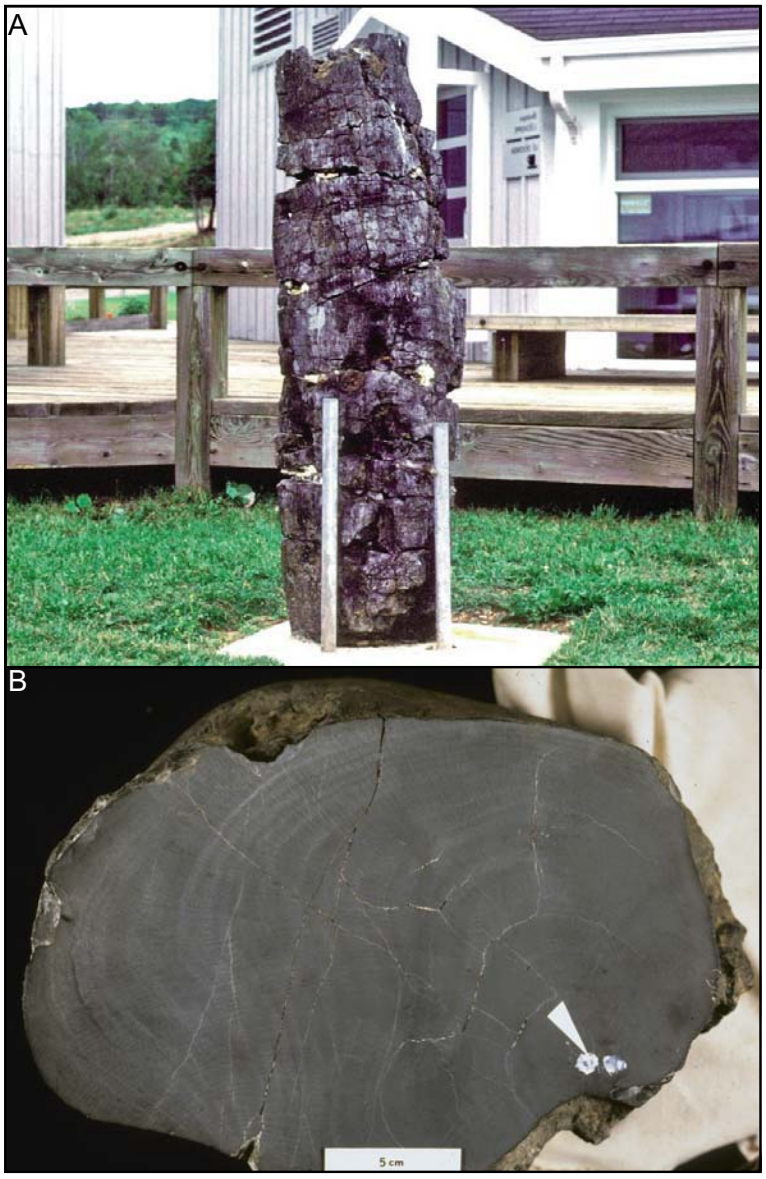
SUPPLEMENTAL FIGURE 1



Supplemental Figure 1. A, Fragment of a permineralized *Prototaxites* trunk displayed at Parc de Miguasha, from the Lower Devonian Bordeaux Quarry, near Cross Point, Quebec, Canada, approximately 1.5 m high. B, Portion of a large permineralized *Prototaxites* trunk in cross section showing the concentric banding of peripheral accretionary growth. White arrow indicates center of the axis. Specimen from Bordeaux Quarry (Parc de Miguasha collection).

METHODS

Samples for isotopic and organic analyses were obtained from permineralized fossils and powdered with mortar and pestle. Powdered samples for isotopic analysis were treated with 5% HCl to eliminate the possibility of carbonate contamination. All tools were cleaned by sonication in hexane for 15 minutes before use, except for the delicate sample boats for isotopic analyses which were sonicated in hexane for 1 minute. Fossils were washed with hexane but not sonicated. The surfaces of fossils and all equipment were rinsed with ethanol and allowed to air dry after the collection of each sample.

Isotopic measurements were made with a Finnigan Delta Plus Excel isotope ratio mass spectrometer with a CE Instruments, NA 2500 series, elemental analyzer and a Conflo II interface. The gas chromatograph oven was set to 60° C for the fossil samples. Acetanilide standards were only included at the beginning of each set of analyses (followed by 2 or 3 blank sample boats) and at the end after all fossil samples had been run in order to eliminate the possibility that trace residue from the carbon-rich acetanilide standards might contaminate fossil samples.

Pyrolysis Gas Chromatography-Mass Spectrometry (GC-MS) was performed with an Agilient 6890 GC interfaced with an Agilent 5972 quadrupole mass spectrometer. Samples were pyrolyzed using a CDS-1000 pyroprobe where 0.5-3 mg samples were heated to 715 °C with a heating rate of 500 °C/sec under helium at the injection port of the GC. Chromatography was performed with a 50 % phenyl polydimethylsiloxane stationary phase column.

Maps of elemental composition in standard fossil thin sections obtained using a JEOL 8900 electron microprobe with five wavelength dispersive spectrometers. Electron probe measurements interact only with the sample surface, are no more than semi-quantitative, and are intended only to illustrate confinement of carbon to the organic tube walls and absence of

dispersed carbonate (which would recognizably dwarf organic carbon concentrations if present). Analyses were performed at 15 KeV. Following modifications of standard procedures described previously (Boyce et al. 2001), samples were aluminum coated and an increased electron beam current of approximately 300 nA was employed in order to enhance detection of organic carbon.

Reference cited:

Boyce, C.K., Hazen, R.M., and Knoll, A.H., 2001, Nondestructive, in situ, cellular-scale mapping of elemental abundances including organic carbon in permineralized fossils: Proceedings of the National Academy of Sciences, v. 98, p. 5970-5974.

TABLE 1. SAMPLES AND CARBON ISOTOPIC COMPOSITION

Age*	Locality†	Specimen§	Curation#	$\delta^{13}C$ (‰)
Frasnian/ Famennian	Kettle Point (ON)	*Prototaxites southworthii*	HBM 55852	-28.99
				-28.83
Frasnian/ Famennian	Kettle Point (ON)	*Prototaxites southworthii*	USNM 510202	-27.87
				-26.49
Frasnian/ Famennian	Kettle Point (ON)	*Callixylon newberryi*	USNM (unnumbered)	-27.79
			Southworth collection	-27.68
Frasnian/ Famennian	Kettle Point (ON)	*Callixylon newberryi***	USNM (unnumbered)	-27.51
			Southworth collection	-27.27
L.Emsian/ E.Eifelian	Baxter State Park (ME)	*Prototaxites* sp.	USNM (unnumbered)	-26.56
			Hueber collection	-26.56
L.Emsian/ E.Eifelian	Baxter State Park (ME)	*Prototaxites* sp.	USNM (unnumbered)	-27.82
			Hueber collection	-27.07
Emsian	Pin Sec Point (NB)	*Prototaxites loganii*	USNM 510099	-15.69
				-15.83
Emsian	Pin Sec Point (NB)	Coal (of cf. *Sawdonia*)	USNM (unnumbered)	-23.23
			Hueber locality 91-10	-23.84
M./L.Emsian	Gaspé peninsula, North Shore (QC)	*Prototaxites loganii*	USNM (unnumbered)	-28.75
			Hueber collection	-28.10
M./L.Emsian	Gaspé peninsula, North Shore (QC)	*Prototaxites loganii*	USNM (unnumbered)	-28.61
			Hueber collection	-28.76
M./L.Emsian	Gaspé peninsula, North Shore (QC)	*Prototaxites loganii*	USNM (unnumbered)	-26.59
			GSC locality†† 5388	-26.59
M./L.Emsian	Gaspé peninsula, South Shore (QC)	*Prototaxites loganii*	USNM (unnumbered)	-26.60
			Hueber locality 66-8	-26.62
M./L.Emsian	Gaspé peninsula, South Shore (QC)	*Prototaxites loganii*	USNM 510202	-18.88
				-19.07
M./L.Emsian	Gaspé peninsula, South Shore (QC)	*Prototaxites loganii*	USNM (unnumbered)	-15.64
			SUNYB†† 1146.C-1.1	-15.68
M./L.Emsian	Gaspé peninsula, South Shore (QC)	*Psilophyton princeps*	USNM (unnumbered)	-24.57
			Hueber locality 66-8	-22.58
L.Pragian/ E.Emsian	Gaspé peninsula, South Shore (QC)	Coal (of cuticularized axes)	USNM (unnumbered)	-24.32
			Hueber locality 66-6	-24.23

*E-Early, M-Middle, L-Late.

†ME-Maine, United States; NB-New Brunswick, ON-Ontario, QC-Quebec, Canada.

§All specimens silica permineralized (including Pin Sec Point coal) except for the unmineralized Gaspé coal and the Gaspé *Psilophyton,* which is permineralized in carbonate.

#All specimens loaned from USNM-Smithsonian National Museum of Natural History or HBM-Harvard Botanical Museum.

**Wood specimen with some fungal decay.

††GSC-Geological Society of Canada; SUNYB-State University of New York, Binghamton.