

# Progress report on geological mapping in the Parrsboro area (NTS 21H/08), Cumberland County, Nova Scotia

R. D. Naylor, K. Adams<sup>1</sup>, J. H. Calder, T. A. Costain and B. A. McCarthy

## Introduction

Geological mapping of the Parrsboro area forms part of a Nova Scotia Department of Natural Resources (NSDNR) project to map Carboniferous and Mesozoic strata adjacent to the south side of the Cobequid Highlands (see Naylor and Kennedy, 1997). The purpose of this project is to create geological maps that provide a more detailed basis for exploration programs and land-use planning. Mapping is undertaken at a 1:10 000 scale using digital base maps provided by the Nova Scotia Geomatics Centre. FieldLog® and AutoCad® are used to add geological data to the maps.

The spectacular coastal sections of Carboniferous and Mesozoic strata near Parrsboro have long been known as important sites for fossil and mineral collecting. Mr. Eldon George, a lifelong resident of the Parrsboro area, has been garnering attention to the area for over 50 years with his fossil discoveries. In 1984 fossils of some of the earliest (200 Ma) mammal-like creatures known to exist were discovered near Parrsboro (Olsen *et al.*, 1987). Subsequently, five partial skeletons of the oldest dinosaur fossils in Canada were found. With these discoveries, interest in the geology of the Parrsboro area grew, culminating in the opening of the Fundy Geological Museum in 1993.

Visitors to the Fundy Geological Museum often ask if there is a geological map that can help guide them to fossil- and mineral-collecting sites in the area. With the assistance of Mr. George and staff of the Fundy Geological Museum, NSDNR has expanded our project mandate in the Parrsboro area to include creation of a geological map that is suitable for use by the general public. This map will be produced in addition to the standard 1:10 000 geological map. Such maps can contribute to community-based economic development of fossil and mineral sites.

## Progress

During the summer of 1998, work in the Parrsboro area focused on mapping all the Carboniferous coastal sections from Cape Sharp to McLaughlin Bluff. The units examined were (oldest to youngest) marine evaporites and nearshore redbeds of the Windsor Group, succeeded by nearshore marine to lacustrine redbeds and grey beds of the Mabou Group, and grey beds and redbeds of the "coal measures" assigned to the Cumberland Group.

All these units showed varying degrees of deformation; however, it is clear that the Mabou and Windsor groups are significantly more deformed than the Cumberland Group. There are at least two locations along the coast where the Cumberland Group appears to sit with angular unconformity on the Mabou Group. Although there is fairly good exposure at these locations, it is still possible that the units are separated by a fault rather than an unconformity.

In addition to mapping coastal sections, some work was completed inland to better determine regional contact relationships between units. Most of this work was restricted to outcrops adjacent to primary and secondary roads.

An important part of this summer's work was to document the locations of fossil sites in the sections. Eldon George provided invaluable assistance with this work and generously shared his thorough knowledge of the Parrsboro area.

A draft, full-colour museum version of the Parrsboro map sheet was prepared and presented at the Mining Matters '98 conference in Halifax, and subsequently at a testimonial dinner held in honour of Mr. George in Parrsboro. The map illustrates the basic geology of the area complete with fossil sites and locations where the

<sup>1</sup>Fundy Geological Museum, Two Islands Road, Parrsboro, Nova Scotia B0M 1S0

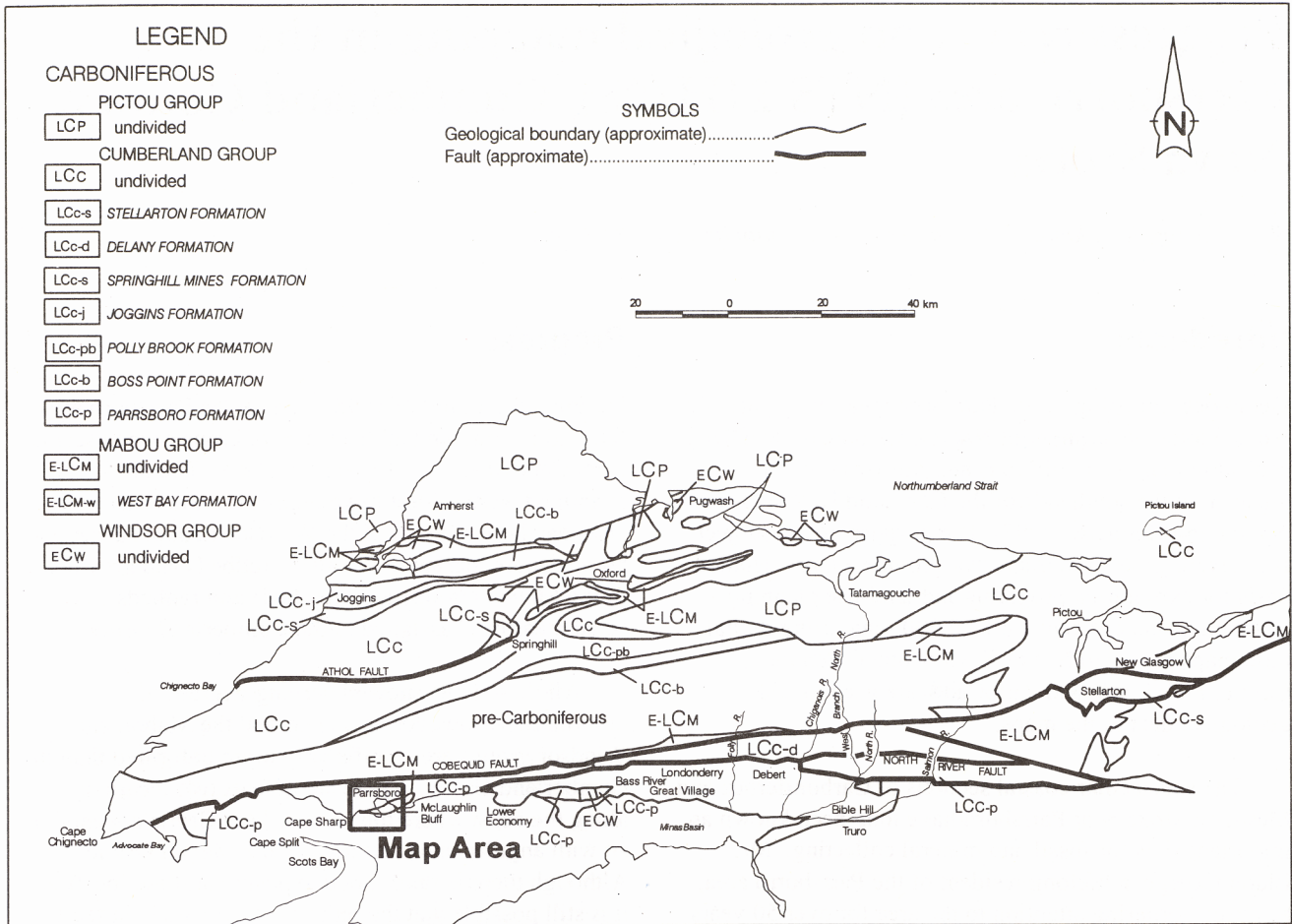


Figure 1. Simplified geological map of northern Nova Scotia showing location of the Parrsboro map area.

coast can be easily accessed. Marginal notes describe the general geological history of the area, and icons of the various fossils are used to link the margin notes to fossil sites shown on the map.

### Future Work

Mapping of the Parrsboro area should be completed during the next field season. A preliminary version of the museum visitors map will be available in July 1999. The intention is to provide 25-50 visitors to the museum with copies of the map for their use and comments. Based on the comments received the map will be modified and a final version should be available for the 2000 tourist season.

The standard geological map of the Parrsboro area should be available in late 1999 or early in the year 2000.

Standard geological maps of the Carboniferous and Mesozoic strata in the Londonderry, Bass River, and Great Village areas are planned to be completed during 1999.

### References

Naylor, R. D. and Kennedy, C. M. 1997: Stratigraphy and sedimentology of the Late Carboniferous Parrsboro Formation; *in* Minerals and Energy Branch, Report of Activities 1997, eds. D. R. MacDonald and K. A. Mills; Nova Scotia Department of Natural Resources, Report 1998-1, p. 115-126.

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