Why traits?

(and with that in mind, how traits?)

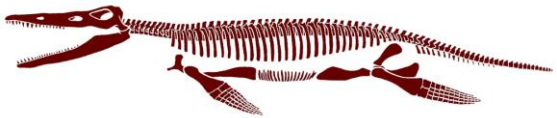
Jen Hammock, Katja Schulz,
Encyclopedia of Life

EOL- a case study

Encyclopedia of Life

- Scale and scope: *global access* to knowledge about *life on Earth*
- Launched in 2008
- Headquartered at the Smithsonian, with collaborators around the world

MUSEUM OF COMPARATIVE ZOOLOGY



HARVARD UNIVERSITY

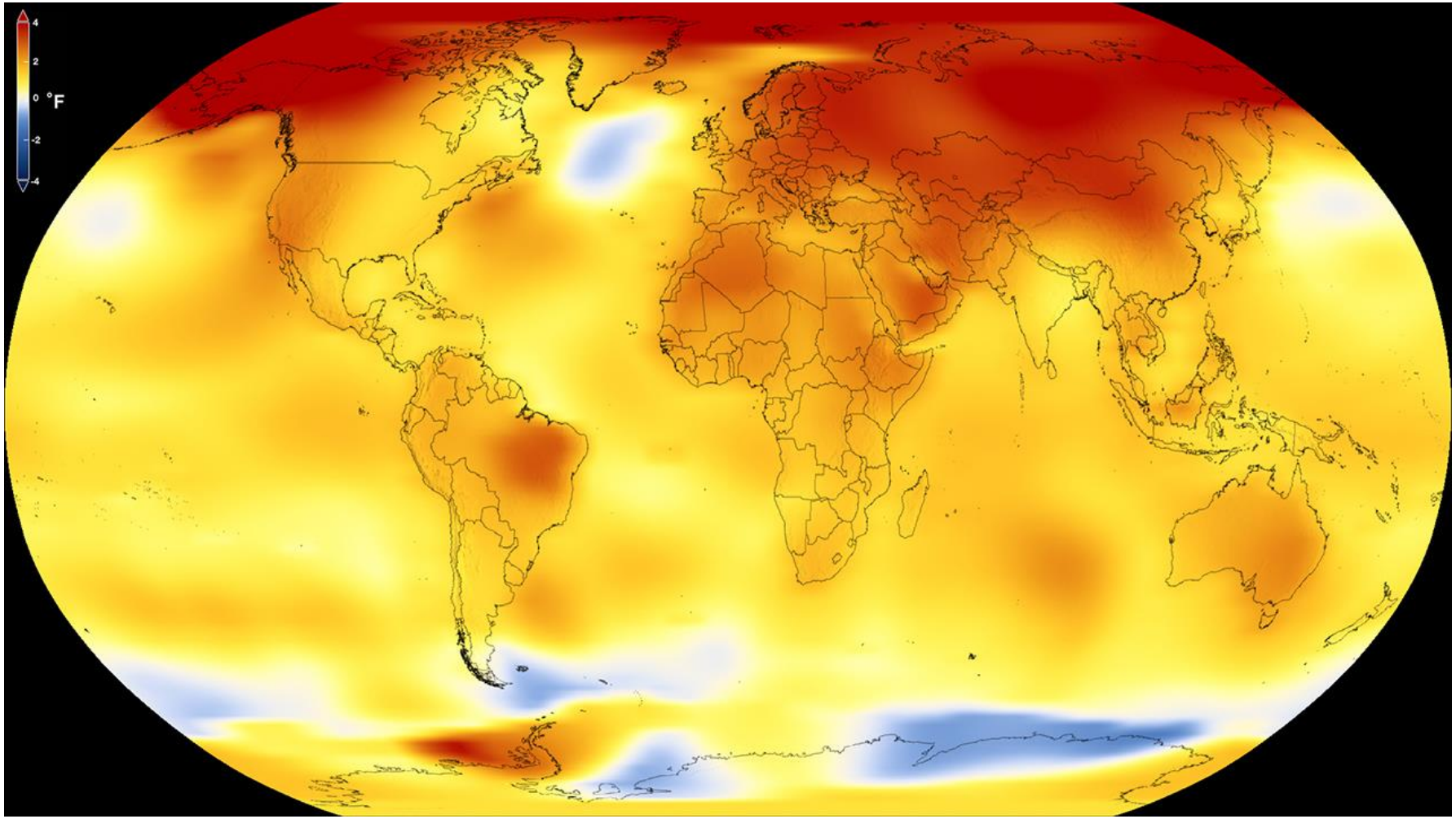
BIBLIOTHECA ALEXANDRINA

مكتبة الإسكندرية

ATLAS OF LIVING AUSTRALIA

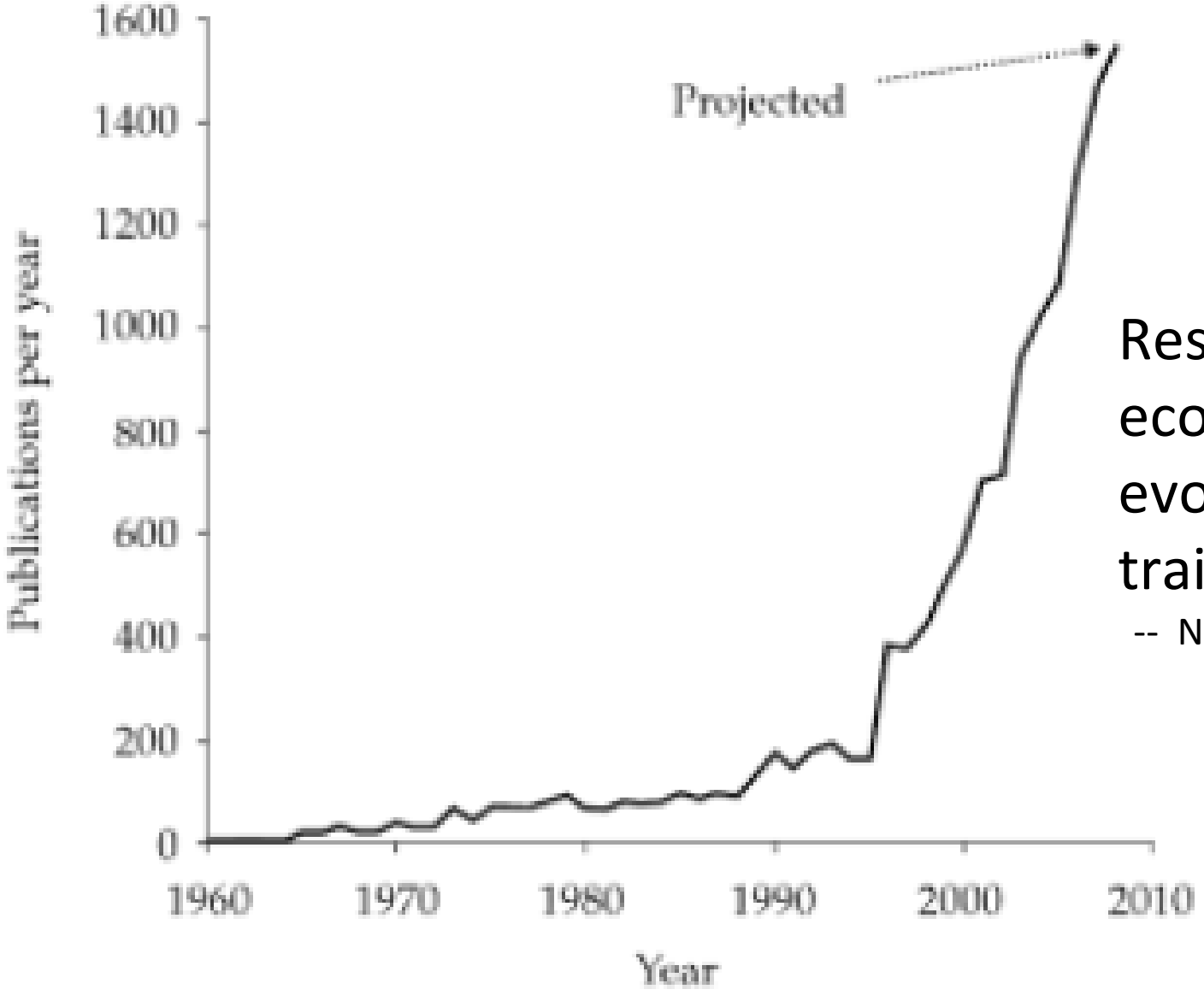
1888 MBL Biological Discovery in Woods Hole

To accelerate discovery



Average 50 year temperature change

-NASA, 2017



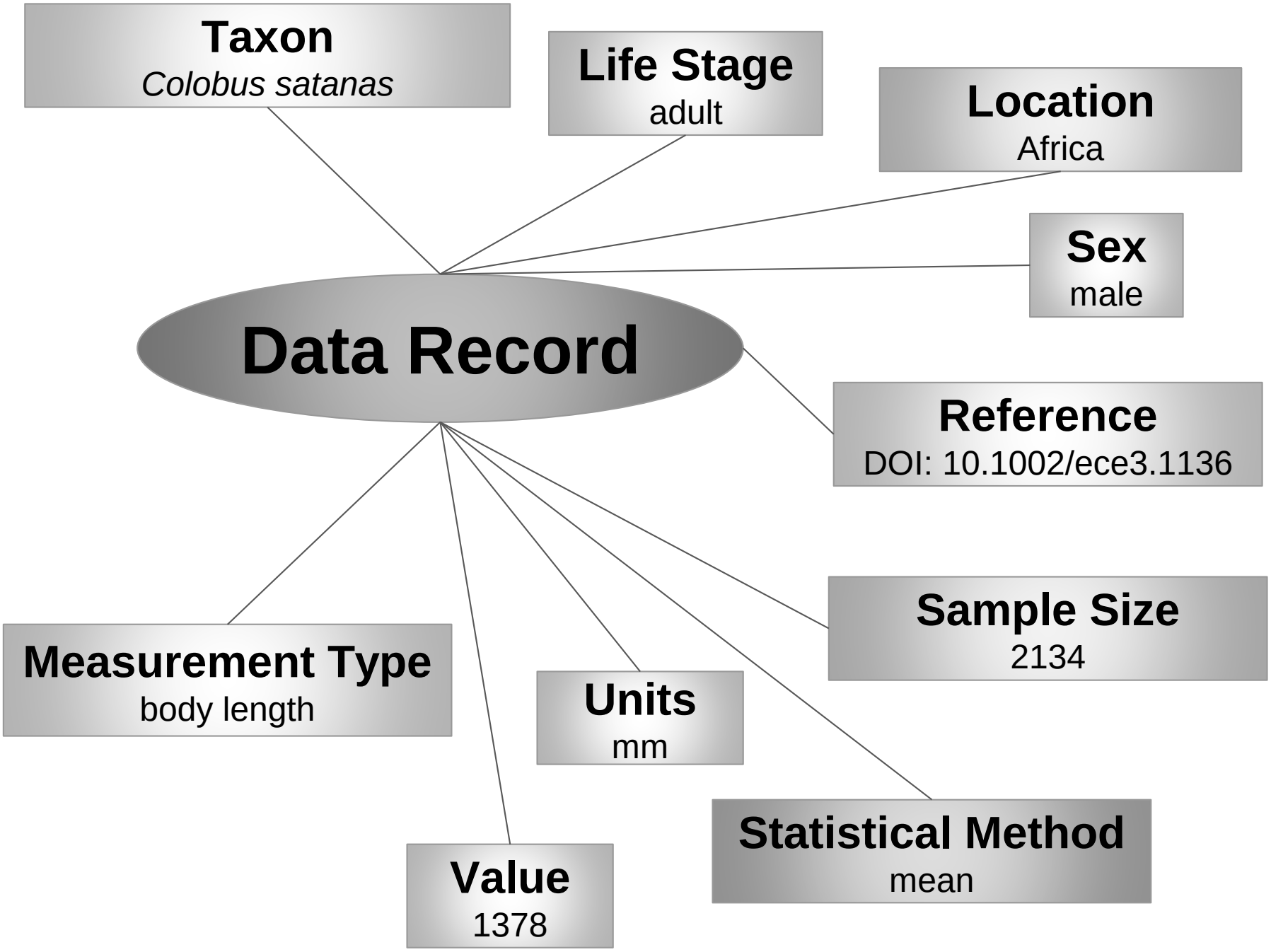
Research in ecology or evolution using traits

-- Naeem & Bunker, 2009

Data must be:

- Well structured
- Delivered easily and fast, in any format
- Scalable
- Easy to search
- Growing in scope, depth and quality

- Graph Data
- Identifiers shared with other data hubs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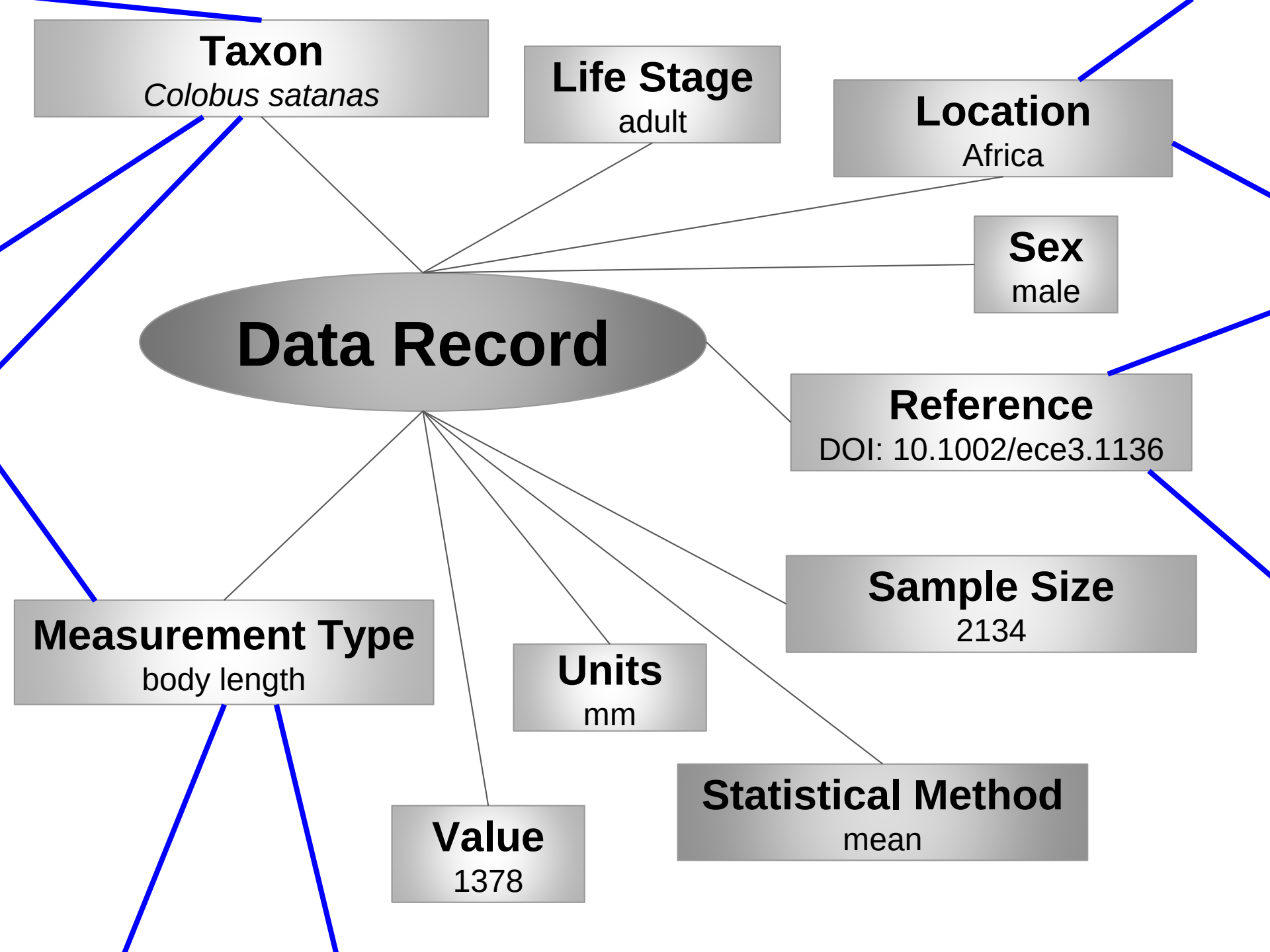
Colobus satanas
Life Stage
adult
Location
Africa
Sex
male
Data Record
Reference
DOI: 10.1002/ece3.1136
Sample Size
2134
Measurement Type
body length
Units
mm
Statistical Method
mean
Value
1378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male
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Reference
DOI: 10.1002/ece3.1136
Sample Size
2134
Measurement Type
body length
Units
mm
Statistical Method
mean
Value
1378

.../Metazoa/.../Vertebrata/.../Synapsida/.../Cynodontia/Mammalia/.../Carnivora/...

Lion

Panthera leo (Linnaeus 1758)

body mass

1291.71 g

(average)

- citation

  Kate E. Jones, Jon Bielby, Marcel Cardillo, Susanne A. Fritz, Justin O'Dell, C. David L. Orme, Kamran
  Foster, Richard Grenyer, Michael Habib, Christopher A. Plaster, Samantha A. Price, Elizabeth A. Ri
  Andy Purvis. 2009. PanTHERIA: a species-level database of life history, ecology, and geography of
- life stage

  newborn animal
- measurement method

  URI: http://purl.bioontology.org/ontology/CSP/0070-1441
  Definition: A neonate. A newborn infant who is only hours, days, or up to a few weeks old.
  Comment: Ontology Description: http://bioportal.bioontology.org/ontologies/CRISP
-

  Panthera leo
- record URL

  https://beta.eol.org/pages/328672/data#trait_id=R261-PK22155664

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Procyon lotor

Common Raccoon

learn more about names for this taxon

add to a collection

Procyon lotor TRUSTED
D. Gordon E. Robertson
Source: Wikimedia Commons

see all media
see all maps

IUCN threat status: Least Concern (LC)

EOL has data for 64 traits

see all

body length (VT)	(average)	484.68 mm (adult)
body mass	(average)	1,095.44 g
	(average)	(weanling)
	(average)	1,200 g
		1,200 g
		more
population trend		Increasing
habitat		Large river biome agricultural feature aquatic habitat more
trophic level		omnivore
native range includes		United States (USA)
primary diet		animals animals birds more
habitat includes		Boreal Forests (Taiga) Deserts and Xeric Shrublands Flooded Grasslands and Savannas more
trophic level		omnivore

Brief Summary

read full entry

learn more about this article

Description

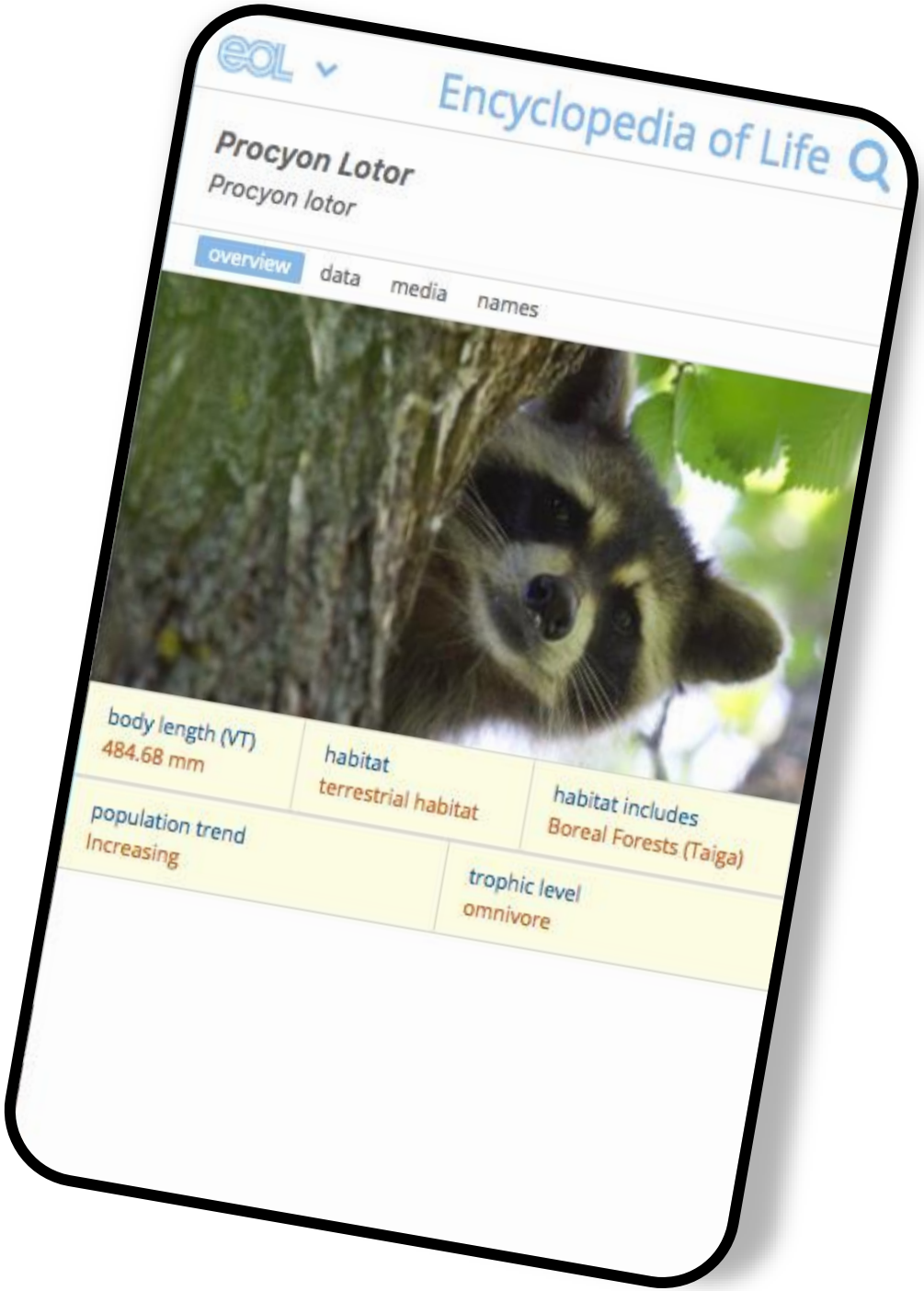
"Raccoons are among the most adaptable of the Carnivora, able to live comfortably in cities and suburbs as well as rural and wilderness areas. They use small home ranges, as small as 1—3 square km, and show flexibility in selecting denning sites, from tree hollows to chimneys to sewers. A varied diet is at the root of their adaptability. Raccoons eat just about anything, finding food on the ground, in trees, streams, ponds, and other wet environments, and from unsecured trash cans, which they open adroitly by hand. They can live anywhere water is available, from the deep tropics well into southern Canada. Even in the suburbs, Raccoons can occur at densities of almost 70 per square km. Females can breed when they are not yet a year old, and typically have litters of four young, which they raise themselves. The female nurses her cubs for about 70 days. The cubs' eyes open at 18—24 days and they begin exploring the world outside the den when they are 9—10 weeks old. By 20 weeks of age they can forage on their own."

Adaptation: As an adaptation to an omnivorous diet, the molars of the Northern Raccoon, *Procyon lotor*

Classification

Classification from Species 2000 & ITIS Catalogue of Life: April 2013 selected by C. Michael Hogan - see more.

- Animalia +
  - Chordata +
    - Mammalia +
      - Carnivora +
        - Procyonidae +
          - Procyon +
            - ***Procyon lotor* (Linnaeus, 1758)**
              - *Procyon lotor auspicatus* Nelson, 1930
              - *Procyon lotor elucus* Bangs, 1898
              - *Procyon lotor excelsus* Nelson and Goldman, 19
              - *Procyon lotor fuscipes* Mearns, 1914
              - *Procyon lotor gloveralleni* Nelson and Goldman,
              - *Procyon lotor grinnelli* Nelson and Goldman, 19


eol
Encyclopedia of Life
Procyon Lotor
Procyon lotor
overview
data
media
names
body length (VT)
484.68 mm
habitat
terrestrial habitat
habitat includes
Boreal Forests (Taiga)
population trend
Increasing
trophic level
omnivore

Ancestry	Scientific Name	Measurement	Value	Measu
Eukaryota| Chordata | Verte	Tyto alba (Scopoli 1769)	body mass	525	
Eukaryota| Chordata | Verte	Tyto soumagnei (Grandidier & A 1878)	body mass	323	
Eukaryota| Chordata | Verte	Sturnella loyca (Molina 1782)	body mass	83.5	
Eukaryota| Chordata | Verte	Sturnella loyca (Molina 1782)	body mass	75	
Eukaryota| Chordata | Verte	Sturnella loyca (Molina 1782)	body mass	92	
Eukaryota| Chordata | Verte	Sula nebouxii Milne-Edwards 1882	body mass	1530	
Eukaryota| Chordata | Verte	Strix virgata (Cassin 1849)	body mass	247.5	
Eukaryota| Chordata | Verte	Strix virgata (Cassin 1849)	body mass	320	
Eukaryota| Chordata | Verte	Strix virgata (Cassin 1849)	body mass	175	
Eukaryota| Chordata | Verte	Turnix nigricollis (Gmelin & JF 1789)	body mass	84	
Eukaryota| Chordata | Verte	Turnix nigricollis (Gmelin & JF 1789)	body mass	67	
Eukaryota| Chordata | Verte	Turnix nigricollis (Gmelin & JF 1789)	body mass	75.5	
Eukaryota| Chordata | Verte	Turnix hottentottus Temminck 1815	body mass	62	
Eukaryota| Chordata | Verte	Turnix hottentottus Temminck 1815	body mass	40	
Eukaryota| Chordata | Verte	Turnix hottentottus Temminck 1815	body mass	51	
Eukaryota| Chordata | Verte	Turnix ocellatus (Scopoli 1786)	body mass	110	
Eukaryota| Chordata | Verte	Tapera naevia (Linnaeus 1766)	body mass	55	
Eukaryota| Chordata | Verte	Pelecanus philippensis Gmelin & JF 1789	body mass	5700	
Eukaryota| Chordata | Verte	Pelecanus philippensis Gmelin & JF 1789	body mass	4900	
Eukaryota| Chordata | Verte	Pelecanus philippensis Gmelin & JF 1789	body mass	4100	

Garlic Mustard

Alliaria petiolata

Food Web Role

AUTO

Tempe

Height
Growth Form
Life Cycle
Flower Color
Sunlight/soil

Difficulty: Inte
Identification
Habitat: Dis
Observation: Car

Image: Malcolm Sto

Arachnids

Class Arachnida

Food Web Role

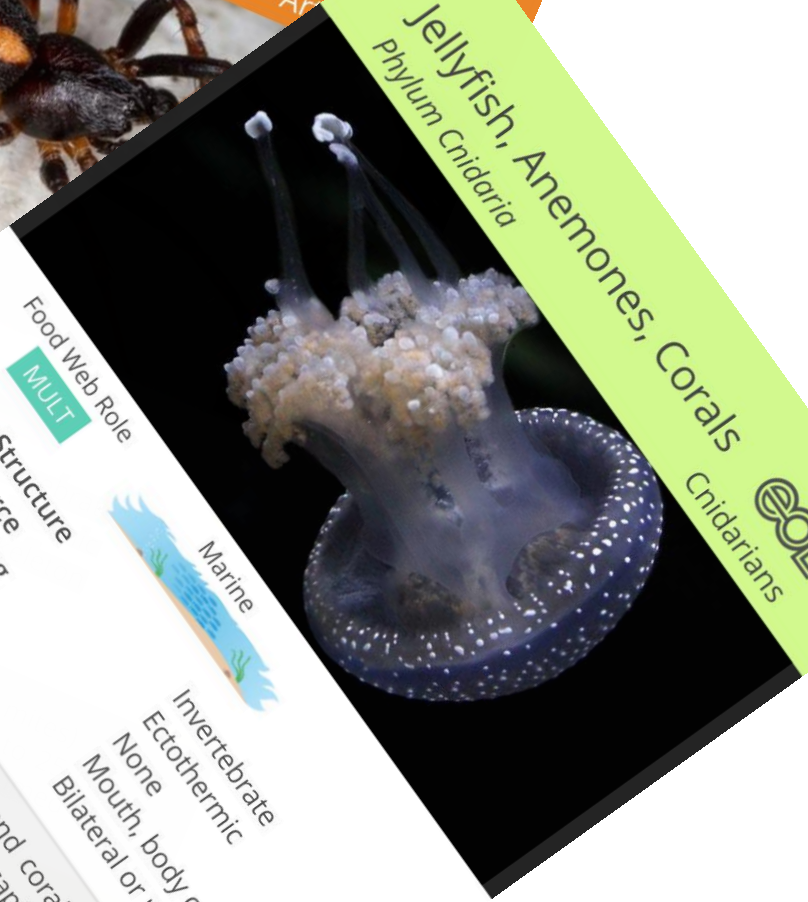
CARN

Body Structure
Heat Source
Body Cover
Body Part
Number

Fun Fa
rang
(10 in
arachnid

Jellyfish, Anemones, Corals

Phylum Cnidaria



Food Web Role

MULT

Body Structure
Heat Source
Body Covering
Body Parts
Body Symmetry

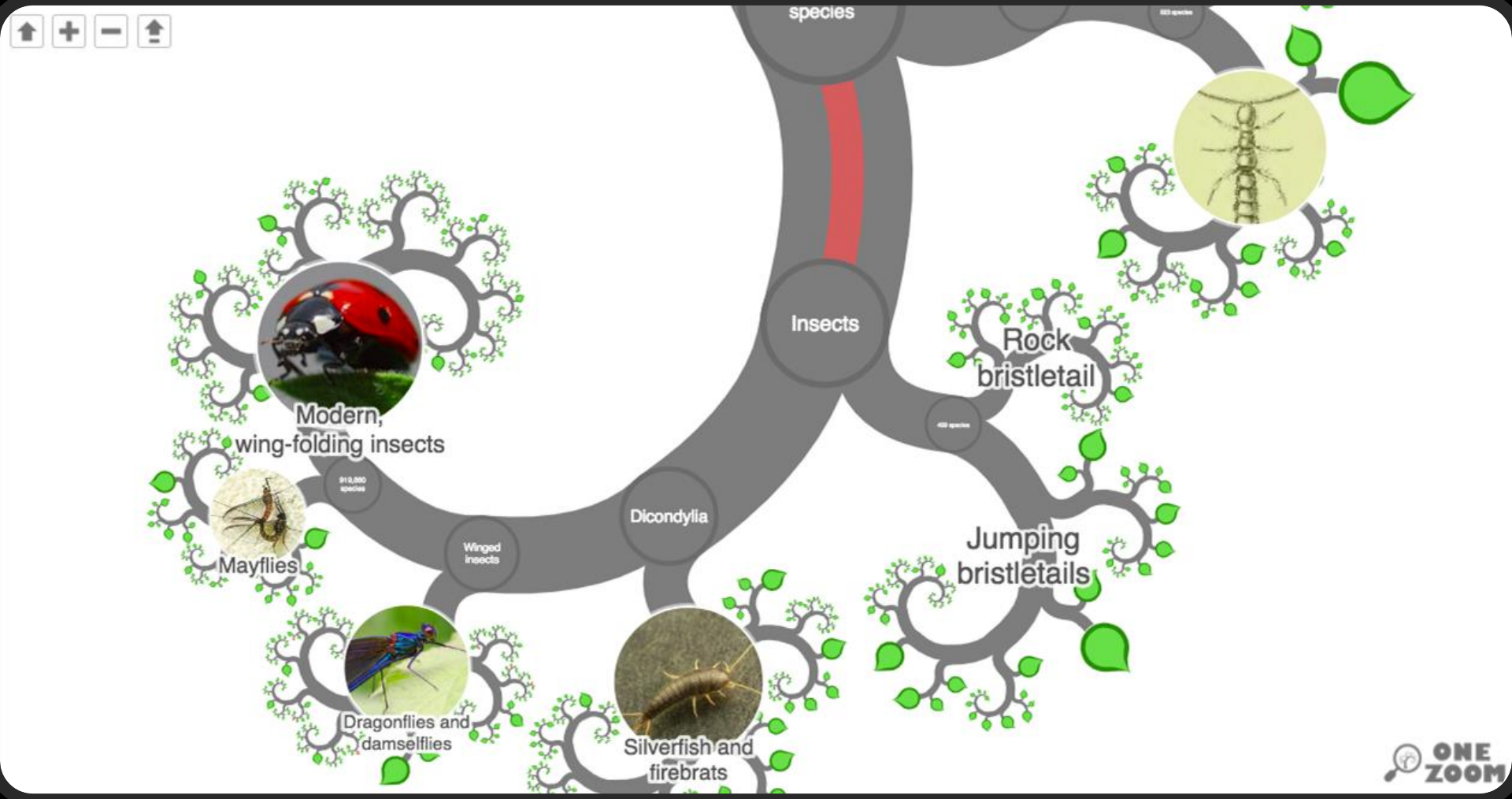
Marine

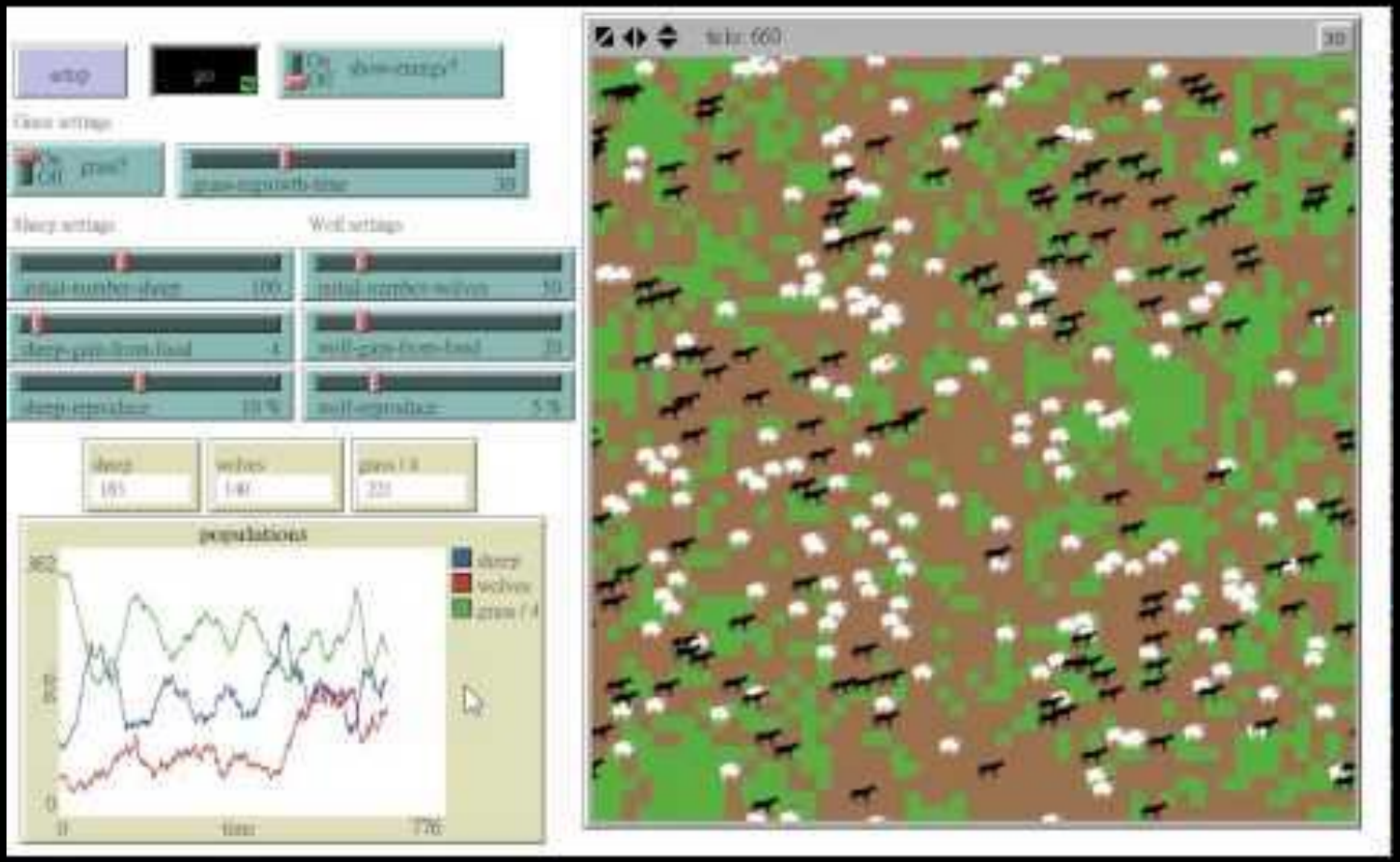
Invertebrate
Ectothermic
None
Mouth, body cavity
Bilateral or radial

Fun Facts: Jellies, anemones, and corals use small barbed threads (nematocysts) to capture prey and sting predators. There are about 9,800 named species of cnidaria!

Image: Miloslav Petrtyl CC-BY-NC

Cnidarians


species
Insects
Rock
bristletail
Modern,
wing-folding insects
Dicondylia
Winged
insects
Jumping
bristletails
Mayflies
Dragonflies and
damselflies
Silverfish and
firebrats
ONE
ZOOM


setup
go
show-energy?
Grass settings
grass?
grass-regrowth-time
30
Sheep settings
Wolf settings
initial-number-sheep
100
initial-number-wolves
50
sheep-gain-from-food
4
wolf-gain-from-food
20
sheep-reproduce
10 %
wolf-reproduce
5 %
sheep
185
wolves
148
grass / 4
220
populations
802
0
0
time
776
sheep
wolves
grass / 4
tick: 660
30

Narwhal

Animal

The narwhal, or narwhale, is a medium-sized toothed whale that possesses a large "tusk" from a protruding canine tooth. It lives year-round in the Arctic waters around Greenland, Canada, and Russia. Wikipedia

Conservation status: Near Threatened Encyclopedia of Life

Scientific name: Monodon monoceros

Trophic level: Carnivorous Encyclopedia of Life

Mass: 2,100 lbs (Adult) Encyclopedia of Life

Length: 17 ft. (Adult) Encyclopedia of Life

Did you know: In the 60s and 70s there were several attempts at keeping narwhals in captivity but all died within several months. facts-about.info

People also search for

View 10+ more

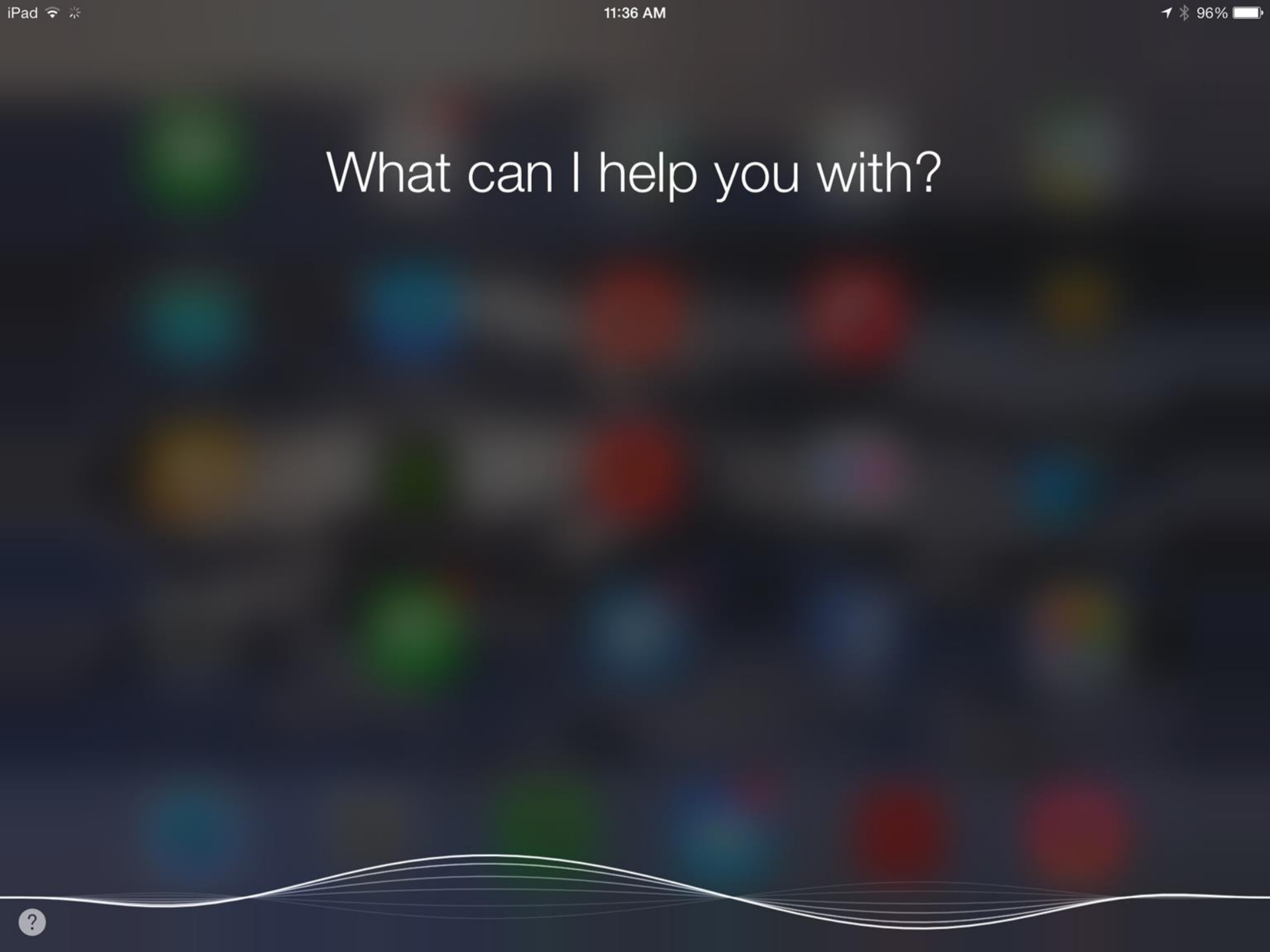

Beluga whale


Killer whale


Walrus


Cetaceans


Polar bear


iPad
11:36 AM
96%
What can I help you with?

Data must be:

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EOL has content for >2 million taxa

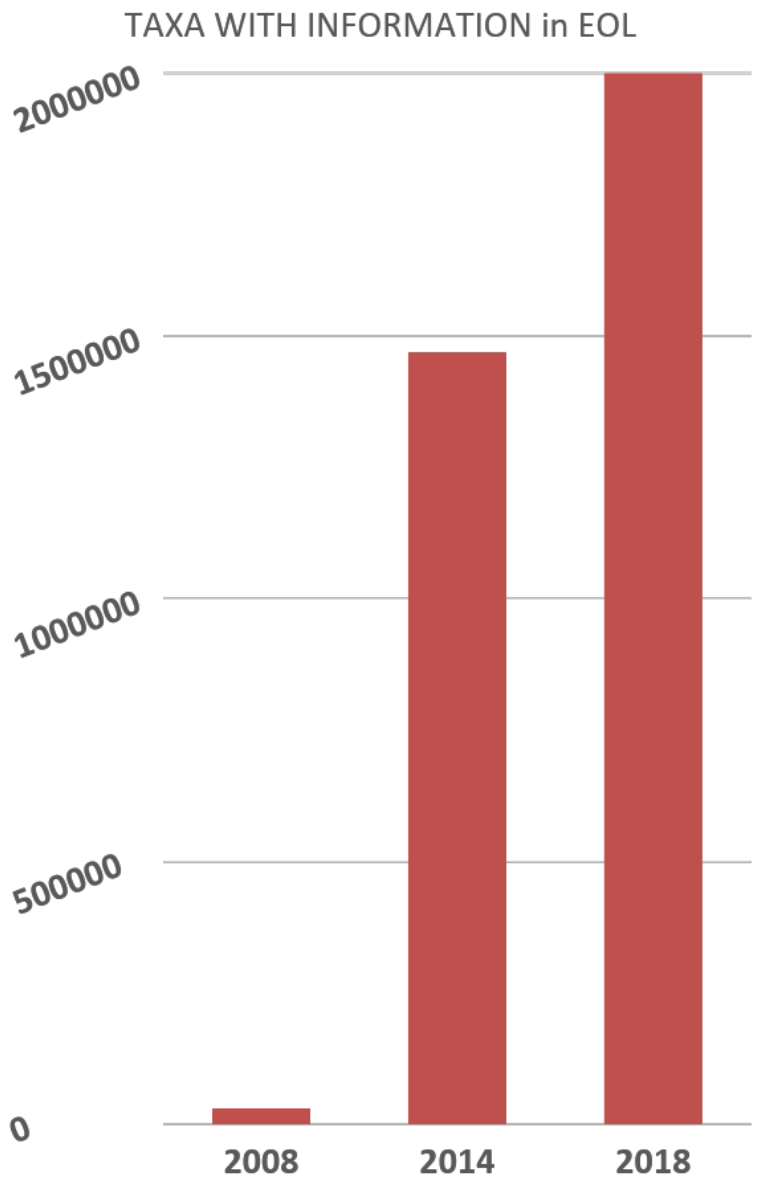
>11M data records

>4M images

>600 data sources

~500,000 website visitors/month

~12,000,000 data requests/month



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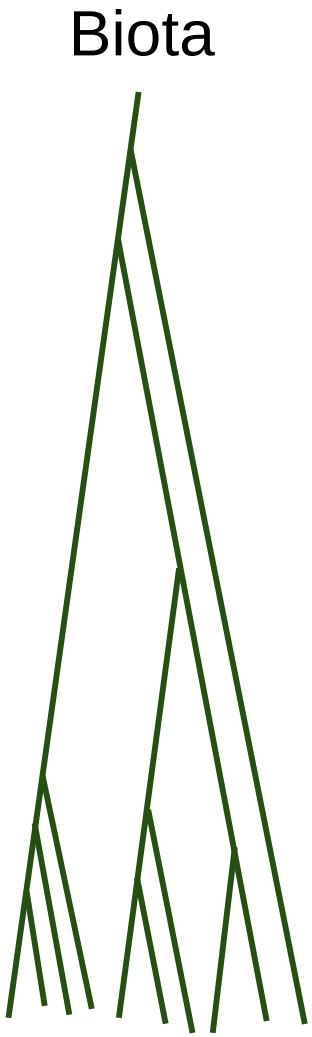
Taxonomic dimension:
The EOL Dynamic Hierarchy



www.ontobee.org/ontology/ENVO?iri=http://purl.obolibrary.org/obo/ENVO_01000122

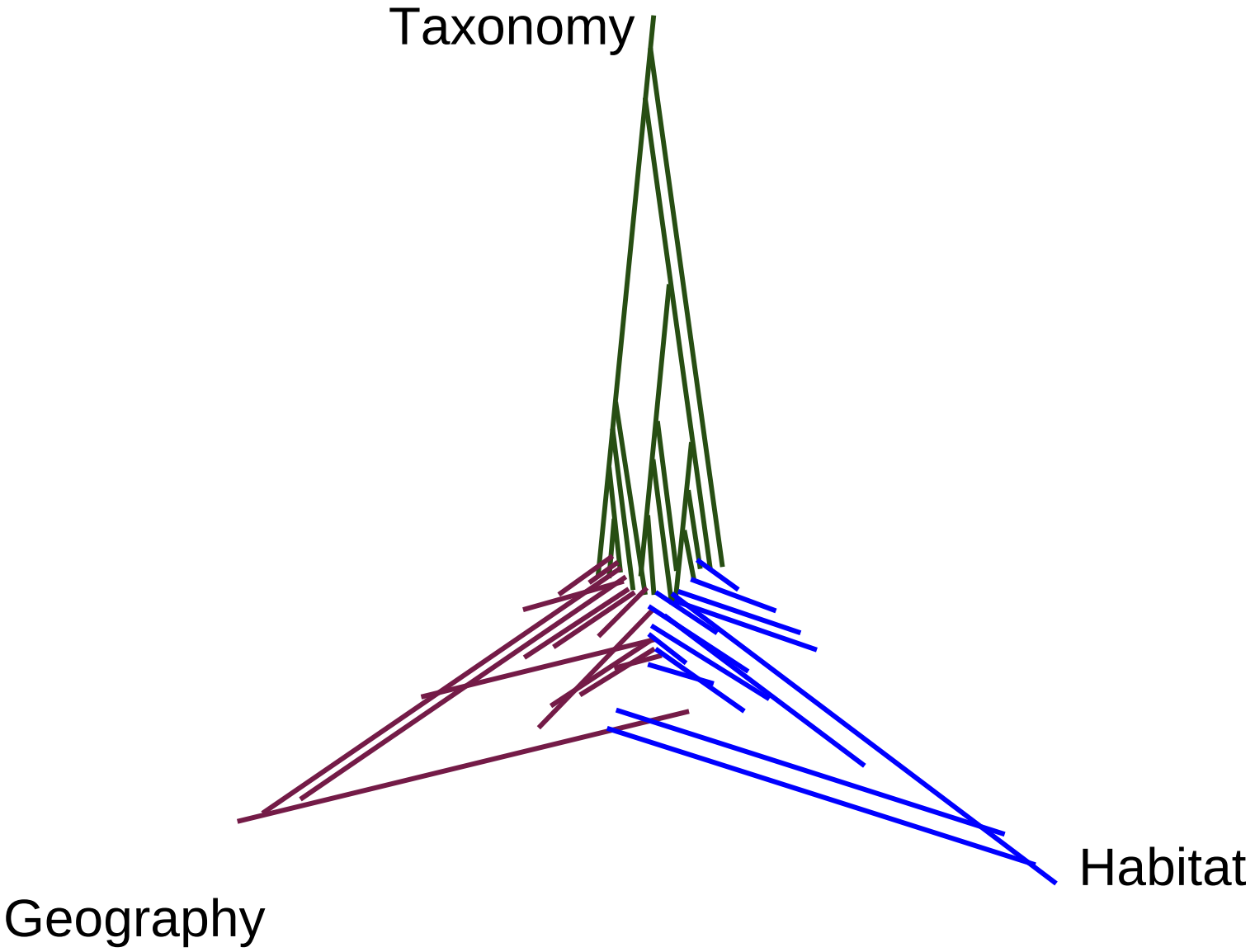
+ water body
  + lotic water body
    + spring
      + hydrothermal vent
        - marine hydrothermal vent
          - black smoker
          - white smoker

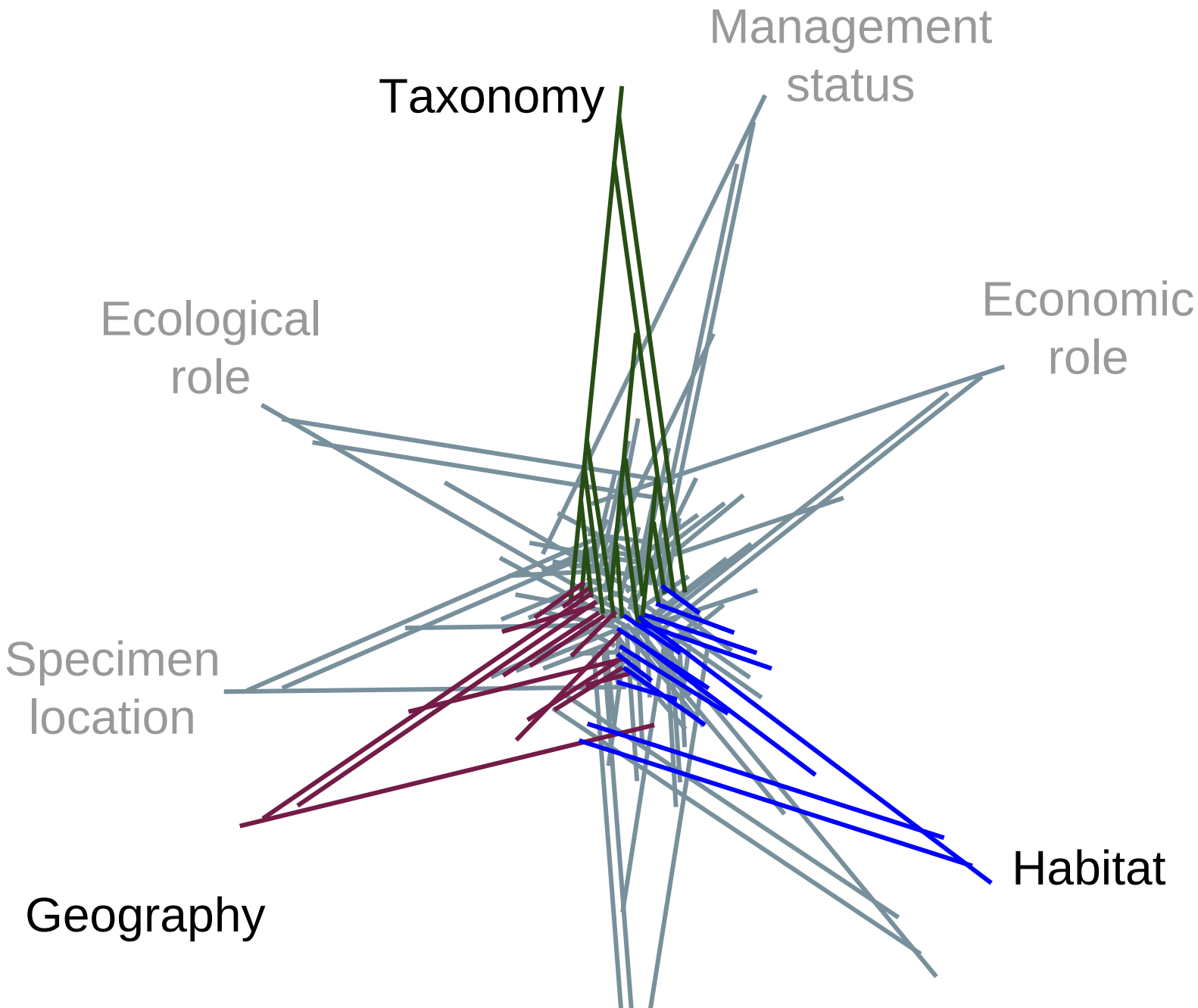
Superclasses & Asserted Axioms

- hydrothermal vent
- located in some marine biome

Uses in this ontology

- marine hydrothermal plume subClassOf : part of some marine hydrothermal vent
- marine hydrothermal vent chimney subClassOf : part of some marine hydrothermal vent


Taxonomy
Habitat
Geography


Management status
Taxonomy
Ecological role
Economic role
Specimen location
Habitat
Geography

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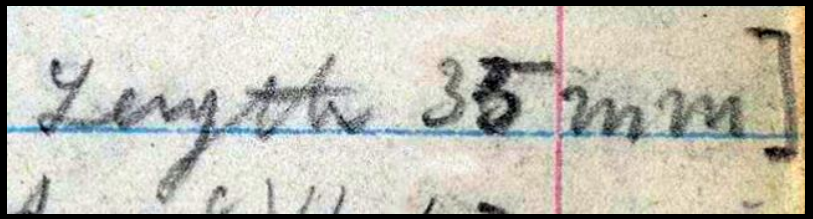
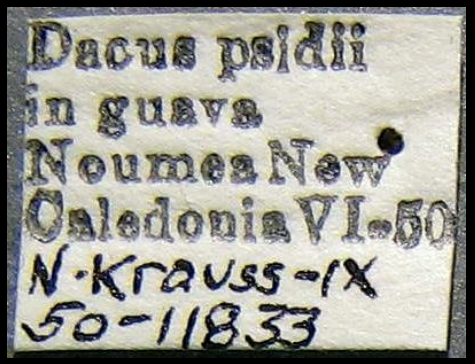


At black light among mixed forest, farmed fields, tidal creek with salt marsh



Sources:

- Natural History Collections
- Biodiversity Literature

Accelerants

- Data Structure
- Citizen Scientists
- Machine Learning

Next: Integrating our services with the global data ecosystem

Thank You!

EOL is funded by:

John D. and Catherine T. MacArthur Foundation

Alfred P. Sloan Foundation

David M. Rubenstein

Alice Konze