The Cletts, Exnaboe

[HU 399 114]

Highlights

This site in Shetland has been the source of limited remains of fossil fishes, but these include *Stegotrachelus finlayi* Woodward and White, an early actinopterygian bony fish found only in Shetland. The sediments are younger than the extensive Achanarras horizon, seen in Shetland at Melby and on Papa Stour, and this adds to their value in documenting fish faunas in the later part of the Mid-Devonian.

Introduction

Exnaboe Fish Bed is a 3 m thick unit of fish-bearing lacustrine limestone laminites within the south-east Shetland Devonian basin of deposition, which outcrops today from Rova Head south to Sumburgh Head in southeast Mainland, and is one of three basins which are juxtaposed in Shetland by major transcurrent faults.

Although fossil fishes have been known from the Middle Devonian of Scotland since 1827, and although the resemblance between the Shetland Flags and those of Orkney and the mainland was generally recognized, fossil fishes were not discovered in Shetland for some time. The first report was of fragments from Bressay (Heddle, 1879). Exnaboe Fish Bed was discovered by T.M. Finlay (1926), and that paper included a report on the fishes by A.S. Woodward and E.I. White. The geology of the area has been revised by Wilson and Knox (1936) and Mykura (1976; (Figure 6.29)).

Description

The Exnaboe Fish Bed falls within the 'Brindister Flags' of Wilson and Knox (1936). The lacus-trine facies occurs within thick cross-bedded fluvial sandstones and is mainly represented by horizontally stratified fine sandstones (PA. Allen, 1981) (Figure 6.29). Allen noted that the sediments are symmetrically disposed about the central limestone member and lack microturbidites above the laminite. This fish bed is the most fossiliferous of four such beds in this part of Scotland.

Fauna

Placodermi: Antiarcha *incertae sedis*

Microbrachius dicki Traquair, 1888

Placodermi: Arthrodira: Coccosteidae

Coccosteus sp. nov.

Osteichthyes: Actinopterygii: Stegotrachelidae

Stegotrachelus finlayi Woodward and White, 1926

Osteichthyes: Osteolepiformes: Eusthenopteridae

Tristichopterus sp.

Osteichthyes: Sarcopterygii: Dipnoi: Dipteridae

Dipterus sp.

The commonest fish at The Cletts, Exnaboe, is *Dipterus,* which is similar, but probably not the same species as, *D. valenciennesi.* The second commonest fish is the rare early actinopterygian (palaeoniscid) *Stegotrachelus finlayi* ((Figure 6.30)A).

Stegotrachelus finlayi Woodward and White, 1926 is the only species of the genus, and it is found only in Shetland, having been recorded also from Ness of Sound and Hoswick (W Mykura, pers. comm.). This is one of the earliest actinopterygians known as complete specimens rather than fragmentary material. Gardiner (1963) redescribed the species using newly collected material but in 1984 he concluded that the family Stegotrachelidae Gardiner, 1963, based on the type (Australian) species *Mimia toombsi* Gardiner and Bartram, 1977, contained forms that shared only primitive characteristics with *Stegotrachelus* and that further affinities remained obscure until more is known about this genus.

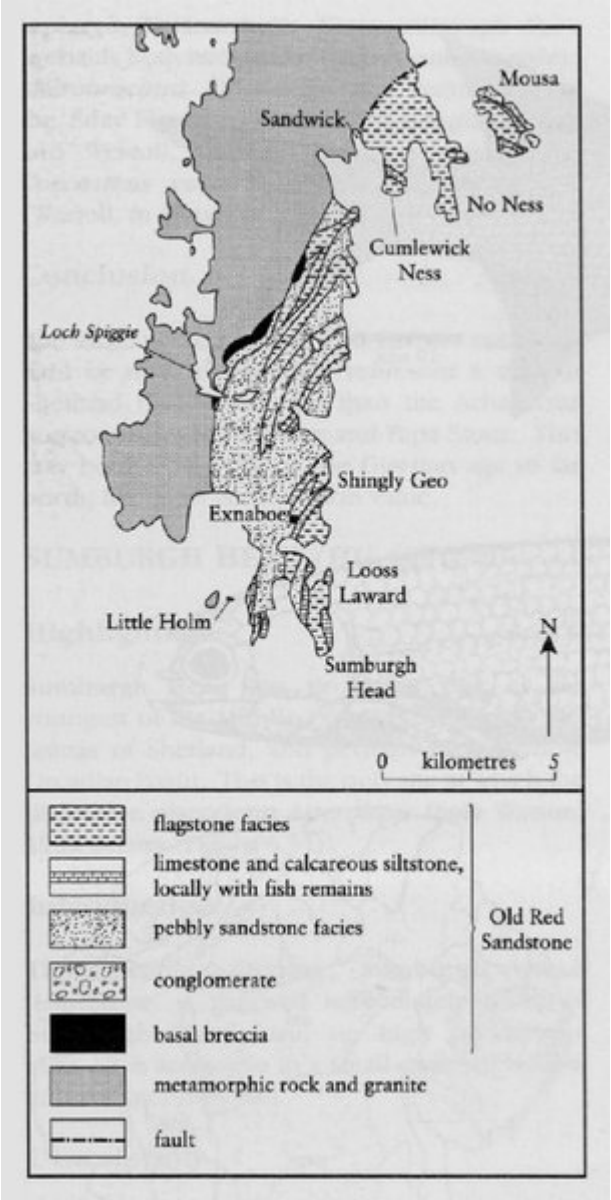
Interpretation

This is a very similar fauna to that which occurs at John o'Groats, yielding *Microbrachius dicki, Watsonosteus fletti, Tristichopterus alatus* and *Pentlandia macroptera* ((Figure 6.30)B). The Exnaboe Fish Bed is probably slightly younger than the John o'Groats and Eday fauna; *Dipterus* sp. replaces *Pentlandia,* and *Coccosteus* sp. nov. replaces *Watsonosteus fletti,* although they probably both had similar habitats and life styles. *Microbrachius dicki* suggests correlation with the Eday Flags of Orkney (late Givetian; Miles and Westoll, 1963), but the specimens of *Coccosteus* could represent an earlier age (Westoll, *in* House *et al.,* 1977).

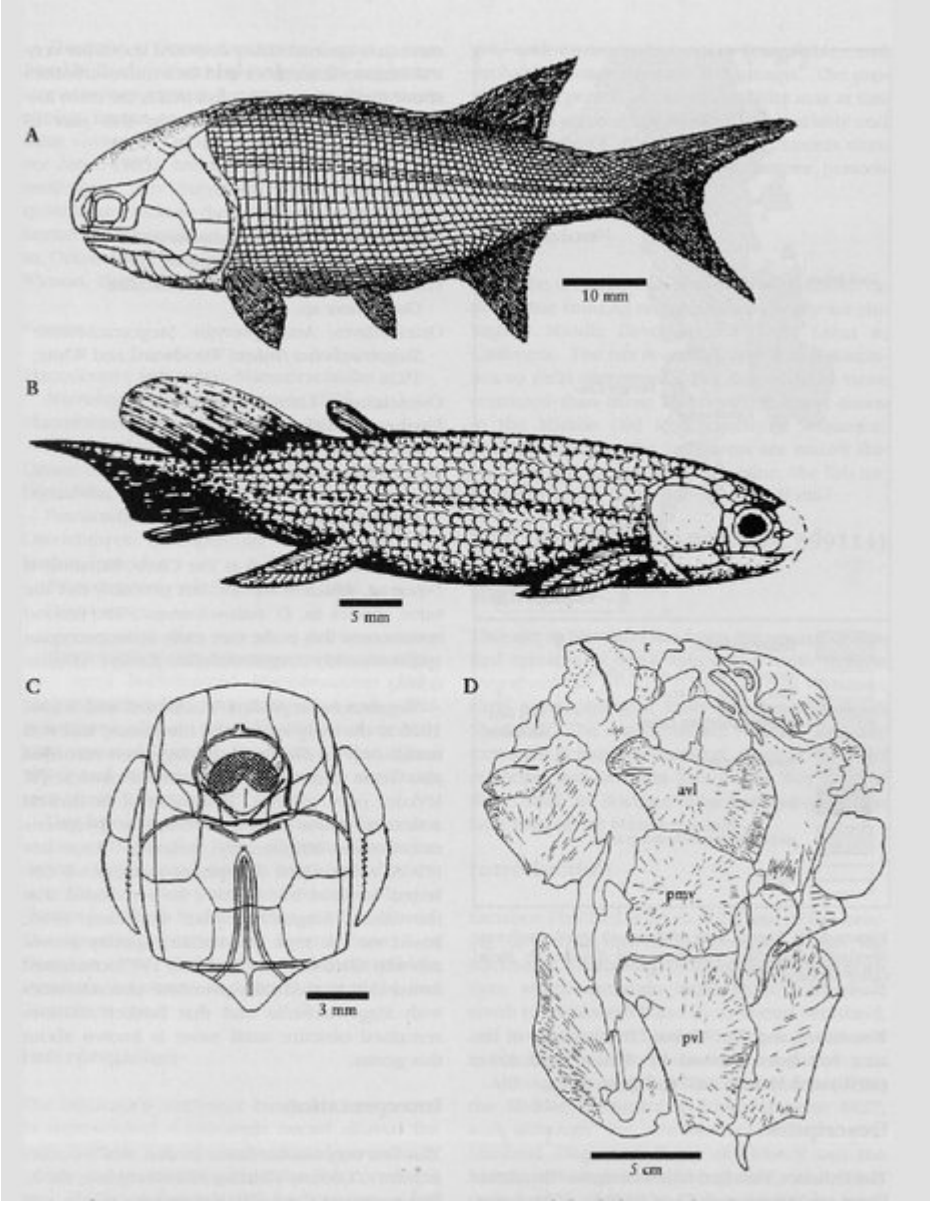
Conclusion

The fishes of the Exnaboe Fish Bed are not abundant or diverse, but they represent a unit in Shetland that is younger than the Achanarras horizon fishes from Melby and Papa Stour. This may be the only site of late Givetian age so far north, hence its conservation value.

References



(Figure 6.29) Sketch map of the geology of south-east Shetland, including Exnaboe and Sumburgh Head (after Mykura, 1976).



(Figure 6.30) Fossil fish found at Exnaboe, Shetland. (A) Stegotrachelus finlayi Woodward and White, an early actinopterygian from Exnaboe; (B) Pentlandia macroptera Traquair, x 0.5; (C) Microbrachius dicki Traquair, reconstruction in dorsal view of the carapace of the smallest antiarch, based largely on RSM 1877.22.4 from John o'Groats and DMSW P 513 from Deerness; (D) Watsonosteus fletti (Watson) from Deerness (after Miles and Westoll, 1963); outline drawing of NHM P 11732 in dorsal view; avl, anterior ventro-lateral plate; pmv, posterior ventro-lateral plate; pvl, posterior ventro-lateral plate; r, rostrum.