The Nature Trust of BC

Lunchtime Sustainability Series
SFU Downtown

Biodiversity in BC: Why Should We Care ?

October 7, 2008

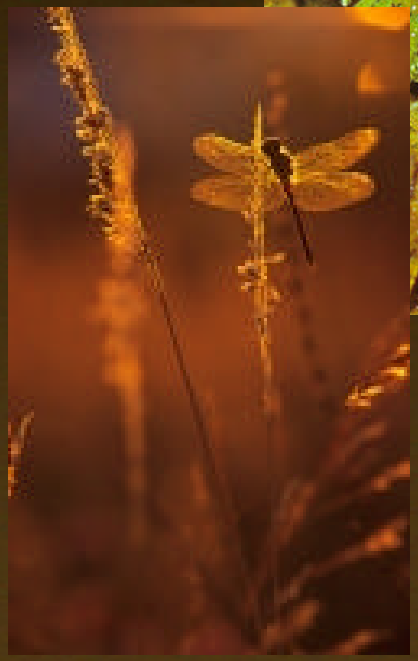
Who is Biodiversity BC?

- Ducks Unlimited Canada
- Environment Canada (Canadian Wildlife Service)
- Government of British Columbia (Ministry of Environment, Ministry of Agriculture and Lands)
- Habitat Conservation Trust Foundation
- The Land Conservancy of British Columbia
- Nature Conservancy Canada
- The Nature Trust of British Columbia
- Pacific Salmon Foundation
- Public Land ENGOs (represented by Canadian Parks and Wilderness Society)
- Union of British Columbia Municipalities (represented by Metro Vancouver)

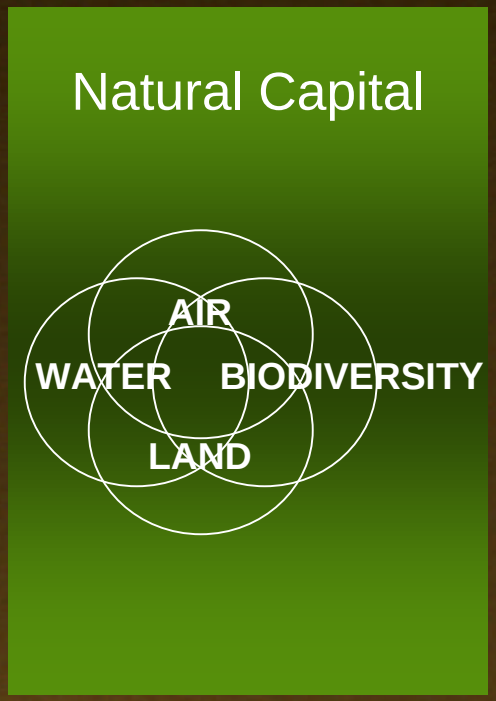
Bio Diversity BC

What is Biodiversity?

…all living things and the elements and processes that sustain them…



Benefits of Biodiversity



ECOSYSTEM OUTPUTS & BENEFITS

Goods:

- wood and fibers
- food
- fuel
- genetic resources
- pharmaceuticals
- drinking water
- minerals

Services:

- climate regulation
- water purification
- waste treatment
- erosion control
- pest and disease control
- pollination
- soil formation
- photosynthesis

Bio Diversity BC

Vision

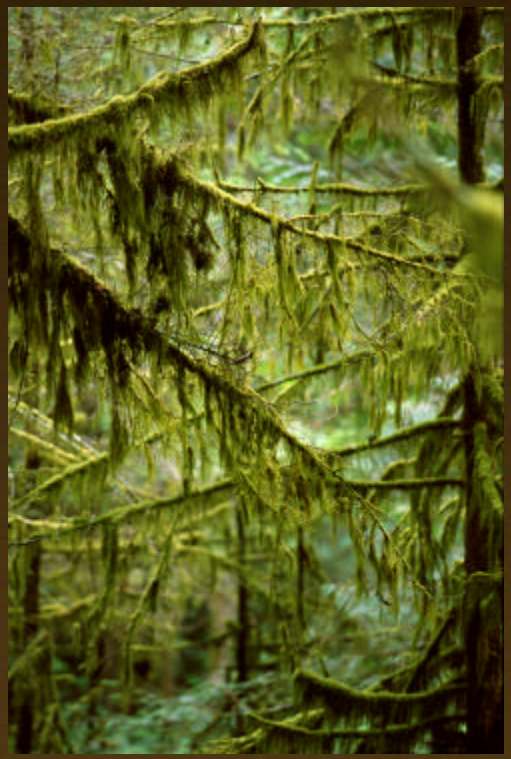
British Columbia is a spectacular place with healthy, natural and diverse ecosystems that sustain and enrich the lives of all.

BC Biodiversity

Goals

1. Conserve the Elements of Biodiversity

To maintain the diversity of genes, species and ecosystems, prevent elements of biodiversity from becoming at risk and contribute to global efforts for biodiversity conservation.



BioDiversity BC

Goals

2. Increase Awareness of the Importance of Biodiversity and Respect for the Natural Environment

To increase awareness and understanding about the importance and value of biodiversity and encourage British Columbians to take action on conserving biodiversity.

Goals

3. Provide Tools and Incentives to Enable Biodiversity Conservation

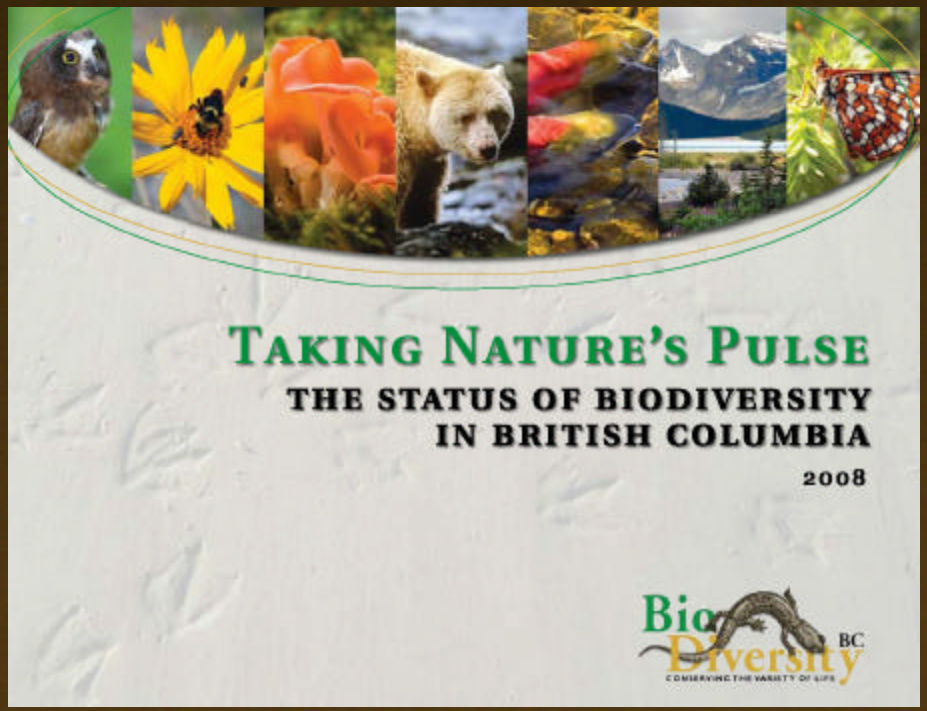
To provide tools and incentives to enable governments (including First Nations), industry, conservation organizations and citizens to improve conservation of British Columbia's biodiversity.

Status Report

Taking Nature's Pulse: The Status of Biodiversity in British Columbia

"As a state of biodiversity report it is as good as any I have seen around the world."

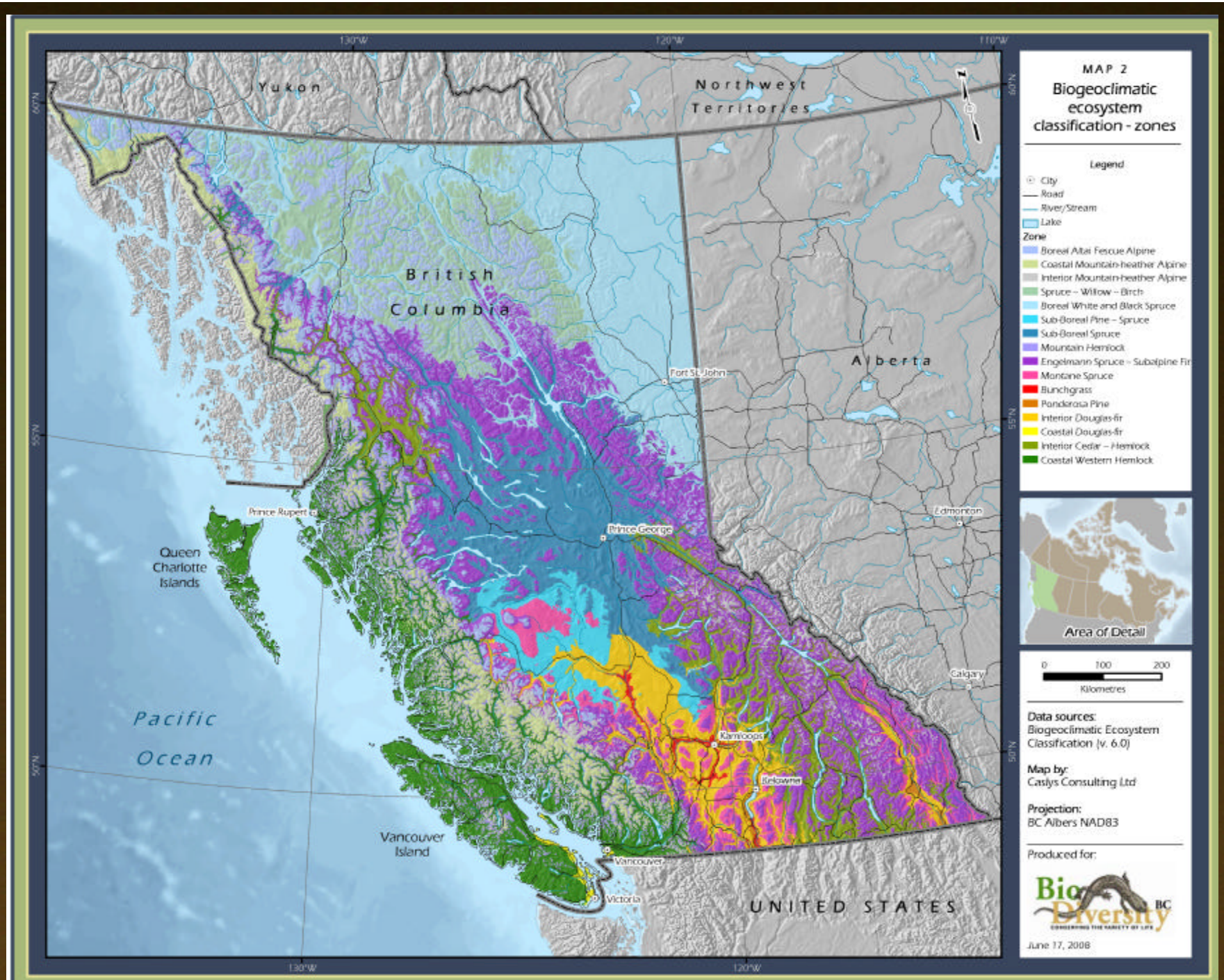
Dr. Hugh Possingham,
University of Queensland



Status Report Major Findings

B.C.’s biodiversity is globally significant because of its variety and integrity, but without immediate action it is vulnerable to rapid deterioration, especially in light of climate change

BC Biodiversity

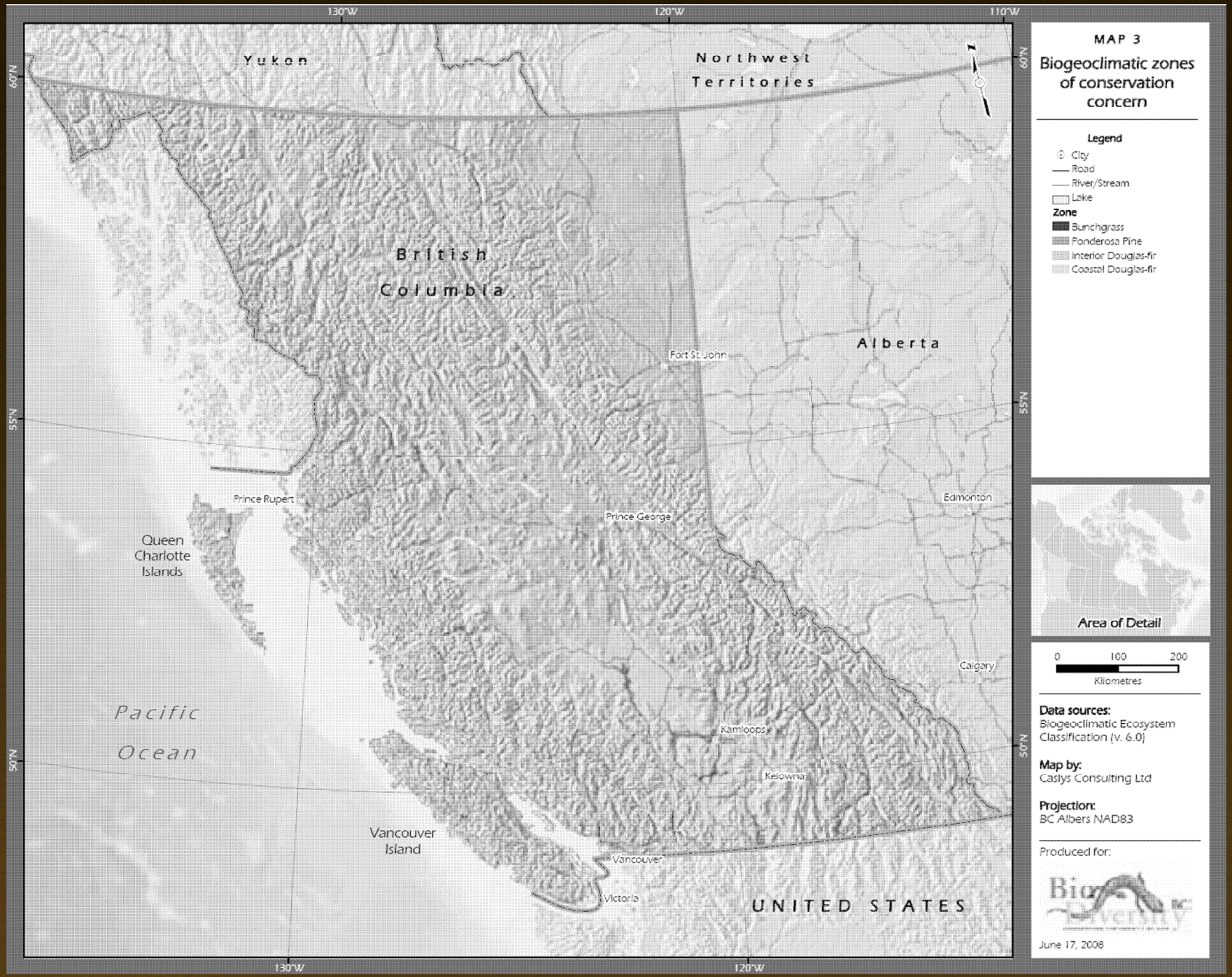

MAP 2
Biogeoclimatic ecosystem classification - zones
Legend
City
Road
River/Stream
Lake
Zone
Boreal Altai Fescue Alpine
Coastal Mountain-heather Alpine
Interior Mountain-heather Alpine
Spruce – Willow – Birch
Boreal White and Black Spruce
Sub-Boreal Pine – Spruce
Sub-Boreal Spruce
Mountain Hemlock
Engelmann Spruce – Subalpine Fir
Montane Spruce
Bunchgrass
Ponderosa Pine
Interior Douglas-fir
Coastal Douglas-fir
Interior Cedar – Hemlock
Coastal Western Hemlock
Area of Detail
0 100 200
Kilometres
Data sources:
Biogeoclimatic Ecosystem Classification (v. 6.0)
Map by:
Caslys Consulting Ltd
Projection:
BC Albers NAD83
Produced for:
June 17, 2008
Yukon
Northwest Territories
British Columbia
Alberta
Fort St. John
Prince Rupert
Prince George
Edmonton
Queen Charlotte Islands
Calgary
Pacific Ocean
Kamloops
Kelowna
Vancouver Island
Vancouver
Victoria
UNITED STATES
130°W
120°W
110°W
60°N
55°N
50°N

Some Major Findings –

Ecosystem Diversity

- 4 of 16 BEC zones of conservation concern
- 50% plus of 611 ecological communities of conservation concern
- Significant areas of wetlands converted or degraded
- Low elevation grassland communities are the rarest land cover type in B.C.

BC Biodiversity



MAP 3

Biogeoclimatic zones of conservation concern

Legend

- City
- Road
- River/Stream
- Lake

Zone

- Bunchgrass
- Ponderosa Pine
- Interior Douglas-fir
- Coastal Douglas-fir

0 100 200

Kilometres

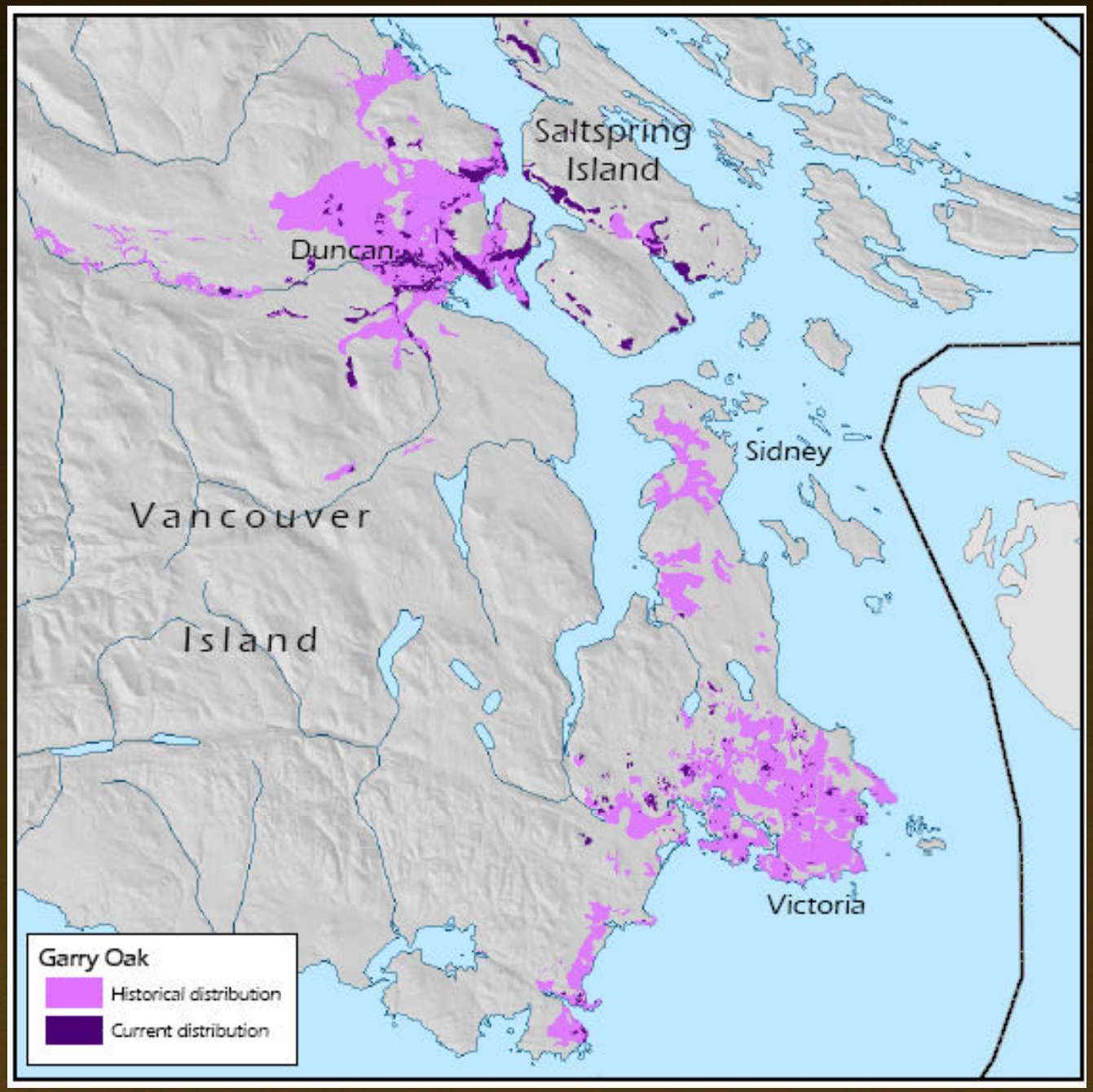
Data sources:
Biogeoclimatic Ecosystem Classification (v. 6.0)

Map by:
Caslys Consulting Ltd

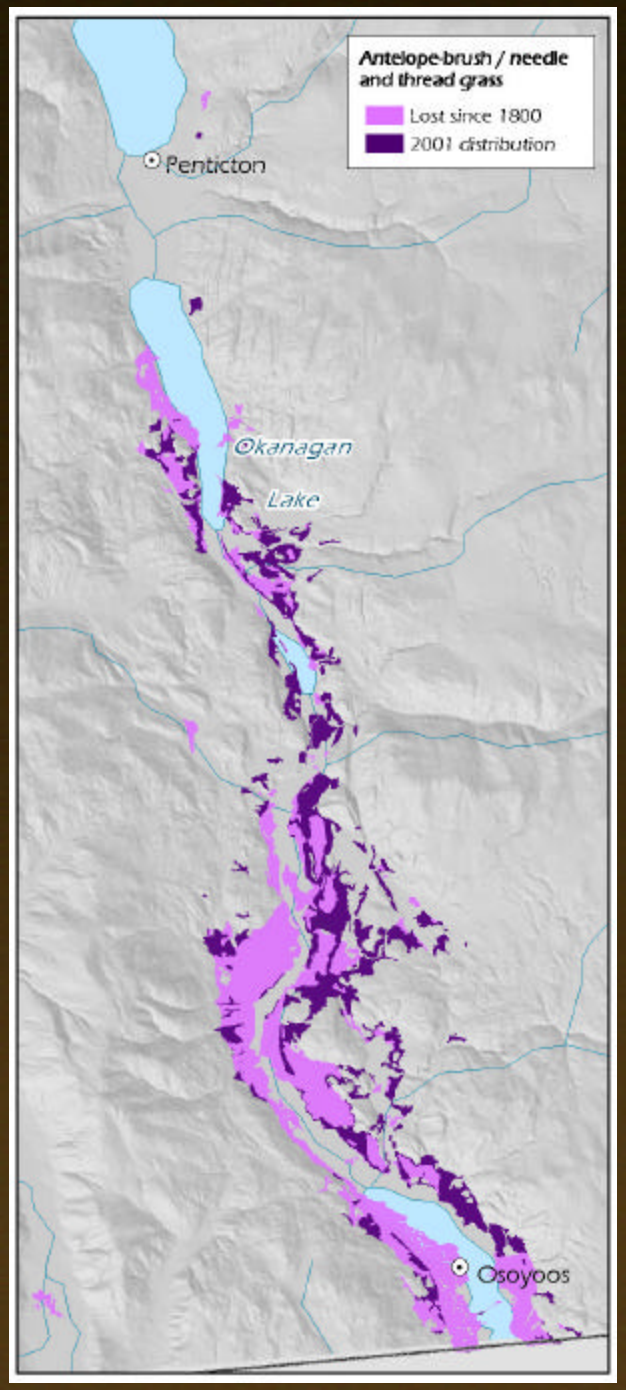
Projection:
BC Albers NAD83

Produced for:

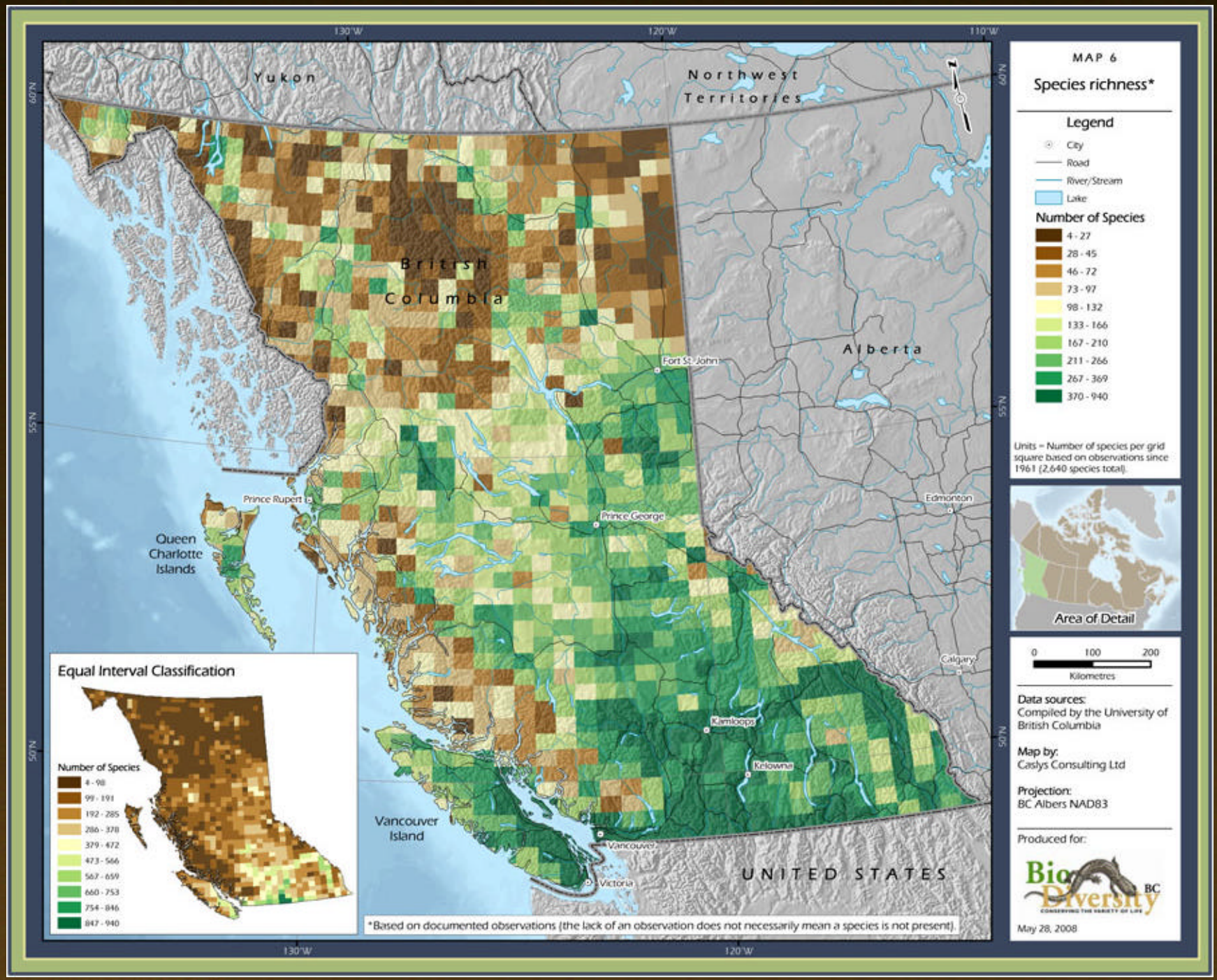
June 17, 2008



BC Biodiversity



BC Biodiversity
Conserving the variety of life


MAP 6
Species richness*
Legend
City
Road
River/Stream
Lake
Number of Species
4 - 27
28 - 45
46 - 72
73 - 97
98 - 132
133 - 166
167 - 210
211 - 266
267 - 369
370 - 940
Units = Number of species per grid square based on observations since 1961 (2,640 species total).
Area of Detail
0 100 200
Kilometres
Data sources:
Compiled by the University of British Columbia
Map by:
Caslys Consulting Ltd
Projection:
BC Albers NAD83
Produced for:
BC Biodiversity
May 28, 2008
Yukon
Northwest Territories
British Columbia
Alberta
UNITED STATES
Queen Charlotte Islands
Vancouver Island
Fort St. John
Prince Rupert
Prince George
Edmonton
Calgary
Kamloops
Kelowna
Vancouver
Victoria
130°W
120°W
110°W
60°N
55°N
50°N
Equal Interval Classification
Number of Species
4 - 98
99 - 191
192 - 285
286 - 378
379 - 472
473 - 566
567 - 659
660 - 753
754 - 846
847 - 940
*Based on documented observations (the lack of an observation does not necessarily mean a species is not present).

Some Major Findings –

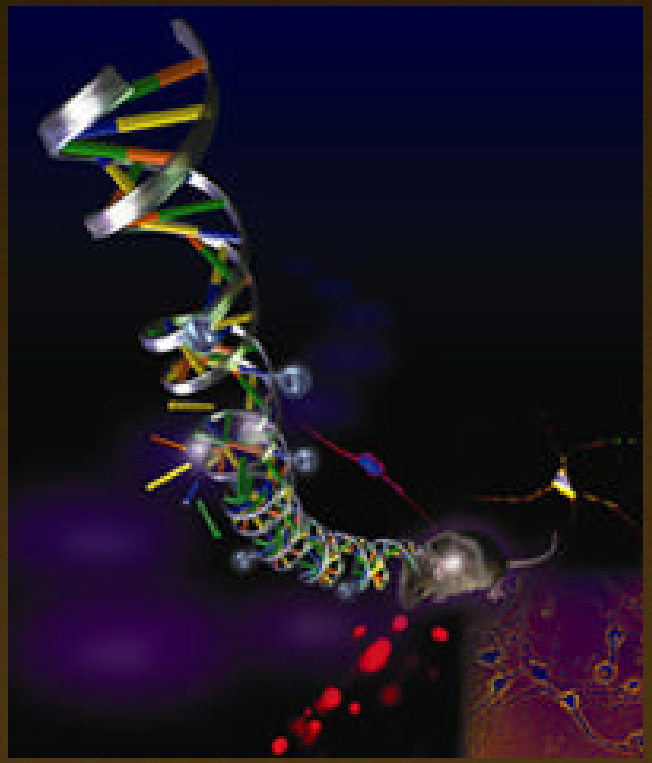
Species Diversity

- 43% of species assessed are of conservation concern
- B.C. has a majority of the global range for 99 species

BioDiversity BC

Some Major Findings – Genetic Diversity

- B.C. has high levels of genetic diversity within species which are critical for adaptation and resilience



BC Biodiversity

Key and Special Elements

Definition of Key Element:

- Pieces of the biodiversity puzzle that are essential and/or have a disproportionate influence on ecosystem function.

Definition of Special Element:

- Elements of biodiversity that are uncommon and often globally significant.

Key Elements

Realm	Key Element Component (C) Structure (S) or Function (F)
Cross-realm	Connectivity (F, S)
	Riparian Areas (C)
Terrestrial	Decomposition and nutrient cycling (F)
	Pollination (F)
	Large mammal predator prey dynamics (F)
	Succession/Disturbance (F)
	Southern red-backed voles (C)
	Wildlife trees (S)
	Broadleaf trees (C)
	Soil (S)
	Coarse woody debris (CWD) (S)

Key Elements (continued)

Realm	Key Element Component (C) Structure (S) or Function (F)
Freshwater	Wetlands (C)
	Sphagnum (C)
	Lake-level patterns (F)
	Headwater streams (F)
	Groundwater (F)
	Anadromous salmonids and nutrient cycling (C)
	Willows (C)
	Beavers (C)
	Waterfowl herbivory of aquatic plants (F)
	Macroalgae (C)
	California Mussels (C)
	Sea otters (C)
	Crustaceans (C)
	Seagrass meadows (S)
	Upland sediments and large woody debris in the intertidal (S)
	Estuaries (C, F)

Key Elements

For each of the Key Elements, we asked:

- What is it?
- Why is it important?
- What do we know about the status/threats?
- What are the data gaps?

Special Elements

Realm	Special Element
Seasonal Concentrations of Species	Important bird areas
	Steller sea lion rookeries/haulouts
	Major salmon spawning sites
Special Communities	Old-growth temperate rainforests
	Intact large mammal predator-prey systems
	Large wetlands (freshwater)
Special Features	Karst
	Hot springs
	Glacially influenced watersheds
	Serpentine soils
	Saline lakes
	Fishless lakes
	Microbialites

Biodiversity BC

Special Elements

For each of the Special Elements, we asked:

- What is it?
- Why is it important?
- What do we know about the status/threats?
- What are the data gaps?

Some Major Findings –

Key and Special Elements

- Water flow in lakes, wetlands and groundwater systems is being seriously affected
- The majority of B.C. has relatively intact predator-prey systems
- B.C. has significant seasonal concentrations of species vulnerable to human impact

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Threats: IUCN Direct Threats

Human Activities:

- Climate Change
- Agriculture
- Urban & Rural Development
- Forestry
- Transportation & Utility Corridors
- Oil and Gas Development
- Water Development
- Grazing
- Industrial Operations
- Mining
- Aquaculture
- Recreation

Threats: IUCN Stresses

- Ecosystem Conversion
- Ecosystem Degradation
- Alien Species
- Environmental Contamination
- Species Disturbance
- Species Mortality

BioDiversity BC

Threats: Impacts on Biodiversity

Loss of Genetic Diversity

Population Decline

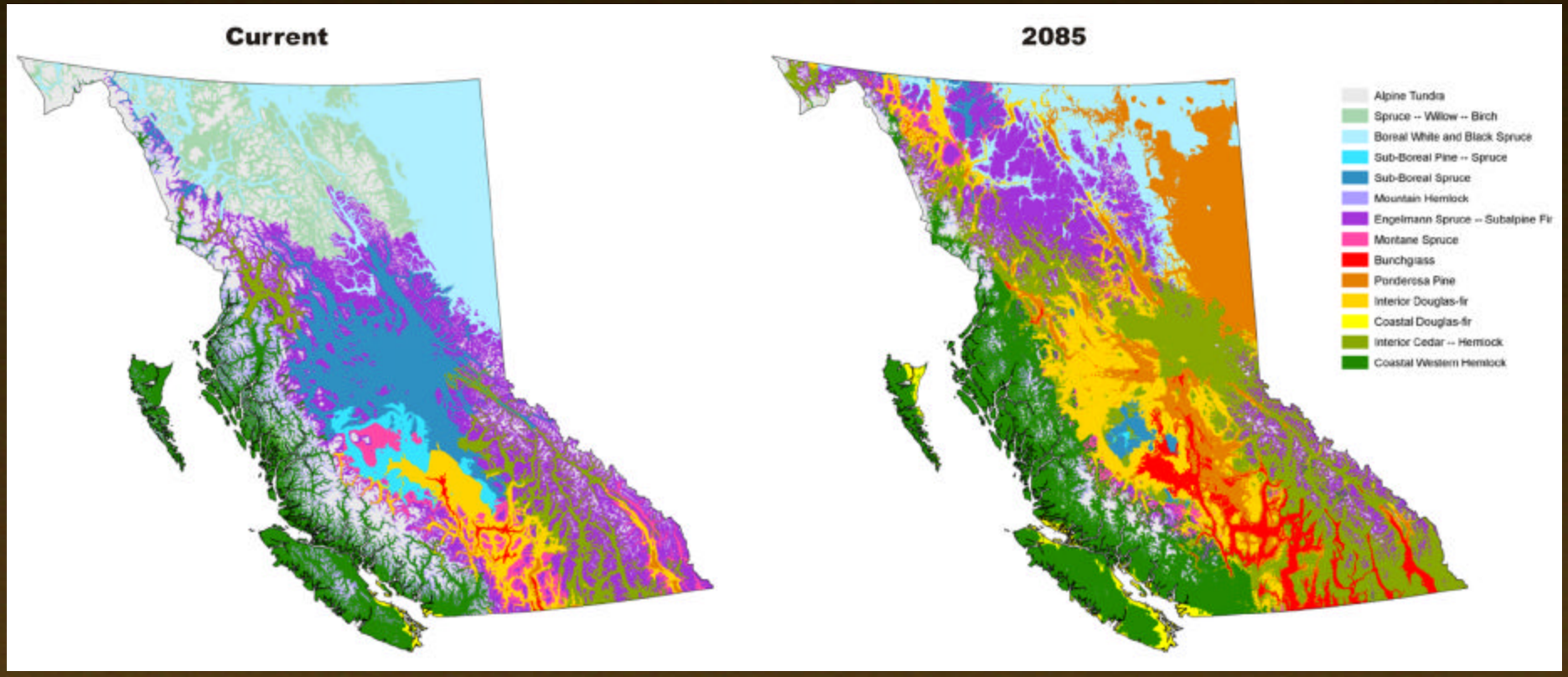
Species Extirpation/Extinction

Impaired Ecosystem Function

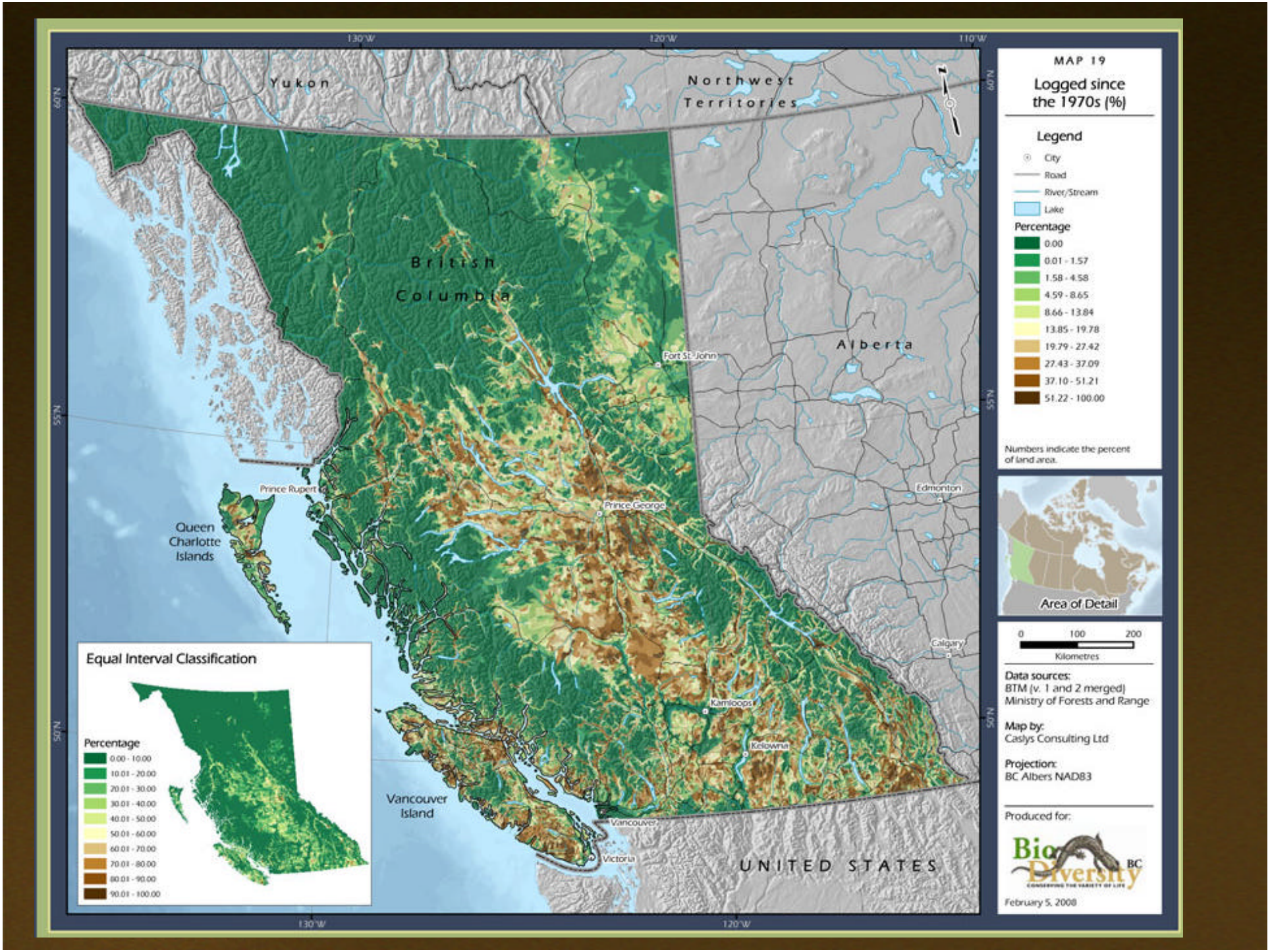
Habitat Fragmentation

Loss of Connectivity

Potential shift in BEC Zones by 2085 due to climate change



BC Biodiversity


MAP 19
Logged since the 1970s (%)
Legend
City
Road
River/Stream
Lake
Percentage
0.00
0.01 - 1.57
1.58 - 4.58
4.59 - 8.65
8.66 - 13.84
13.85 - 19.78
19.79 - 27.42
27.43 - 37.09
37.10 - 51.21
51.22 - 100.00
Numbers indicate the percent of land area.
Area of Detail
0 100 200
Kilometres
Data sources:
BTM (v. 1 and 2 merged)
Ministry of Forests and Range
Map by:
Caslys Consulting Ltd
Projection:
BC Albers NAD83
Produced for:
BC Biodiversity
February 5, 2008
Equal Interval Classification
Percentage
0.00 - 10.00
10.01 - 20.00
20.01 - 30.00
30.01 - 40.00
40.01 - 50.00
50.01 - 60.00
60.01 - 70.00
70.01 - 80.00
80.01 - 90.00
90.01 - 100.00
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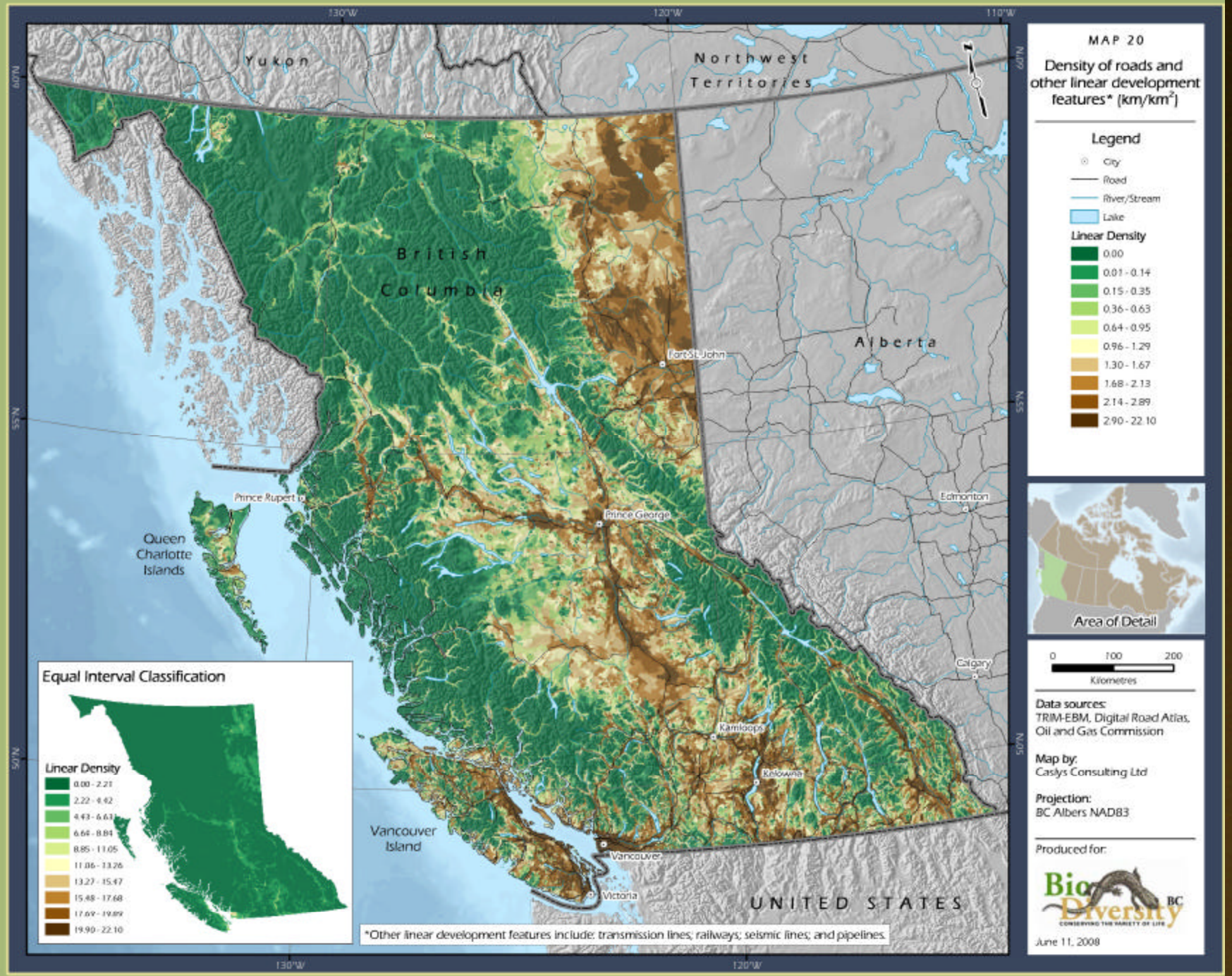
MAP 20
Density of roads and other linear development features* (km/km²)
Legend
City
Road
River/Stream
Lake
Linear Density
0.00
0.01 - 0.14
0.15 - 0.35
0.36 - 0.63
0.64 - 0.95
0.96 - 1.29
1.30 - 1.67
1.68 - 2.13
2.14 - 2.89
2.90 - 22.10
Area of Detail
0
100
200
Kilometres
Data sources:
TRIM-EBM, Digital Road Atlas, Oil and Gas Commission
Map by:
Caslys Consulting Ltd
Projection:
BC Albers NAD83
Produced for:
BC Biodiversity
June 11, 2008
Equal Interval Classification
Linear Density
0.00 - 2.21
2.22 - 4.42
4.43 - 6.63
6.64 - 8.84
8.85 - 11.05
11.06 - 13.26
13.27 - 15.47
15.48 - 17.68
17.69 - 19.89
19.90 - 22.10
*Other linear development features include: transmission lines; railways; seismic lines; and pipelines.
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Vancouver
Victoria
UNITED STATES
130°W
120°W
110°W
60°N
55°N
50°N

Some Major Findings –

Threats to Biodiversity

- Climate change is the foremost threat to biodiversity
- Ecosystem conversion and degradation have seriously impacted biodiversity
- Alien species are seriously impacting biodiversity
- Ecosystem connectivity is being lost and will limit species distribution

BioDiversity BC
CONSERVING THE VARIETY OF LIFE

Why should I care?

- Our wellbeing depends on the health of our ecosystems
- Increasing loss of biodiversity
- Climate change will intensify biodiversity loss
- Healthy ecosystems will moderate the impacts of climate change
- Ensure a legacy for our children's, children's children

BC Biodiversity

What can I do?

- Stay informed
- Promote scientific research
- Reduce your ecological footprint
- Be a “green” consumer
- Demand political leadership
- Get involved in local stewardship projects
- Plug into social networks (community groups, church groups, conservation organizations, web blogs, etc.)
- Enjoy nature…

Accessing BBC Information

Website www.biodiversitybc.org

- Science Foundation Reports

BBC Secretariat info@biodiversitybc.org

- DVD’s available soon

Hectares BC – www.hectaresbc.org