

Digitization of the Trinity Geological Museum Collection

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Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin



Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

An Roinn Comhaltach, Aireacht agus Cumarsáid
Department of the Environment, Climate and Communications

Introduction

TCD Geological Museum houses an extensive collection of fossils, minerals and rocks of scientific and historical value.

In 2014 it was moved from the Museum Building, TCD, to the Trinity Technology and Enterprise Campus, where it is less accessible. It had no digital record of its holdings.

Aim: to set up a collection management database and digitize select parts of the collection, in order to:

- bring visibility and awareness.
- provide remote access, highlight specimens available for research.
- contribute to global datasets, allowing for studies of e.g., diversity on geological timescales.
- build connections internally and externally: between different parts of the collection, to related specimens in other institutions, between people.
- facilitate curation/administration (loan tracking, accessions, storage locations etc.).



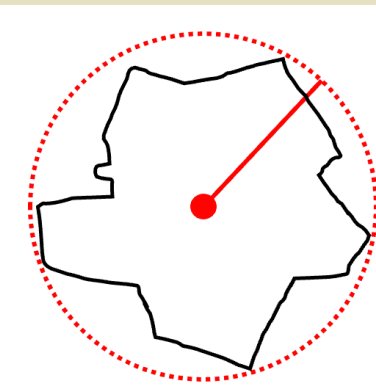
Database



- Active, responsive community
- Shared resources: agents, taxonomy, geography, media, publications, projects.
- Export to Global Biodiversity Information Facility
- Affordable
- No IT support or server space needed
- Accommodates rocks, fossils and minerals

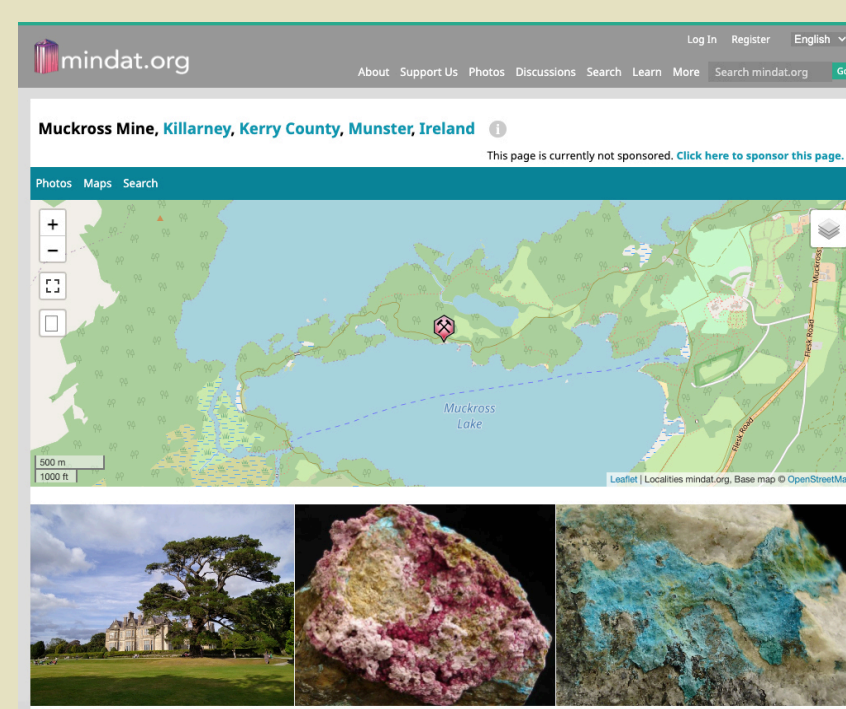
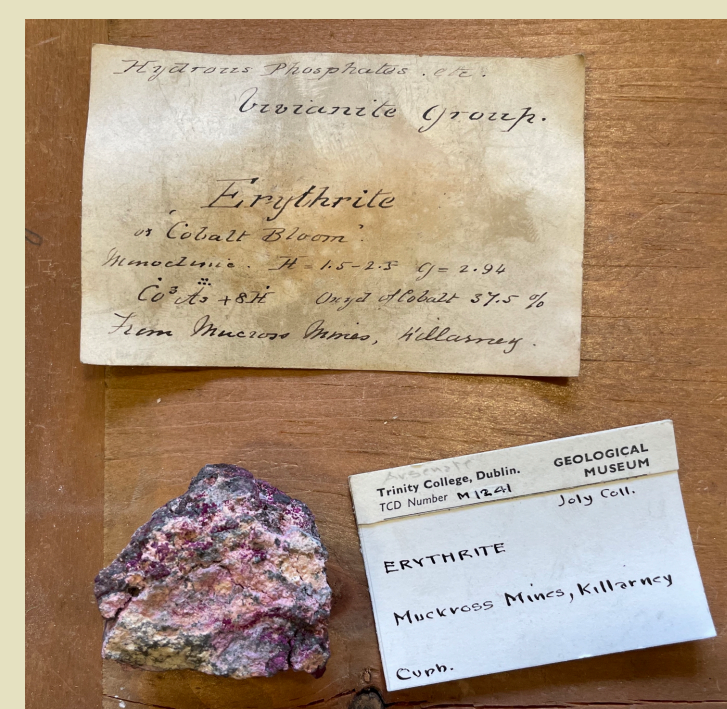
Georeferencing Resources

Georeferencing: assigning coordinates, and associated uncertainty, to localities.



Georeferencing Best Practices (Chapman and Wiecek, 2020)

geographic coordinate ("corrected center") + geodetic datum + maximum uncertainty



Muckross Mine, Killarney, Co. Kerry
52.016304, -9.53706
Datum: WGS84
Uncertainty: 377 m

Most commonly used online resources for georeferencing



Workflow

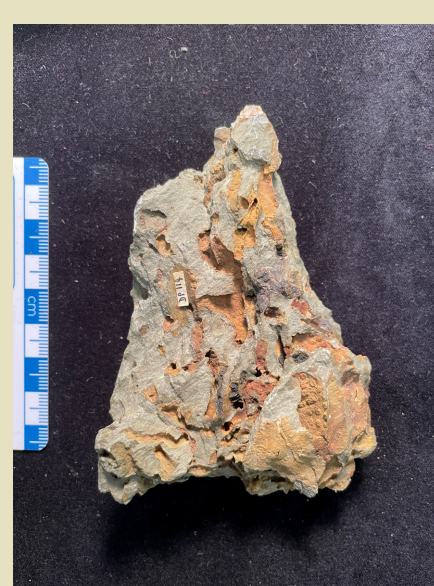
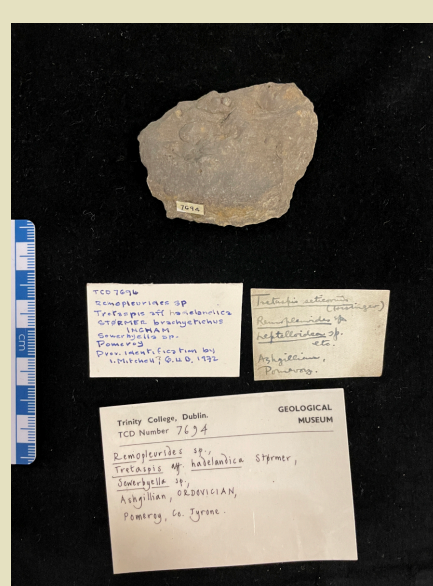
1 Pre-digitization



- Define scope, locate relevant specimens
- Assess curation/conservation needs
- Find associated documentation

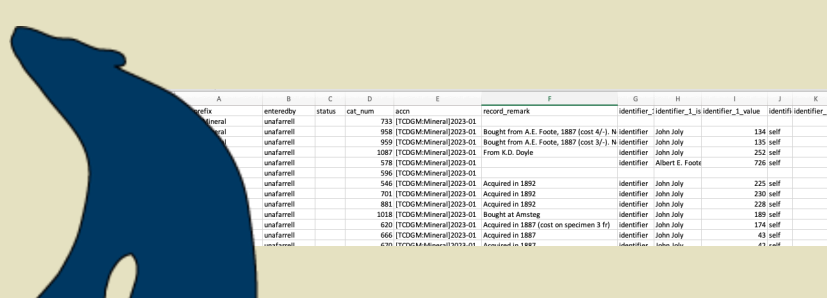
2 Imaging

- Specimen + labels
- Specimen only
- Label only
- Documents



File name: start with catalogue number
Re-box specimens concurrently

3 Data gathering

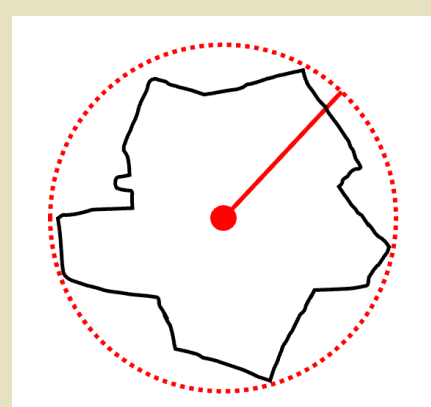


Fill Arctos spreadsheet templates based on specimen labels

Augment/correct based on additional data from catalogues and papers
→ collection dependent: identify primary/most accurate source of data.

4 Georeferencing

- Sort by geography to bring similar places together
- Search Arctos to identify existing localities.
- Georeference new localities



5 Data Upload

- Prepare database - add new agents, taxonomy, stratigraphy, accessions.
- Bulk-load 1) localities 2) collecting events 3) specimens.
- Attach media and quality control.

6 Dissemination

TCD Museum Website

Geological Museum – Trinity College Dublin

Home Collections Fossils Minerals Rocks History People Blog

Joly Catalogue - Minerals

A selection of Joly catalogue numbers (left) illustrates the two main styles – round stickers with larger numbers and a smaller rectangular style. All are handwritten in brown or black ink.

Albert E. Foote Specimens

Seventy-two databased Joly specimens were bought from A. E. Foote. The majority are from the United States, Canada and Mexico, with an additional few from Europe and Japan. Many of the specimens have Foote labels stuck directly onto them (see right), which include Foote catalogue numbers, identification(s), and some locality information. Many also have a price stuck

GBIF

542 download events Download report

Download data
Data visualisation
Mapping
Data quality check

First Irish institution to submit Irish fossil data to GBIF

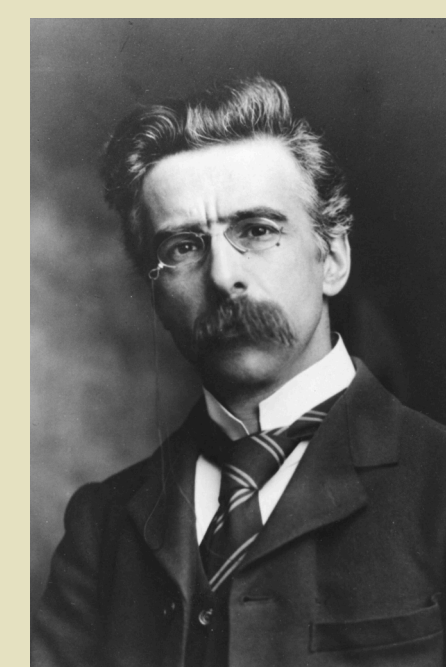
Countries contributing Irish fossil data to GBIF

Scanned Documents
Source Catalogues and Papers
Background and history

Arctos

Search and explore by identification, collectors, geology, storage location, images, higher taxonomy, date collected, relationships to other specimens (e.g. in same matrix as), collector numbers...

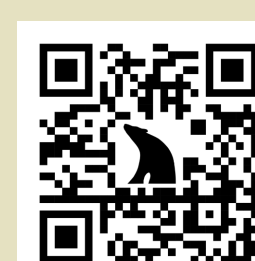
Joly Collection



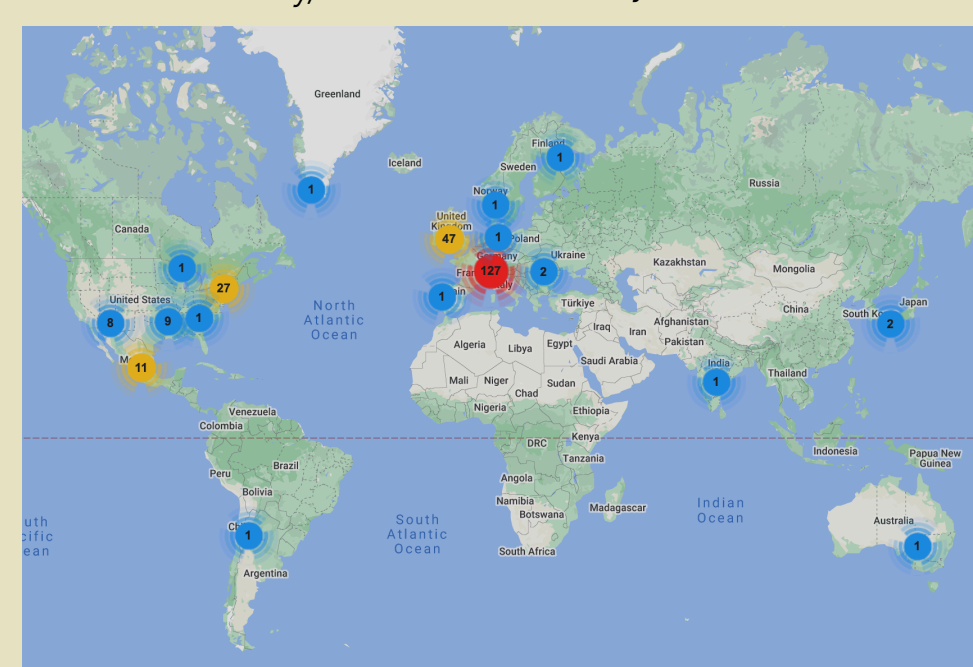
Prof. John Joly, 1900



Joly Mineral cabinet



M643: Beryl, Mourne Mountains



Joly Specimens - Berkeley Mapper via Arctos.

Type: Mineral
Location: Global
Geol. Age: Unrecorded
Collected: late 1800s
Key document(s): Joly handwritten catalogue.
Specimens: 793

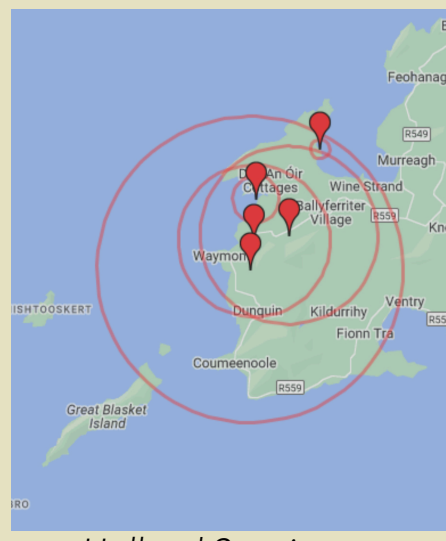
Holland Collection



Image: Geological Society
Prof. Charles H. Holland



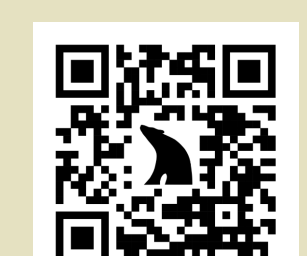
Type: Fossil
Location: Dingle Peninsula, Co. Kerry
Geol. Age: Silurian
Collected: 1960s-80s
Key document(s): Holland, 1987; 1988
Specimens: 264



Holland Specimens, Berkeley Mapper via Arctos.

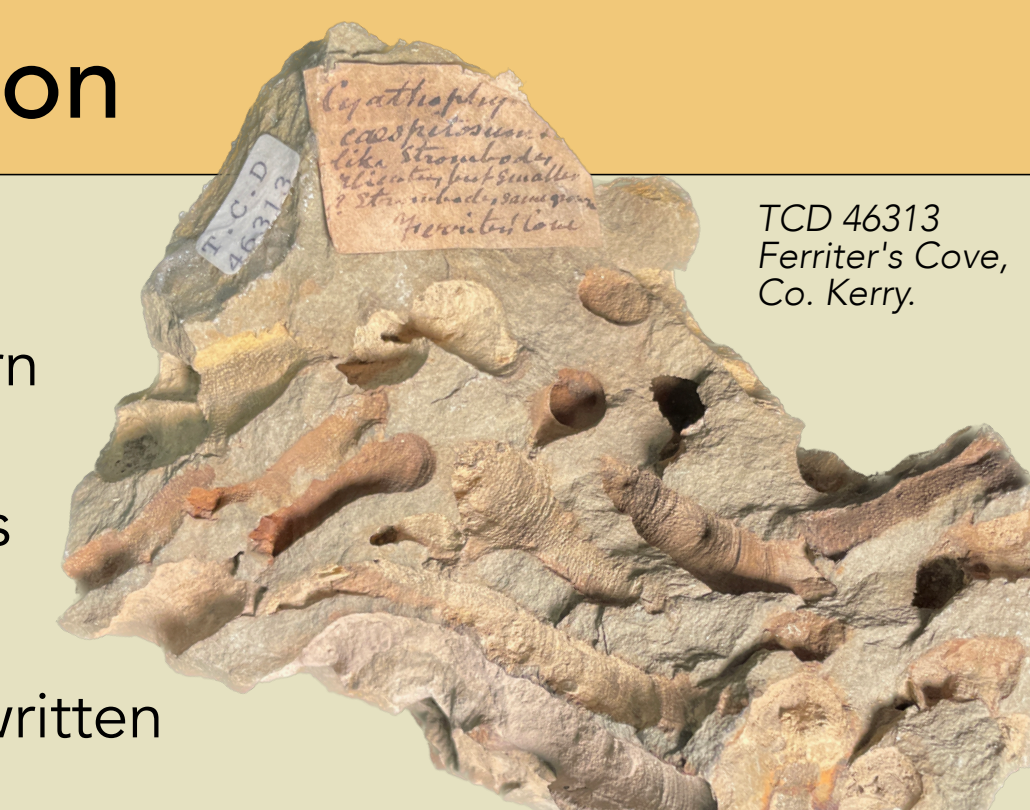
Portlock Collection

Type: Fossil
Location: Pomeroy, Co. Tyrone (mostly)
Geol. Age: Ordovician (mostly)
Collected: early-mid 1800s
Key document(s): Portlock, 1843; Tunnicliff, 1980
Specimens: 339



Griffith Collection

Type: Fossil
Location: Ireland/Northern Ireland
Geol. Age: Carboniferous
Collected: mid 1800s
Key document(s): Handwritten catalogue



Acknowledgements

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References

- Chapman, A. D. & Wiecek, J. R. (2020). Georeferencing Best Practices. Copenhagen: GBIF Secretariat. <https://doi.org/10.15468/doc-gg7h-s853>
- Holland, C. H. (1987). Stratigraphical and structural relationships of the Dingle Group (Silurian), County Kerry, Ireland. *Geological Magazine*, 124(1), 33–42. <https://doi.org/10.1017/S0016756800015764>
- Holland, C. H. (1988). The fossiliferous Silurian rocks of the Dunquin inlier, Dingle Peninsula, County Kerry, Ireland. *Transactions of the Royal Society of Edinburgh: Earth Sciences*, 79(4), 347–360. <https://doi.org/10.1017/S0263593300014346>
- Karim, T., Burkhalter, R., Farrell, Ú., Molineux, A., Nelson, G., Utrup, J., & Butts, S. (2016). Digitization workflows for paleontology collections. *Palaeontologia Electronica*. <https://doi.org/10.26879/566>
- Tunnicliff, S. P. (1980). A Catalogue of the Lower Paleozoic Fossils in the Collection of Major-General J.E. Portlock, R.E., LL.D., F.R.S., F.G.S. Etc. Ulster Museum. <https://books.google.ie/books?id=yColzEACAAJ>
- Portlock, J. E. (1843). Report on the Geology of the County of Londonderry, and of Parts of Tyrone and Fermanagh. i-xxi, 784pp., pls. 1-38, A-I. Dublin and London