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GEOLOGICAL SURVEY OF CANADA
OPEN FILE 9166

Palynological analysis of Carboniferous outcrop and corehole samples from the 1993–1995 Magdalen Basin NATMAP Project, with updated data files, locality data, and lists of taxa identified, Prince Edward Island, Nova Scotia, New Brunswick, and Quebec

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(Introduction by E.A. Atkinson and P.S. Giles)

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INTRODUCTION

The Magdalen Basin NATMAP Project was a cooperative and collaborative effort to address the late Paleozoic geological history and resource potential of the western Maritimes Basin. This basin underlies much of the Gulf of St Lawrence and can be studied onshore in parts of five eastern Canadian provinces. Approximately thirty participants, representing regional and national geoscience arms of government, universities, and the private sector, undertook multidisciplinary studies of onshore portions of the basin between 1993 and 1995. Stratigraphic studies of this extensive sedimentary basin underpinned this collective effort. Such studies have been supported historically by invertebrate paleontology which helps to place the rocks in relative geological time. As more traditionally used fossils are largely unavailable in a basin dominated by non-marine rocks, palynology, especially the study of spores and pollen, provided an ideal tool suited to the study of terrestrial rocks.

Graham Dolby, consultant and one of only two Carboniferous palynological specialists in Canada at that time, provided fundamental support with studies through the duration of the Magdalen Basin project. Material analysed was largely from rock outcrops in Nova Scotia and southeastern New Brunswick where project activities were focused. Palynology for selected exploratory wells drilled in Nova Scotia, Prince Edward Island and New Brunswick, and several deep hydrocarbon wells drilled offshore in the Gulf of St. Lawrence, were also analysed. The purpose of this multicomponent Open File is to publicly release Dolby's NATMAP contributions.

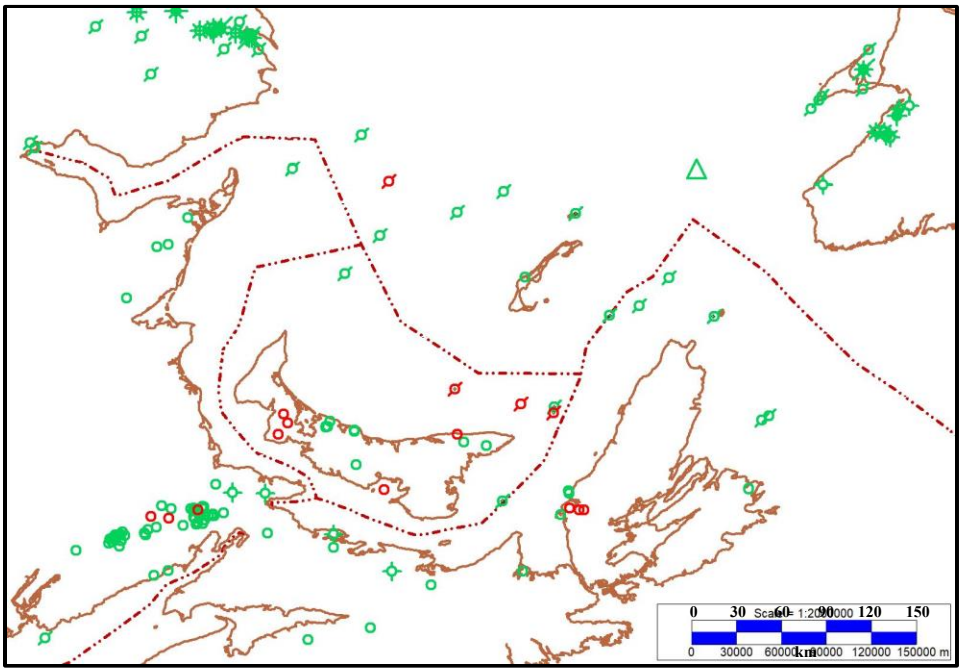

Figure 1. Map of wells analysed

Wells analysed

Other boreholes

The palynological data presented in this Open File are as valuable today as they were in the 1990s, but in the intervening thirty years, significant improvements in the understanding of pollen distribution and application to Maritimes Basin stratigraphy have been made. In the present version, Dolby has updated the stratigraphic implications that can be gleaned from his earlier analyses of the NATMAP samples to reflect more current zonations. The updated palynological data were applied by Atkinson et al. (2020), in their petroleum resource assessment of the Maritimes Basin, as part of the Marine Conservation Projects program.

While the Magdalen Basin NATMAP Project was operational, palynological data and assessment of biostratigraphic position were returned to the project keyed only to sample identification or well name, because the locations of submitted samples were well known to the participating geologists. To rectify this lack of location data, the summary data, including most sample locations as well as lists of taxa recovered, were extracted from BASIN, a major archival database of the Geological Survey of Canada – Atlantic. These data are provided spreadsheet form, and can be accessed in BASIN here: https://basin.marine-geo.canada.ca/wells/natmap_index_e.php

DATA FILE LIST

Contents / reference	File name	Date
Palynological Analysis of Carboniferous Outcrop and Corehole Samples from the NATMAP program, 1993 field season	Dolby1994-complete.pdf	March 1994
Palynological Analysis of Carboniferous Outcrop and Corehole Samples from the NATMAP program, 1994 field season	Dolby1995-complete.pdf	March 1995
Data on sample locations and species identified, from GSC-Atlantic archival database	NATMAP_LOCATION_SAMPLE_SPECIES.xlsx	2023
Well names, latitude and longitude, X Y in LCC projection, for well bores analysed	DolbyWellLocations.xlsx	2023
Reformatted well data – biostratigraphic charts:	Beaton Point F70 Chart.pdf	2018
	BRADELLE L-49 chart 1 METRIC.pdf	
	Bradelle L49 Chart 1.pdf	
	BRADELLE L-49 chart 2 METRIC.pdf	
	Bradelle L49 Chart 2.pdf	
	Cablehead #1 Chart.pdf	
	DDH P58 Chart.pdf	
	E. Stoney Creek #1 Chart.pdf	
	East Point E47 Chart.pdf	
	Hillsborough #1 Chart.pdf	
	Little River #1 Chart.pdf	
	Mabou #1.pdf	
	Mabou #2.pdf	
	MABOU 1 METRIC.pdf	
	MABOU 2 METRIC.pdf	
	MacDougall #1 Chart.pdf	
	MACDOUGALL 1 METRIC.pdf	
	Mull River #1 Chart.pdf	
	Naufrage #1 Chart.pdf	
	Pollet River #1 Chart.pdf	
	POLLET RIVER 1 METRIC.pdf	
	Port Hill #1 Chart.pdf	
	PORT HILL 1 METRIC.pdf	

	Port Hood #1 Chart.pdf	
	PORT HOOD 1 METRIC.pdf	
	Wellington #1 Chart.pdf	
	WELLINGTON 1 METRIC.pdf	
Well data – DEX equivalent StrataBug files	Beaton Pt F-70.sbg	2018
	Bradelle L-49 chart 1.sbg	
	Bradelle L-49 chart 2.sbg	
	Cablehead #1.sbg	
	DDH P-58.sbg	
	East Point E-47.sbg	
	East Stoney Creek #1.sbg	
	Hillsborough #1.sbg	
	Little River #1.sbg	
	Mabou #1.sbg	
	Mabou #2.sbg	
	MacDougall #1.sbg	
	Mull River #1.sbg	
	Naufrage #1.sbg	
	Pollett River #1.sbg	
	Port Hill #1.sbg	
	Port Hood #1.sbg	
	Wellington #1.sbg	
Well data – csv format	Beaton Pt F-70.csv	2018
	Bradelle L-49 chart 1.csv	
	Bradelle L-49 chart 2.csv	
	Cablehead #1.csv	
	DDH P-58.csv	
	East Point E-47.csv	
	East Stoney Creek #1.csv	
	Hillsborough #1.csv	
	Little River #1.csv	
	Mabou #1.csv	
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	Mull River #1.csv	
	Naufrage #1.csv	
	Pollett River #1.csv	
	Port Hill #1.csv	
	Port Hood #1.csv	
	Wellington #1.csv	

Well data – Excel format	Beaton Pt F-70.xlsx	2018
	Bradelle L-49 chart 1.xlsx	
	Bradelle L-49 chart 2.xlsx	
	Cablehead #1.xlsx	
	DDH P-58.xlsx	
	East Point E-47.xlsx	
	East Stoney Creek #1.xlsx	
	Hillsborough #1.xlsx	
	Little River #1.xlsx	
	Mabou #1.xlsx	
	Mabou #2.xlsx	
	MacDougall #1.xlsx	
	Mull River #1.xlsx	
	Naufrage #1.xlsx	
	Pollett River #1.xlsx	
	Port Hill #1.xlsx	
	Port Hood #1.xlsx	
	Wellington #1.xlsx	

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This work was originally conducted under the National Geoscience Mapping Program (NATMAP), and the reformat and modernization of the data was contracted under the Marine Conservation Targets (MCT) program.

REFERENCES

Atkinson, E.A., Durling, P.W., Kublik, K., Lister, C.J., King, H.M., Kung, L.E., Jassim, Y., McCarthy, W.M., and Hayward, N., 2020. Qualitative petroleum resource assessment of the Magdalen Basin in the Gulf of St. Lawrence; Quebec, Prince Edward Island, New Brunswick, Nova Scotia, and Newfoundland and Labrador; Geological Survey of Canada, Open File 8556, 109 p., https://doi.org/10.4095/321856