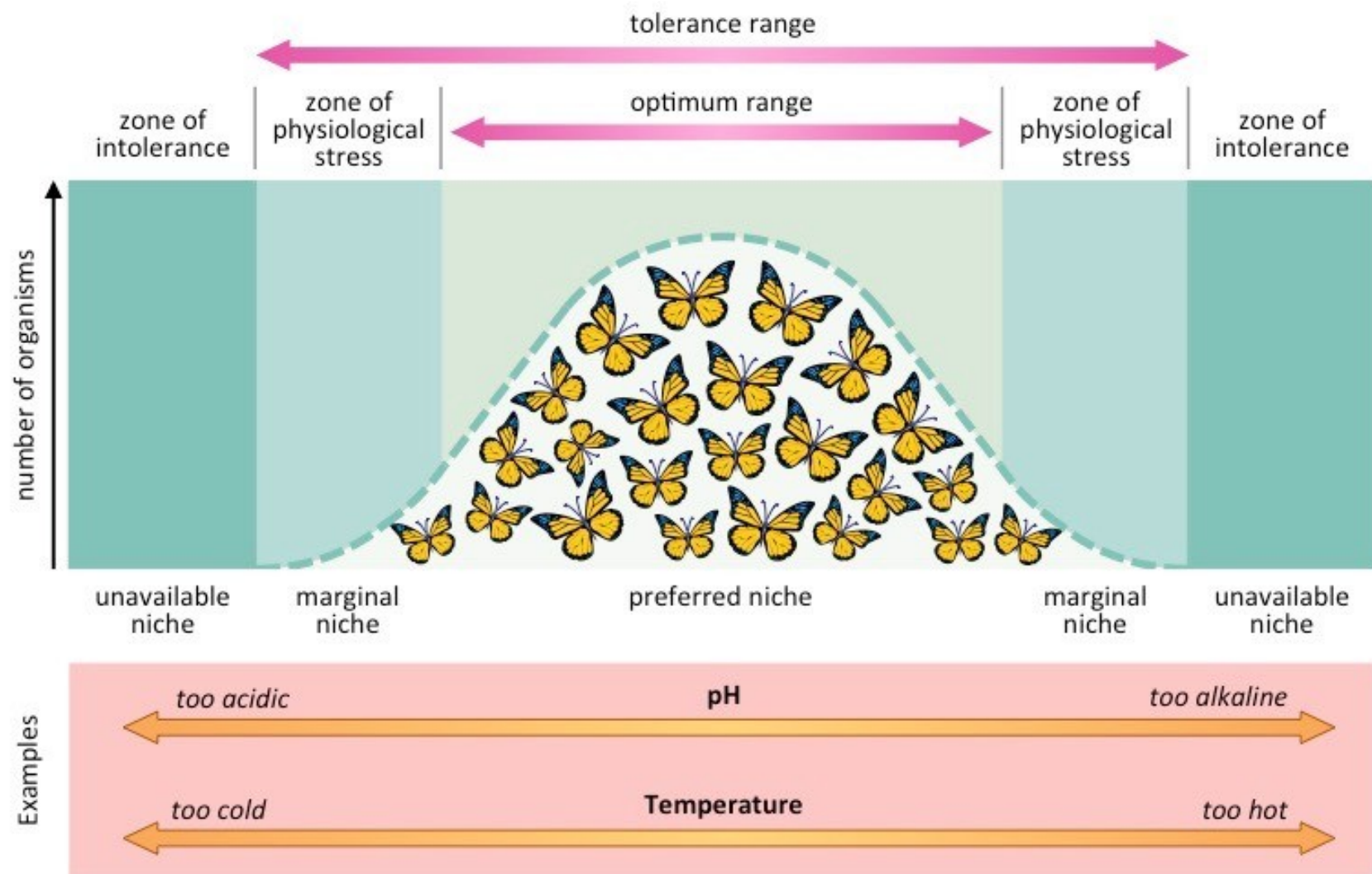
Charting success







Rózsa, L., & Vas, Z. (2015). Co-extinct and critically co-endangered species of parasitic lice, and conservation-induced extinction: should lice be reintroduced to their hosts?. *Oryx*, 49(1), 107-110.





Hengherr, S., Worland, M. R., Reuner, A., Brümmer, F., & Schill, R. O. (2009). High-temperature tolerance in anhydrobiotic tardigrades is limited by glass transition. *Physiological and Biochemical Zoology*, 82(6), 749-755.

Horikawa, D. D., Sakashita, T., Katagiri, C., Watanabe, M., Kikawada, T., Nakahara, Y., ... & Kobayashi, Y. (2006). Radiation tolerance in the tardigrade *Milnesium tardigradum*. *International journal of radiation biology*, 82(12), 843-848.

Soemme, L. (1996). Anhydrobiosis and cold tolerance in tardigrades. *European Journal of Entomology*, 93, 349-358.

Wright, J. C. (1989). Desiccation tolerance and water-retentive mechanisms in tardigrades. *Journal of Experimental Biology*, 142(1), 267-292.



| ONE STRANGE ROCK |

These 'Indestructible' Animals Would Survive a Planet-Wide Apocalypse

Even the most catastrophic astrophysical events couldn't wipe out the hardy tardigrade, researchers report.

BY CASEY SMITH



PUBLISHED APRIL 23, 2018

ONE STRANGE ROCK, a global event series, [airs Mondays at 10/9C on National Geographic](#).

THE WORLD'S MOST robust animals may very well survive until the sun stops shining.

INSECTS · July 14th, 2017

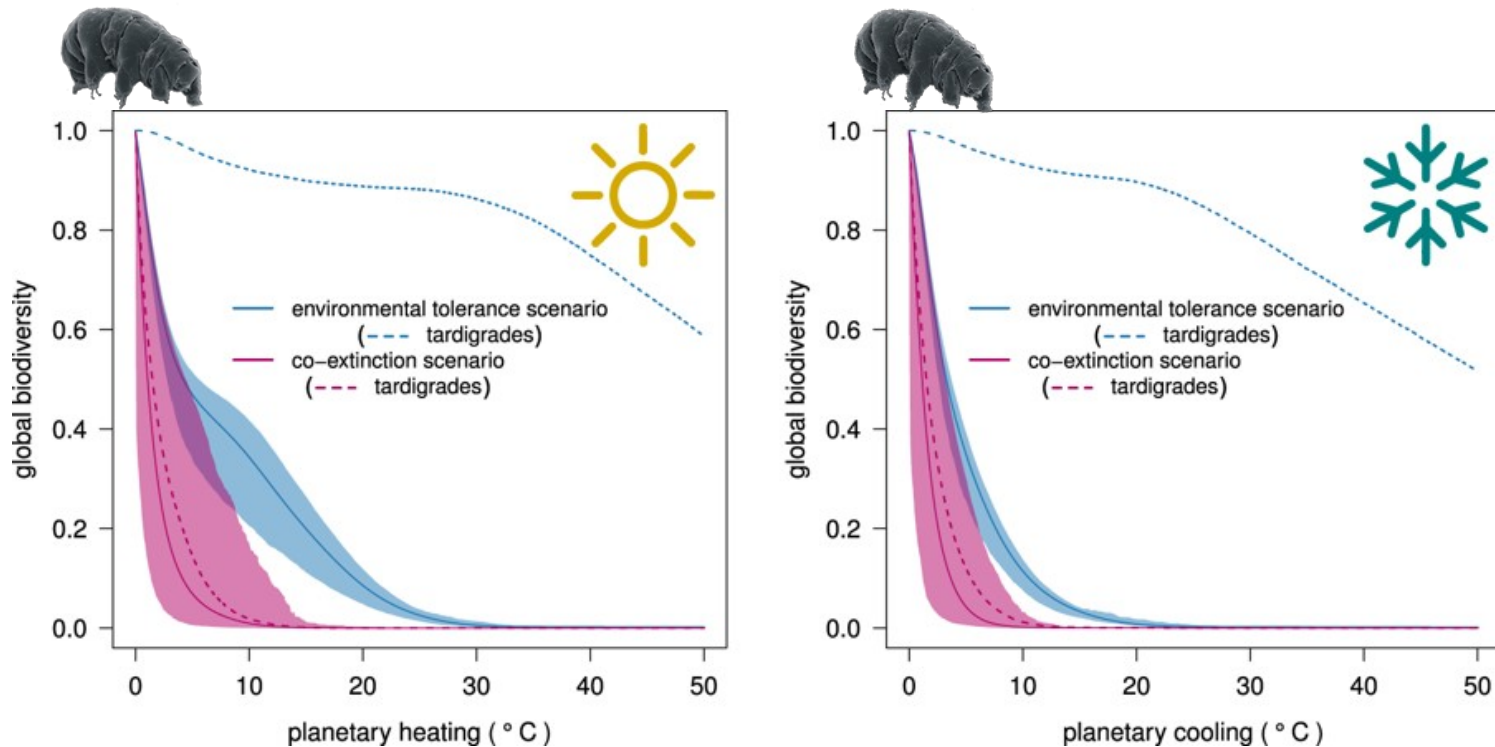
This eight-legged creature could be Earth's sole survivor -- and help search for aliens

Fox News

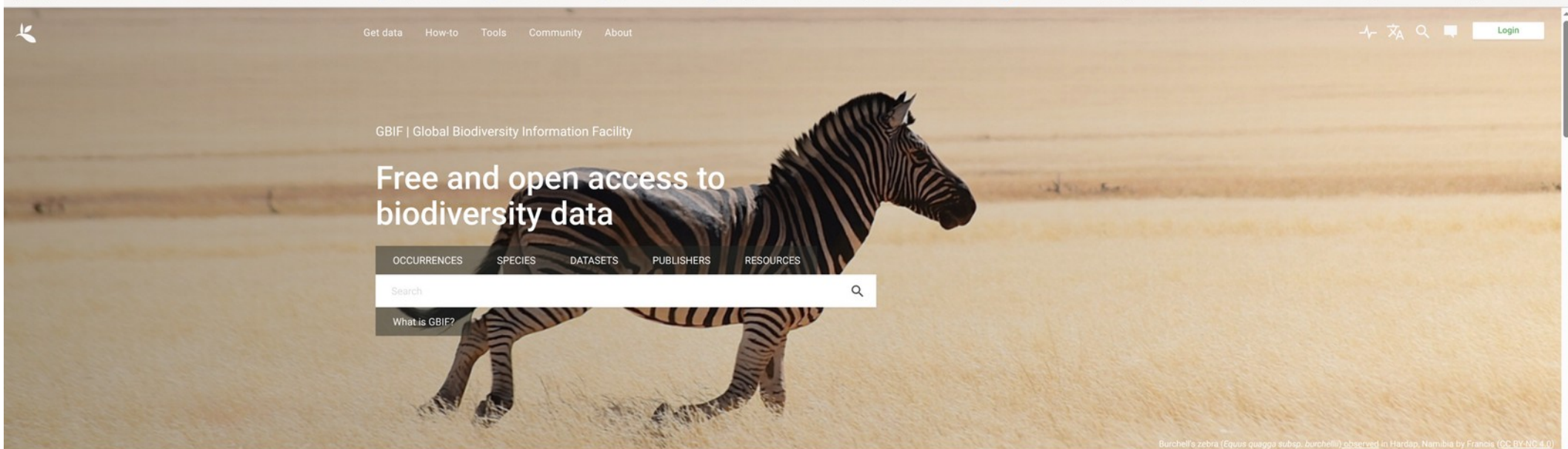


A tardigrade. (AP Photo/Bob Goldstein & Vicki Madden, UNC Chapel Hill)

Sloan, D., Batista, R. A., & Loeb, A. (2017). The resilience of life to astrophysical events. *Scientific Reports*, 7(1), 5419.



Strona, G., & Bradshaw, C. J. (2018). Co-extinctions annihilate planetary life during extreme environmental change. *Scientific Reports*, 8(1), 16724.



GBIF | Global Biodiversity Information Facility

Free and open access to biodiversity data

OCCURRENCES SPECIES DATASETS PUBLISHERS RESOURCES

Search

What is GBIF?

Burchell's zebra (*Equus quagga subsp. burchellii*) observed in Hardap, Namibia by Francois (CC BY-NC 4.0)



3,657,075,434
Occurrence records



121,227
Datasets



2,660
Publishing institutions



14,358
Peer-reviewed papers
using data

SPECIES | ACCEPTED

Canis lupus Linnaeus, 1758

Published in: Syst. Nat., 10th ed. vol.1 p.39

In: GBIF Backbone Taxonomy

Lupo In Italian

Trade restrictions I/II CITES 2025

Basionym: *Lupus lupus* Linnaeus, 1758

OVERVIEW

12 TREATMENTS

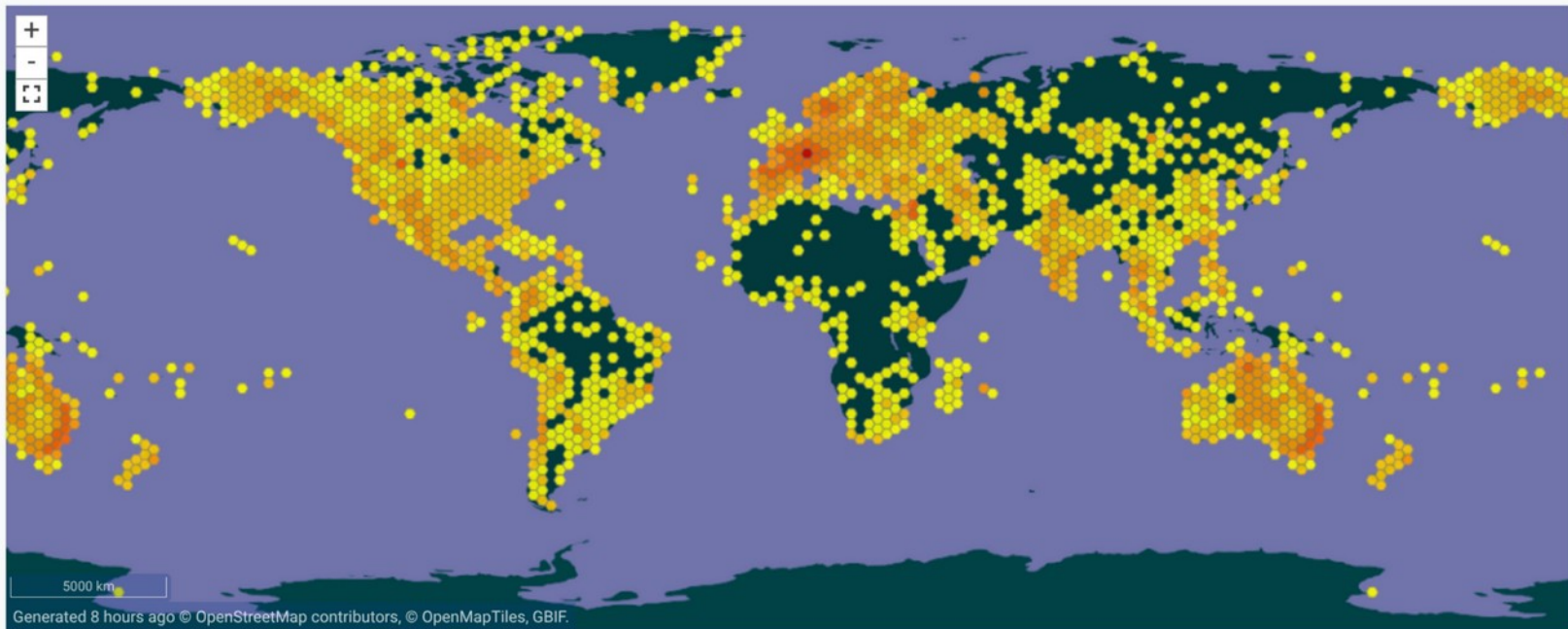
235,522 OCCURRENCES

44 INFRASPECIES

15,917 OCCURRENCES WITH IMAGES



107,942 GEOREFERENCED RECORDS



Any year 1545 - 2026

EXPLORE



RECORDED AS INTRODUCED IN 31 COUNTRIES OR ISLANDS

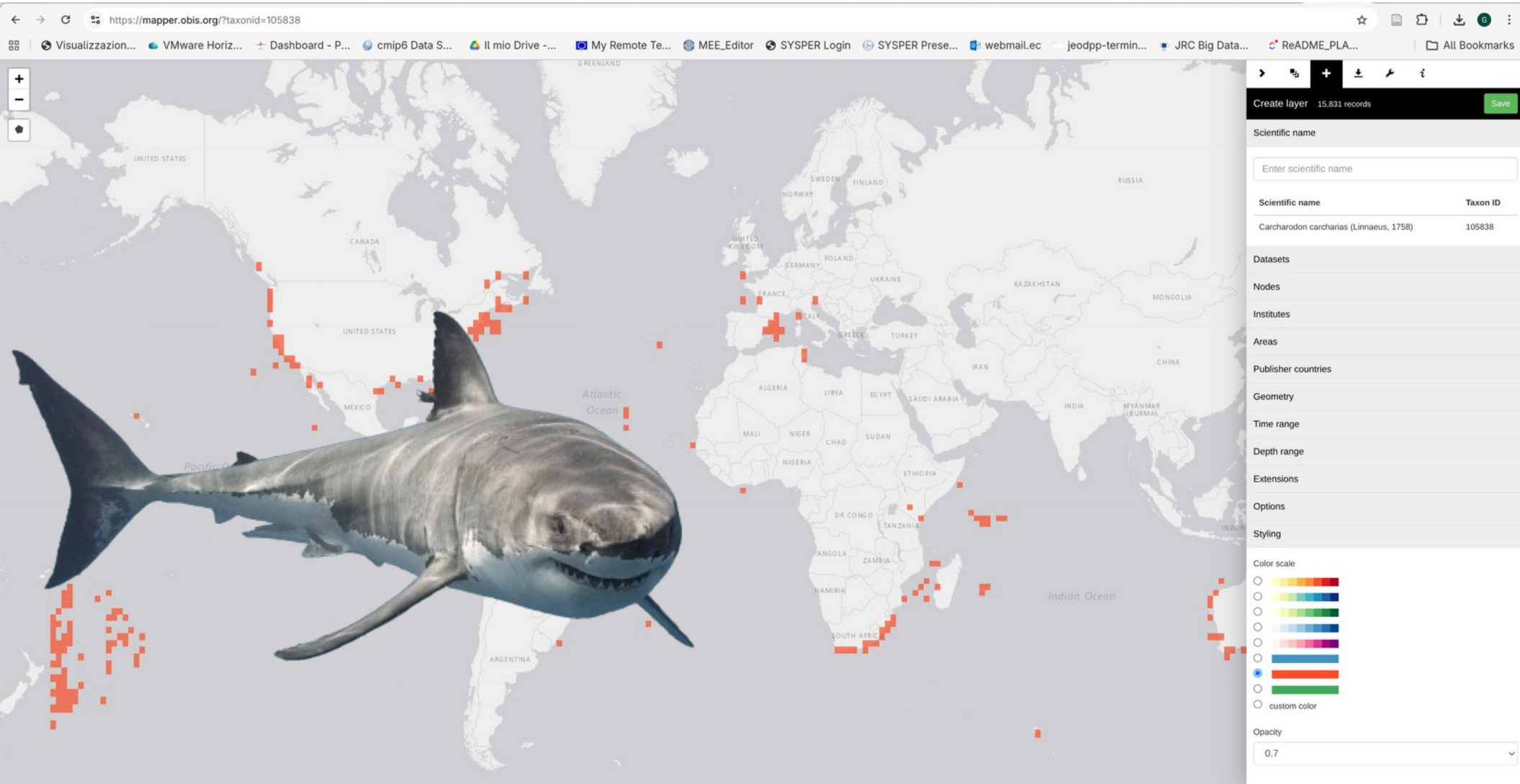
Recorded as introduced in

According to

Evidence of impact

Occurrences in GBIF

<https://mapper.obis.org/>



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Common Name

Select language: All
is (e.g. rainbow trout) Search

[A](#)[B](#)[C](#)[D](#)[E](#)[F](#)[G](#)[H](#)[I](#)[J](#)[K](#)[L](#)[M](#)[N](#)[O](#)[P](#)[Q](#)[R](#)[S](#)[T](#)[U](#)[V](#)[W](#)[X](#)[Y](#)[Z](#)
[中文](#) [العربية](#) [Русский](#) [日本語](#) [हिन्दी](#) [Ελληνικά](#) [More scripts...](#)

Scientific Name

☐ [Partita avanzata](#)
Genus is (e.g. Rhincodon) Search
Species is (e.g. typus) ☐ Specie casuali
Genus + Species Sp. ID Search

[A](#)[B](#)[C](#)[D](#)[E](#)[F](#)[G](#)[H](#)[I](#)[J](#)[K](#)[L](#)[M](#)[N](#)[O](#)[P](#)[Q](#)[R](#)[S](#)[T](#)[U](#)[V](#)[W](#)[X](#)[Y](#)[Z](#)

[Read more](#) on the position of Scaridae - parrotfishes (November 2025).
[Differences](#) between FishBase and Eschmeyer's Catalog of Fishes ([ECoF](#)).

Glossario

(es.oophagy) ricerca
[A](#)[B](#)[C](#)[D](#)[E](#)[F](#)[G](#)[H](#)[I](#)[J](#)[K](#)[L](#)[M](#)[N](#)[O](#)[P](#)[Q](#)[R](#)[S](#)[T](#)[U](#)[V](#)[W](#)[X](#)[Y](#)[Z](#)

Information by Family

☐ Family info. ☐ Identification by pictures ☐ Missing pictures ☐ BRUVS

[Informazioni su](#) [Le lingue](#) [Feedback degli](#) [Citazione](#) [Caricamenti](#) [Specie correlate](#) [DONATE](#)

Salmo trutta Linnaeus, 1758

Sea trout

Carica il tuo [foto](#) e [Video](#)
[Immagini](#) | [Video](#) | [Francobolli](#), [monete](#), [materiale vario](#). | [Google image](#)

Aggiungete la vostra osservazione in [Fish Watcher](#)
[Native range](#) | [All suitable habitat](#) | [Point map](#) | [Year 2050](#)



Classificazione / Nomi [Nomi Comuni](#) | [Sinonimi](#) | [Catalog of Fishes\(Genere, Specie\)](#) | [ITIS](#) | [CoL](#) | [WoRMS](#) | [Cioffa](#)

> [Salmoniformes](#) (Salmons) > [Salmonidae](#) (Salmonids) > [Salmoninae](#)
Etymology: *Salmo*: Latin, salmo, Plinius = salmon (Ref. [45335](#)); *trutta*: *trutta* is a Latin name for trout (Ref. [10294](#)).
More on author: [Linnaeus](#).

Ambiente: milieu / zona climatica / distribuzione batimetrica / gamma di distribuzione [Ecologia](#)

marino; acqua dolce; salmastro pelagic-neritic; anadromo (Ref. [138126](#)); distribuzione batimetrica 0 - 28 m (Ref. [101587](#)), usually 1 - 2 m (Ref. [101587](#)). Temperature; 18°C - 24°C (Ref. [12741](#)); 71°N - 34°N, 25°W - 57°E

Distribuzione [Territories](#) | [Aree FAO](#) | [Ecosistemi](#) | [Presenze](#) | [Mappa dei ritrovamenti](#) | [Introduzioni](#) | [Faunafri](#)

Europe and Asia: Atlantic, North, White and Baltic Sea basins, from Spain to Chosha Bay (Russia). Found in Iceland and northernmost rivers of Great Britain and Scandinavia. In Rhône drainage, native only to Lake Geneva basin, which it entered after last glaciation. Native to upper Danube and Volga drainages. Introduced widely. Several countries report adverse ecological impact after introduction.

Lunghezza alla prima maturità / Dimensione / Peso / Età

Maturità: L_m [20.6](#), range 1 - 60 cm

Max length : 140 cm SL maschio/sex non determinato; (Ref. [682](#)); common length : 72.0 cm TL maschio/sex non determinato; (Ref. [3397](#)); peso massimo pubblicato: 50.0 kg (Ref. [682](#)); Età massima riportata: 38 anni (Ref. [32682](#))

Breve descrizione [Chiavi di identificazione](#) | [Morfologia](#) | [Morfometria](#)

Spine dorsali (totale) : 3 - 4; Raggi dorsali molli (totale) : 10 - 15; Spine anali: 3 - 4; Raggi anali molli: 9 - 14; Vertebre: 57 - 59. Fusiform body (Ref. [51442](#)). Head little and pointed (Ref. [51442](#)). Mouth large, extending mostly after the eye and has well developed teeth (Ref. [51442](#)). Teeth on shaft of vomer numerous and strongly developed (Ref. [7251](#)). Caudal fin with 18-19 rays (Ref. [2196](#)). Caudal peduncle thick and rounded (Ref. [51442](#)). Little scales (Ref. [51442](#)). Body is grey-blue colored with numerous spots, also below the lateral line (Ref. [51442](#)). Blackish colored on upper part of body, usually orange on sides, surrounded by pale halos. Adipose fin with red margin. Body shape ([shape guide](#)): fusiform / normal; Cross section: oval.

Biologia [Glossario](#) (es. epibenthic)

Found in streams, ponds, rivers and lakes (Ref. [5951](#)). Individuals spend 1 to 5 years in fresh water and 6 months to 5 years in salt water (Ref. [51442](#)). Juveniles mature in 3-4 years (Ref. [6885](#)). Lacustrine populations undertake migration to tributaries and lake outlets to spawn, rarely spawning on stone, wave-washed lake shores. Spawns in

Example query: [What do sea otters \(*Enhydra lutris*\) eat?](#) or [What do honey bees \(*Apis*\) pollinate?](#)

What kind of

do

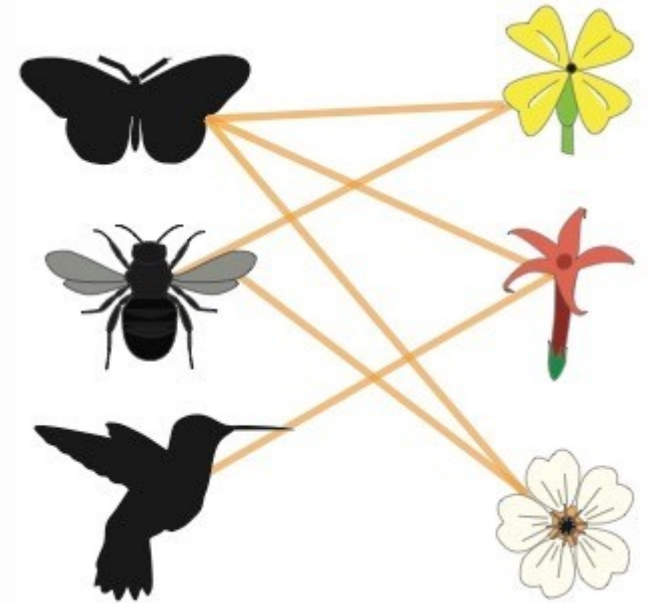
Enhydra lutris

eat

according to

a DOI, URI or other identifiers

?





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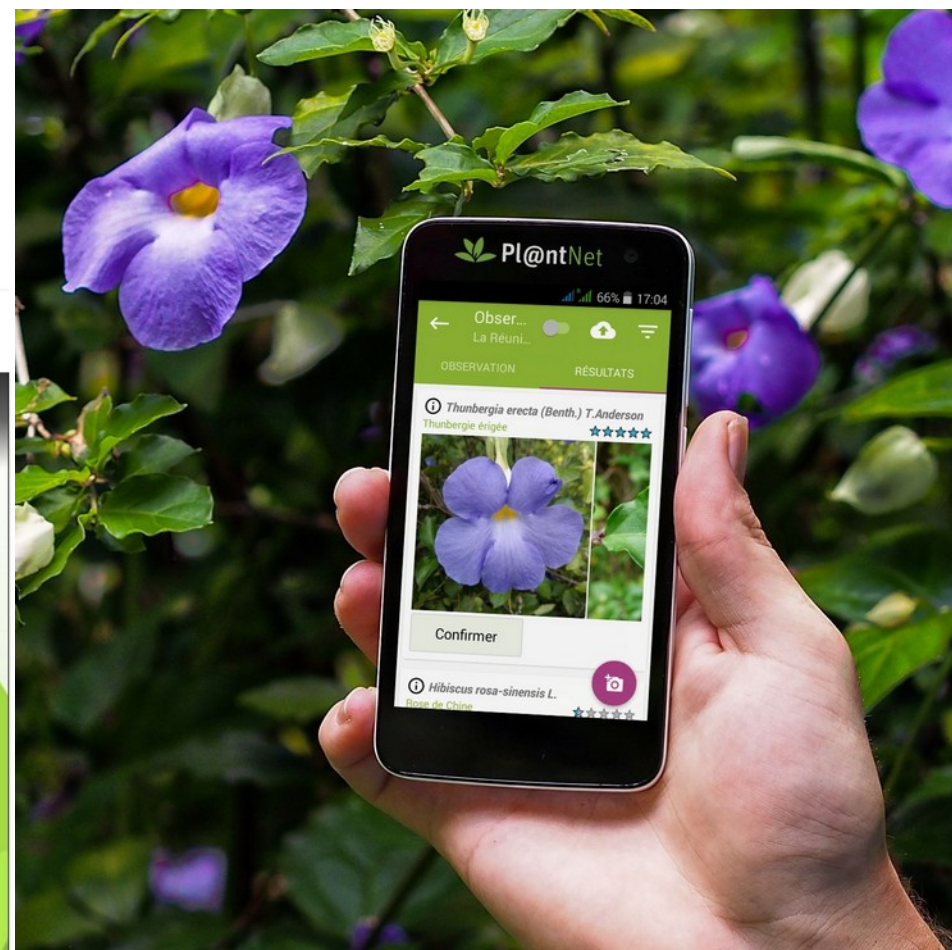
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a citizen scientist !

 **MAMBO**
MODERN APPROACHES TO THE
MONITORING OF BIODIVERSITY


European
Commission



 Guarda su YouTube



A dense collage of various marine organisms, including starfish, sea anemones, nudibranchs, and other invertebrates, arranged around the central text boxes.

Grazie per l'attenzione!

Giovanni Strona

*European Commission
Joint Research Centre
Nature Conservation and Observations
Knowledge Centre for Biodiversity*

giovanni.strona@ec.europa.eu

