

John Hugh Calder

CURRICULUM VITAE

Past Chair, Canadian Geoparks Network

Global Geoparks Network Executive Board (interim)

Part-Time Faculty, Department of Geology, Saint Mary's University

Adjunct Professor, Dalhousie University

Senior Geologist (retired), Nova Scotia Department of Energy & Mines

Past President, Atlantic Geoscience Society

Member, IUCN Specialist Group on Geoheritage

Earth science educator, author and Geoheritage specialist, senior scientist and author of nomination of the Joggins Fossil Cliffs UNESCO World Heritage Site and Cliffs of Fundy UNESCO Global Geopark. Past Chair of the Canadian Geoparks Network, with experience in assessing aspiring geoparks in Canada prior to their application to UNESCO.

Deep interest in assisting all peoples, but especially indigenous peoples and developing countries, to benefit from awareness and sustainable development of their geoheritage.

Distinctions & Awards

E.R. Ward Neale Medal (2012) National award of the Geological Association of Canada for outstanding effort in communicating and sharing geoscience with Canadians.

Provincial and Territorial Geologists Medal (2009) National award of the Committee of Provincial and Territorial Geologists

Premier's Award of Excellence (2009) For leadership in the successful designation of Joggins as a UNESCO World Heritage Site.

Gesner Medal (2005) Atlantic Geoscience Society Distinguished Scientist Award (2005).

APICS Distinguished Lecturer (2000) Atlantic Provinces Inter-University Committee on the Sciences (APICS)/Atlantic Geological Society (2000).

International Recognition

IUCN Specialist Group on Geoheritage

Smithsonian Institution, Washington, D.C.: *Visiting Scientist Fellowship* (1993).

Center for Applied Energy Research, University of Kentucky: *Visiting Scientist* (May 1993).

NATO: *Collaborative Research Grant* (with A.C. Scott and M.R. Gibling, 1994-1995).

International Journal of Coal Geology, Amsterdam: *Editorial Board* (1995 - 2001).

National Geographic Society, Washington, D.C.: *Research and Exploration Committee Grant* (1999-2000).

Geological Society of America:

- *Chair, Coal Geology Division* (1996)
- *Elected Fellow* (2001).
- *Best Paper Award*, Geological Society of America Annual Meeting, Denver (2002).

Honourary Appointments

President, Atlantic Geoscience Society (2015)

Honourary Adjunct Professor, Faculty of Earth Sciences, Dalhousie University (1994 - present)

Research Associate, Nova Scotia Museum of Natural History (1995 - 2008)

Editorial Board, International Journal of Coal Geology (1995 - 2001)

Employment history

1977 - 2020: Nova Scotia Department of Energy and Mines, Geological Survey Division.

- Senior Geologist (IV) 1996 – 2020
- Interim Manager, Coal Resources Section 08/1994-03/1995
- Regional Geologist (III) 1986-2006 (NSDME, NSDNR)
- Geologist II 1977-1985 (NSDM, NSDME).

1996 - present: Faculty of Geology (Part-Time), Saint Mary's University

2012: Faculty of Earth Sciences (Sessional Professor), Dalhousie University

Professional Interests

- Teaching the stories of the Earth and their relevance to humanity.
- Using geoheritage to provide sustainable economic development opportunities for rural communities.
- Communicating the significance of our geological heritage to policy makers, students, and to the broader public as book author, commentator, educator and speaker.
- Climate change, basin analysis, paleontology, ecosystems.
- Developing innovative concepts in programs and projects.
- Making a difference.

Grants awarded

National Geographic Society Research and Exploration Committee Grant to undertake research at the Brule palaeontological site (1999-2000).

Nova Scotia Museum Paleontology Research Grant to undertake paleontological research of fossil vertebrate-bearing tree stump, Joggins (1999).

Nova Scotia Museum Paleontology Research Grant to undertake research and documentation of the Brule walchian forest and tetrapod trackway site (1996).

NATO Collaborative Research Grant with A.C. Scott and M.R. Gibling in Euramerican coal basin paleobotany (1994-1995).

Memberships in Scientific or Professional Organizations

- Geoscientists Nova Scotia (P.Geo)
- World Commission for Protected Areas (WCPA)
- Geological Association of Canada
- Geological Society of America (Fellow and Past Chair, Coal Geology Division)
- Atlantic Geoscience Society (President, 2015)
- Canadian Geoscience Education Network (Vice Chair, 2015)

Professional Experience

Leadership in geoheritage recognition in Canada, including development of a Geoheritage strategy for the Province of Nova Scotia.

Scientific lead and mentor of community-driven initiative to develop Fundy Cliffs Aspiring Global Geopark, Nova Scotia.

Scientific lead and senior author of successful nomination of the Joggins Fossil Cliffs as a UNESCO World Heritage Site, cited by the World Heritage Committee as setting a new standard for nominations. Built consensus and trust among disparate groups, including community and local to national levels of government.

Scientific advisor to international, national and regional geoscience initiatives (UNESCO World Heritage Site nomination, Joggins; Atlantic Geoscience Society *Last Billion Years*; Fundy Geological Museum; Natural History of Nova Scotia; Nova Scotia Museum).

University teaching in Earth Sciences: Saint Mary's University; adjunct professor at Dalhousie University; invited lecturer at other universities.

Earth Science commentator on national and international public radio and television:

- o BBC *Green Planet*
- o CBC Radio *Morningside*
Quirks & Quarks
- o CBC TV *Land and Sea*
The National
Midday
- o CTV/syndicated *Wonder Why?*
- o Discovery Channel
- o Société Radio Canada *Decouverte*

Managerial and Program Planning: development of conceptual programs and innovative projects; short-term and long-term geology program planning including managerial experience.

Extensive international collaboration in research (Smithsonian Institution; Royal Holloway, University of London; Kentucky Geological Survey; Center for Applied Energy Research; Geological Survey of Canada, among others).

Convenor of major international geoscience and industry forums, including Euramerican Coal Province Symposium, Nova Scotia - 1992

Invited participation in key international geoscience forums:

- o Royal Holloway and Bedford New College, U.K. (1986)
- o Orléans, France (1989)
- o Lyell Bicentennial, Geological Society of London (1998)
- o International Congress of the Carboniferous and Permian, Calgary (1999)

Chair, Geological Society of America Coal Geology Division - 1996 (Symposium Chair, San Diego - 1991; Program Chair, New Orleans - 1995)

Scientific referee for international geoscience journals (*Atlantic Geology*; *Bulletin de la Société Géologique de France*; *Canadian Journal of Earth Sciences*; *International Journal of Coal Geology*; *Palaeogeography*, *Palaeoclimatology*, *Palaeoecology*; *Sedimentology*).

External Examiner, Reader of graduate theses in Earth Science (University of Western Ontario; Dalhousie University; Boston College, Saint Mary's University).

Requests for Scientific Papers (partial list)

Academy of Sciences, Czech Republic
Amoco Production Company, Houston, Texas
BRGM, Orléans, France
British Geological Survey, England
Centre ORSTOM de Bangui, République Centrafricaine
Charles University, Czechoslovakia
Chinese Academy of Geological Sciences, The People's Republic of China
Chouaïb Doukkali University, Morocco
Geological Survey of Canada
Geological Survey of Denmark
Geologisk Institutt, Universitetet I Bergen, Norway
Geoscience Office, Whitehorse, Yukon Territory
Harvard University
IANIGLA, Argentina
Illinois State Geological Survey
Indiana Geological Survey
Institut für Geowissenschaften, Johannes Gutenberg-Universität, Germany
International Energy Agency, London, England
Kansas State University
Liverpool Polytechnic, England
Louisiana Geological Survey
Lund University, Sweden
Memorial University of Newfoundland
Natural Resources and Energy, New Brunswick
New Brunswick Museum
Nihon University, Japan
Ohio Department of Natural Resources
Oregon State University
Oxford Brookes University, England
Pennsylvania Geological Survey
Polish Academy of Sciences
Pomona College, California
Praça Gomez Teixeira, Portugal
Rajiv Gandhi Institute of Petroleum Technology, India
Rhodes University, South Africa
Rijks Geologische Dienst, The Netherlands
Royal Holloway, University of London, England
Smithsonian Institution
Soviet Academy of Sciences, USSR
Stanford University
The Geological Survey of Greenland
The Ohio State University
The University of Bristol, England
The University of Chicago
The University of Kansas
The University of Melbourne, Australia
The University of Michigan
The University of Queensland, Australia
The University of Reading, England
The University of Sheffield, England
The University of Texas at Arlington
United States Geological Survey, Menlo Park
United States Geological Survey, Reston
Universidad Naçional de Mar del Plata, Argentina
Université de Lyon, France
Université de Montpellier, France
Université d'Orleans, France
University of Calcutta, India
University of California, Santa Barbara
University of Strathclyde, Scotland
University of Tennessee at Martin
University of Yangon, Myanmar (Burma)
University of Wales, Swansea

Invited Keynote Presentations

- Inaugural Madeleine A. Fritz Lecture in Palaeontology, Royal Ontario Museum, Toronto, January, 2020.
- Travelling Speaker Series, Atlantic Geoscience Society, Prince Edward Island and Nova Scotia, October, 2016.
- International Appalachian Trail Annual Meeting, Millinocket, Maine, June 2014
- GAC-MAC NL Spring Meeting, 2013
- Charles Camsell Talk, Yellowknife, NWT, November, 2012.
- Nova Scotia Institute of Science 150th Anniversary Lecture, October, 2011.
- Atlantic Universities Geological Conference, Saint Mary's University, Halifax, October, 2003.
- APICS-AGS Distinguished Lecture tour, 2000 (Nova Scotia, New Brunswick & Newfoundland).
- The Sir Charles Lyell-Sir James Hutton Bicentenary Conference, Geological Society of London, Royal Holloway, University of London, July 31, 1997.
- Paleontological Society of Washington D.C., March 16, 1994.
- Coal Branch Seminar, United States Geological Survey, Reston, Virginia, March 11, 1994.
- Department of Paleobiology, National Museum of Natural History, Smithsonian Institution, Washington, D.C., March 10, 1994.
- Center for Applied Energy Research, University of Kentucky, Lexington; May, 1993.
- Atlantic Geoscience Society featured lecture, Halifax, Nova Scotia, February 12, 1986.

Recognition in the Arts

Work (documentary and arts photography) in permanent collections

- Nova Scotia Art Bank
- Saint Mary's University Art Gallery
- Fototeca de Cuba, Havana

Curator

- *Contemporary Stories: New Cuban Photography*, Saint Mary's University Art Gallery (2001)

Published Essays

- *Uncommon Reality*: catalogue essay for Contemporary Cuban Photography (2001)
- *Face the Land: A Perspective on Photographic Practice in Atlantic Canada* (2004)

Grants

- Nova Scotia Arts Council (1998, 1999, 2001)

Recognition in the Community

Citizen of the Year (Chris Campbell Award), Halifax County District 4 (2003)

Affiliation

Department of Geology
Saint Mary's University
Halifax, Nova Scotia
Canada B3H 3C3

Mailing Address

PO Box 43 Halifax Central
Halifax, NS Canada B3J 1A3

+1 (902) 266 9412 (mobile)
Johncalder99@gmail.com

Citizenship Canadian

Languages English (fluent)
French & Spanish (working knowledge)

Education

1991	Ph.D. (Earth Sciences), Dalhousie University
1976	B.Sc. (Geology), Saint Mary's University

References

Dr. William A. DiMichele
Smithsonian Institution
Department of Paleobiology,
National Museum of Natural History,
Washington, DC
20560
USA

dimichele.william@si.edu
202 357 4480 fax 202 786 2832

Dr. Martin Gibling
Professor Emeritus
Dalhousie University
Department of Earth Sciences
Halifax
Nova Scotia
B3H 3J5
Canada

mgibling@is.dal.ca
902 494 2355 fax 902 494 6889

Publications

1. Burn, C. R., Cooper, M., Morrison, S.R., Pronk, T. and Calder, J.H. 2021. The Canadian Federation of Earth Sciences scientific statement on climate change – its impacts in Canada, and the critical role of Earth scientists in mitigation and adaptation. *Geoscience Canada*, 48, 59-72.
2. Marchetti, L., Voigt, S., Buchwitz, M., MacDougall, M.J., Lucas, S., Filmore, D.L., Stimson, M.R., King, O.A., Calder, J.H. and Fröbisch, J. 2021. Tracking the origin and early evolution of reptiles. *Frontiers in Ecology and Evolution*, 9, 385.
3. Marchetti, L., Voigt, S., Lucas, S.G., Stimson, M.R., King, O.A. and Calder, J.H. 2020. Footprints of the earliest reptiles. *Notalacerta missousiensis* – Ichnotaxonomy, potential trackmakers, biostratigraphy, palaeobiogeography, and paleoecology. *Annales Societatis Geologorum Poloniae*, 90, 271-290.
4. Gastaldo, R., Bamford, M., Calder, J., DiMichele, W.A., Iannuzzi, R., Jasper, A., McLoughlin, S., Opluštil, S., Pfefferkorn, H.W., Rößler, R., and Wang, J. 2020. The Coal Farms of the Late Paleozoic, in *Nature Through Time*, Springer Verlag, Berlin, 317-343.
5. Calder, J. and Haine-Bennett, E. 2020. Awaiting two new UNESCO Global Geoparks for Atlantic Canada: communities in Newfoundland and in Nova Scotia embrace their Geoheritage. Atlantic Geoscience Society Annual Meeting, Atlantic Geology.
6. Calder, J.H. (Senior Author) 2019. Cliffs of Fundy Aspiring Geopark, Nova Scotia, Canada: application dossier submitted to UNESCO and the Global Geoparks Network.
7. Calder, J.H., Naylor, R.D., Waldron, J.W.F., Adams, K.S, Fedak, T., George, E.T., and Giles, P.S. 2019. Geological map of the Parrsboro area, Black Rock to Moose River, Cumberland County. Scale 1:20,000. Nova Scotia Department of Energy and Mines Map 2019-01.
8. Calder, J.H. 2018. *Island at the Centre of the World: The Geological Heritage of Prince Edward Island*. Acorn Press, 88 p.
9. Calder, J.H. 2018. The art of communicating a geopark's geology. 8th International UNESCO Conference on Global Geoparks, Madonna di Campiglio, Italy, 11-14 September, 2018
10. Calder, J.H. 2018. Island at the Centre of the World: Why PEI needed a book on their geology. Atlantic Geoscience Society, 44th Colloquium and Annual Meeting, Program with Abstracts.
11. Calder, J.H., Waldron, J.W.F., MacHattie, T., Thomas, A. and Adams, K. 2018. Recent mapping and interpretation of the enigmatic Clarke Head area, northern Nova Scotia. Atlantic Geoscience Society, 44th Colloquium and Annual Meeting, Program with Abstracts.
12. Calder, J.H. 2017. *The Joggins Fossil Cliffs, Coal Age Galápagos*. Second Edition, Formac, Halifax, 98 p.
13. Calder, J.H. and Poole, J. C. 2017. Geoheritage Sites of Nova Scotia. Nova Scotia Department of Natural Resources Open File Map 2017-032, 1:500,000.
14. Calder, J.H. 2017. Finding the International Appalachian Trail in the Atlantic Provinces, Canada: the Last Spike. *Atlantic Geology*, 43, 135.
15. Calder, J.H. 2017. Recent case studies that illustrate the need to identify, value, and protect our natural and cultural geoheritage in Atlantic Canada. *Atlantic Geology*, 43, 134-135.
16. Faulkner, S.J.M., Stimson, M.R., Calder, J.H. and Lucas, S.G. 2017. The first unambiguous pterygote ichnofossil from The Joggins Fossil Cliffs, UNESCO World Heritage Site, Joggins, Nova Scotia, Canada. *Atlantic Geology*, 43, 141.
17. Calder, J.H. 2016. The Continuing Growth of Geoparks in Canada. 7th International UNESCO Conference on Global Geoparks, Torquay, England, September 2017.
18. Calder, J. and Gloade, G. 2016. Seeing a Geopark through Indigenous and Geological Eyes: The Fundy Rift, Home of Kluscap. 7th International UNESCO Conference on Global Geoparks, Torquay, England, September 2017.
19. Calder, J.H. 2016. Recognition of Geoheritage in Nova Scotia with special reference to paleontology. Canadian Paleontology Conference, Sydney, August 2016, Proceedings No. 13.
20. Calder, J.H., Scott, A.C. and Milner, A.R. In prep. A Late Paleozoic hollow tree guild: fauna of the fossil lycopsid trees at Joggins, Nova Scotia.
21. Calder, J.H. 2015. Why we need to embrace the concept of geoheritage. Atlantic Geoscience

- Society, 41st Colloquium and Annual Meeting, Program with Abstracts, p. 14.
22. Rygel, M.C., Lally, C., Gibling, M.R., Ielpi, A., Bashforth, A.R., and Calder, J.H. 2015. Sedimentology of the type section of the Pennsylvanian Boss Point Formation, Joggins Fossil Cliffs UNESCO World Heritage Site. *Atlantic Geology*, 51, 1-43.
 23. Stimson, M.C., Calder, J.H., and Hebert, B.L. 2015. The top predator of Joggins and its tracker Donald Reid. Atlantic Geoscience Society, 41st Colloquium and Annual Meeting, Program with Abstracts, p. 40.
 24. Calder, J.H. 2014. Geoheritage sites: The starting point for Global Geoparks. 6th International UNESCO Conference on Global Geoparks, September 19-22, 2014, Saint John, New Brunswick, Canada, Abstracts Volume, 13-14.
 25. Calder, J.H. 2014. A call for cross-Canada recognition of geoheritage. Geological Association of Canada- Mineralogical Association of Canada Annual Meeting, Fredericton, 2014, Abstracts, vol. 37, p. 47.
 26. Prescott, Z.M., Stimson, M.R., Dafoe, L.T., Gibling, M.R., MacRae, A.R., Calder, J.H. and Hebert, B.L. 2014. Microbial mats and arthropleurid and tetrapod trackways in a meandering channel at the fluvial-tidal transition: A diverse Early Pennsylvanian aquatic and riparian assemblage at Joggins, Atlantic Canada. *Palaios*, 29, 624-645.
 27. Calder, J.H. 2013. Intracontinental expression of the Late Paleozoic Icehouse and its collapse in equatorial Pangea: the Maritimes Basin, Eastern Canada. Geological Society of America Annual Meeting, Denver, Colorado, Abstracts Volume.
 28. Calder, J.H. 2013. Nova Scotia's Geoheritage strategy: A transferrable model. Geological Society of America Annual Meeting, Denver, Colorado, Abstracts Volume.
 29. Calder, J.H. 2013. Establishing a Geoheritage List for Nova Scotia. In Mineral Resources Branch, Report of Activities 2013, Nova Scotia Department of Natural Resources Report ME 2014-001, 1-6.
 30. Rygel, M.C., Sheldon, E.P., Stimson, M.R., Calder, J.H., Ashley, K.T., and Salg, J.L. 2014. The Pennsylvanian Springhill Mines Formation: Sedimentological framework of a portion of the Joggins Fossil Cliffs UNESCO World Heritage Site. *Atlantic Geology*, 50, 249-289.
 31. Waldron, J.W.F., Rygel, M.C., Gibling, M.R. and Calder, J.H. 2013. Evaporite tectonics and the late Paleozoic stratigraphic development of the Cumberland basin, Appalachians of Atlantic Canada. *Geological Society of America Bulletin*, 125, 945-960.
 32. Calder, J. 2012. *The Joggins Fossil Cliffs: Coal Age Galápagos*. Nova Scotia Department of Natural Resources, 96 p.
 33. Calder, J.H., Gibling, M.R., Grey, M., Mukhopadhyay, P.K., Rygel, M.C. and Stimson, M.R. 2011. Coals and organic deposits of the Joggins World Heritage Site. Field Trip of the Annual Meeting of the Society for Organic Petrology, Halifax, 3 August, 2011, 18 p.
 34. Fielding, C.R., Allen, J.P., Alexander, J., Gibling, M.R., Rygel, M.C. and Calder, J.H. 2011. Fluvial systems and their deposits in hot, seasonal, semiarid and subhumid settings: modern and ancient examples. In S.K. Davidson, Leleu, S. and North, C.P. (editors) *From River to Rock Record: The Preservation of Fluvial Sediments and their Subsequent Interpretation*. SEPM Special Publication 97, 89-112.
 35. Calder, J.H. and DeMont, G.J. 2010. Geoheritage in Nova Scotia. In Mineral Resources Branch, Report of Activities 2009, Nova Scotia Department of Natural Resources Report ME 2010-1, 1-10.
 36. Calder, J. and Badman, T. 2009. Earth heritage: a common past ... and future. *World Heritage*, No. 52, 6-15.
 37. Keighley, D., Calder, J., Park, A., Pickerill, R. and Waldron, J. 2008. Discussion on ecology of earliest reptiles inferred from basal Pennsylvanian trackways. *Journal of the Geological Society of London*, 165, 983-987.
 38. Boon, J. and Calder, J.H. 2007. Nomination of the Joggins Fossil Cliffs for Inscription on the World Heritage List, 129 p.
 39. Calder, J.H., Dolby, G., Mukhopadhyay, P.K., Scott, A.C. and Stea, R.R. In preparation. Cretaceous lignites of Nova Scotia: composition and paleoenvironment.
 40. Calder, J.H., Falcon-Lang, H.J. and Gibling, M.R. In preparation. The fossil cliffs of Joggins. Palaeontological Association (London), Field Guide Series.
 41. Calder, J.H. 2006. 'Coal Age Galapagos': Joggins and the Lions of Nineteenth Century Geology. *Atlantic Geology*, 42, 37-51.
 42. Calder, J.H., Gibling, M.R., Scott, A.C. and Hebert, B.L. 2006. A fossil lycopsid forest succession

- in the classic Joggins section of Nova Scotia: paleoecology of a disturbance-prone Pennsylvanian wetland. *In* S.F. Greb and W.A. DiMichele (editors), *Wetlands Through Time*. Geological Society of America Special Paper 399, 169-195.
43. Rygel, M.C., Calder, J.H., Gibling, M.R., Gingras, M.K. and Melrose, C.S.A. 2006. Tournaisian forested wetlands in the Horton Group of Atlantic Canada. *In* S.F. Greb and W.A. DiMichele (editors), *Wetlands Through Time*. Geological Society of America Special Paper 399, 103-126.
 44. Calder, J.H. 2006. Geological sites and World Heritage's concept of 'outstanding universal value': weighing the worth and relevance of geological heritage. Abstracts of the Geological Association of Canada Annual Meeting, Montreal.
 45. Calder, J., Samuelson, H. and Boon, J. 2006. Learning how to tell the story of a prospective geological World Heritage Site: rejoining art and science at Joggins. Atlantic Geoscience Society Annual Colloquium, Wolfville.
 46. Calder, J.H. 2006. The Fossil Cliffs of Joggins: Towards World Heritage Designation. Nova Scotia Department of Natural Resources Open File Illustration ME 2006-001.
 47. Calder, J.H., Gibling, M.R. and Rygel, M.C. 2005. The Joggins Cliffs of Nova Scotia: Lyell & Co's "Coal Age Galapagos". Field Trip B2, Joint Meeting of the Geological Association of Canada, Mineralogical Association of Canada, Canadian Society of Petroleum Geologists, and Canadian Society of Soil Sciences, Halifax, May 2005. Atlantic Geoscience Society, 44 p.
 48. Calder, J.H., Rygel, M.C., Ryan, R.J., Gibling, M.R., Falcon-Lang, H.J. and Hebert, B.L. 2005. Stratigraphy and sedimentology of early Pennsylvanian red beds at Lower Cove, Nova Scotia, Canada: the Little River Formation with redefinition of the Joggins Formation. *Atlantic Geology*, **41**, 143-167.
 49. Davies, S.J., Gibling, M.R., Rygel, M.C., Calder, J.H. and Skilliter, D.M. 2005 The Pennsylvanian Joggins Formation of Nova Scotia: sedimentological log and stratigraphic framework of the historic fossil cliffs. *Atlantic Geology*, **41**, 115-142.
 50. Falcon-Lang, H.J. and Calder, J.H. 2005. Sir William Dawson (1820-1899): A very modern paleobotanist. *Atlantic Geology*, **41**, 103-114.
 51. Van Allen, H.E.K., Calder, J.H. and Hunt, A.P. 2005. The trackway record of a tetrapod community in a waldenian conifer forest from the Permo-Carboniferous of Nova Scotia *In* Lucas, S.J. and Zeigler, K.E. (Editors), *The Nonmarine Permian*, New Mexico Museum of Natural History and Science, Bulletin 30, p. 322-332.
 52. Calder, J.H. 2005. The Joggins World Heritage Initiative: A progress report. Nova Scotia Department of Natural Resources Report ME 2005-002.
 53. Calder, J.H. 2005. 'Coal Age Galapagos': lions of Nineteenth Century geology at Joggins. Geological Association of Canada Annual Meeting, Halifax, Abstracts vol. 30, p. 23.
 54. Calder, J.H., Scott, A.C., and Milner, A.C. 2005. The tree hollow fauna of Joggins: Ockham's Razor tells the pitfall theory. *In* North American Paleontology Convention, Halifax, Nova Scotia, Programme and Abstracts. *Paleobios*, Museum of Paleontology, University of California, Berkeley, **25**, p. 28.
 55. Gibling, M.R., Rygel, M.C., Davies, S.J. and Calder, J.H. 2005. Sequence stratigraphy of the Pennsylvanian Joggins Formation, Nova Scotia: architecture of a rapidly subsiding extensional basin. Geological Association of Canada Annual Meeting, Halifax, Abstracts vol. 30, p. 66-67.
 56. Lucas, S.G., Hunt, A.P., Calder, J.H., Reid, D., Hebert, B. and Stimson, M. 2005. Tetrapod footprints from Joggins, Nova Scotia: A template for understanding Carboniferous tetrapod footprints. Geological Association of Canada Annual Meeting, Halifax, Abstracts vol. 30, p. 116-117.
 57. Utting, J., Giles, P.S., Dolby, G. and Calder, J.H. 2005. New palynological data from Upper Viséan, Namurian and Westphalian rocks of Joggins area, Nova Scotia and New Brunswick. Geological Association of Canada Annual Meeting, Halifax, Abstracts vol. 30, p. 197.
 58. Calder, J.H. 2005. Interpretation of the Joggins Fossil Cliffs: Source Book. Nova Scotia Department of Natural Resources Open File Report 2005-0X.
 59. Calder, J.H., Baird, D., and Urdang, E.B. 2004. On the discovery of tetrapod trackways from Permo-Carboniferous redbeds of Prince Edward Island and their biostratigraphic significance. *Atlantic Geology*, **40**, 217-226.
 60. Falcon-Lang, H.J. and Calder, J.H. 2004. UNESCO World Heritage and the Joggins cliffs of Nova Scotia. *Geology Today*, **20** (4), 140-144.
 61. Rygel, M.C., Gibling, M.R., and Calder, J.H., 2004. Vegetation-induced sedimentary structures from fossil forests in the Pennsylvanian Joggins Formation, Nova Scotia. *Sedimentology*, **51**,

- 531-552.
62. Hebert, B.L. and Calder, J.H. 2004. On the discovery of a unique terrestrial faunal assemblage in the classic Pennsylvanian section at Joggins, Nova Scotia. *Canadian Journal of Earth Sciences*, **41**, 247-254.
 63. Falcon-Lang, H., Gibling, M., Rygel, M., Calder, J. and Davies, S. 2004. A dance to the music of time. *The Geoscientist*, **14**, 4-9.
 64. Falcon-Lang, H.J., Rygel, M.C., Calder, J.H. and Gibling, M.R. 2004. An early Pennsylvanian waterhole deposit and its fossil biota in a dryland alluvial plain setting, Joggins, Nova Scotia. *Journal of the Geological Society of London*, **161**, 209-222.
 65. Hunt, A.P., Lucas, S.G., Calder, J.H., van Allen, H.E.K., George, E., Gibling, M.R., Hebert, B.L., Mansky, C. and Reid, D.R. 2004. Tetrapod footprints from Nova Scotia: the Rosetta Stone for Carboniferous tetrapod ichnology. Geological Society of America Annual Meeting, Denver, Abstracts with Programs, vol. 36, p. 66.
 66. Lucas, S., Hunt, A.P., Calder, J.H., Mansky, C. 2004. The oldest tetrapod footprint ichnofauna, from the lower Mississippian Horton Bluff Formation, Nova Scotia, Canada. Geological Society of America Annual Meeting, Denver, Abstracts with Programs, vol. 36, p. 66.
 67. Calder, J.H. 2004. Geology and mineral potential of Upper Carboniferous rocks in Nova Scotia: tradition meets innovation. Nova Scotia Department of Natural Resources Report ME 2004-002.
 68. Calder, J.H. 2003. 'Coal Age Galapagos': Joggins and the Lions of Nineteenth Century Geology. Geological Society of America, Northeastern Section Annual Meeting.
 69. Calder, J.H., Mukhopadhyay, P.K. and McGregor, D.C. 2003. Devonian source rocks in the Maritimes Basin, Eastern Canada. Geological Society of America, Northeastern Section Annual Meeting.
 70. Van Allen, H.E.K. and Calder, J.H. 2003. Brule: The earliest record of gregarious tetrapod behaviour in the world's only known waldenian conifer forest. Geological Society of America, Northeastern Section Annual Meeting.
 71. Calder, J.H. and Bromley, D.S. 2003. Seismic stratigraphy of the Athol Syncline, Cumberland Basin: implications for coal and coalbed methane exploration. Nova Scotia Department of Natural Resources Open File Report No. 2003-1.
 72. Calder, J.H., Davies, S.J., Falcon-Lang, H.J., Gibling, M.R., Hebert, B.L., Rygel, M.C. and Scott, A.C. 2003. Current research at Joggins: testimony to a prospective World Heritage Site. Nova Scotia Department of Natural Resources Report ME 2003-002.
 73. Calder, J., Adams, K., Falcon-Lang, H., Gibling, M., Skilliter, D. and Williams, G. 2002. Building the scientific case for World Heritage designation of Joggins. Atlantic Geoscience Society 2002 Colloquium and Annual General Meeting, Abstracts. *Atlantic Geology*, **38**, p. 78.
 74. Calder, J.H. and Falcon-Lang, H.J. 2002. The classic Pennsylvanian locality of Joggins, Nova Scotia: Paleocology of a disturbance-prone wetland ecosystem. Geological Society of America Annual Meeting, Denver, Abstracts with Programs, vol. 34, p.211.
 75. Falcon-Lang, H.J. and Calder, J.H. 2002. Late Carboniferous dryland tropical ecosystems at Joggins, Nova Scotia. 6th European Palaeobotany and Palynology Conference, Athens, Greece, p. 80.
 76. Rygel, M., Falcon-Lang, H.J., Gibling, M.R. & Calder, J.H. 2002. Sedimentology and fossil biota of a Pennsylvanian "waterhole" deposit in a dryland alluvial plain setting, Joggins, Nova Scotia. Geological Society of America Annual Meeting, Denver, Abstracts with Programs, vol. 34, p. 18.
 77. Calder, J.H., Mukhopadhyay, P.K. and McGregor, D.C. 2002. Mid to Late Devonian organic-rich terrestrial deposits in the early fill of the Maritimes Basin, eastern Canada: composition, paleobotany and source rock potential. The Society for Organic Petrology (TSOP) Annual Meeting,, Banff, Abstracts vol. B, p. B.
 78. Calder, J.H. and Donohoe, H.V. Jr. 2002 Field Excursion to Joggins and Parrsboro, Nova Scotia. The Association of Earth Science Editors and the European Association of Science Editors Annual Meeting Field Trip, 30 p.
 79. Calder, J.H. 2002. Status report on the scientific case for designation of Joggins as a UNESCO World Heritage Site. Nova Scotia Department of Natural Resources Report ME 2002-001, p. 15-22.
 80. Calder, J.H. 2002. World Heritage designation of the Joggins 'Fossil Cliffs': a progress report. Nova Scotia Department of Natural Resources Report ME 2002-002.
 81. Gibling, M.R., Rygel, M.C., Falcon-Lang, H.J., Calder, J.H. and Davies, S.J. 2002. Joggins:

- Carboniferous river and forest landscapes. Nova Scotia Department of Natural Resources Nova Scotia Department of Natural Resources Report ME 2002-002.
82. Atlantic Geoscience Society 2001. *The Last Billion Years: A Geological History of the Maritime Provinces of Canada*. AGS, 212 p. (Chapter author).
 83. Calder, J.H., Mukhopadhyay, P.K., Ryan, R.J. and Naylor, R.D. 2001. Geology and petroleum systems of the post-Tournaisian Carboniferous of the Maritimes Basin. Program and Abstracts, Nova Scotia Oil and Gas Conference, 3 October, 2001; Petroleum Society, Canadian Institute of Mining, Metallurgy and Petroleum p. 16-17.
 84. Calder, J.H. 2001. Partnerships in paleontology in Nova Scotia: rewards to communities, enthusiasts & researchers. Geological Society of America Annual Meeting, Boston, Abstracts with Programs vol. 33.
 85. Calder, J.H. 2001. Carboniferous research in the Cumberland Basin, northern Nova Scotia. Nova Scotia Department of Natural Resources Report ME 2001-001, p. 1-4.
 86. Mukhopadhyay, P.K., Goodarzi, F. and Calder, J.H. (Editors) 2000. Energy and Environmental Issues: Geochemical and Petrological Perspectives. *International Journal of Coal Geology*, vol. 43.
 87. Hower, J.C., Calder, J.H., Eble, C.F., Scott, A.C., Richardson, J.D. and Blanchard, L.J. 2000. Metalliferous coals of the Westphalian A Joggins Formation, Cumberland Basin, Nova Scotia. *International Journal of Coal Geology*, **42**, 185-206.
 88. Mukhopadhyay, P.K.; MacDonald D.J., Harvey P.J., Boehner R.C., Calder J.H. and Ryan R. 2000. *International Journal of Coal Geology*, **43**, 137-139.
 89. Calder, J.H. 2000. Paleozoic basin research. Nova Scotia Department of Natural Resources Report ME 2000-001, p. 13-16.
 90. Calder, J.H. 2000. On the Nova Scotia Fossil Trail: a progress report on community economic development of fossil sites in Nova Scotia. Nova Scotia Department of Natural Resources Report ME 2000-001, p. 17-20.
 91. Calder, J.H. and Ogilvie, R.R. 2000. World Heritage designation for Joggins: a flagship project for Nova Scotia's natural resources. Nova Scotia Department of Natural Resources Report ME 2000-002.
 92. Calder, J.H., Davies, S.J. and Gibling, M.R. 1999. Classic Upper Carboniferous sections of the Maritimes Basin in Nova Scotia. Field trip of the XIV International Congress of the Carboniferous and Permian, Calgary, 95 pp.
 93. Calder, J.H., Gibling, M.R., Scott, A.C., Davies, S.J. and Hebert, B. 1999. Palaeoecology and sedimentology of fossil lycopsid forest successions in the classic Upper Carboniferous section at Joggins, Nova Scotia. XIV International Congress on the Carboniferous-Permian, Calgary, Program with Abstracts, p. 19.
 94. Naylor, R.D., Adams, K., Calder, J.H., Costain, T.A. and McCarthy, B.A. 1999. Progress report on geological mapping in the Parrsboro area (NTS 21H/08). Nova Scotia Department of Natural Resources Report ME 1999-001, p. 69-70.
 95. Calder, J.H. 1998. The Carboniferous evolution of Nova Scotia. In D.J. Blundell and A.C. Scott (editors) *Lyell: the Past is the Key to the Present*. Geological Society (London) Special Publication 143, 261-302.
 96. Calder, J.H., Boehner, R.C., Brown, D.E., Gibling, M.R., Mukhopadhyay, P.K., Ryan, R.J. and Skilliter, D.M. 1998. Classic Carboniferous sections of the Minas and Cumberland Basins in Nova Scotia, with special reference to organic deposits. The Society for Organic Petrology Annual Meeting Field Trip, 29-30 July, 1998. Nova Scotia Department of Natural Resources Open File Report ME 1998-5, 86 pp.
 97. Calder, J.H. 1998. The Fossil Cliffs of Joggins: towards World Heritage Designation. Nova Scotia Department of Natural Resources Open File Illustration ME-1998-001.
 98. Calder, J.H. 1998. Brule Fossil Site Project: Preserving and developing a World Class Fossil Discovery in Nova Scotia. Nova Scotia Department of Natural Resources Open File Illustration ME-1998-002.
 99. Calder, J.H. 1998. Sydney Mines: Fossil Interpretation Project. Nova Scotia Department of Natural Resources Open File Illustration ME-1998-003.
 100. Calder, J.H., Dolby, G., Finck, P., Mukhopadhyay, P.K., Scott, A.C. and Stea, R.R. 1998. Cretaceous lignites of Nova Scotia: Observations on their petrology, geochemistry and paleobotany. The Society for Organic Petrology, Annual Meeting, Abstracts with Programs.
 101. Scott, A.C., Nichols, G., Cripps, J., Collinson, M.E. and Calder, J.H. 1998. Fire ecology of

- Cretaceous vegetation in the Isle of Wight, England and Nova Scotia, Canada. Geological Society of America, Annual Meeting Abstracts with Programs, vol. 30, No. 7, p. A36.
102. Skilliter, D.M., Calder, J.H., Hower, J.C. and Roy, D.C. 1998. Composition of the Forty Brine Seam and limestone roof strata, Joggins Formation, Nova Scotia: implications for the recognition of marine influence. The Society for Organic Petrology, Annual Meeting, Abstracts with Programs.
 103. Adams, K, Calder, J.H., Costain, T.A., Giles, P.S., Naylor, R.D., Stevens, R. and Waldron, J.W.F. 1998. Geological maps for the general public B an example from the Parrsboro area. Nova Scotia Department of Natural Resources Report ME 1998-002.
 104. Calder, J.H. 1998. Buried treasure at the doorstep: community-based economic development of world-class fossil sites in Nova Scotia. Nova Scotia Department of Natural Resources Report ME 1998-002.
 105. Calder, J.H., Dolby, G., Finck, P.W., Mukhopdhyay, P.K., Scott, A.C. and Stea, R.R. 1998. Cretaceous lignites of Nova Scotia: petrography, geochemistry and paleobotany. Nova Scotia Department of Natural Resources Report ME 1998-002.
 106. Hower, J.C. and Calder, J.H. 1997. Maceral and microlithotype analysis of the Hardgrove Grindability of lithotypes from the Phalen coal bed, Cape Breton, Nova Scotia. *Minerals and Metallurgical Processing*, vol. 14, p. 49-54.
 107. Calder, J.H., Hunt, A.P. and Van Allen, H.E.K. 1997. Trackways of gregarious tetrapods from a fossil walchian forest at Brule, Nova Scotia, Canada. Symposium on ichnofacies and ichnology of the Lower Permian, Martin Luther Universitat, Halle, Germany.
 108. Mukhopadhyay, P.K., MacDonald, D.J, Calder, J. H., Hughes, J. D., and Hatcher, P.G., 1997, Relationship between methane generation/adsorption potential, micropore system, and permeability with composition and maturation BB Examples from Carboniferous coals of Nova Scotia, eastern Canada: Proc. International Coalbed Methane Symposium, Tuscaloosa, Alabama, Paper 9733, p. 183-193.
 109. Mukhopadhyay, P.K., Mac Donald, D.J., Calder, J.H., Hughes, J.D., Simoun, A. and Hatcher, P.G. 1997. Composition and maturity of Appalachian coals from Nova Scotia: their relationship to methane generation and adsorption, development of micropores and permeability. Fourteenth Annual Meeting of the Society for Organic Petrology and Twenty-sixth Annual Meeting of the Eastern Section, American Association of Petroleum Geologists, Abstracts and Program, 14, p. 73.
 110. Skilliter, D.M., Calder, J.H. and Roy, D.C. 1997. Investigation of Marine Influence in the Joggins Formation of Nova Scotia. Geological Society of America Northeastern Section, Abstracts with Programs.
 111. Calder, J.H. 1997. Carboniferous basin research: the Joggins section, Cumberland Basin. Nova Scotia Department of Natural Resources Report ME 1997-001, p. 1-5.
 112. Calder, J.H. 1997. The opportunity for community-based economic development of fossil sites. Nova Scotia Department of Natural Resources Report ME 1997-001, p. 7-12.
 113. Calder, J.H., Gibling, M.R., Eble, C.F., Scott, A.C. and MacNeil, D.J. 1996. The Westphalian D fossil lepidodendrid forest at Table Head, Sydney Basin, Nova Scotia: Sedimentology, paleoecology and floral response to changing edaphic conditions; *International Journal of Coal Geology*, vol. 31, p. 277-313.
 114. Calder, J.H., Scott, A.C., Archer, A.W., Dolby, G. and Skilliter, D.M. 1996. The fossil record of Joggins: a second look; Geological Society of America Abstracts with Programs, vol. 28, p. A106.
 115. Hower, J.C., Calder, J.H., Eble, C.F., Scott, A.C., Robertson, J.D. and Blanchard, L.J. 1996. Petrology, geochemistry and palynology of Joggins Formation (Westphalian A) coals, Cumberland Basin, Nova Scotia. American Association of Petroleum Geologists Bulletin, 80, p. 1525.
 116. Mukhopadhyay, P.K., Calder, J.H., MacDonald, D.J., Hughes, D. and Hatcher, P.G. 1996. Integrated field and analytical research of coalbed methane potential of Carboniferous Basins of Nova Scotia; Geological Society of America Abstracts with Program, vol. 28, p. A40.
 117. Calder, J.H. 1996. Progress report on Carboniferous basin research in the Cumberland Basin. Nova Scotia Department of Natural Resources Report ME 1996-001, p. 1-2.
 118. Archer, A.W., Calder, J.H., Gibling, M.R., Naylor, R.D., Reid, D.R. and Wightman, W.G. 1995. Invertebrate trace fossils and agglutinated foraminifera as indicators of marine influences within the classic Carboniferous section at Joggins, Nova Scotia, Canada; *Canadian Journal of Earth*

- Sciences*, vol. 32, p. 2027-2039.
119. Calder, J.H. 1995. Geology map of the Springhill Coalfield, Cumberland County, Nova Scotia. Nova Scotia Department of Natural Resources Map 95-1.
 120. Mukhopadhyay, P.K., Calder, J.H. and MacDonald, D.J. 1995. Evaluation of coalbed methane potential of the Stellarton Basin, Nova Scotia, Canada, based on geological, physical and geochemical properties; Intergas '95, International Unconventional Gas Symposium, University of Alabama, p. 310-320.
 121. Calder, J.H. 1995. The Brule fossil walcian forest: A new discovery from the late Carboniferous-early Permian of Nova Scotia, Canada; Program with Abstracts, 1st Walter A. Bell Memorial Symposium on Paleobotany and Coal Science: Euramerican Carboniferous Paleobotany and Coal Geology, p.20.
 122. Calder, J.H., Eble, C.F. and Scott, A.C. 1995. The Harbour Seam at Table Head, Sydney Basin: A Westpalian D mire margin and its succession to clastic wetland forest; Geological Society of America Abstracts with Programs, vol. 27, p. A141.
 123. Calder, J.H. and Scott, A.C. 1995. Euramerican fossil lepidodendrid forests from Canada and Britain; Program with Abstracts, 1st Walter A. Bell Symposium on Paleobotany and Coal Science: Euramerican Carboniferous Paleobotany and Coal Geology, p.18-19.
 124. Calder, J.H., van Allen, H.E.K., Adams, K.G. and Grantham, R.G. 1995. Tetrapod trackways in a fossil *Walchia* forest: a new discovery from the early Permian of Nova Scotia; *Atlantic Geology*, vol. 31, p. 42.
 125. Mukhopadhyay, P. K., MacDonald, D. J. and Calder, J. H., 1995, Evaluation of coalbed methane potential of the Stellarton Basin, Nova Scotia, Canada, based on geological, physical, and geochemical properties: Proceedings International Gas Conference (INTERGAS '95), Tuscaloosa, Alabama, Paper 9505, 311-320.
 126. Scott, A.C. and Calder, J.H. 1995. New vistas on Carboniferous climate and weather; Proceedings of the Yorkshire Geological Society.
 127. Calder, J.H. 1995. New geology map of the Springhill Coalfield. Nova Scotia Department of Natural Resources Report ME 1995-002.
 128. Calder, J.H. 1994. The impact of climate change, tectonism and basin hydrology on the formation of Carboniferous tropical intermontane mires: the Springhill Coalfield, Cumberland Basin, Nova Scotia; *Palaeogeography, Palaeoclimatology, Palaeoecology*, vol. 106, p. 323-351.
 129. Calder, J.H. and Gibling, M.R. (Editors) 1994. The Euramerican Coal Province: Controls on tropical peat accumulation in the Late Paleozoic. *Palaeogeography, Palaeoclimatology, Palaeoecology*, vol. 106, 351p.
 130. Calder, J.H. and Gibling, M.R. 1994. The Euramerican Coal Province: Controls on Late Paleozoic peat accumulation; *Palaeogeography, Palaeoclimatology, Palaeoecology*, vol. 106, p. 1-21.
 131. Scott, A.C. and Calder, J.H. 1994. Carboniferous fossil forests; *Geology Today*, vol. 10, no. 6, p. 213-217.
 132. Calder, J.H. and Gibling, M.R. 1994. Duration and periodicity of controls on coal formation: a Carboniferous perspective; Geological Society of America Abstracts with Programs vol. 26, p A95.
 133. Scott, A.C. and Calder, J.H. 1994. The Joggins fossil forests; Scottish Paleontological Society.
 134. Calder, J.H. 1994. New developments in coal and coalbed methane in Nova Scotia: King Coal stages a comeback. Nova Scotia Department of Natural Resources Report ME 1994-002.
 135. Calder, J.H. 1993. Evolution of a groundwater-influenced peat-forming ecosystem in a piedmont setting: the No. 3 seam, Springhill coalfield, Cumberland Basin, Nova Scotia; Geological Society of America Special Paper 286, p. 153-180.
 136. Reed, B.C., Nance R.D., Calder, J.H. and Murphy, J.B. 1993. The Athol Syncline: tectonic evolution of a Westpalian A-B depocenter in the Maritimes Basin, Nova Scotia; *Atlantic Geology*, vol. 29, p. 179-186.
 137. Calder, J.H., Gillis, K.S., MacNeil, D.J., Naylor R.D. and Watkins-Campbell, N. 1993. *One of the Greatest Treasures: The Geology and History of Coal in Nova Scotia*; Nova Scotia Department of Natural Resources Information Series No. 25.
 138. Calder, J.H., Mukhopadhyay, P.K. and Hatcher, P.G. 1993. Methane generating capabilities of Carboniferous coals, Cumberland Basin: geological and physicochemical constraints; Geological Association of Canada Abstracts vol. 18, p. A.
 139. Eble, C.F., Calder, J.H. and Hower, J.C. 1993. A palynologic, petrographic and geochemical

- comparison of the Manchester coal bed (Central Appalachian Basin, USA) and the No. 3 coal bed (Cumberland Basin, Nova Scotia); Geological Society of America Abstracts with Program.
140. Lyons, P.C., Cross, A.T., Gao, Z., Gillis, K.S., Calder, J.H., Zodrow, E.S., and Congdon, R.D. 1993. Discovery of in-situ carbonate petrifications (coal balls) in the Foord seam (Westphalian C, Upper Carboniferous), Stellarton, Nova Scotia, Canada: implications for origin of sulphur in the Foord seam; AAPG 1993 Eastern Section Meeting Programs with Abstracts, pp. 33-34.
 141. Mukhopadhyay, P.K., Calder, J.H. and Hatcher, P.G. 1993. Geological and physicochemical constraints on methane and C₆ hydrocarbon generating capabilities and quality of Carboniferous coals, Cumberland Basin, Nova Scotia, Canada; Proceedings of the Tenth Annual International Pittsburgh Coal Conference, University of Pittsburgh, 1074-1079.
 142. Reed, B.C., Nance, R.D., Calder, J.H. and Murphy, J.B. 1993. The Athol Syncline: Tectonic evolution of a Westphalian B-C depocenter in the Maritimes Basin, Nova Scotia; Atlantic Geoscience Society Annual Colloquium, Halifax.
 143. Scott, A.C. and Calder, J.H. 1993. Studies on Upper Carboniferous fossil forests in Nova Scotia, Canada; abstracts of the Linnean Society Paleobotany Specialist Group, p. 2.
 144. Mukhopadhyay, P.K., Calder, J.H. and Hatcher, P. G. 1993. Methane generation from coal beds in the Cumberland Basin. Nova Scotia Department of Natural Resources Report ME 1992-004.
 145. Gibling, M.R., Calder, J.H., Ryan, R., Van de Poll, H.W., Yeo, G.M. 1992. Late Paleozoic drainage patterns in Atlantic Canada; *Canadian Journal of Earth Sciences*, vol. 29, p. 338-352.
 146. Calder, J.H., Gibling, M.R. and Naylor, R.D. 1992. Allocyclic constraints on coal formation in Late Carboniferous basins of Maritime Canada; Geological Society of America Abstracts with Programs, vol. 24, p. A31.
 147. Calder, J.H. 1992. Response of tropical continental peat formation to climate change and tectonism: examples for the Late Carboniferous of Euramerican and Holocene of Africa; Geological Association of Canada Abstracts vol. 17, p. A14.
 148. Goodarzi, F. and Calder, J.H. 1992. The influence of groundwater sources on the geochemistry and petrography of Carboniferous coals from the Springhill coalfield, Nova Scotia; Geological Association of Canada Abstracts vol. 17, p. A41.
 149. Mukhopadhyay, P.K., Calder, J.H., Gillis, K., MacNeil, D.J. and Naylor, R.D. 1992. Use of organic petrology to study the genesis of coal facies of selected seams from Nova Scotia, Canada; Geological Association of Canada Abstracts vol. 17, p. A81.
 150. Reed, B.C., Calder, J.H., Murphy, J.B. and Nance, R.D. 1992. Structural controls on the development of the Cumberland coal basin, Nova Scotia; Geological Association of Canada Abstracts vol. 17, p. A94.
 151. Gibling, M.R., Calder, J.H. and Naylor, R.D. 1992. Carboniferous Coal Basins of Nova Scotia; Field Guide, Excursion C-1, Geological Association of Canada Annual Meeting, Wolfville, Atlantic Geoscience Society, 84p.
 152. Naylor, R.D., Calder, J.H., Martel, T.A. and Ryan, R.J. 1992. Controls on formation of Upper Carboniferous coals in the intermontane Stellarton and Cumberland Basins of Atlantic Canada; Proceedings of the Canadian Coal and Coalbed Methane Geoscience Forum, Parksville, British Columbia, p. 365-397.
 153. Calder, J.H., Mukhopadhyay, P.K., MacDonald, D.J. and Naylor, R.D. 1992. Coalbed methane in the Cumberland basin: status of geological and geochemical data. Nova Scotia Department of Natural Resources Report ME 1992-004.
 154. MacNeil, D.J., Naylor, R.D., MacKenzie, B. and Calder, J.H. 1992. Regional and mine-scale projects of the Coal Resources Section in the Sydney Coalfield. Nova Scotia Department of Natural Resources Report ME 1992-004.
 155. Calder, J.H., Gibling, M.R. and Mukhopadhyay, P.K. 1991. Peat formation in a Westphalian B piedmont setting, Cumberland Basin, Nova Scotia: implications for the maceral-based interpretation of rheotrophic and raised paleomires; *Bulletin de la Société géologique de France*, vol. 8, p. 139-154.
 156. Kalkreuth, W.D., Marchioni, D.L., Calder, J.H., Lamberson, M.N., Naylor, R.D. and Paul, J. 1991. The relationship between coal petrography and depositional environments from selected coal basins in Canada; *International Journal of Coal Geology*, vol. 19, p. 21-76.
 157. Mukhopadhyay, P.K., Hatcher, P.G. and Calder, J.H. 1991. Hydrocarbon generation of coal and coaly shale from fluvio-deltaic and deltaic environments of Nova Scotia and Texas; *Organic Geochemistry*, vol. 17, p. 765-783.
 158. Ryan, R.J., Boehner, R.C. and Calder, J.H. 1991. Lithostratigraphic revision of the Upper

- Carboniferous to Lower Permian strata in the Cumberland Basin, Nova Scotia and the regional implications for the Maritimes Basin in Atlantic Canada; *Canadian Society of Petroleum Geologists Bulletin* vol. 39, p. 289-314.
159. Calder, J.H. 1991. Controls on Westphalian peat accumulation: the Springhill Coalfield, Nova Scotia; Ph.D. thesis, Dalhousie University, 310p.
 160. Calder, J.H. and Gibling, M.R. 1991. Time and processes in the development of Late Carboniferous peat-forming ecosystems. *Geological Society of America Abstracts with Programs*, vol. 21, p. A85-86.
 161. Mukhopadhyay, P.K., Calder, J.H. and Esterle, J.S. 1991. Gelification and early diagenesis in peat: implications for the precursors of vitrinite maceral types; *Proceedings of the Eighth Annual Meeting of The Society for Organic Petrology*, Lexington.
 162. Calder, J.H. 1991. Controls on ancient peat accumulation in the Springhill Coalfield: implications for coal exploration in the Cumberland Basin. Nova Scotia Department of Mines and Energy Report ME 1991-005.
 163. MacDonald, D.J., Naylor, R.D., Calder, J.H., Harvey, P.J. and McPhee, M.S. 1991. Coalbed methane: an important resource for Nova Scotia. Nova Scotia Department of Mines and Energy Report ME 1991-005.
 164. Reed, B.C., Calder, J.H., Murphy, J.B. and Nance, R.D. 1991. Kinematic analysis of Late Paleozoic deformation in the western Cumberland Basin. Nova Scotia Department of Mines and Energy Report ME 1991-005.
 165. Calder, J.H., Kalkreuth, W., Lamberson, M.N., Marchioni, D.L. and Naylor R.D. 1990. The relationship between coal petrography and depositional environments: a status report on Canadian research; *Seventh Annual Meeting of The Society of Organic Petrology*, Calgary; Abstracts and Program, p. 29.
 166. Ryan, R.J., Boehner, R.C., Deal, A. and Calder, J.H. 1990. Cumberland Basin geology, Amherst, Springhill and Parrsboro, Cumberland County; Nova Scotia Department of Mines and Energy Map 90-12.
 167. Calder, J.H. and Ryan, R.J. 1990. Stratigraphy of the Springhill area. Nova Scotia Department of Mines and Energy Open File Illustration 1990-005.
 168. Ryan, R.J., Boehner, R.C., Calder, J.H. and Dolby, G. 1990. New palynological age dates, zonations and stratigraphy in the Permo-Carboniferous strata of the Cumberland Basin, Nova Scotia; *Atlantic Geology*, vol. 26, p. 186.
 169. Ryan, R.J., Boehner, R.C., Calder, J.H., Deal, A.J. and Carter, D.C. 1990. Geology maps of the Cumberland Basin, Colchester, Cumberland and Pictou Counties, Nova Scotia. Nova Scotia Department of Mines and Energy Report ME 1990-003.
 170. Calder, J.H. 1989. Interpretation of ancient peat-forming ecosystems: an example from the Westphalian B (early Middle Pennsylvanian), Cumberland Basin, Nova Scotia, Canada; *Geological Society of America Abstracts with Programs*, vol. 21. p. A27.
 171. Calder, J.H. 1989. The paradox of coal in an active depocenter: the Westphalian of the Cumberland Basin; *Atlantic Geology*, vol. 25, p. 156.
 172. Calder, J.H., Gillis, K.S., MacNeil, D.J., Naylor R.D. and Smith, W.D. 1989. Current coal geoscience research at the Nova Scotia Department of Mines and Energy; *Advances in Western Canada Coal Geoscience Forum Proceedings*, Alberta Research Council Information Series No. 103, p. 357.
 173. Calder, J.H. 1989. Allogenic constraints on sites of peat-forming ecosystems in a Late Carboniferous intermontane basin. Nova Scotia Department of Mines and Energy Report ME 1989-001, p. 1-3.
 174. Calder, J.H. and Gillis, K.S. 1989. Preliminary results of deep coal drilling at South Athol, Cumberland Basin. Nova Scotia Department of Mines and Energy Report ME 1989-003, p. 5-7.
 175. Calder, J.H., Gibling, M.R., Ryan, R. and Yeo, G. 1988. Pennsylvanian drainage in the Maritimes Basin of Eastern Canada and its tectonic implications; *Geological Association of Canada Program with Abstracts*, vol. 13, p. A16.
 176. Calder, J.H. and Bromley, D.S. 1988. Structure and correlation of coal-bearing strata of the Athol Syncline, Cumberland Basin: results of recent seismic studies. Nova Scotia Department of Mines and Energy Report ME 1988-003, p. 9-13.
 177. Ryan, R.J., Calder, J.H. and Boehner, R.C. 1988. Pennsylvanian sediment dispersal trends in the Cumberland basin of Nova Scotia. Nova Scotia Department of Mines and Energy Report ME 1988-001, p. 165-169.

178. Ryan, R.J., Deal, A.J., Calder, J.H. and Boehner, R.C. 1988. Preliminary geological field map of the Cumberland Basin, Colchester and Cumberland Counties, Springhill and Apple River areas (21 H/09-1 to 18 and 21 H/10-1 to 16) 1:10 000. Nova Scotia Department of Mines and Energy Open File Map ME 1988-042.
179. Ryan, R.J. Calder, J.H. Donohoe, H.V. Jr. and Naylor, R.D. 1987. Late Paleozoic sedimentation and basin development adjacent to the Cobequid Highland Massif, Eastern Canada; *in* C. Beaumont and A.J. Tankard (editors), *Sedimentary Basins and Basin-Forming Mechanisms*; Canadian Society of Petroleum Geology Memoir 12, P. 299-309.
180. Calder, J.H. and Bromley, D.S. 1987. Preliminary interpretation of seismic stratigraphy of Late Carboniferous strata in the Athol Syncline, Cumberland Basin: implications for coal exploration. Nova Scotia Department of Mines and Energy Report ME 1987-005, p. 5-9.
181. Calder, J.H., Naylor, R.D., Gillis, K.S. and MacNeil, D.J. 1987. History of migration of a channel belt in the offshore Prince resource block, Morien Group, Nova Scotia. Nova Scotia Department of Mines and Energy Report ME 1987-005, p. 11-17.
182. Calder, J.H. 1987. Tectono-sedimentary evolution of the Cumberland Group in the Cumberland coal basin: implications for coal exploration. . Nova Scotia Department of Mines and Energy Report ME 1987-001, p. 5-7.
183. Ryan, R.J., Calder, J.H., Donohoe, H.V., Jr. and Naylor, R.D. 1987. Upper Paleozoic sedimentation and basin development adjacent to the Cobequid Highlands massif, Eastern Canada. Nova Scotia Department of Mines and Energy Report ME 1987-001, p. 197.
184. Calder, J.H. 1986. The Westphalian B Springhill coalfield of Nova Scotia: processes of coal formation at an alluvial basin margin; Abstracts of the International Symposium on Coal and Coal-Bearing Strata, Royal Holloway and Bedford New College (University of London), 1986.
185. Ryan, R.J., Calder, J.H., Donohoe, H.V. Jr. and Naylor R. 1986. Permo-Carboniferous sedimentation, lithofacies variations and basin development of the Cumberland Basin of Eastern Canada and Worldwide Analogues, Programs with Abstracts, Atlantic Geoscience Society; p. 102.
186. Boehner, R.C., Calder, J.H., Carter, D.C., Donohoe, H.V., Ferguson, L, Pickerill, R.K. and Ryan, R.J. 1986. Carboniferous-Jurassic sedimentation and tectonics: Minas, Cumberland and Moncton Basins, Nova Scotia and New Brunswick; Atlantic Geoscience Society Special Publication No. 4, 122p.
187. Calder, J.H. 1986. Stratigraphic and coal-related studies in the Springhill Coalfield, Cumberland Basin. Nova Scotia Department of Mines and Energy Report ME 1986-001, p. 3-5.
188. Calder, J.H. 1986. Preliminary observations on the sedimentology of selected sites within the Debert-Kemptown coal basin. Nova Scotia Department of Mines and Energy Report ME 1986-001, p. 7-13.
189. Calder, J.H. 1985. *Coal in Nova Scotia*. Nova Scotia Department of Mines and Energy Information Series No. 8, 79 p.
190. Calder, J.H. 1985. Claremont Formation; Cumberland Group; Riversdale Group; *in* G.L. Williams, L.R. Fyffe, R.J. Wardle, S.P. Colman-Sadd and R.C. Boehner (eds.), *Lexicon of Canadian Stratigraphy*, vol VI, Atlantic Region, Canadian Society of Petroleum Geologists, Calgary; pp. 77, 94, 310.
191. Calder, J.H. 1985. Summary report of Rodney Seam investigations, Springhill Coalfield, 1980-84. Nova Scotia Department of Mines and Energy Open File Report ME 1985-005, 15 p.
192. Calder, J.H. and Naylor, R.D. 1985. Coal exploration in alluvial fan-lacustrine settings: the Salts Springs and Roslin districts of the Cumberland Basin. Nova Scotia Department of Mines and Energy Report ME 1985-001, p. 5-9.
193. Calder, J.H. 1984. Depositional environment of the Westphalian B Cumberland Basin coals of Springhill, Nova Scotia; *Maritime Sediments and Atlantic Geology*, vol. 2, p. 92.
194. Calder, J.H. 1984. Structural features of the Springhill Coalfield with notes on the geology and mining history (second draft). Nova Scotia Department of Mines and Energy Open File Report ME 1984-007, 57 p.
195. Calder, J.H. 1984. Preliminary geological map of the Cumberland coal basin (1:250 000). Open File Map ME 1984-001.
196. Calder, J.H. 1984. Sedimentology studies within the Springhill Coalfield, Cumberland County, Nova Scotia. Nova Scotia Department of Mines and Energy Report ME 1984-001, p. 1-6.
197. Naylor, R.D., Calder, J.H. and Chesal, S. 1984. Springhill Coalfield diamond-drill program. Nova Scotia Department of Mines and Energy Report ME 1984-001, p. 7-10.

198. Calder, J.H. 1983. Structural features of the Springhill Coalfield with notes on the geology and mining history (first draft). Nova Scotia Department of Mines and Energy Open File Report ME 578, 57 p.
199. Calder, J.H. 1983. Report on Number 3 Seam investigation, Novaco Open Pit Mine, Springhill Coalfield, Nova Scotia. Nova Scotia Department of Mines and Energy Open File Report ME 575, 30 p.
200. Calder, J.H. and Naylor, R.D. 1983. Studies in the Springhill Coalfield. Nova Scotia Department of Mines and Energy Report ME 1983-001, p. 5-7.
201. Calder, J.H. 1983. Geological investigations and depositional studies within the Springhill Coalfield. Nova Scotia Department of Mines and Energy Information Series ME 006, p. 97-99.
202. Calder, J.H. 1982. Cumberland coal Basin. Nova Scotia Department of Mines and Energy Report ME 1982-001, p. 5-8.
203. Calder, J.H. 1981. Recent interpretations of the geology of the Springhill coalfield; *Maritime Sediments and Atlantic Geology*, vol. 17, p. 144.
204. Calder, J.H. 1981. Coal exploration in the Springhill Coalfield. Nova Scotia Department of Mines and Energy Report ME 1981-001, p. 7-14.
205. Calder, J.H. and Somers, G.H. 1981. Geological mapping of coal-bearing Upper Carboniferous strata in the Oxford area. Nova Scotia Department of Mines and Energy Report ME 1981-001, p. 15-17.
206. Calder, J.H. 1980. Depositional environment and megascopic petrography of the Foord seam, Pictou coalfield; Geological Association of Canada Abstracts vol. 5, p. 44.
207. Calder, J.H. 1980. Geological appraisal of coal resources in the Rodney Seam of the Springhill Coalfield, Nova Scotia. Nova Scotia Department of Mines and Energy Open File Report ME 456, 39 p, 23 maps
208. Calder, J.H. 1980. Coal exploration in the Springhill Coalfield. Nova Scotia Department of Mines and Energy Report ME 1980-001, p. 41-50.
209. Calder, J.H. 1979. Effects of subsidence and depositional environment on the formation of lithotypes in a hypautochthonous coal of the Pictou Coalfield; Nova Scotia Department of Mines Paper 79-6, 23p.
210. Calder, J.H. 1979. Coal Inventory Survey, Cumberland Basin. Nova Scotia Department of Mines Report ME 1979-001, p. 25-29.
211. Smith, E. and Calder, J.H. 1979. Coal Inventory Survey, Pictou Coalfield. Nova Scotia Department of Mines Report ME 1979-001, p. 35-38.
212. Calder, J.H. 1979. Deposition and lithology of the Foord Seam, Pictou Coalfield. Nova Scotia Department of Mines Report ME 1979-001, p. 39-41.
213. Calder, J.H. 1979. Geology and resource evaluation of the Foord Seam, Strellarton District, Pictou Coalfield. Nova Scotia Department of Mines Open File Report ME 416, 19 p.
214. Calder, J.H. 1978. Megascopic petrography and economic geology of the Foord Seam open pit mine, Pictou Coalfield, Nova Scotia. Nova Scotia Department of Mines Open File Report ME 624, 24 p.
215. Potter, W.G., Smith, E.W., Gillis, K.S. and Calder, J.H. 1978. Coal Inventory Survey. Nova Scotia Department of Mines Report ME 1978-003, p. 7-14.
216. Calder, J.H. 1978. Structural geology and economic geology of the southern Scott Seam reserves, Drummond No. 2 Colliery, Westville, Nova Scotia. Nova Scotia Department of Mines Open File Report ME 1978-002, 14 p.
217. Calder, J.H. 1965. The Great Dying. Quarterly Newsletter of the Brooke Bond Tea Co., Saint John, New Brunswick.

Signed: John Hugh Calder

Dated: 27 August, 2021