

# SEDIMENTOLOGICAL AND FAUNAL DYNAMICS OF ROCKY SHORES AND OTHER HARD SUBSTRATES, SPITS, AND TURBIDITES (QUEBEC, CANADA)

Markes E. Johnson  
Department of Geology  
Williams College  
Williamstown, MA 01267

## Introduction

The coastal areas of the St. Lawrence and the Gaspé Peninsula of Quebec, Canada (Fig. 1) were chosen for a variety of study sites around which comparative work on modern and ancient rocky shores might be promoted. Four faculty members and twelve students went into the field on July 11, 1989, for a period of two and one-half-five weeks and they were assisted for several days by five visiting faculty. In terms of participants, this was the largest Keck project undertaken to date. After a group tour of potential study localities stretching 700 kms between Trois Rivières and Gaspé City and a series of lectures by faculty members, students selected individual projects which usually involved cooperative work in pairs supervised by a faculty member. Nine students elected to work on projects related to the sedimentological and faunal dynamics of rocky shores (fossil rocky shore in Quebec City; modern rocky shores at Grande Vallée and Point Mimi on the north shore of the Gaspé Peninsula) or other hard substrates (Port Daniel on the south shore of the Gaspé Peninsula).

Three students took advantage of the opportunity to study spectacular sand spits forming adjacent to rocky shores between Gaspé City and Percé (on the east shore of the Gaspé Peninsula) or the well exposed turbidites of Ordovician age which form long stretches of the modern rocky shore (on the north side of the Gaspé Peninsula). Although the central theme of the project revolved around rocky shores or other hard substrates (and all students were exposed to questions related to this theme), flexibility permitted maximum use of local resources and faculty expertise.

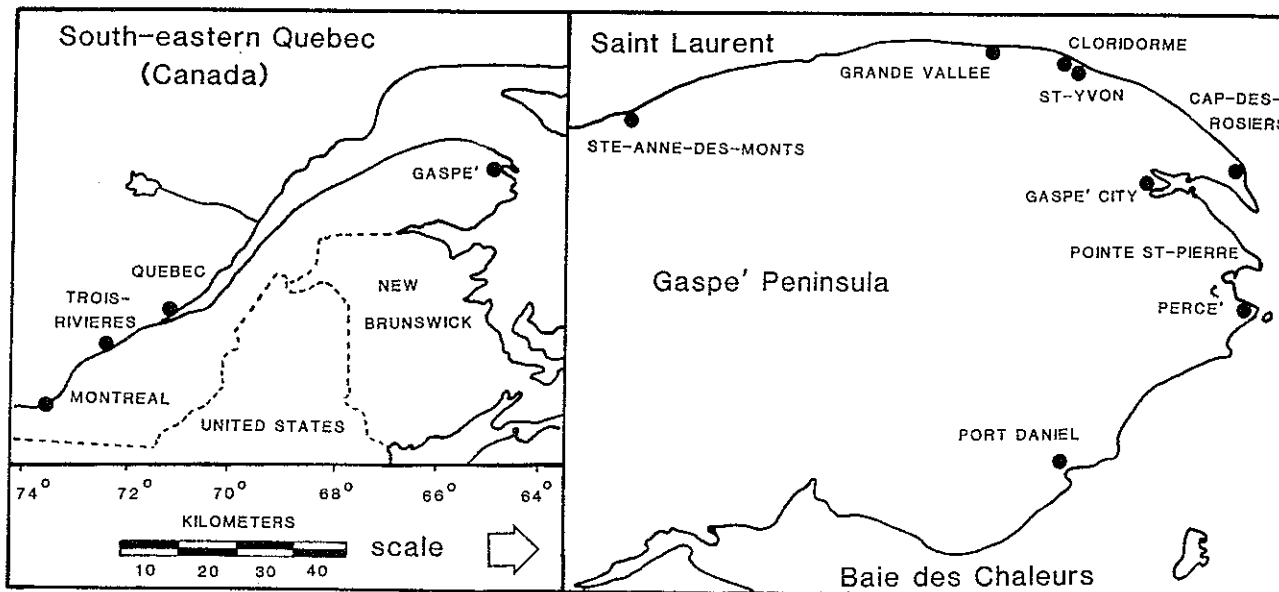


Fig. 1. Map of southeastern Quebec and The Gaspé Peninsula

Robyn Sommer and Jay Simonds of the College of Wooster worked with Mark Wilson, also of Wooster, on hardground communities preserved along the south shore of the Gaspé Peninsula. Robyn studied the platter-like stromatoporids preserved on the soft surface of the Bouleaux Member of the West Point Formation exposed on Pointe au Bouleau, Gascons. Jay is investigating a coral community preserved in the La Vieille Formation exposed just east of Gascons. There he found a variety of favositid, syringoporid, heliolitid and rugosan corals, along with many large Costistricklandia lirata brachiopods. Here the sediment surface was undoubtedly soft, but there are so many corals. Jay's hypothesis is that favositid corals, brachiopod valves and, to a lesser extent, domical stromatoporids provided the only available hard substrates.

#### Ancient and Modern Sedimentation

Three students worked on ancient and modern sedimentation projects along the coast of the Gaspé Peninsula under the direction of Bill Fox of Williams College. Brad Evans of Colorado College studied the stratigraphy and sedimentology of the Cloridorme Formation which was exposed on the wave cut platforms from Cap Barre through Saint Yvon. Brad distinguished four lithologic facies within the Ordovician turbidites. He worked closely in the field with Paul Myrow, his faculty advisor from Colorado College, and Giff Kessler, from the Marathon Oil Research Lab in Denver.

Gary Creaser of Beloit College and Becky Haney of Smith College worked with Bill Fox on the sedimentation and evolution of two large spits at the east end of the Gaspé Peninsula. Gary used a wave refraction computer program to determine the direction of longshore currents on a sand spit named le Cordon Littoral de Malbaie. He correlated the direction and velocity of the longshore currents with the grain size distribution along the spit. Becky Haney of Smith College studied the origin and evolution of Penouille Spit located on the north shore of Gaspé Bay in Forillon National Park. From measured profiles across the spit and trenches dug along the beaches, she was able to determine rates of erosion and deposition on the two branches of the spits and estimate the ages of the 31 dune and beach ridges which marked ancient shore lines.

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