

Alberta Palaeontological Society

Exploring for Algal Stromatolites in North America and Africa – the Journey Continues

Main Speaker: Tako Koning, Geological Consultant, APS and CEGA Member

Location: Room B108, Mount Royal University

Time: 7:30 PM, MST, April 21, 2023

Abstract

This presentation is based on my exploring for algal stromatolites in North America and Africa. Accordingly, this can be described as a personal “journey” which hopefully will continue for another decade or two. The presentation begins with a brief overview of the occurrences of stromatolites over time – from the Precambrian to present day. The overview will be mainly about stromatolites which grew in marine environments but also to be discussed will be stromatolites which flourished in nonmarine lacustrine environments. Included also is a short review of the world-renown stromatolites which continue to thrive in Sharks Bay, western Australia.

The presentation will then provide detail on the five locations where I have been fortunate to view stromatolites in outcrop.

1.) Great Slave Lake, Northwest Territories. A half century ago, in the summer of 1971 while involved in a mining exploration program, I discovered stromatolites on an island in the East Arm of Great Slave Lake near Fort Reliance. These stromatolites occurred in unmetamorphosed limestones dated as 1.8 billion years age which is Precambrian-Middle Proterozoic in age. This led to my abiding interest in stromatolites.

2.) Angola, West Africa. My next discovery of stromatolites was in 2005 in southern Angola where the stromatolites occur in Precambrian-Upper Proterozoic limestones age dated at 1.1 billion years old. These occur in the Lubango Plateau just west of the city of Lubango. The stromatolites have been little studied due to logistical challenges and the impact of Angola’s long civil war from 1975 to 2002. An exposure of Upper Cretaceous thrombolites discovered in 2014 along the coast of Angola will also be shown. Thrombolites are similar to stromatolites since they are microbial accretionary structures which were formed in shallow water by cyanobacteria and have a non-laminated clotted internal fabric.

3.) Gatineau, Quebec. In 2018, I learned in the literature about well-exposed Ordovician-age stromatolites located across the river from Ottawa in Gatineau, Quebec. This led to my travelling there to find those stromatolites. The Gatineau stromatolites have been described in the literature as “one of the best-known displays of stromatolites in Canada and certainly in an urban area”.

4.) Helen Lake, Banff National Park. In 2020 I had the opportunity to hike up into the alpine to Helen Lake and view some splendidly exposed Middle Cambrian stromatolites. The stromatolites cover an area of about 800 meters in length by 10 meters in width. These have been age dated at 510 million years of age. Despite their age and the impact of alpine weathering, these stromatolites are breathtakingly well preserved. Their elliptical shape reflects the dominant tidal currents at the time of deposition in the shallow Middle Cambrian sea.

5.) Waterton National Park. In 2022, I visited beautifully exposed Precambrian stromatolites in Red Rock Canyon in Waterton Provincial Park. These stromatolites are found in the Siyeh Formation and are dated as 1.3 billion years old.

I will also provide my “bucket list” of locations of stromatolites which I still hope to visit which include the thrombolites of Cambrian age at Flowers Cover, Newfoundland as highlighted by Wayne Laturnas’ photograph in the January, 2019 CSPG calendar. I also hope to see the 2.0 billion years old stromatolites in the Belcher Islands, a remote archipelago in the southeast part of Hudson’s Bay.

Biography

Tako Koning is Holland-born but Canada-raised with a B.Sc. in Geology in 1971 from the University of Alberta and a B.A. in Economics in 1981 from the University of Calgary. After a fifty-year career in the oil industry, he is semi-retired and living in Calgary.

He leads field trips for the Alberta Palaeontological Society (APS) which visits the fossils-rich Ordovician Tyndall Stone which clads various buildings in downtown Calgary, Kensington and at SAIT (Southern Alberta Institute of Technology). For the APS he also leads every summer a field trip which studies the K-Pg mass extinction boundary at Knudsen’s Farm near Huxley, Alberta. Tako also leads similar field trips for the Canadian Energy Geoscience Association (formerly Canadian Society of Petroleum Geologists). He also volunteers for the Alberta Wilderness Association (AWA) through their Adventures for Wilderness program by leading an annual summer field trip to visit orphan oil and gas wells and abandoned oil and gas producing infrastructure in southern Alberta. As most Albertans are aware of, the issue of orphaned and long-time suspended oil and gas wells is a major issue for Alberta. For the AWA he also annually leads a field trip north of Cochrane to view two magnificent glacial meltwater channels. Attendees also have the opportunity to view the multi-company rapidly expanding Lochend area Upper Cardium oil production play whose success is dependent on multi-stage hydraulic fracking. The field trip also views the environmental impact of some mega-size gravel mining operations in the area. Tako volunteers by being a board member of the Calgary Justice Film Festival and he writes monthly restaurant reviews for the Rosedale Reporter, the publication of the Rosedale Community Association where he lives in Calgary.



Stromatolite found in 1971 near Great Slave Lake, North West Territories.
Unmetamorphosed limestone dated at 1.8 billion years old.

Information

This event is presented jointly by the Alberta Palaeontological Society (APS), the Department of Earth and Environmental Sciences at Mount Royal University, and the Paleontology Division of the Canadian Society of Petroleum Geologists (CSPG). To present a talk in the future, please telephone APS Coordinator Harold Whittaker at 403-286-0349 or contact programs1@albertapaleo.org. You can also contact the CSPG Palaeontology Division Chair Jon Noad at jonnoad@hotmail.com. You can also visit the APS website for confirmation of event times and upcoming speakers: <http://www.albertapaleo.org/>.