

CHAPTER 2 – TERRESTRIAL PROTECTED AREAS PLANNING

SUMMARY OF FINDINGS

- 11 of 15 jurisdictions have protected areas strategies in place. BC has substantially completed implementation of its strategy.
- 29% of Canada's ecoregions are afforded a high level of protection (>12%), 12% moderate protection (6 to 12%), 42% low protection (<6%), and 17% have no protected areas.
- Varying levels of attention are being given by jurisdictions to designing protected areas networks to sustain ecological processes and functions across landscapes, to conserve wide ranging species, and to protect hot spots for biodiversity and species at risk in the settled regions of southern Canada.
- Candidate protected areas are being identified and advanced in NWT and NU using community-based approaches to planning.
- Several jurisdictions are beginning to assess potential impacts of climate change and consider adaptation strategies (BC, AB, SK, ON & PC).
- 6 of 15 jurisdictions plan for the conservation of inland freshwater ecosystems within their protected areas networks (BC, AB, MB, ON, QC & PC).
- Two thirds of the total area protected in Canada are found within a small number of protected areas that are greater than 300,000 ha, which is a roughly estimated minimum size needed to guard against biodiversity loss.
- Jurisdictions have highly variable levels of scientific data, information, tools and capacity for designing protected areas networks. Several agencies noted the need for additional research regarding the design of protected areas networks to sustain ecological processes and functions, and to preserve wide ranging species.
- Jurisdictions are working cooperatively on the management of transboundary protected areas. More opportunity exists for jurisdictions to work together in planning their protected areas networks on an ecoregional basis.

CONTEXT

Canada is one of the few countries that still has the opportunity to conserve relatively intact, unfragmented habitats within its protected areas networks, particularly in its boreal forests and Arctic ecosystems. Jurisdictions have made significant progress in this respect; however, none has yet fully met the commitment to complete networks of protected areas.

In the southern regions of the country, the highly fragmented landscapes necessitate approaches to protected areas planning that focus on conserving biodiversity and species at risk hot spots and working with conservation organizations, landowners, and land users towards the effective stewardship of private lands.



Photo Credit © Ontario Ministry of Natural Resources

ANALYSIS

- PROTECTED AREAS STRATEGIES -

11 of 15 jurisdictions have protected areas strategies in place. BC has substantially completed implementation of its strategy.

Status of Protected Areas Strategy (PAS) for Each Jurisdiction

| | |
|-------------------------------|--|
| PAS substantially implemented | BC ¹ |
| PAS being implemented | AB ² , SK, MB, ON ² , QC, NB, NS, PEI, NWT, YK, PC |
| PAS being developed | NL, EC |
| No PAS in place | YK ³ , NU ⁴ |

¹ BC has completed implementation of its protected areas strategy; however, there are important gaps remaining that it continues to work to fill.

² AB and ON protected areas strategies and frameworks are in place and completed, while new strategies have been developed and are being implemented to further complete AB's and ON's systems.

³ Individual protected areas opportunities are being considered in YK through the land claims process. Upon completion of remaining land claims, YK may consider the need to develop a representative protected areas network.

⁴ The NU government supports the development of a PAS but feels that the Government of Canada's Indian and Northern Affairs Canada has the mandate through the Territorial Lands Act and as administrator of all Crown lands in the territory, and should be the lead in development of the strategy.

- PROTECTING REPRESENTATIVE HABITATS WITHIN CANADA'S ECOREGIONS -

29% of Canada's ecoregions are provided a high level of protection (>12%), 12.4% moderate protection (6 to 12%), 41.9% low protection (<6%), and 16.6% have no protected areas.

- Jurisdictions committed in both 1992 and 2000 to complete networks of protected areas representative of Canada's land-based natural regions.¹
- Most jurisdictions are developing protected area networks with a primary objective of protecting representative habitats in each ecoregion.
- AB provides the greatest level of representative areas protection of all jurisdictions, with 66% of its natural regions receiving a "high" level of protection.

Summary of Ecoregion Protection

| Degree of Protection | Ecoregion Count | Percent of Ecoregions |
|----------------------|-----------------|-----------------------|
| >15 % | 50 | 23.0% |
| 12 to 15% | 13 | 6.0% |
| 6 to 12% | 27 | 12.4% |
| <1 to 6% | 91 | 41.9% |
| None | 36 | 16.6% |

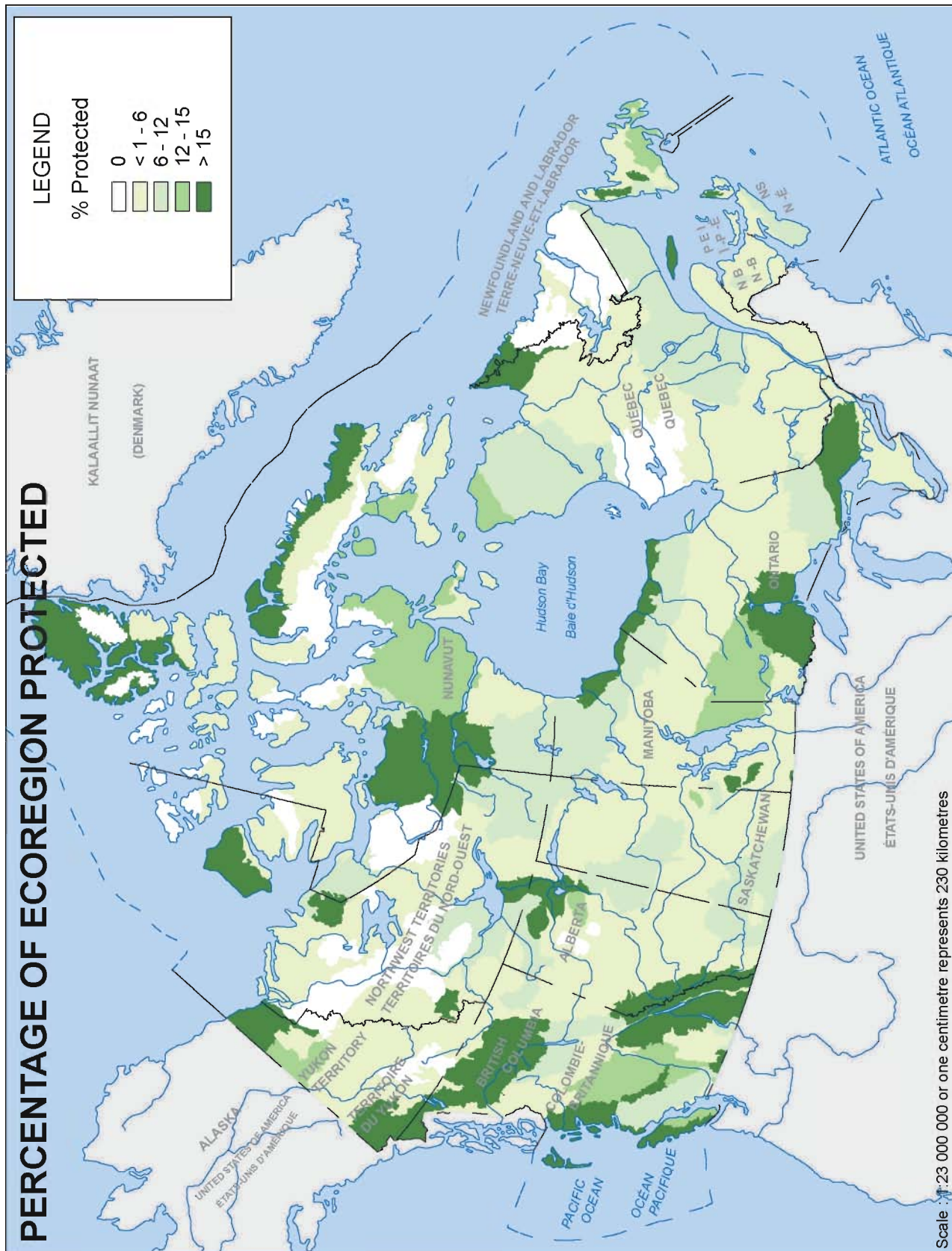
Representative Targets Achieved for Each Jurisdiction's Protected Areas Networks (As reported on by each provincial and territorial protected areas agency)

| Jurisdiction | % of Ecological Units Protected |
|--------------|---|
| BC | 33% high; 19% moderate; 48% low |
| AB | 66% high; 19% moderate; 15% little or none |
| SK | nd |
| MB | 27% high; 9% moderate; 42% partial; 22% none |
| ON | in preparation ¹ |
| QC | 46% high; 15% moderate; 39% low |
| NB | 14% high; 71% moderate; 14% low |
| NS | 34% fully represented |
| PEI | nd |
| NL | 17% high; 69% have study areas; 14% none |
| YK | 33% represented; 33% partial; 33% none |
| NWT | 62% represented; 38% partial (<10%) or none |
| NU | No PAS in place, but future strategy may include representivity targets |
| PC | 72% complete (28 of 39 natural regions) |
| EC | PAS not based on representative framework |

nd – not determined.

¹ ON is in the process of collecting this information through the implementation of its comprehensive monitoring framework and in preparation for future State of Protected Areas reporting.

¹ Most governments use ecoregions as the basis for designing their representative protected areas networks. Some agencies use different ecological units for their protected areas planning (e.g. PC uses natural regions; BC uses ecodistricts).



Source: Protected Areas Provisional Atlas Framework for protected areas > 1,000 ha, & the Canadian Conservation Areas Database for protected areas < 1,000 ha. Excludes all interim protected areas that are not identified in the Protected Areas of Canada map.

- PROTECTING OTHER ECOLOGICAL FEATURES -

Varying levels of attention are being given by jurisdictions to designing protected areas networks to sustain ecological processes and functions across landscapes, to conserve wide ranging species, and to protect hot spots for biodiversity and species at risk in the settled regions of southern Canada.

- Effective protected areas network design requires a number of complementary approaches – inclusion of representative habitats, conserving unique or threatened habitats, ensuring habitat for wide ranging wildlife, and preserving ecological processes and functions¹.
- Jurisdictions have to date focused network strategies primarily on protection of representative habitats.
- Most jurisdictions have also given some consideration to employing “fine-filter” approaches to protect specific habitats of importance to rare, threatened and endemic wildlife. Some recent studies suggest, however, that Canada’s protected areas network does a less effective job of conserving biodiversity hot spots and habitats for species at risk, particularly in settled regions of southern Canada^{2,3,4}.
- Initial attention is being given by some jurisdictions to designing protected areas networks to maintain ecological processes and functions, such as facilitating

animal and plant dispersals and gene flows, providing for shifts in species ranges, maintaining natural processes (fire, wind, water, etc.), and ensuring resilience to short-term natural disturbances.

- A few jurisdictions have in place specific measures to ensure that wide ranging migratory species are effectively conserved within their protected areas networks.
- 13 of 15 jurisdictions have conducted some form of gap analysis to assess protected areas gaps and opportunities.

Designing Protected Areas for Newfoundland and Labrador’s Woodland Caribou

NL’s protected areas strategy provides for the establishment of six wilderness reserves, each greater than 1,000 km², specifically targeted for the conservation of the province’s woodland caribou.



Photo Credit © David Tilley

A Conservation Design for Canada’s Boreal

The University of Alberta’s BEACONS Project is developing a conservation design framework for Canada’s boreal region, including confirming appropriate levels of protection required to maintain the ecological integrity of the region. Under the BEACONS reverse-matrix model for conservation planning, the paradigm of reserves as nodes within a largely degraded environment is inverted, and extensive conservation lands are the supportive matrix within which development activities are carefully managed so as not to erode other values.

The BEACONS team is identifying criteria and candidates for benchmark areas across boreal Canada to anchor a protected areas network, and to provide reference areas against which resource development activities can be evaluated. **Benchmark areas** must be large enough to maintain ecological processes, such as predator-prey dynamics, hydrological connectivity and natural disturbance regimes. Both SK and NWT are working with BEACONS to assess benchmark suitability/requirements for their protected areas networks.

- COMMUNITY-BASED PROTECTED AREAS PLANNING IN THE NORTH -

Candidate protected areas are being identified and advanced in NWT and NU using community-based approaches to planning.

- Land claims processes in all three northern territories play an important role in planning, identifying and establishing protected areas.
- Existing or planned protected areas strategies and/or land claims processes in NWT and NU recognize the important role of local communities in nominating and advancing candidate protected areas.
- Federal and territorial jurisdictions noted the importance of identifying areas of cultural importance to local Aboriginal communities in the three northern territories, recognizing the close association between the conservation and cultural value of the land.

¹ R. F. Noss, C. Carroll, K. Vance Borland, G. Wuerthner, Conservation Biology 16, 895 (2002)

² Jeremy T. Kerr, Josef Cihlar, Patterns and Causes of Species Endangerment in Canada, Ecological Applications, 14(3), 2004, pp. 743-753

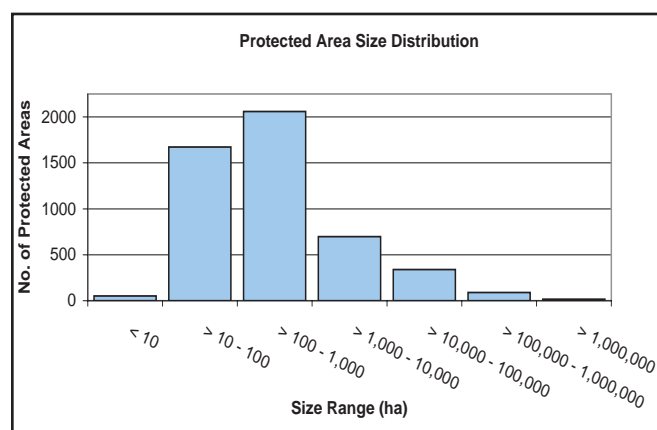
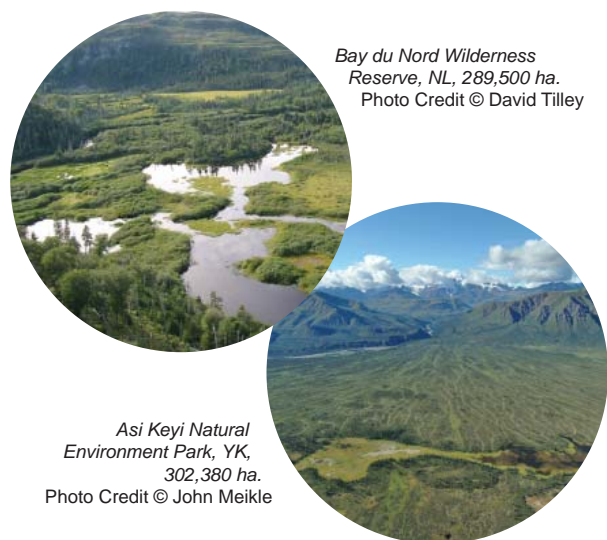
³ L. Warman, D.M. Forsyth, A.R.E. Sinclair, K. Freemark, H.D. Moore, T.W. Barrett, R.L. Pressley, D. White, Species Distributions, Surrogacy, and Important Conservation Regions in Canada, Ecology Letters (2004) 7:374-379

⁴ G.C.E. Scudder, Biodiversity Conservation and Protected Areas in British Columbia, University of British Columbia

- CONSERVING UNFRAGMENTED HABITATS -

Two thirds of the total area protected in Canada are found within a small number of protected areas that are greater than 300,000 ha, which is a roughly estimated minimum size needed to guard against biodiversity loss¹.

- 4 of 10 jurisdictions include design requirements in their network strategies to preserve unfragmented habitats.
- SK, ON and NL's protected areas strategies all provide for the inclusion of a series of protected areas in excess of 100,000 ha within their networks. Many other jurisdictions also plan for and have established large protected areas within their networks.
- QC and NWT are advancing several candidate protected areas that exceed 500,000 ha and 700,000 ha respectively. MB is currently advancing one candidate protected area which is 748,000 ha.



¹ The 300,000 ha figure is taken from Wiersma, Yolanda F., Thomas J. Beechey, Bas M. Oosenbrug and John C. Meikle. 2005. Protected Areas in Northern Canada: Designing for Ecological Integrity. Phase 1 Report. CCEA Occasional Paper No. 16. Canadian Council on Ecological Areas, CCEA Secretariat, Ottawa, Ontario, Canada. xiv + 128 pp. + folded map. This minimum reserve area was estimated based on historical species distributions. It should be noted that in the highly fragmented landscapes of southern Canada, many species that were historically present and that required large tracts of unfragmented habitat have been extirpated, and remaining wildlife may have lesser area requirements.

- ENSURING HABITAT CONNECTIVITY -

Variable attention is being given to providing for habitat connectivity between protected areas.

- Eight jurisdictions noted as "significant" constraints to their protected areas planning the lack of tools for providing habitat connectivity and/or for the compatible management of activities adjacent to protected areas. ON noted that establishing connectivity was one of its top priorities over the coming years.
- Jurisdictions reported using the following mechanisms for providing habitat connectivity.

Mechanisms in Place to Provide for Connectivity Between Protected Areas

| Connectivity Measure | No. of Jurisdictions with Connectivity Measure in Place |
|---|---|
| Regulatory-based buffers or corridors | 5 |
| Policy guidance on need for networking protected areas | 4 |
| Non-regulatory designations (i.e. World Heritage Sites, model forests, etc.) | 5 |
| Environmental assessment process that consider impacts on protected areas | 7 |
| Policy guidance to <u>governments</u> on compatible use of lands around protected areas | 4 |
| Policy guidance to <u>industry</u> on compatible use of lands around protected areas | 3 |

Mineral Claims Restrict Protected Area Opportunities in Nunavut

There is a perception that NU contains great areas of lands available for protected areas. However, most potentially available lands have been reserved/claimed for prospecting and exploration. In the last three years, NU has quietly experienced the most extensive mineral rush in Canadian history. Over 2,500 permits were issued between 2004 and 2006, committing over 40 million hectares to development. At the same time, there is currently no appropriate mechanism for communities to identify and set aside areas of importance to allow time for needed research to be completed (WWF, 2005).

- PLANNING FOR CLIMATE CHANGE -

Several protected areas agencies are beginning to assess potential impacts of climate change and consider adaptation strategies (BC, AB, SK, ON & PC).

- Climate change predictions suggest a shifting of ecosystem distributions and composition, generally in a northward direction, and that special consideration must be taken in order to ensure that habitat connectivity can be maintained¹. The impacts of climate change are expected to be most pronounced in polar regions, where temperature increases will be greatest².
- BC, AB, SK, ON & PC are all advancing climate change studies and/or pilot projects within their protected areas networks to assess potential impacts and develop adaptation strategies.
- In the northern territories, jurisdictions have not yet begun to assess potential consequences of climate change for their network planning.
- Canada's protected areas play an important role in our country's efforts to minimize the release of CO₂ into the atmosphere by sequestering large amounts of carbon³.

Preparing National Parks for Climate Change

Parks Canada is developing climate change scenarios for each geographic region and every national park as part of the suite of indicators that are used to monitor the ecological integrity of the park system. From the scenarios and monitoring, park scientists will be better able to predict the impacts on plant and animal communities. Park managers can then take measures to adapt to the inevitable changes. Climate change considerations are increasingly being used to design boundaries of proposed national parks.



Observatory for the avalanche control program in Rogers Pass, Glacier National Park, BC.
Photo Credit © W. Lynch

- PLANNING FOR FRESHWATER PROTECTION -

6 of 15 jurisdictions plan for the conservation of inland freshwater ecosystems within their protected areas networks (BC, AB, MB, ON, QC & PC).

- It is not known what amount of freshwater habitat is found within Canada's protected areas networks, as most jurisdictions do not currently have the ability to report this information.
- An important factor in the identification of candidate protected areas by First Nations in NWT is the protection of watersheds and wetlands.
- PC's National Marine Conservation Areas system plan provides for five freshwater NMCAs in the Great Lakes. There is currently one NMCA (Fathom Five) and another proposed for Lake Superior.
- The Canada-Ontario Agreement respecting the Great Lakes Basin Ecosystem provides for Canada and ON to begin to establish a viable and representative Great Lakes protected areas network.

Freshwater Ecosystem Protection

- BC's protected areas network includes 13.1% of the province's total freshwater habitat, including 46,000 of its 389,000 lakes.
- ON has set, as a target, to establish one waterway provincial park in each of its 71 ecodistricts. 42 ecodistricts are currently represented with a waterway park.
- QC's protected areas strategy includes an 8% target for freshwater habitat protection.
- 6.6% of PEI's protected areas are within freshwater ecosystems.

¹ G. del Barrio, P.A. Harrison, P.M. Berry, N. Butt, M.E. Sanjuan, R.G. Pearson and T. Dawson. 2006. Integrating multiple modelling approaches to predict the potential impacts of climate change on species' distributions in contrasting regions: comparison and implications for policy. *Environmental Science & Policy*. Volume 9, Issue 2, pp. 129-147.

² James J. McCarthy, Osvaldo F. Canziani, Neil A. Leary, David J. Dokken, Kasey S. White (editors). *Climate Change 2001: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change.

³ S.N. Kulshreshta et al., "Carbon Sequestration in Protected Areas in Canada", University of Saskatchewan, Department of Agriculture and Economics, 2000.

- SCIENCE IN SUPPORT OF NETWORK DESIGN -

Jurisdictions have highly variable levels of scientific data, information, tools and capacity for designing protected areas networks.

- 11 of 15 jurisdictions reported having adequate scientific information for designing representative protected areas networks.
- Most jurisdictions reported having moderate to good data to plan for fine filter considerations, such as species at risk and areas of high biodiversity.
- Many jurisdictions reported having partial or minimal information to plan networks for sustaining ecological processes and functions and preserving wide ranging species, and that further research was needed to assist efforts in this respect.
- The greatest reported limitations in the planning of protected areas networks were (1) inventory and monitoring; (2) stress assessments and indicators; and (3) traditional ecological knowledge.
- Most jurisdictions reported having the following adequate capabilities to design their protected areas networks: (1) database design; (2) GIS mapping; and (3) candidate area evaluation.

- INTERGOVERNMENTAL NETWORK PLANNING -

Jurisdictions are working together on the management of transboundary protected areas. More opportunity exists for jurisdictions to work together in planning their protected areas networks on an ecoregional basis.

- Many provinces and territories are working cooperatively on the management of specific cross-border protected areas. BC and AB, and AB and SK, have established inter-provincial protected areas.
- Most jurisdictions are not working with adjacent governments more broadly in the overall planning of protected areas networks across landscapes that they share.
- A few provincial jurisdictions reported working with the Nature Conservancy of Canada and adjacent states and provinces on conservation planning that informs protected areas planning.
- The NWT Protected Areas Strategy is jointly administered by the governments of NWT and Canada.
- All jurisdictions are members of the Canadian Parks Council and the Canadian Heritage Rivers Program (with the exception of QC), and others participate in a number of international protected areas planning or related initiatives, notably the Circumpolar Protected Area Network of the Arctic Council and the Commission on Environmental Cooperation.
- The Canadian Council on Ecological Areas' Conservation Areas Reporting and Tracking System (CARTS), currently under development, is an important new framework for ensuring nationally consistent protected areas information is collected and made publicly available.

Tracking Canada's Protected Areas

The Canadian Council on Ecological Areas (CCEA) is leading the development of the Conservation Areas Reporting and Tracking System (CARTS), a national web-based portal that enables the standardized collection, summarizing and mapping of Canada's protected areas. CARTS will enable both scientists and policy-makers to undertake accurate assessments of Canada's growing network of protected areas and will help Canada to fulfill important national and international reporting obligations. The CARTS project is a partnership of federal, provincial and territorial protected areas agencies, the CCEA, the National Forest Information System (NFIS), and the national GeoConnections program.