Southern Ontario Karst

Ontario

Ontario Geological Survey

Karst study for

SOUTHERN ONTARIO

This map is published with the permission of the Senior Manager, Sedimentary Geoscience Section, Ontario Geological Survey.

Location Map

SOURCES OF INFORMATION

Base map: Natural Resources and Values Information System (NRVIS)

Projection: NAD 83

Image overlay: Bedrock topography (bedrock surface with the glacial materials removed)

CREDITS

Author: The Ontario Geological Survey

Acknowledgements: Derek Armstrong, Mark Boone, Marcus Buck, Sandra Clarke, Daryl Cowell, Lona-Kate Dekeyser, Shannon Evers, Simon Gautrey, Joanna Gaweda, Harvey Goodfellow, Ken Goodfellow, Ron Hopper, Walter Jensen, Charlie Koch, Phil Kor, Arley Leader, Brian Luinstra, Ryan Mariotti, Gord Middleton, Scott Parker, John Petrie, Paul Ritchie, Dan Russell, Mr. Spearing, Jeff Truscott, Cody Walter, John Warbick, Dave Webster, William White, David Williams and Steve Worthington.

Every possible effort has been made to ensure the accuracy of the information presented on this map; however, the Ontario Ministry of Northern Development and Mines does not assume any liabilities for errors that may occur. Users may wish to verify critical information.

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Information from this publication may be quoted if credit is given. It is recommended that reference be made in the following form:

Brunton, F.R. and Dodge, J.E.P. Karst map of Southern Ontario, including Manitoulin Island; Ontario Geological Survey, Groundwater Resource Study 5.

LEGEND

Known Karst - observed, measured field data or data from Published reports. Key features include: karren, cave types and associated precipitates, sinkholes and disappearing streams.

Inferred Karst - regions of carbonate bedrock units highlighted as most vulnerable or susceptible to karstification, where direct field observations have not been made by OGS staff or other sources. A natural extrapolation of the known karst areas for given rock units.

Potential Karst - areas of carbonate rock units identified as most susceptible to karst processes.

Unknown or no observed evidence of karstification due to the character of bedrock, lack of outcrop and/or relative thickness of overburden.

SYMBOLS

- Karst features - cave, crevice, sinkhole
- Joints, hyperlinked
- Borehole logs, hyperlinked
- Field photos, hyperlinked
- Contact, approximate
- Contact, interpreted
- Contact, observed
- Provincial boundary
- Fault-contact, ball on downthrown side
- Fault-contact, no dip, no downthrown side indicated
- Fault, ball on downthrown side
- Fault, no dip, no downthrown side indicated

Figure 7. Mindemoya or Skeleton Cave, central Manitoulin Island. This cave formed by surface waters creating a joint-controlled sinkhole in cuesta-forming Fossil Hill Formation dolostones that cap finely crystalline dolostones of underlying St. Edmund Formation. The lithologic contrast and sequence boundary enabled bedding-plane controlled conduits to develop resulting in the present-day cave system.

Figure 8. Tuckersmith Sinkhole, southwestern Ontario. This sinkhole is typical of a series of sinkhole clusters that have developed within the thinner drift areas of Huron and Bruce counties, southwestern Ontario. Sinkholes preferentially occur above and within the Middle Devonian age high-purity dolostones of the Lucas Formation and less commonly where fossiliferous limestones of the Dundee Formation cap Lucas Formation dolostones.

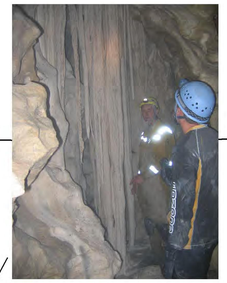

Figure 6. Large stalactites in Root Cave, northern Bruce Peninsula. This gated cave is among the few Ontario caves that may contain pre-glacial paleoclimatic records within the cave draperies, sediments and biota. This joint-controlled karst cave displays some evidence of wave-cut processes during part of its development.

Figure 5. Bruce's Caves, Bruce Peninsula, southern Ontario. It is known as wave-cut or sea cave which formed by wave abrasion and possible meltwater influences during higher lake levels while Laurentide ice sheet was retreating northward.

Figure 1. A sinkhole of the Gervais cave-three island cave system. This karst network of joint-controlled conduits and sinkholes/sumps extends for a few kilometres proximal to the present-day river course and occurs in the mini-escarpment-forming Bobcaygeon-Gull River formational limestones, Westneath area, Ottawa River.

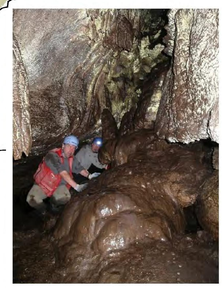

Figure 2. Cave draperies (stalactites, stalagmites, flowstone) of the Moira Cave — the second largest cave system known in southern Ontario (after Gervais and three island cave system near Westmeath, Ottawa River). This karst cave system has developed within same Middle Ordovician limestone units as Gervais Cave (lower Bobcaygeon-upper Gull River formational interval).

Figure 3. Sinkholes that formed during past paleodrainage conditions within mini-cuesta-forming limestones of lower Bobcaygeon and upper Gull River formations, Tyendinaga, southeastern Ontario.

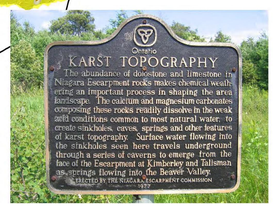

Figure 4d. A plaque erected in 1977 by the Niagara Escarpment Commission to recognize the significance of karst topography as the dominant landform of the Niagara Escarpment margin across southwestern Ontario (Niagara Falls to Manitoulin Island).

Figure 4c. The main drain where upper Wodehouse Creek waters are diverted into Amabel dolostone conduits to reemerge a few kilometres away at the edge of the Beaver Valley.

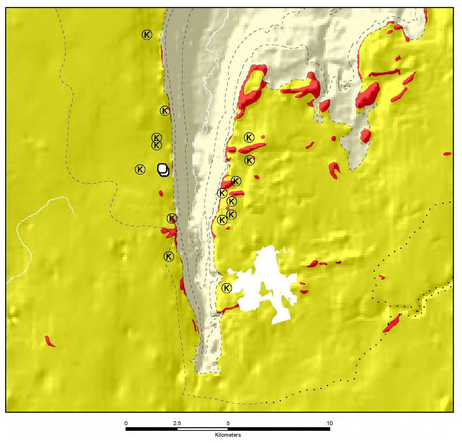

Figure 4. Wodehouse Karst area, Niagara Escarpment. A series of more than 16 sinkholes drain a small lake and creek system that is seasonally flooded. Sinkholes drain surface waters into the Amabel Formation dolostones - the caprock dolostone of the Niagara Escarpment. Bedrock groundwaters then flow along joint- and bedding-plane-controlled conduits to form springs in Kimberley and Talisman areas of Beaver Valley.

Figure 4a. Sinkhole displaying joint-controlled opening of drain in Amabel dolostones, Niagara Escarpment.

Figure 4b. This knob of Amabel dolostone, interpreted as a roche moutonnee, displays the open joint conduit network for enhanced groundwater flow and potential for cave development at the downstream end of the Wodehouse creek system.