Parks Canada – NatureServe

Working Together to Conserve Biodiversity

David Clark

Parks Canada Ecological Integrity Branch
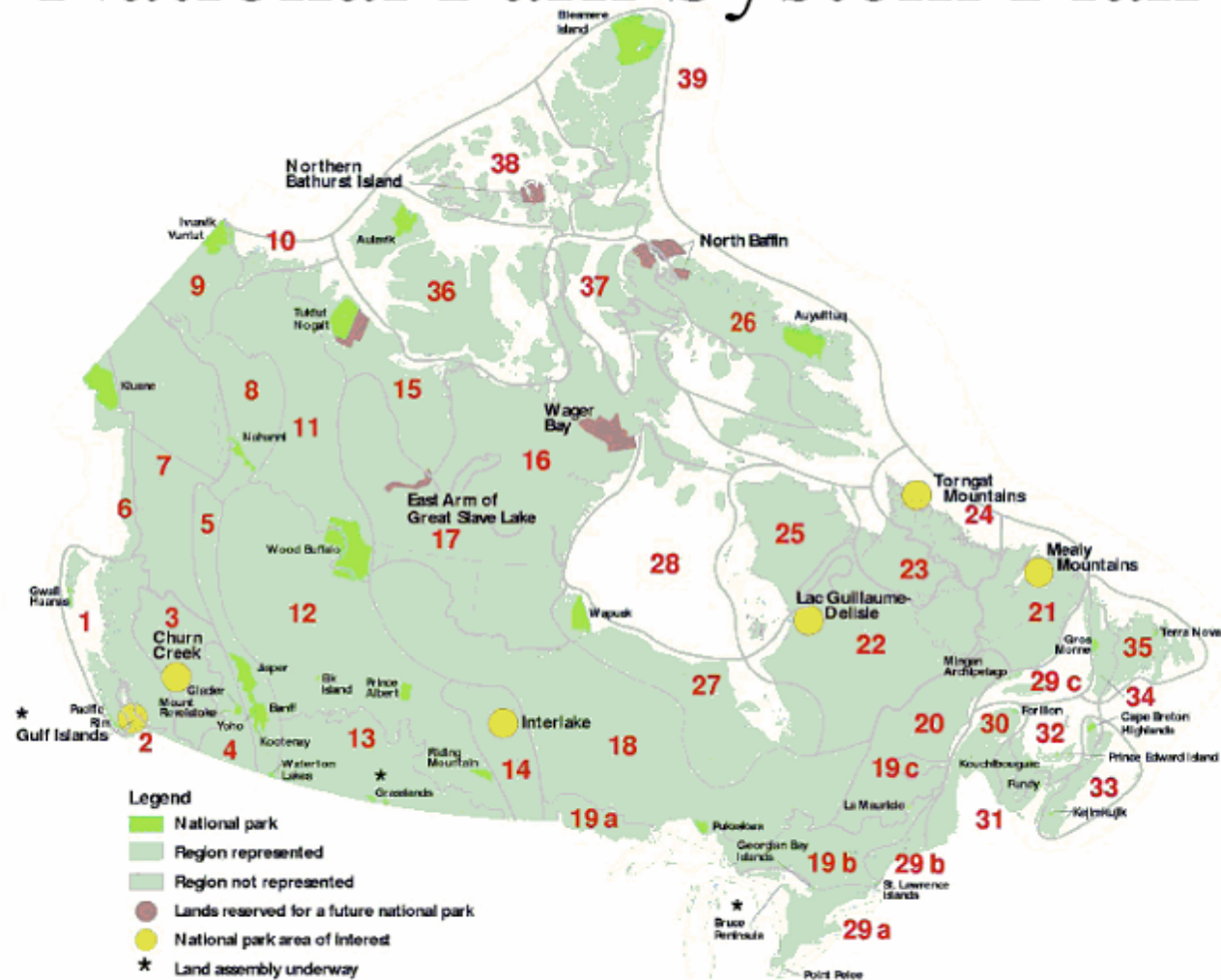
And

Rob Solomon

NatureServe

Parks Canada Agency

- 41 National Parks, 2 National Marine Conservation Area's and 155 Historic sites.

- Manage approximately 3% of Canada's landmass.

-Largest landholder in the country.

-Over 5000 employees.

National Park System Plan

Why Parks Canada is Interested in Biodiversity Management
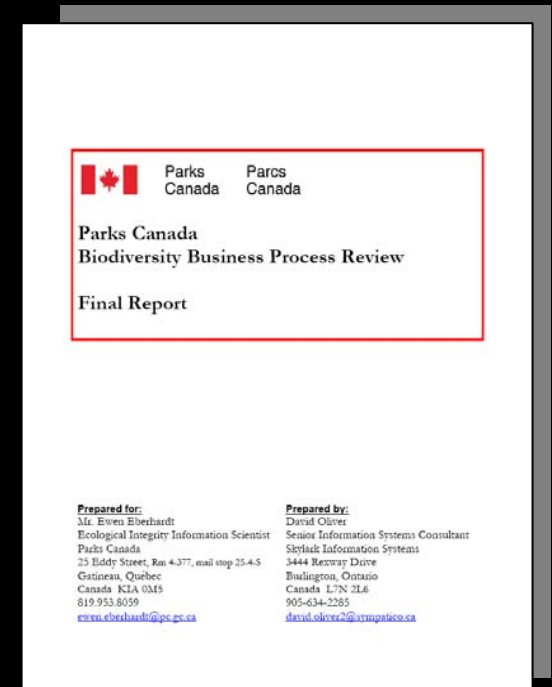
Parks Canada's mandate states that:

*"On behalf of the people of Canada, **we protect** and present nationally significant examples of **Canada's natural** and cultural **heritage** and foster public understanding, appreciation and enjoyment **in ways that ensure** their **ecological** and commemorative **integrity** for present and future generations."*

In addition biodiversity is explicitly protected in Canada's Species At Risk Act (SARA) which aims:

"… to prevent Canadian indigenous species, subspecies, and distinct populations from becoming extirpated or extinct, to provide for the recovery of endangered or threatened species, and encourage the management of other species to prevent them from becoming at risk."
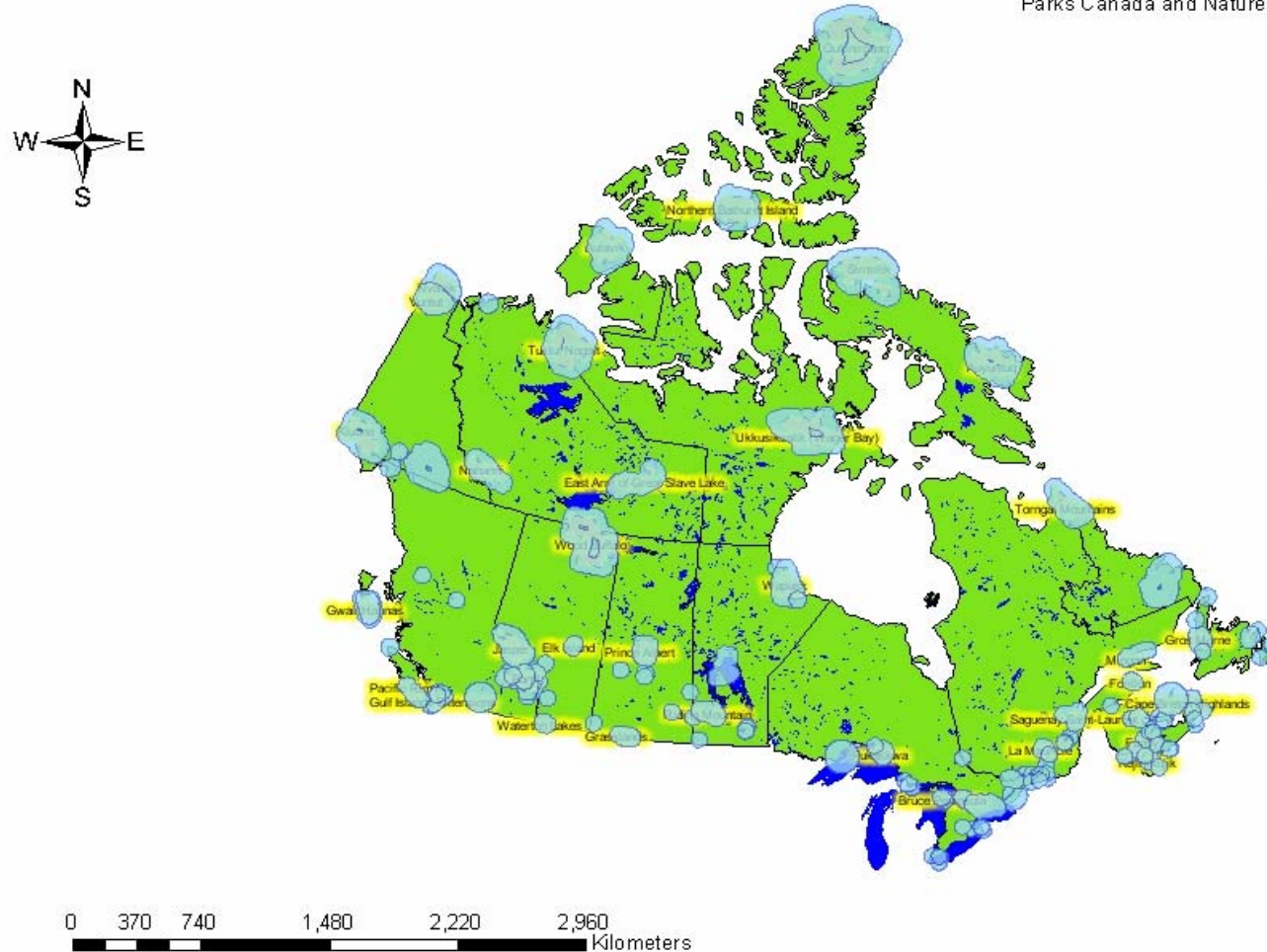
Parks Canada's Need for Information and Partnerships

- Taxonomy

- Methodology and standards

- Quality system

- Valid baseline

- Share data with NatureServe

- Share data with others

Parks Canada / Parcs Canada

Parks Canada
Biodiversity Business Process Review

Final Report

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Geographic Boundaries for Biodiversity Data Sharing

Parks Canada and NatureServe Canada

NatureServe

NatureServe is a non-profit organization dedicated to providing the scientific information and technology needed to guide effective conservation action.

NatureServe's network of member programs includes 74 natural heritage programs in the United States, Canada, and Latin America.
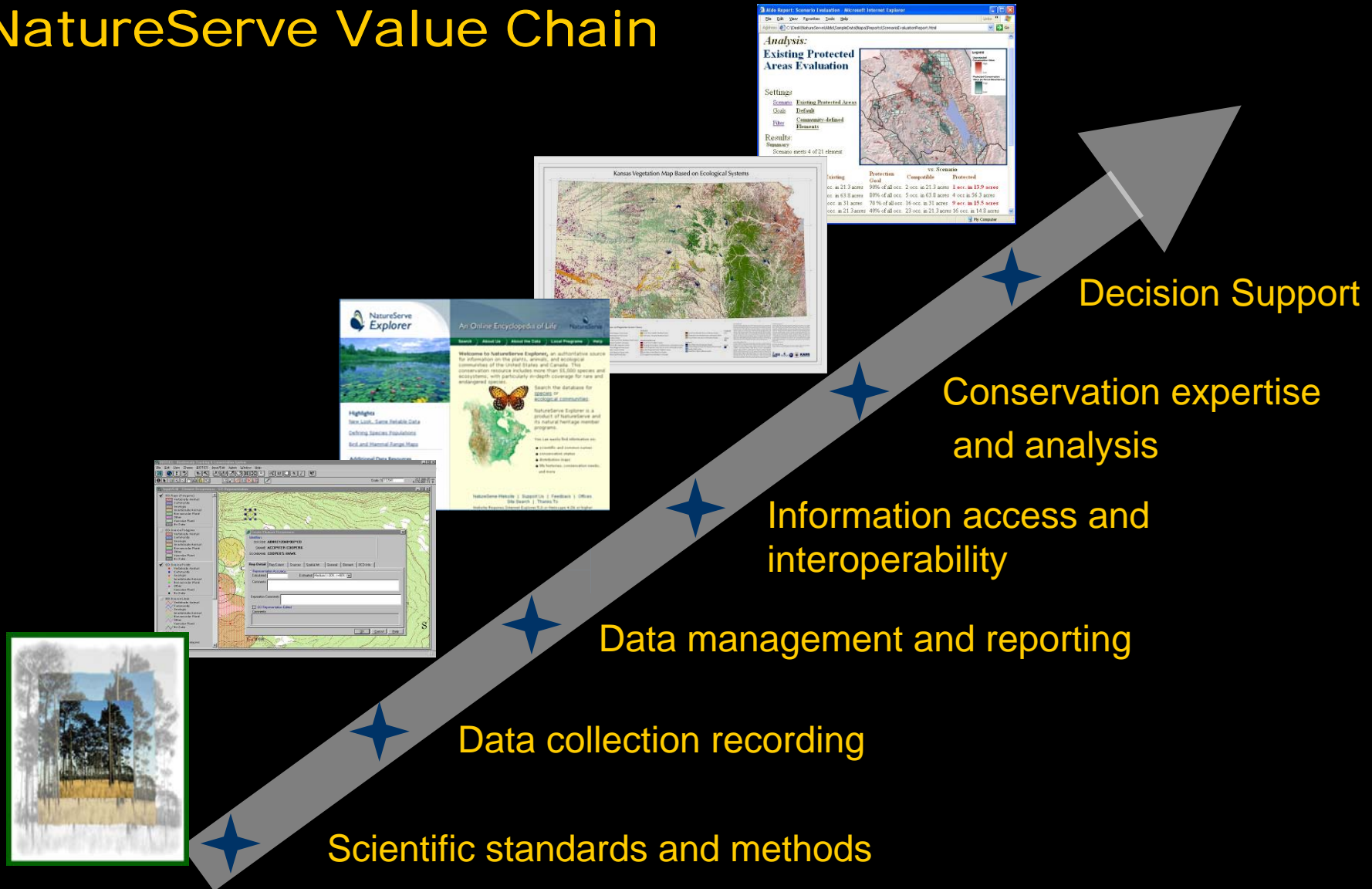
100 scientists, information technology specialists, and other conservation professionals support the network with science, data, analysis, and software.
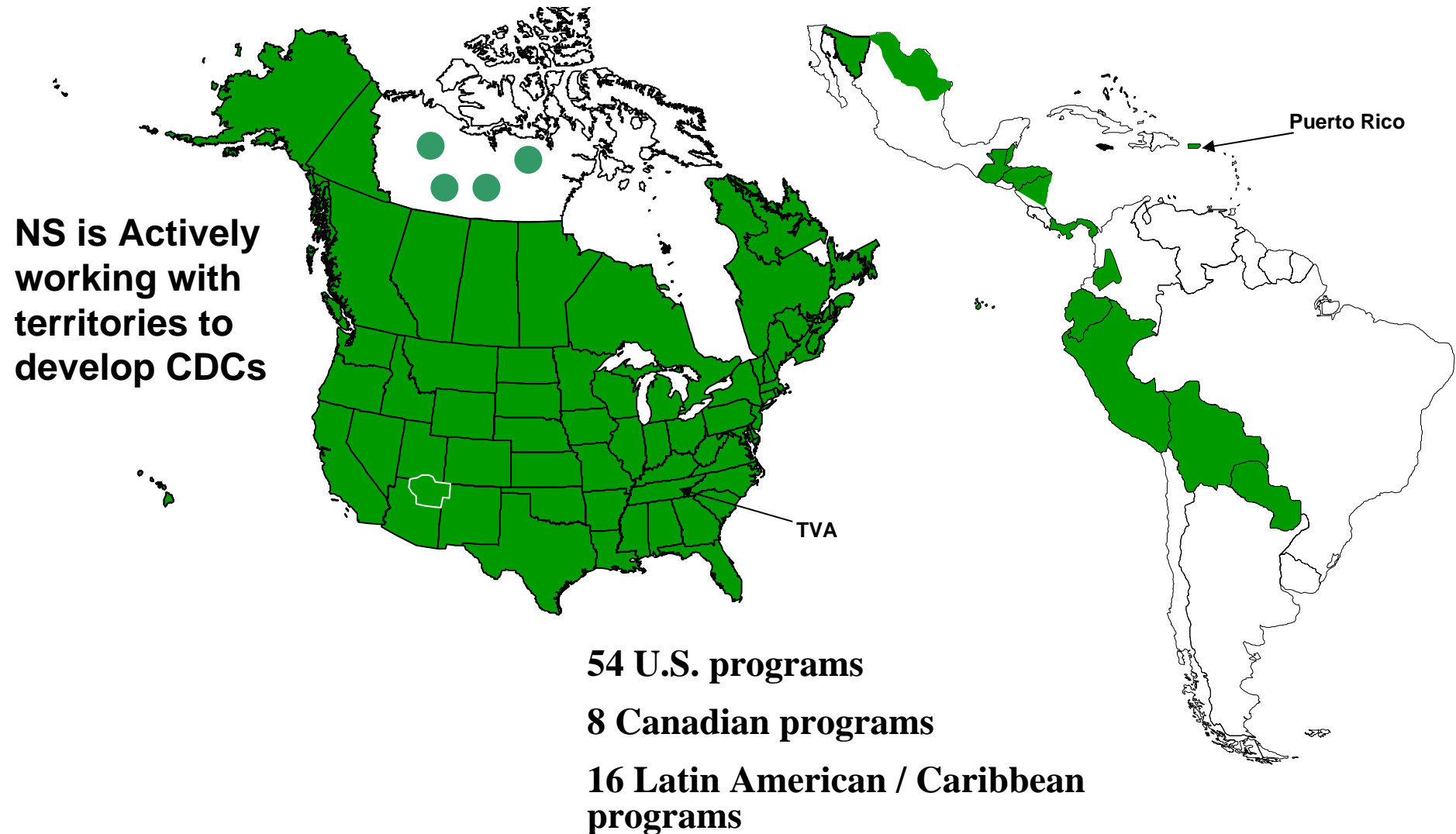
Our Vision

To protect the world's plants, animals, and ecosystems by improving society's understanding of biological diversity and making this knowledge easily accessible to the public and those making decisions about land and water use.

NatureServe

NatureServe Value Chain

Decision Support

Conservation expertise
and analysis

Information access and
interoperability

Data management and reporting

Data collection recording

Scientific standards and methods

NatureServe Network Member Programs 2006

NS is Actively working with territories to develop CDCs

Puerto Rico

TVA

54 U.S. programs

8 Canadian programs

16 Latin American / Caribbean programs

Basic Methodology

What is it?

- **Taxonomy & classification of species and natural communities (Elements).**

Where is it?

- **Mapped locations of species populations and natural communities (Element Occurrences- EOs).**

How is it doing?

- **Quality and condition of each element occurrence**
- **Conservation status and trend of each element**

What is it?

Botanical Taxa

- 24,497 Vascular Plants
  - 16,566 full species & 7,931 infraspecifics native in U.S. and/or Canada

- 2,433 Bryophytes
  - 1,975 full species & 458 infraspecifics

- 4,012 Lichens
  - 3,882 full species & 130 infraspecifics

- Plus an additional ~10,000   non-native species

Animal Taxa

	Vertebrates		Invertebrates	
	Species	Sub-species	Species	Sub-species
U.S. & Canada	2,840	1,748	12,000	1,300
Latin America	9,170 *	0	0	0
Total Taxa	~12,000	1,748	12,000	1,300

L. Master

Piotr Naskrecki

L. Master
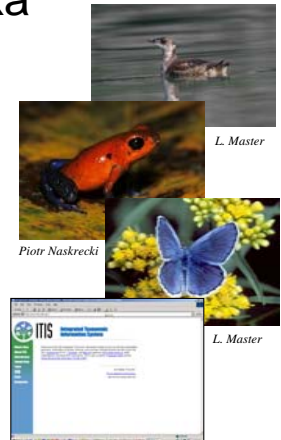
Terrestrial Ecological Systems

Group of plant associations that tend to co-occur within landscapes with similar ecological processes, substrates, and/or environmental gradients.

~800 in US & Canada; 1,700 in hemisphere

Good for broad-scale mapping

ECOLOGICAL SYSTEMS OF THE UNITED STATES
A WORKING CLASSIFICATION OF U.S. TERRESTRIAL SYSTEMS
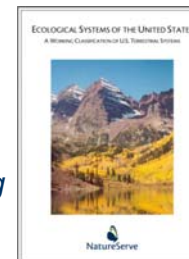
NatureServe

NatureServe uses recognized standards

Metadata

National Biological Information Infrastructure (NBII)

Canadian Biodiversity Information Facility (CBIF)

Taxonomic Databases Working Group (TADWG)

Global Biodiversity Information Facility (GBIF)

U.S. Federal Geographic Data Committee (FGDC)
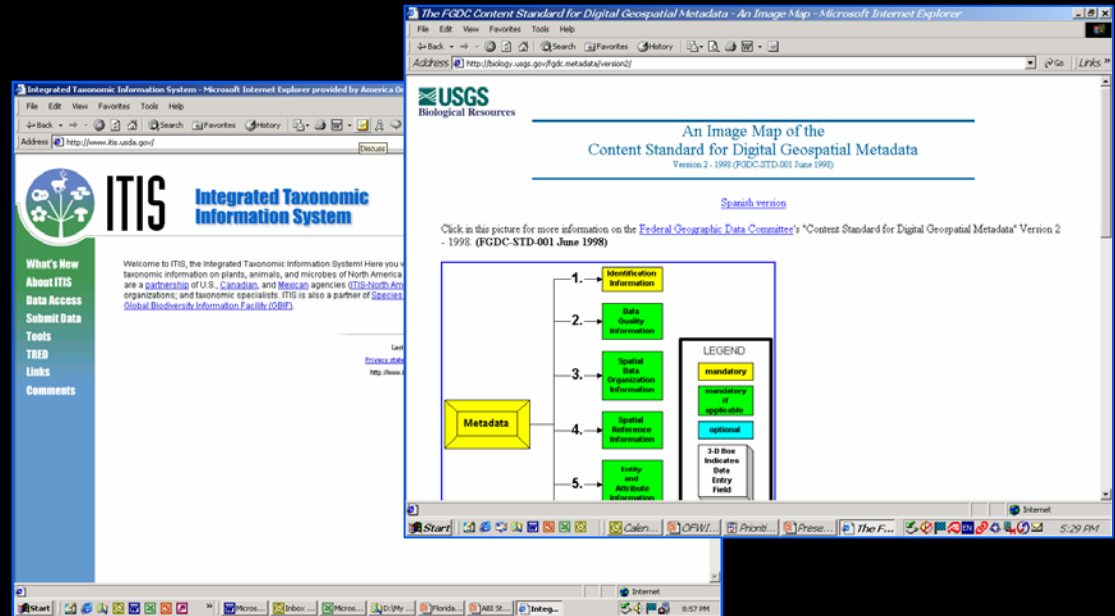
Taxonomy

**Where they exist accepted taxonomy and metadata standards are established and supported**

Examples;

     Plants = Kartesz

     Birds = Bird taxonomy follows American Ornithologists Union (AOU)

     Community classification = NatureServe helped to develop [International Classification of Ecological Communities](#) (ICEC) for plant communities.

Where is it?

Area of land and/or water in which a species population or natural community is, or was present.
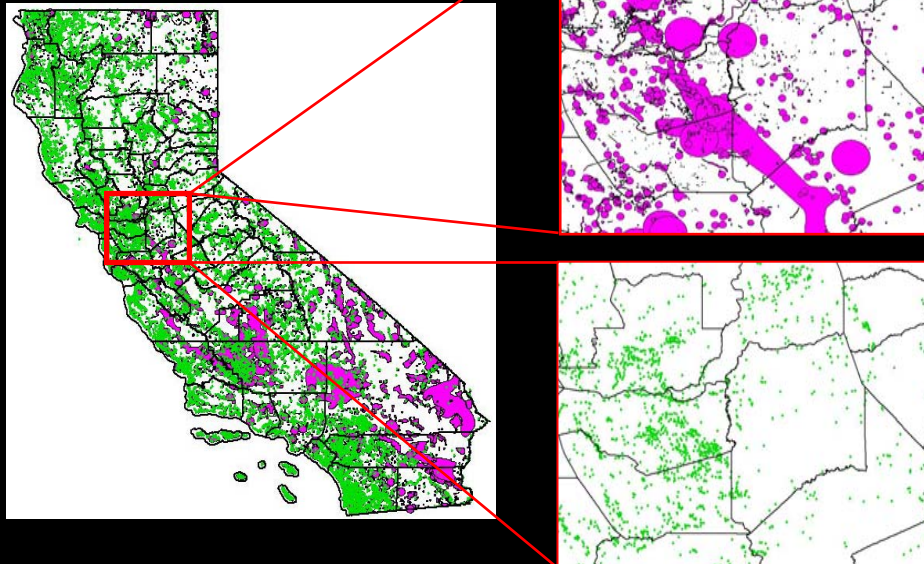
Boreal Toad,
Bufo boreas boreas

- Identity
- Date
- Location

How is it doing?

NatureServe Conservation Status Ranks

GX — Extinct

GH — Possibly extinct

G1 — Critically imperiled

G2 — Imperiled

G3 — Vulnerable

G4 — Apparently secure

G5 — Widespread, abundant and secure


L. Master

Wood Stork, G4 N3

Eastern Prairie White-Fringed Orchid, G3 N3

• **N-rank and S-rank equivalents are used to rank at National and Sub-national levels**

Biodiversity Data Management

- A desktop-based, GIS database management system

- Manages and analyzes local and range-wide biodiversity information on species and ecosystems

- Facilitates data-sharing among international network of scientists and programs

- A distributed systems with tools to aggregate and reconcile data problems
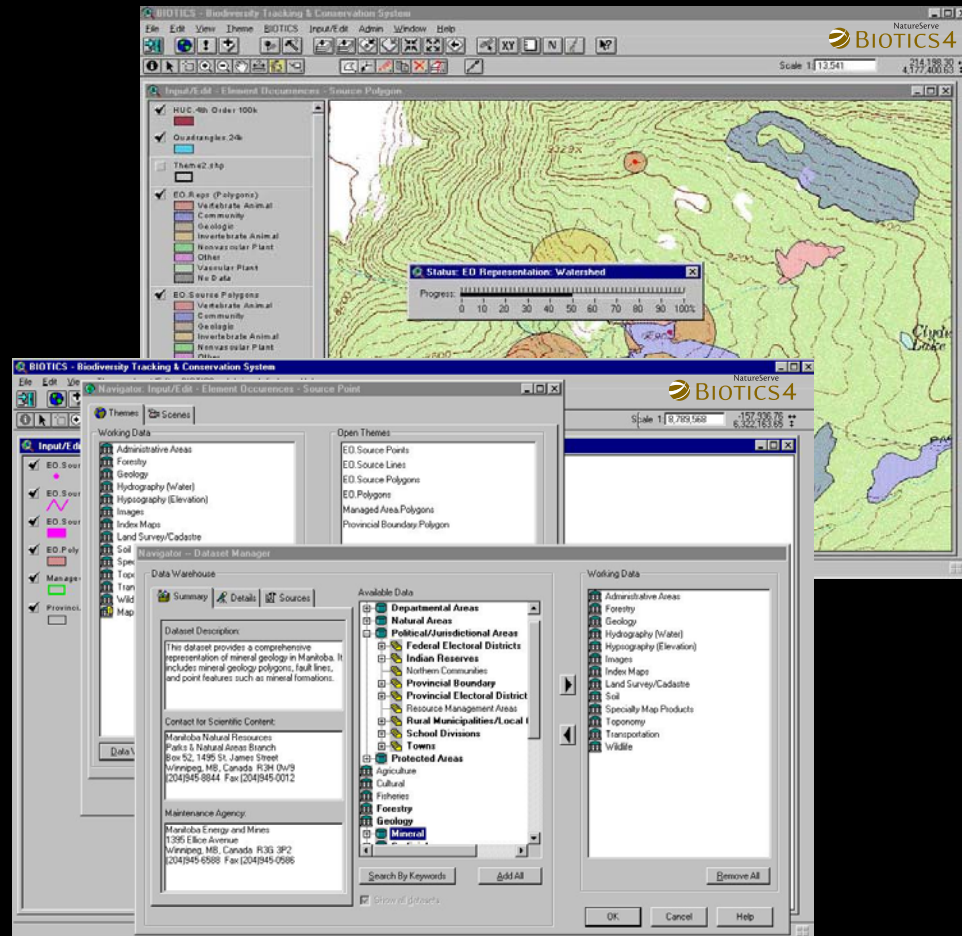
Element Occurrence – "EO"

An Element Occurrence (EO) is an area of land and/or water in which a species population or natural community is, or was present.
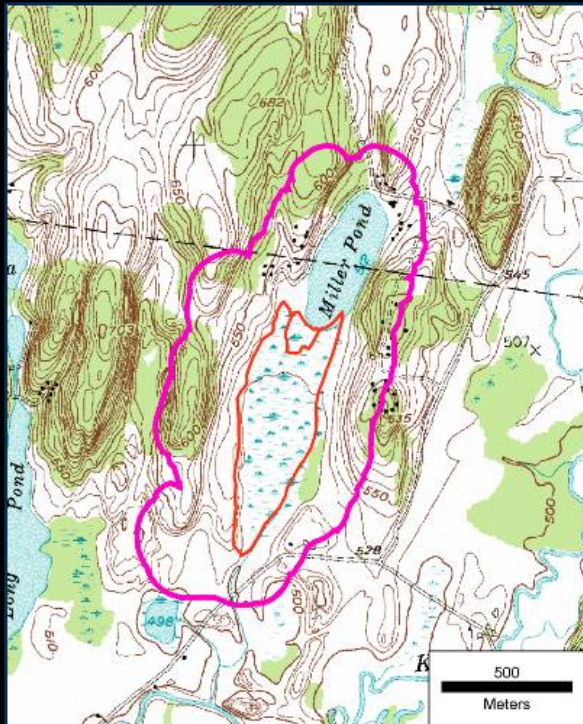
Boreal Toad

Why an "EO"?

- Place-based

- Focuses on **population or natural community** as primary unit of conservation interest

- Enables viability estimates (rank it through time)

- Unbiased comparison of areas of interest

- **Observations and plots** are supporting data

- Knowing the location of significant areas of interest will help in their protection

Observations

A *foundation* used for scientific inventory, conservation planning, habitat management, invasive-species assessments, predictive range modeling, monitoring, and much more.

Characterizes the evidence for the presence or absence of an organism or set of organisms through a data collection event at a location.

Can be documented as physical specimens or vouchers, as well as through the collection of different attribute data including but not limited to location, abundance, distribution, phenology, ecological associations, and environmental necessarily conditions.

Accommodates monitoring activities that results from repeated visits to the same observation site over a period of time using consistent methodology.
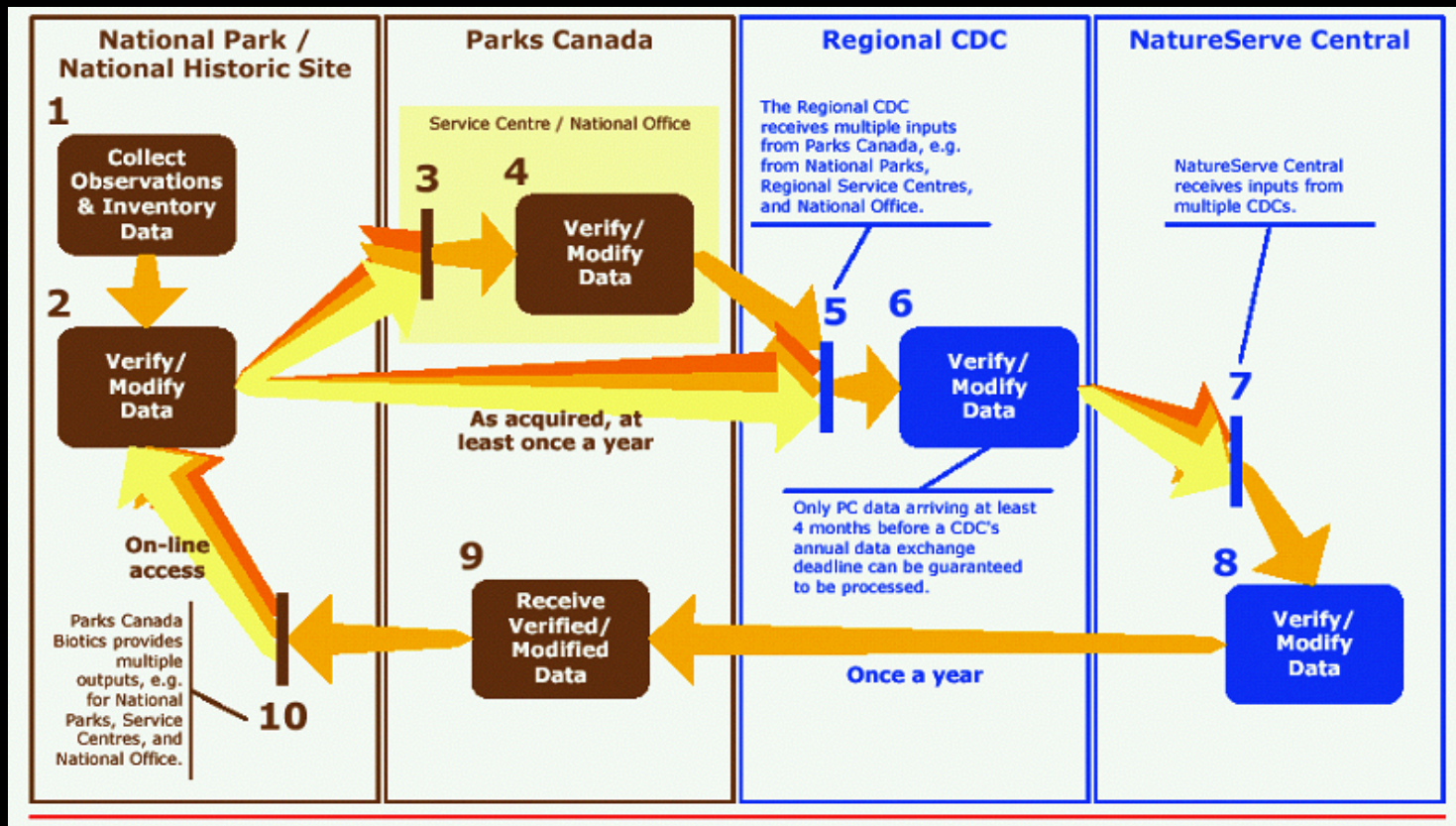
Monitoring focus is generally the detection and documentation of change over time and trends.

EO Development Process
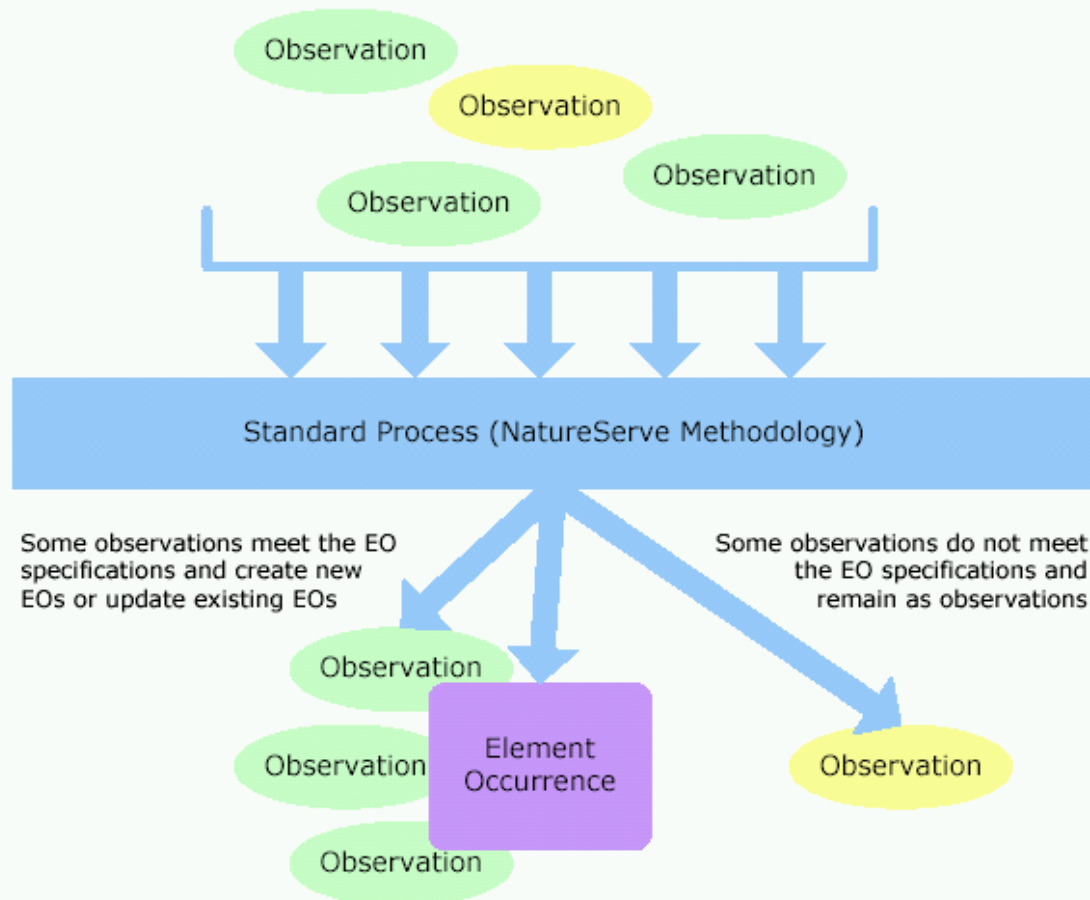
Process for Data flow

Process that 'quality' data moves to Parks Canada Biotics to be accessible to the appropriate people

NatureServe's Next-Generation Technology

Replaces Biotics 4 with web-based suite of application modules.

Features:

- Hostable – users access remotely via web; cheaper than acquiring and managing local system.

- Web services enable interconnectivity among data providers, new flexibility in provision of data to clients.

- Query of multijurisdictional data sets in near real-time.

- Multilingual, localizable.

- Simplification of data model: individual application modules replace monolithic structure.

The Observation Data tool is the first proposed new module

NatureServe's Next-Generation Technology
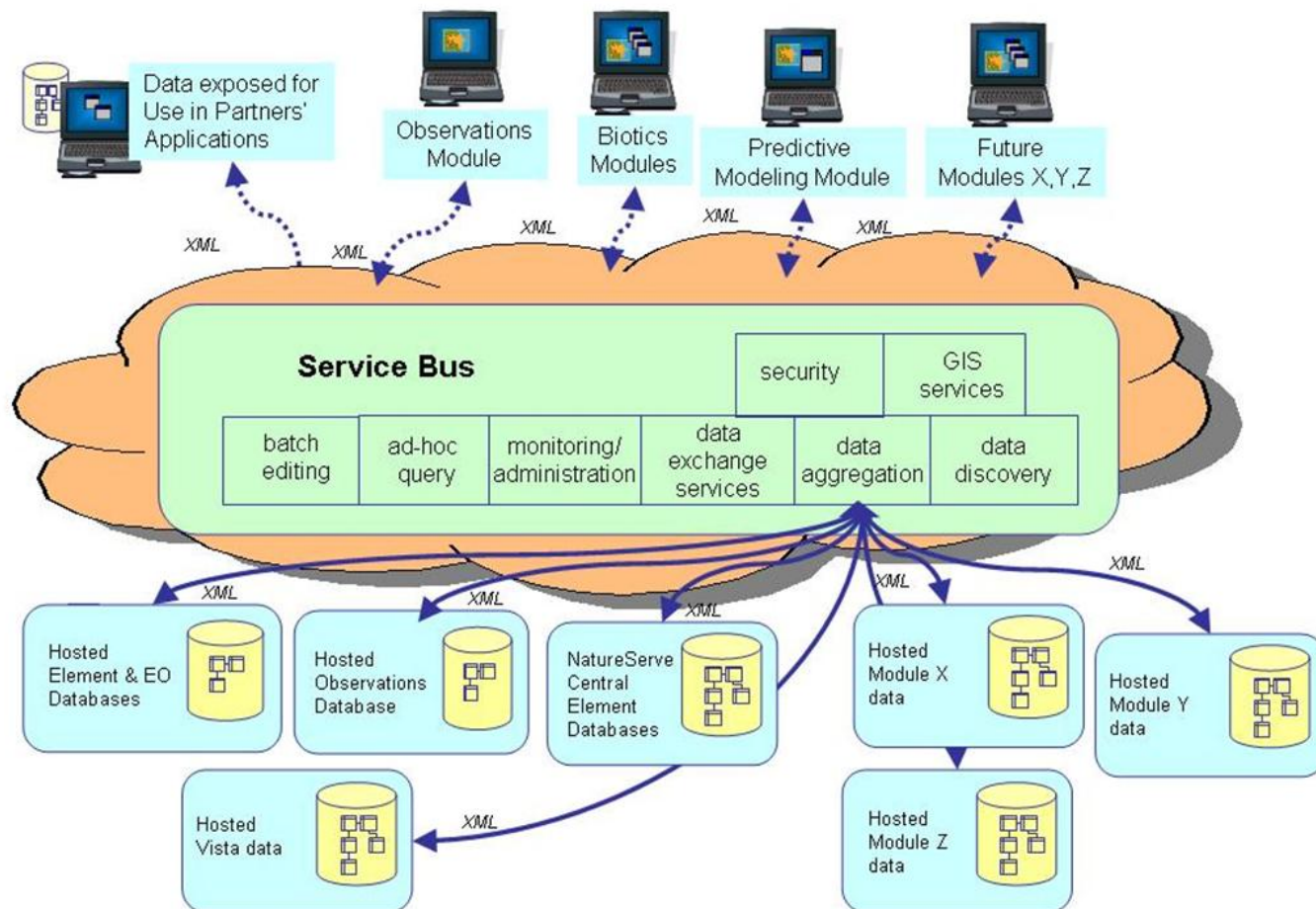
Other Interest

-Other Canadian Federal Agencies

-Global Biodiversity Information Facility (GBIF)

-Federal Biodiversity Information Partnership (FBIP)

-Industry associations

-Private industry

Conclusion / Questions ?

More information is available by contacting the Parks Canada Ecological Integrity Branch or NatureServe