Demand-Driven Biodiversity Data

NatureServe Canada

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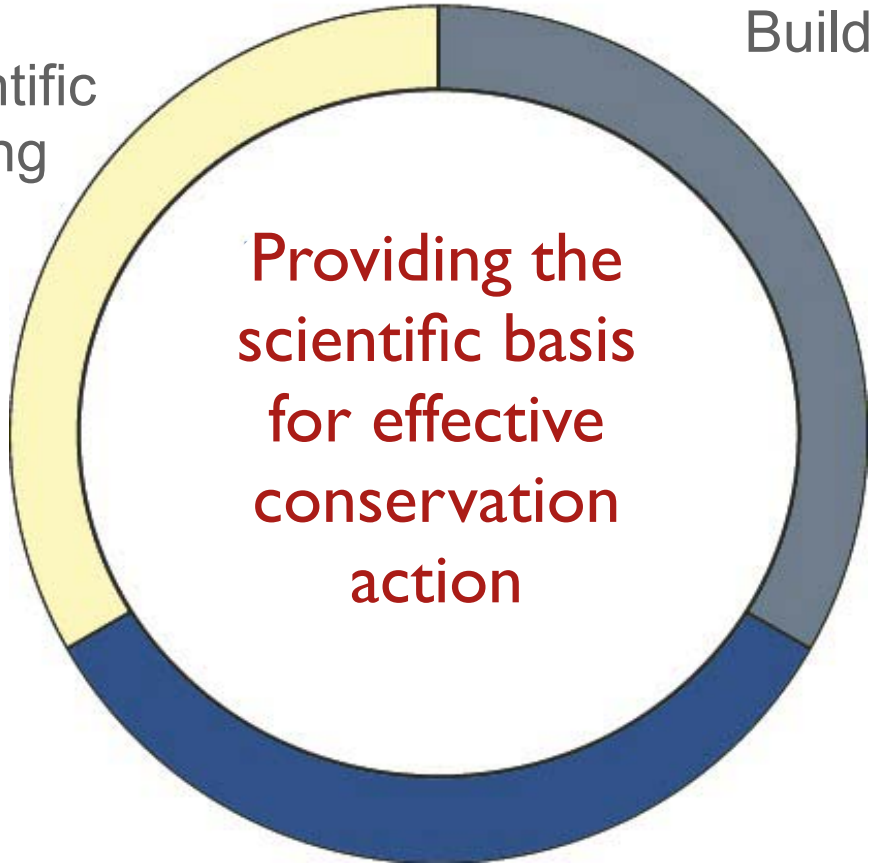
NatureServe Canada

About NatureServe Canada

Mission and Goals

GOAL 1
Advance Scientific Understanding

GOAL 2
Build Conservation Capacity



GOAL 3
Inform Natural Resource Decisions

NatureServe Canada's Role

- NatureServe Canada is a steward of biodiversity information
  - Gather and process information across all taxonomic groups, across Canada (aggregator)
  - Focus is on rare elements as priorities
  - Help Canada to understand that status of its biodiversity
  - Underpin reporting on general status of species in Canada

NatureServe Canada

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9 conservation data centres (CDCs)

- Atlantic Canada CDC
- Centre de données sur le patrimoine naturel du Québec
- Ontario Natural Heritage Information Centre
- Manitoba CDC
- Saskatchewan CDC
- Alberta Conservation Information Management System
- British Columbia CDC
- Yukon CDC
- NWT CDC

Each CDC collects and manages data on species and ecological communities based on standards and consistent methods

Membership expanding

NatureServe's Business Process and Tools

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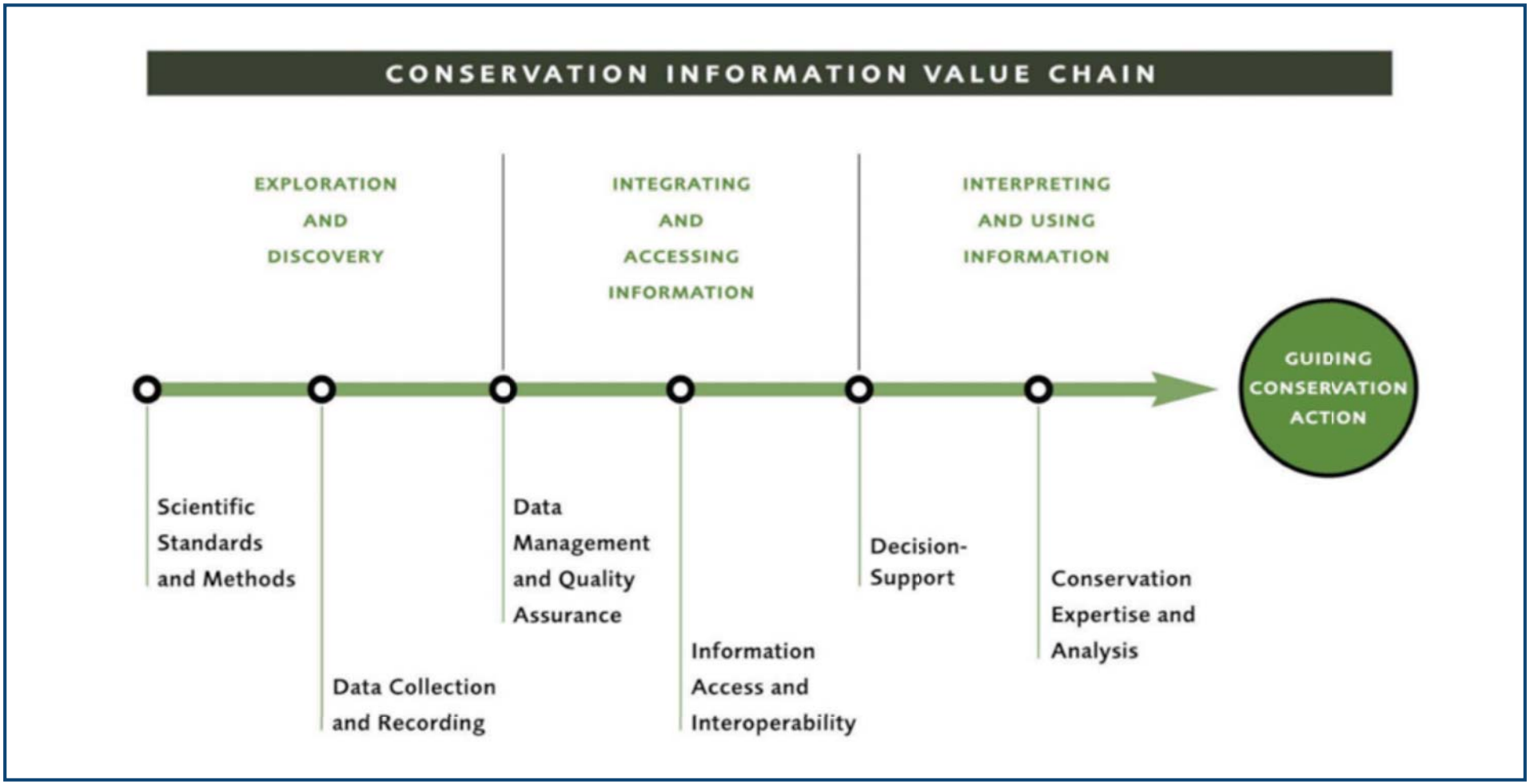
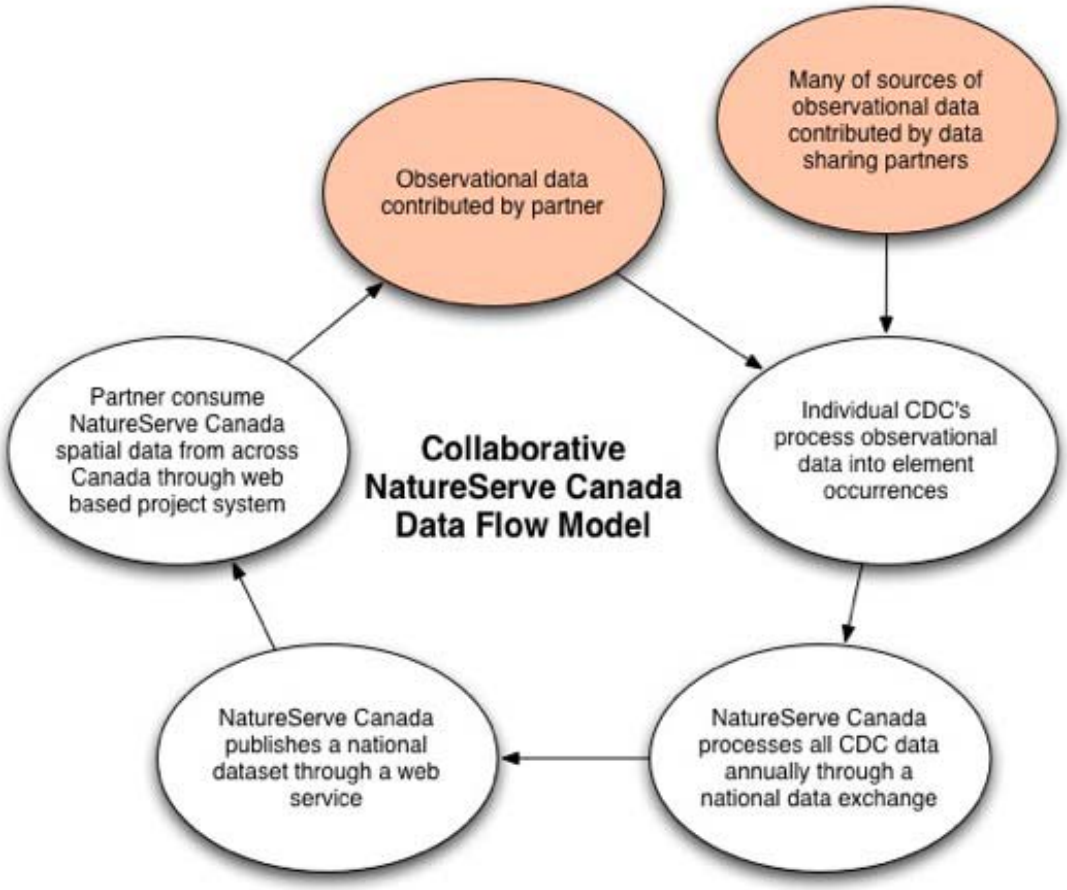
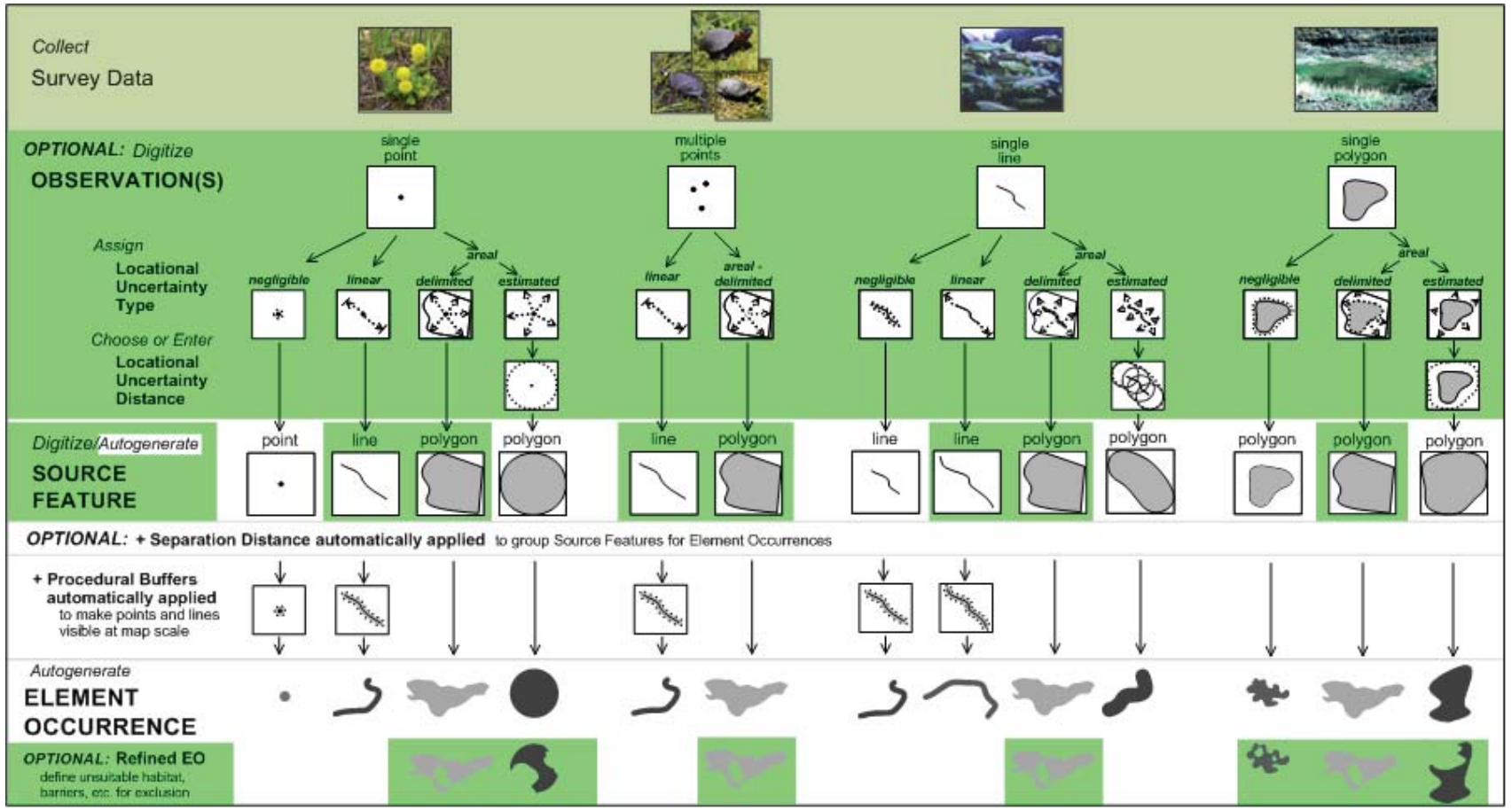


Data sharing fundamental to NatureServe programs



Network-based Spatial Methodology





Defining demand driven


Demand driven

Data that is either collected or processed according to priorities set in response to decision makers

Diminishing returns - The costs of obtaining data outweigh the benefits to decision making. Adaptation? Sufficing

The conservation science community needs to be more effective at reducing costs.

Success lies in collaboration, and linking to decision-making needs

Decision makers hold the funding keys

Who is responsible for biodiversity?

- Mandate:
  - Provincial and territorial governments (lead); Indigenous peoples (land claims)
  - Fisheries and Oceans Canada (marine, fish habitat); Environment Canada (migratory birds); Parks Canada
- Users:
  - Other federal agencies (e.g., Agriculture and Agri-food Canada; NRCan), municipalities, non-profit organizations (e.g., NCC, DU, land trusts), business (e.g., mining, oil and gas, electricity, forestry)

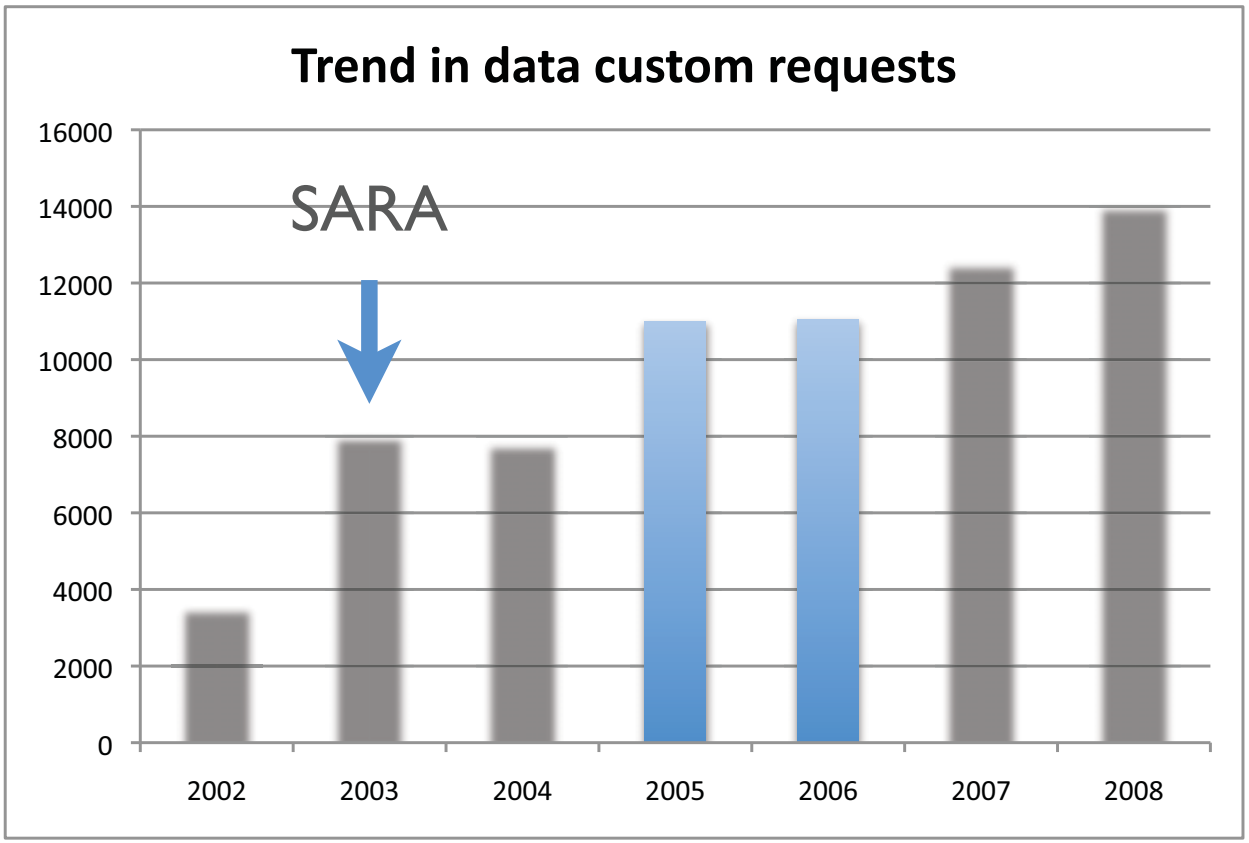
NatureServe Canada supports international vegetation classification standards.

CBD 1998 (Drivers in Canada)

- Federal, provincial and territorial legislation and policies regarding species at risk (now mostly in place)
- Strengthened environmental assessment procedures (progress made e.g., federal ties to SARA)
- Mechanisms to ensure "ecological integrity" within and surrounding parks and protected areas (now in place)
- Comprehensive law and policy for wild, non-commercial, plant species conservation, both in situ and ex situ (ties above, coming?)

Biodiversity Law and Policy in Canada: Review and Recommendations, 1996. Canadian Institute for Environmental Law and Policy, Edited by Ian Attridge.

Indicators on demand for data associated with SARA



Demand for data?

NatureServe Data can be accessed through NatureServe Explorer, Web Services, or through custom data requests

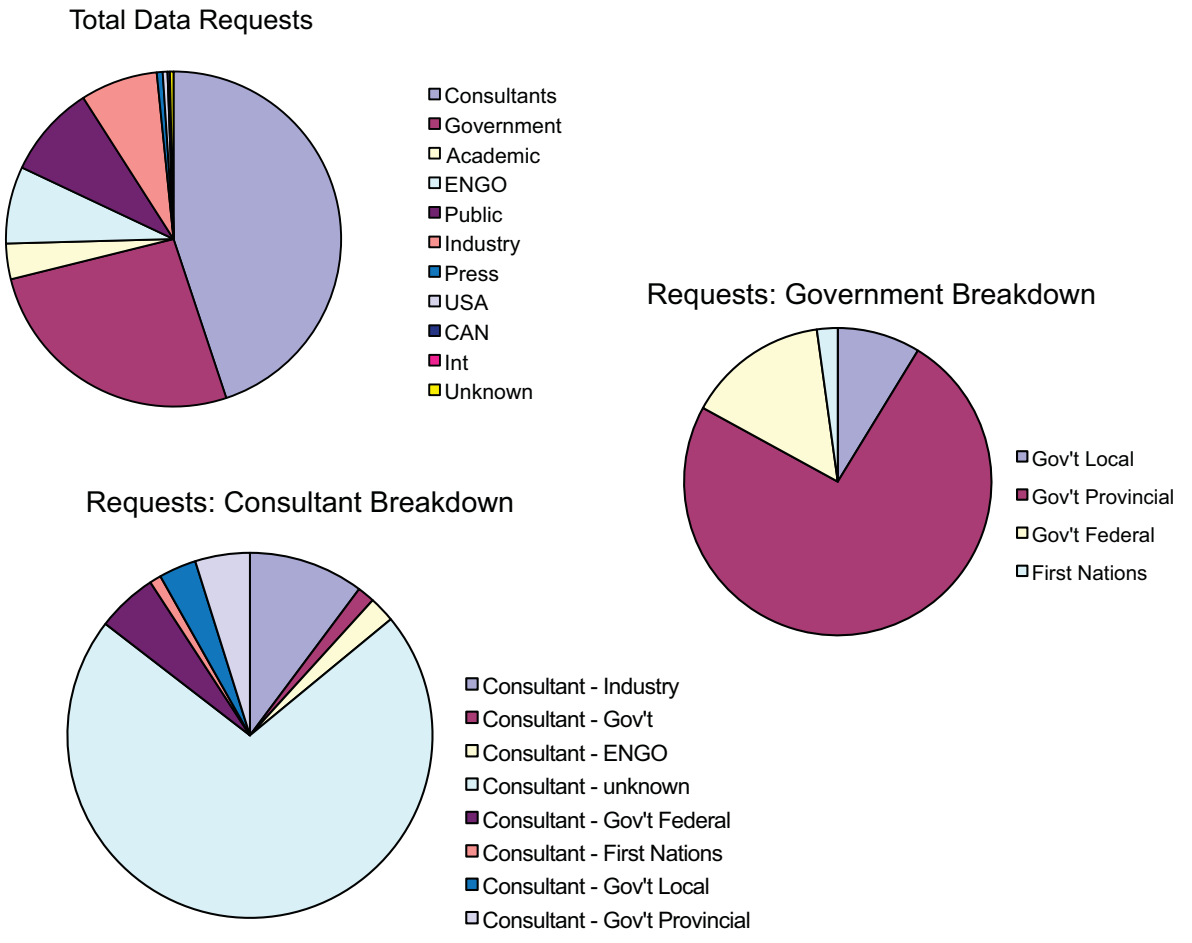
Individual CDC's have their own tools tailored to provincial legislation or planning requirements

- Ontario Explorer
- CDC Internet Mapping Service
- BC Species and Ecosystems Explorer
- Others

Currently estimate more than 500 thousands queries per month

Custom requests for some data: Must respect data sensitivity

Custom requests (BC CDC)



- BC CDC tracks client requests ~ 900 per year (2009)
- Response time from 6.5 to 2.7 days since 2004
- Time to process requests from 0.5 hours in 2004 to 0.25 hours in 2008

Types of data requests*

Site Management

Conservation Program Planning

Land Use Planning

Environmental Assessment

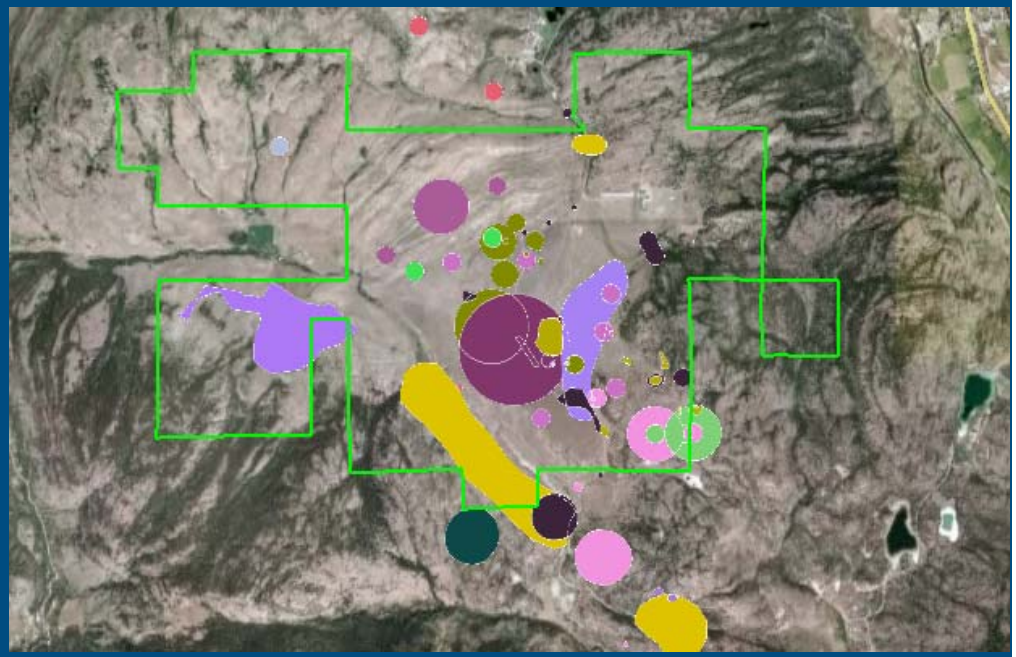
Status assessments

Other

* Estimated, based on 2009 request data

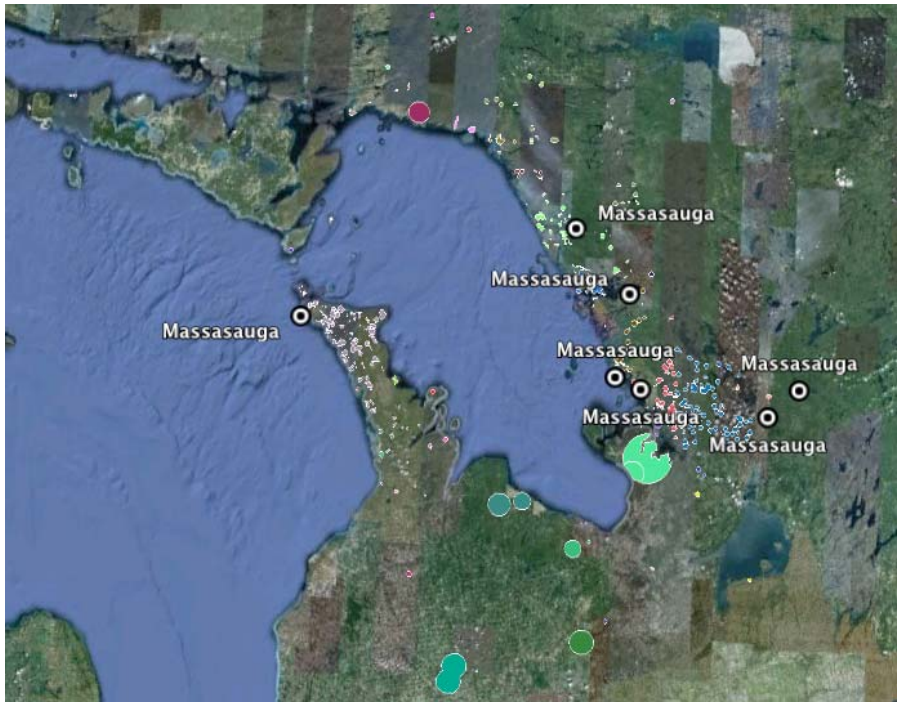
Property Management and Project EA

- Screening: Simple questions can focus effort
  - What federal or provincially listed species at the site? What other species?
  - Where are they? What threatens them?
- Beyond screening
  - Engage proper experts
  - Trigger for additional study



Conservation Planning and Action

- Having spatial data available through a common system allows for more effective planning
- Stewardship efforts for a species by multiple partners over multiple years
- Are there gaps? Where else is stewardship needed?



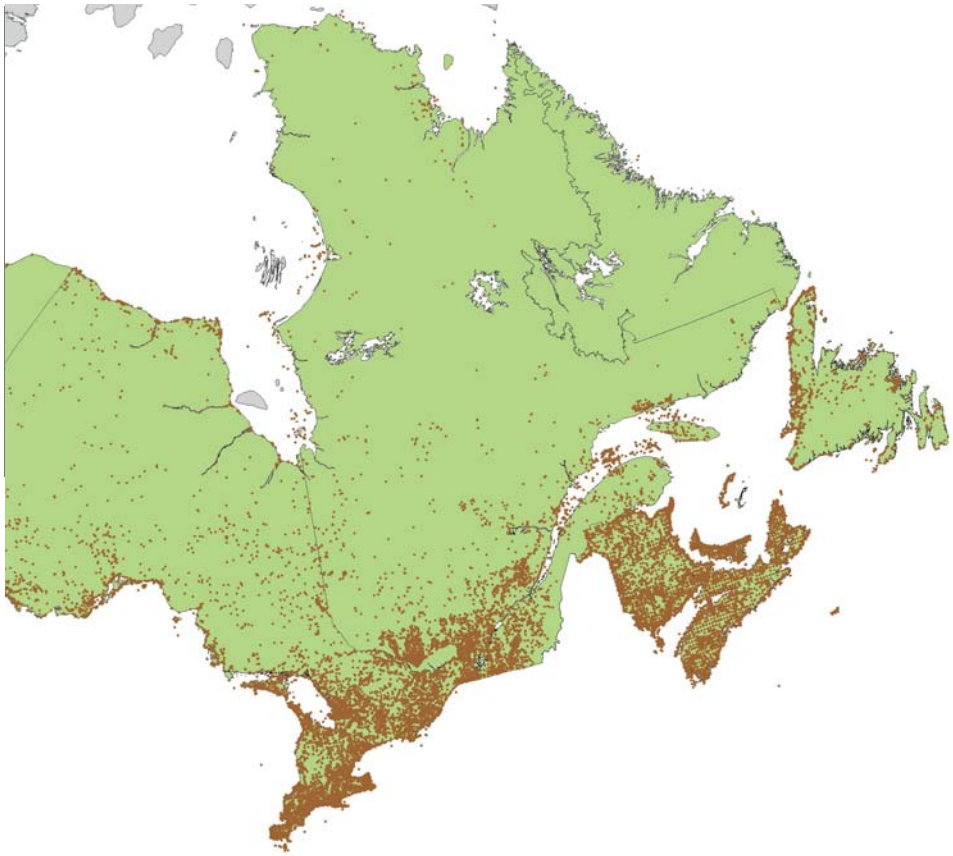


How effectively is NatureServe Canada meeting data needs?


Limitations of NatureServe Canada data

- About 50,000 species elements and 1,500 community elements in our system nationally
- Of these, 12,000 are actively "tracked" (spatially)
- Approximately 115,000 EOs nationally
  - Each EO can represent one to thousands of specimen/observation records
  - Data for most elements is incomplete

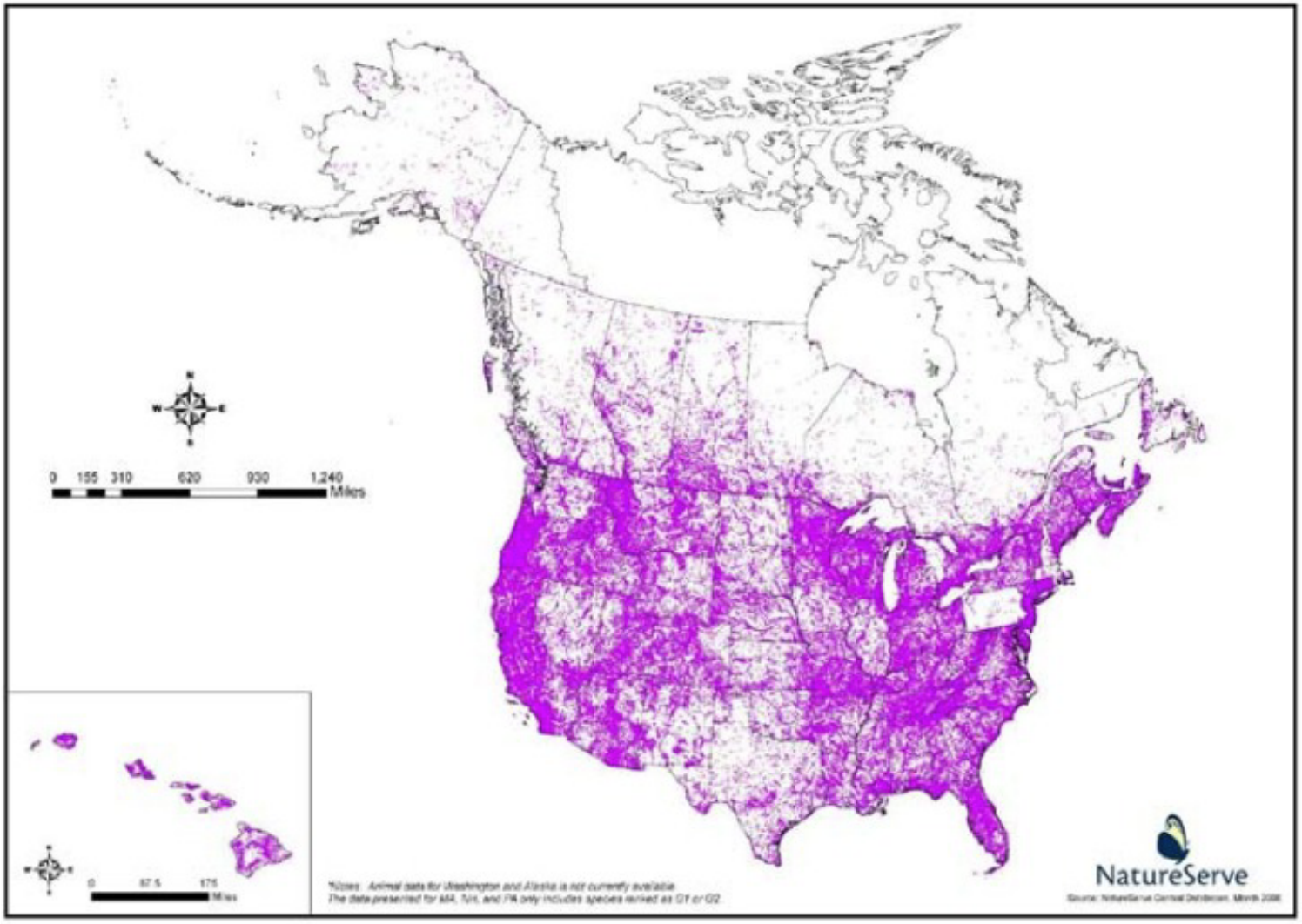
Spatial Limitations: Element Occurrences in eastern Canada



Network data coverage for some species in some areas is high

Need more survey work for priority species to enhance coverage

EO quality affected by age of supporting observational data - need ongoing investments in surveys and inventories


0 155 310 620 930 1,240
Miles
0 87.5 175
Miles
NatureServe

Taxonomic Group	Percentage of all species held	Percentage of species tracked in this class
Dicots	34.93	29.60
Insects	22.17	8.28
Monocots	14.55	34.21
Birds	6.75	43.44
Mosses	5.90	37.17
Fungi	5.08	27.04
Fish	2.01	44.01
Ferns and Fern Allies	1.97	44.07
Mammals	1.78	36.38
Gastropods	1.51	23.99
Liverworts and Hornworts	1.02	27.94
Hepatics	0.09	34.29
Hepatics	0.00	0.00
Hornworts	0.02	21.43
Spiders	0.66	1.89
Bivalves	0.39	30.25
Conifers	0.37	37.84
Amphibians	0.28	40.53
Reptiles	0.17	46.67
Branchiopods	0.10	0.00
Turtles	0.10	40.51
Crustaceans	0.07	18.18

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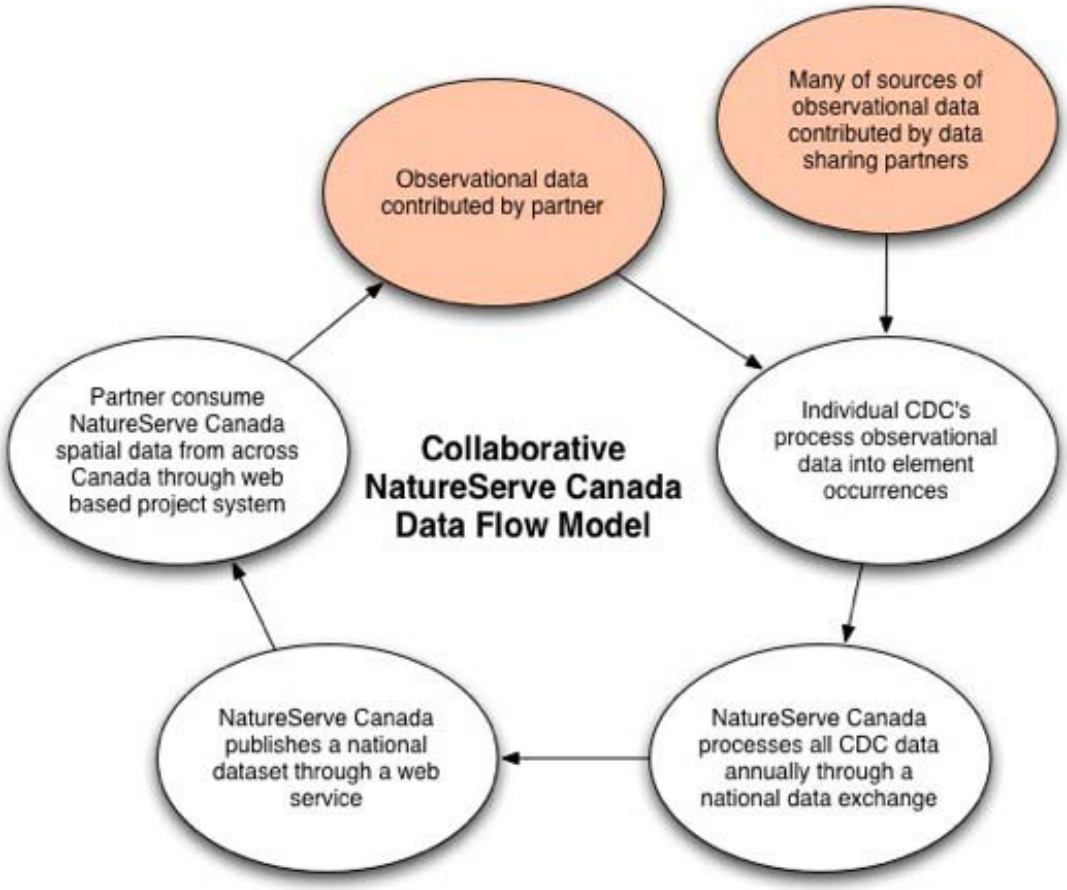
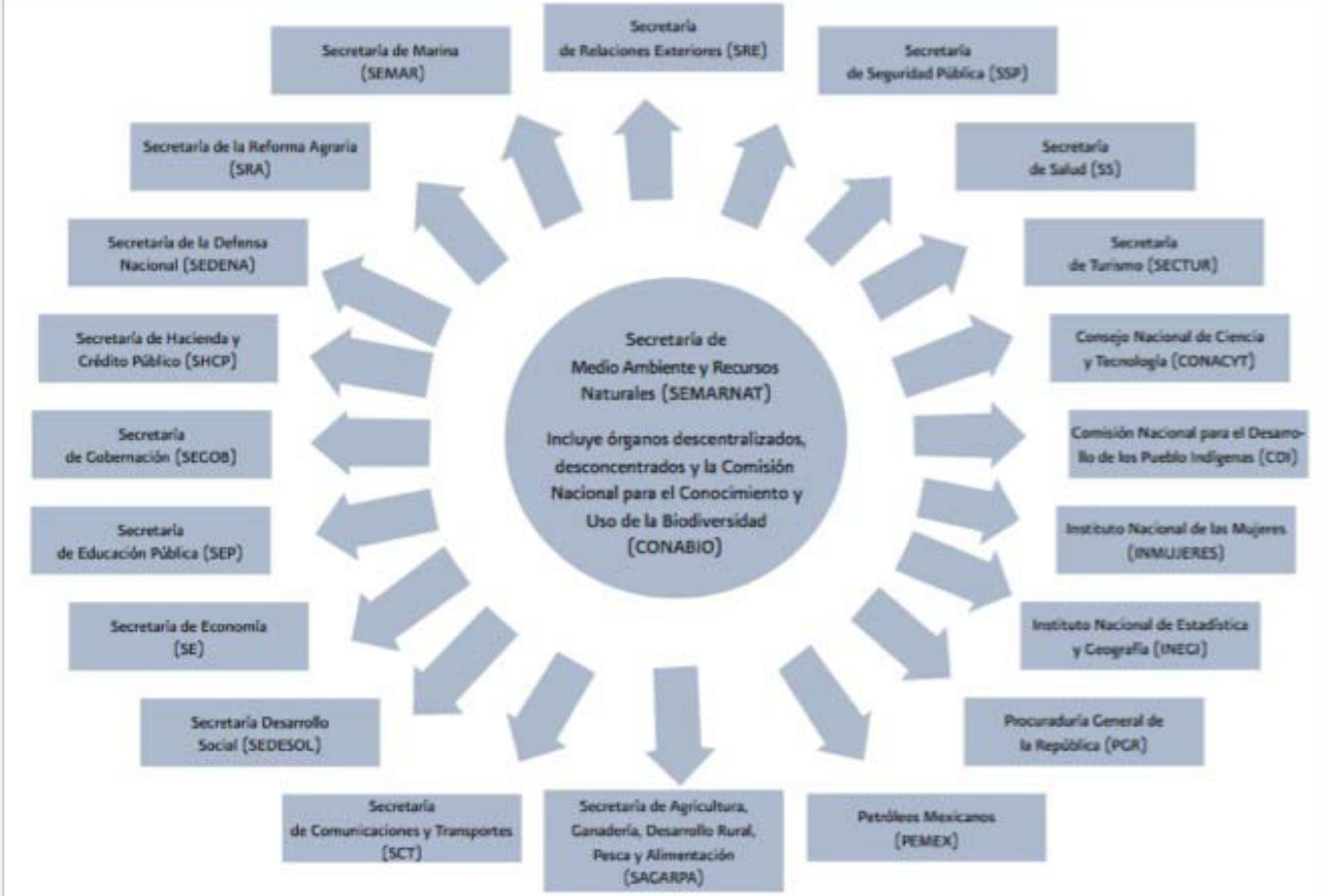




How do we respond?


FIGURA 1. DEPENDENCIAS DE LA ADMINISTRACIÓN PÚBLICA FEDERAL QUE PARTICIPAN EN LA CONSERVACIÓN DE LA DIVERSIDAD BIOLÓGICA



Fuente: SEMARNAT, 2008. Subsecretaría de Planeación y Política Ambiental. Dirección de Integración de Políticas Sectoriales.

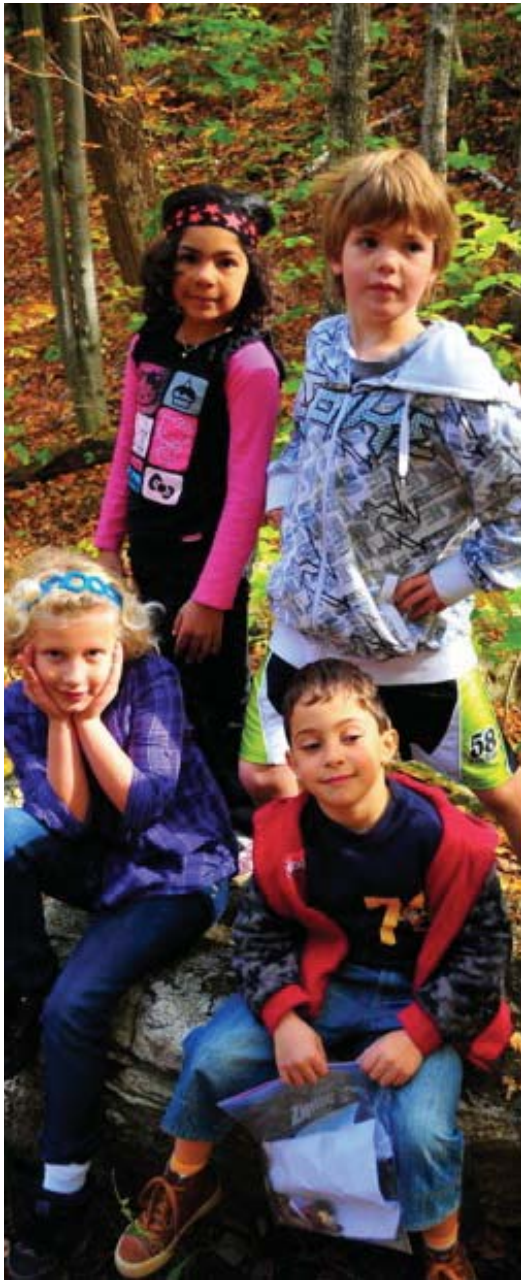
Work together

- Work to support needs in different communities
  - Effort to make NatureServe observational data available to conservation science community
- Overcome barriers to data sharing
  - Develop metadata tools to facilitate digitization, sharing
  - Apply standards to existing data
  - Create a national repository for data
- Be proactive about ties to decision making, insist on relevance
  - Reduce cost of developing and accessing data, ensure tied to priorities

A Vision

A Canadian Institute for Biodiversity Information

- outside government, joins fragmented communities, a network
- funded by federal, provincial agencies; cost recovery mandate
- promotes a Canadian observational data standard (based on DwC)
- sets priorities every 3 years for a national biological survey, based on (1) an understanding of demand, (2) a synthesis of existing data (identification of gaps); offers funding
- ensures data is gathered and made available to researchers, CDCs
- gather data and produces reports based on expert input to address issues of the day (policy relevance)



Getting *Naturally Connected*: Expanding Canadian Biodiversity Citizen Science

NatureServe Canada

Bar Coding

Cost of processing and gathering data diminishing

Target at lesser studied taxonomic groups?

Tie to citizen science - enable accurate identification

Build strong corporate sector support - tie to monitoring requirements

Thank you!
Questions?