

# Non-tetrapod sarcopterygian fossil material (*Holoptychius* sp., *Rhizodontida* indet., *Dipnoi* indet.) from Iveragh Peninsula (Ireland) - CT-Data, 3D-Models

**SND-ID:** 2023-84-1. **Version:** 1. **DOI:** <https://doi.org/10.57804/s0tg-cb09>

## Download data

1. CT data/NHMUK PV P 59686/NHMUK PV P 59686.zip (10.21 GB)
1. CT data/NMING F35232/devonfish\_UU\_1000.tifstack [20220822].zip (1.11 GB)
2. segmentation files/NHMUK PV P 59686/NHMUK PV P 59686\_20230424.mcs (7.02 GB)
2. segmentation files/NMING F35232/NMING F35232\_UU1000\_20220822.mcs (865 MB)
3. STL files/NHMUK PV P 59686/\_NHMUK PV P 59686\_1 cm3\_001.stl (45.8 MB)
3. STL files/NHMUK PV P 59686/\_NHMUK PV P 59686\_Bothriolepis indet\_001.stl (57.64 MB)
3. STL files/NHMUK PV P 59686/\_NHMUK PV P 59686\_Bothriolepis ML2\_001.stl (131.66 MB)
3. STL files/NHMUK PV P 59686/\_NHMUK PV P 59686\_Dipnoi toothplate\_001.stl (111.67 MB)
3. STL files/NHMUK PV P 59686/\_NHMUK PV P 59686\_facial dermal bone\_001.stl (209.2 MB)
3. STL files/NHMUK PV P 59686/\_NHMUK PV P 59686\_Rhizodont cornoid + fang\_001.stl (673.97 MB)
3. STL files/NHMUK PV P 59686/\_NHMUK PV P 59686\_whole specimen\_001.stl (1.87 GB)
3. STL files/NMING F35232/NMING F35232\_1 mm3\_001.stl (87.19 KB)
3. STL files/NMING F35232/NMING F35232\_scale complete smoothed\_001.stl (32.14 MB)
4. 3D pdfs/NHMUK PV P59686\_20220922.pdf (117.01 MB)
4. 3D pdfs/scale NMING-F35232.pdf (10.21 MB)

## Associated documentation

readme.txt (2.68 KB)

## Download all files

2023-84-1-1.zip (~22.42 GB)

## Citation

Dupret, V. (2023) Non-tetrapod sarcopterygian fossil material (*Holoptychius* sp., *Rhizodontida* indet., *Dipnoi* indet.) from Iveragh Peninsula (Ireland) - CT-Data, 3D-Models (Version 1) [Data set]. Uppsala University. Available at: <https://doi.org/10.57804/s0tg-cb09>

## Creator/Principal investigator(s)

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## Research principal

[Uppsala University](#) - Department of Organismal Biology

## Description

The data set forms part of a study of fossil fish material from Southwest Ireland (Sarcopterygii: *Dipnoi* indet., *Rhizodontida* indet. och *Holoptychius* sp.; Givetian of the Iveragh Peninsula). The data consist of

CTscan image stacks and subsequent working files (i.e. segmentation, visualisation files, STLs and 3D PDF files).

#### 1. CT-scans datasets

At the Natural History Museum in London, the material was CT-scanned with a Nikon HMX ST 225 system, Nikon Metrology, Leuven, Belgium, with a tungsten reflection target. Detailed settings were adjusted for each specimen and are given in associated article (see "Material and Methods"). The specimen required stitching performed with an in-house NHM script written in Octave. In Oslo, at the Natural History Museum, University of Oslo, the scanning was carried out with a Nikon Metrology XT H 225 ST microfocus CT instrument at the Natural History Museum, University of Oslo, at 220 kV, 1245  $\mu$ A, 4444 projections, 2 frames per projection, 1 mm tin filter, Fast CT protocol (not minimising ring artefacts) and a voxel size of 23.9  $\mu$ m. Detailed settings are given in associated article.

#### 2. Drishti and Mimics files (segmentation)

#### 3. STL files

#### 4. 3D pdfs

In Mimics, each individual structure corresponding to a mask was used to generate a high quality 3D object, itself transformed into an STL file. Each .stl file was then imported into Materialise 3-matic (v. 15.0) and Blender (v. 2.82). In 3matic, the following operations were applied to each .stl file to increase manageability while preserving accuracy: reduce number of triangles (geometrical error 0.1, preservation of surface contours) and smoothing (factor 0.1). A 3D pdf file was finally generated and can be open in Adobe Acrobat.

for the following specimens

##### a. NHMUK PV P 59686

Rhizodontida indet. (anterior coronoid with fang, one indet. facial bone), Dipnoi indet. (left lower jaw tooth plate), Bothriolepis dairbhrensis (indet anatomical element and MI2, not analysed in the article). Segmentation in Mimics, treatment of STLS and 3d PDF exportation in 3-matic. The scale of the reference cube edges is 10 mm.

##### b. NMING:F35232

Holoptychius sp. (dermal scale). Segmentation in Mimics, treatment of STLS and 3d PDF exportation in 3-matic. The scale of the reference cube edges is 1 mm.

**\*\*LINKS TO PREVIOUSLY MENTIONED SOLUTIONS\*\***

MATERIALISE MIMICS and 3-MATIC (segmentation, 3D modelling):

<https://www.materialise.com/en/healthcare/mimics-innovation-suite>

DRISHTI (3D visualisation):

<https://github.com/nci/drishti>

Ajay Limaye; Drishti: a volume exploration and presentation tool. Proc. SPIE 8506, Developments in X-Ray Tomography VIII, 85060X (October 17, 2012)

#### **Data contains personal data**

No

#### **Language**

[English](#)

## Data format / data structure

[Numeric](#)

[Text](#)

[Still image](#)

[3D](#)

[Other](#)

## Species and taxons

[Rhizodontida](#)

[Porolepiformes](#)

[Dipnoi](#)

[Bothriolepis dairbhrensis](#)

[Holoptychius](#)

## Geographic spread

Geographic description: Valentia Slate Formation, Iveragh Peninsula, Ireland

## Responsible department/unit

Department of Organismal Biology

## Funding 1

- Funding agency: Knut and Alice Wallenberg Foundation

## Funding 2

- Funding agency: European Research Council (ERC)
- Funding agency's reference number: ERC-2020-ADG 101019613

## Research area

[Geology](#) (Standard för svensk indelning av forskningsämnen 2011)

[Zoology](#) (Standard för svensk indelning av forskningsämnen 2011)

[Other natural sciences not elsewhere specified](#) (Standard för svensk indelning av forskningsämnen 2011)

## Keywords

[Palaeogeography](#), [Devonian](#), [Fossils](#), [Palaeozoology](#), [Stratigraphy](#), [Systematics](#), [Valentia island](#), [Givetian](#)

## Publications

Dupret, Byrne, Challands, Hammer, Higgs, Long, Niedźwiedzki, Qvarnström, Stössel & Ahlberg. 2023. Non-tetrapod sarcopterygians from the Valentia Slate Formation (Givetian, Devonian) of the Iveragh Peninsula, south-western Ireland: systematic reappraisal and palaeobiogeographic implications. Spanish Journal of Palaeontology 38 (1): 37-46, doi: <https://doi.org/10.7203/sjp.26527>

**DOI:** <https://doi.org/10.7203/sjp.26527>

If you have published anything based on these data, [please notify us](#) with a reference to your

publication(s). If you are responsible for the catalogue entry, you can update the metadata/data description in DORIS.

#### **Point (Lon/Lat)**

-10.332384, 51.841065

#### **Polygon (Lon/Lat)**

-10.348484, 51.845101

-10.349063, 51.844664

-10.349407, 51.844399

-10.348934, 51.843948

-10.347347, 51.844213

-10.346274, 51.844916

-10.34681, 51.845141

-10.348484, 51.845101

#### **Polygon (Lon/Lat)**

-10.395911, 51.845065

-10.396813, 51.845383

-10.3978, 51.844614

-10.397156, 51.84358

-10.39604, 51.843766

-10.395482, 51.844455

-10.395911, 51.845065

#### **Accessibility level**

Access to data through SND

Data are freely accessible

#### **Use of data**

[Things to consider when using data shared through SND](#)

#### **Versions**

Version 1. 2023-05-31

#### **This resource has the following relations**

Requires [Drishti: a volume exploration and presentation tool](#)

Requires [Materialise Mimics Innovation Suite](#)

#### **Related research data in SND's catalogue**

[Bothriolepis \(Placodermi, Arthrodira\) from Iveragh Peninsula \(Ireland\) - CT-Data, 3D-Models, and Phylogenetic Analyses Files](#)

#### **Download metadata**

[DataCite](#)

[DDI 2.5](#)

[DDI 3.3](#)

[DCAT-AP-SE 2.0](#)

[JSON-LD](#)

[PDF](#)

[Citation \(CLS\)](#)

[File overview \(CSV\)](#)

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