



**GBIF**



# Mapping Biodiversity

## Using GBIF data to conserve nature

Sam Wenaas Perrin



**GJÆREVOLL CENTRE**  
Biodiversity Foresight Analyses



UNIVERSITETET I BERGEN



Why is mapping biodiversity so important?

How do we map biodiversity?

How does GBIF help?



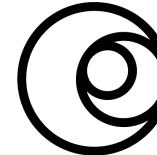
Image credit: Reef - Workfortravel ([CC BY-SA 4.0](#))



Vitenskapsmuseet

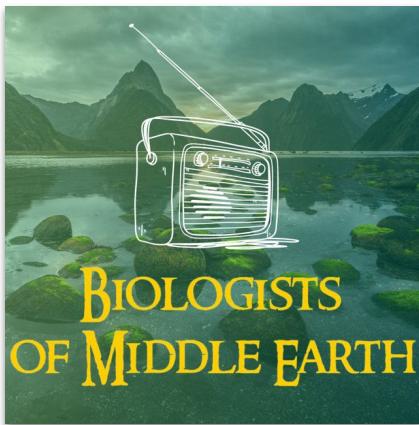


Ducky



GJÆREVOLLENTERET

Framtidsanalyser av naturmangfold



**The Biologist**  
Royal Society of Biology

**FEATURES**  
[FEATURES](#)  
[INTERVIEWS](#)  
[COVID-19](#)  
[MEET OUR MEMBERS](#)

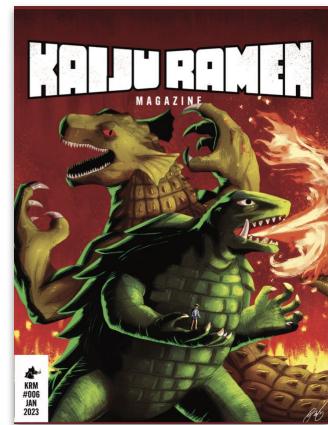
**OPINION**  
[BOOK REVIEWS](#)  
[ARCHIVE](#)

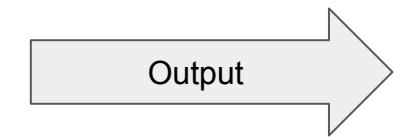
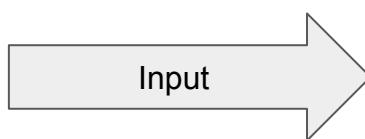
**FEATURES**  
**The way of the jackal**



**Biography**  
Dr Sam Wenzel Perrin is an invasion ecologist and climate data analyst and founder/editor of the blog Ecology for the Masses.

**“**  
When the golden jackal appeared most onlookers assumed it was just a matter of time before the species was duly assigned a classification by local authorities. Yet first Finland then Norway announced that the species wouldn't make it on to the list  
**”**







Vascular  
plants

Birds



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2020 UN BIODIVERSITY CONFERENCE  
COP 15 - CP/MOP 10 - NP/MOP 4  
Ecological Civilization: Building a Shared Future for All Life on Earth  
KUNMING – MONTREAL

## KUNMING MONTREAL GLOBAL BIODIVERSITY FRAMEWORK

...the twenty-three targets to be achieved by 2030 include **30 per cent conservation of land, sea and inland waters**, 30 per cent restoration of degraded ecosystems...



Image credit (wind farm): Statkraft (CC BY-NC-ND 2.0)



You need to understand which areas are  
the most valuable

What is value

You need to understand the spatial  
distribution of species



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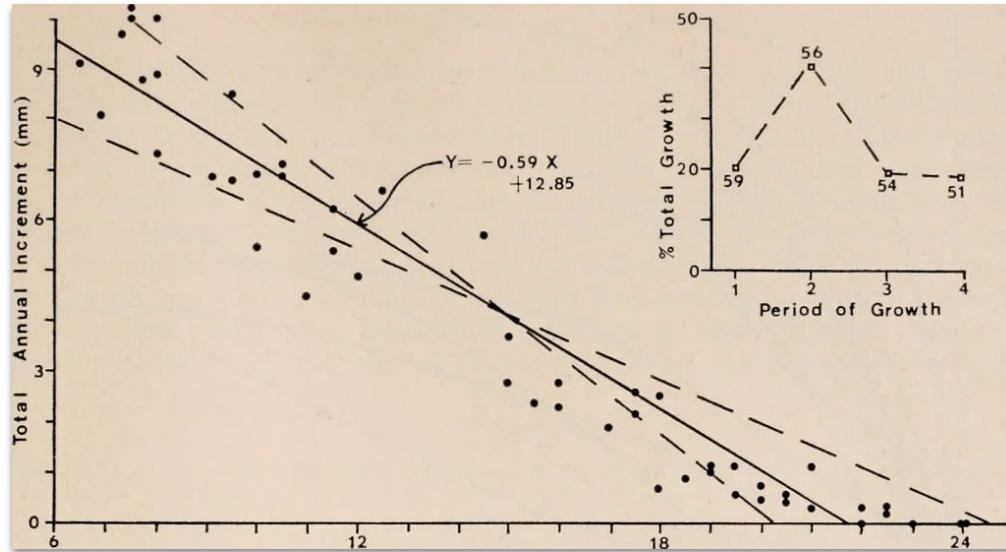
Image credit: NTNU Vitenskapsmuseet



We need to use **the areas we have data for** to extrapolate and make predictions about the areas **we don't have data for**



## Ecological Modelling





# What do you need for a **Species Distribution Model?**

- Species occurrence data
- Environmental data
- Additionally:
  - Spatial data
  - Trait/phylogenetic data



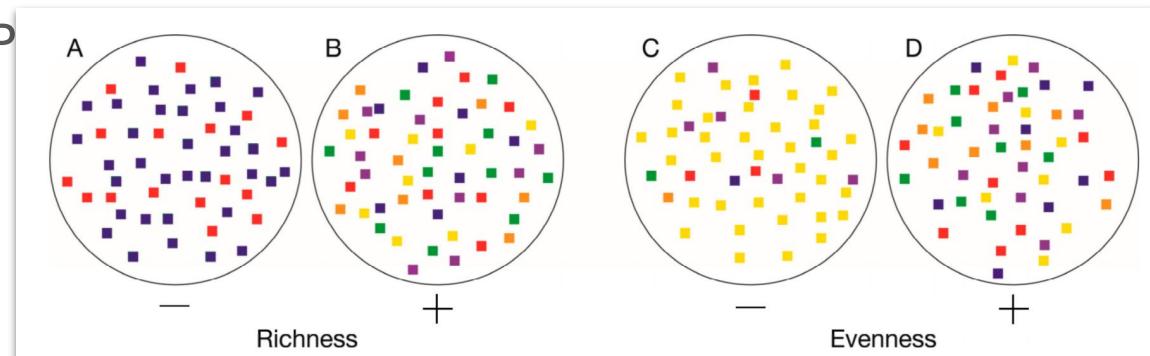
# How can we measure biodiversity?

- **Species richness/evenness**
- Rare/threatened species richness
- Genetic diversity
- Functional richness
- Phylogenetic richness



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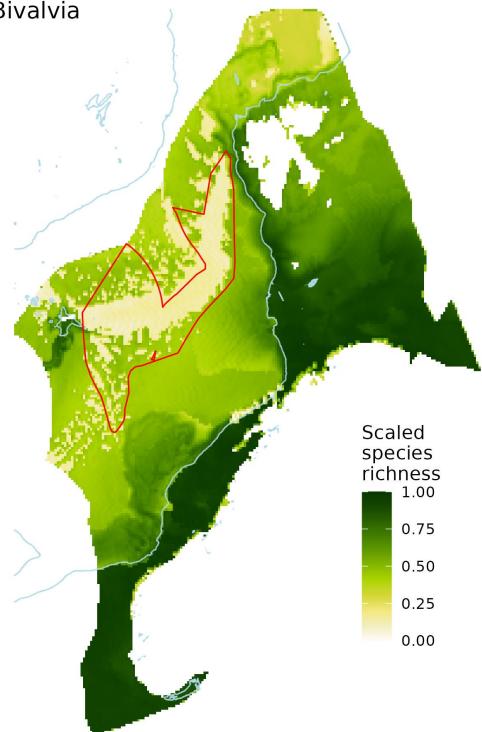




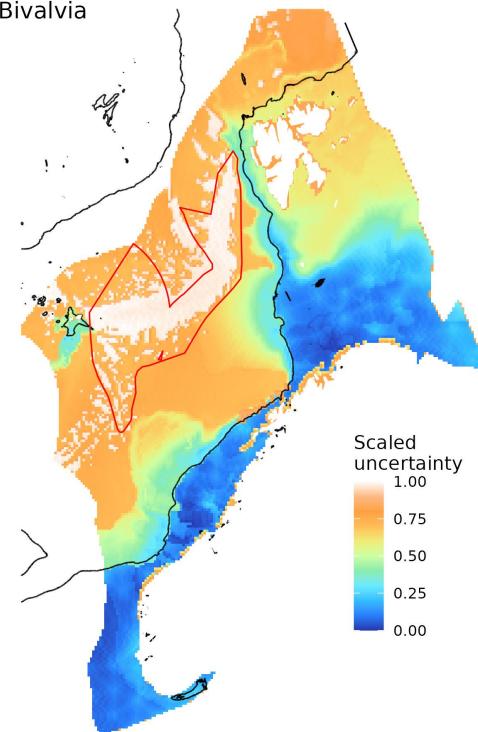
	Low richness	High richness
Low uncertainty	Useable land	Conservation
High uncertainty	Surveying	Surveying



Bivalvia

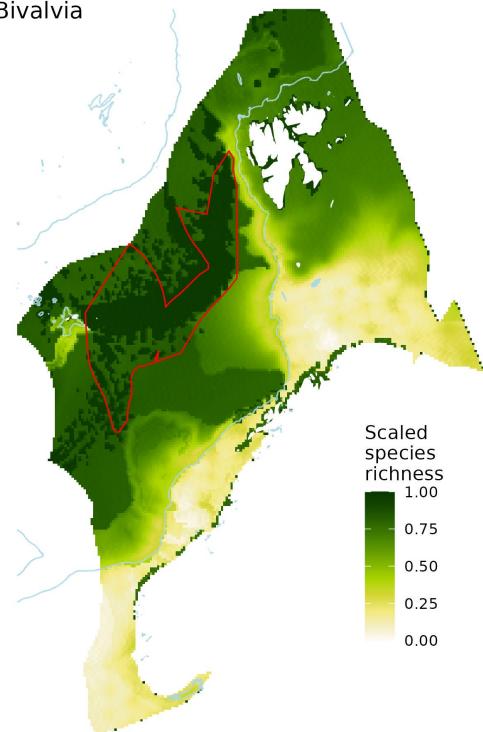


Bivalvia

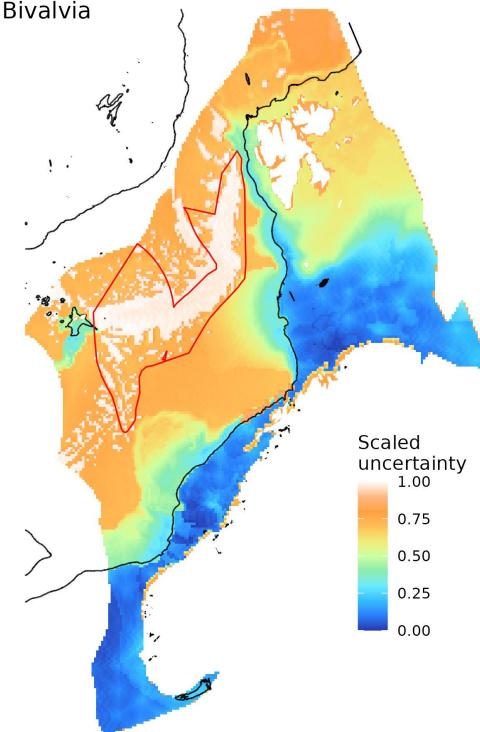




Bivalvia

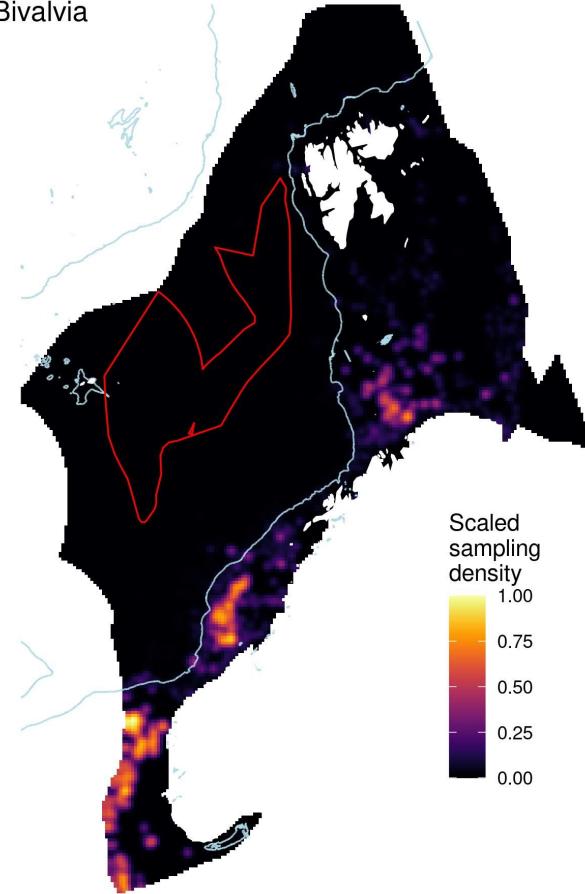


Bivalvia





Bivalvia





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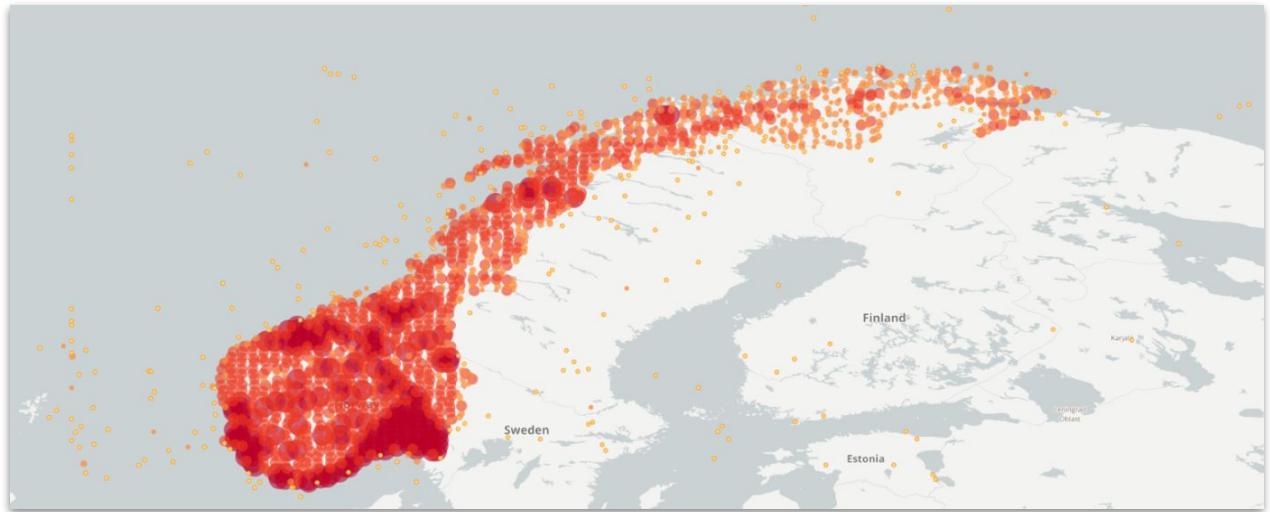
3,435,281,843

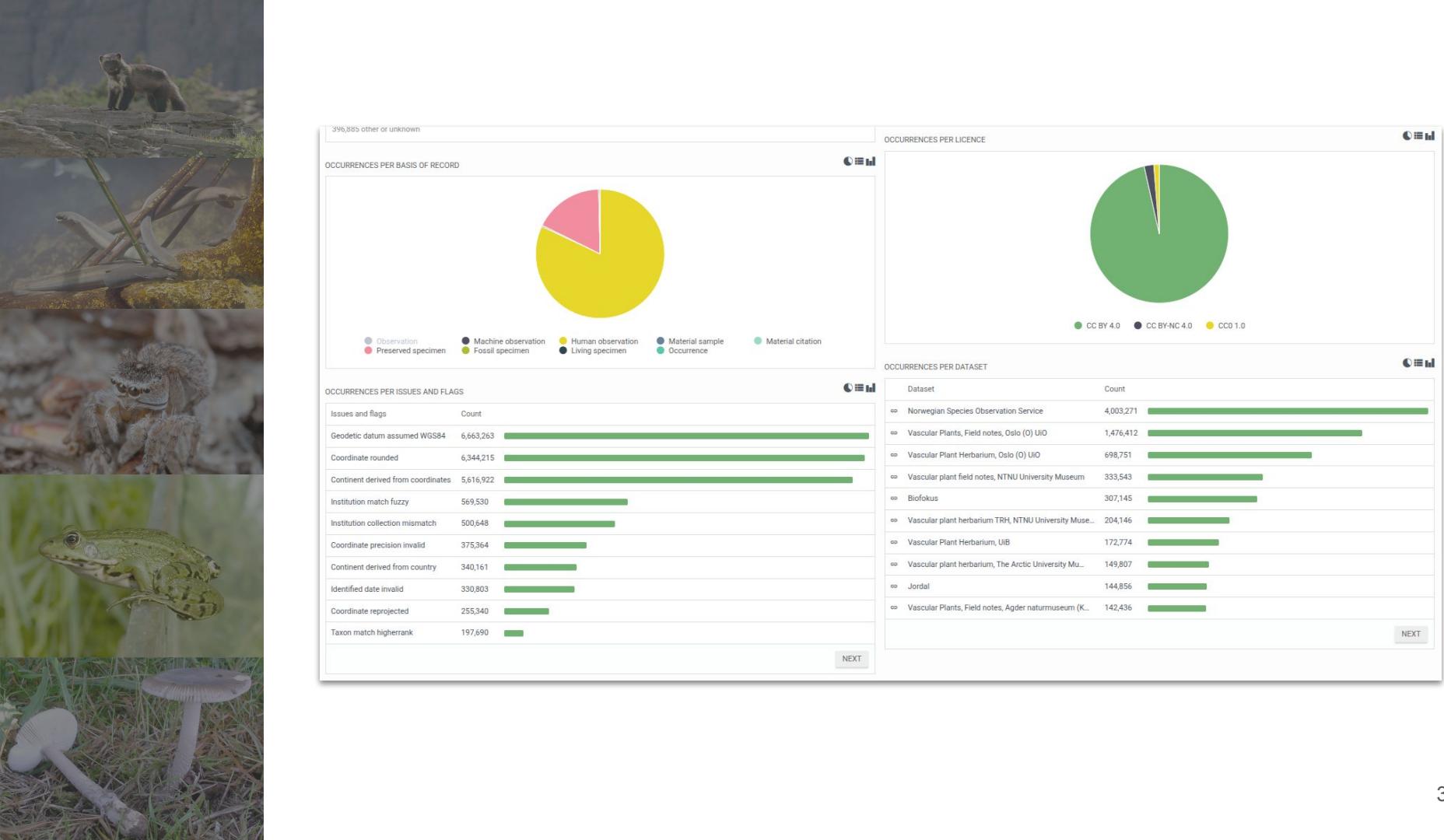
Occurrence records

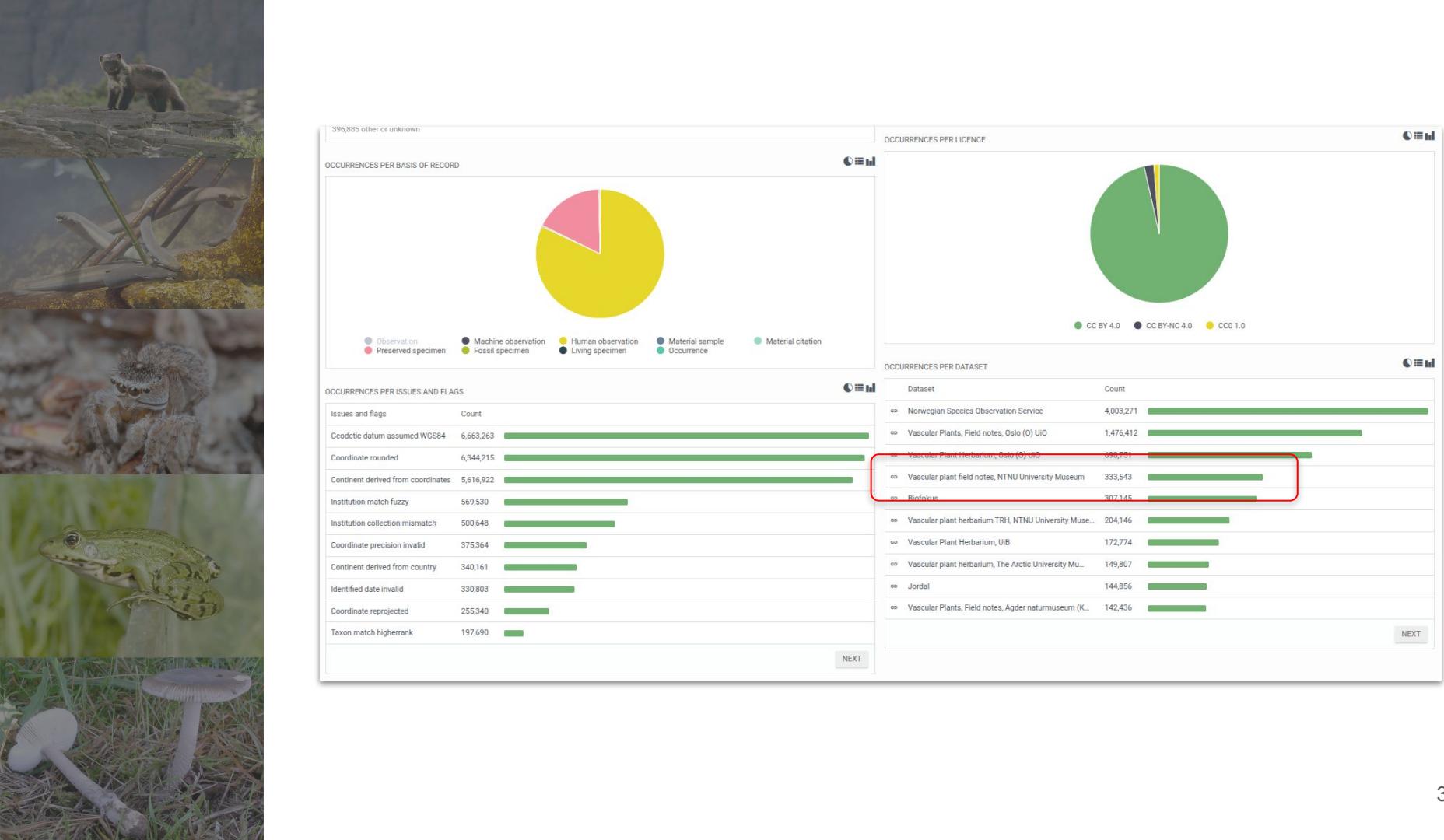


116,701

Datasets









SAMPLING EVENT | REGISTERED JULY 30, 2012

# Vascular plant field notes, NTNU University Museum

Published by [Norwegian University of Science and Technology](#)

[DATASET](#)   [METRICS](#)   [ACTIVITY](#)   [DOWNLOAD](#)

336,868 OCCURRENCES

644 CITATIONS

Vascular plant field notes, Norway. Observation of vascular plants from several thousand localities using standardized cross-lists.



Publication date: December 10, 2024

Metadata last modified: February 16, 2025

Hosted by: Norwegian University of Science and Technology

Network: Living Norway Ecological Data Network

Licence: CC BY 4.0

[How to cite](#)   [DOI](#) 10.15468/kkb2x0

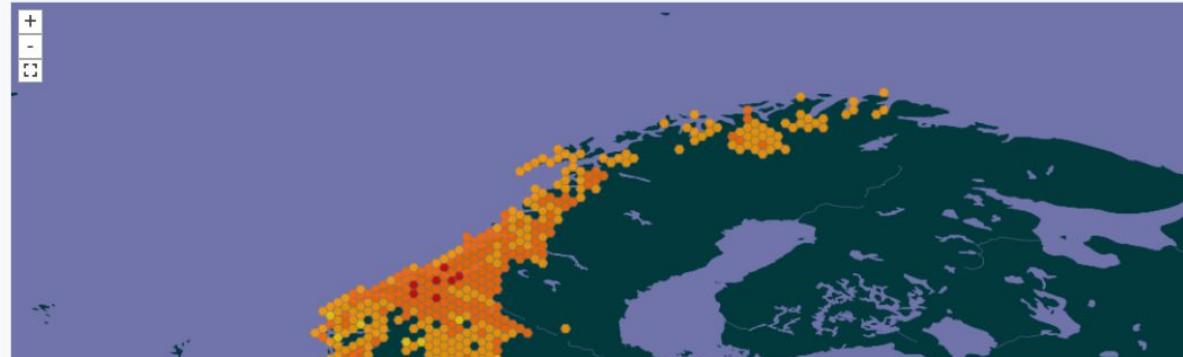
336,868  
Occurrences

100%  
With taxon match

100%  
With coordinates

99.3%  
With year

336,868 GEOFEREFENCED RECORDS





[Description](#)  
[Geographic scope](#)  
[Methodology](#)  
[Additional info](#)  
[Contacts](#)  
[Data description](#)  
[GBIF registration](#)  
[Citation](#)

## Description

Vascular plant field notes, Norway. Observation of vascular plants from several thousand localities using standardized cross-lists.

## Geographic scope

Norway and a few localities in the middle part of Sweden

## Methodology

### Study extent

The dataset is a collection of observations made during various research project, including surveys and shorter field trips, at the NTNU University Museum from the first part of the 1900s and onwards. Included are also a few observation made by skilled amateurs. The dataset contains observation from several thousand localities throughout Norway, and also a few localities in the middle part of Sweden (Dalarna and Värmland).

### Sampling

Observations of all vascular plant species within a certain area, were recorded in the field using standardized cross-list paper forms covering most vascular plants to be found in Norway. From the late 1990ies onwards, the paper forms have been digitized and the observations recorded in a database. At present the dataset contains observation made until 2006. The area of which each list cover, varies from a few ha to several square km, and the coordinate of each species observation is thus the center point of that area.

### Quality control

The digitized data have been subjected to thorough proofreading by skilled personnel prior to publication.



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## Contacts

### NTNU University Museum

Originator • Metadata author

Norway

<http://www.ntnu.no/vitenskapsmuseet>

### Dag-Inge Øien

Administrative point of contact

Administrator

NTNU University Museum

Norway

[dag.øien@ntnu.no](mailto:dag.øien@ntnu.no)

<http://www.ntnu.no/vitenskapsmuseet>

## Data description

Metadata language: English

Data language: English

## GBIF registration

Registration date: July 30, 2012

Metadata last modified: February 16, 2025

Publication date: December 10, 2024

Hosted by: Norwegian University of Science and Technology

Installation: NTNU

Installation contacts: Anders Gravbret Finstad

Endpoints: <https://gbif.vm.ntnu.no/archive.do?r=vascularplantfieldnotes> (Darwin Core Archive) • <https://gbif.vm.ntnu.no/eml/do?r=vascularplantfieldnotes> (EML)

Preferred identifier: DOI [10.15468/kkb2x0](https://doi.org/10.15468/kkb2x0)

Alternative identifiers: <https://gbif.vm.ntnu.no/resource?r=vascularplantfieldnotes> • <https://gbif.vm.ntnu.no/ipt/resource?r=vascularplantfieldnotes> • <http://gbif.vm.ntnu.no/ipt/resource?r=vascularplantfieldnotes> • [https://data.gbif.no/ipt/resource?r=trh\\_vxl](https://data.gbif.no/ipt/resource?r=trh_vxl) • [http://data.gbif.no/ipt/resource?r=trh\\_vxl](http://data.gbif.no/ipt/resource?r=trh_vxl) • [http://dev.gbif.no/ipt/resource?r=trh\\_vxl](http://dev.gbif.no/ipt/resource?r=trh_vxl) • [http://gbif.no/ipt/resource?r=trh\\_vxl](http://gbif.no/ipt/resource?r=trh_vxl) • [http://gbif.no/ipt/resource?r=trh\\_vxl](http://gbif.no/ipt/resource?r=trh_vxl)

See details in the [GBIF Registry](#)

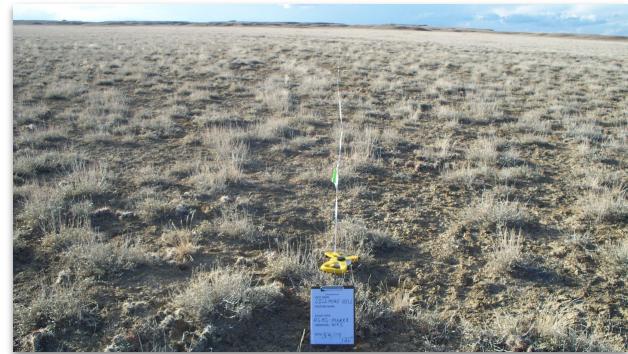
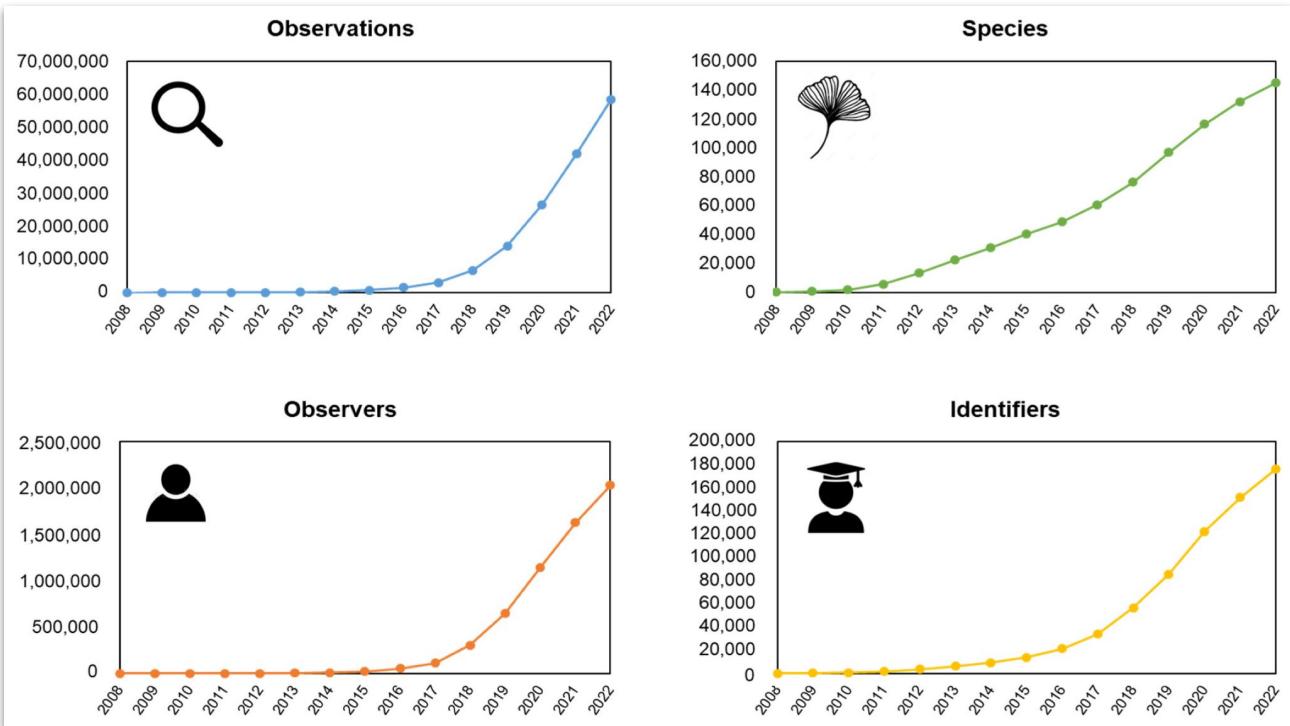


Image credit: Test tube - [University of Michigan SEAS](#) (CC BY 2.0), transect - [Northwest College Agriculture](#) (CC BY 2.0)



[Lopez-Guillen et al, 2024](#)



Absences get removed!



Occurrence only data is everywhere, but doesn't have much sampling information

Presence-absence data gives you a lot more information, but it's much harder to come by



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We'll learn how to examine GBIF datasets (and metadata) through R

We'll download GBIF data from GBIF (and from its IPT source)

And we'll add absence data back in, where possible