

MAY - JUNE 2002

## Summary

### SEARCH

Search by Key Word

#### **MRN at the Joint International Symposium and Exhibition on Geospatial Theory, Processing, and Applications**

MRN will give a conference on the production of its new map at the 1:100 000 scale at the Joint International Symposium bringing together ISPRS Commission IV, the SDH Symposium (processing of spatial data), and the 95<sup>th</sup> annual conference of the Canadian Institute of Geomatics. This highly popular event among the geomatics community will be held from July 9 to 12, 2002 in Ottawa.

<http://www.geomatics2002.org/>

#### **Erratum**

A small error appeared in the article "An Exceptional Collaborator" in our March-April issue. The text should have stated that Louis Rousseau served as Editor-in-Chief from 1998 to 2000 instead of from 1996 to 2000.

#### **Répertoire géographique des services gouvernementaux dans Internet (geographic directory of online government services)**

In March, the Ministère des Ressources naturelles put a whole new Web site online, the Répertoire géographique des services gouvernementaux. This project comes under the public services modernization program, which aims at facilitating access to information for Quebec residents and companies. The directory offers single-window access to contact information for more 2000 government points of service.

#### **The Impact of Municipal Reorganization on Mapping Administrative Delimitations**

For 18 years now, the Ministère des Ressources naturelles has been regularly maintaining map synthesis of municipal and regional delimitations at the 1:20 000 scale. While these delimitations vary over time, the recent municipal mergers resulted in changes that had a major impact on map data.

#### **Land Register Computerized An Accessible, Powerful, and Safe System**

## Join Our List of Subscribers!

We will inform you when  
each new issue is published

Enter your  
email address:



GÉOinfo is a bimonthly Internet newsletter produced by the Plan géomatique du gouvernement du Québec, PGGQ team. Its articles principally address current issues in the field of geomatics within the government of Québec.

### Editor-in-Chief

Marie-Josée Gallien

### Editorial Committee

Geneviève-Ilou Boucher

Luc Gravel

Pierre Lessard

Isabelle Ouellet

Chantal Seuthé

### Contributors

Fernand Boudreault

Réhaume Courtois

Michel Doyon

Michèle Gagnon

Louis Laberge

Marie Lapierre

Alexandre Lavoie

Lise Leclerc

The process for digitizing land registry documents and implementing a computer system for easier consultation got underway on October 9, 2001. The computerized land registry is now a reality. To date, more than 15 land registry office have converted to computerized access. By December 2003, all 73 throughout the province will have made the switch.

## Geomatics 2002 Be There in October!

The Canadian Institute of Geomatics (CIG), through its Montréal Branch, invites individuals involved in the field of geomatics to attend its biennial symposium on October 30 and 31, 2002 at the Montréal Convention Centre. Based on the theme *Everywhere for Everyone!*, the event will highlight the science's evolution towards democratization.

[Article](#)

## Smooth Implementation

In March 2000, Dorval's technical services department implemented a centralized geomatics system. The concept aimed at bringing together all of the municipality's descriptive and graphic data and incorporating them into a single geomatics system. Designing and smoothly implementing a system of this scope required that all municipal departments adopt the same technology and work together to make the data available to everyone.

---

## NUMÉRIMAGE

## Remote Sensing on the Trail of Woodland Caribou

The Société de la faune et des parcs (FAPAQ) is studying woodland caribou in order to develop management methods and land-use planning strategies that would provide for the preservation of

Raymond Leclerc  
Chantal Seuthé

### Translation

Garriss et Vachon inc.

### Computer graphics

Annie Jutras  
Karine Sanschagrín

### Electronic Edition

Prospection Inc.

### Networking

Jacques Roussin

### GÉOinfo

Phone: (418) 627-6250, ext. 2166  
Fax: (418) 646-9424

### Comments

 [Marie-Josée Gallien](#)

this type of caribou ecotype. In order to determine the woodland caribou's habitat, FAPAQ needs maps digital that characterize the vegetation cover in the sites they frequent. Classified satellite images were successfully used for this purpose in the Manicouagan area and the Grands-Jardins conservation park.

[Article](#)

 [Return on top](#)

ISSN : 1488-0741



PGGQ Home

[© Gouvernement du Québec, 2002](#)



## Events of Interest

### 2002

#### GeoSpatial World 2002

The Intergraph GeoSpatial Users Community (IGUC) International Training and Management Conference

**Organization:** Intergraph Corporation

**When:** June 10-12, 2002



**Where:** Renaissance Waverly Hotel, Atlanta (Georgie), USA

 <http://www.intergraph.com/geospacialworld>

#### Third International Symposium on Remote Sensing in Urban Areas

**When:** June 11-13, 2002

**Where:** Istanbul, Turkey

 [fsunar@srv.ins.itu.edu.tr](mailto:fsunar@srv.ins.itu.edu.tr)  
 <http://www.ins.itu.edu.tr/rsurban3>

#### GeoAlberta 2002

**Organization:** URISA Alberta, City of Edmonton's GBIS, Alberta Geomatics Group (AG), GITA Alberta

**When:** June 12-14, 2002

**Where:** Shaw Conference Centre, Edmonton, Alberta, Canada

#### The Open Source GIS - GRASS Users Conference

**Organization:** Department of Civil and Environmental Engineering, University of Trento

**When:** September 11-13, 2002

**Where:** University of Trento, Trento, Italy

 [grass2002@ing.unitn.it](mailto:grass2002@ing.unitn.it)  
 <http://www.ing.unitn.it/~grass>

#### GIS 2002 International Symposium on Geographic Information Systems

**Organization:** FIG, International Federation of Surveyors

**When:** September 23-26, 2002

**Where:** Istanbul, Turkey



 [gis2002@itu.edu.tr](mailto:gis2002@itu.edu.tr)  
 <http://www.gis2002.hkmo.org.tr/>



#### Remote Sensing 2002

**Organization:** SPIE, International Society for Optical Engineering

**When:** September 23-27, 2002

**Where:** Capsis Sofitel Conference Center, Agia Pelagia, Crete, Greece

 [publicity@urisab.org](mailto:publicity@urisab.org)  
 <http://www.urisab.org/geoalta.htm>

 [spie@spie.org](mailto:spie@spie.org)  
 <http://spie.org/conferences/calls/02/rs/>

### **100 Years of Geomatics in Switzerland - Geomatics of Our Future**

**Organization:** Geomatics conference during Journées de la géomatique 2002  
**When:** June 14, 2002  
**Where:** Fribourg, Switzerland

 <http://www.vermessungschweiz.ch/100ans.html>



### **ION GPS 2002**

**Organization:** The Institute of Navigation  
**When:** September 24-27, 2002  
**Where:** Oregon Convention Center, Portland, Oregon, USA

 [lbeaty@ion.org](mailto:lbeaty@ion.org)  
 [http://www.ion.org/meetings/gps2002\\_exhibitor.html](http://www.ion.org/meetings/gps2002_exhibitor.html)



### **Put Your Community Online**

**Organization:** ESRI Canada in collaboration with GeoConnexions  
**When:** June 18, 2002  
**Where:** Clarendon Hotel (Dufour II room), Quebec, Québec, Canada

 [corp.events@esricanada.com](mailto:corp.events@esricanada.com)  
 <http://www.esricanada.com/events/cc2002>

### **GIScience 2002**

Second International Conference on Geographic Information Science  
**When:** September 25-28, 2002  
**Where:** Millenium Hotel, Boulder Colorado, USA

 [GIScience2002@giscience.org](mailto:GIScience2002@giscience.org)  
 <http://www.giscience.org/>

### **IGARSS 2002 and the 24<sup>th</sup> Canadian Remote Sensing Symposium**


International Geoscience and Remote Sensing Symposium  
**Organization:** IEEE Geoscience and Remote Sensing Society  
**When:** June 24-28, 2002  
**Where:** Westin Harbour Castle Hotel, Toronto (Ontario), Canada

 [info@igarss02.ca](mailto:info@igarss02.ca)  
 <http://www.igarss02.ca/>

### **La géomatique et les mesures d'urgence (Geomatics and emergency response measures)**

#### **Fall 2002 AGMQ Conference**

**Organization:** Association de géomatique municipale du Québec (AGMQ)  
**When:** October 8, 2002  
**Where:** Hôtel des Seigneurs, Saint-Hyacinthe, Quebec, Canada

 (514) 282-3819  
 [agmq@affaires.com](mailto:agmq@affaires.com)  
 <http://www.agmq-quebec.com>

### **Laser-Scan User Group Conference**

**When:** July 1-3, 2002  
**Where:** Robinson College Executive Centre, Bedfordshire, England

 [helenn@isl.co.uk](mailto:helenn@isl.co.uk)  
 [http://www.laser-scan.com/usrgpr/uk\\_conf.htm](http://www.laser-scan.com/usrgpr/uk_conf.htm)

### **GIS in the Rockies**

**Organization:** GITA, ASCM, ASPRS, URISA, PLSC

**When:** October 8-10, 2002  
**Where:** Plaza at the Mart, Denver, Colorado, USA

 [chair@GISintheRockies.org](mailto:chair@GISintheRockies.org)

## ESRI Education User Conference 2002

**When:** July 5-7, 2002

**Where:** San Diego Convention Center, San Diego (California) USA

 [educ2002@esri.com](mailto:educ2002@esri.com)

 <http://www.esri.com/industries/k-12/educ/index.html>

## 22<sup>nd</sup> Annual ESRI International User Conference

**When:** July 8-12, 2002

**Where:** San Diego Convention Center, San Diego (California), USA

 [uc2002@esri.com](mailto:uc2002@esri.com)

 <http://www.esri.com/events/uc>

## Joint International Symposium and Exhibition on Geospatial Theory, Processing, and Applications


ISPRS Commission IV Symposium, the Spatial Data Handling Symposium, and the 95<sup>th</sup> Annual Geomatics Conference of the Canadian Institute of Geomatics (CIG)


**Organization:** ISPRS Commission IV, IGU Commission, Canadian Institute of Geomatics

**When:** July 8-12, 2002

**Where:** Ottawa Congress Centre (Ontario), Canada

**Information:** Tom Herbert

 (613) 224-9851

 (613) 224-9577

 [exdircig@netrover.com](mailto:exdircig@netrover.com)

 <http://www.geomatics2002.org>

## "Pattern Recognition for Mankind and the Environment"

16<sup>th</sup> International Conference on Pattern Recognition

**Organization:** International Association for Pattern Recognition and Canadian Image Processing and Pattern Recognition Society

**When:** August 11-15, 2002

**Where:** Palais des congrès (Québec),

 <http://www.gisintherockies.org/>

## World Space Congress 2002: The New Face of Space

**Organization:** The American Institute of Aeronautics and Astronautics (AIAA), and the National Academy of Sciences (NAS)

**When:** October 10-19, 2002

**Where:** George R. Brown Convention Center, Houston, Texas, USA

 [wsc@aiss.org](mailto:wsc@aiss.org)


 <http://www.aiaa.org/wsc2002>

## Intergeo 2002 Conference and Trade Fair for Geodesy, Photogrammetry and Cartography

**Organization:** German associations for surveying (DVW), photogrammetry and remote sensing (DGPF) and cartography (DGFK)

**When:** October 16-18, 2002

**Where:** Frankfurt, Germany

 49 (30) 86 42 45 39

 <http://www.intergeo.de>

## URISA 2002 Annual Conference

**Organization:** Urban and Regional Information Systems Association

**When:** October 26-30, 2002

**Where:** Hyatt Regency Chicago on the Riverwalk, Chicago (Illinois), USA


 <http://www.urisa.org/annual.htm>

## Geomatics 2002: Evelywhere, for everyone

**Organization:** Canadian Institute of Geomatics - Montréal branch (CIG)

**When:** October 30 and 31, 2002

**Where:** Montreal Convention Centre

 (514) 522-5715

 [Acsg\\_mtl@ling.net](mailto:Acsg_mtl@ling.net)

 <http://www.geomatique2002.com>

(available in late January 2002)

Canada



(418) 656-2979



<http://icpr2002.gel.ulaval.ca>

### **Integrated System for Spatial Data Production, Custodian and Decision Support**

ISPRS Technical Commission II Symposium

**Organization:** ISPRS (International Society for Photogrammetry and Remote Sensing)

**When:** July 20-23, 2002

**Where:** Xi'an, China



[jjie@nsdi.gov.cn](mailto:jjie@nsdi.gov.cn)



<http://isprs2.nsd.gov.cn/xian/>

[Xian1\\_index.htm](#)

### **17th World Computer Congress**

**Organization:** International Federation for Information Processing (IFIP), Canadian Information Processing Society (CIPS), Fédération informatique du Québec (FIQ)

**When:** August 25-30, 2002

**Where:** Montréal Convention Centre, Montréal, Quebec, Canada



(514) 840-1240



[info@cips.ca](mailto:info@cips.ca)



<http://local.cips.ca/info2002/>

### **CARIS 2002, Revolutionizing Geomatics**

**Organization:** Caris

**When:** September 3-6, 2002

**Where:** Norfolk Waterside Marriott Hotel, Norfolk, Virginia, USA



[caris2002@caris.com](mailto:caris2002@caris.com)



<http://www.caris.com/caris2002>

### **The 15th William T. Pecora Memorial Remote Sensing Symposium / Land Satellite Information IV Conference and the**

### **ISPRS Commission I Symposium**

**Organization:** American Society for Photogrammetry and Remote Sensing (ASPRS)

**When:** November 8-15, 2002

**Where:** Denver, Colorado, USA



[tbattee@asprs.org](mailto:tbattee@asprs.org)



<http://www.asprs.org/Pecora-ISPRS-2002/index.shtml>

### **Innovation Opportunities for Canada in Space**

ASTRO 2002 - 12th CASI Conference on Astronautics

**Organization:** Canadian Aeronautics and Space Institute (CASI)

**When:** November 12-14, 2002

**Where:** Crowne Plaza Hotel, Ottawa, Ontario, Canada



[casi@casi.ca](mailto:casi@casi.ca)



<http://www.asprs.org/alaska2003/index.html>



[http://www.caisu.ca/conference/2002/ASTRO2002\\_en.PDF](http://www.caisu.ca/conference/2002/ASTRO2002_en.PDF)

### **AGU 2002 Fall Meeting**

**Organization:** American Geophysical Union (AGU)

**When:** December 6-10, 2002

**Where:** Moscone Center, San Francisco, California, USA










1-800-966-2481



[meetinginfo@agu.org](mailto:meetinginfo@agu.org)



<http://www.agu.org/meetings/fm02top.html>

**2003 GITA Annual Conference XXVI****Organization:** Geospatial Information and Technology Association (GITA)**When:** March 2-5, 2003**Where:** Sans Diego Convention Center, San Antonio, Texas California, USA (303) 337-0513 [staff@gita.org](mailto:staff@gita.org) [http://www.gita.org/events/conferences/gita\\_annual/futconf.html](http://www.gita.org/events/conferences/gita_annual/futconf.html)**The 99<sup>th</sup> AAG Annual Meeting****Organization:** American Association of Geographers (AAG)**When:** March 4-8, 2003**Where:** Nouvelle-Orléans (Louisiane), USA (202) 234-1450 [gaia@aag.org](mailto:gaia@aag.org) <http://www.aag.org>**Integrating GIS & CAMA Conference****Organization:** URISA and International Association of Assessing Officers (IAAO)**When:** March 30 to April 2, 2003**Where:** Hyatt Regency, Columbus (Ohio), USA +1 (604) 254-6778 [info@urisa.org](mailto:info@urisa.org) <http://www.urisa.org/cama.htm>**2003 ASPRS Annual Conference****Organization:** American Society for Photogrammetry and Remote Sensing (ASPRS)**When:** May 3-9, 2003**Where:** Anchorage (Alaska), USA (301) 493-0290, ext. 106 [meetings@asprs.org](mailto:meetings@asprs.org)**ISU 14<sup>th</sup> World Congress****Organization:** International Stereoscopic Union**When:** May 28 to June 2, 2003**Where:** Besançon, France +1 (604) 254-6778 [ISU-Info@stereoscopy.com](mailto:ISU-Info@stereoscopy.com) <http://www.stereoscopy.com/isu>**21<sup>st</sup> ICA International Cartographic Congress****Organization:** International Cartographic Association (ICA)**When:** August 10-16, 2003**Where:** Durban, Afrique du Sud 31 30 2531373 [f.ormeling@geog.uu.nl](mailto:f.ormeling@geog.uu.nl) <http://www.icaci.org/>**XXII<sup>th</sup> World Forestry Congress****Organization:** Food and Agriculture Organization of the United Nations (FAO)**When:** September 21-28, 2003**Where:** Palais des congrès, Québec (Québec), Canada (418) 694-9922 [sec-gen@cfm2003.org](mailto:sec-gen@cfm2003.org) <http://www.cfm2003.org>**URISA 2003 Annual Conference****Organization:** Urban and Regional Information Systems Association**When:** October 11-15, 2003**Where:** Atlanta (Georgia), USA <http://www.urisa.org/annual.htm>

 <http://www.asprs.org/alaska2003/index.html>

### **FIG Working Week and XVI General Assembly**

**Organization:** International Federation of Surveyors

**When:** May 19-23, 2003

**Where:** Eilat, Israël

 [mapi@netvision.net.il](mailto:mapi@netvision.net.il)

 <http://www.kenes.com/surveyors/>


## 2004

### **The 100<sup>th</sup> AAG Annual Meeting**

**Organization:** American Association of Geographers (AAG)

**When:** March 16-20, 2004

**Where:** Philadelphia, Pennsylvania, USA

 (202) 234-1450

 [gaia@aag.org](mailto:gaia@aag.org)


 <http://www.aag.org>

### **2004 GITA Annual Conference XXVII**

**Organization:** Geospatial Information and Technology Association (GITA)

**When:** April 25-27, 2004

**Where:** Washington State Convention & Trade Center, Seattle, Washington, USA

 (303) 337-0513

 [staff@gita.org](mailto:staff@gita.org)


 [http://www.gita.org/events/conferences/gita\\_annual/futconf.html](http://www.gita.org/events/conferences/gita_annual/futconf.html)

### **2004 AGU Spring Meeting**

**Organization:** American Geophysical Union (AGU)

**When:** May 17-21, 2004

**Where:** Palais des congrès, Montréal, Quebec, Canada

 (202) 462-9600

 [meetinginfo@agu.org](mailto:meetinginfo@agu.org)

 <http://www.agu.org/meetings>

### **Geo-Imagery: Bridging Continents**

**Organization:** International Society for Photogrammetry and Remote Sensing

**When:** July 12-23, 2004

**Where:** Istanbul, Turkey

 [oaltan@srv.ins.itu.edu.tr](mailto:oaltan@srv.ins.itu.edu.tr)

 <http://www.isprs2004-istanbul.com>

### **FIG Working Week and XXVII General Assembly**

**Organization:** International Federation of Surveyors

**When:** May 2004

**Where:** Athens, Greece

 [Return on top](#)



PGGQ Home



Réalisation de l'édition électronique: [Prospection Inc.](#)

[© Gouvernement du Québec, 2002](#)

MAY - JUNE 2002



Article



## Geomatics 2002 Be There in October!

The Canadian Institute of Geomatics (CIG), through its Montreal Branch, invites individuals involved in the field of geomatics to attend its biennial symposium on October 30 and 31, 2002 at the Montreal Convention Centre. Based on the theme *Everywhere for Everyone!*, the event will highlight the science's evolution towards democratization.

All of us have observed just how much geomatics has developed and expanded in recent decades. Whether in the deepest roots of its constituent sciences or its most specialized branches, geomatics has become democratized over time... and for the better.

This year's theme of *Everywhere for Everyone!* refers to the walls between professionals both within geomatics as well as in related fields are gradually falling. It also evokes access to geomatics tools by users, whether experienced or novices. Access has become palpable both economically and in terms of user-friendliness.

The user-friendliness and accessibility of geomatics tools can be seen everywhere. You'll come across neat little devices based on GPS technology when you flip through a hunting-and-fishing catalogue. You might be surprised to see a navigation screen in the dash of a family member's new car. If you're going to meet friends for dinner at a location you're not that familiar with, just use your Internet browser to consult an address locator: just print the

itinerary that pops up on your screen. In Ontario, high-school students learn to use spatially referenced data in geography class. Moreover, many indicators point to the growing spread of geomatics. Indeed, geomatics has both vertically and horizontally integrated scientific fields and human resources.

The trends towards professional decompartmentalization now brings together surveyors, geographers, cartographers, statisticians, demographers, epidemiologists, agronomists, engineers, land-use planners, geologists and analysts, and still others to talk about geomatics. While each georeferenced databases has its own data format and applications, from now on, georeferenced databases will be translated and exchangeable.

As a result of the shift towards globalization, information technologies have undergone profound change. And geomatics is keeping pace with the changes. In the area of business, therefore, geomatics has played a role in strategically planning the locations of service points for department stores and financial institutions. It was also useful in repositioning service points after the merger of institutions and municipalities. While the community didn't support this intervention unanimously, the reaction was nonetheless positive.

### **Call for Papers**

The conference organizers want to call on your communication skills by inviting you to share your recent experiences with or research on geomatics, whether in the areas of transportation, the environment, municipal management, telecommunications, precision agriculture, water distribution networks, and the like. All are invited to submit a proposal for a paper before May 31, 2002. You can do so by e-mail at [conférenciers@geomatique2002.com](mailto:conférenciers@geomatique2002.com) or through the official Geomatics 2002 Web site.

Moreover, we have already received some very interesting proposals. You can keep up-to-date on program developments by regularly visiting the Web site over the months to come.

### **GAIA Award and CIG Scholarships**



During the conference, the name of the recipient of the GAIA Award, will be disclosed. This prize is awarded in recognition of significant achievements in the field of geomatics in Quebec. The CIG Montréal and Champlain branches will also take the opportunity to award their scholarships to master's students for outstanding performance at the bachelor's degree level in the field of geomatics or GISs.

### **Commercial Exhibit**

A major commercial exhibit will wind up the event. A range of suppliers of goods and services as well as many representatives of government departments and organizations will be on hand to greet you and present their know-how. The public and institutional organizations working on projects of interest are invited to rent exhibition space to present their missions and the results of their work. The Ministère des Ressources naturelles and

Ministère des Transports have already announced that they will participate.

## Already 20 Years

During this tenth biennial encounter, the conference organizing committee will highlight the past two decades of meetings about geomatics. Indeed, the first conference took place on October 28 and 29, 1982 at the queen Elizabeth Hotel, on the theme of *digital graphics and databases*. Next October, long-standing members will be able to reminisce about the time when we programmed in Fortran on terminals with green screens and information was saved on magnetic tape. Younger participants will appreciate the progress that has been made over in the interim and the technological gains they have inherited.

A cocktail will be held in honor of the 20<sup>th</sup> anniversary. Participants will have the opportunity to talk with old classmates and colleagues and possibly expand their circle of friends and contacts.

We look forward to seeing there!

**There's a single portal for registering for the conference, proposing a conference topic, or renting booth space: [www.geomatique2002.com](http://www.geomatique2002.com)**

### Information:

Lise Leclerc  
Director, Communications  
CIG Montréal Branch

 [communications@geomatique2002.com](mailto:communications@geomatique2002.com)

 [Return on top](#)

[Next Article](#) 



PGGQ Home



[© Gouvernement du Québec, 2002](#)

MAY - JUNE 2002



Article

## NUMÉRIMAGE

### Remote Sensing on the Trail of Woodland Caribou

by Réhaume Courtois,  
Alexandre Lavoie  
and Chantal Seuthé

The woodland caribou live the entire year in the boreal forest. In Quebec, they are found mostly on the North shore as well as in the Saguenay and James Bay regions. While the exact figures aren't known, sector inventories indicate that the situation of the herds is precarious. In fact, woodland caribou throughout North America have fallen on hard times. Predation, hunting, and the impact of habitat changes would appear to account for the decline. In addition, there's no assurance that the ecotype will be preserved, since these caribou are few in number and very vulnerable.

The Société de la faune et des parcs (FAPAQ) is studying woodland caribou in order to develop management methods and land-use planning strategies that would provide for the preservation of this type of caribou ecotype. In order to determine the woodland caribou's habitat, FAPAQ needs digital maps that characterize the vegetation cover in the sites they frequent. Classified satellite images were successfully used for this purpose in the Manicouagan area and the Grands-Jardins conservation park.



*Seeking food, ever rare in winter.*

In order to preserve the woodland caribou, FAPAQ needs a variety of information, including its distribution and characteristics of its habitat. To understand how the caribou habitat is used, FAPAQ must map the classes vegetation cover, such as lichen tundra, open softwood with lichen, and dense mature softwood. These environments are the most attractive to caribou, at least during the winter, since they provide abundant feeding opportunities (ground and arboreal lichen) and adequate coverage.

### **Backed by Satellite Imagery**

Landsat satellite images make it possible to map the classes of vegetation cover that FAPAQ needs. A preliminary trial carried out around the Manicouagan reservoir, on the North shore, demonstrated that Landsat images could be used to classify with acceptable reliability about 15 classes of vegetation cover useful in analyzing the habitat.

Moreover, woodland caribou tagged with radio collars were located by telemetry at different times of the year. These locations were superimposed on classified satellite images to characterize the types of environments frequented by the caribou.

The experiment was repeated in the Grands-Jardins park. FAPAQ studied changes in the habitat of the woodland caribou in this territory over 20 years. From the end of the seventies to the end of the nineties, FAPAQ paired caribou telemetry data with habitat maps. For its monitoring, FAPAQ delved into the Banque de données satellitaires du Québec for Landsat images for three different years:

- a Landsat-MSS scene from August 21, 1978 (resolution of 50 m);
- a Landsat-TM scene from August 27, 1989 (resolution of 30 m);
- a Landsat-TM scene from August 14, 1996 (resolution of 30 m).

(Click on picture for enlargement) - 201 Ko



*The monitoring of the woodland caribou habitat was carried out in the Charlevoix area. The sector under study, encircled in red, takes in the Grands-Jardins conservation park and part of the Jacques-Cartier park.*

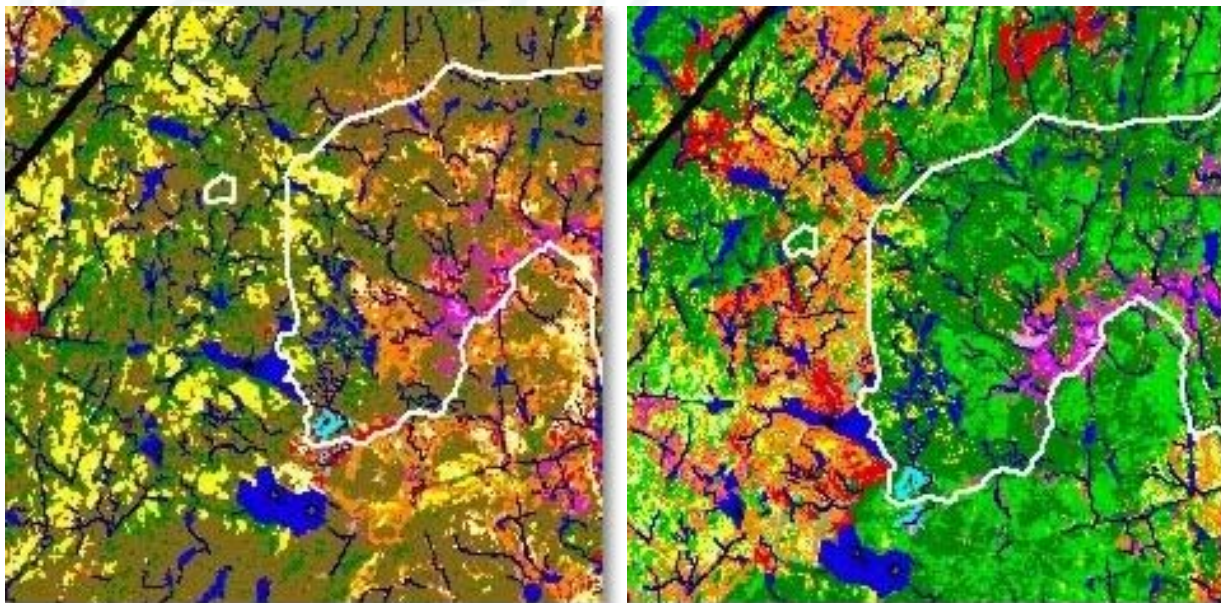
These images were processed to obtain about 12 classes of vegetation cover. The number of classes varies somewhat from one image to the next, depending on image resolution, the spectral bands used, and the cover itself, which changed between the periods under consideration.

### **Surprising Results**

The analysis of the three classifications of Landsat images made it possible to visualize and rapidly measure the changes that have occurred in the Charlevoix landscape in recent decades. This analysis made it possible to detect that the changes observed in the area in which the Charlevoix caribou ranged were mainly caused by spruce budworm epidemics, logging, and forest fires. The percentage of the territory involved in logging grew from 14 % to 25 % in seven years ([see the table](#)).

(Click to see the complete region - 377 Ko)

(Click to see the complete region - 400 Ko)



*On the left, the 1978 Landsat-MSS image shows the extent of forest affected by the spruce budworm. On the right, the Landsat-TM image reveals the evolution of logging and regeneration in the Charlevoix sector. Provincial parks are shown in white; the black represents the caribou distribution area.*

Moreover, we were surprised to note that lichens were quite scarce in the site studied. Tundra and open softwood lichen are found nearly exclusively in the southern part of the park and, more rarely, in various types of open habitats. The quantity of ground lichen has been relatively stable over the last 20 years, aside from a fire in 1993, which destroyed part of it. In spite of everything, the lichens could feed about 117 woodland caribou, which corresponds quite closely to population census dating from the early nineties. It should be kept in mind that the Charlevoix herd cannot grow significantly without its habitat deteriorating. Similarly, any appreciable modification in the environment could affect the caribou.

<b>Relative Size of Habitats (%) between 1978 and 1996 in the Area Currently Occupied by Woodland Caribou in Charlevoix</b>			
<b>Habitat</b>	<b>August 21, 1978</b>	<b>August 27, 1989</b>	<b>August 14, 1996</b>
Waterbody	4	4	4
Peatland	< 1	< 1	< 1
Open nonregenerated area	4	4	4
Open regenerated area	7	6	15
Mixed or broadleaf regeneration	7	1	4
Softwood regeneration	-	3	2
Open or young softwood	1	7	24

Dense mature softwood	15	51	33
Defoliation due to the spruce budworm	49	5	-
Lichen tundra	< 1	1	< 1
Open softwood lichen forest	2	2	1
Mature mixed or broadleaf forest	11	16	12

### Particularly Useful work



In addition to its use in analyzing image content, the information provided by telemetric monitoring, which gives the position of the caribou in the territory, was superimposed on the classified images. This provided means for locating and characterizing the habitats frequented by the woodland caribou.

It appears that the caribou prefer environments with lichens in abundance, mature softwood woodlands, open areas, and sites with waterbodies. Their preferences change depending on the season. During the calving season (mid-May to mid-June), the caribous frequent open areas, environments with lichens in abundance, and dense softwood stands. In October, which is the rutting season, they prefer peatlands, open areas, environments with lichens, and mature softwood stands. This contrasts with winter, when the caribou mainly seek out mature softwood forests and environments with lichens.



These observations, which are very valuable for FAPAQ, will serve in building a land-use plan aimed at protecting the habitat of the woodland caribou in Charlevoix.

### Information:

Réhaume Courtois  
 Direction de la recherche sur la faune  
 Société de la faune et des parcs du Québec

 (418) 521-3955, Ext. 4394  
 [rehaume.courtois@fapaq.gouv.qc.ca](mailto:rehaume.courtois@fapaq.gouv.qc.ca)

Alexandre Lavoie  
 Direction générale de l'information géographique  
 Ministère des Ressources naturelles

 (418) 627-6284, Ext. 2163  
 [alexandre.lavoie@mrnfp.gouv.qc.ca](mailto:alexandre.lavoie@mrnfp.gouv.qc.ca)

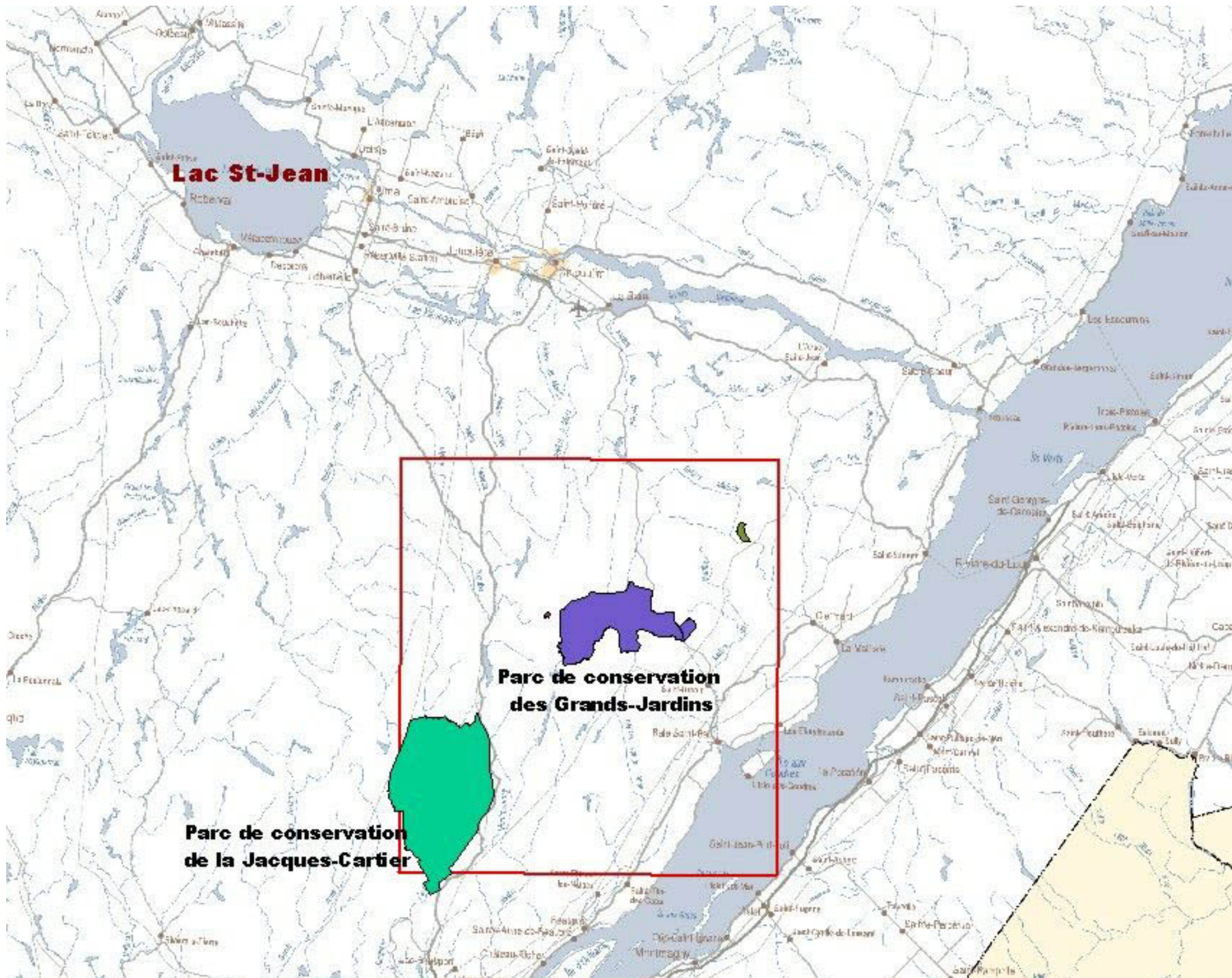


Québec   
Ministère des  
Ressources naturelles

PGGQ Home



© Gouvernement du Québec, 2002



**Lac St-Jean**

**Parc de conservation  
des Grands-Jardins**

**Parc de conservation  
de la Jacques-Cartier**



