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2023 NSARB-2023-001

Nova Scotia Aquaculture Review Board

IN THE MATTER OF: *Fisheries and Coastal Resources Act*, SNS 1996, c 25

- and -

IN THE MATTER OF: An Application by KELLY COVE SALMON LTD. for a boundary amendment and two new finfish aquaculture licenses and leases for the cultivation of Atlantic salmon (*Salmo salar*) - AQ#1205x, AQ#1432, AQ#1433, in Liverpool Bay, Queens County (the "Application")

BETWEEN:

Kelly Cove Salmon Ltd.

APPLICANT

and

Minister of Nova Scotia Department of Fisheries and Aquaculture

PARTY

and

Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO)

Queens Recreational Boating Association (Brooklyn Marina)

22 Fishermen of Liverpool Bay

Region of Queens Municipality (RQM)

Protect Liverpool Bay Association (PLBA)

INTERVENORS

Affidavit of Heather MacLeod-Leslie

I affirm and give evidence as follows:

1. I am Heather MacLeod-Leslie, Manager of the Archaeology and Research Division (ARD) for Kwilmu'kw Maw-klusuaqn Negotiation Office, for whom I have worked since June 9, 2008 (15 years and 8 months). I hold a PhD in Archaeology from Memorial University of Newfoundland and am a certified Project Management Professional by the Project Management Institute. My qualifications as a subject matter expert in archaeology and geomatics are set out in my Curriculum Vitae attached to this affidavit as **Exhibit A**.

2. I have been asked to review and provide an expert opinion regarding impacts of the Kelly Cove applications on Mi'kmaw archaeological heritage resources.

3. I have personal knowledge of the evidence affirmed in this Affidavit except where otherwise stated to be based on information and belief.

4. I state, in this Affidavit, the source of any information that is not based on my own personal knowledge, and I state my belief of the source.

Significance of Liverpool Bay

1. The Mi'kmaq have occupied the Liverpool Bay area since time immemorial.

2. There are registered Mi'kmaw archaeological sites dating to the Kejikawe'k L'nu'k Period (3000 BP - 500 BP) on Coffin Island and the shoreline of Liverpool Bay, as well as a recorded submerged Mi'kmaw archaeological site in Liverpool Harbour.

3. The Mersey River corridor, which includes Liverpool Bay, formed part of an essential Mi'kmaw transportation route connecting the Atlantic coast with the Bay of Fundy. Approximately one quarter of all recorded Mi'kmaw archaeological sites in Nova Scotia are located along the Mersey River between Kejimkujik National Historic Site and Liverpool Bay.

4. Oqomkikiaq, meaning "a dry sandy place", is the Mi'kmaw name for Liverpool, while Brooklyn is known as Qamaku'jk/Katqu'jk, which means "across the small waterway". Attached to this affidavit as **Exhibit B** is a screenshot of the Mi'kmaw Place Names Digital Atlas (placenames.mapdev.ca). Mi'kmaw methods of naming a place frequently reflect the meaning of the area to Mi'kmaq, such as the resources available or the landscape features of the area. This type of naming relies on an intimate understanding and repeated use of an area.

5. The proximity of known archaeological sites, Mi'kmaw placenames, and longstanding traditional use (harvesting, encampment and ceremonial sites) highlight the archaeological and cultural significance of Liverpool Bay for the Mi'kmaq.

6. Historic references, along with oral and traditional knowledge, record the enduring presence of Mi'kmaq around Liverpool Bay. The Mersey River was a main travel route for Mi'kmaq and early settlers, as indicated at page 1 of Thomas Raddall's paper "Bon Mature" that is attached to this affidavit as **Exhibit C.** Another record, dating to 1604, describes fur trading between the French and the Mi'kmaq at Liverpool (see Marc Lescarbot's "Nova Francia" at page 8, attached to this affidavit as **Exhibit D**, where this area is referenced as the Port du Rossignol).

7. Records of Mi'kmaw settlement and occupation around Liverpool and surrounding areas continued throughout the eighteenth and nineteenth centuries, as illustrated by the following sources: Elizabeth Hutton's paper "Indian Affairs in Nova Scotia, 1760-1830" at page 68, attached to this affidavit as **Exhibit E**; Petition of Father Hugh O'Reilly, 9 December 1839, at page 154, attached to this affidavit as **Exhibit F**; the House of Common's "Annual Report of the Department of the Interior for the Year Ending 30th June, 1878" at page 36-37, attached to this affidavit as **Exhibit G**, where this area would fall within District of Caledonia; and the Petition of Malti Gload, 17 November 1835, attached to this affidavit as **Exhibit H**.

8. During centralization, in the 1940s, there was resistance among the Mi'kmaq of southwestern Nova Scotia to relocating from their homelands and, as a result, many Mi'kmaw families continued to live in this part of the province (see Maura Hanrahan's paper

"Resisting Colonialism in Nova Scotia: The Kesukwitk Mi'kmaq, Centralization, and Residential Schooling" at page 37, attached to this affidavit as **Exhibit I**).

Palaeolandscape of Liverpool Bay

9. Over millennia, the Mi'kmaq have witnessed immense changes to the landscapes and shorelines of Mi'kma'ki. The entirety of Liverpool Bay was once dry land that would have been used and occupied by Mi'kmaw ancestors.

10. Research on Holocene marine transgression along the Atlantic coast of Nova Scotia indicates that sea levels have risen approximately 40 metres over the course of the last ten thousand years, as discussed by Shaw, Taylor, & Forbes in the article "Impact of the Holocene Transgression on the Atlantic Coastline of Nova Scotia" at pages 221-238, attached to this affidavit as **Exhibit J**. As sea levels rose, coastal lands, including the areas within Liverpool Bay, were inundated with water. These now-submerged shorelines and landscapes are considered to represent areas of elevated archaeological potential for Mi'kmaw cultural heritage.

11. The shortage of recorded submerged Mi'kmaw archaeological sites in Liverpool Bay is more reflective of a lack of prior archaeological work in the area than an absence of archaeological resources.

Archaeological Assessment of Liverpool Bay

12. The Record of Meeting for the 1 March 2022 and 1 June 2022 consultation meetings, contained within the 1 May 2023 letter from the Nova Scotia Department of Fisheries and Aquaculture (NSDFA) to KMKNO, show that representatives of KMKNO and Acadia First Nation emphasised the archaeological significance of Liverpool Bay and the need for a proper Archaeological Resource Impact Assessment (ARIA) to be completed. Although I was not personally in attendance at these meetings, I believe this source of information to be true.

13. The Record of Meeting for the 1 June 2022 consultation meeting also shows that the Department of Communities, Culture, Tourism and Heritage (CCTH) suggested a two-phased approach to the archaeological assessment of proposed aquaculture sites in Liverpool Bay: beginning with a thorough background study, "then talking together as a group about the results and discussing whether or not further exploration is required".

14. KMKNO's 16 June 2022 letter to NSDFA, attached to this affidavit as **Exhibit K**, strongly recommends that a full ARIA be completed and that any such investigation be developed collaboratively with the Mi'kmaq.

15. NSDFA did not follow up on the need for an ARIA. Instead, Kelly Cove Salmon Limited, of its own volition, retained Boreas Heritage Consulting Inc. to carry out an ARIA of the three aquaculture sites. KMKNO-ARD recognises the Proponent's proactive approach in acknowledging that aquaculture operations have the potential to impact submerged Mi'kmaw archaeological resources.

16. In Nova Scotia, submerged archaeological landscapes and related resources are mostly, if not exclusively, Mi'kmaw cultural heritage. Archaeological sites and materials are non-

renewable resources. Physical impacts to land, including land covered by water, have the potential to damage or disturb buried cultural remains.

17. Archaeological heritage is a regularly-cited source of evidence in the legal determination of rights and title. Consequently, any impact to Mi'kmaw archaeological heritage, including lack of detection, loss, or disturbance, has the potential to negatively impact Mi'kmaw rights and title.

18. Prior disturbance of submerged archaeological resources does not detract from the cultural significance of an area. Rather, there is an even greater need to protect whatever remains for current Mi'kmaw communities and generations to come.

19. Underwater archaeology, with respect to submerged landscapes, is an emerging discipline in Nova Scotia. Most archaeological consultants/companies operating in the province have limited experience and/or capacity in undertaking archaeological assessments in submerged environments.

20. In the absence of standards and guidelines for submerged landscape archaeological assessment in Nova Scotia, a weakness exists that affects all parties.

21. Direct consultation on archaeological matters, between the Mi'kmaq of Nova Scotia and the provincial government, would be an important and helpful step towards building trust and helping to alleviate Mi'kmaw concerns regarding the ever-present threats to Mi'kmaw cultural and archaeological heritage.

22. No discussions were held between KMKNO and the Government of Nova Scotia (NSDFA or CCTH) concerning appropriate strategies or methodologies for the archaeological investigation of the submerged Mi'kmaw cultural landscape of Liverpool Bay.

23. Boreas Heritage Consulting Inc. completed a desk-based archaeological assessment of the Liverpool Bay aquaculture sites, under Heritage Research Permit A2022NS130, in October 2022. The assessment displays a number of strengths, including the manner in which it takes into account Holocene environmental conditions, postglacial coastline change, and modern bathymetric data in its examination of submerged archaeological potential in Liverpool Bay.

24. The resulting A2022NS130 Report (also referred to as the Phase 1 ARIA) identifies two areas with high potential for encountering submerged archaeological resources (HPA-01 & HPA-02) and recommends that these areas be subjected to subsurface archaeological sampling probes. The report recommends that the results of such subsurface investigation would inform the potential need for additional archaeological assessment or mitigation. The report also recommends that development within the remainder of the assessment area may proceed without further archaeological investigation.

25. As set out in KMKNO's 14 December 2022 letter to NSDFA, attached to this affidavit as **Exhibit L**, KMKNO-ARD supports the recommendation that HPA-01 and HPA-02 be subjected to sub-seabed testing prior to any disturbance. However, the ARD consistently recommends that subsurface testing be undertaken across the full extent of any development area, regardless of prior disturbances or classifications of low archaeological potential. As such, in the absence of adequate sub-seabed information, KMKNO-ARD does not support the

recommendation that the remainder of the assessment area be cleared of requirement for further archaeological investigation.

26. No discussions took place between KMKNO and the Government of Nova Scotia (NSDFA or CCTH) regarding the results of the Phase 1 ARIA A2022NS130 Report, despite CCTH's acceptance and approval of the report's conclusion that further archaeological investigation was needed.

27. Kelly Cove Salmon, again of its own volition, retained Boreas Heritage Consulting Inc. to carry out a programme of seabed core sampling within HPA-01 and HPA-02. No discussions were held between KMKNO and the Government of Nova Scotia (NSDFA or CCTH) regarding appropriate sampling techniques for the assessment area.

28. Boreas Heritage Consulting Inc. conducted seabed sampling and analysis, under Heritage Research Permit A2023NS016, in March 2023. According to the Sampling Report, also known as the Phase 2 ARIA, the core samples had a target depth of 15 cm below the sea floor. In practice, the cores ranged in length from 0 cm to 33 cm. Each core sample recorded a single stratigraphic context with inclusions of marine shell debris. No core penetrated the seabed deep enough to reach a layer / context that would have been dry land prior to sea level rise at Liverpool Bay.

29. The Maw-lukutijik Saqmaq (Assembly of Nova Scotia Mi'kmaw Chiefs) expects a high level of archaeological diligence, with evidence-based decisions grounded in an understanding of subsurface environmental data adequate to eliminate concern for the presence, protection, and management of Mi'kmaw archaeological and cultural heritage, in advance of any development.

30. In underwater archaeological assessments, seabed sampling is used to reconstruct palaeolandscapes and identify contexts conducive to the preservation of cultural material, not simply as a presence/absence strategy for locating archaeological resources. Without sufficient sub-seabed testing, the evidence of a lack of concern in submerged impact areas simply does not exist.

31. KMKNO made clear in its communications with NSDFA that a full ARIA should be completed, in collaboration with the Mi'kmaq, and the results reviewed by KMKNO-ARD prior to the conclusion of consultation. Well-intentioned efforts, on the part of both the aquaculture proponent and the archaeological consultant, to identify and protect submerged Mi'kmaw cultural heritage in Liverpool Bay are recognised and acknowledged. Any deficiencies in the archaeological assessment of the proposed aquaculture development areas stem from the failure, on the part of the Government of Nova Scotia, to engage in meaningful consultation with respect to Mi'kmaw concerns regarding the submerged archaeological potential of the Liverpool Bay.

32. The failure, as yet, to, "[talk] together as a group about the results and …[discuss] whether or not further exploration is required" has also negatively impacted the proponent and archaeological consultant as necessary feedback has not yet occurred and, thus, the archaeological investigation needs may not be considered as complete. Having not been present for the 1 June 2022 consultation meeting, the proponent and consultant are assumed unaware that this requirement remains unmet.

33. I affirm this affidavit is in support of KMKNO's intervention before the Aquaculture Review Board and for no other or improper purpose.

34. I was not physically present before Garnet Brooks when I affirmed this affidavit. I was linked with Garnet Brooks using video conferencing technology.

Affirmed before me by videoconference from)
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Middle Musquodoboit (location of affiant) to)
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Halifax (location of lawyer taking)
oath) on the 19th day of January, 2024)
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[redacted]
A Commissioner of Oaths in and for the Province of Nova Scotia

GARNET E. BROOKS
A Barrister and Solicitor of
the Supreme Court of Nova Scotia

[redacted]
Heather MacLeod-Leslie

This is **Exhibit "A"** mentioned and referred to in the affidavit of Heather MacLeod-Leslie affirmed before me on this 19th day of January, 2024

A Commissioner of Oaths in and for the Province of Nova Scotia

GARNET E. BROOKS
A Barrister and Solicitor of
the Supreme Court of Nova Scotia

Heather McLeod-Leslie, PhD, PMP
[redacted]

Education

Project Management Professional (current)	Project Management Institute	2017
Doctor of Philosophy	Archaeology, Memorial University of Newfoundland	2002-2011
Dissertation Title	*Sankofa: An Archaeological Exploration of Black Loyalist Identity and Culture in Nova Scotia*	
Master of Arts	Sociology/Anthropology Carleton University, On	1998-2001
Thesis Title	*Understanding the Use of Space in an Eighteenth Century Black Loyalist Community: Birchtown, Nova Scotia*	
Diploma Candidate	Remote Sensing, conc. GIS College of Geographic Sciences, NS	1996-1997
Bachelor of Arts, honours	Anthropology Saint Mary's University, NS	1990-1995
Thesis Title	*Edward Howe's property at Grassy Island, A test of Stanley South's Artifact Patterns*	

Professional Experience

Manager, Archaeology & Research – Kwilmu'kw Maw-klusuaqn Negotiations Office
2022- Present

Chair, 55th Annual Meeting of the Canadian Archaeology Association, Membertou, N.S.
2022-2023

Member, CAA Ethics Review Committee, Canadian Archaeological Association
2019-2022

Senior Archaeologist – Kwilmu'kw Maw-klusuaqn Negotiations Office
2015- 2022

Staff Archaeologist – Kwilmu'kw Maw-klusuaqn Negotiations Office, Millbrook, N.S.
2008-2015

Lecturer / Adjunct Professor
- Anthropology, Geography & Atlantic Canada Studies 2005-2011

Archaeological Consultant
Davis Archaeological Consultants Limited 1992 - 2008
In Situ Cultural Heritage Research 2001-2007
Office of the Chief Medical Examiner, NS 2006 & 2007

Geomatics Research Associate
Canada Centre for Remote Sensing 1999-2001

Geomatics Consultant

	Dendron Resource Surveys	1998-1999
	Intermap Technologies	1997-1998

Website Database Developer

	MacKinnon Tees	1997-98

Nova Scotia Museum

	Mi'kmaw Portraits Database, Team Leader	1997

70+ Archaeological Field & Laboratory projects in varying roles:
(Director, Principal Investigator, Senior Archaeological Technician, Forensic Archaeological Consultant, Archaeological Geomatics Analyst, Archaeological Researcher, Conservation Intern, Assistant Archaeologist, Crew Chief, Intern, Laboratory Assistant and Excavator)
1991-2018

Teaching Experience

University Level:

ANTH 1271	Introduction to Archaeology
ANTH 2273	Who Owns The Past
ANTH 3351	Directed Study in Anthropology
ANTH 3376	Archaeology of Death
GEOG 2336	Principles of Cartography
GEOG 3386	Concepts in Geographical Information Systems (GIS)
GEOG 5686	Concepts in Geographical Information Systems (GIS) – graduate level
ANTH 3373	Archaeology Laboratory
ANTH 3374	Fieldwork in Archaeology
ANTH 4464	Advanced Fieldwork in Archaeology
ANTH 4465	Advanced Archaeology Laboratory
ANTH 4462	Method and Theory in Historical Archaeology
ANTH 4475	CRM Archaeology (new curriculum - developed and delivered)
ANTH 3354/ACST3302	Archaeology of Black Atlantic Canada - Seminar

29 Invited Lectures/Guest Presentations 1996-2018

Mentoring

Kamden Nicholas – Archaeological Intern	2019-2020
Kaitlin MacLean, M.A. – Archaeological Assistant	2016 - 2021
Jodi Howe – Summer Student	2011-2013
Cynthia Simpson – External Reviewer for M.A. (SMU - Atlantic Canada Studies)	2011
Keenan Sutherland – Summer Student	2009

Publications, Conference Papers & Posters

2023 *"Archaeology and the Landscape of Grand Pré: Managing a UNESCO World Heritage Site in a Spirit of Collaboration, Partnership and Multiple Perspectives"* poster presented at Canadian Archaeological Association's Annual Meeting, Membertou, NS (co-author)

"From Conflict and Castigation to Collaboration and Celebration" paper presented at Canadian Archaeological Association's Annual Meeting, Membertou, NS (co-author)

"The Time is Nigh: Responding to Archaeological Resources at Risk in the Coastal Zone" paper presented at Canadian Archaeological Association's Annual Meeting, Membertou, NS (co-author)

"Archaeologies of Black Atlantic Canadians – Next Steps" paper presented at Canadian Archaeological Association's Annual Meeting, Membertou, NS (co-author)

2020 Invited Presenter, *"When It's Not About You: Heirs and "Experts" in the Study of non-Eurocentric Pasts"*, **Diggin' In** (Season 4, Episode 2), presented by the RS Peabody Museum. https://www.youtube.com/watch?v=ErajbwLsZ7s

2019 *"Wela'lin Mike: The contributions of Michael Deal to the work of recognizing Mi'kmaw Rights and Title in Nova Scotia"* paper delivered at the Canadian Archaeological Association's Annual Meeting, Quebec City, QC

"African Diaspora is part of Black Canadians' archaeological heritage: An example from the mound complexes of Birchtown, Nova Scotia" paper delivered at the Canadian Archaeological Association's Annual Meeting, Quebec City, QC

2018 *"Second Wind: How the Mi'kmaq of Nova Scotia are meeting the forces of nature"* paper delivered at the Canadian Archaeological Association's Annual Meeting, Winnipeg, MB (first author)

"Reconciliation" *Annual Archaeology Workshop*, Province of Nova Scotia /Nova Scotia Museum, Halifax, N.S.

2017 "Understanding Cultural Change in Modern Archaeological Practice: A Perspective from Nova Scotia" paper delivered at the Canadian Archaeological Association's Annual Meeting, Gatineau, QC (first author)

"Archaeology and Consultation in Nova Scotia, Presented at *Consultation Conference*, GC - Indian and Northern Affairs Canada, Membertou, N.S.

"ANSMC's Ancestral Remains Protocols & Statement of Principles of Archaeological Value" *Annual Archaeology Workshop*, Province of Nova Scotia / Nova Scotia Museum, Halifax, N.S.

"Erosion Control at Mniku (chapel Island): our experience using coir fibre products" *Annual Archaeology Workshop*, Province of Nova Scotia / Nova Scotia Museum Halifax, N.S. (first author)

2016 "ANSMC's Culture, Heritage and Archaeology Strategic Plan" *Annual Archaeology Workshop*, Province of Nova Scotia / Nova Scotia Museum, Halifax, N.S

2015 "Sankofa: African Diaspora Archaeology in Atlantic Canada" presented in African Canadian Archaeology session at *Black Canadian Studies* Conference, Halifax, NS

"Mawiomi at Pasi'tuek: Gaspereau Lake in the 1DD Watershed through time" paper delivered at the Canadian Archaeological Association's Annual Meeting, St. John's NL

2014 "MacGyvering, managing and muddied waters: community stewardship of eroding coastal heritage" paper delivered at the *Coastal Zone Canada Conference*, Halifax, NS (first author)

"Archaeology and Atlantic Canada's African Diaspora", *Acadiensis, XLIII, No. 1<Winter>*

2012 "Archaeology and Atlantic Canada's African Diaspora", *Atlantic Canada Studies Annual Conference*, UNB - Fredricton, N.B.

2011 "When a cigar isn't a cigar and garbage isn't garbage: How to interpret African Diasporic archaeological material in Canada". *Canadian Archaeological Association 44th Annual*

Conference, Halifax, NS

2011 "Absence of Evidence is not Evidence of Absence: A Critical Review of the Development of Archaeological Knowledge of First Nations sites in Nova Scotia". *Canadian Archaeological Association 44th Annual Conference*, Halifax, NS

2011 "MacGyvering a solution: learning to manage heritage sites at the water's edge". *Canadian Archaeological Association 44th Annual Conference*, Halifax, NS (co-author)

2010 Invited discussant, "Submerged Landscapes in the Waters of Nova Scotia", *Nova Scotia Underwater Archaeology Workshop*, Nova Scotia Archaeology Society

2010 Book Chapter: "Mapping a Black Loyalist Settlement at Birchtown, Nova Scotia" in *Stories of Archaeology in Nova Scotia*, Paul Erickson and Jonathan Fowler (eds.), Nimbus Publishing, N.S.

2010 *Landscapes of Mi'kmaq Past: Field Research Activities of KMKNO 2009 Permit Report*, HRP# A2008NS79, Nova Scotia Museum

2010 Invited panelist, "*Nova Scotian Treasures and Special Places: A Public Policy Discussion of Archaeological Legislation*" Symposium sponsored by the Gorsebrook Research Institute.

2009 *Landscapes of Mi'kmaq Past: Field Research Activities of KMKNO 2008 Permit Report*, HRP# A2008NS62, Nova Scotia Museum

2009 Invited panelist, "African Diaspora Archaeology in Canada", *Society for Historical Archaeology (SHA) 27th Annual Conference*, Toronto, On

2008 "Condition Assessment of nItramural Burials under St. Paul's Anglican Church, Grand Parade Square, Halifax". *Nova Scotia Archaeology Society Newsletter*, Vol 20 (2), pp. 9-15

2008 *Black Loyalist Identity Archaeological Project*, report, Nova Scotia Museum Grants Office

2008 *Where did the enslaved bury their dead? A survey at the MacKinnon Plantations, Yarmouth Co. Permit Report, HRP# A2006NS16*, Nova Scotia Museum

2007 "More than just an Address: considering the relationship between Mi'kmaq and African Nova Scotian communities". *Canadian Archaeological Association 40th Annual Conference*, St. John's, NL

2007 "How African are African Nova Scotians?" *Society for Historical Archaeology (SHA) 25th Annual Conference*, Williamsburg, Va

2007 "Archaeology in Cole Harbour", *Nova Scotia Archaeology Society Newsletter*, Winter 2007

2007 *Dalhousie Mountain Wind Farm, Archaeological Resource Impact Assessment, Permit Report, HRP# A2007NS40*, Davis Archaeological Consultants Ltd.

2007 *Glen Dhu Wind Farm: Archaeological Resource Impact Assessment, Permit Report, HRP # A2007NS45*, Davis Archaeological Consultants Ltd.

2007 *Archaeology at the Poor's Farm, Permit Report, HRP A2006NS43*, Nova Scotia Museum

2007 *The Burials under St Paul's Anglican Church, Halifax, N.S.: Condition Assessment*, Nova Scotia Museum

2006 "Archaeological Investigation of Delap's Cove, Brindley Town and Rear Monastery". *SHA Newsletter*, Vol 39 (1) March 2006 (submitted)

2006 "The Cultural Landscape of African Nova Scotia" *Salt of the Earth Conference: Creating a Culture of Environmental Respect and Sustainability*, co-sponsored by the Canadian Network for Environmental Education and Communication and Interpretation Canada.

2005 "Delap's Cove, Brindley Town and Rear Monastery". *Council for Northeast Historical Archaeology Newsletter*, No. 62, October 2005

2005 *Invisible Subjects: An Archaeological Exploration of Black Loyalists' Identity Report of 2004 survey carried out under ISER Research Grant fund # 203609*. Institute of Social and Economic Research, St. John's, NL

2004 "Geomatics at Birchtown: Advancing our knowledge of Black Loyalist History through simple applications" *FABS Sessions, Archaeology Unit*, Memorial University of Newfoundland, St. John's, NL

2002 "Applying Geomatics Technologies to Archaeological Data: Advances in Black Loyalist History" *Canadian Archaeological Association, 35th Annual Meeting*, Ottawa, ON

2001 *Considerations for GIS-based Archaeological Predictive Modeling for Nova Scotia*, Nova Scotia Museum

2001 "GIS Issues Encountered in Exploring an Eighteenth Century Black Loyalist Site". *Northeastern Anthropological Association, 40th Anniversary Conference*, Hartford, CT

2001 Burnt area mapping across Canada's boreal forest zone using SPOT VEGETATION calibrated with Landsat TM imagery. (Poster) *Third International Workshop: Remote Sensing and GIS applications for Forest Fire Management, New Methods and Sensors.* Paris, France. Designer, Co-Author

2000 "Using GIS to detect inaccuracy in the Historic Record of Land grants to Nova Scotia's Black Loyalists" *Council for Northeastern Archaeology, 34th Annual Conference*, Halifax, NS

2000 Satellite forest fire scar mapping as a tool for salvage logging planning (Poster) *Geographic Information Systems and Remote Sensing for Sustainable Forest Management: Challenge and Innovation in the 21st Century Workshop*. Edmonton, Alberta. Designer, Second Author

1999 "A Zoom with a View: Digitally Mapping Social Space". *Northeastern Anthropological Association, 38th Conference*, Providence RI

This is **Exhibit "B"** mentioned and referred to in the affidavit of Heather MacLeod-Leslie affirmed before me on this 19th day of January, 2024

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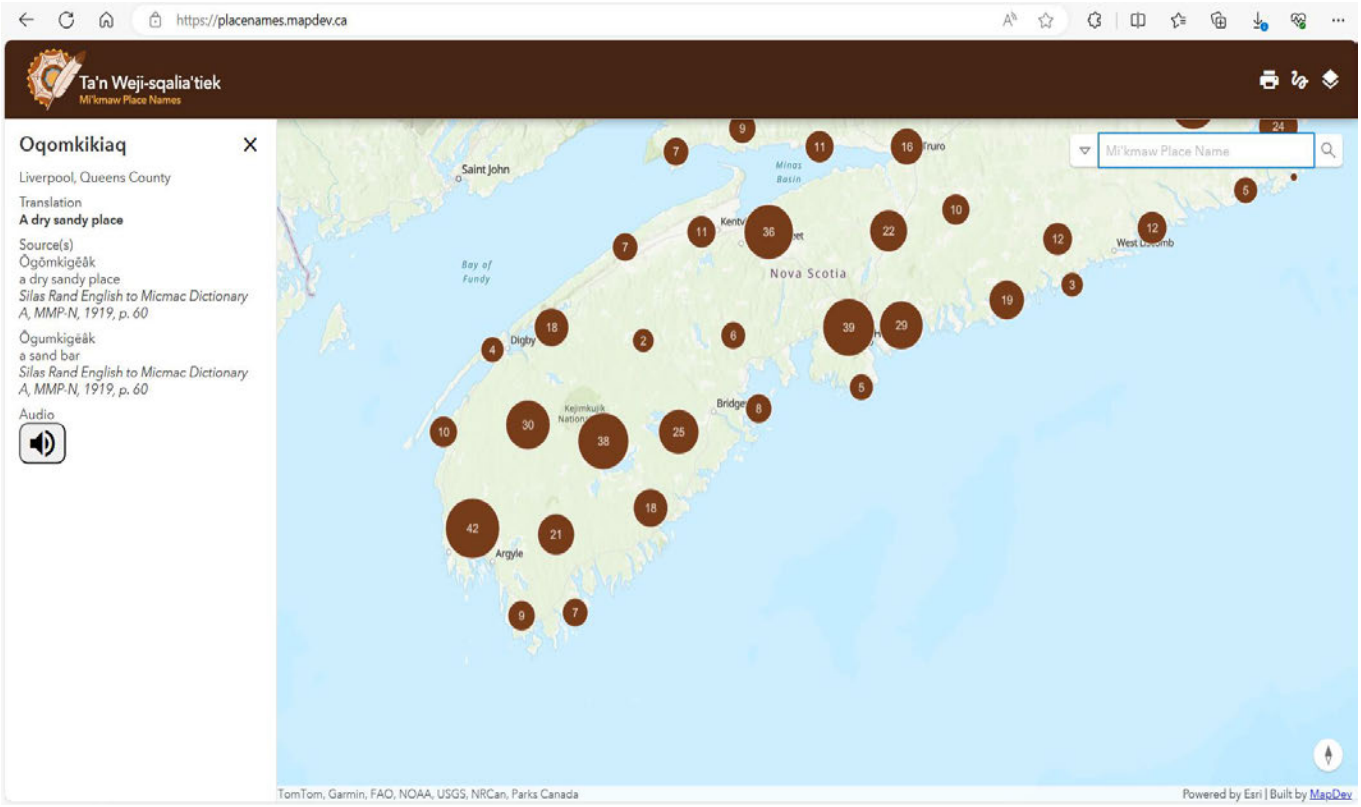
https://placenames.mapdev.ca
Ta'n Weji-sqalia'tiek
Mi'kmaw Place Names
Oqomkikiaq
Liverpool, Queens County
Translation
A dry sandy place
Source(s)
Ôgômkigêâk
a dry sandy place
Silas Rand English to Micmac Dictionary
A, MMP·N, 1919, p. 60
Ôgumkigéâk
a sand bar
Silas Rand English to Micmac Dictionary
A, MMP·N, 1919, p. 60
Audio
Mi'kmaw Place Name
Saint John
Truro
Digby
Bridgetown
Kejimkujik National Park
Argyle
West Dublin
Nova Scotia
Bay of Fundy
Minas Basin
TomTom, Garmin, FAQ, NOAA, USGS, NRCan, Parks Canada
Powered by Esri | Built by MapDev

This is **Exhibit "C"** mentioned and referred to in the affidavit of Heather MacLeod-Leslie affirmed before me on this 19th day of January, 2024

[redacted]

A Commissioner of Oaths in and for the Province of Nova Scotia

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A Barrister and Solicitor of
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Thomas Raddall, “Bon Mature”, Raddall Papers, Dalhousie University Archives, MS2.202.Q.7.F.

BON MATURE

This is the name of two lakes (Little and Big Bon Mature) which flow into the west side of the Mersey River about 12 miles above Liverpool. For many years it was a favorite hunting country for Milton men, and in ancient times the land about these lakes was covered with a massive and tall stand of pine, as the XXXXX name shows. This name Bon Mature (meaning Good Masting or Good Spars) is a curious survival of the old French regime in Nova Scotia. There was never a French settlement on the river, although Denys had a fishing station at Liverpool Harbour for a few years, long before the New Englanders came to settle there. However the Mersey River and its lakes formed a canoe highway across the province to Port Royal, with a steep but comparatively short portage between the head xxxxxx waters of the Mersey and those of the Lequille River, which flows into Annapolis Basin under the very ramparts of Fort Anne. This canoe route was much used by the Indians, and by French travelers, one of whom,de Meuilles, left an account of it.

There is no record that Rossignol, the French trader whose name was given originally to Liverpool harbor and the river that flowed into it, ever ventured up the stream to the great lake which still bears his name. Possibly he did, and possibly he was the Frenchman who first noted the tall pines at Bon Mature.

In August 1787, John Wentworth, who was then Surveyor General of the King's Woods, visited Liverpool and traveled up the river in search of a stand of pine suitable for naval masts. Simeon Perkins wrote in his diary, August 18,1787:- "Major Freeman calls on me and informs me that Governor Wentworth has marked a number of logs, trees, &c, for the King. I call on him with Capt. William Freeman, the Major and xxxxx sundry others. He informs that he has laid out 2 miles & a half square on the river, at the stillwater, for a forest for the King's use; that no timber may be cut thereon; that his deputy will survey the

This is **Exhibit "D"** mentioned and referred to in the affidavit of Heather MacLeod-Leslie affirmed before me on this 19th day of January, 2024

A Commissioner of Oaths in and for the Province of Nova Scotia

GARNET E. BROOKS
A Barrister and Solicitor of
the Supreme Court of Nova Scotia

Marc Lescarbot, “Nova Francia” (1609) Londini: Impensis Georgii Bishop.

NOVA FRANCIA:
Or the
DESCRIPTION
OF THAT PART OF
NEVV FRANCE,
which is one continent with
VIRGINIA.

Described in the three late Voyages and Plantation made by *Monsieur de Monts*, *Monsieur du Pont-Graué*, and *Monsieur de Poutrincourt*, into the countries called by the French men *La Cadie*, lying to the Southwest of *Cape Breton*.

Together with an excellent seuerall Treatie of all the commodities of the said countries, and maners of the naturall inhabitants of the same.

Translated out of French into English by
P. E.

The Author was Marke L'Scarbot, as Purchas says in his Pilgrimage p. 826.

LONDINI,
Impensis GEORGII BISHOP.
1609.

of France. Whereunto I anſwer, that the Ices that be found in thoſe ſeas are not originary frō the ſame climate, but rather come from the Northerly parts, driuen without any let thorow the vaſt of this great ſea by the waues, ſtormes, and boiſterous flouds, which the Eaſterly and Northerly windes doe cauſe in Winter and Spring time, and driue them towards the South and Weſt: But the French ſeas are ſheltered by Scotland, England and Ireland: which is the cauſe that the Ices cannot fall into it. An other reaſon alſo might be alleaged, and that is the motion of the ſea, which beareth more towards thoſe parts, becauſe of the larger courſe that it maketh towards America than towards the lands of theſe our parts. The perill of this voyage was, not onely in the meeting of the ſaid bankes of Ice, but alſo in the ſtormes that vexed them: One of them they had that brake the galleries of the ſhip: And in theſe turmoiles, a Ioyner was caried away by a ſea or flaſh of water to the next doore of death, ouerboord, but he held himſelfe faſt at a tackling, which by chance hung out of the ſaid ſhippe.

A perillous ſtorme.

The voyage was long by reaſon of contrarie windes, which ſeldome hapneth to them that ſet out in March for the New found lands, which are ordinarilie caried with an Eaſt or Northren winde, fit to goe to thoſe lands. And hauing taken their courſe to the South of the Ile of *Sablon*, or Sand, for to ſhunne the ſaid Ices, they almoſt fell from *Caribdis* into *Scylla*, going to ſtrike towards the ſaid Ile, during the thicke miſts that are frequent in that ſea.

Winde commonly good in March for the New found lands. The Ile of Sablon or Sand.

In the end, the ſixt of May they came to a certain Port, where they found captaine *Roſſignol* of New-hauen, who did trucke for skins with the Sauages, contrarie to the Kings inhibitions, which was the cauſe that his ſhip was confiſcated. This Port was called *Le Port du Roſſignol*, hauing (in this his hard fortune) this onely good, that a good and fit Harborough or Port, in thoſe coaſts beareth his name.

Port du Roſſignol.

From

From thence coaſting and diſcouering the lands, they arriued at another Porte, very faire, which they named *Le Port du Moutton*, by reaſon that a Mutton or Wether hauing leaped ouerboord and drowned himſelfe came aboord againe, and was taken and eaten as good prize. By ſuch accidents many names haue anciently beene giuen on the ſudden, and without any great deliberation. So the Capitol of Rome had his name, becauſe that in digging there, a dead mans head was found. So the citie of Milan hath beene called *Mediolanum*, that is to ſay, halfe wooll, for that the *Gaules*, caſting the foundation thereof, found a Sowe halfe couered with wooll: and ſo of ſundry others.

Le Port du Moutton.

Capitol.

Milan.

Being at the Port *du Moutton*, they cabaned and lodged themſelues after the ſauage faſhion, expecting newes of the other ſhip, wherein was the victuals and other neceſſarie prouiſion for the foode and entertainment of them that were to Winter there, being about an hundred men in number. In this Port they tarried a moneth in great perplexitie, for feare they had that ſome ſiniſter accident had hapned to the ſaid other ſhippe, who ſet out the tenth of March, wherein was *Monſieur Du Pont* of *Honfleur*, and the ſaid Captaine *Morel*. And this was ſo much the more important, for that of the comming of the ſaid ſhip depended the whole ſucceſſe of the buſineſſe. For euen vpon this long tarying, it was in queſtion whether they ſhould returne into France or no. *Monſieur De Pontrincourt* was of aduice that it were better to die there; whereto the ſaid *Monſieur De Monts* conformed himſelfe. In the meane while many went a hunting, others to fiſhing, for to ſtore the kitchin. Neere the ſaid *Moutton* Porte there is a place ſo repleniſhed with Rabbets and Conies, that they almoſt did eat nothing elſe. During that time *Monſieur Champlein* was ſent with a ſhalloup to ſeeke farther off a fitter place to retire themſelues, at which exploit he tarried ſo long, that deliberating vpon the returne, they thought to leaue him behind: for there was no more victuals: and

About 100. Planters.

Deliberation vpon the returne into France.

Store of Conies.

This is **Exhibit "E"** mentioned and referred to in the affidavit of Heather MacLeod-Leslie affirmed before me on this 19th day of January, 2024

A Commissioner of Oaths in and for the Province of Nova Scotia

GARNET E. BROOKS
A Barrister and Solicitor of
the Supreme Court of Nova Scotia

Elizabeth Hutton, “Indian Affairs in Nova Scotia, 1760-1830” (1963) Collections of the Nova Scotia Historical Society vol. 34, reproduced in Harold F. McGee, Jr. ed. *The Native Peoples of Atlantic Canada: a history of Ethnic Interaction* (Toronto: McClelland & Stewart, 1975), Carleton Library Series no.72, p.63.

The original truckhouse system devised for control of Indian affairs in Nova Scotia dealt with commerce and paid little attention to other facets of Indian life. However, the necessity of appointing individuals with greater power was recognized in 1762, if not before, when John Doggett, truckmaster at Liverpool, penned a request to the Council at Halifax on December 31 for relief on behalf of Joseph Mitchell, his wife and seven orphans. The Council complied by ordering £5 to be advanced to Doggett. Hence the need of a general supervisor of Indian affairs had been demonstrated.

Since the Board of Trade's scheme had called for the abolition of all existing laws dealing with Indian trade, the office of Commissary or Agent for Indian Commerce became defunct as did the use of truckhouses. The Agent was replaced by a Superintendent of Indian Affairs for the province as a whole who was responsible for assistant superintendents who were appointed to supervise affairs in local areas. As the change of name suggests, this newly created office of superintendent entailed more manifold duties than did the original office of Agent for Indian Commerce and this new post was ably filled by such individuals as Michael Francklin, John Cunningham, and George Henry Monk. Since Nova Scotia was only a very small portion of the overall general scheme of managing Indian affairs in British North America, it appears as though the central British authority had an agent in this province. Although the details of such a scheme are extremely scanty, it would appear as though the two geographical divisions of North America, the Northern and Southern districts each had its own agent, the one for the former being Sir William Johnson who in turn had an agent by the name of Major Joseph Gorham stationed in this province.

Another clause of the Board of Trade's plan called for the licensing of all persons engaged in trading operations with the Micmac Indians. Such traders were required to deposit a bond with the government officials as proof of their willingness to uphold the regulations devised for the control of such commerce. Included among these regulations were the demand that the prices set by the Council at Halifax were to be adhered to without variation; that no liquor was to be used in barter with the Micmacs; and furthermore that only certain approved types of fire-arms were to be admitted to be sold to these savages. In an attempt to keep the system solvent, licensed traders were restricted to fifty shillings credit at the government trading posts. These traders were responsible to the Superintendent of Indian Affairs either directy or indirectly through one of his deputies.

McGee, H F.. The Native Peoples of Atlantic Canada: A History of Indian-European Relations. Montréal, QC, CAN: McGill-Queen's University Press, 1975. ProQuest Ebrary. Web. 5 November 2014.
Copyright © 1975. McGill-Queen's University Press. All rights reserved.

This is **Exhibit "F"** mentioned and referred to in the affidavit of Heather MacLeod-Leslie affirmed before me on this 19th day of January, 2024

[redacted]

A Commissioner of Oaths in and for the Province of Nova Scotia

GARNET E. BROOKS
A Barrister and Solicitor of
the Supreme Court of Nova Scotia

"Petition of Father Hugh O'Reilly" (9 December 1839) JLA 1839-1840, App.54.

JOURNAL

AND

PROCEEDINGS

OF THE

HOUSE OF ASSEMBLY

OF THE

PROVINCE OF NOVA-SCOTIA.

SESS. 1839—40.

Division on passage of Bill

The question being then put that the Bill do pass, to be sent to the Council for concurrence, and the House dividing thereon, there appeared, for the affirmative of the question, twenty-four; against it, twenty:

For the affirmative,		Against it,	
Mr McKim	Mr Uniacke	Mr Holdsworth	Mr Robichau
Mr Smith	Mr Allison	Mr Waterman	Mr Holland
Mr Forrester	Mr Miller	Mr Thorne	Mr Morton
Mr DesBarres	Mr Heckman	Mr J Sargent	Mr Clements
Mr Howe	Mr Annand	Mr McHeffy	Mr Benjamin
Mr Archibald	Mr Young	Mr Elder	Mr Dickey
Mr Bell	Mr Lewis	Mr W Sargent	Hon. Mr Dewolf
Mr Fairbanks	Mr McDougall	Mr McLellan	Mr Goudge
Mr McDonald	Mr Spearwater	Mr Whitman	Mr Huntington
Mr Forrestall	Mr Dickson	Mr D'Entremont	Mr Chipman
Mr Hatton	Mr Creighton		
Mr Holmes	Mr Upham		

So it passed in the affirmative.

Bill passed

Ordered, That the Bill do pass, and that the title be, An Act for applying certain Monies therein mentioned for the improvement of the Great Roads in this Province.

Bills sent to Council

Ordered, That the Clerk do carry the Bills to the Council, and desire their concurrence.

Report from Com. on Pet. of Sam. Dodge

Mr. Holland reported from the Select Committee on the Petition of Samuel Dodge, and delivered the Report in at the Clerk's Table, where the same was read.

(*See Appendix, No.* 44.)

Report and Pet. ref. to Com. of Supply

Ordered, That the Report and Petition be referred to the Committee of Supply.

Blue Book presented

The Hon. Mr. Dewolf, by command of His Excellency the Lieutenant-Governor, presented the Blue Book for the year 1838, also the several Documents, Plans and Papers, following, viz:

Casual Revenue Accounts

Account of the Casual Revenue for the year 1939.

(*See Appendix, No.* 45.)

Plan of Eastern Shore Road

Letter from James Kent, Esq., with a Plan of a proposed Road along the Eastern Shore,

(*See Appendix, No.* 46.)

Plan of Road from Blue Bell to Margaret's Bay

Mr. Faulkner's plan of the several Roads from the Blue Bell to Margaret's Bay, with the Report and Estimates, &c.

(*See Appendix, No.* 47.)

Mr. Purdy's report as to alteration of road round Cumberland Mountain

Mr. Jacob G. Purdy's Report on alteration of the road to avoid Cumberland Mountain.

(*See Appendix, No.* 48.)

Mr. Stevens' plan of road round Cumberland Mountain

Mr. Andrew N. Stephens' Plan and Report of a section of the proposed Road round Cumberland Mountain.

(*See Appendix, No.* 49.)

Report of Proceeding on Windsor Road

Mr. Daniel Wier's Report of proceedings as Commissioner on the Windsor Road last year, with some suggestion of an improved plan of repairing the roads.

(*See Appendix, No.* 50.)

Mr. Doyle's claim for conducting Criminal Prosecutions

Note from L. Doyle, Esqr. representing his claim to be remunerated for conducting certain prosecutions on the part of the Crown, with the recommendation of His Excellency, that the House would provide for payment of the Account.

Digby Revenue Boat

Mr. Sims' Letter, with Journal of the Revenue Boat at Digby.—For the Letter

(*See Appendix, No.* 51.)

Sydney, C. B. Revenue Boat

Mr. Leonard's Letter, reporting his proceedings in protecting the Revenue, &c. at Sydney, Cape Breton.

(*See Appendix, No.* 52.)

Coals exported

Statement of Coals sold and exported at H. M. Coal Mines in Nova-Scotia, in 1839.

(*See Appendix, No.* 53.)

Indians Liverpool

Petition of Hugh O'Riley, Catholic Pastor of the Parish of Liverpool, in behalf of 200 Indians in said Parish.

(*See Appendix, No.* 54.)

Expences of Shipwrecked Emigrants in Aid-de-Camp

Abstract of expenses incurred under the superintendance of a Committee of Magistrates, in relieving nearly 300 Emigrants, who were wrecked last Summer on Briar Island, in the Ship Aide-de-Camp, with His Excellency's recommendation, that provision be made for payment thereof.

APPENDIX Nos. 54, 55.

No. 54.

(*See Page* 742.)

TO HIS EXCELLENCY LIEUTENANT-GENERAL

SIR COLIN CAMPBELL,

Knight Commander of the Most Honorable Military Order of the Bath, Lieutenant-Governor and Commander in Chief, in and over Her Majesty's Province of Nova-Scotia, and its Dependencies, &c. &c. &c.

THE HUMBLE MEMORIAL OF HUGH O'REILLEY, CATHOLIC PASTOR OF THE PARISH OF LIVERPOOL, IN BEHALF OF TWO HUNDRED INDIANS IN SAID PARISH, RESPECTFULLY SHEWETH—

That, since the appointment of your Excellency's Memorialist to said Parish, the moral rectitude of this portion of the human race induces him to recommend them to your Excellency's well known commiseration in behalf of the distressed and destitute.

That nothing but the fearful approach of an inclement winter, and the miseries attendant thereon, to a race of human beings whose honesty (let their privations be what they may) has rendered them proverbial for refraining from the use of any man's ox, calf, sheep or lamb, &c.

Your Memorialist therefore most respectfully prays that if any thing is at your Excellency's disposal in such articles as Blankets, partly worn Clothes, &c. &c. that your Excellency will order them to be transmitted to your Memorialist, who shall deem it a peculiar duty to see that your Excellency's benign and paternal solicitude be faithfully fulfilled.—And your Memorialist as in duty bound will ever pray.

Liverpool, December 9th, 1839.

HUGH O'REILLY,
Catholic Pastor at Liverpool.

We, the undersigned Parishioners of Liverpool, gladly unite with our respected Pastor, in recommending most respectfully to your Excellency's attention, the object of the accompanying Petition.

Patrick Gough, John Carten, Patrick Flyn, Philip Carten, John Cobbet, John Gilcrist, Michael Butler, David Delahanty, James Murphy, Bernard Dowling, Michael Kelly.

No. 55.

(*See Page* 743.)

Statement of Accounts for Supplies, &c. furnished the Shipwrecked Passengers of the Ship Aid de Camp.

No. 1	Amount of Stephen Binney's Account	£99	14	11
2	Henry J. Wright's	3	5	0
3	David Walker's	3	13	9
4	Joseph Scriven's	3	0	0
5	Commrs. of Poor	14	2	6
6	Robert D. Clarke	2	16	6
7	W. A. Black & Son	0	13	0
8	D. McLennan's	2	0	6
9	W. & J. Murdoch's	9	16	4
10	John Willis'	3	0	0

No.

This is **Exhibit "G"** mentioned and referred to in the affidavit of Heather MacLeod-Leslie affirmed before me on this 19th day of January, 2024

A Commissioner of Oaths in and for the Province of Nova Scotia

GARNET E. BROOKS
A Barrister and Solicitor of
the Supreme Court of Nova Scotia

Canada, House of Commons, "Annual Report of the Department of the Interior for the Year Ending 30th June, 1878; Part I. Report of the Deputy Superintendent General of Indian Affairs" in *Sessional Papers* No.7 (1879).

ANNUAL REPORT

OF THE

DEPARTMENT OF THE INTERIOR

FOR THE

YEAR ENDED 30TH JUNE,

1878.

Printed by Order of Parliament.

OTTAWA:
PRINTED BY MACLEAN, ROGER & CO., WELLINGTON STREET.
1879.

No. 16.

NOVA SCOTIA,
DISTRICT No. 1

No Report from M. Harlow.

No. 17.

NOVA SCOTIA,
INDIAN DISTRICT No. 2.
CORNWALLIS, K.C., September 5, 1878.

The Honorable
The Superintendant General of Indian Affairs,
Ottawa.

SIR,—I have the honor to submit, for the information of the Indian Department, the following Report with the Tabular Statement to the 30th of June last.

There are no reserves set apart for Indians in this county, and although they live mostly in slight framed houses, and have many of the comforts of civilized life, ye in the summer, they are somewhat migratory, following up the fishery on the Bay of Fundy shore, simply to obtain a daily existence.

One or two of them also engage in porpoise shooting, but the oil they obtain is sold to keen traders at half price, and does not amount to much.

I do not consider them improvident originally, but from the force of circumstances, which becomes a second nature.

Many of them are anxious to obtain lands for settlement, and would, no doubt, improve them to a certain extent, which would add, materially, to their comfort, and prevent that decrease in their number which is steadily, but slowly and surely taking place from the very nature of things.

I have received, from the Department, for the purpose of assistance to the sick, the aged and infirm within the year, and also for seed, when required, to the amount of $79.75. Of this sum, there remains on hand—June 30, 1878—$13.22; these sums are exclusive of $9,22 received for medical aid.

There are no shools for Indians here particularly, but all schools are free, and one family, in South Keswick, send three constantly to the school there.

I have the honor to be, Sir,
Your obedient servant,
J. E. BECKWITH,
Indian Agent.

No. 18.

NOVA SCOTIA, INDIAN DISTRICT No. 2,
CALEDONIA, 22rd September, 1878.

The Honorable
The Superintendent-General of Indian Affairs,
Ottawa.

SIR,—I have the honor to submit for your information the following Report, with accompanying Tabular Statement.

Previous to my assuming the Agency of this District, I found matters in a very unsatisfactory state, owing to the encroachment by White men on the Reserve grounds. I hope to have this grievance removed in a short time.

The Indians of this District live principally by fishing and basket-making. A few of them live comfortably by farming. They are very much in want of a few ploughs, &c.

Very few of them live on the Reserve, owing principally to the want above mentioned. I must confess, however, they are the most comfortable who reside permanently on the Reserve.

I have not succeeded as yet in obtaining a purchase from the Indians of the island in Keyemkegoeh Lake, owing to the temporary absence of a few of the leading Indians.

The Indians of this District are a quiet, inoffensive class of people, attending very regularly to their religious duties.

There are no schools nor teachers for the Indians of this District.

I have the honor to be, Sir,

Your obedient servant,

THOMAS J. BUTLER,

Indian Agent.

No. 19.

NOVA SCOTIA, INDIAN DISTRICT NO.

CHESTER, 23rd September, 1878.

The Honorable

The Superintendent-General of Indian Affairs,

Ottawa.

SIR,—I have the honor to submit, for the information of the Indian Department, the following Report:—

Ever since my appointment to the Agency, which has been within the last few months, I have had much satisfaction in observing a marked change in the habits of the Indians of my District. They are beginning to evince, every day, a much stronger desire for agricultural pursuits than heretofore. Many of them have purchased small pieces of land, especially in Bridgewater, where they are replacing the old wigwams with comfortable houses. Those living on the Reserve have been favored with good crops of wheat, barley, potatoes and oats, and are now preparing the land to sow more extensively next spring. I do not know of any Indians engaged in shore fishing, but the river, on which they depend principally for a livelihood, have rewarded their labors this spring with bountiful results. Owing to the Indians being very much scattered, living in groups of three and four families, at a distance of twenty and thirty miles apart, I regret it is impossible for them to have a school. The Nictaux and Atlantic Railway, now in course of construction, has given employment to a great many during the past few months, and should the work continue, I feel encouraged that there will be but little suffering from indigence the coming winter. As a rule, the Indians here are a temperate people, and attend strictly to their religious duties. They are all Roman Catholics. The money I received in the spring for the relief of destitute Indians, I have distributed as my judgment best directed me, and I hope to the satisfaction of the Department. I also received $30 for grain seed, a part of which I expended in purchasing potatoes, barley, oats, &c. I will forward immediately receipted accounts for the money received.

Owing to my recent appointment I regret I cannot send a true tabular statement this year.

I have the honor to be, Sir,

Your obedient servant,

E. J. McCARTHY.

This is **Exhibit "H"** mentioned and referred to in the affidavit of Heather MacLeod-Leslie affirmed before me on this 19th day of January, 2024

A Commissioner of Oaths in and for the Province of Nova Scotia

GARNET E. BROOKS
A Barrister and Solicitor of
the Supreme Court of Nova Scotia

“Petition of Malti Gload” (17 November 1835) NSARM RG1 vol.431 no.16, m/f 15472.

PANS
RG1 VOLUME 431 #16
PETITION OF MALTI GLOAD FOR RELIEF, 17 November 1835
M/F 15, 472
TRANSCRIPT

To His Excellency Sir Colin Campbell
Governor and Commander in Chief in and over
His Majestys Province of Nova Scotia &c &c &c &c

The Petition of Malti Gload, a lame Indian
with a large family
Respectfully and Humbly Shewith
that your Petitioner is one amongst a Number of
Indians, comprising not leſs than Twenty families
who obtain a precarious Subsistence by Hunting &c
That amongst them are many young children
who are exposed to much suffering from the coldneſs
of the weather & whose parents have not the
means of procuring for them clothing against the
Rigours of the coming Winter --
That His Majestys Govern
=ment has on former Occasions Kindly furnished
to other Indians Blankets and other old Clothing
Your Petitioner therefore on his own behalf
and that of the other Indians aſsociated with
him Respectfully solicits the attention of

Your

Your Excelly (*sic*) to the Promises and prayers
for Such Relief therein as to your Excellency
may soon meet

And As in duty bound your
Petitioner will Humbly & Sincerely
pray.....his
Malti X Gload
Liverpool 17th Novr 1835 mark

We the undersigned Magistrates of Queens County
Certify that the Petitioner is Known to us
and that the Statement made in the annexed
Memorial is true

John Newton C.R.
James R. Dewolf JP
John Campbell, JP
James Barſs JP
James Gorham JP
John Barſs JP

[Backer]

Liverpool Indians

Rec^{d} 18 Nov 1835

10/ to Gloade

This is **Exhibit "I"** mentioned and referred to in the affidavit of Heather MacLeod-Leslie affirmed before me on this 19th day of January, 2024

A Commissioner of Oaths in and for the Province of Nova Scotia

GARNET E. BROOKS
A Barrister and Solicitor of
the Supreme Court of Nova Scotia

Maura Hanrahan, "Resisting Colonialism in Nova Scotia: The Kesukwitk Mi'kmaq, Centralization, and Residential Schooling" (2008) *Native Studies Review* Vol.17, No.1, p. 25.

Native Studies Review 17, no 1 (2008)

Resisting Colonialism in Nova Scotia: The Kesukwitk Mi'kmaq, Centralization, and Residential Schooling

Maura Hanrahan

As settler and state colonialism expanded its reach, the Mi'kmaq of Kesukwitk/southwest Nova Scotia became internally colonized people. But even within this framework, they were able to take actions, some drawing on longstanding Mi'kmaq cultural practices, to successfully resist bureaucratic colonial policies, specifically centralization and residential schooling. In the 1940s, the Kesukwitk Mi'kmaq refused to move to two designated centralized reserves. They also used transhumance and other strategies to keep their children out of residential schools.

Au fur et à mesure que le colonialisme des pionniers et de l'état s'est développé, les Mi'kmaq de Kesukwitk du sud-ouest de la Nouvelle-Écosse sont devenus un peuple colonisé sur le plan intérieur. Mais même au sein de ce cadre, ils ont été capables d'agir, certains en s'appuyant sur leurs pratiques culturelles Mi'kmaq de longue date, pour réussir à résister aux politiques coloniales bureaucratiques, en particulier la centralisation et les études dans les pensionnats. Dans les années 1940, les Mik'maq de Kesukwitk ont refusé de déménager dans deux réserves désignées et centralisées. Ils ont aussi utilisé la transhumance et d'autres stratégies pour empêcher leurs enfants d'aller dans des pensionnats.

The Kesukwitk Mi'kmaq and This Study

A part of the Algonkian language group, the Mi'kmaq are descendants of the original Indigenous inhabitants of what is now eastern Canada and the eastern seaboard of the United States. Their traditional territory extends from Quebec's Gaspé Peninsula to the island of Newfoundland to the state of Maine. In 2005, I carried out open-ended, narrative-based interviews with fourteen informants, on- and off-reserve Mi'kmaq elders and experts[1] in southwest Nova Scotia/Kesukwitk (the land of last flow, a

Thanks are extended to the Mi'kmaq of Kesukwitk/southwest Nova Scotia for their kind participation in this study and to Professor Charles Martijn for his helpful comments.

1 Experts in this context are those Mi'kmaq who are well-versed in Mi'kmaq history and cultural practices.

if you lived somewhere year-round. The tourists came in the summer and they always bought baskets. You could only have so many people selling baskets in one spot." Another joked about the practice, "You go to visit a Mi'kmaq and he's not home, he's never home."

The economic unit of the Kesukwitk Mi'kmaq was the nuclear or extended family, not the village, the reserve, or government departments or agencies. Many Mi'kmaq in southwest Nova Scotia lived off-reserve, especially when it was economically advantageous. This, coupled with the distribution of natural resources, meant that the population was scattered. Two of the economic activities that propelled seasonal transhumance well into the Depression era were trapping and guiding. According to one woman, "My father trapped on back of Labrador Corner in Bear River. The Luxeys, the Pictous, Labradors, and Bartletts all trapped around there. Father trapped all over the place. He had a friend in Pubnico, W---- C------, he was Mi'kmaq, and they trapped together all over Digby and Yarmouth." One man in his forties recalled how his father had traplines at Wild Cat, Smith Cove, Digby, and Bridgewater (locations dozens of miles apart), living in shacks along each route. For two hundred years, guiding was a particularly strong economic sector in southwest Nova Scotia. Sportsmen—at first, British officers and visiting gentry, and, later, affluent locals and American hunters and fishermen—were attracted to the mixed coniferous-deciduous woods of the area, where moose, caribou, deer, ruffled grouse, woodcock, snipe, salmon, and trout flourished, at least initially. The Mi'kmaq role in guiding became entrenched early on because of Mi'kmaq skills, but also partly because some Europeans tended to romanticize "Indians." To many sportsmen, Mi'kmaq were indispensable. In his history of guiding, Mike Parker writes that in the 1920s and 1930s, there were seventy-five tents for American sportsmen along the salmon-rich Mersey River, home to many Mi'kmaq families, especially at the village of Two Mile. From 1908 until the season finally closed in 1937, over half the total moose caught in the province were in this area.[35] Indeed, nearly 60% of the guiding licenses issued were for guides from southwest Nova Scotia.[36] Guiding did not decline until the 1950s. Even through the difficult Depression years, it offered the Kesukwitk Mi'kmaq something of a buffer against poverty and dependence on government assistance.

35 Mike Parker, *Guides of the North Woods* (Halifax, NS: Nimbus, 1990), 6.
36 Ibid.

Long-term participation in guiding and other seasonal resource-based industries meant that the Mi'kmaq of southwest Nova Scotia remained as dispersed as their ancestors had been. They were not crowded onto tiny reserves, forced to eke out a living as best they could, dependent on Indian Affairs and welfare payments. Their economic and social patterns exhibited significant persistence. One man said, "The [Kesukwitk] people managed to stay away from centralization. They were spread out. Everyone [all Mi'kmaq] was like that one time." Because they were "spread out," the Kesukwitk Mi'kmaq were not as susceptible to coercion by Indian agents. First of all, it was harder for Indian agents to find and identify them. One off-reserve woman reported that a man, presumably an Indian agent, came into the store in which she worked and recorded her name and address ("I don't know why"). Their contact with Indian agents seems to have been minimal when compared to Mi'kmaq elsewhere in the province. A long-term Shubenacadie resident explained, "The South Shore Indians never came [to Shubenacadie]. They weren't on the reserves and nobody bothered them. There was only one family of -------s that came from there."[37] Over and over, study participants described how the Mi'kmaq of southwest Nova Scotia were mobile ("all over the place") and how Indian agents couldn't find them.

Those who were contacted by Indian agents were not predisposed to obey orders to move. They were committed to their seasonal round of economic activities, no matter how marginal these were, and agents could not use threats to cut off welfare. The vast majority of the Kesukwitk Mi'kmaq simply refused to move. Two elders remembered their parents' conversations with the authorities: "They wanted everybody to go to Shubenacadie and Eskasoni. They wanted Mom and Dad to move. I remember they didn't want to move. They said no"; and, "One of the Indian Agents came to Dad and said, 'You got to move.' Dad said, 'No'; he wasn't moving. We were living in Bridgewater at the time. We were the only [Mi'kmaq] family there besides the ------s."

Sometimes resistance took an even more active form as Mi'kmaq, worried about their independence and self-sufficiency, tried to evade Indian agents. They deliberately hid from government officials. One elder recalled, "You were constantly moving in those day. Some people were on the run from centralization. You were afraid who'd come and get you." Clearly, the Mi'kmaq of southwest Nova Scotia were on the peripheries of the centralization program, which is where they wanted to be. With only very few exceptions, they simply did not participate.

37 This family later moved out of the province.

In the end, the Kesukwitk Mi'kmaq of southwest Nova Scotia were able to continue living on their land. Whether their land was reserve land or not, their actions allowed them to retain it. They continued to base themselves at Two Mile, Wild Cat, Shelburne, Barrington, Hectanooga, Yarmouth, and other locales dispersed through the region. Further loss of their land and their removal from it would have constituted a loss of social, economic, emotional, and spiritual dimensions. Such a loss is what other Nova Scotia Mi'kmaq experienced with centralization, and what all Mi'kmaq experienced in the early colonial era. Centralization was the Canadian and Nova Scotian governments' systematic attempt to completely re-organize Mi'kmaq life. It provides an example of colonial processes continuing well into the twentieth century.

While a discussion of the impacts of the centralization policy is beyond the purview of this paper, there is consensus among the Mi'kmaq that the re-organization did harm to those who were relocated as well as the those who already lived in the two designated reserves, Shubenacadie and Eskasoni. In resisting the bureaucratic colonial policy of centralization, the Mi'kmaq of southwest Nova Scotia hoped that they would escape the social disruption that they knew would be visited on other Mi'kmaq throughout the province.

Residential Schooling

The Department of Indian Affairs' residential school policy was instituted in most Canadian provinces. The residential school at Shubenacadie opened in 1930, staffed by Roman Catholic teachers (mainly nuns) who were charged with following the Nova Scotia Department of Education curriculum and providing vocational training. Mi'kmaq and Maliseet children who were orphaned, deemed neglected or underprivileged, or living too far from a day school were the objects of the policy. These were wide parameters given the relatively low socio-economic status of most Nova Scotia Mi'kmaq. Because "Indians," both children and adults, were effectively wards of the state, the government did not need parents' permission to take their children and place them in residential schools. Mi'kmaq parents did not have access to the laws that would have protected their and their children's rights.

The residential school policy is relevant to the Kesukwitk Mi'kmaq inclination and ability to resist centralization, of which residential schooling might be considered a part. Many Nova Scotia Mi'kmaq had children

This is **Exhibit "J"** mentioned and referred to in the affidavit of Heather MacLeod-Leslie affirmed before me on this 19th day of January, 2024

[redacted]

A Commissioner of Oaths in and for the Province of Nova Scotia

GARNET E. BROOKS
A Barrister and Solicitor of
the Supreme Court of Nova Scotia

J. Shaw, R.B. Taylor, & D.L. Forbes, “Impact of the Holocene Transgression on the Atlantic Coastline of Nova Scotia” (1993) Géographie physique et Quaternaire 47(2), p. 221.

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Géographie physique et Quaternaire

Impact of the Holocene Transgression on the Atlantic Coastline of Nova Scotia
Conséquences de la transgression marine holocène sur la côte atlantique de la Nouvelle-Écosse

John Shaw, Robert B. Taylor et Donald L. Forbes

Volume 47, numéro 2, 1993

URI : https://id.erudit.org/iderudit/032950ar
DOI : https://doi.org/10.7202/032950ar

Aller au sommaire du numéro

Éditeur(s)

Les Presses de l'Université de Montréal

ISSN

0705-7199 (imprimé)
1492-143X (numérique)

Découvrir la revue

Citer cet article

Shaw, J., Taylor, R. B. & Forbes, D. L. (1993). Impact of the Holocene Transgression on the Atlantic Coastline of Nova Scotia. *Géographie physique et Quaternaire*, *47*(2), 221–238. https://doi.org/10.7202/032950ar

Résumé de l'article

Les données géologiques et les connaissances sur les changements du niveau marin relatif sont étudiées à trois échelles temporelles en tant qu'analogues des conséquences d'une future hausse du niveau marin sur la côte de la Nouvelle-Écosse. Le niveau marin relatif s'est rapidement élevé au cours de l'Holocène inférieur, jusqu'au taux maximal de 11 m/ka à 7500 BP. Des sédiments estuariens ou issus de marais salants et d'eau douce datant de cette période ont été localisés sur le plateau continental intérieur. Après 5000 BP le taux a diminué jusqu'à 2 m/ka. En dépit de la submersion de la région côtière et de son dégagement subséquent, les cordons littoraux de gravier ont persisté là où de grandes quantités de sédiments ont été mis en place sur le littoral par érosion des dépôts glaciaires. Les cordons montrent souvent des indices de phases de progression sous la forme de crêtes de graviers, partiellement ou entièrement submergés dans les lagunes situées derrière les plages de tempêtes contemporaines. Les données marégraphiques du siècle dernier font ressortir un taux de submersion d'environ 3,5 mm/a, taux nettement plus élevé que celui de la tendance à long terme. La réponse du littoral à cette hausse rapide est complexe. Les falaises non consolidées peuvent reculer jusqu'à 5 m/a au début de leur exposition aux fortes vagues et pendant les plus fortes tempêtes et à un rythme beaucoup plus lent (<0,5 m/a) après la formation de plages de protection, de hauts-fonds ou de structures de blocs. Le recul des plages est rapide (>8 m/a) par endroits, lent ailleurs; certaines plages sont presque immobiles depuis 10 ans, alors que les plages voisines se comportent de façon tout à fait différente. Les sédiments libérés par l'érosion littorale se retrouvent dans les estuaires les plus proches, provoquant l'expansion des deltas d'inondation et l'extension des marais. Si une hausse globale du niveau marin survenait, les processus d'érosion et de sédimentation qui se sont manifestés le long de la côte de la Nouvelle-Écosse pendant l'Holocène agiront de façon semblable, mais le rythme des changements augmentera dans plusieurs sites.

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Géographie physique et Quaternaire, 1993, vol. 47, n° 2, p. 221-238, 17 fig., 1 app.

Essai

IMPACT OF THE HOLOCENE TRANSGRESSION ON THE ATLANTIC COASTLINE OF NOVA SCOTIA*

John SHAW, Robert B. TAYLOR and Donald L. FORBES, Geological Survey of Canada, Atlantic Geoscience Centre, Bedford Institute of Oceanography, P.O. Box 1006, Dartmouth, Nova Scotia B2Y 4A2.

ABSTRACT As analogs for impact of a future sea-level rise on the coast of Nova Scotia (eastern Canada), geological data and information on relative sea-level changes are examined at three different time scales. Relative sea level rose swiftly during the early Holocene, at a maximum rate of 11 m/ka at 7500 radiocarbon years BP. Freshwater, salt-marsh, and estuarine sediments that formed during this period have been located on the inner shelf. After 5000 BP the rate slackened to about 2 m/ka. Despite overall submergence and coastal retreat since that time, gravel barriers have persisted where large amounts of sediment have been added to the littoral system by erosion of glacial deposits. The barriers often display evidence of early progradational phases in the form of gravel beach ridges, partly or wholly submerged in lagoons behind contemporary storm beaches. Tide-gauge data from the past century show submergence rates averaging 3.5 mm/a, well in excess of the longterm trend. The response of the coastline to this rapid rise is complex. Unconsolidated cliffs (bluffs) retreat at up to 5 m/a during initial exposure to wave attack and during extreme storm events, but at lesser rates (<0.5 m/a) as protective beaches, lag shoals or boulder frames accumulate at the base of the cliffs. Beach retreat rates are sometimes very high (>8 m/a) in some locations, but low elsewhere, in some cases showing almost no movement over the past 10 years, and neighbouring beaches are sometimes observed to behave in completely different ways. Sediment released by coastal erosion finds its way into nearby estuaries, causing growth of flood-tidal deltas and marsh aggradation. If a global rise in sea level occurs, the processes of erosion and sedimentation operating along the coast of Nova Scotia during the Holocene are expected to continue in a similar fashion, but rates of change will increase at many locations.

RÉSUMÉ *Conséquences de la transgression marine holocène sur la côte atlantique de la Nouvelle-Écosse*. Les données géologiques et les connaissances sur les changements du niveau marin relatif sont étudiées à trois échelles temporelles en tant qu'analogues des conséquences d'une future hausse du niveau marin sur la côte de la Nouvelle-Écosse. Le niveau marin relatif s'est rapidement élevé au cours de l'Holocène inférieur, jusqu'au taux maximal de 11 m/ka à 7500 BP. Des sédiments estuariens ou issus de marais salants et d'eau douce datant de cette période ont été localisés sur le plateau continental intérieur. Après 5000 BP le taux a diminué jusqu'à 2 m/ka. En dépit de la submersion de la région côtière et de son dégagement subséquent, les cordons littoraux de gravier ont persisté là où de grandes quantités de sédiments ont été mis en place sur le littoral par érosion des dépôts glaciaires. Les cordons montrent souvent des indices de phases de progression sous la forme de crêtes de graviers, partiellement ou entièrement submergés dans les lagunes situées derrière les plages de tempêtes contemporaines. Les données marégraphiques du siècle dernier font ressortir un taux de submersion d'environ 3,5 mm/a, taux nettement plus élevé que celui de la tendance à long terme. La réponse du littoral à cette hausse rapide est complexe. Les falaises non consolidées peuvent reculer jusqu'à 5 m/a au début de leur exposition aux fortes vagues et pendant les plus fortes tempêtes et à un rythme beaucoup plus lent (<0,5 m/a) après la formation de plages de protection, de hauts-fonds ou de structures de blocs. Le recul des plages est rapide (>8 m/a) par endroits, lent ailleurs; certaines plages sont presque immobiles depuis 10 ans, alors que les plages voisines se comportent de façon tout à fait différente. Les sédiments libérés par l'érosion littorale se retrouvent dans les estuaires les plus proches, provoquant l'expansion des deltas d'inondation et l'extension des marais. Si une hausse globale du niveau marin survenait, les processus d'érosion et de sédimentation qui se sont manifestés le long de la côte de la Nouvelle-Écosse pendant l'Holocène agiront de façon semblable, mais le rythme des changements augmentera dans plusieurs sites.

* Geological Survey of Canada Contribution no. 52891

Manuscrit reçu le 25 février 1993; manuscrit révisé accepté le 23 juin 1993

INTRODUCTION

Numerous predictions of rapid sea-level rise due to global warming have been made during the past decade (National Research Council, 1979, 1985, 1987; Bindschadler, 1985; Hoffman *et al.*, 1983, 1986; Revelle, 1983; Meier, 1984). The Intergovernmental Panel on Climate Change (IPCC) working group (World Meteorological Organisation, 1990) predicted that mean sea level would increase by 16-32 cm by 2030, with a mean increase of 20 cm, and would increase by 33-75 cm, with a mean of 45 cm, by 2070. There are doubts that these predictions would apply across the globe. In this respect, the work of Mikolajewicz *et al.* (1990) is important: it shows that the increase in ocean depth due to thermal expansion would vary geographically.

Forecasts of higher sea levels have inspired a flurry of papers concerned with prediction of coastal impacts in various areas of the world, including Canada (Forbes *et al.*, 1989), the USA (Titus *et al.*, 1985; Gornitz, 1990), Ireland (Carter, 1990),the UK(Boorman *et al.*, 1989), and elsewhere (Wind, 1987). The approach taken in this paper is to examine how the Atlantic coast of Nova Scotia (Fig. 1) has responded to varying rates of sea-level rise during the Holocene, with the underlying assumption that past changes may be useful analogs for responses to future accelerated sea-level rise of the magnitude predicted by IPCC.

THE STUDY AREA

Mainland Nova Scotia (Fig. 1) forms a prominent peninsula on the eastern seaboard of Canada. Cape Breton Island continues the general line of the mainland to the northeast. The coastline of Nova Scotia can be subdivided into three regions (Owens, 1977) comprising (1) the Gulf of St. Lawrence and Northumberland Strait shores, which are microtidal, exposed to locally generated wind waves for 7 to 8 months of each year, and ice-covered during the winter; (2) the Bay of Fundy shores, which are tide-dominated, with large tidal ranges of 13 to 16 m at the head of the bay; and (3) the more exposed open Atlantic coast, which is low, mesotidal, and dominated by storm wave processes. This paper focuses mainly on the Atlantic coast of Nova Scotia.

Annual deep-water significant wave heights are in the 7-8 m range and 10-year significant wave heights are 10-13 m (Neu, 1982). Surges are generated by cyclonic depressions passing northeastward across the region and also by occasional tropical storms moving north along the U.S. eastern seaboard. Positive surges of 0.6 to 1.5 m can occur during persistent northeast winds (Galbraith, 1979) which are most common between October and March each year. Mean tidal range decreases from 3.7 m in southwestern Nova Scotia to less than 1 m in northern Cape Breton Island (Canadian Hydrographic Service, 1991). The coastal waters are largely ice-free, excepting estuaries and lagoons which may wholly or partly freeze during winter. Pack ice drifting south out of the Gulf of St. Lawrence via Cabot Strait can influence the outer coast in late winter.

The Atlantic coast of Nova Scotia is highly indented, with long narrow embayments, intervening headlands, and numerous rocky offshore islands. Many of the embayments originated as preglacial consequent streams which were overdeepened by glacial erosion and which have subsequently been drowned by the Holocene transgression. The

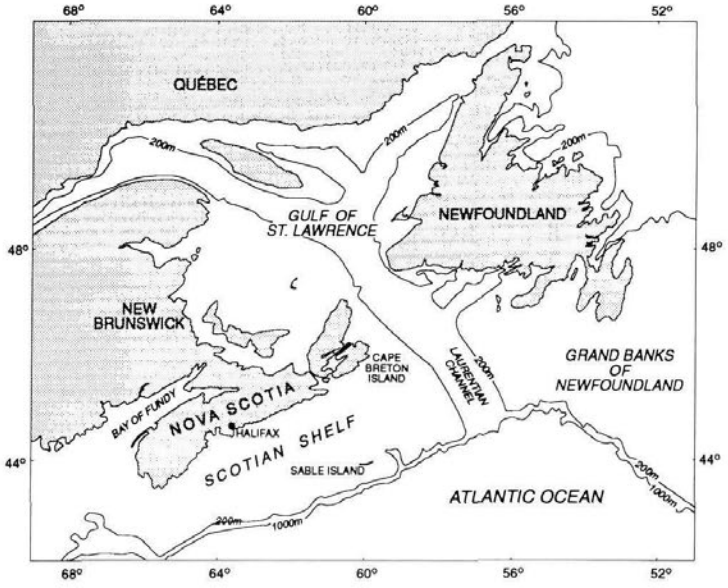

FIGURE 1. Location of Nova Scotia in eastern Canada and generalised bathymetry of the adjacent continental shelf.

Localisation de la Nouvelle-Écosse et bathymétrie générale du plateau continental.

resulting estuaries and their analogs in relict estuarine basins on the inner shelf are the principal sinks for sands and finer sediments in the coastal zone (Piper, 1980; Carter *et al.*, 1989, 1990b; Forbes *et al.*, 1991a). Close to the steep upland shores of Cape Breton Island, elevations reach almost 300 m, but relief is much more subdued elsewhere along the outer Atlantic coast, where low-lying coastal embayments and marshes are common. Glacial erosion and deposition have provided the main source of sediment for beach development. Glacial deposits are found as a thin mantle over bedrock and as thick deposits organised into fields of drumlins (Piper *et al.*, 1986; Forbes and Taylor, 1987). Multiple tills at some localities show a range of grain-size distributions and other geotechnical properties (Stea and Fowler, 1979; Sonnichsen, 1984).

THE HOLOCENE TRANSGRESSION

LONG-TERM RELATIVE SEA-LEVEL TRENDS

Changes of relative sea level in Nova Scotia have resulted from the interplay between discharge of glacial meltwater from late Quaternary ice sheets and isostatic adjustments of the crust (*cf.* Tushingham and Peltier, 1991; Quinlan and Beaumont, 1981, 1982). The sea-level curve for the inner Scotian Shelf (Fig. 2) is based on core data obtained from just offshore in the Halifax region (Forbes *et al.*, 1988, 1991a), together with data from other sources (Scott, 1977; Hall, 1985; Honig, 1987). Information on the index points is contained in Appendix I. The curve is constrained by the ages of salt-marsh materials at index points 5 and 13. Arguably, it could be steeper than indicated, with relative sea level as high as −10 m at 6000 BP, constrained by index point 19. However, the material dated for index point 19 is wood, which may be allochthonous. Index point 11 indicates that the (−20 m) sill of Bedford Basin, Halifax, was overtopped by 5830 BP. We have indicated an envelope containing possible sea-level curves, and have suggested a likely curve.

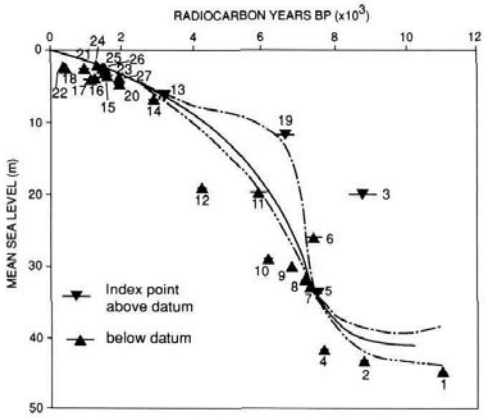

FIGURE 2. Relative sea-level changes on the inner Scotian Shelf during the past 10 ka, based on new and published radiocarbon dates (Forbes *et al.*, 1988, 1991a; Scott, 1977a; Hall, 1985; Honig, 1987). Information on the index points is contained in Appendix I, and the error bars are equivalent to two standard deviations. The solid line represents the most likely sea-level curve and the dashed lines define an envelope of possible sea-level curves.

Fluctuations du niveau marin relatif à l'intérieur du plateau Scotian depuis 10 ka fondées sur des datations au radiocarbone publiées ou nouvelles (Forbes et al., *1988, 1991a; Scott, 1977a; Hall, 1985; Honig, 1987). L'appendice donne les renseignements sur les points de repère. Les marges d'erreurs sont équivalentes à deux écarts types. La courbe pleine représente la courbe du niveau marin la plus plausible, tandis que les lignes brisées représentent des possibilités.*

Relative sea level was below −40 m at 10,000 radiocarbon years BP, and rose rapidly from 8000 BP to 6000 BP. Thereafter, relative sea level increased less rapidly, and *ca.* 2000 BP the average submergence rate dropped below 2 m/ka. The highest rate of increase during the Holocene was approximately 11 m/ka at about 7500 BP. The peak acceleration of sea-level rise was 8 m/ka² at 8000 BP, and the peak deceleration was 4 m/ka² at 6500 BP. However, these calculations should be viewed with some caution — as we have suggested, the curve could be steep until 6000 BP, and it is possible that submergence during the past few thousand years (at least) was stepped, as van de Plassche (1991) has found in New England, and Tanner (1992) elsewhere.

RECENT RELATIVE SEA-LEVEL TRENDS

Relative sea level has been rising during the past century in Nova Scotia. Tide records were kept by the British Admiralty at Halifax in 1851-52 and 1861-62 (Shaw and Forbes, 1990a) but the earliest data presently available to researchers date from the 1890s, when a network of tidal stations was established in eastern Canada by Dawson (1918). Unfortunately, monitoring ceased at most stations just after the turn of the century. The Halifax record begins in 1896, ends in 1905, and recommences in 1920 (Canadian Hydrographic Service, 1951). Marine Environmental Data Services (MEDS) archives in Ottawa contain the main body of tidal data from Halifax and other tidal stations. Based on the continuous record since 1920, mean sea level has risen at 3.63 mm/a (Fig. 3); based on the complete data set, the rate of rise in mean sea level since 1896 is 3.18 mm/a. These are comparable to other published rates: Middleton and Thompson (1986) found a trend of 3.75 mm/a in data for the period 1920-82; Carrera and Vaníček (1988) had similar findings. Figure 3b shows that the rate of sea level rise has fluctuated somewhat and has slackened during the past decade.

Comparable rates of sea-level rise have been recorded at other locations in eastern Canada where long tidal records exist (Shaw and Forbes, 1990a). Apart from Halifax, most tidal records from Nova Scotia are relatively short. The Yarmouth data set includes isolated values from 1900 and 1956, but the continuous data set does not begin until 1967. At Pictou, the records are continuous back to 1965; there are also records from 1957-58 and about 20 years of data from the turn of the century. Additional tidal records beginning in the late 1960s or early 1970s are available from several other locations. Carrera *et al.* (1990) tackled the problem of how to extract trends of sea-level change from these relatively short

records. Their results for sea-level trends in southeastern Canada are shown in Figure 4.

The rate of change registered by the Halifax tide gauge clearly exceeds the rates observed over the most recent few millennia. In fact, to find a comparable rate, we have to look as far back as 4500 BP. If the IPCC forecasts are used, then, by simply adding the projected increase to the rise now occurring, the rate of sea-level rise by 2070 would be 10 m/ka. This rate almost equals the maximum rate of sea-level rise during the Holocene transgression.

IMPACTS OF RELATIVE SEA-LEVEL RISE ON THE COASTLINE

EARLY TO MIDDLE HOLOCENE IMPACTS

It is almost impossible to determine in detail how the coast of Nova Scotia responded to the high rates of sea-level rise which pertained during the early to middle Holocene, because most of the evidence was destroyed during the transgression. The overall result was, of course, submergence of coastal areas. Former lakes occupying silled basins

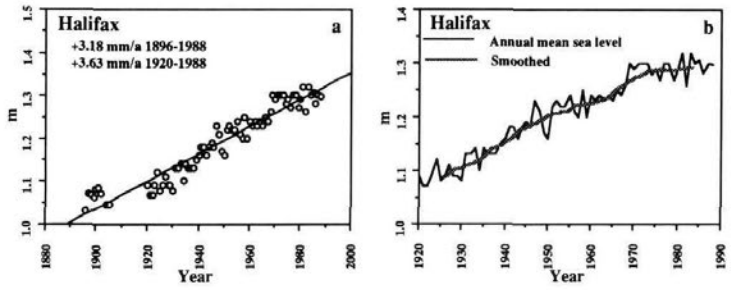

FIGURE 3. Tidal data collected during the past century at Halifax, Nova Scotia: a) with the linear trend superimposed, and b) data from 1920 with a simple 11-year moving average filter.

Données marégraphiques du dernier siècle recueillies à Halifax (Nouvelle-Écosse): a) avec superposition de la tendance linéaire; b) données à partir de 1920 avec lissage par moyenne glissante de périodes de 11 ans.

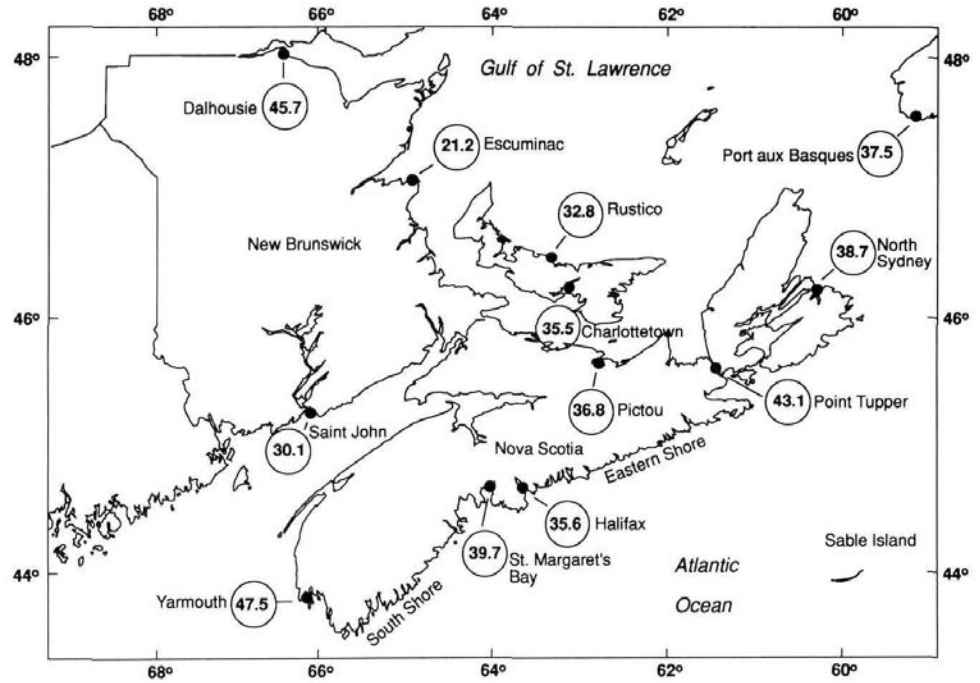

FIGURE 4. Rates of relative sea-level rise (cm/century) derived from tidal records at selected locations in Atlantic Canada (after Carrera *et al.*, 1990).

Taux de la hausse du niveau marin (cm/siècle) déterminés à partir des données marégraphiques de certains sites des régions atlantiques (d'après Carrera et al., *1990).*

in St. Margarets Bay and Mahone Bay on the South Shore (Fig. 1) were invaded by the sea at about 11,500 and 4500 radiocarbon years BP, respectively (Piper and Keen, 1976; Barnes and Piper, 1978). Where drumlin fields were flooded, a stepped progression of wave-cut cobble-boulder shoals marks the distribution of former drumlins (Wang and Piper, 1982; Piper, 1980). Along the Cape Breton shore (Fig. 1), the maximum early Holocene lowering of sea level was about 50 m below present; below this level the undulating till surfaces are preserved (Wang and Piper, 1982).

On the inner Scotian Shelf, off the Eastern Shore just east of Halifax (Fig. 5), fragmentary evidence of former coastal environments has been obtained. Using high-resolution shallow seismic reflection techniques it has been possible to locate remnant deposits of estuarine, freshwater and salt-marsh sediments down to present depths of at least 45 m (Forbes *et al.*, 1988; 1991a; see also Appendix I). Sedimentary sequences observed from coring these deposits closely resemble those observed from cores within existing estuaries (Honig, 1987; Carter *et al.*, 1989, 1990b). From the radiocarbon dating of shell and peat material found in the cores (Table 10 of Forbes *et al.*, 1988), it is clear that estuaries were present in the region in the early and middle Holocene. Salt marshes were also present, even during the peak of the transgression at about 7500 BP (Forbes *et al.*, 1988; Fig. 6 of Shaw and Forbes, 1990a). These estuarine and salt-marsh environments must have developed behind protective barriers, of which little evidence remains. Much of the sediment in the barriers moved shoreward, keeping pace with the transgression (Boyd *et al.*, 1987), although some gravel was abandoned on the inner shelf, forming an extensive thin veneer (Forbes and Boyd, 1989). Only in special settings have recognisable barrier deposits remained trapped on the inner shelf of eastern Canada (*cf.* Forbes *et al.*, 1991 b, 1993; Shaw and Forbes, 1992).

Using the sea-level curve (Fig. 2) and bathymetric charts, mean rates of coastal retreat have been calculated for the coastal segment between Chezzetcook Inlet and Ship Harbour (Fig. 5). At about 10,000 radiocarbon years BP, the average position of the coast was 10.0 km seaward of its present location; at 7000 and 5000 BP, the positions were 4.1 km and 1.5 km, respectively. These changes in shoreline position indicate mean retreat rates of about 2.0 m/a (10,000 to 7000 BP), 1.3 m/a (7000 to 5000 BP), and 0.3 m/a (5000 BP to the present).

LATE HOLOCENE IMPACTS

Compared with the early Holocene, much more is known about how the coast responded to sea-level changes during the past several millennia, primarily because beach deposits formed during the latter period still exist. Among the factors that control coastal evolution, sediment supply is of great importance (Forbes *et al.*, 1989; Shaw *et al.*, 1990). While coastal retreat may be pervasive, it is often counterbalanced

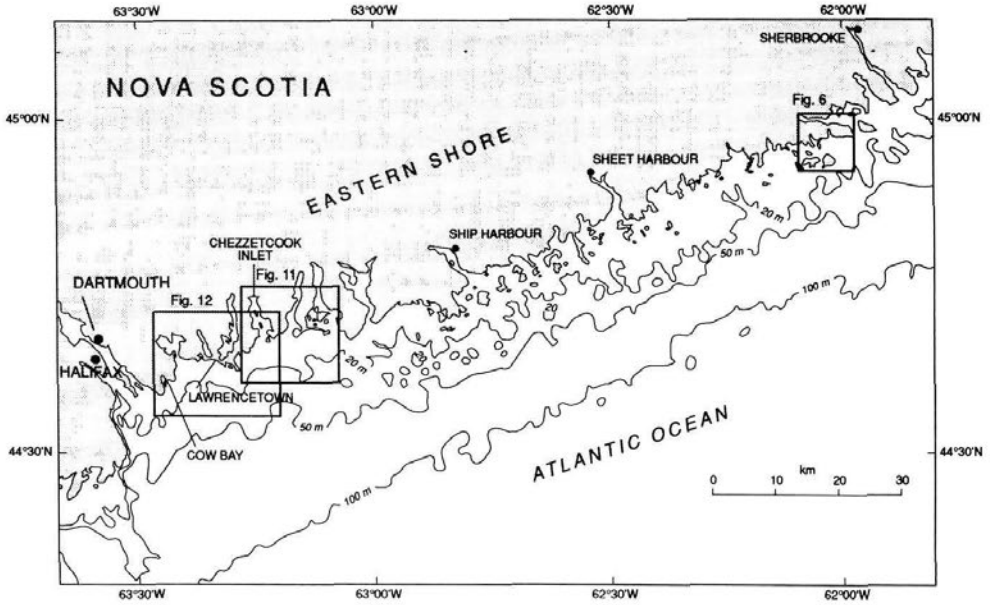

FIGURE 5. Eastern Shore of Nova Scotia showing long, narrow, shore-normal estuaries, complex bathymetry of the inner shelf, and place names referred to in text. The boxes show the locations of Figures 6,11 and 12.

Eastern Shore de la Nouvelle-Écosse montrant d'étroits et longs estuaires, la bathymétrie complexe du plateau continental intérieur et la toponymie employée dans le texte. Les carrés donnent la localisation des figures 6,11 et 12.

by local stability or even progradation where relatively large volumes of sediment are supplied to the littoral zone (Forbes *et al.*, 1990; Shaw and Forbes, 1992), either by erosion of glacial deposits (Boyd *et al.*, 1987) or from the disintegration of older beach systems (Sonnichsen, 1984).

The results of the interplay between rising sea level and sediment supply are observed at several sites along the Eastern Shore of Nova Scotia, where beach and barrier systems include prograded beach and dune-ridge complexes. At these sites, sufficient sediment must have been supplied to the coast to enable progradation to occur, despite rising sea level. These are not anomalous occurrences — similar prograded beach-ridge systems, partly or wholly submerged, occur in many places along the coastline of Nova Scotia (Goldthwait, 1924; Grant, 1975) and Newfoundland (Shaw and Forbes, 1987, 1990b, 1992; Forbes *et al.*, 1989).

The prograded, gravel barrier complex at Fancys Point, about 100 km east of Halifax (Fig. 6), is a representative example. The barrier encloses a tidal lagoon, Fancys Pond, and lies in front of the embayment of Smith Cove (Fig. 7). The upper shoreface consists of thin sand over a cobble-boulder substrate. The active beach is a steep, reflective, coarse gravel ridge with a crest 4.5 to 5.0 m above mean sea level (msl). Behind the active beach is a higher, lichen-covered beach ridge (Fig. 8) and a series of gravel beach ridges which descend to about 0.5 m above msl (Fig. 9). The base of a 0.25 m-thick peat layer overlying the backbarrier ridges is dated at 110±70 years BP (GSC-5138).

Although the lowest beach ridges at Fancys Point have been modified by man, there is sufficient evidence to postulate the evolution of the system during the past 1000 years or so. In an early phase (Fig. 10a), a gravel barrier is thought to have linked Smiths Red Heads with the headland to the south. The crest elevation of this oldest ridge was about 0.5 m above present msl. Assuming conservatively that the ridge formed 2.5 m above the contemporaneous sea level, then (based on Fig. 2a) it has an age of about 1 ka; if it formed higher than 2.5 m above former msl, it is older. At this stage, the drumlin at Fancys Point (Fig. 10a) was trimmed by wave action. A period of progradation ensued, resulting in an arcuate series of beach ridges (Figs. 7, 8, 10b). The source of the sediment is unknown — it may have resulted from the breakdown of another barrier system, possibly a barrier linking Barren Island (Fig. 6) to the mainland, or it may have been coastal bluffs located updrift of the barrier. Figure 10c shows the situation today. The active beach has built to a much higher crest elevation and has partially cannibalised the older ridges, especially at the north end where the submerged landward ridges are truncated by the present barrier (Fig. 7).

From the example of Fancys Point barrier and similar sites across Atlantic Canada, it is clear that rising sea level does not cause universal coastal retreat on a formerly glaciated coastline. Progradation can occur where pulses of sediment are released into the littoral system, either as a new glacial source is uncovered or as earlier barrier systems break down and shed sediment landward (see the example of Story Head — Fig. 11). Dwindling sediment supply results in cannibalisation of the prograded deposits by slow retreat of the frontal storm beach, which usually shows a growth in crest height.

The nature of estuarine sedimentation and the development of beaches and barriers along the outer coast are intimately related. Porters Lake (Fig. 12), which has a severely restricted connection with the ocean at the present time, has undergone a number of changes, from freshwater lake to estuary, to freshwater lake, to estuary again, over the past 2 ka. The transitions from freshwater to estuarine conditions have resulted in each case from rising relative sea level over-

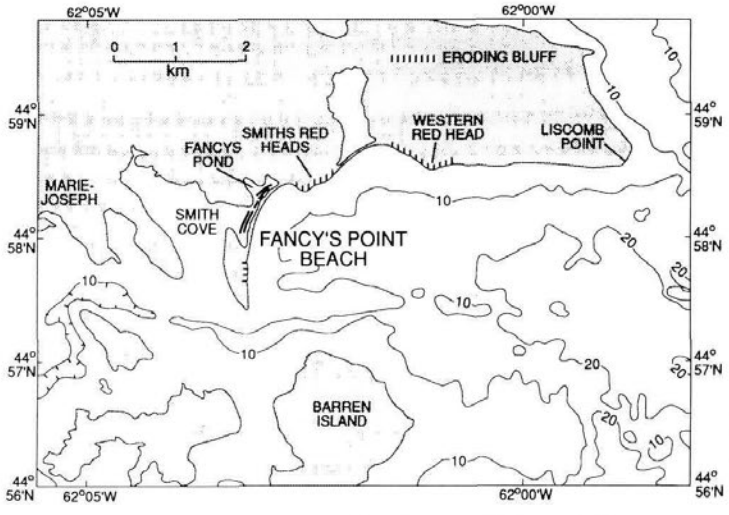

FIGURE 6. Fancys Point barrier, with eroding till bluffs along nearby shorelines to east and south (hachures). Bathymetry is in metres below chart datum (after Canadian Hydrographic Service, chart 4234).

Cordon littoral de Fancys Point avec des falaises en voie d'érosion le long des rivages avoisinants à l'est et au sud (hachures). La bathymétrie est en mètres (Service hydrographique du Canada, carte n° 4234).

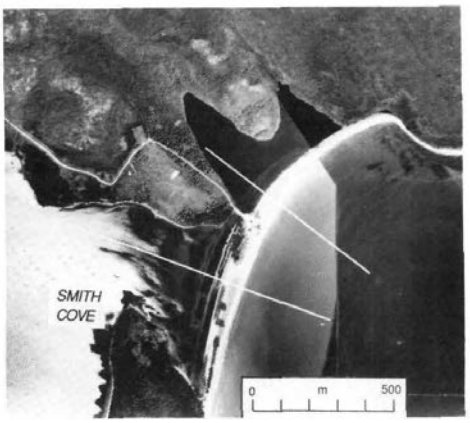

FIGURE 7. Vertical air photograph of the gravel barrier at Fancys Point, showing the locations of the two cross-shore profile lines illustrated in Figure 9. North is towards the top (from LRIS, Amherst photographs A80301-30 and 31, July 1980).

Photographie aérienne du cordon de gravier de Fancys Point montrant l'emplacement des deux profils illustrés à la figure 9 (LRIS, Amherst, photos n°s A80301-30 et 31, juillet 1980).

topping sills at the seaward margin of the lake, initially *ca.* 2000 years ago and then about 1500 years later (Laidler, 1990). The intervening reversion to freshwater conditions resulted from the growth of Lawrencetown Beach, forming a barrier across the former estuary entrance (Oakey, 1985).

Some estuaries with narrow seaward sections have single tidal channels defined by prominent levees (Fig. 13). In others with broad entrances, such as Chezzetcook Inlet (Fig. 11), waves can propagate more easily into the outer part of the estuary. Some estuaries contain two or more sub-basins and the rates and processes of sedimentation vary between them (Honig, 1987; Carter *et al.*, 1989; Laidler, 1990). For Chezzetcook Inlet, Orford *et al.* (1991b) have proposed a four part sub-division: (1) an upper-estuarine zone representing the leading edge of the transgression and dominated by terrestrial infilling (Scott, 1980); (2) an upper-middle estuarine zone with channel levees, mud deposition, and salt-marsh accretion; (3) a lower-middle estuarine zone with flood-delta progradation and infilling of intervening embayments (Fig. 14a); and (4) a lower estuarine zone (the bay mouth), affected by the leading edge of the transgressive erosional front and containing partially eroded (over-run) remnants of flood-delta and other estuarine facies (Fig. 14b; Fig. 9 of Carter *et al.*, 1989).

In Lawrencetown Lake (Fig. 12), which has a narrow tidal-channel inlet, the sequence of Holocene deposits includes estuarine muds, tidal channel sands, flood-delta sands, and distal sand sheets, ranging from a few hundred to about 3000 years in age (Honig, 1987; Boyd and Honig, 1992). A number of these older units were associated with tidal exchange through a channel under the present west end of

FIGURE 8. Ground view looking southwest along the barrier crest, north line, Fancys Point, 17 June 1991.

Vue vers le sud-ouest le long de la crête du cordon, à Fancys Point, le 17 juin 1991.

Lawrencetown Beach, predating the initiation of the present tidal inlet.

As this illustrates, estuarine sedimentation, particularly in the lower estuary, is intimately linked with the development and breakdown of beaches and barriers along the outer coast. We have speculated elsewhere (Forbes *et al.*, 1990) that large sandy beach systems such as Martinique Beach (Figs. 11 and 14 b) are initiated in a protected lower estuarine setting. Once initiated in the estuaries, the barriers later emerge at the outer coast as sea-level rise facilitates landward translation of the transgressive front.

COASTAL CHANGES THIS CENTURY

Changes in the coastline during this century have been documented at a number of sites in the province (*cf.* Cameron, 1965; Owens, 1971; Bowen *et al.*, 1975; Boyd and Bowen, 1983; Taylor *et al.*, 1985). Most change results from natural processes, but change at some sites has been precipitated by human intervention. For example, progradation at Waterside Beach (Pictou County) resulted from the construction in 1922 of a causeway to Caribou Island, while the near complete destruction of Silver Sands Beach at Cow Bay (Halifax County) was triggered by beach mining (Taylor *et al.*, 1985).

During the early part of the 20th century, ground surveys of shore erosion along Carboniferous rock cliffs in eastern Cape Breton Island were reported by Johnson (1925). Mean retreat rates at three sites were 2.6 m/a (1885-1900), 1.4 m/a (1907-1914) and 0.4-0.9 m/a (1907-1919).

Along the South and Eastern shores of Nova Scotia, rates of bluff-top retreat measured from air photos varied from 0.25 m/a in sheltered bays to 1.2-2.1 m/a at exposed headlands (Piper *et al.* 1986). Between 1981 and 1991 a network of sites around mainland Nova Scotia were monitored and resurveyed for both bluff top- and bluff-face erosion (Taylor *et al.*, 1985). These surveys, together with short-term studies by the Nova Scotia Department of Environment (1982) along the Minas Basin and by Boyd and Bowen (1983) along the

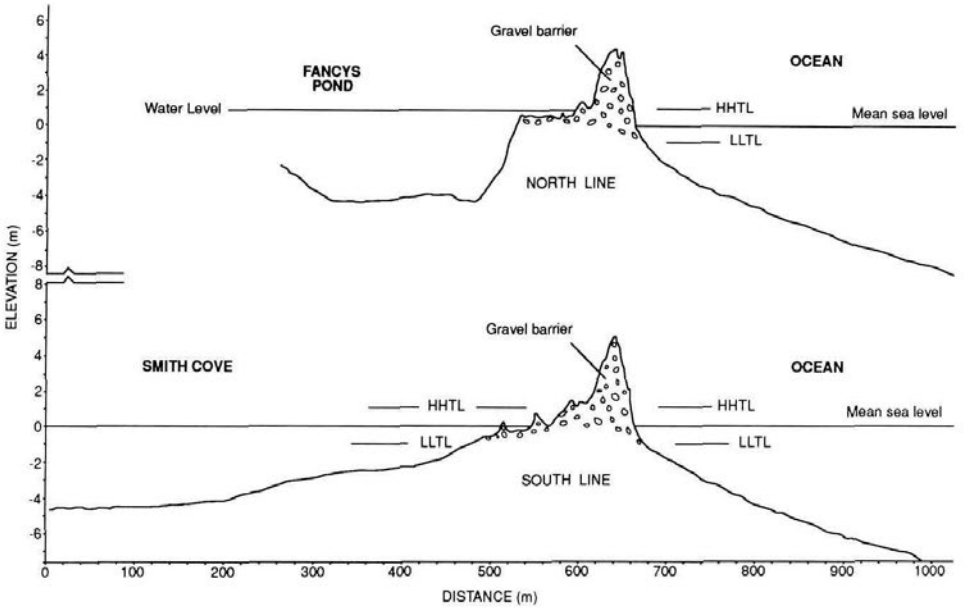

FIGURE 9. Surveyed profile lines across Fancys Point barrier (see Fig. 7 for locations). The north line shows two high beach ridges fronting older and lower ridges that terminate abruptly landward in Fancys Pond. The south line shows a single high beach ridge, also with lower ridges behind. The swales between the submerged backbarrier beach ridges have been artificially deepened for eel-breeding ponds. The gently shelving profile in Smith Cove may represent an old flood delta or a subaqueous barrier platform.

Profils au travers du cordon de Fancys Point (emplacement à la fig. 7). La ligne du nord montre deux levées de plage faisant front à des levées plus anciennes et plus basses qui se terminent abruptement dans le Fancys Pond. La ligne du sud montre une unique levée de plage élevée, avec derrière des levées plus basses. Les dépressions entre les levées de plage submergées ont été surcreusées pour la pisciculture des anguilles. Le profil doux vers le Smith Cove pourrait représenter un ancien delta d'inondation ou une plate-forme sous-marine.

Eastern Shore, provide a representative set of recent retreat rates for bluffs. Typical rates of bluff-top retreat were 0.2 to 0.4 m/a, but 0.6 m/a at more exposed sites (Fig. 15). During extreme storms, retreats of 1 to 12 m have been observed at exposed headlands (Newman, 1971; Boyd and Bowen, 1983).

However, these estimates should be interpreted with caution. Bluff-top retreat is extremely variable. Individual slumps often extend only a few metres along the cliff. Furthermore, bluff erosion is the result of a complex interaction between subaerial slope processes and marine effects, primarily wave attack. Storms accompanied by heavy precipitation can induce rapid erosion by surface runoff, groundwater percolation, and storm waves. However, as boulders and other coarse debris accumulate at the base of the cliff, wave energy is dissipated. In some cases, the boulder frame is sufficient to provide protection against all but extreme wave attack (Carter *et al.*, 1990a), and active erosion of the bluff can be reduced or halted. At a headland at Lawrencetown Beach (Fig. 12) erosion decreased from 0.4 m/a to 0.1 m/a during the 1980s. During extreme storm events, such as the Ground Hog Day storm of 1976, stable, vegetated bluffs can be reactivated (Grant, 1976).

Models of marine transgression through drumlin fields (Wang and Piper, 1982; Boyd *et al.*, 1987) have postulated barrier-beach sedimentation cycles based on the cyclic erosion and depletion of drumlin deposits as sea level rises. It was postulated that retreat would be rapid when a drumlin headland was initially attacked by waves (Forbes and Taylor, 1987). Recent field observations have confirmed this hypothesis and provided measurements of initial rapid retreat rates. The western headland of Chezzetcook Inlet (Fig. 11) was recently exposed to wave attack when the barrier beach in front of it was pushed landward onto the face of the drumlin in the early 1980s (Fig. 6 of Forbes *et al.*, 1990). Rates of retreat along the drumlin face since 1988 have averaged 5.4 m/a and have been as high as 7.6 m/a (Fig. 15).

Field observations of the Nova Scotia coast in the early part of the century by Goldthwait (1924) and Johnson (1925), supplemented by observations from sequential aerial photography (Owens, 1971; Forbes *et al.*, 1990, 1991b) and field observations later in the century by Bowen *et al.* (1975), Taylor *et al.* (1985), Shaw *et al.* (1990) and others, have documented progressive and often abrupt changes in coastal configuration and stability. A prime example is the collapse of Cadden Beach, on the South Shore. Before 1927 it was an

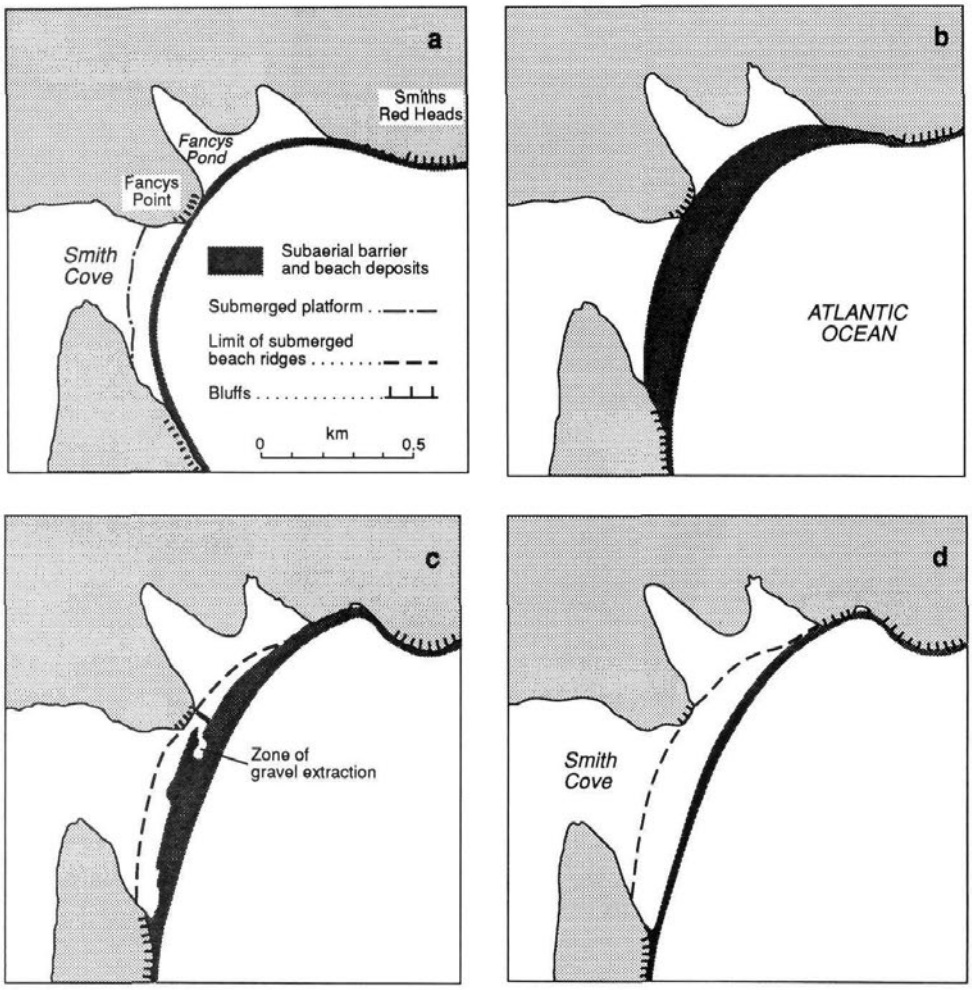

FIGURE 10. Postulated schematic development of Fancys Point barrier: a) an early single-ridge barrier; b) influx of sediment results in a prograded beachridge plain; c) present: sea-level rise has submerged the backbarrier ridges and the seaward edge of the barrier has retreated landward; d) future: in the case of a sea-level rise of 1 m over the next century the backbarrier ridges will be submerged and the main barrier will experience some landward retreat.

Schéma de l'évolution du cordon littoral de Fancys Point: a) cordon à crête unique en début de formation: b)progradation jusqu'à la formation d'une plaine littorale; c) présentement, la hausse du niveau marin a submergé les crêtes arrières et l'avant-cordon a reculé vers la terre; d) dans l'avenir, avec une hausse du niveau marin de 1 m au cours du prochain siècle, les crêtes arrières seront submergées et le cordon principal reculera vers l'intérieur.

extensive sand barrier fronting a large lagoon. By the mid 1970s, however, following at least two major failures and the reestablishment of tidal channels, the barrier had migrated landward and flood-tide deposits had infilled the lagoon (Bowen *et al.*, 1975, p. 54).

One of the best examples of extreme contrast in gravel barrier evolution comes from recent observations at Story Head and Long Beach (Figs. 11,12,16,17) on the Eastern Shore (Carter *et al.*, 1990c; Forbes *et al.*, 1990, 1991b). The Story Head barrier, at the mouth of Chezzetcook Inlet, is a low ridge (3 m above msl), composed of poorly sorted sand and gravel (Fig. 16a). It is overwashed several times per year. In the 1940s, the barrier was situated much farther seaward and linked Story Head to a now-vanished drumlin. Between 1954

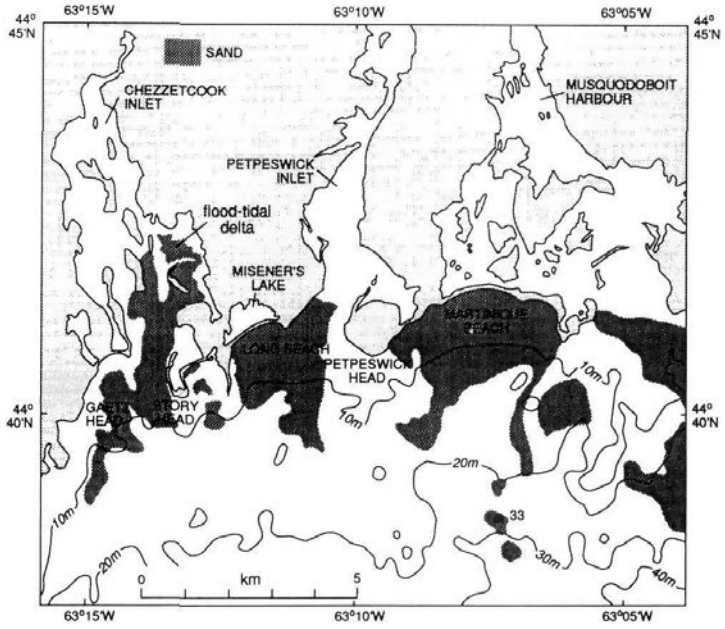

FIGURE 11. Location of the Story Head and Long Beach barriers, at the mouth of Chezzetcook Inlet, Eastern Shore. The point labelled 33, seaward of Martinique Beach, represents the location of a core in which salt-marsh peat with a radiocarbon age of 7500±120 years (index point 5 in Appendix I; GX-13972, Forbes *et al.*, 1988) was sampled 34 m below present sea level. Also shown is the distribution of sand (stipple) on the inner shelf and in Chezzetcook Inlet (extent of sand in other estuaries is omitted).

Localisation des cordons littoraux de Story Head et de Long Beach, à l'embouchure du Chezzetcook Inlet, Eastern Shore. Le point 33, au large de Martinique Beach, donne la localisation d'un sondage où l'on a daté une tourbe de marais salant à 7500±120 BP (repère 5 en appendice; GX-13972, Forbes et al., *1988). On voit également la répartition du sable (grisé) sur le plateau intérieur et dans le Chezzetcook Inlet (mais n'est pas donnée dans les autres estuaires).*

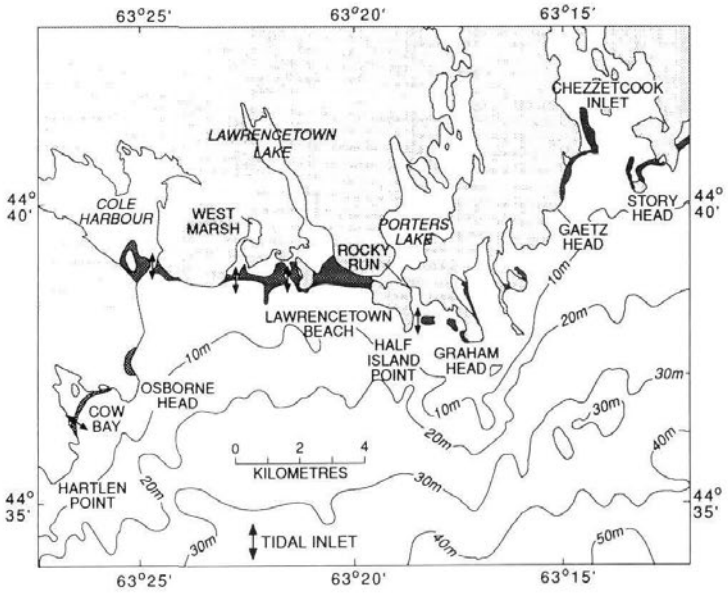

FIGURE 12. Map showing the location of estuaries and barrier systems (stippled) west of Chezzetcook Inlet.

Localisation des estuaires et des cordons littoraux (grisé), à l'ouest du Chezzetcook Inlet.

and 1982, the barrier migrated landward at an average rate of 8 m/a (Fig. 17), abandoning gravel deposits on the shoreface (Forbes *et al.*, 1991b). Orford *et al.* (1991a) argued that the migration rate of the seaward barrier shoreline had been proportional to both the annual rate and the 5-year smoothed rate of sea-level change.

Long Beach, located 1 km east of Story Head beach (Figs. 11, 16b), is a high gravel storm ridge rising to 4 m above msl, enclosing a freshwater pond. It has a steep beachface and well-developed cross-beach sediment size and shape sorting. The barrier appears to rest on bedrock. Gravel on the lower beachface is covered by a sandy apron, part of which is exposed at low tide. The beach has remained virtually in the same position for the past 7 years or more. Cobbles on the backbarrier slope are partially colonised by lichens and show little sign of recent washover sedimentation. Minor reworking of the barrier crest occurred during two major storms in the past 12 months, and local residents report that the last major overwash activity took place during a storm in 1975.

FIGURE 13. Oblique air photograph showing a central tidal channel with well-developed levees, Jeddore Harbour (30 March 1990).

Photo aérienne oblique montrant le chenal de marée central et ses levées latérales bien marquées, Jeddore Harbour (30 mars 1990).

Why the difference in stability between the two adjoining beaches? The overwashing and migration of the Story Head barrier has not been caused by higher levels of wave energy than at Long Beach — in the course of our surveys we have always noted much higher breaking waves at the latter. In fact, the stretching of the Story Head barrier would have caused wave energy levels to drop as it migrated.

Forbes *et al.* (1991b) have argued that the Story Head barrier was irreversibly modified during one or more years of exceptional storm activity, and that rising sea level played a role in its migration. They also noted that the Story Head barrier had migrated across backbarrier lagoonal deposits of mud with sand lenses, up to 4.5 m thick. Recent waterjet drilling and seismic surveys have established that the deposits are at least 10 m thick (possibly as much as 17 m) immediately behind the middle of the barrier. These deposits may be the key to the rapid migration of Story Head barrier. They provide a platform across which the barrier can migrate, but more importantly, it may be the quarrying of these sediments by wave action which helps maintain rapid migration. They may be susceptible to erosion during wave conditions below the threshold for barrier overwashing, and would be advected from the immediate shoreface in suspension.

By contrast, Long Beach and other barriers such as Fancys Point are fronted by coarser sediment which cannot be dispersed out of the immediate coastal compartment. This demonstrates that a close examination of both the subaerial and subaqueous architecture of barriers may provide answers to the problem of differential beach retreat.

During the past 30 to 50 years large-scale changes have been observed in some estuaries. In Chezzetcook Inlet, flood-delta deposits expanded by more than 230 000 m²

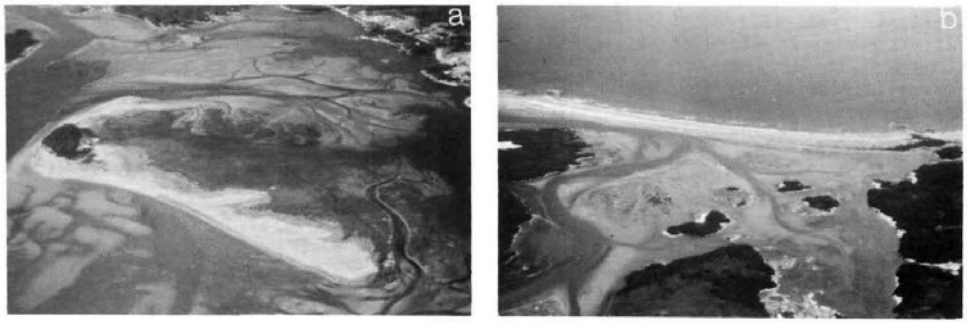

FIGURE 14. a) Expanding spits and flood delta at Red Island, Chezzetcook Inlet (30 March 1990); b) flood delta deposits overrun by barrier migration, Martinique Beach, looking seaward (30 March 1990).

a) Flèche en voie d'expansion et delta d'inondation à Red Island, Chezzetcook Inlet (30 mars 1990); b) dépôts de delta d'inondation recouverts par le cordon littoral en migration, Martinique Beach, vue vers le large (30 mars 1990).

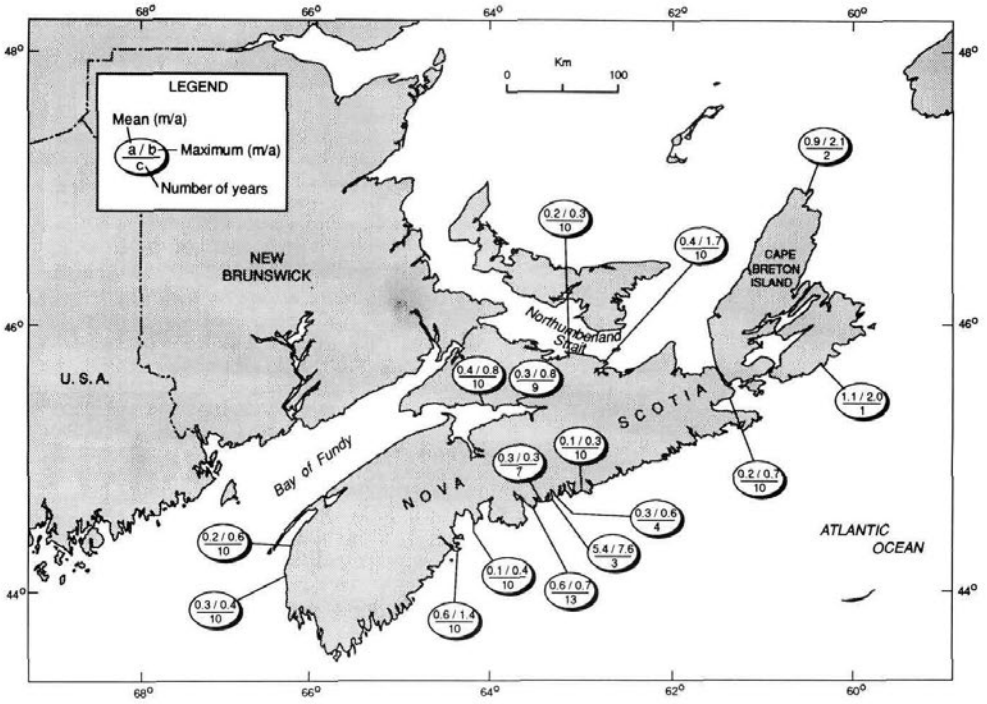

FIGURE 15. Mean and maximum rates of cliff-top retreat in unconsolidated bluffs at selected sites in Nova Scotia. The compilation is based on repetitive ground surveys between 1980 and 1991.

Taux moyens et maximaux du recul de la partie sommitale des falaises non consolidées à certains sites de la Nouvelle-Écosse. Compilation fondée sur de nombreux levés de terrain faits entre 1980 et 1991.

between 1954 and 1982 (Fig. 14 a; Fig. 5 of Carter *et al.*, 1990b). Despite the high rate of relative sea-level rise during the past 50 years (Fig. 3), salt-marsh deposits have also expanded in Chezzetcook Inlet since the 1940s (Scott, 1980). This process of rapid estuarine sedimentation can be directly related to the high rates of erosion at the outer coast (Forbes *et al.*, 1990, 1991b; Carter *et al.*, 1990b) and associated dispersal of sand and mud into the estuary. In other words, just as beaches and barriers along the outer coast may respond to high sediment supply by progradation, even under rising sea levels, so too the sedimentary and ecological response of estuarine systems to sea-level rise is strongly dependent on sediment supply. Coastal erosion and resulting sediment production may be accelerated under higher mean water levels. Under favourable circumstances, supply of sediment to nearby estuaries may increase at the same time, favouring maintenance or expansion of salt-marsh habitat despite the rise in sea level.

FUTURE IMPACTS

Does the spectrum of coastal changes which we have discussed provide useful analogs for the impact of accelerated sea-level rise of the magnitude described by the IPCC? The answer is a tentative yes. During the past several thousand years, while sea level was rising at mean rates of 0.2 m/century, the coastal response has apparently been cyclical: barrier systems have undergone phases of progradation, stability, and retreat as adjacent estuaries accumulated fine sediments. It could be argued that cyclic phases of progradation, stability and retreat will continue at an accelerated rate, so that the whole coastline will retreat faster, possibly at gross rates of 1-2 m/a as estimated from changes in paleo-shoreline positions observed during similar rates of rise in the past.

Changes at a specific coastal location will depend to a large extent on the stage of the present shoreline within the cycle of coastal development and on the history of that coastal segment during the late Holocene. Where shores have experienced pronounced progradation, for example at Lawrencetown Beach, a relatively large volume of sediment will be available for incorporation into future beaches and barriers. In the short term, parts of barriers may be submerged. At Fancys Point, for example, a sea-level rise of slightly over 1 m will submerge much of the low, old beach ridges behind the active beach (Fig. 10d); the barrier will become a single

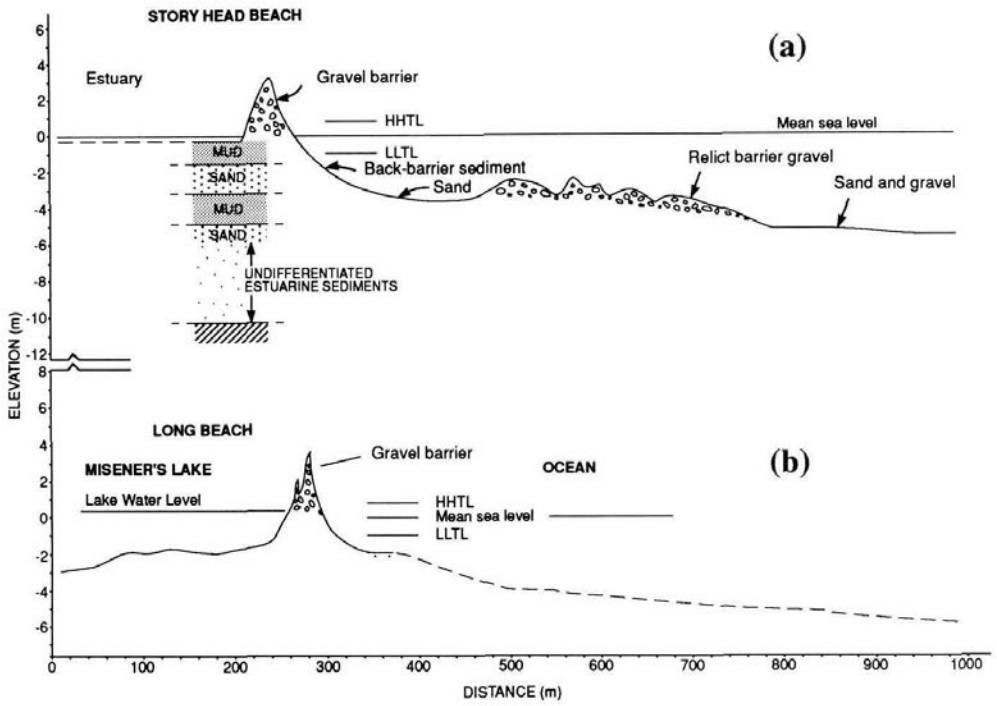

FIGURE 16. Profiles across barriers at (a) Story Head (b) Long Beach. At Story Head the barrier is overwashed a number of times each year and has migrated landward at an average rate of 8 m/a since 1954 (Forbes *et al.*, 1991b); the Long Beach barrier has remained stationary over the same period.

Profils des cordons littoraux à Story Head Beach (a) et à Long Beach (b). À Story Head Beach, le cordon est submergé plusieurs fois par année: il migre vers l'intérieur à un taux moyen de 8 m/a depuis 1954 (Forbes et al., *1991b); le cordon de Long Beach est demeuré stable au cours de la même période.*

ridge similar to Long Beach. Eventually, however, the large amount of gravel in the old ridges may be incorporated into a new barrier/beach system or may be overstepped (Forbes *et al.*, 1991b).

Where beaches have been in a retreat phase because of sediment depletion, and where no new local source of beach sediment exists, or where the backshore environment is extremely deep, they are apt to continue landward retreat or even be destroyed. Rapid beach retreat at some sites may have effects in adjacent coastal environments. At Story Head, for example, the beach retreat observed today cannot be extrapolated indefinitely, because the link with the drumlin headland (Fig. 17) has already been severed. Disengaged from this anchor point, the barrier may now undergo a transformation into a drift-aligned feature anchored to the mainland. The entire system of gravel barriers at the mouth of Chezzetcook Inlet is in the process of being reorganised. This will expose formerly quiescent backbarrier environments to wave attack. Fine sediment remobilised due to retreat of the muddy shoreface exposed in front of the barrier will be advected either to offshore basins (Piper *et al.*, 1986) or to inner-estuary salt-marsh and intertidal environments, enabling the latter to keep pace with sea-level rise. Coarse material liberated from the retreating prism of estuarine sediment will contribute to the formation of new flood-delta and beach deposits within Chezzetcook Inlet, in the manner described by Carter et *al.* (1990b).

The release of sediment into the littoral system as a result of the erosion of till bluffs will be an important supplement to sediment conserved during the transgression — both sources will supply new barriers and beaches. Bluffs will retreat at variable rates — initial wave attack of newly exposed drumlins will result in rapid retreat (up to 7 m/a or more) until boulder frames or gravel beaches accumulate, or bedrock platforms are exposed seaward; rates of recession will then diminish to less than 1 m/a.

However, we must be cautious in making these sorts of predictions, for they rest on the assumption that sea-level rise during the Holocene has been smooth. Van de Plassche (1991) and Thomas and Varekamp (1991) claimed that late Holocene sea-level rise was stepped, so that alternating periods of greater and lesser relative sea-level rise were embedded within an overall submergence. Tanner (1992) found

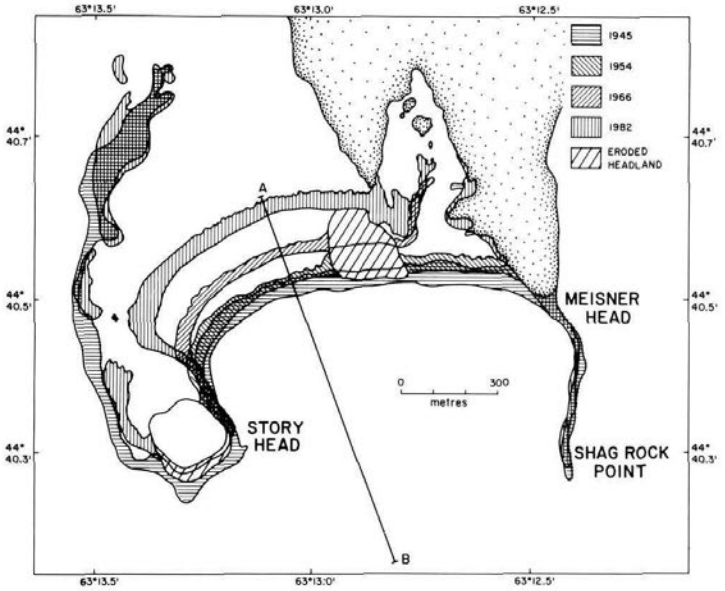

FIGURE 17. Landward migration of Story Head barrier since 1945 (from Forbes *et al.*, 1991b). A-B: approximate line of profile in Figure 16.

Migration vers l'intérieur du cordon de Story Head Beach depuis 1945 (Forbes et al., *1991b). AB-profil de la figure 16.*

evidence in the Gulf of Mexico of three drops and two rises of sea level in the past 3.0-3.5 ka, with amplitudes of 1-2 m. He suggested that the most recent oscillation corresponded with the Little Ice Age and that the current sea-level rise is the result of a trend towards future sea-level rise. Closer to the study area, the Holocene transgression in the Tantramar marshes of New Brunswick is thought to have been interrupted at least 4 times during the past 3000 years (Grant, 1985).

If the late Holocene transgression was stepped, it is conceivable that cycles of barrier formation and breakdown have been controlled by fluctuations in the rate of sea-level rise (Orford *et al.*, 1991a). Perhaps the coastal progradation at some locations, as described in this paper, occurred only during phases of slow sea-level rise, whereas the rapid changes observed in this century are characteristic of phases of rapid sea-level rise such as the present (van de Plassche, 1991; Tanner, 1992). In this case, coastal erosion and retreat may become pervasive if predictions of a global rise in sea level are correct.

The uncertainty about future impacts could be lessened by directing our research towards two goals. The first is a better understanding of the age, morphodynamics, and sedimentary structure of estuarine and barrier systems. Was, for example, barrier progradation linked to cycles of sediment supply, or was progradation more common at certain periods, and did these correspond with minor regressions? These questions are linked to a second research objective: to determine the pattern of relative sea-level rise during the past several thousand years in Atlantic Canada, to a resolution of tens of centimetres and centuries. When progress has been made towards attaining these goals we will be able to make even better use of the geological record to predict future changes on the coast.

ACKNOWLEDGEMENTS

We wish to thank D. Frobel for participation in fieldwork, and R.W.G. Carter, J. D. Orford and S. C. Jennings for many useful discussions. S. Solomon and G. Sonnichsen reviewed draft versions of the manuscript. Journal reviews by D.F. Belknap and P.R. Hill are appreciated. This paper is a contribution to IGCP Project 274.

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APPENDIX I

RELATIVE SEA-LEVEL INDEX POINTS, AS SHOWN ON FIGURE 2

Many of the dates are on samples obtained during cruise 87-042, CSS *Dawson* (Forbes *et al.*, 1988). Relevant pollen data are from an unpublished AGC report by J. Shaw (pollen sum = arboreal pollen), and foraminiferal data from Honig (1988). RIDDL dates were obtained with the AMS method, and where shell was dated the fractionation correction is to a base of $\delta^{13}C = 0‰$, equivalent to a 410 year reservoir correction; for RIDDL-1078 the base was $\delta^{13}C = -25‰$. TO dates are AMS dates with a reservoir correction of 410 years in the case of shell material; TO dates on other organic materials are corrected to a base of $\delta^{13}C = -25‰$. However, GX and Beta (conventional dates) shell dates are normalised to a base of $\delta^{13}C = -25‰$. They are given here as reported, but an additional date, adjusted by 410 years, is also given, and is used to constrain the sea-level curve (msl = mean sea level; hhw = higher high water).

1. *Spisula polynyma* shell (non-estuarine shallow water — subtidal to intertidal) dated at 10,980±120 (RIDDL-1082), from 5.44 m in core 87042-039, water depth 39.5 m. Corrected for tides the sample is 44.9 m below msl. This sample was contained in sandy mud, in a zone of low pollen and spore concentrations. Arboreal pollen levels were low and sedge levels up to 30%. The sediment was barren of foraminifera.

2. *Polinices heros* shell (typically shallow water — subtidal to intertidal), dated at 9240±130 (GX-13974), contained in dark olive grey clayey silt at 3.84 m in core 87042-039, water depth 39.5 m. After subtracting 410 yr for the reservoir effect the date is 8830±130 BP. Adjusted for tides the sample is 43.3 m below msl. The sample was at a pollen zone boundary, with a herb/shrub assemblage below, and an overlying zone dominated by *Pinus* and *Betula*, with upwards increasing amounts of *Tsuga*. The foraminiferal assemblage was a restricted calcareous type dominated by *Elphidium excavatum* and *Buccella frigida*.

3. Freshwater detritus peat, dated at 8800±390 (GX-13973), from 2.72 m in core 87042-030, water depth 18.0 m. Compensated for tides, the sample is 19.9 m below msl. The 0.24 m thick peat layer had relatively high levels of *Nymphaea* and *Nuphar* pollen, in an early Holocene assemblage. It contained freshwater diatoms, and no foraminifera. Above the sharp (erosional) upper boundary was dark olive grey clayey silt with a mixed estuarine/marine foraminiferal assemblage. The underlying silty sand was barren.

4. *Macoma balthica* shell, dated at 7680±130 (RIDDL-1081) at 2.59 m in core 87042-039, water depth 39.5 m. Sample depth compensated for tides is 42.0 m below msl. The sample was contained in dark olive grey clayey silt with a Holocene pollen assemblage dominated by *Pinus*, with upward increasing levels of *Tsuga*. An estuarine foraminiferal assemblage was sampled slightly above, at 2.44 m.

5. Salt-marsh peat, dated at 7500±120 (GX-13972), from 4.30 m in core 87042-033, water depth 30.0 m. Compensated for tides the sample is 33.7 m below msl. The peat layer was about 20 cm thick, and was underlain by grey silty clay. It contained an early Holocene arboreal pollen assemblage. *Alnus* occurred in relatively high amounts, and there were small peaks in Gramineae and Chenopodiaceae pollen. The foraminiferal assemblage, comprising 96% *Trochammina macrescens* and 4% *T. comprimata*, was indicative of a salt-marsh environment. Overlying silty clay contained estuarine foraminiferal assemblages, and the underlying silty clay was barren.

6. Total organic carbon date of 7425±255 (GX-10027) on muddy sand with organic matter from 0.42-0.53 m in core 83-010-2 (water depth 26 m), off Cole Harbour, N.S. (Hall, 1985).

7. *Macoma balthica* shell, dated at 7280±100 (RIDDL-1080), from 3.38 m in core 87042-033, water depth 30.0 m, tide-compensated sample depth is 32.8 m below msl. The shell was in dark grey silty clay with a typical early Holocene pollen assemblage, dominated by *Pinus*, followed by *Tsuga, Picea, Quercus* and *Betula*, in descending order of importance. The estuarine foraminiferal assemblage contained *T. macrescens*, *T. squamata, T. comprimata,* and *E. excavatum*, in descending order of abundance.

8. *Mytilus edulis* shell, dated at 7190±120 (RIDDL-1079), 2.24 m in core 87042-033, water depth 30.0 m, tide-compensated sample depth 31.7 m below msl. The shell was contained in dark grey silty clay, with pollen and foraminiferal assemblages as for sample 7 (above).

9. A total organic carbon date of 6790±80 (Beta-19587) on a grab sample of olive estuarine mud (8606001) from the wall of a seafloor depression off Martinique Beach, water depth 30 m. The mud contained a typical Holocene pollen assemblage, with *Pinus, Tsuga, Picea, Quercus, Betula,* in descending order of abundance, plus foraminifera and marine planktonic diatoms.

10. *Portlandia* sp. shell at 1.31 m depth in core 87042-010, from a water depth 27.8 m, tide-compensated sample depth 28.9 m below msl. The sample is dated at 6130±110 (RIDDL-1077) and was contained in green-grey silty clay with a middle Holocene pollen assemblage and an estuarine foraminifera fauna.

11. A total organic carbon date of 5830±230 (GX-6806) on dark brown marine mud from 3.09-3.13 m in core 79-011-01 (Miller *et al.*, 1982), water depth 60 m in Bedford Basin, near Halifax. It is plotted at 20 m depth in Figure 1, since it indicates a sea level of at least −20 m (sill depth).

12. Seaweed from 1.70 m depth in core 87042-030 (water depth 18.0 m, tide-compensated sample depth 18.8 m below msl), dated at 4240±130 (RIDDL-1078), and contained in 4 cm of interlaminated sand and silt in pebbly medium sand. The pollen assemblage indicated Holocene Zone C-3 while the foraminiferal assemblage was characteristic of a nearshore environment.

13. Total organic carbon date of 3220±150 (GX-11342) on salt-marsh peat from 3.97 m depth (−6 m below msl) in core 15, Lawrencetown Lake (Boyd and Honig, 1992).

14. Total organic carbon date of 2900±150 (GX-11343) on brackish mud from a depth of 5.10 m (5.8 m below msl) in core 9A, Lawrencetown Lake (Boyd and Honig, 1992).

15. Shell sample from flood-tidal delta sediments, 2.80 m depth (−3.7 m below msl) in core 7, Lawrencetown Lake, dated at 1990±130 (GX-11344), from Boyd and Honig (1992). Adjusted for a 410 yr reservoir effect the date becomes 1580±130 BP.

16. Shells from a flood-tidal channel deposit, dated at 1650±180 (GX-12250), from 4.05 m depth (3.9 m below msl) in core 16, Lawrencetown Lake (Boyd and Honig, 1992). The reservoir-corrected date is 1240±180 BP.

17. Shells contained in basin mud, dated at 1535±220 (GX-12251), from 3.17 m depth (−4.2 m below msl) in core 3, Lawrencetown Lake

(Boyd and Honig, 1992). The reservoir-corrected date is 1125±220 BP.

18. Shells from a flood-tidal delta deposit, dated at 815±70 (GX-12249), from 1.25 m depth (~2.5 m below msl) in core 7, Lawrencetown Lake, N.S. (Boyd and Honig, 1992). After correcting for reservoir effect the date is 405±70 BP.

19. Small wood fragment in salt-marsh peat at the former hhw level, dated at 6625±240 (GX-4594) from 11.85 m below sea level, core V, Chezzetcook Inlet (Scott, 1977a).

20. Small wood fragment from an intertidal — shallow subtidal deposit, approximately 5.00 m below sea level in core X, Chezzetcook Inlet, dated at 1940±140 (GX-4652) (Scott, 1977a).

21. Small wood fragment dated at 915±130 (GX-4825), from 2.70 m below sea level in core XIII, Chezzetcook Inlet (Scott, 1977a).

22. AMS date of 330±50 BP (TO-3172) on a *Spisula polynyma* fragment contained in silty fine sand of a flood-tidal delta, from 1.87 m depth (2.37 m below msl) in vibracore 88301-007, Chezzetcook Inlet.

23. Date of 1840±70 BP (Beta-51312) on *Spisula polynyma* fragments from 2.78 m depth (3.28 m below msl) in vibracore 88301-007, Chezzetcook Inlet. The shells were part of a shell hash, 0.08 m thick, contained in flood-tidal delta medium sand. The date is normalised to $\delta^{13}C = -25‰$. Compensated for a 410 yr reservoir effect it becomes 1430±70 BP.

24. AMS date of 1290±70 BP (TO-3164) on *Spisula polynyma* fragments contained in estuarine sand, from 1.50 m depth (2.10 m below msl) in vibracore 08704-004, immediately behind Story Head barrier, Chezzetcook Inlet. The sample was contained in sand.

25. AMS date of 1440±90 BP (TO-3163) on two valves of *Macoma balthica* and fragments of a juvenile gastropod, contained in estuarine sand at 1.97 m depth (2.57 m below msl) in vibracore 08704-004, behind Story Head barrier, Chezzetcook Inlet.

26. AMS date of 1500±70 BP (TO-3162) on *Spisula polynyma* fragments contained in estuarine sand at 2.12 m depth (2.72 m below msl) in vibracore 08704-004, immediately behind Story Head barrier, Chezzetcook Inlet.

27. AMS date of 1890±60 BP (TO-3156) on a twig contained in estuarine mud from 3.25 m depth (3.85 m below msl) in vibracore 08704-004, immediately behind Story Head barrier, Chezzetcook Inlet.

This is **Exhibit "K"** mentioned and referred to in the affidavit of Heather MacLeod-Leslie affirmed before me on this 19th day of January, 2024

A Commissioner of Oaths in and for the Province of Nova Scotia

GARNET E. BROOKS
A Barrister and Solicitor of
the Supreme Court of Nova Scotia

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June 16th, 2022

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RE: Consultation with the Mi'kmaq on Licence and Lease Application Nos. AQ#1205, AQ#1432 & AQ#1433 Kelly Cove Salmon Ltd., Marine Finfish, Liverpool Bay, Queens County.

Mr. Ceschiutti,

I write to reiterate the discussions from our June 1st, 2022, consultation meeting and to highlight concerns raised by Acadia First Nation. The Kwilmu'kw Maw-Klusuaqn Negotiation Office (KMKNO) supports the following concerns raised by Acadia First Nation as the expansion of Liverpool Bay will directly impact Mi'kmaq Rights and Title.

The Mi'kmaq have witnessed immense changes to the landscapes and shorelines of Mi'kma'ki over millennia. The Mi'kmaq and their ancestors have occupied the Liverpool Bay region since time immemorial and the area is significant for traditional gathering and fishing practices including reliance on lobster, cod, mackerel and other species. As sea levels rose, coastal lands including areas within Liverpool Bay were inundated. These now submerged shorelines are considered to represent areas of elevated archaeological potential for Precontact Mi'kmaw cultural heritage.

Acadia First Nation, as well as the Mi'kmaq of Nova Scotia, are very concerned with the archaeological significance of the entire Mersey River corridor, including Liverpool Bay. The Mersey River formed part of a natural inland waterway, which served as an essential transportation route connecting the Atlantic coast with the Bay of Fundy. Approximately one quarter of all registered Precontact Mi'kmaw archaeological sites in Nova Scotia are located along this corridor. The presence of Mi'kmaw place names around Liverpool Bay, including Oqomkikiaq (Liverpool, NS) and Qamaku'jk (Brooklyn, NS), highlights the importance of the area for the Mi'kmaq. The proximity of known archaeological sites, including one located within Liverpool Harbour, Mi'kmaw place names, and longstanding traditional use of the area validate the request for a proper underwater archaeological assessment in Liverpool Bay.

Underwater archaeology of submerged landscapes is still an emerging discipline in Nova Scotia; while Mi'kmaw concerns regarding potential archaeological impacts may not have been communicated effectively in our initial consultation meeting, the KMKNO certainly noted the

archaeological and cultural significance of Liverpool Bay. Archaeological sites are a non-renewable resource and physical impacts have the potential to damage or disturb buried cultural remains. Impacts to Mi'kmaw archaeological heritage, including loss, disturbance or a lack of detection have the potential to negatively impact Mi'kmaw Rights and Title. Therefore, the KMKNO strongly recommends that a full Archaeological Resource Impact Assessment (ARIA) be carried out prior to any decision by the Aquaculture Review Board (ARB) and that any such investigation be developed collaboratively with the Mi'kmaq.

The Assembly of Nova Scotia Mi'kmaw Chiefs (ANSMC) expects a high level of archaeological investigative diligence and cultural attention as research is conducted. Acadia First Nation and the KMKNO also raised concerns over shoreline appearance and tourism value, loss of traditional and current fishing space for Food, Social & Ceremonial (FSC) fishers who are unable to locate elsewhere, fish health and environmental disturbances.

Yours in Recognition of Mi'kmaw Rights and Title,

[redacted]

Twila Gaudet, B.A., LL.B.
Director of Consultation
Kwilmu'kw Maw-Klusuaqn Negotiation Office

c.c.:
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Councillor Charmaine Stevens, Acadia First Nation
Claire Rillie, Consultation Advisor, Nova Scotia Office of L'nu Affairs
Linda Babineau-LeBlanc, Consultation Officer, Transport Canada
Edward Parker, Senior Aquaculture Advisor (Maritimes), Fisheries and Oceans Canada

This is **Exhibit "L"** mentioned and referred to in the affidavit of Heather MacLeod-Leslie affirmed before me on this 19th day of January, 2024

A Commissioner of Oaths in and for the Province of Nova Scotia

GARNET E. BROOKS
A Barrister and Solicitor of
the Supreme Court of Nova Scotia

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Nova Scotia Department of Fisheries and Aquaculture
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RE: Continuing Consultation with the Mi'kmaq on Licence and Lease Application Nos. AQ#1205, AQ#1432 & AQ#1433 Kelly Cove Salmon Ltd., Marine Finfish, Liverpool Bay, Queens County

Mr. Ceschiutti,

I write to acknowledge receipt of your letter dated November 23, 2022, with respect to continued consultation under the *Terms of Reference for a Mi'kmaq-Nova Scotia-Canada Consultation Process* (ToR) as ratified on August 31, 2010, on the above noted project.

In the letter, action item #4 reads: Kwilmu'kw Maw-Klusuaqn Negotiation Office (KMKNO) to provide Nova Scotia Department of Fisheries and Aquaculture (NSDFA) with information on what species are being fished, where fishing occurs and how many community members would be impacted, how the project would prevent fishers from accessing the resource and if reasonable accommodations can be developed to mitigate any potential loss, within the immediate area of the project. We reiterate that there remains concerns in providing that information. This is an ongoing exercise.

Action item#5: Parties agreed to work towards a way of illustrating specific adverse impacts to Mi'kmaw Aboriginal and treaty rights from proposed site expansions. Providing Kelly Cove with more room to farm their fish, means less area for the Mi'kmaq to fish. This clearly impedes the Mi'kmaw right to fish for food, social and ceremonial purposes as well as for moderate livelihood. Displacement has been brought up numerous times during our meetings and the loss of an archaeological site or artifact is an irreversible loss to Mi'kmaq history and culture.

Kelly Cove Salmon Limited's decision to proceed with an Archaeological Resource Impact Assessment (ARIA) followed concerns raised by representatives of Acadia First Nation, during an April 2022 community engagement session, rather than at the direction of the province. KMKNO recognizes the Proponent's proactive approach in acknowledging that aquaculture operations have the potential to impact submerged archaeological resources.

As a desk-based screening, the archaeological assessment of the Liverpool Bay aquaculture sites displays a number of strengths, including the manner in which it takes into account Holocene environmental conditions, modern bathymetric data, and postglacial coastlines in examining archaeological potential within the study area. As stated in the report, "the coastline has evolved

significantly through time and the coastal orientation of precontact archaeological sites must be considered in light of the changing configuration" (Boreas 2022: 10,35).

The Archaeology Research Division (ARD) of KMKNO supports the recommendation that high potential areas (HPA-01 & HPA-02) "be subjected to subsurface archaeological sampling probes" prior to any disturbance (Boreas 2022: 42). The Maw-lukutijik Saqmaq (Assembly of Nova Scotia Mi'kmaw Chiefs) expects a high level of archaeological diligence, with evidence-based decisions grounded in an understanding of subsurface environmental data adequate to eliminate concern for the presence, protection, and management of Mi'kmaw archaeological and cultural heritage, in advance of any development. "Any potential need for further archaeological assessment or mitigation will be based on the results of this subsurface investigation" (Boreas 2022: 38).

The ARD's primary concern with respect to the archaeological report, as submitted, is with its titling as an ARIA. An ARIA should properly consist of both a desktop assessment (background screening) and field reconnaissance. According to the Nova Scotia Department of Communities, Culture, Tourism and Heritage's ARIA (Category C) Guidelines, "In designing an [ARIA], the following components should be addressed: 1. Background research…2. Field strategy". The Liverpool Bay report acknowledges this deficiency, on more than one occasion, by describing the desktop assessment as "the first phase of the ARIA" (Boreas 2022: 1,5). The report further states that the assessment was restricted to a desk-based screening "so that an appropriate field component strategy can be devised" (Boreas 2022: 1). However, the submission of the report as an ARIA, to both the Proponent and the provincial regulator, risks setting the precedent that underwater archaeological assessments need not be held to the same standard as terrestrial ARIAs. As such, the ARD disagrees with the recommendation that portions of the assessment area "be cleared of any requirement for further archaeological investigation [and that] development within these areas may proceed as planned" (Boreas 2022, 42), without some form of prior visual reconnaissance, as a primary data tool, such as remote sensing or direct diver survey.

It is KMKNO's understanding that Kelly Cove Salmon intends to proceed with the field component phase of the Liverpool Bay ARIA, including subsurface archaeological sampling probes. We stand firm in our position that the full ARIA should be completed, and the results reviewed by the ARD, prior to the conclusion of consultation. Recognition from the Province of the cultural significance of the submerged landscape of Liverpool Bay to the Mi'kmaq would be a step towards building the trust required for sharing information on fishing activities in the area.

We look forward to continuing consultation with you on this matter.

Yours in Recognition of Mi'kmaw Rights and Title,

[redacted]

Twila Gaudet, B.A., LL.B.
Director of Consultation
Kwilmu'kw Maw-Klusuaqn Negotiation Office

c.c.:
Keptin Jeff Purdy, Acadia First Nation
Councillor Charmaine Stevens, Acadia First Nation
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