

Global Biodiversity Information Facility

Dag Endresen - GBIF Norge, Universitetet i Oslo



GBIF

Global Biodiversity
Information Facility

Illustrasjon: GBIF data portal

UiO forskningsinfrastrukturvalg, Oslo | 6. juni 2023

TEMA FOR PRESENTASJONEN (UIO KJERNEFASILITET)

Fagrådet ønsker en 10 min presentasjon med fokus på følgende:

- En kort sammenfatning av **hvilke tjenester** kjernefasiliteten *planlegger* å tilby (3-4 min). [allerede tilbyr]
- Forklar hvorfor fasiliteten faller inn under UiOs vedtatte **definisjon av en kjernefasilitet** (ca 3 min).
- Skisser forventet **brukerbase og nedslagsfelt** (2-3 min).
- Hvilken **gevinst** ser man for seg av å få status som UiO-kjernefasilitet?

Resten av den avsatte tid vil benyttes til spørsmål og avklaringer som Fagrådet måtte ha behov for.

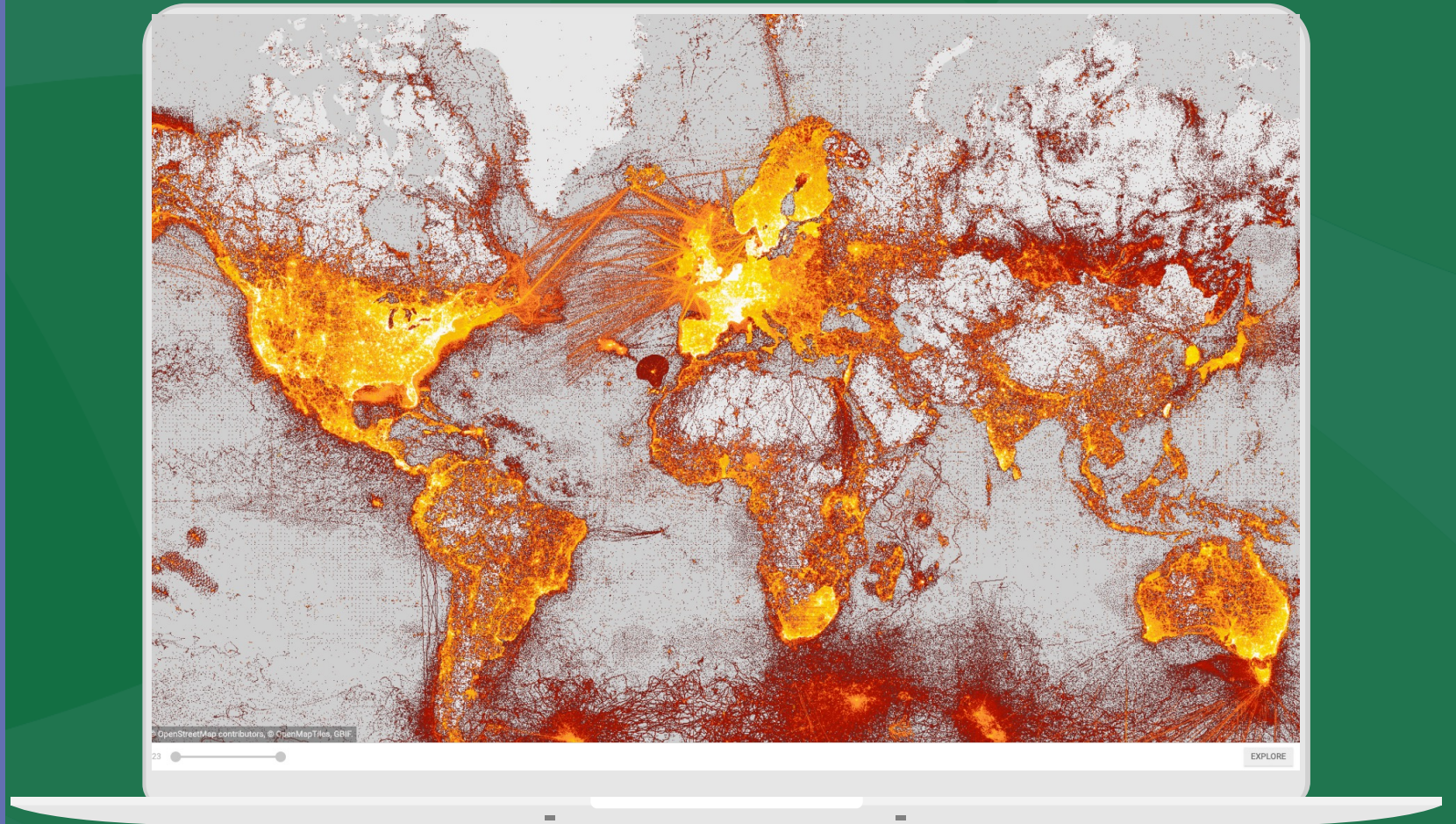
WHAT IS GBIF?

Intergovernmental network and research infrastructure

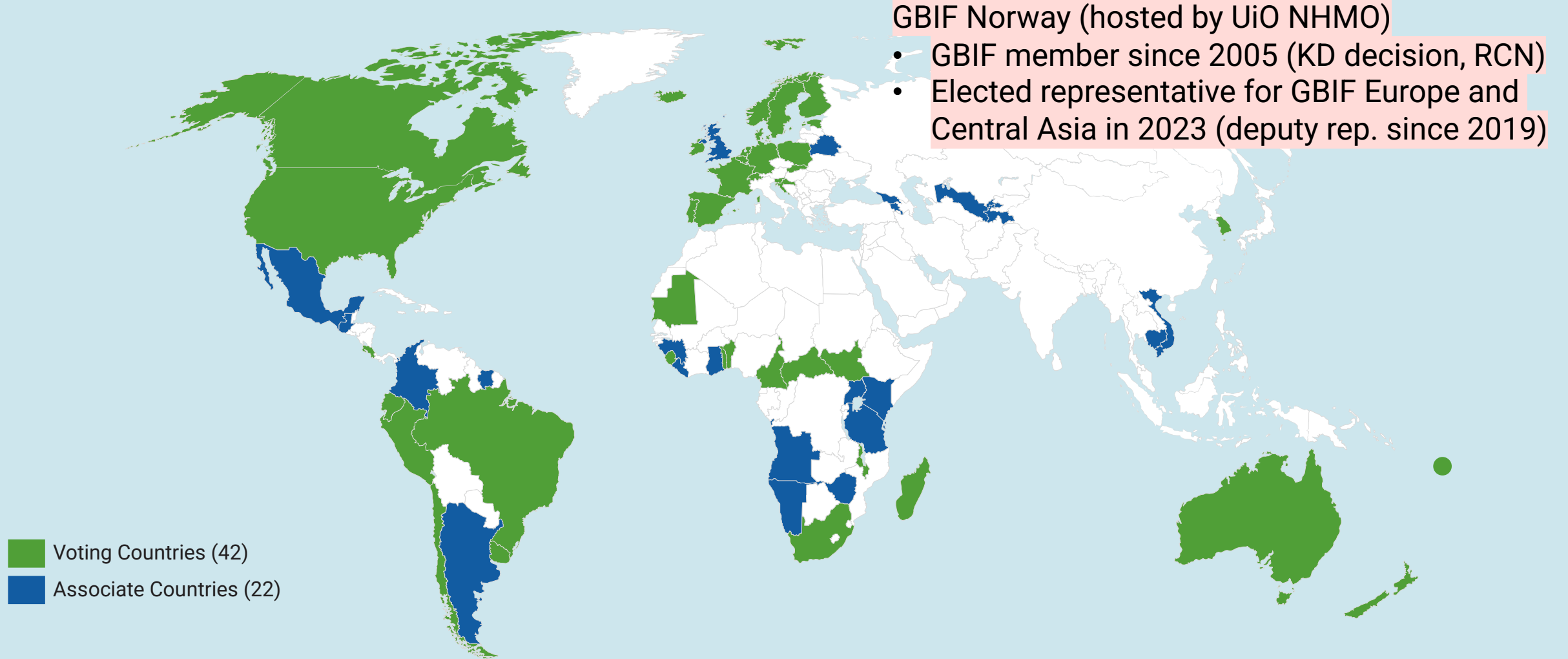
Provides anyone, anywhere, **free and open access to data** about all types of life on Earth

Distributed research data infrastructure based on **national participant NODES**

Secretariat in Copenhagen, Denmark



GBIF PARTICIPANT COUNTRIES 5th May 2023



GBIF NORWAY SERVICES: PUBLISH DATASETS WITH GBIF

National GBIF nodes offer support with professional data preparation and publication (data stewardship, FAIRification, data citation).

The GBIF community including the national GBIF nodes offer **training and capacity building** for open and FAIR data management.

GBIF support **researchers and students at UiO** with (FAIR) biodiversity data publishing services.

And with biodiversity **data reuse** (and data citation).



GBIF-MEDIATED BIODIVERSITY DATA FROM RESEARCHERS AT UIO



Researchers and students from the University of Oslo **publish 4 670 167 species occurrence data points** in GBIF (updated 2023-06-04)

These data points have been reused and **cited in 1 637 peer-reviewed** scientific publications.

(187 so far in 2023; 455 in 2022)

In total for all datasets published from Norway
51 612 699 species occurrences published
400 datasets, 38 institutions

OCCURRENCES PER KINGDOM



Animalia
1,157,144
occurrences



Plantae
2,742,071
occurrences



Fungi
668,098
occurrences



Archaea
0
occurrences



Bacteria
112
occurrences



Chromista
13,660
occurrences



Protozoa
2,486
occurrences

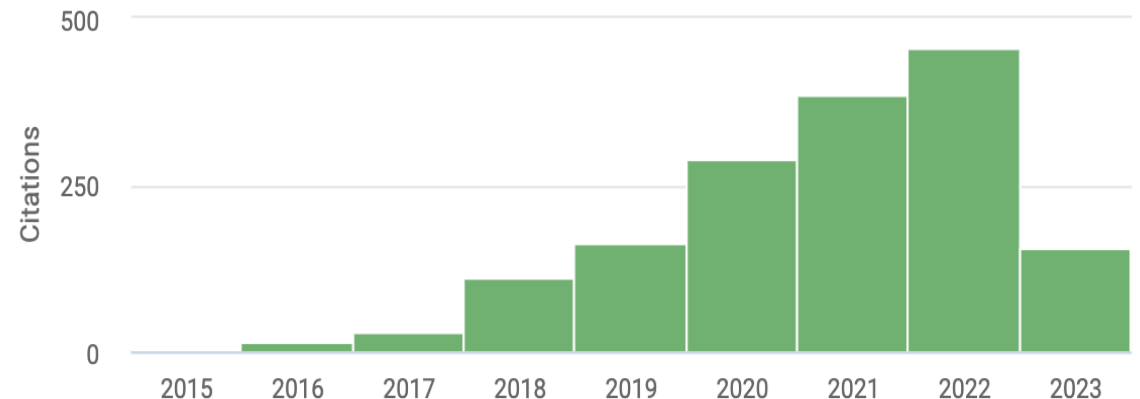


Viruses
0
occurrences



Incertae sedis
67,792
occurrences

Data citations (biodiversity data published FROM UiO)



DATA PUBLISHING FROM UIO



GBIF

Global Biodiversity
Information Facility

Researchers and students from the University of Oslo publish 4 651 363
species occurrence data in GBIF (map updated 2023-05-15)

GBIF NORWAY END-USERS: GBIF-MEDIATED BIODIVERSITY DATA

GBIF provides anyone, anywhere, open access to data about all types of life on Earth.

Researchers and students **from Norway** has published **483 peer-reviewed papers** citing the reuse of GBIF-mediated data.

(18 papers so far in 2023; 106 in 2022)



STUDENT COURSES, RESEARCH TRAINING AND WORKSHOPS

Marine biodiversity data mobilisation for Nansen Legacy
(Tromsø Nov 2022, Oslo Sept 2023, ...)

Data publication workshops (Bergen Feb 2023, ...)

Open Science courses (Finse Nov 2022, Dovre Nov 2023)

BioDATA data mobilisation (2018-2022)

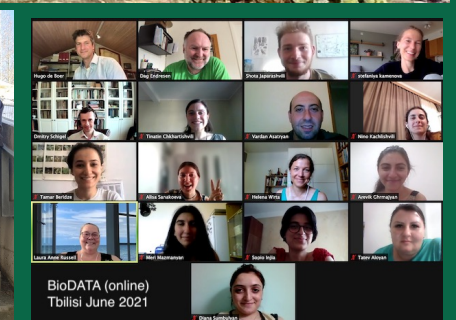
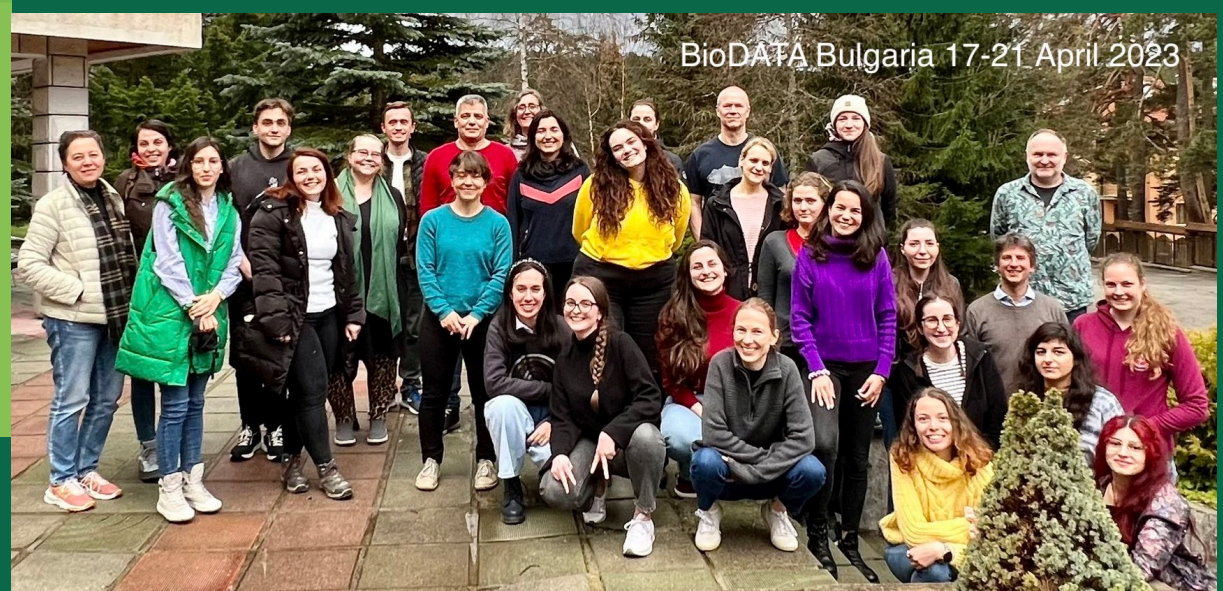
BioDATA DNA sequence data (2022-2025)

BioMedData ELIXIR data management (2020-2024)

GBIF CESP Tajikistan mentoring (2022)

GBIF CESP OpenPSD private sector (2020)

GBIF CESP Bireme EU reporting (2017-2018)



BIODIVERSITY DIGITAL TWIN (BIODT.EU)

GBIF and GBIF Norway (UiO) participate in the Horizon Europe development of digital twins for biodiversity (2022-2025).

*Including a **digital twin for the crop wild relative genepool** of grasspea (*Lathyrus*).*

*Including a **digital twin for DNA-detected biodiversity** in poorly known habitats.*

*Including identifying **biodiversity infrastructure** (ESFRI roadmap, EOSC) collaboration models.*



HVORFOR GBIF NORGE SOM UIO KJERNEFASILITET – ØNSKET GJEVINST

Ytterligere **økt anvendelse fra hele UiO** (bedre integrert i *hele* UiO).
Økt **gjennbruk av forskningsdata** (artsdata) produsert ved *hele* UiO.
Tverfaglig utveksling av kompetanse, **redusere duplisering** av ressurser
→ økt **komplementaritet** mellom forskningsinfrastrukturer der UiO deltar.

UiO Forskningsstrategi (inkludere biodiversitetsinformatikk):

Veikart UiO → Veikart Norge → ESFRI

UiO IT: Avanserte tjenester for IT i forskning:

Artsdata, datapublisering, FAIR data, **data science**

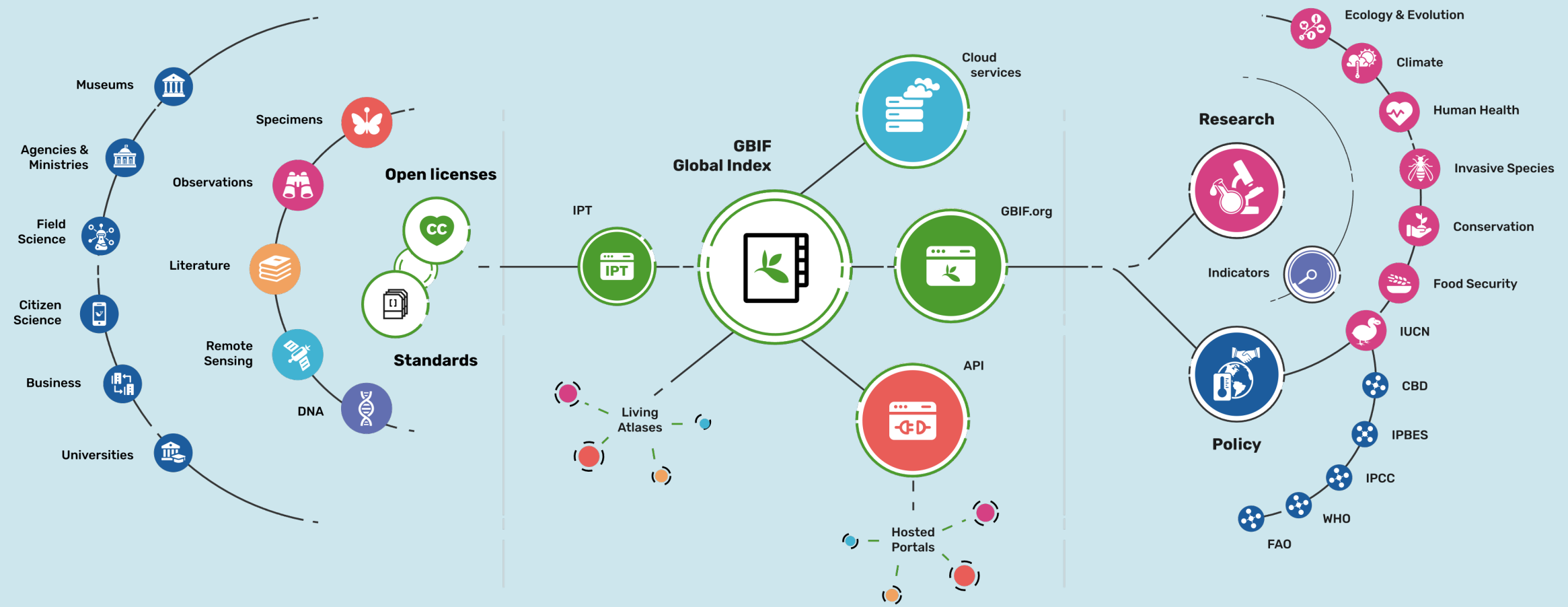


UIO KJERNEFASILITET - DEFINISJON

Kjernefasiliteter er forskningsinfrastruktur som godkjennes av fagrådet om den oppfyller følgende krav:

- **Gjør tilgjengelig**, eller bidrar med analyser fra, **særlig avansert og kostbart vitenskapelig utstyr** som ikke finnes allment tilgjengelig i forskningsmiljøene, og legitimeres i stor grad av etterspørsel og **brukermasse utenfor eier av fasiliteten**. → Artsdata fra vitenskapelige samlinger, naturhistorie
- **Krever spisskompetent personell for drift og service**; spesialkompetansen må dokumenteres for eksempel gjennom dette personellets forskningsaktivitet. → datarøker, data steward
- Kan unntaksvis være rene **kompetanseplattformer** (spesialkompetanse uten avansert kostbart utstyr) når etterspørsel etter kompetansen er utstrakt og særskilt viktig for forskningsaktiviteten – et eksempel på dette er for tiden Computational Life Science. → biodiversitetsinformatikk
- Har påtatt seg en **forpliktelse til å tilby avanserte/ høyspesialiserte analyser uten automatisk å ha krav om medforfatterskap** (men dette kan vurderes etter Vancouver-reglene når bidraget innebærer videreutvikling utover standard analyseoppsett). → #CiteTheDOI avanserte tjenester for datasitering
- **Nasjonal forskningsinfrastruktur** defineres automatisk som kjernefasilitet. → har NFR INFRA status
- Kjernefasiliteten er vurdert å fylle et behov utfra Fagrådets vurderinger.

PROVIDING BIODIVERSITY EVIDENCE FOR RESEARCH AND POLICY





GBIF Norway node story ...so far

(2004-2025)

GBIF ECA Nodes Meeting in Warsaw Poland May 2023

GBIF PARTICIPANT NODE

- Participant Node (*min 4 roles*)
 - Node Manager (coordination)
 - IT developer (informatics)
 - Data scientist (science support)
 - Biodiversity informatics officer





GBIF.no



Research Council of Norway (RCN)
UiO Natural History Museum (NHMO)
Norwegian Biodiversity Information Centre
(NBIC)

- Norway joined GBIF as voting member in **February 2004**.
- **Mandate** from the Ministry of Science (KD).
- **Funded** through the Research Council of Norway (RCN-INFRA).
- **Node hosted** by the UiO Natural History Museum since 2005.
- **Node staff** at NHMO (since 2005) & NBIC (since 2018) & more since 2021 (distributed node Oslo, Trondheim, Bergen, Tromsø).
- Project funding through **5 project periods** (2005-2025).
- Node data publishing services are **well integrated** in operational national decision-making systems.

NODE BUDGET (2005 - 2025)

Overall investment (21 years, 83 MNOK = 8 M€)

- 2005-2007 (1,9 MNOK/year = 194 000 €/year)
- 2008-2011 (3,0 MNOK/year = 317 000 €/year)
- 2012-2016 (4,0 MNOK/year = 421 000 €/year)
- 2017-2020 (3,7 MNOK/year = 382 000 €/year)
- 2021-2025 (6,2 MNOK/year = 533 000 €/year)



DISTRIBUTED NODE CONSORTIUM

formalized sharing of Node responsibilities

Oslo (node host)
University of Oslo

Trondheim

Norwegian University of Science and Technology
Norwegian Biodiversity Information Centre
Norwegian Institute of Nature Research

Bergen

University of Bergen

Tromsø

UiT The Arctic University of Norway

Bergen

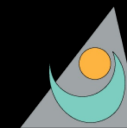
Oslo

Tromsø

Trondheim



NODE BOARD



- Hugo de Boer, UiO, Oslo – *Head of delegation*
- Arild Lindgaard, NBIC, Trondheim
- Ingrid E. Mathisen, NTNU, Trondheim
- Geir Rudolfsen, UiT, Tromsø
- Jenny Smedmark, UiB, Bergen
- Erlend Birkeland, NINA, Trondheim
- *Appox. 2 (virtual) node board meeting each year*



NODE STAFF



Dag Endresen, UiO Oslo – Node manager

Rukaya Johaadien, UiO Oslo – Data manager

Vidar Bakken, UiO Oslo – Data mobilization

Michal Torma, UiO Oslo – Data steward

Erik Kusch, UiO Oslo – BioDT

Desalegn Gelete, UiO, Oslo – BioDT

Knut Hovstad, NBIC, Trondheim – Data mobilization

Stein Hoem, NBIC, Trondheim – IT Manager

Anders Finstad, NTNU, Trondheim – Science

Caitlin Mandeville, NTNU, Trondheim – Data use

Beatrice Maria Trascau, NTNU, Trondheim

Andreas Altenburger, UiT, Tromsø – Marine data

Katrine Kongshavn, UiB, Bergen – Marine data

Erlend Birkeland, NINA, Trondheim – Living Norway

Road Vang, NINA, Trondheim – IT Manager

Regular bi-weekly (virtual) node meetings



SOME KEY NODE COLLABORATION PROJECTS

- Biodiversity Digital Twin – BioDT (Horizon Europe, 2022-2025)
- GBIF CESP mentoring (with Tajikistan) (2022)
- BioDATA DNA barcode data (with South Africa [and Russia]) (2021-2024)
- BioMedData – FAIR data management (lead by ELIXIR, 2020-2025)
- DiSSCo Prepare (ESFRI preparatory phase) (2020-2023)
- GBIF CESP OpenPSD (Private-sector data mobilization) (2019-2021)
- BioDATA biodiversity data skills (Caucasus and Central Asia) (2018-2022)
- GBIF CESP Bireme (EU Directorate reporting) (2017-2018)
- Marine data mobilization (Nansen Legacy, OBIS, etc) (recent years)



THANK YOU

Dag Endresen

GBIF Nodeleder for Norge

UiO Naturhistorisk museum

Forskningsgruppe for Maskin-lesbar Natur (MaNa)



www.gbif.org



EXTRA SLIDES

- Some extra slides included here to present some of the biodiversity research data infrastructures the Norwegian GBIF node has collaboration with...

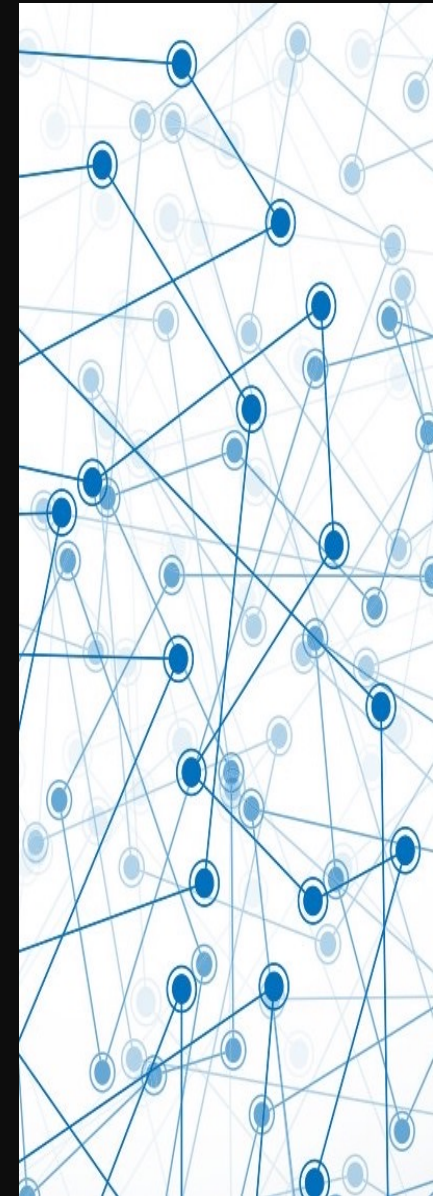


Biodiversity research infrastructure in Norway

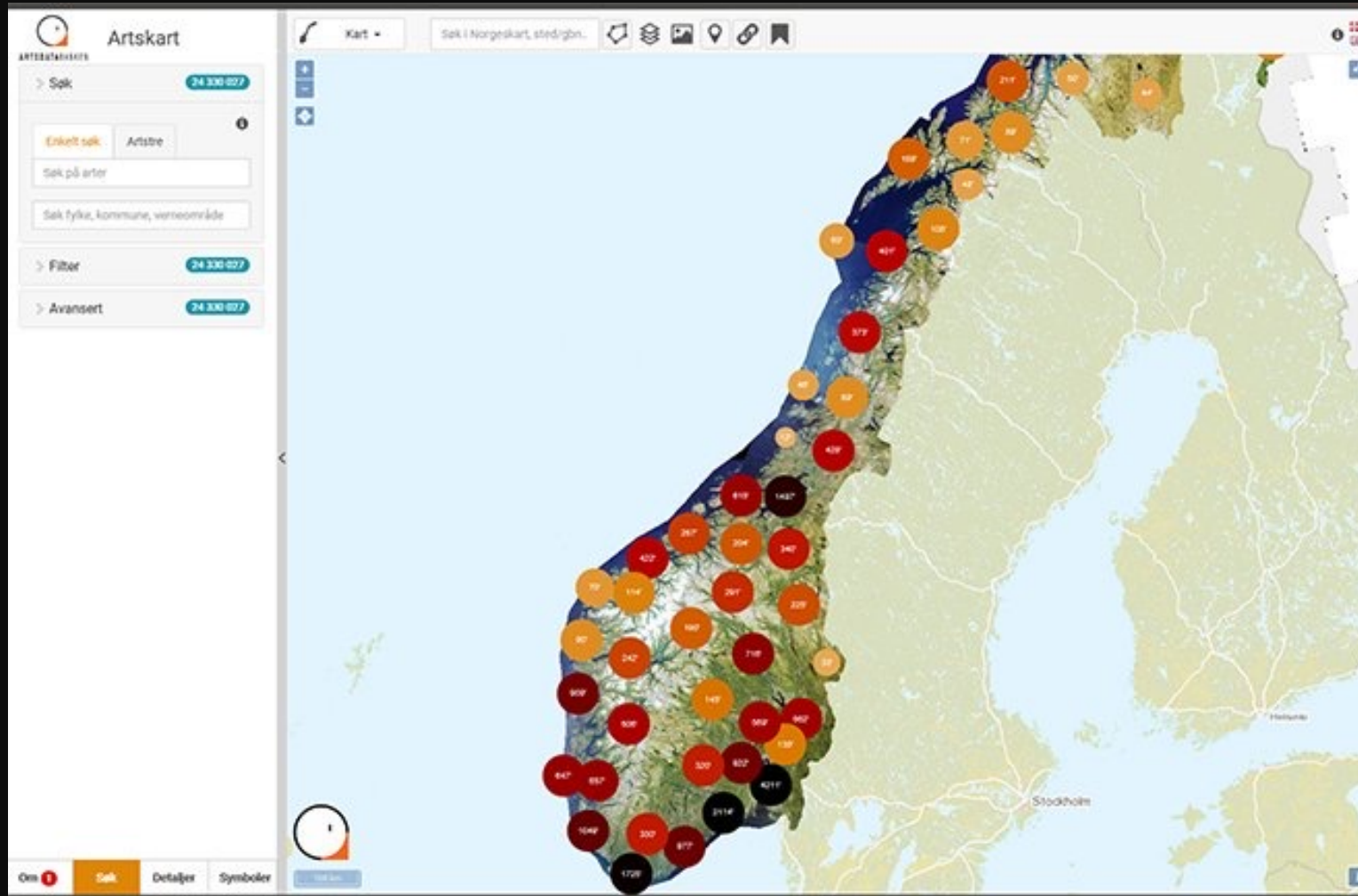
GBIF ECA Nodes Meeting in Warsaw Poland May 2023

LANDSCAPE – NATIONAL BIORI NODES

- Global Biodiversity Information Facility – Norway (since 2004)
- DiSSCo Norway (since 2019) – *under development*
- Revita – Digitization of museum specimens (since 2007)
- ForBio – Research School in Biosystematics (since 2010)
- BioDATA – biodiversity information skills (since 2018)
- Living Norway Ecological Data Network (since 2020)
- eLTER Norway (since 2022) – ecological data (*under development*)
- Norwegian Barcode of Life network - NorBOL (since 2012)
- ELIXIR Norway (since 2014) – Molecular biodiversity WG
- Nature Biobank / DNA Bank – *proposed (under development)*
- GEO BON, GEOSS representatives in Norway
- Nordic e-Infrastructure Collaboration (NeIC)



NORWEGIAN BIODIVERSITY INFORMATION CENTRE



DISSCO NORWAY (RCN & ESFRI INFRASTRUCTURE)

- Distributed System of Scientific Collections – DiSSCo RI
- DiSSCo Prepare (ESFRI) (2020-2023)
- DiSSCo Norway consortium MoU signed (by the 4 university museums)
- Aligned and/or integrated GBIF Norway with DiSSCo Norway



DISTRIBUTED DISSCO NODE CONSORTIUM

formalized sharing of Node responsibilities

Oslo

University of Oslo, Natural History Museum

Tromsø

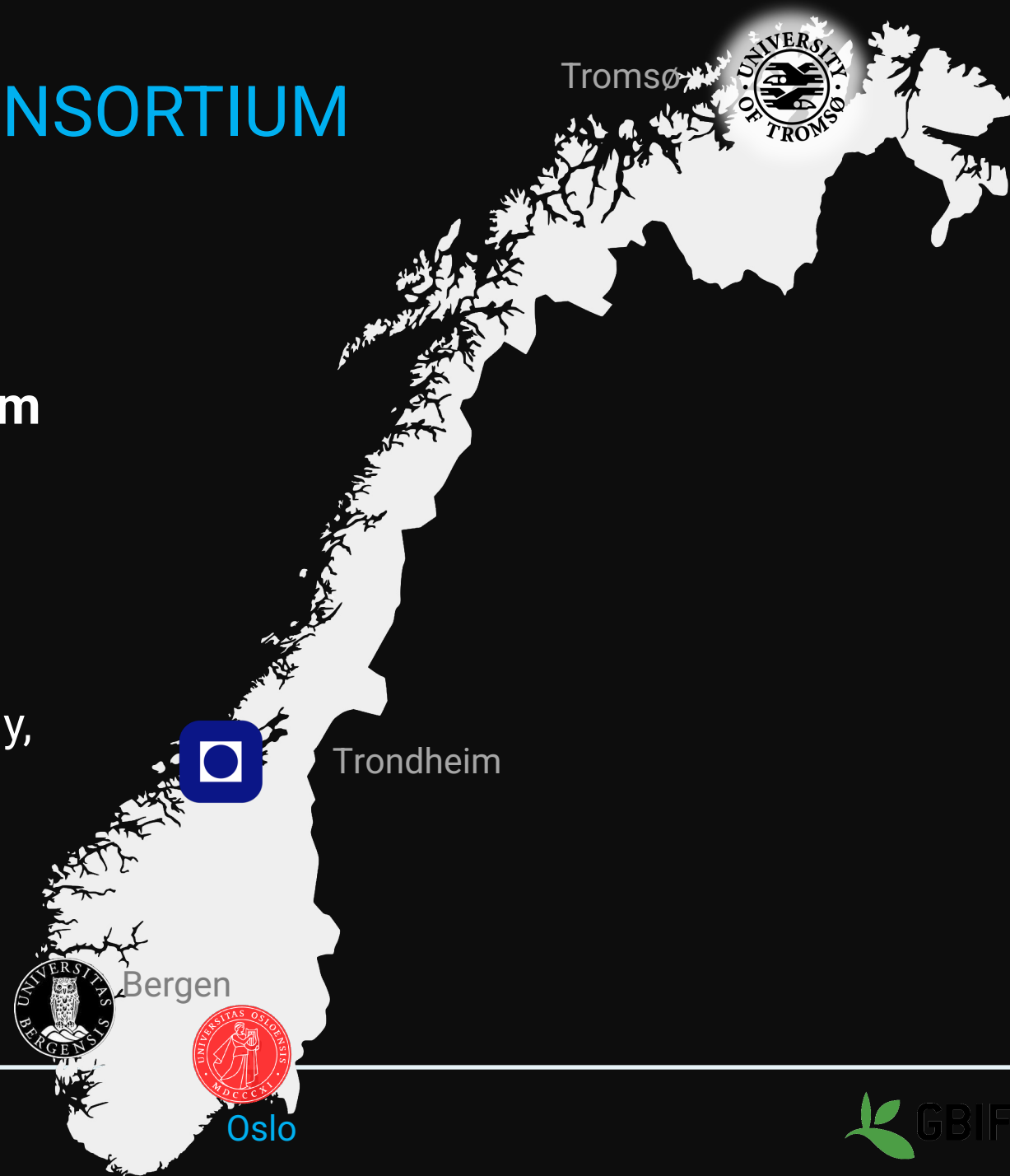
UiT The Arctic University Museum of Norway

Trondheim

Norwegian University of Science and Technology,
University Museum

Bergen

UiB, University Museum of Bergen



Data mobilization

Institute sector

Ecology & Observation data

NINA coordination

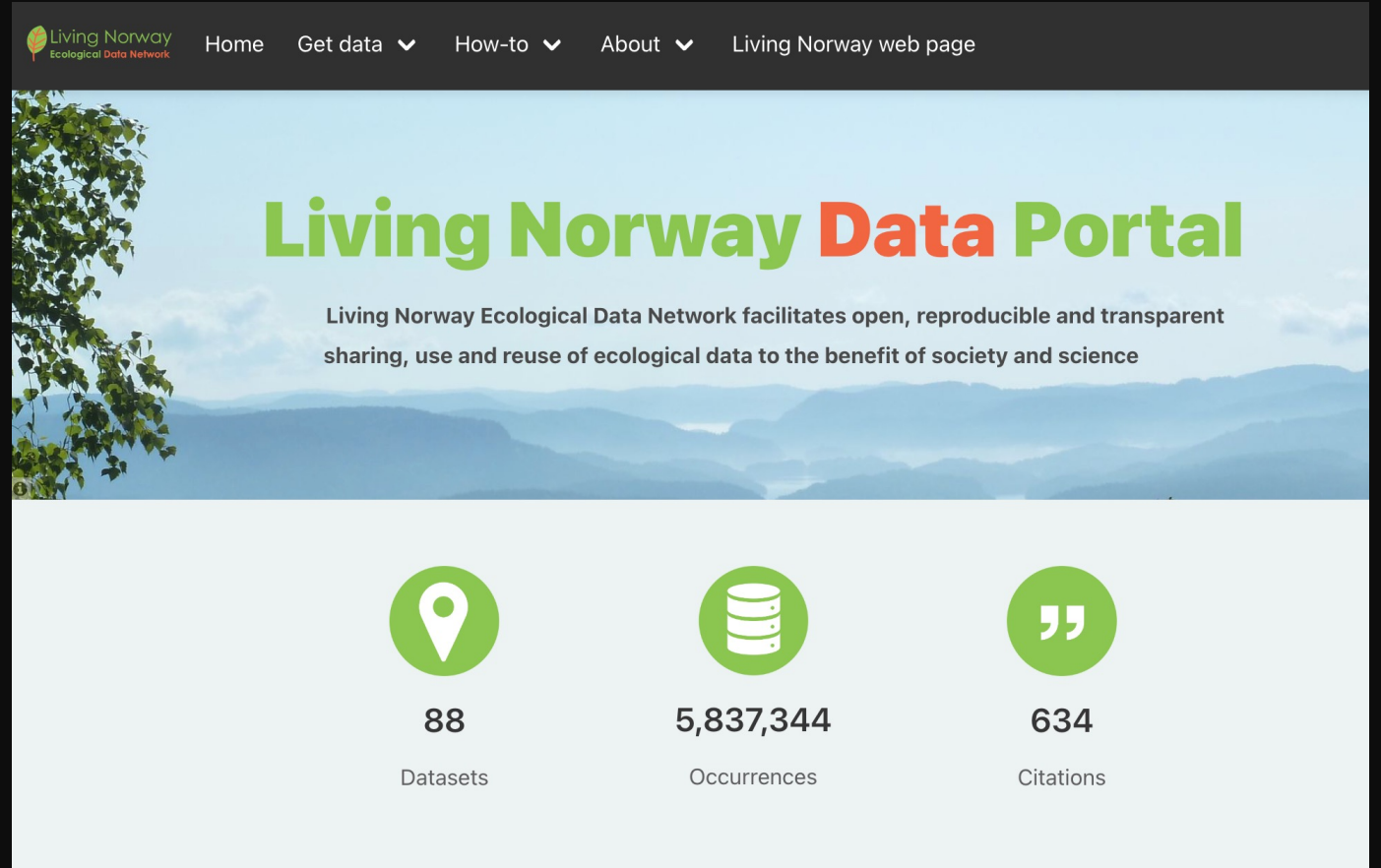
Distributed infrastructure

Consortium (8 institutions)

GBIF Hosted Portal

Annual colloquium meetings

Open Science courses



The screenshot shows the Living Norway Data Portal website. At the top is a dark navigation bar with the Living Norway logo and links for Home, Get data, How-to, About, and a link to the Living Norway web page. The main header features a large image of a forest landscape with the title "Living Norway Data Portal" in green and red text. Below the title is a subtitle: "Living Norway Ecological Data Network facilitates open, reproducible and transparent sharing, use and reuse of ecological data to the benefit of society and science". The lower section of the page displays three statistics in green circles: 88 Datasets (location pin icon), 5,837,344 Occurrences (database icon), and 634 Citations (quote icon).

Category	Count
Datasets	88
Occurrences	5,837,344
Citations	634

LIVING NORWAY ECOLOGICAL DATA NETWORK



Trondheim

Norwegian Institute of Nature Research (NINA)

Norwegian University of Science and Technology

Norwegian Biodiversity Information Centre

Bergen

University of Bergen

Oslo

University of Oslo

Norwegian University of Life Sciences

Norwegian Institute of Bioeconomy Research

Norwegian Institute for Water Research



NATURE BIOBANK (RCN INFRASTRUCTURE)

Nature biobank of digitized material samples *in silico*

Distributed infrastructure

Builds on museum collections, DNA barcoding, genome sequencing and DiSSCo RI

Proposed – not funded (yet)



international
BARCODE
OF LIFE



DiSSCO

Distributed System of Scientific Collections



NORWEGIAN SEQUENCING CENTRE

ELIXIR NORWAY

National node of ELIXIR

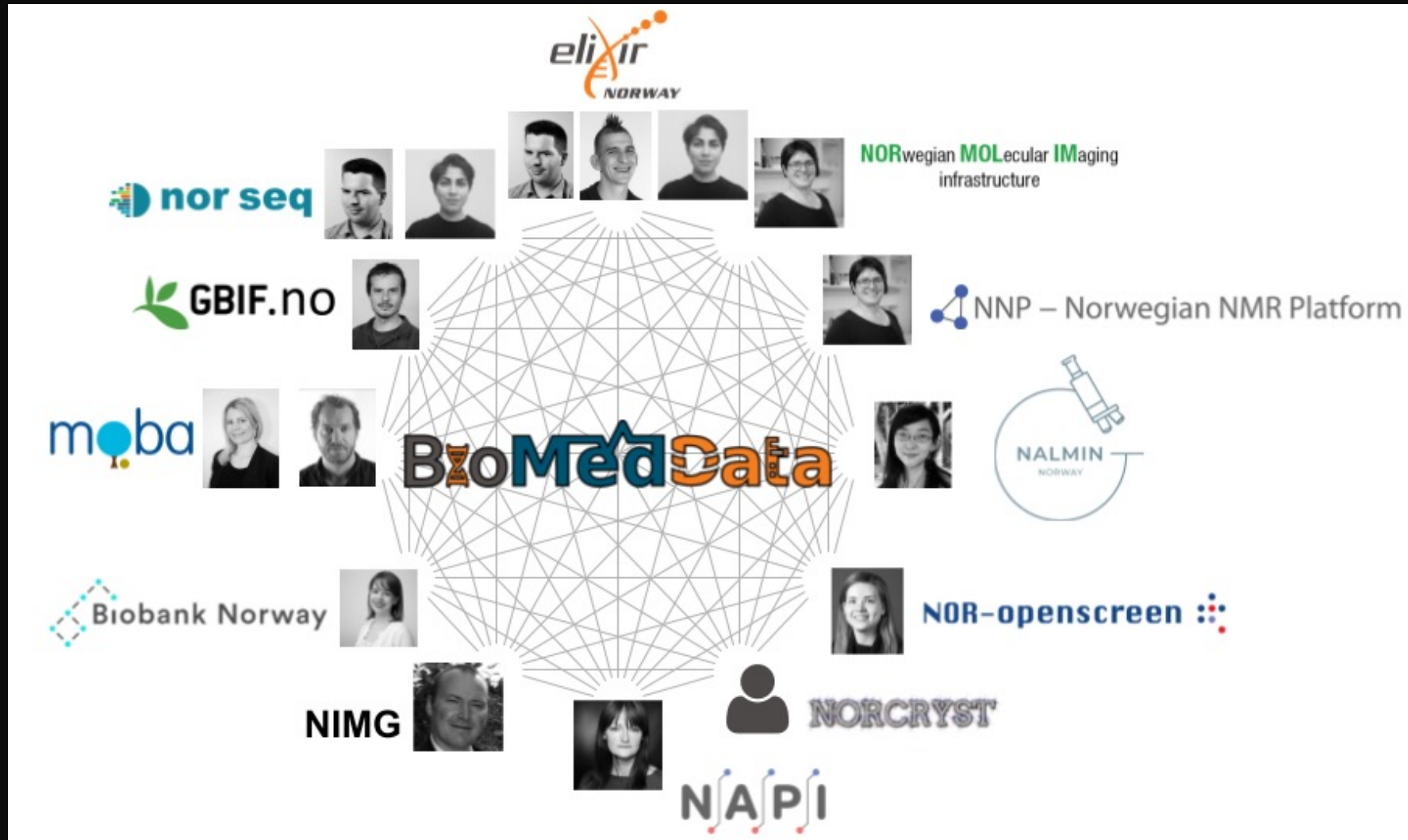
Distributed infrastructure

supporting life science research
and its translation to medicine,
environment, the bioindustries
and society

Molecular biodiversity working
group



ELIXIR NORWAY – BIOMEDDATA (2020 – 2024)



MARINE DATA RESEARCH DATA INFRASTRUCTURES



NORDFORSK – NEIC – NORDIC EINFRASTRUCTURE COLLABORATION

- DeepDive (2017 - 2019) Nordic-Baltic Collaboration on e-Infrastructures for Biodiversity Informatics
- Nordic Lifewatch cooperation (NordForsk report 2014)

