Geologic Site of the Month

January, 2011

A Geological Tour of Bartlett Narrows and Vicinity

44 20‘ 42.25“ N, 68 25‘ 14.86“ W

Text by
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Introduction

Many geological wonders are exposed on Mount Desert Island, providing opportunities for exploration either by land or sea by interested visitors who know where to look. This feature focuses on the fascinating geology around Bartlett Narrows, a relatively sheltered body of water on the western side of the island. Most of the bedrock or ledge exposed on Mount Desert Island is granite or related rocks that solidified from molten magma within the crust of the earth and the older rocks into which the molten magma was intruded. These rocks were exposed at the surface by many millions of years of erosion.

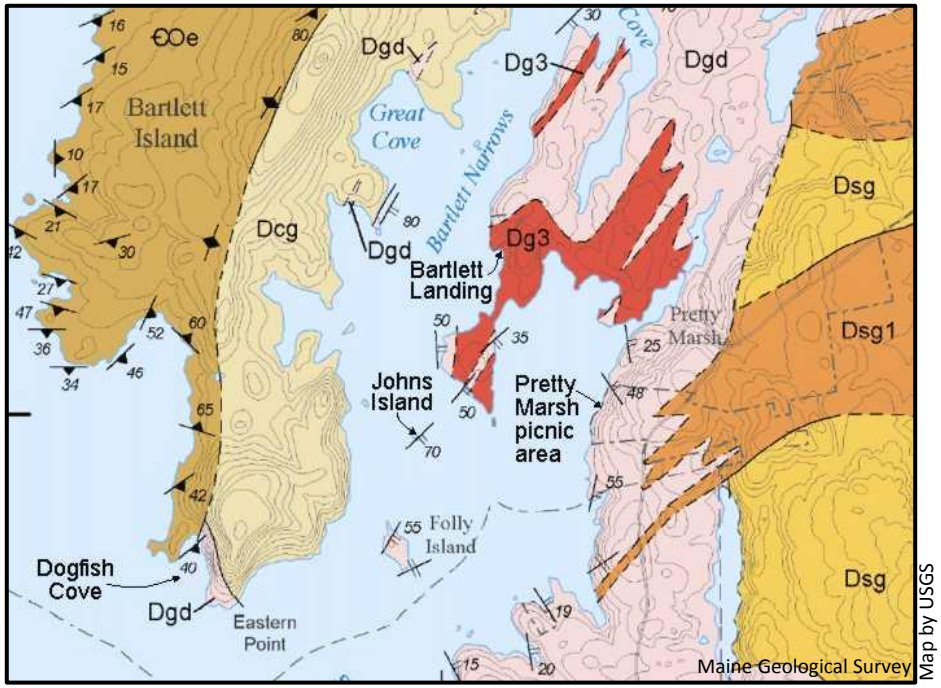

Figure 1. A portion of the bedrock geologic map of Mount Desert Island.

Rock Formations (Youngest to Oldest)

Igneous rocks

Dg3 - this is a young granite exposed in several small bodies around Mount Desert Island. It is pink and has crystals of medium size. It often occurs as thin dikes within the older rocks.

Dsg, Dsg1 - this is the granite of Somesville, so-named because of its excellent exposure there. It has pink and gray feldspars, and black biotite in crystals of medium size.

Dcg - this is the Cadillac granite which is has very large crystals of pink and gray feldspar, glassy quartz, and black hornblende.

Dgd - this is a mix of dark gray, coarse-grained gabbro where the primary minerals are pyroxene and hornblende, and diorite which contains more gray feldspar and is lighter gray.

Metamorphic rocks

COe - these are older metamorphic rocks of the Ellsworth Schist. It is a dark green or gray schist with distinctive thin, lighter colored layers of quartz and feldspar. It was sand and mud on the ocean floor many millions of years before being squeezed and heated, and then intruded by the various molten magmas.

Exploring the area

While this map shows sharp boundaries or contacts between the various types of rock, in reality, the contacts are often gradational in one way or another. Often large blocks or rafts of the Ellsworth Schist may be caught up completely within the younger granites and gabbros, even at considerable distance from the mapped contacts. This occurs at Dogfish Cove and on Folly Island.

Sometimes the magmas of two different igneous rock types occurred at the same place at the same time but, like oil and water, did not mix. There are examples of this along the mainland shore east and south of Folly Island.

The following images provide examples of some of the bedrock units and their contact relationships. While these images are from specific locations, they are common throughout the exposures along Bartlett Narrows, where the observant visitor can identify them.

***Please note that most of the shoreline around Bartlett Narrows is private land, except for Acadia National Park's picnic area at Pretty Marsh. Please respect private property. The boat ramp at Bartlett Landing is a popular access point for kayaking and boating the Narrows. Access has generally been permitted on Johns Island, Folly Island, and at Dogfish Cove on the south end of Bartlett Island for day users who follow appropriate rules of etiquette.*

Dogfish Cove

Photo by R. Marvinney

Figure 2. The cobble beach of Dogfish Cove is a great place to explore by kayak or small boat. Watch the tides and weather!

Ellsworth Schist

Photo by R. Marvinney

Figure 3. Typical layering in the Ellsworth Schist at Dogfish Cove. The light-colored layers of quartz and feldspar are very thin and often contorted into wild folds.

Ellsworth Schist

Photo by R. Marvinney

Figure 4. Another example of layering in the Ellsworth Schist at Dogfish Cove showing the common appearance of dark schist with discontinuous layering.

Ellsworth Schist

Photo by R. Marvinney

Figure 5. More folds in the Ellsworth Schist at Dogfish Cove.

Ellsworth Schist and Granite

Photo by R. Marvinney

Figure 6. Sharp contact of granite and Ellsworth Schist at Dogfish Cove.

Ellsworth Schist and Granite

Photo by R. Marvinney

Figure 7. Not-so-sharp contact of granite and Ellsworth Schist, Dogfish Cove. Here, fingers of schist seem to melt into the granite.

Ellsworth Schist and Granite

Photo by R. Marvinney

Figure 8. Ellsworth Schist melting into granite, Dogfish Cove. This image shows small blocks of schist floating within the granite.

Granite and Gabbro

Photo by R. Marvinney

Figure 9. Non-mixing gabbro and granite magmas, near Folly Island. This shows the typical textures that develop when two co-existing molten magmas mingle but do not mix. The dark gabbro blobs have rounded and cuspate edges, indicating that they were pliable blobs floating in the more viscous light-colored granite magma that surrounds them.

Ellsworth Schist and Granite

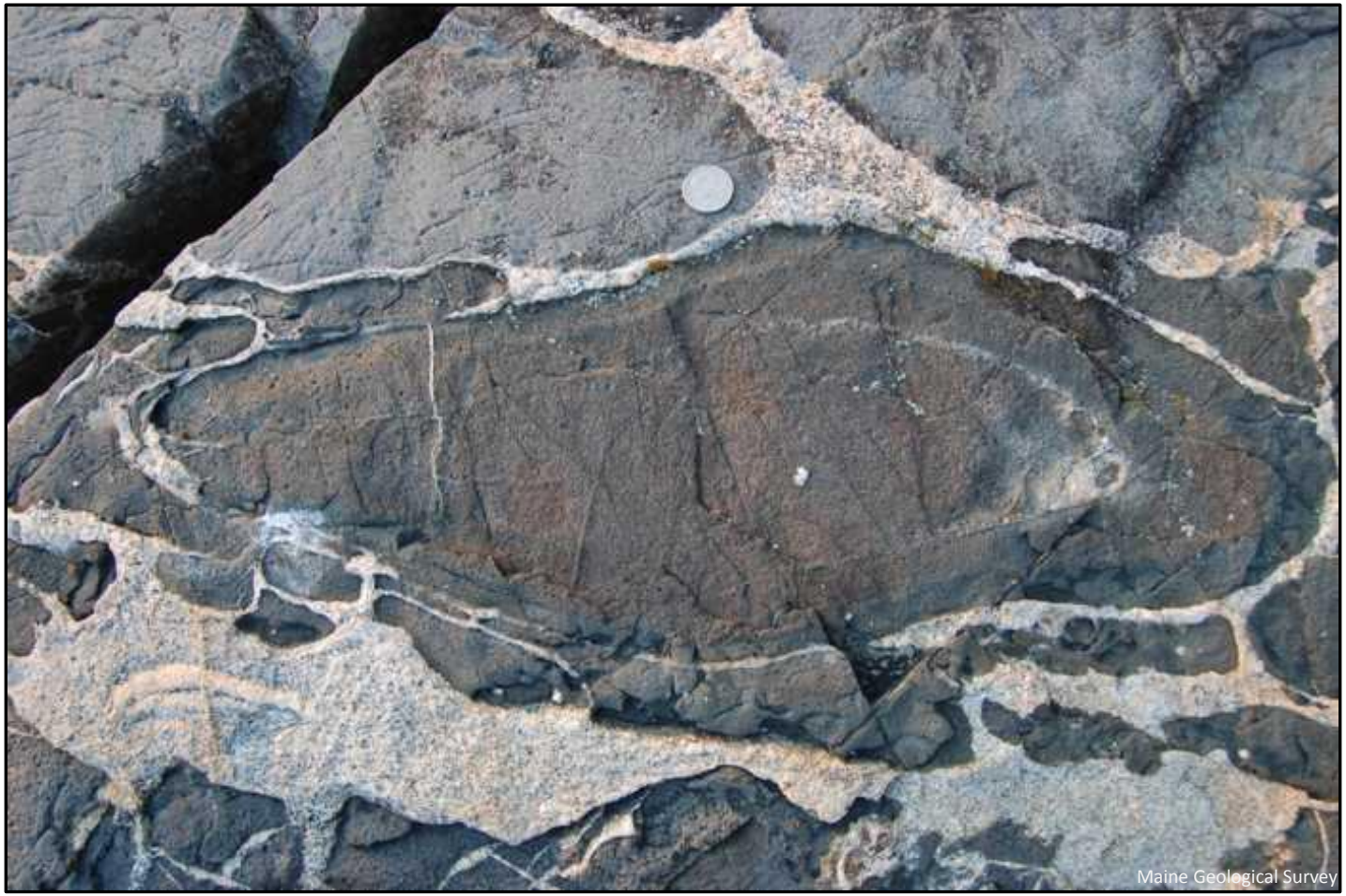

Photo by R. Marvinney

Figure 10. Similar non-mixing textures as in Figure 8.

Ellsworth Schist and Granite

Photo by R. Marvinney

Figure 11. Sometimes a resurgence of the granite magma after some cooling causes the gabbro blobs to break, forming very angular pieces.