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# INCHKEITH

OS Grid Reference: NT294830 and NT294822

## Highlights

A good fauna of 13 fossil fish species has been reported from the island of Inchkeith in the Firth of Forth, Fife. The site is especially important since it has also yielded tetrapod bones.

## Introduction

Fishes were first reported from Inchkeith by Davies (1936) from more than one locality. In 1979 one of these localities was excavated using explosives to remove the overlying lavas. The results of this were the retrieval of several 'amphibian bones' (S. Turner, internal NCC report), as well as associated fish remains.

## Description

Steeply dipping shales, mudstones, limestones and sandstones, about 120 m thick, interbedded with lavas, making up a total of about 290 m, are exposed on the Island of Inchkeith (Davies, 1936). The middle of the sequence is thought to lie near the horizon of the Burdiehouse Limestone (Davies, 1936, p. 777; Mitchell and Mykura, 1962), a unit exposed near Edinburgh that lies at the junction of the Lower and Upper Oil Shale groups. The age is Viséan, and probably Brigantian (George *et al.*, 1976, p. 49).

The tetrapod bones found in 1979 came from a welded ash band between two thin ostracod-bearing horizons that were full of fish scales, lying between two lava flows. The tetrapod remains were found together with rhipidistian and lungfish bones (S. Turner, pers. comm., 1982).

### Fauna

Acanthodii: Climatiformes: Gyraacanthidae

*Gyraacanthus* sp.

Osteichthyes: Sarcopterygii: (Dipnoiformes) *Sagenodus* sp.

*Uronemus* sp.

Osteichthyes: Sarcopterygii: Rhizodontidae *Strepsodus?* *Rhizodus* cf. *hibberti* (Agassiz and Hibbert, 1836)

Osteichthyes: Actinopterygii: Gonatodidae *Pseudogonatodus* sp.

Osteichthyes: Actinopterygii: Elonichthyidae *Elonichthys robisoni* (Hibbert, 1835)

Osteichthyes: Actinopterygii: Acrolepidae

*Nematoptychius* sp.

Osteichthyes: Actinopterygii: Platysomidae *Eurynotus* sp. Chondrichthyes: Elasmobranchii

*Ageleodus* sp. (= synonym of *Callopristodus*)

*Callopristodus* sp. *Cynopodius crenulatus* Traquair, 1881

*Pleuracanthus* sp. (= *Xenacanthus*)

TETRAPODA: ?Adelogyrinidae

cf. *Palaeomolgophis*

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## Interpretation

The vertebrate assemblage does not support the opinion of the Geological Survey that the Inchkeith sediments are in the Lower Oil Shale Group, but suggests that they lie in the Viséan Middle Oil Shales Group (Smithson, 1985, p. 127). It is a freshwater facies with predatory species of osteichthyan predominant in the fauna. The elasmobranchians also include large predatory forms. Tetrapod bones include a rib (Andrews and Carroll, 1991; Smithson, 1985) and jaw fragments. The association of beach shales, ostracod and plant-rich beds with the vertebrates (fishes and tetrapods) in a volcanic setting is comparable to the situation at East Kirkton (q.v.).

## Conclusions

The Inchkeith site has a conservation value based on its varied fauna of mid-Dinantian fishes and rare tetrapod remains. Recent excavations have shown that the potential of the site is good, given the means of effecting the removal of hard volcanic units adjacent to the fossil layer.

## Reference list

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