Key Historical Developments in Karst Management in BC
1970’s – Present

Key development of the 1970s

In Policy:

- An Inter-Ministry Caves Committee was formed to coordinate government and public input into a provincial cave policy. (1979)

In Karst Research:

- John Drake of McMaster University begins his academic study of gypsum karst sites in Southeastern BC. (1970)

Key developments of the 1980s

In Policy:


- The first cave policy paper is released – A Statement of Crown Land Cave Policy and Administration. ¹ (1981)

- The BC Ministry of Forests (MOF) releases its Cave Management Policy. The policy has guidelines for “timber harvesting in karst areas”, but these are restricted to land areas above caves. (March 1981)

- MOF adds caves and karst resources as landform elements to its recreation features inventory system. (1981)

- MOF releases A Method to Manage the Cave/Karst Resources within Provincial Forests in draft form. (1983)

- MOF releases Cave and Karst Management in Provincial Forests, Ministry of Forests, Vancouver Region in draft form. (1986)

In Planning:

- MOF prepares its first cave management plan. (1980)

¹ In 1983, the word “karst” is substituted for “cave” in the 1981 version of the policy paper. The revised policy paper is not adopted.
• MOF commissions the first formal field inventory covering both cave and karst resources for to inform planning for a Vancouver Island watershed. The report has a discussion of the possible effects of timber harvesting. (1982)

In Karst Research:

• Paul Mills of McMaster University begins his academic study of the karst hydrogeology in the Benson River drainage on Vancouver Island. (1980)

• Mel Gascoyne and his colleagues conduct isotopic analyses on speleothem calcite from Vancouver Island caves to yield palaeoclimate records. (1981)

• Kevin Ecock of McMaster University begins his academic study of the hydrology of the White Ridge, a karst area with forested slopes on Vancouver Island. (1983)

• Kathleen Harding of McMaster University begins her academic study of soil loss at karst sites on Northern Vancouver Island. (1986)

• Kathleen Gladysz of McMaster University studies the surface karst relief features at deforested Vancouver Island karst sites. (1986)

In Publications:

• The BC Ministry of Environment publishes Terrain Inventory and Geological Hazards Northern Vancouver Island. The report describes soil loss and road issues in karst areas. (1981)

Key developments of the 1990s:

In Legislation or Policy:

• MOF releases A Method to Manage the Cave/Karst Resource Within British Columbia Forests: Interim Guidelines for the Vancouver [Forest] Region. (May 1990)

• MOF releases the Cave Management Handbook (including Cave/Forestry Guidelines for the Vancouver Forest Region). (August 1990)

• MOF adds the “Cave/Karst Management“ chapter to a revised Recreation Manual. (1991)

• MOF retains a consultant to respond to some of the cave and karst management issues arising from the 1991 Cave Management Symposium, to review cave and karst legislation and policy, and make recommendations. The consultant prepares the Cave and Karst Stewardship Handbook in draft format. (1992)

• MOF releases the Cave/Karst Management Handbook for the Vancouver Forest Region in draft format. (June 1994)

• MOF releases the final version of the Cave/Karst Management Handbook for the Vancouver Forest Region. (July 1994)
• The Forest Practices Code of British Columbia Act is passed, and the definition of forest resources is extended to cover recreation resources including caves and karst features. (1995)

• MOF announces that a draft Cave Management Guidebook will be the first of a series of Forest Practices Code field guides. (1995)

• The Vancouver Island Resources Target technical team considers adding karst as a resource value in their target process. (February 1997)

• MOF acknowledges past impacts caused by surface resource extraction activities and lack of awareness about the ecological significance of karst environments. The need to protect karst as a sensitive and vulnerable ecosystem when conducting forest operations is also acknowledged, as is the need to undertake karst research as a high priority contingent on funding. (October 1997)

• The provincial chief forester initiates development of best management practices for conducting forestry operations in karst areas. (1997)

• MOF retains a consultant to begin work on drafting the Karst Management Handbook for British Columbia. (1997)

• MOF establishes the provincial Karst Task Force, enlisting the help of internationally recognized karst scientists and other subject matter experts. (1997)

• MOF retains consultants to start field work in support of developing karst inventory and vulnerability assessment methods and procedures. The Karst Inventory Standards and Principles (the “KISAP”) project is initiated. (1997)

• MOF holds a “KISP” project workshop on Vancouver Island. (1997)

• MOF consultants visit with USDA Forest Service officials in Alaska to research and compare forest karst management strategies and approaches. (February 1998)

• MOF retains a consultant to review operational considerations of karst management guidelines under development. (November 1998)

• MOF retains consultants to estimate timber supply impacts of implementing recommended best practices for karst management. (1998)

• MOF consultants carry out field testing of the proposed karst inventory and vulnerability assessment procedures on Vancouver Island. (1998)

• MOF consultants carry out field testing of the proposed karst inventory and vulnerability assessment procedures in the Northern Interior. (October 1999)

• MOF consultants carry out field testing of the proposed karst inventory and vulnerability assessment procedures in the Southern Interior. (November 1999)

• MOF holds a workshop on the proposed karst management guidelines with industry and subject matter experts. (December 1999)
In Planning:

- MOF develops the Artlish River Karst Area Recreation Management Plan in draft format.2 (1991)
- Strategic-level 1:250,000 scale karst inventories are carried out for the Vancouver and Prince Rupert Forest Regions. (1994)
- MOF develops the Glory’ole Cave/karst Area Management Plan in draft format.3 (1995)
- MOF completes reconnaissance-scale karst potential mapping for BC. (1999)

In Research:

- Forest Renewal BC is established as a crown corporation with a research component administered by the Science Council of BC. (1994)
- MOF Vancouver Forest Region commissions the Literature Review of Management of Cave/Karst Resources in Forest Environments. (1995)
- MOF retains a consultant to prepare A Preliminary Problem Analysis of Cave/Karst Issues Related to Forestry Activities on Vancouver Island. (1996)
- The provincial Chief Forester formally recommends to Forest Renewal BC making karst research a high priority. (1997)
- Forest Renewal BC rejects all proposed karst research projects. (April 1997)

In Publications:

- The paper Impacts of primary deforestation upon limestone slopes in Northern Vancouver Island, British Columbia is published in the journal Environmental Geology. The paper is based on Kathleen Harding’s 1986 field research. (1993)
- MOF publishes the 6-page booklet Karst in British Columbia: A Complex Landscape Sculpted by Water and a companion wall poster. (May 1997)

In Training or Education:

- MOF senior managers participate in a field tour of karst sites on Northern Vancouver Island. (June 1997)
- Representatives of the Pacific Section of the Canadian Institute of Forestry participate in a field tour of karst sites on Northern Vancouver Island. (February 1998)

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2 The area is subject to public planning process over the next four years but is suspended: The Artlish River Caves Provincial Park is established in 1995.
3 The plan is not adopted.
In Events:

- The Cave Management Symposium is held in Campbell River with MOF involvement. (1991)
- The US-Canada symposium highlighting forest karst ecosystems is held with MOF participation. Supported by MOF, there are field tours to karst areas of Northern Vancouver Island and the Chilliwack Valley. (October 1997)

Key developments in the 2000s:

In Legislation and Policy:

- MOF consultants carry out field testing of proposed karst inventory and vulnerability assessment procedures in the BC central Coast. (February 2000)
- MOF consultants carry out field testing of proposed karst inventory and vulnerability assessment procedures in Haida Gwaii. (August 2000)
- The results of provincial karst inventory and vulnerability assessment field trials are assembled for MOF as an unpublished report. (2000)
- The BC Cabinet endorses the 204-page Vancouver Island Summary Land Use Plan, the first strategic land use plan in the province to offer karst management strategies for consideration prior to forest development. (2000)
- The Forest and Range Practices Act (FRPA) is passed. (2002)
- The BC Government introduces the Forest and Range Practices Act (FRPA) and associated regulations. (January 2004)
- The Government Actions Regulation (GAR) and the Forest Planning and Practice Regulation are passed under FRPA. (2004)
- MOF begins work on drafting the first karst GAR Order under FRPA. (2005)
- The MOF Campbell River Forest District publicly announces its proposed GAR Order identifying karst resource features for protection. (May 2005)
- The MOF Coast Forest Region establishes a sub-committee with government and industry representatives to develop regional guidance for consistent drafting of karst GAR Orders. (September 2005)
- The Order to Identify Karst Resource Features for the Queen Charlotte Islands Forest District is issued. This is the first karst GAR Order in BC. (September 2006)
- The MOF Coast Region FRPA Implementation Team (“CRIT”) releases the Coast Forest Region Karst Resource Features Government Actions Regulation (GAR) Order, Professional Advice. Endorsed by government and industry CRIT members, the document includes a karst GAR Order template. (May 2006)
- The GAR Order to Identify Karst Resource Features for the Campbell River Forest District is issued. (2007)
• The GAR Order to Identify Karst Resource Features for the North Island–Central Coast Forest District is issued. (2007)

• MOF South Island Forest District issues its GAR Resource Feature Order. (2009)

In Planning:

• The first planning-level karst inventory in BC conforming to provincial standards is completed for a tree farm licence on Vancouver Island. (2002)

• The second planning-level karst inventory in BC conforming to the renamed Resources Information Standards Committee provincial standards is completed for a tree farm licence and two forest licence areas on Vancouver Island. (2004)

In Monitoring:

• The provincial Forest and Range Evaluation Program (FREP) is established. (May 2003)

• FREP retains consultants to assist with the development of standard methods and procedures for evaluating the effectiveness of forest practices for karst. (December 2003)

• MOF holds a Karst Indicators Workshop in Nanaimo. (July 2004)

• FREP indicators under development for karst monitoring are refined with the input of industry, government, and karst experts. (2004)

• There is more field testing of the FREP karst indicators under development. Results are consolidated into the report Field Testing of Karst Resource Stewardship Monitoring Indicators and Protocols. (2005)

• The new BC Ministry of Forests and Range (MFR) field tests FREP Resource Stewardship Monitoring karst indicators on Southern Vancouver Island. (May 2006)

• MFR holds a FREP Karst Indicators Workshop in Richmond. (December 2006)

• MFR holds the first FREP Karst Resource Stewardship Monitoring Routine Evaluation classroom and field training session for Coastal BC stewardship staff. (September 2007)

• MFR holds a FREP Introduction to Karst Resource Stewardship Monitoring Routine Evaluation classroom and field training session for Fort Saint James Forest District staff. (2008)

• MFR holds a FREP Karst Resource Stewardship Monitoring Routine Evaluation classroom and field training session for Coastal BC stewardship staff. (2008)

• Five pilot test evaluations are carried out in three MFR forest districts using the current FREP Karst RSM Form checklist indicators. (2008)
In Training or Education:

- The Ministry of Forests (MOF) pilots a three-day Resources Inventory Committee Karst Field Assessments Training Course for regional and district staff. (2001)

- MOF develops additional training materials for the Karst Field Assessments Training Course. (2002)

- MOF develops the 10-lesson online training module intended to provide learners with a basic introduction and overview to the Karst Management Handbook for British Columbia. (2003)

- The BC Ministry of Forests and Range (MFR) holds a Karst Resource Stewardship Monitoring classroom and field training session for Queen Charlotte Islands (renamed Haida Gwaii) Forest District staff. (2006)

- Field testing of FREP karst monitoring indicators with Queen Charlotte Islands Forest District stewardship foresters. (August 2006)

- MFR holds Karst Basics and FREP RSM Karst Pilot Project Training for the North Island-Central Coast Forest District. (September 2006)

In Research:

- Feride Serefiddin of McMaster University begins her doctoral research into developing paleoclimate records from water extracted from speleothem calcite at Vancouver Island karst sites with forest cover. (July 2000)

- Ren Zhang of McMaster University and his colleagues reconstruct a Holocene palaeotemperature record using speleothem calcite from Vancouver Island karst sites. (2008)

In Compliance or Enforcement:

- MFR in Haida Gwaii determines that there had been a failure in 2002 to construct a road in accordance with a road permit and road layout and design contrary to the Forest Practices Code of British Columbia Act, resulting in damage to karst identified in a road permit and other documents. A penalty of $45,000 is levied on the responsible party. 4 (2005)

In Publications:


- The provincial Resources Inventory Committee publishes the Karst Inventory Standards and Vulnerability Assessment Procedures for British Columbia. (2001)

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4 The penalty is rescinded by the BC Forest Appeals Commission in 2006.
• The renamed provincial Resources Information Standards Committee publishes the second version of the Karst Inventory Standards and Vulnerability Assessment Procedures for British Columbia, with some minor changes. (January 2003)

• After internal and stakeholder reviews, MOF releases the final version of the Karst Management Handbook for British Columbia. (May 2003)

• MOF publishes a Notes to the Field devoted to karst management. (August 2003)

• The BC Ministry of Environment publishes a thematic Vancouver Island Karst Potential Map with an extended legend. (December 2006)

• The Forest Practices Board of British Columbia issues its special report Protecting Karst in Coastal BC. (January 2007)

Key developments in the 2010s:

In Legislation or Policy:

• The GAR Order to Identify Karst Resource Features for the Sunshine Coast Forest District is issued. (2010)

• The Environmental Protection and Management Regulation is passed under the Oil and Gas Activities Act. The regulation defines karst as a resource feature for protection during oil and gas activities. (2010)

• The GAR Order to Identify Karst Resource Features in the Chilliwack Forest District is issued. (2010)

• The Haida Gwaii Land Use Objectives Order is issued, with a schedule listing “karst features” as a potential Class 2 Haida Traditional Heritage Feature category for protection using a reserve zone. (2010)

• The new BC Ministry of Forests, Lands and Natural Resource Operations (FLNRO) awards a contract for professional services to complete the FREP Karst Field Cards. (2014)

In Monitoring:

• FLRNO North Island-Central Coast Forest District staff begin to collect field data from some cut blocks after revising the 2009 FREP karst monitoring protocol and checklist. (2010)

• The Forest Practice Board of British Columbia conducts a special investigation into the management of karst resource features on Northern Vancouver Island. (August 2012)

• FLRNO North Island-Central Coast Natural Resources District staff continue to collect data from some cut blocks using the revised version of the 2009 FREP karst monitoring protocol and checklist. (2012)

• FLNRO reports that the FREP karst monitoring protocol is at final development stage, with a plan to implement the protocol during the 2015 field season. (2015)

• FLNRO solicits professional services quotes to complete development of the FREP karst monitoring field guides and protocol (for completion by the end of September 2016). (2016)
• The BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) establishes the Karst Science Advisory Group. (February 2019)

• FLNRORD holds a FREP Karst Monitoring Indicators expert workshop with a field tour (May 2019).

• FLNRORD holds the first Karst Science Advisory Group meeting. (October 2019)

In Training or Education:

• The BC Forum for Research and Extension in Natural Resources includes a chapter devoted to the geomorphology, hydrology and management of karst landscapes in its Compendium of Forest Hydrology and Geomorphology in British Columbia. (2010)

• MOF holds a one-day Karst Information Session for Sunshine Coast Forest District staff and contractors. (December 2010)

• MOF Chilliwack Forest District holds a two-day Introduction to Karst and Karst Management classroom and field training session for staff and contractors. (March 2011)

• The Forest Practices Board of British Columbia holds a one-day Introduction to Karst and Karst Management training session for its staff. (May 2011)

• FLNRO South Island Natural Resource District holds a one-day Karst Information Session for stewardship staff. (January 2016)

• FLNRO Haida Gwaii Natural Resources District holds a two-day Karst Identification classroom and field training session for staff, plus some BC Timber Sales, first nation and licensee representatives. (September 2016)

• FLNRO holds a short FREP Karst Introduction training session for headquarters staff. (December 2016)

• FLNRO holds a one-day Introduction to Karst and Karst Management classroom training session for Coastal BC natural resources district stewardship staff and some licensee representatives. (August 2019)

• FLNRO holds a three-day RISC Karst Field Assessments classroom and field training session for its Coastal BC stewardship staff. (August 2019)

• FLNRO–BC Timber Sales Cariboo–Chilcotin Business Area holds a one-day karst information classroom training session for selected staff. (October 2019)

In Research:

• Carol Ramsey starts her doctoral research into the shape and basic ecological characteristics of forested dolines on Vancouver Island. (2010)
In Publications:

- The Forest Practice Board of BC publishes its Special Investigation report Management of Karst Resource Features on Northern Vancouver Island. (March 2014)

- FLNRO publishes a Preliminary Analysis of Surface Karst Feature Data from Northern Vancouver Island. The report describes the results of FREP pilot testing in 2010–2012 using the revised version of the 2009 of the karst field cards and routine monitoring protocol. (June 2016)

The 2020s

The global pandemic of the corona virus disease COVID-19 spread to the province in the earliest months of 2020 and the BC Government took numerous emergency measures in an effort to reduce the spread of the virus. Work continued in 2020 toward completion of FREP karst monitoring indicators and protocol under these emergency measures during most of the year. FLNRORD held online training and carefully controlled field sessions for stewardship staff in November 2020.