



## PROPOSED EXPANSION OF NAHANNI NATIONAL PARK RESERVE

### The Nahanni North Karst

#### THERE IS NOTHING LIKE IT IN THE WORLD

The Nahanni North Karst is a strange terrain of underground rivers, caves, sinkholes, natural rock bridges and isolated rock towers. Dr. Derek Ford, Emeritus Professor of Geography and Geology at McMaster University, is a worldwide expert on karst landscapes. He considers the Nahanni North Karst the most interesting and varied collection of karst topography anywhere in Canada or the United States. In fact, the Nahanni North Karst has many distinctive features found nowhere else in the world.

#### WHY IS THE NAHANNI NORTH KARST SO SPECIAL?

It is rare to have such a large number, variety and density of karst landform features within a relatively small geographic area. Part of the reason the Nahanni North Karst is still intact is that some areas of the eastern Greater Nahanni Ecosystem have not been scoured or crushed by glaciers for more than 350,000 years. This has allowed extended periods of time for the slow and gradual formation of karst landscape features in this sub-arctic environment.



*(Above) Third Polje, a karst corrosion plain that can flood and convert to a lake, August 2003. Photo: Douglas Tate, Parks Canada.*

*(Left) Third Polje, seen from the air in July 2006. The polje has flooded and become a lake. Photo: Charles Blyth, Parks Canada.*



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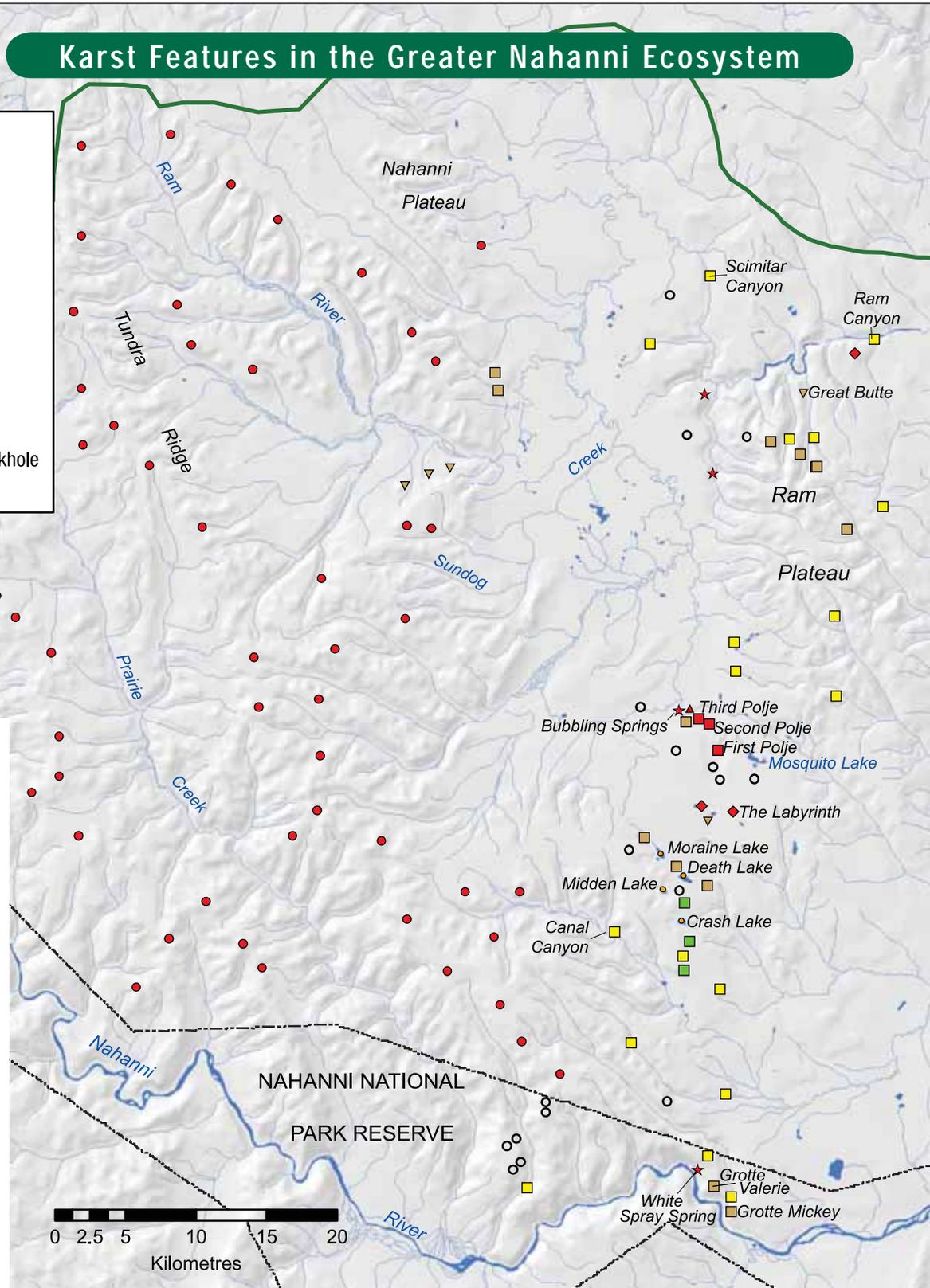
# Karst Features in the Greater Nahanni Ecosystem

## Legend

- ▲ Arch
- Canyon
- Caves
- ◆ Corridor karst
- Karst lake
- Karst pavement
- ▽ Karst tower
- Polje (karst corrosion plain)
- Remnant karst plateau
- Sinkhole, cenote, collapse sinkhole
- ★ Spring



The Ram River slices through the bedrock on its way through Scimitar Canyon, June 2003. Photo: Douglas Tate, Parks Canada.



## WHAT IS “KARST”?

Karst landforms are created when water reacts with soluble rock over long periods of time. With the right conditions, water flowing either on the surface or underground will dissolve—at least partially—the bedrock underneath. The Nahanni North Karst’s bedrock is mostly made up of carbonate

limestone and dolomite and, over time, many unique and fragile landforms have been created by the dissolution of this soluble bedrock. Because of the significant amount of time it takes to create them, karst landforms are considered non-renewable resources that are vulnerable to disturbance.



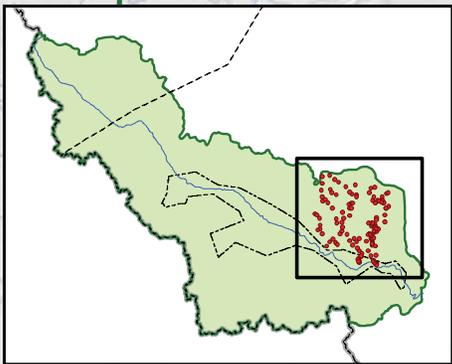
*Karstic limestone pavements in an old forest fire burn. Though it looks eerily like an abandoned road, it is actually a fragile natural formation.  
Photo: Douglas Tate, Parks Canada.*



*(Above) Framed by sheer limestone cliffs, Death Lake is a deep, water-filled sinkhole.  
Photo: Douglas Tate, Parks Canada.*

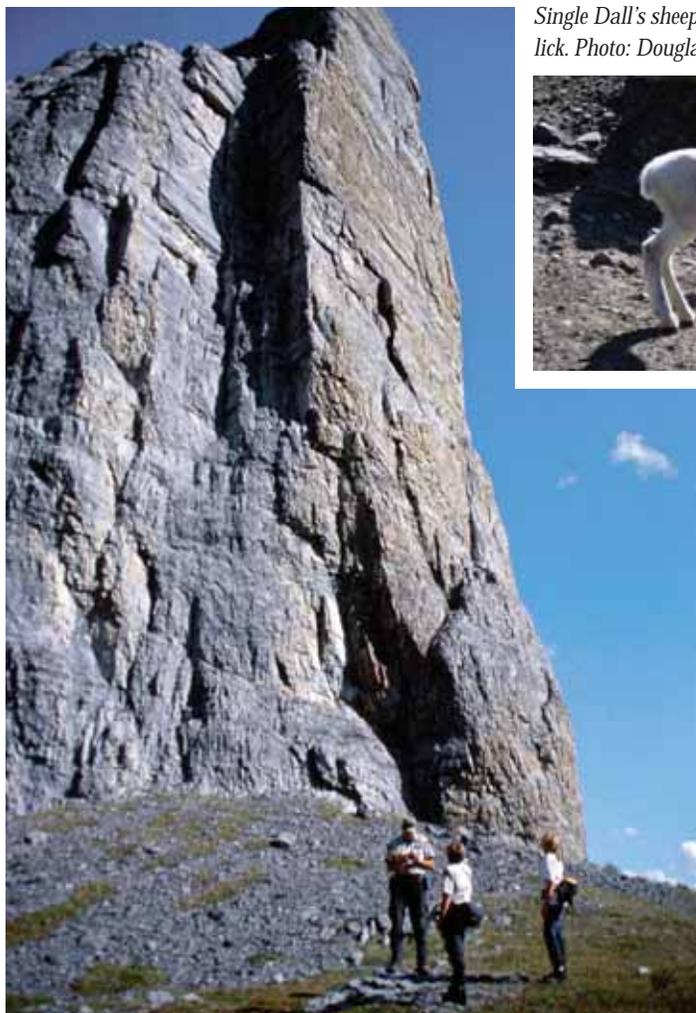
*(Right) A Dall's sheep skeleton, preserved for over a thousand years within Grotte Valerie.  
Photo: Derek Ford.*

*(Below Right) A researcher studies an extensive ice passage inside the cave network of Grotte Valerie.  
Photo: Derek Ford.*



## **SPECIAL FEATURES OF THE NAHANNI NORTH KARST**

- remarkable caves such as Grotte Valerie, Grotte Mickey and Igloo Cave, with delicate calcite and perennial ice stalagmites, and remains of Dall's sheep preserved in permafrost;
- extensive limestone pavements with a fragile alvar ecology;
- magnificent karst canyons, in which all water sinks underground except overflow during floods;
- labyrinth-like karst corridors with sinkholes and caves, making it the largest known karst terrain in the world;
- innumerable sinkholes and solution shafts that range from the size of a person to hundreds of metres long and more than one hundred metres deep;
- impounded lakes and karst corrosion plains (poljes) that flood and convert to lakes for months at a time;
- vast karst springs—three of them—that supply groundwater year-round to the South Nahanni and Ram rivers.



Dramatic cliffs form the walls of Death Canyon. Photo: Douglas Tate, Parks Canada.

Single Dall's sheep lamb at Prairie Creek mineral lick. Photo: Douglas Tate, Parks Canada.



John Weaver, a biologist with the Wildlife Conservation Society Canada, examines lush plant growth near the entrance to a cave used by Dall's sheep. Photo: Steve Catto, Parks Canada.

## NAHANNI'S KARST AND NAHANNI'S SHEEP: A UNIQUE ARRANGEMENT?

During fieldwork in 2005, researchers discovered a new area with a high number of karst caves that were being used by Dall's sheep. This is important for two reasons. First, these karst caves had never been documented before, so their discovery alone is exciting. Second, and even more exciting, we learned that these caves may help Dall's sheep lambs to survive.

Each cave has a lush carpet of grasses and other plants at the entrance and is difficult for predators to reach – giving ewes and lambs both food and security. Dr. John Weaver, a wildlife biologist with the Wildlife Conservation Society, has learned that this use of caves by Dall's sheep has been found nowhere else in North America!

## DO YOU HAVE QUESTIONS?

**Please contact us! Your questions, views and opinions are very important. Your voice will be heard.**

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## WHY DOES PARKS CANADA WANT TO PROTECT THE NAHANNI NORTH KARST?

Based on his Nahanni studies in the early 1970s and his later research all over the world, Dr. Ford believes that the Nahanni North Karst has qualities and features that are globally unique. However, these strange landforms are delicate and easily damaged. Parks Canada believes that if these are the best examples of arctic or sub-arctic karst in the world, they should be protected from potential future damage.

Even more important is the unique underground water drainage pattern. In the Nahanni North Karst, surface waters do not flow directly into the South Nahanni River watershed—but underground water does. Industrial development or accidents could impact water quality, both within the current park reserve and downriver in local communities.

