

BIOSTRATIGRAPHIC AND PALEOENVIRONMENTAL SIGNIFICANCE OF PALAEONISCID FISH AND VASCULAR PLANT REMAINS FROM THE SNAKES BIGHT FORMATION (ANGUILLE GROUP), CODROY AREA, SOUTHWESTERN NEWFOUNDLAND

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ABSTRACT

The Codroy area was visited in order to sample the Snakes Bight Formation (Anguille Group) more extensively for palaeoniscid fish and vascular plant fossils, and to determine the depositional environment of the formation. The plant species *Lepidodendropsis corrugata* (Dawson) was obtained from the Snakes Bight Formation for the first time. Closer examination of the formation failed to yield any diagnostic marine fossils. The conclusion of previous workers that the Snakes Bight Formation is of lacustrine origin is probably valid.

INTRODUCTION

The Snakes Bight Formation (Anguille Group) comprises thinly bedded black siltstones, mudstones and shales, and thinly to thickly bedded gray sandstones. It also includes minor conglomerates, intraformational slump deposits and carbonate rocks (Baird and Coté, 1964; Knight, 1983). Past workers have generally interpreted the formation as a freshwater lacustrine deposit (Baird and Coté, 1964; Belt, 1969; Knight, 1983; Boyce, 1985; Dean and Meyer, 1985), even though it was possible that it might be of marine origin (Knight, 1983, page 31).

Articulated fish remains and vascular plant fossils were discovered in June, 1984, near the top of the Snakes Bight Formation at Shoal Point, near Codroy, by P. L. Dean, J. R. Meyers, A. Best and D. Andrews (Boyce *et al.*, 1984; Boyce, 1985). The area was revisited this past summer in order to obtain more extensive fish and plant collections, and to determine the depositional environment of the Snakes Bight Formation.

BIOSTRATIGRAPHIC SIGNIFICANCE OF THE COLLECTED FLORA AND FAUNA

Collections were obtained from the Snakes Bight Formation on the northern and southern flanks of an anticline at Shoal Point and at the Cape Anguille lighthouse (see Knight, 1983, Map 82-1, and Dean and Meyer, 1985, Figure 4).

On the southern flank of the anticline, there are at least two productive horizons for fossil fish in the Snakes Bight Formation. They are separated by approximately 2 m and have collectively yielded the following fossils (see also Boyce, 1985).

Plantae

Aneimites acadica Dawson

Asterocalamites scrobiculatus (Schlotheim)
Lepidodendropsis corrugata (Dawson)

Palaeoniscida (Colbert, 1980; Moy-Thomas and Miles,
1971; Romer, 1966)

Acrolepis sp. undet.
?Canobius sp. undet.
Elonichthys browni (Jackson)
Elonichthys ellsii Lambe
Rhadinichthys sp. cf. *R. alberti* (Jackson)

Aneimites acadica Dawson was recovered from the northern flank of the anticline.

At the Cape Anguille lighthouse, *Aneimites acadica* Dawson was collected from the Snakes Bight Formation within 10 to 20 m stratigraphically below its southern contact with the overlying Friars Cove Formation.

Age of the Snakes Bight Formation (top)

Aneimites acadica Dawson, *Lepidodendropsis corrugata* (Dawson) and *Asterocalamites scrobiculatus* (Schlotheim) occur in the Horton Bluff and Cheverie Formations (Horton Group) of Nova Scotia (Bell, 1960). *Aneimites acadica* Dawson and *Lepidodendropsis corrugata* (Dawson) are also present in the Albert Formation of southeastern New Brunswick (Lambe, 1910; Bell, 1960).

A species of *Acrolepis* occurs in the Horton Bluff Formation of Nova Scotia (Dawson, 1878; Carroll *et al.*, 1972). *Elonichthys browni* (Jackson), *E. ellsii* Lambe, *Rhadinichthys alberti* (Jackson) and a species of *Canobius* are found in the Albert Formation of New Brunswick (Lambe, 1910; Gussow, 1953; Greiner, 1974).

Aneimites acadica Dawson has been reported from Lower Carboniferous strata in Scotland (White, 1927). Species of *Acrolepis*, *Canobius*, *Elonichthys* and *Rhadinichthys* are also

common in Scottish Lower Carboniferous strata (Traquir, 1903; Moy-Thomas and Bradley-Dyne, 1938; Schram, 1983).

Bell (1960), Playford (1963) and Barss *in* Hacquebard (1972) assigned an Early Carboniferous, Late Tournaisian (Early Mississippian) age to the Horton Bluff and Cheverie Formations of Nova Scotia, and the Albert Formation of New Brunswick, based on their macroflora and microflora. Because the fossil plants and fish in the Snakes Bight Formation so closely compare at the specific and generic levels with those in the above formations, a similar age is indicated. The upper part of the Snakes Bight Formation is therefore Early Carboniferous, Late Tournaisian (Early Mississippian) in age (see Boyce, 1985, Figure 2).

PALEOENVIRONMENT OF THE SNAKES BIGHT FORMATION

Knight (1983) pointed out the lithological similarity of the Snakes Bight Formation to the lacustrine Albert Formation of New Brunswick (Greiner, 1962, 1974) and the lacustrine argillaceous middle member of the Horton Bluff Formation of Nova Scotia (Carroll *et al.*, 1972; Hesse and Reading, 1978). Boyce (1985) discussed the difficulties of using the plant and fish fossils alone in assessing the depositional environment of the Snakes Bight Formation. Closer examination of the upper part of the formation this past summer failed to yield any diagnostic marine fossils (such as brachiopods, bryozoa, cephalopods, corals, echinoderms, sponges or trilobites), despite a determined search. This suggests that the Snakes Bight Formation is a freshwater lacustrine deposit as concluded by Knight (1983) and Boyce (1985).

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