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Geology of the Island of Grand Manan, New Brunswick:
Precambrian to Early Cambrian and Triassic Formations

J. Gregory McHone and Leslie Fyffe

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GAC-MAC 2014: FIELD GUIDE SUMMARY

Geology of the Island of Grand Manan, New Brunswick: Precambrian to Early Cambrian and Triassic Formations

GAC–MAC Fredericton 2014, post-meeting field trip

J. Gregory McHone[1] and Leslie Fyffe[2]

[1]Stones2Gems
9 Dexter Lane,
Grand Manan, NB, Canada, E5G 3A6

[2]New Brunswick Department of Energy and Mines
Geological Surveys Branch
P.O. Box 6000
Fredericton, NB, Canada, E3B 5H1
Email: les.fyffe@gnb.ca

Figure 1. Schistose mafic volcanic tuff of the Neoproterozoic Ingalls Head Formation.

FIELD TRIP OBJECTIVES

This two day, post-conference field trip will visit shoreline exposures on the scenic Island of Grand Manan, located in the Bay of Fundy off the southwestern coast of New Brunswick. Grand Manan is unique in Atlantic Canada in displaying the geological features of both the ancient Gondwanan margin of the Paleozoic Iapetus Ocean and the Mesozoic margin of the modern Atlantic Ocean. The eastern part of Grand Manan is underlain by complexly deformed sequences of volcanic (Fig. 1) and sedimentary rocks (Figs. 2, 3), the ages of which have only recently been determined by geochronological analyses. This field trip will examine evidence that these dated Mesoproterozoic to Early Cambrian sequences have characteristics more closely resembling the Gondwanan terrane of Ganderia rather than Avalonia. Following the opening of the Atlantic Ocean, this Ganderian fragment of the former Gondwanan continent was left stranded behind in North America. Spectacular cliff sections of essentially flat-lying, columnar-jointed and amygdaloidal flows of Triassic basalt (Fig. 4), exposed on the western part of Grand Manan, mark the initial breakup of the supercontinent of Pangea. These 'flood basalts' underlie much of the Bay of Fundy, one of several rift basins that formed along the eastern margin of North America prior to the main opening of the Atlantic Ocean. Contact relationships and lithological characteristics of newly recognized sedimentary and basaltic subdivisions within the Triassic sequence exposed on Grand Manan will be examined on the field trip.

ADDITIONAL INFORMATION

The trip will depart by bus from the UNB Currie Center at mid-afternoon on Friday May 23 to catch the 5:30 pm ferry to Grand Manan from Blacks Harbour. Participants will walk onto the ferry for the hour and thirty minute crossing to Grand Manan. People with their own vehicles can leave them in the parking lot at the Blacks Harbour terminal. Participants wishing

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Figure 2. Massive quartzite of the Mesoproterozoic Thoroughfare Formation.

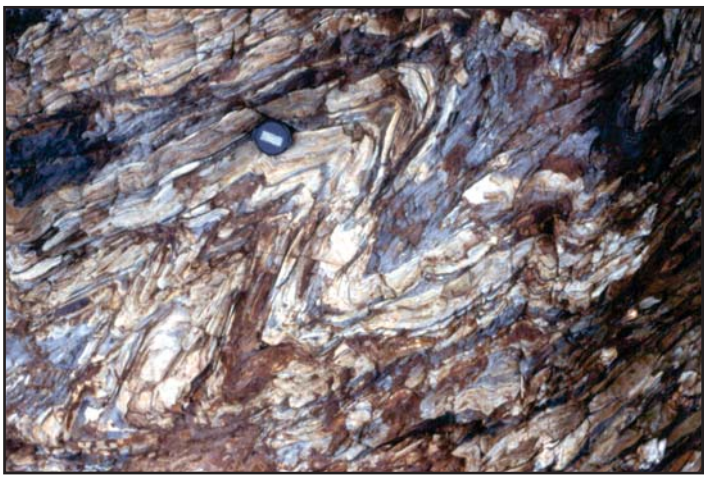

Figure 3. Folded, thin-bedded sandstone and shale of the latest Neoproterozoic to Early Cambrian Flagg Cove Formation.

to bring their own vehicle across the ferry to Grand Manan must make and pay for their own ferry reservation (506-662-3724). Several of the field trip stops require short hikes along beaches, which are often rocky and somewhat rough so sturdy footwear is recommended. The field trip will end in the afternoon of May 25 in time to catch the 3:30 ferry back to Blacks Harbour where participants will board a bus back to Fredericton.

Participants are limited to 25 people and while on the island will travel together by shuttle bus. The field trip fee includes bus transportation from Fredericton to Blacks Harbour on Friday, the shuttle bus, ferry travel on foot both ways, bag lunches both days, dinner at the Inn on Saturday evening, and bus transportation from Blacks Harbour to Fredericton on Sunday afternoon. Accommodations and other meals are extra and the participant's responsibility, however, participants are encouraged to stay at the Marathon Inn in North Head (http://marathoninn.com/; 506- 662-8488 or toll free 888-660-8488) where the trip will be based. Please be sure to reserve your room well in advance, as bird watchers flock to Grand Manan in May. Alternate accommodations are available at the Surfside Motel (506-662-8156), located about 1.5 km from the ferry terminal, or at one of several B & B's in the area.

Figure 4. Colonnades in the Triassic Dark Harbour Basalt.

Grand Manan Geology website: http://earth2geologists.net/grand-manangeology/

Grand Manan Island Tourism website: http://www.grandmanannb.com/