

SUPERIOR SEA CAVES

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Minnesota Speleology Monthly
Volume 23, Number 3

There was an eerie feeling of floating, a bit like walking on water. The transition was unnerving; skiing from the opaque security of snow and pack ice onto the crystal clear window of new formed ice, exposing the black depths of Lake Superior beneath. The occasional stress crack slicing a vertical plane through the one to one half meter thick viewing lenses allowed an assessment of safety. It also provided a reminder of the transient nature of the expanse of ice extending outward over four to eight kilometers.

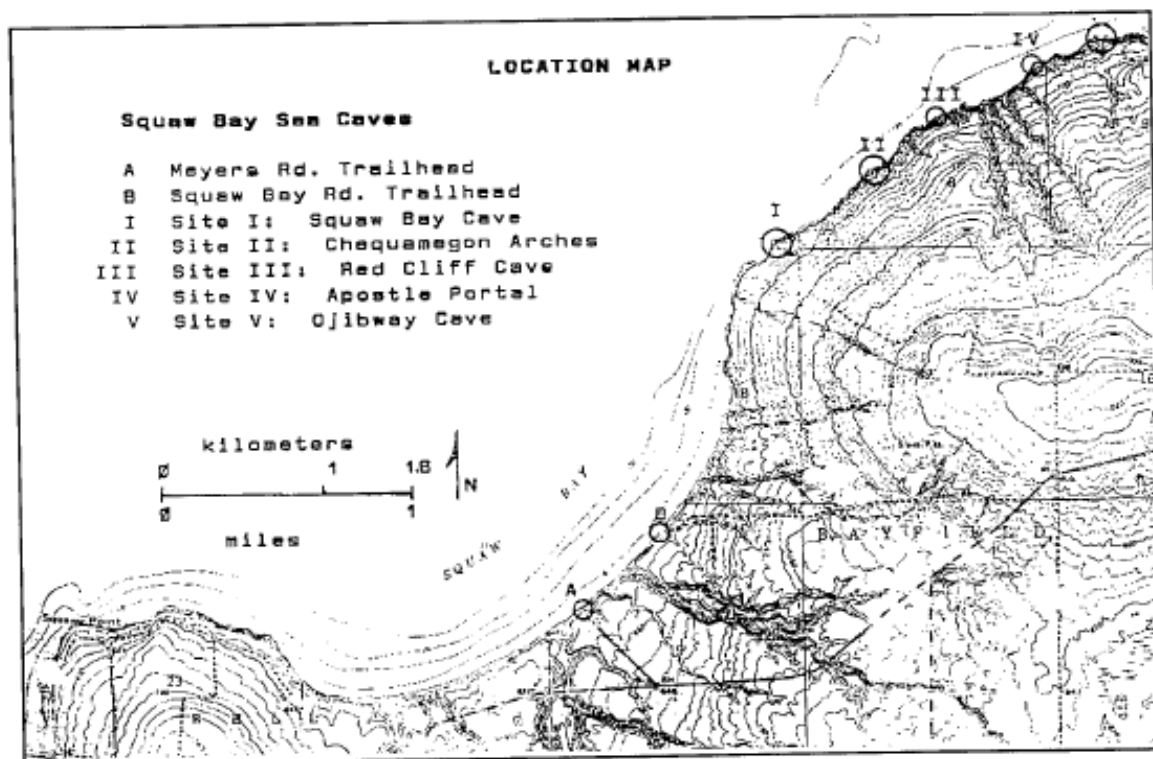
The dark profiles of the inner Apostle Islands stood in stark contrast to the enveloping white and the distant blue band of open water scoring the horizon. We skied on, beneath the red sandstone escarpment marked by bright, multihued ice flows and the deep shadows of portals and arches. The 10- to 25-meter overhanging barrier of the Red Cliffs prevented escape from the lake for over 4½ kilometers. Yet, it was the inviting shadows which had drawn us there and captured our attention.

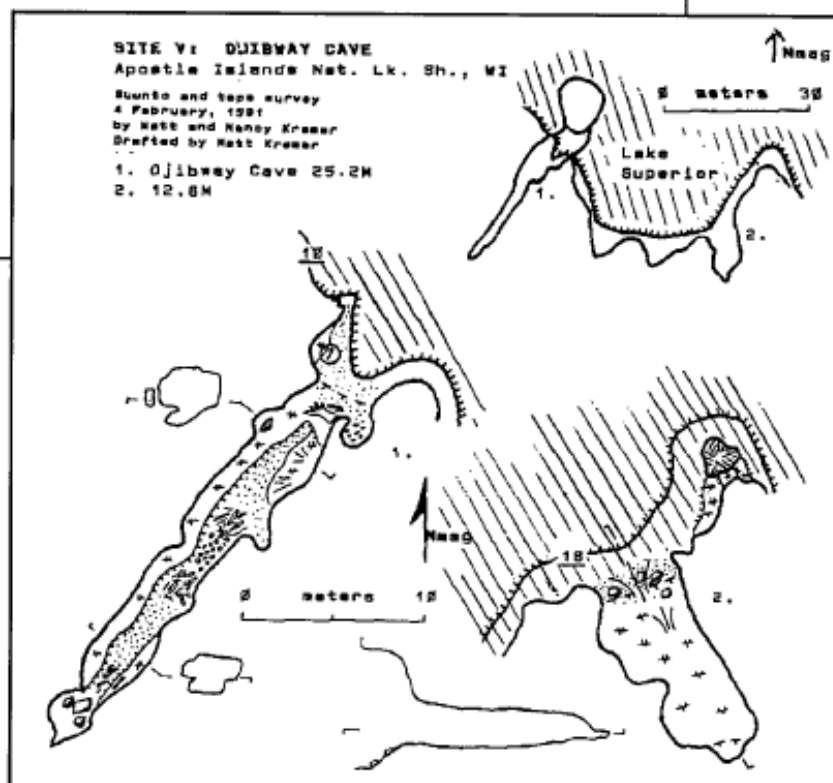
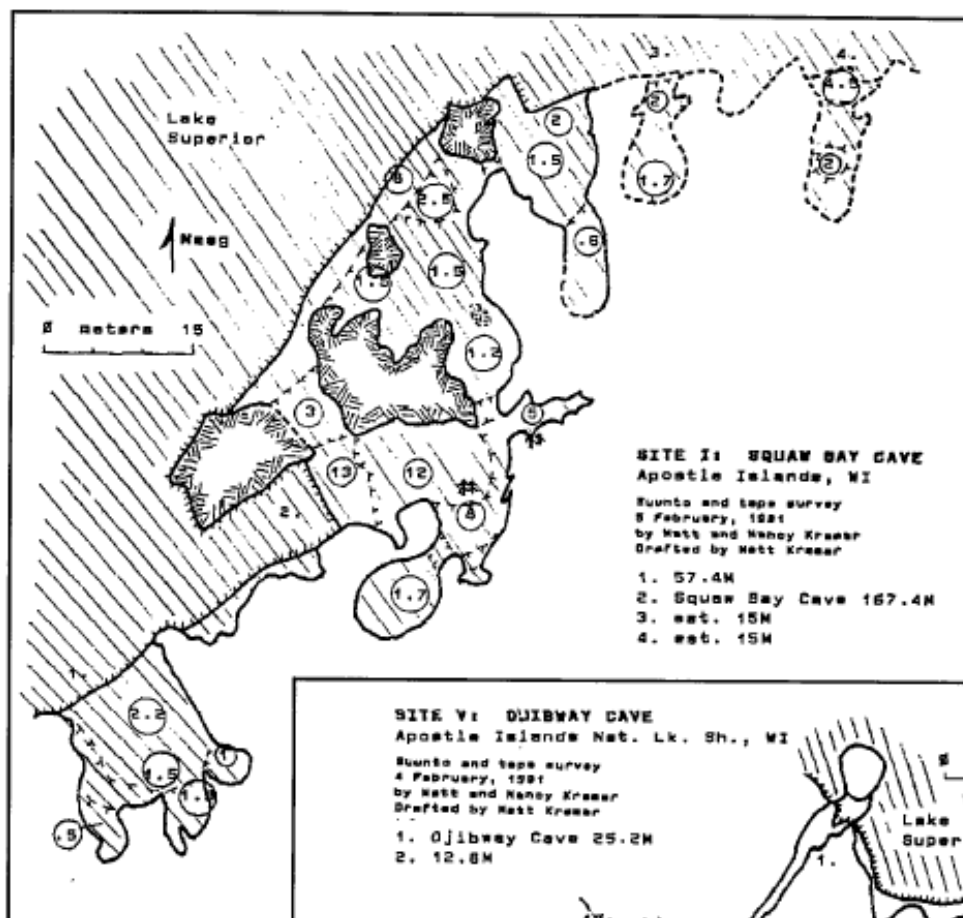
The Red Cliffs of Apostle Islands National Lake Shore and its well known "Squaw Bay Sea Caves" lie within the Devils Island Sandstone, a member of the Chequamegon Formation. The caves are accessed from Squaw Bay at the western end of the Apostle archipelago. Access is across ice in winter or by boat in summer. The largest of the caves is reached about 700 meters from the west end of the cliff band. Within a few hundred meters of this the tracks of tourists diminish and end. The caves however, continue for the remainder of the escarpment.

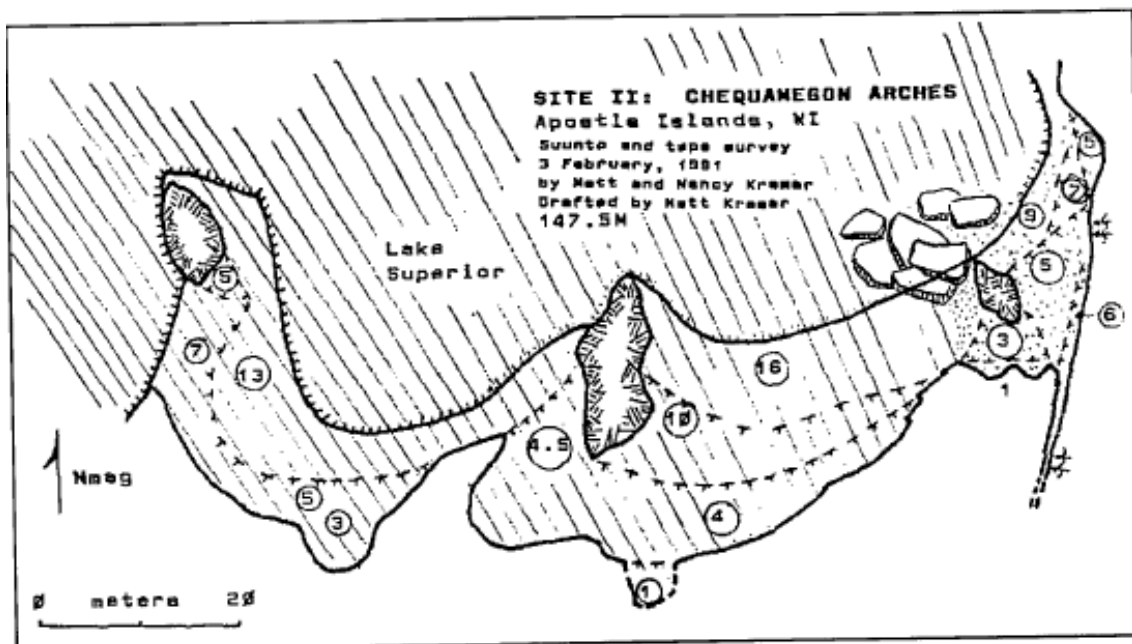
When we were planning a winter camping trip to the Apostles we contacted Gary Soule of the Wisconsin Grotto for information on the caves. He informed us that there was no record of any maps or surveying in the Grotto files for the sea caves. The National Park Service also reported having no specific information. We thus decided to include some surveying in our trip.

There exist varying criteria for what constitutes a "cave." Definition varies from requiring a dark zone to anything that allows one to get out of the rain. By the former, few (if any) of the lateral caves would qualify; most receding only into twilight zones. On the other hand the cliffs are undercut most of their 4½ kilometers and there are many overhangs and shallow depressions or shelters. We elected to survey and locate some of the more significant and interesting caves at representative sites along the Red Cliffs. It was not an exhaustive, comprehensive effort. Our three days would not allow this. To be truly comprehensive a continuous 4½-kilometer survey would be required, so extensive and varied are the caves, shelters, and arches.

Given the nature of the cave entrances and of the overhanging cliffs themselves, designating the dripline for survey length purposes was at times rather arbitrary. We attempted to utilize the perceived "apparent" entrance. In the Chequamegon







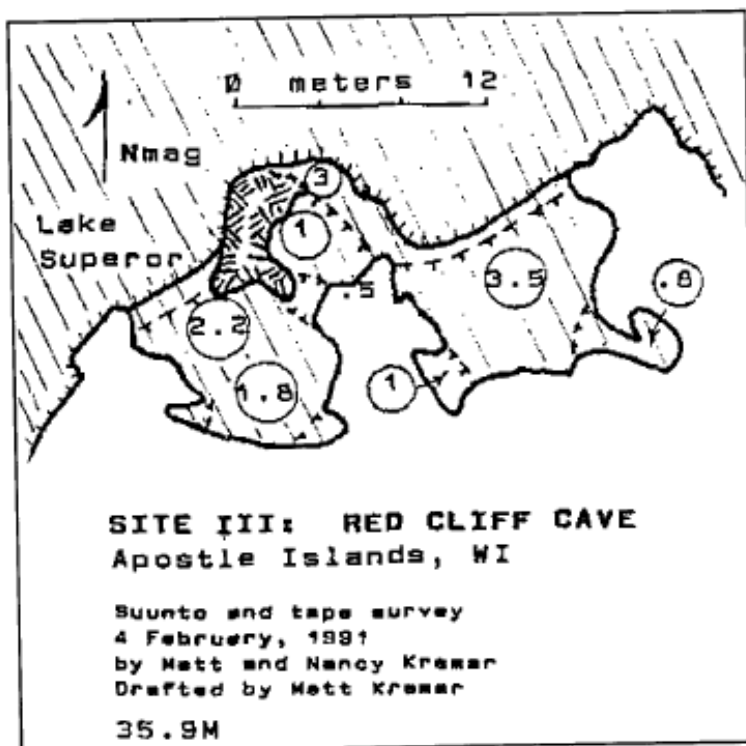
Arches the survey length makes no attempt to differentiate "cave" vs "overland" survey. Another difficulty encountered was determining exact wall data due to ice coating. In one side passage of Squaw Bay Cave it was determined the actual rock passage was five to seven meters wide yet the accumulated ice narrowed it to less than a meter. Based on U.S. Geological Survey data the water depth at the mouth of the caves varies from two to eight meters. For our purposes we used the ice surface as the floor, with the rare exception of exposed sand or rock floor. Only the Site Five Caves were entirely dry. It should also be noted that we could find no specific names for any of the caves either from locals or from the National Park Service. Obviously these caves have been known and visited for many years and by many people (likely from the early Ojibway to today's tourist). We have assigned names based on features or in use for the general area for the purpose of description and clarity.

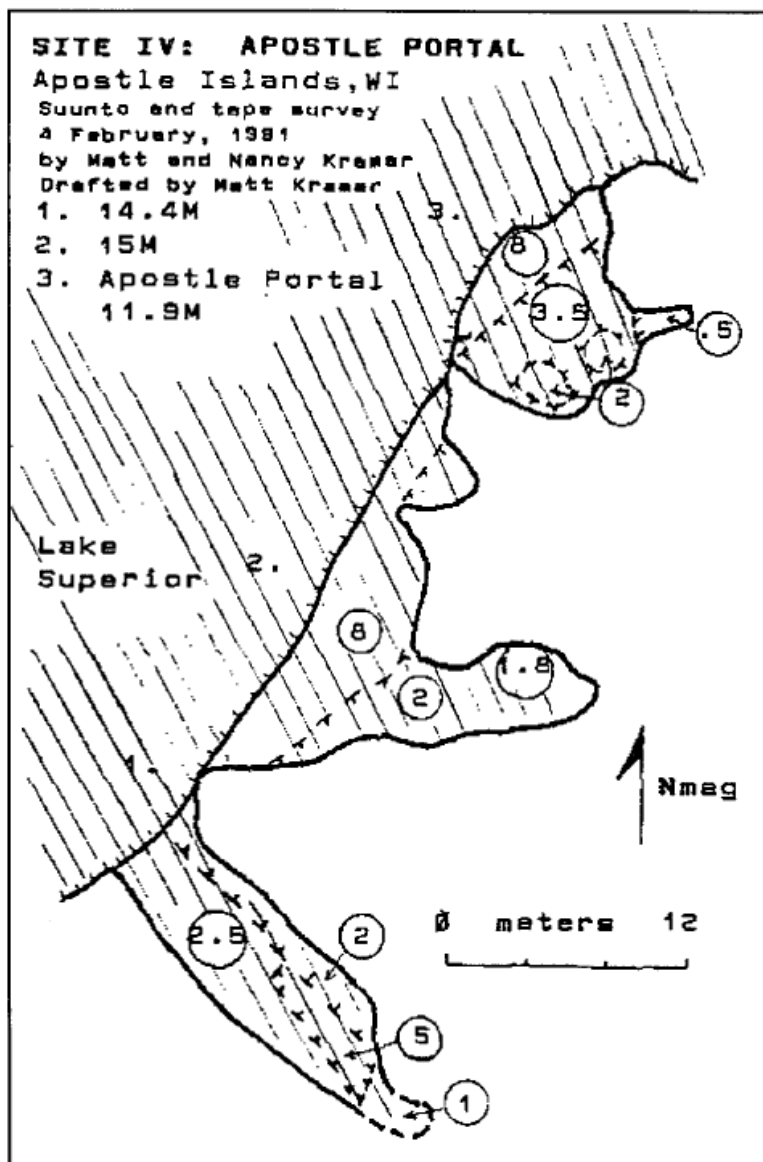
With daytime temperatures in the upper 40s and low 50s we were more concerned with spring camping conditions, that is rain and melting ice, than those of winter. Rain posed no threat but ice conditions were a concern both under ski and overhead. Under the thaw conditions, ice chunks varying from small annoyance size to several cubic meter slabs frequently separated from the rock walls and roofs. The refrozen cracks and the stress cracks in the lake ice began to open over the three days. On our third day, after a late afternoon lunch basking on foam pads in a solar con-

vection cove, Matt stood up, leisurely stretched, took two steps, and was greeted by a resounding, grating 'crrruunchhhh.' A large floe floated free of the surrounding half meter thick crack-laced ice. It gently bobbed and rocked under body weight. Although more a surprise than a peril

we decided to finish surveying the site, take a few photos, and save the rest for a colder day.

The ice also provided the caves with features not seen by summer visitors. A variety of ice formation existed along the cliffs and within the caves. Most of the ice forms from ear-





lier season splashing and freezing of lake water. This is at times several meters thick. Another source is from seeps in the rock. The seep sources often provided a spectrum of color in the ice due to the same organic and inorganic material that in places stains the sandstone.

There were few seeps in the caves themselves, but many along the cliffs, often forming flows 10 to 14 meters high by 3 to 30 meters long. The myriad of ice stalactites, stalagmites, columns, and curtains within the caves were a delight. These tended to be more prevalent in cave entrance rooms between one and three meters high. It appeared that these chambers received more splashing and freezing, forming a coating variable in thickness and texture. Subsequent thawing/freezing from warmth in the rock as well as the air causes the development of ice formations.

Upon approaching Chequamegon Arches, a bat was observed flitting about. We were able to determine that it was roosting high (and out of sight) in a joint. Species identification wasn't made and no other bats were noted. In Ojibway Cave, several types of lichens were seen. Although the sandstone contains no fossils (according to the park naturalist), cross bedding and ripple marks were an interesting feature of several of the caves.

For us it was a nice way to enjoy the best of several activities without the pitfalls: winter camping/ski touring without bashing the brush, caving without getting muddy and sore, and seldom needing a light. And if weekends are avoided, or if one is willing to go just a bit further than the usual tourist, it can be done in peaceful isolation. Bring along some favorite foods, a flask of Cherry Kiwi, and a significant other; it could just convince you that being a casual old duffer isn't so bad after all.