Manitoba
Sustainable Development

Western Parks

Kettle Stones Provincial Park

Kettle Stones

Kettle Stones Provincial Park is on the north side of the Kettle Hills, in the Swan-Pelican Provincial Forest. Visitors are greeted by the fragrances of jack pine, spruce, trembling aspen, juniper, birch and ground cedar. Only 4 km2 in size, the park features sandstone concretions known locally as the kettle stones. Its open areas, or meadows, have Manitoba's and possibly Canada's, most northwestern patches of big bluestem - a grass associated with the tall grass prairie. Located 70 km (45 mi.) northeast of the town of Swan River, the park's purpose is to:

- protect the kettle stones and preserve mixed-wood and prairie habitats;
- provide a largely undisturbed backcountry setting for nature-oriented recreational activities such as hiking; and
- promote public appreciation and understanding of the kettle stones and the park's other unique natural features.

The kettle stones' long development spans millions of years. Scientists believe that the stones formed in three stages beginning in the Cretaceous Period, between 70 - 135 million years ago. The first stage took place near the shore of a shallow sea that covered the area during the late Cretaceous Period. Sand from rivers and shoreline erosion, and other marine sediments, were

deposited in horizontal layers on the seabed which through time became a stratum (layer) of sandstone (Figure 1.1). Known as the Swan River Formation (SRF), this stratum is 100 m (metres) thick in places.

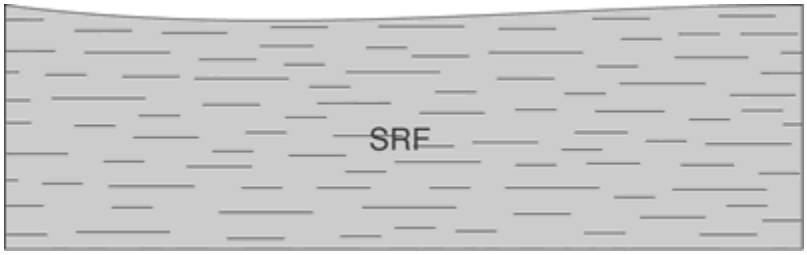

Figure 1.1: 70-135 million years ago: Swan River Formation (SRF) sand and clay deposited in a shallow sea.

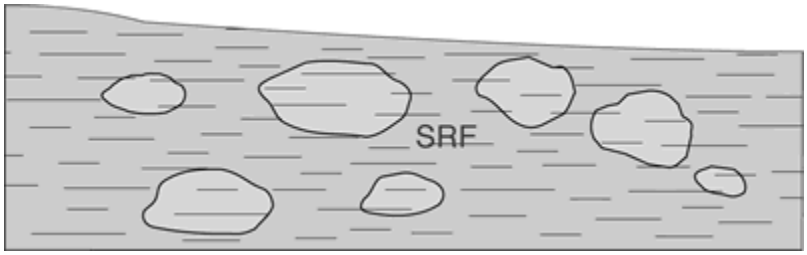

Figure 1.2: 1-70 million years ago: Sandstone concretions formed by chemical precipitation of calcium carbonate.

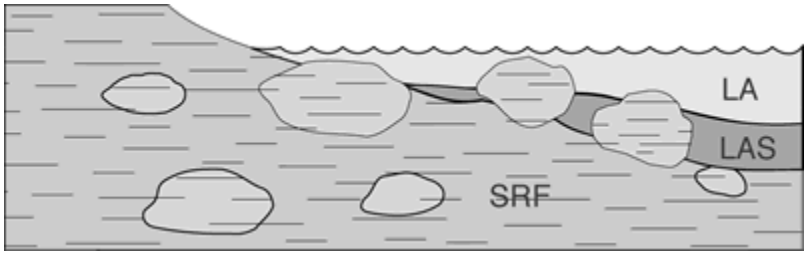

Figure 1.3: 8,500 years ago: Sandstone concretions emerge from surrounding Swan River Formation (SRF) by Lake Agassiz wave action and Lake Agassiz sand (LAS) was deposited.

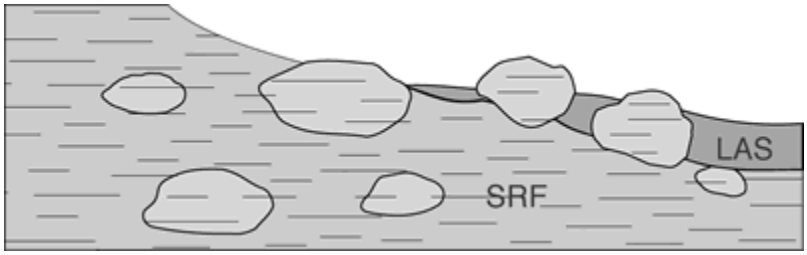

Figure 1.4: Present surface: Following the drainage of Lake Agassiz the land surface emerged and was colonized by vegetation.

Figure 1: Formation and emergence of the kettle stones, based on concepts suggested by Gaywood Matile, Manitoba Geological Survey.

During the second stage, regional uplift raised the stratum above the level of the sea. At this time, percolating groundwater cemented loose bits of sand and sediment together to form concretions (Figure 1.2). Sand was cemented around a nucleus or centre-an unknown base, possibly a fossil. The "glue" or adhesive was a lime solution, derived from the calcium carbonate of sea animal skeletons. In this process called chemical precipitation, the concretions maintained the layered appearance found in the original stratum.

In the third and final stage-about 8,500 years ago-glacial ice of the last Ice Age had retreated into northern Manitoba. Lake Agassiz modified the land to look much like it does today. During the final drainage of Lake Agassiz, beaches, offshore bars and spits formed where the kettle stones were held in the soft sandstone. Waves crashed against the sandstone shore and eroded the loose material around them (Figure 1.3). The harder concretions or kettle stones were left behind with Lake Agassiz sand (LAS). Being firm and round, the stones weren't noticeably altered by the waves. Since then, wind, rain, heat and cold have weathered those that are above ground level. Some appear to be partly above the ground surface and an unknown number of others may be still completely buried (Figure 1.4). The remaining original sandstone stratum is about 10 m below the present sandy surface and extends through all of southwestern Manitoba.

Kettle stones in meadow

Wave erosion by Lake Agassiz has left a unique landscape, with the kettle stones propped up like sentinels overlooking the Manitoba Lowlands to the east. While the origin of the name kettles is unknown, it is generally believed that they are so named because they resemble household kettles or kettle drums.

Kettle stone with birch tree

The park is the only known location of such concretions in Manitoba. They're concentrated in a 300-m (400-yard) strip that runs from northeast to southwest. Some are in meadows and others are amid the area's mixed forest. Some actually support fully grown trees. The stones range in size from 45 cm to 4.5 m (18 in. to 15 ft.) in diameter, with most between 2.5 and 3.5 m (8 to 12 ft.) in height.

Although these kettle stones have not been weighed, the one at the Swan River Town Visitor Information Centre measures 2.5 m (8 ft.) in diameter, and is an estimated 12.6 metric tonnes (14 tons). This is as much as eight sports cars! It was discovered in 1966 by workmen trenching a new storm sewer in town, at a depth of 3.5 m (11.5 ft.)- possibly where it was originally formed. It was raised and placed on display at the town offices.

The Kettle Hills have been, and continue to be, used by local First Nations people for traditional resource harvesting-hunting, trapping, and gathering berries and plants for food and ceremonial use. Kettle stones themselves are considered to be sacred.

Noted on early maps as "Kettle Hill" this prominent high point near the southeast shore of Swan Lake, rises 83.5 m (274 ft.) above the lake level. The foot of the slope is a short distance south of the shore; the slope to the top is a series of six "steps" or terraces-beach ridges-formed by Lake Agassiz. The kettle stones are on the second highest of the terraces, about 61 m (200 ft.) above the lake level. D. B. Dowling's map, prepared for the Geological Survey of Canada in 1889, shows a "pack trail," or bridle path, that crossed Kettle Hill. This land route connected Swan Lake and the communities of Duck Bay and Pine Creek, on Lake Winnipegosis.

Kettle stone

Getting There

Visiting Kettle Stone Provincial Park is not as straightforward as driving to your favourite campground. From the town of Swan River only a portion of the roadway is paved and/or gravelled. A lengthy part of the route east of PR 268 is impassable when wet. Even when dry, access should not be attempted in a family vehicle such as a van or sedan. Before a planned visit, call the Swan River district office for the latest road conditions.

Topographic maps that show the kettle stones area are: Lenswood map sheet 63 C/7, 1:50,000 and Swan Lake map sheet 63 C, 1:250,000. Both may be purchased from the Land Information Map Sales office.

Visitors should be aware that *there are no services or facilities on-site*. There are no washroom facilities, no drinking water and no picnic tables.

"D. B. Dowling photo, September 3, 1889. Rounded Bosses of Dakota Sandstone. On a terrace 1053 ft. A.T. on the north side of Kettle Hill, Manitoba. Lat. N. 52° 21'30", Long. W. 100° 37'." From *Report on North-Western Manitoba with Portions of the Adjacent Districts of Assiniboia and Saskatchewan.* J.B. Tyrrell: Geological Survey of Canada; Ottawa, 1892. More than a hundred years after this photo was taken, can you find the kettle stones that were photographed?

Things to See and Do

After a tour of the kettle stones, take part in the different recreational and nature-oriented activities that are available at both Duck Mountain Provincial Park and Porcupine Provincial Forest. Enjoy a weekend at the beach; hiking and wildlife viewing in the forests; boating and fishing on the many lakes; and skiing or snowmobiling on winter trails. Pitch a tent at either basic or serviced campsites, or have a picnic in the summer. To experience local cultural heritage, view artifacts, and learn about Swan Valley's history, visit the Swan Valley Museum (open during the summer months) in Swan River. At the end of July, take in the rodeo at Swan River's Northwest Round-up and Exhibition.

Your Help

The kettle stones are a unique part of our natural heritage, protected as a provincial park. Please do your share to protect them for those who follow. Take only pictures. Leave only footprints.

While at the park, please observe the following:

- Camping and open fires are not permitted.
- Stay on existing roads.

- Please do not climb, damage or write on the rocks. Since their final emergence 8,500 years ago only weather has altered their appearance. Report all vandalism to the Swan River District Office.

Kettle stone

Acknowledgements

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