

Georeferencing natural history museum specimens

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NTNU University Museum

MOBILISE meeting 10-12 February 2020, Warsaw

Digitalisation

- 1997 – several initiatives
- 2006-2015 – national programme Revita (Revitalise)
- MUSIT - University museums IT-organisation
- 2007 Common national database – MUSIT
- Local databases
- Digitised ~90% natural history specimens

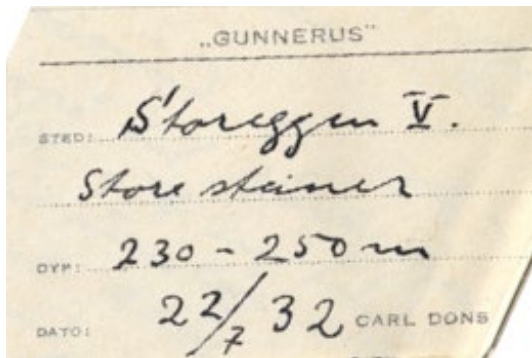


Development of workflow

- National database
 - Darwin Core backbone
 - Export to GBIF
 - Georeferencing: UTM, MGRS, Lat/Long
 - Images and supplementary data supported
- Locally developed databases
 - Organism groups not covered by national database
 - Local needs, research data add-ons

Standards and pragmatics

- Local georeferencing standards
 - Best practice
 - How to treat accuracy
- Use of supplementary information



St.: 1213-81 Dato: 28/8-81
Lok: Bleiksdjupet 69°33'N, 15°45'E
Redskap: Slede Dyp: ca.1200-900 m
Bunn: Foraminiferer og mudder, kiselspikler
Andre opplysninger: Ca. 2000

kuld mid en siddende
solindgang.

Stad i fjæren - den varly ster
fjære, men ganske lre.

Kjørt en Ginstenrum til i løse
oss gi. fallgarnen. Han var bare
23 år gammel - og så vant ungdomme-
lig ut, men hadde vært på Skoleen
for han var 13 år.

Oms. 7. juli kl 8 ut forbi Orsa - og
satt kurs N.V.E.V. Sats. Løppen.
Vi gj. bare med 5 ringes fart!

Snak bis fra H., forholdene rolig her
Kl 4 om n. 40 krønør for utgang
Skjart (H. Steinhorn) rø skinn
et skapet & med 500 m vint
Ligning - gi 1 krønør
Lilke; Løst 270 m.
St. I 220-270 m (39 km.) sand og grus
vint. En siddende
Siddende. Skallrups
ar Pecten ist. og andre.
[Steinhorn. 11. juli] - en ny ass !!!

Standards and pragmatics

- Place names
 - Norwegian Mapping Authority
 - Modified GBIF International geographic thesaurus (ISO-3166-1&2)
- Changes in administrative organisation
- Old names
- Many similar names

*Tirsd. 3/4. Kl 1/2 2 ombord i "Prinsesse
Ragnhild", et nydelig skib. - En liden
tun island i Ålesund, hvalke på bær
D. Björlykke - her så hans samlinger.
Onsd. 4/4 kl. 5: Frondhjem.*

[Signature] [Ragnaldsvæg:
61° 34' N
4° 48' E]

Georeference challenges

- Know your coordinates
- Mid-point position when labels give general names
 - Municipalities
 - Fjords
- Accuracy
 - how to set accuracy
 - Introduce errors, too accurate

Know your coordinates

- Many sources to errors
 - Lack of knowledge
 - Use of different formats in entries
 - Need of guide/handbook for users
 - Keep verbatim entries

Examples:

- Example 1: 36°31'21"N; 114°09'50"W (DMS)
- Example 2: 36°31.46'N; 114°09.84'W (DDM)
- Example 3: 36.5243°S; 114.1641°W (DD)
- Example 4: -36.5243; -114.1641 (DD using minus signs to indicate southern and western hemispheres)



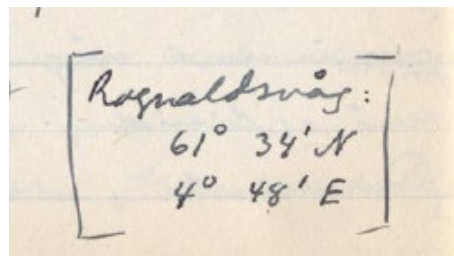
decimalLatitude
decimalLongitude
coordinateUncertaintyInMeters

verbatimCoordinates
verbatimLatitude
verbatimLongitude

Accuracy - uncertainty

- Introduce incorrect information
 - Too accurate coordinates
 - Primary source is inaccurate

A	B	C	D	K	P
	Kortnummer	Slekt	Art	Verdensdel/område	År
46	41	Conus	rusticus	Afrika	1779
47	42	Conus	rusticus	Afrika	1779
48	43	Conus	rusticus	Afrika	1779
49	44	Conus	rusticus	Afrika	1779
50	45	Conus	figulinus	Indien	1779
51	46	Conus	figulinus	Indien	1779
52	47	Conus	ebraeus	Indien	1779
53	48	Conus	ebraeus	Indien	1779



NORD

61.5655394

61°33.9323659'

61°33'55.94195"

ØST

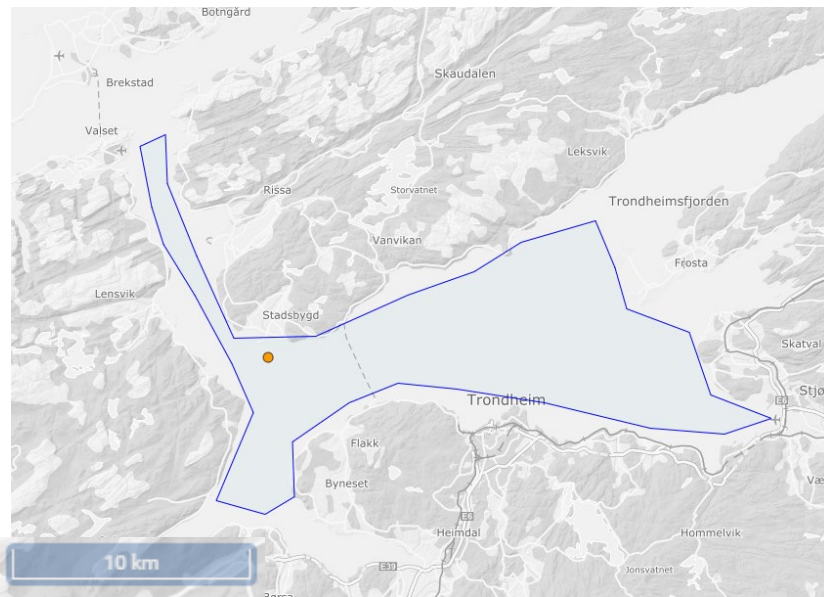
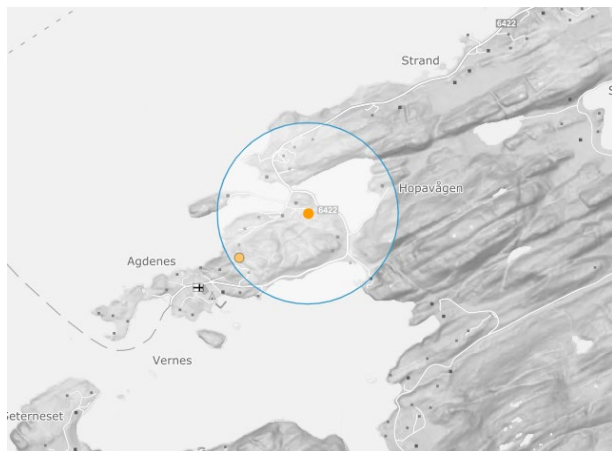
4.7906014

4°47.4360827'

4°47'26.16496"

Mid-point position or inaccuracy

- Report inaccuracy or set mid-point position?
 - Municipality
 - Fjords



Workflow today

Marine Invertebrata...

Navigator

Object data Revision data Photo and PDF

Object no. 1503 Collection NTNU-VM/MI/WET Barcode UUID A7A6... Copy setup .blank... Reg no seq

Slide/tube Box/jar 263 Old no. 1 Owner Job coll. (WE) Approved?

Taxon (Mollusca : Gastropoda : Nudibranchia : Kentroderididae)

Entered taxon name Dorunna tomentosa V Intraspecific rank and name

Validated taxon name Dorunna tomentosa (Cuvier, 1804) Note

Valid taxon name Dorunna tomentosa (Cuvier, 1804)

Identifier (person name) Scr No # Person module

Evertsen, Jussi

Date 2001 01.01.2001-31.12.2001 Prep. Ethanol

Sex 1u Life stage 1u Estimated No. of ind.

Jussi Evertsen

Collecting event (ID=6328297) #Objects=1

Admplace Hiltre Locality Frøyfjorden Kvernvær

Municipality Hiltre R

County/Province Sør-Trøndelag Ecology 0-None

Country Norway

Host

Collector (person name) Collector no Scr No # Person module

Bakken, Torkild

Date 30.4.2001 30.04.2001 Region EIS

Torkild Bakken Method Scuba diving

Other data/Administrative data

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NTNU University Museum

ABOUT METRICS HOME PAGE

1,519,929 OCCURRENCES 29 DATASETS 144 CITATIONS

Description: The NTNU University Museum is one of six university museums in Norway and is a part of the Norwegian University of Science and Technology, NTNU. The Museum is located at Kalkbølvet in the centre of Trondheim, along with its exhibitions, collections, administration and three of its sections. The Archaeometry Section is located at the Gleshaugen campus of NTNU. Ringve Botanical Gardens can be found at Lade, on the outskirts of Trondheim, and the Kongsvoll Alpine Garden is found in Kongsvoll, in Dovrefjell National Park. The NTNU University Museum has its origins in the Royal Norwegian Society of Sciences and Letters (DKNVS), founded in 1760. In 1926, the Society was reorganized into two sections: the Academy and the Museum. In 1968, the Norwegian Parliament approved a resolution to found the University of Trondheim and the Museum was transferred to the University on 1 April 1984. Further reorganization of the University led to the establishment of the Norwegian University of Science and Technology (NTNU) on 1 January 1996. Since 2005, the NTNU University Museum has been treated at the same level as the University faculties, with representation on the Council of Deans and the Central University Research Committee.

Endorsed by: GBIF Norway

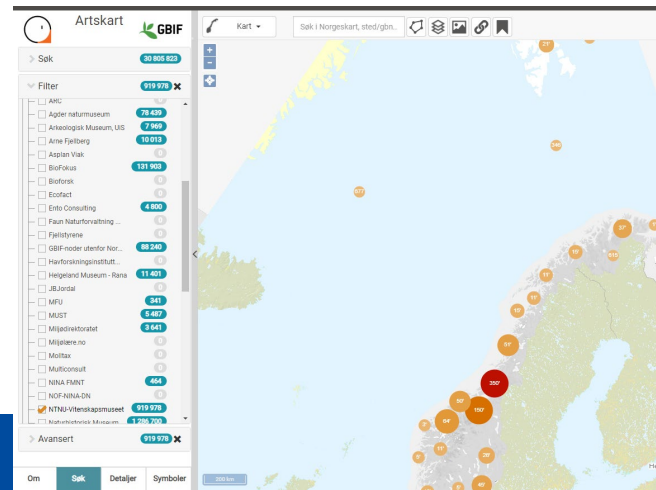
Installations: NTNU University Museum IPT

Administrative contact: Anders Gravbrøt Finstad

Technical contact: Roger W. J. Alterskjer

Country or area: Norway

Hosting: 20 datasets (1 publisher • 1 country)





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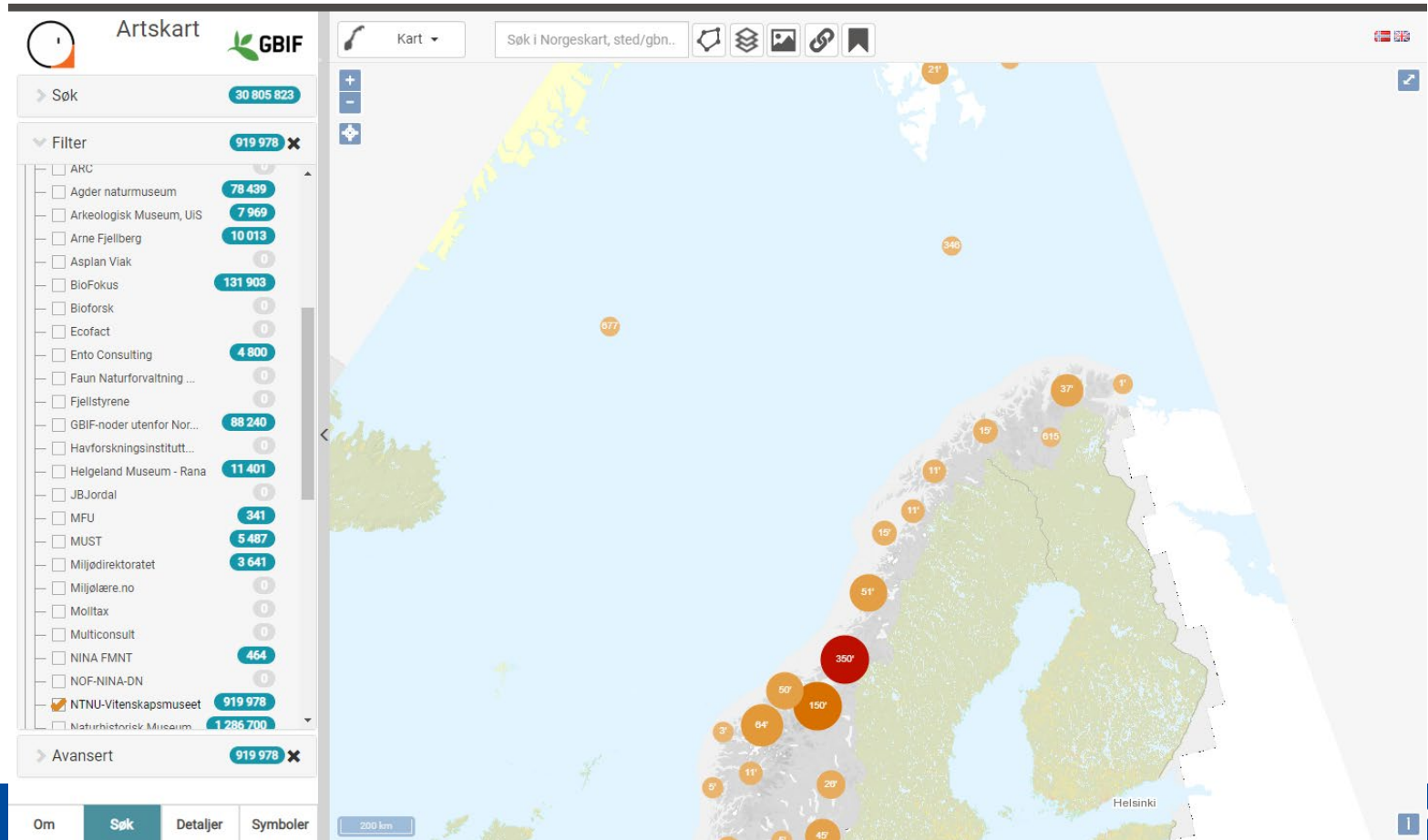
CONTACTS

NTNU University Museum

Roger W. J. Alterskjær

Anders Gravbrøt Finstad

National map service – Norwegian Biodiversity Information Centre



Conclusions

- 90% of specimens digitised
- Pragmatics important to digitise everything
- Easy to introduce inaccuracies
- Use standards
- Make guides, handbooks, workflow schemes for users