



Landscape Analysis for Forest Conservation Planning

June 2005, Toronto

FPAC/ WWF Technology Transfer Workshop





Presentation Overview

- WWF overview
- Forest statistics – the case for forest conservation
- Market drivers - forest certification
- Conservation planning context
- HCVF framework
- AoR conservation planning tools





Presentation Overview

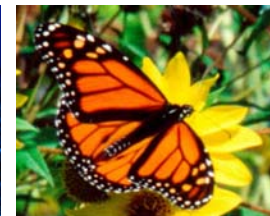
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Biodiversity Conservation

- It is best to plan over relatively large spatial areas (Groves et al. 2002);
- Biodiversity protection requires identifying key habitats for strict protection as well as good management in intervening landscapes (NRTEE 2003, Margules and Pressey 2000), and;
- The process of conservation planning needs to be scientifically defensible and rigorous (Noss 2003).





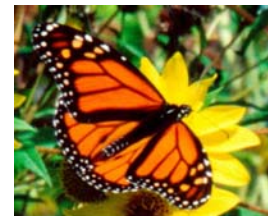
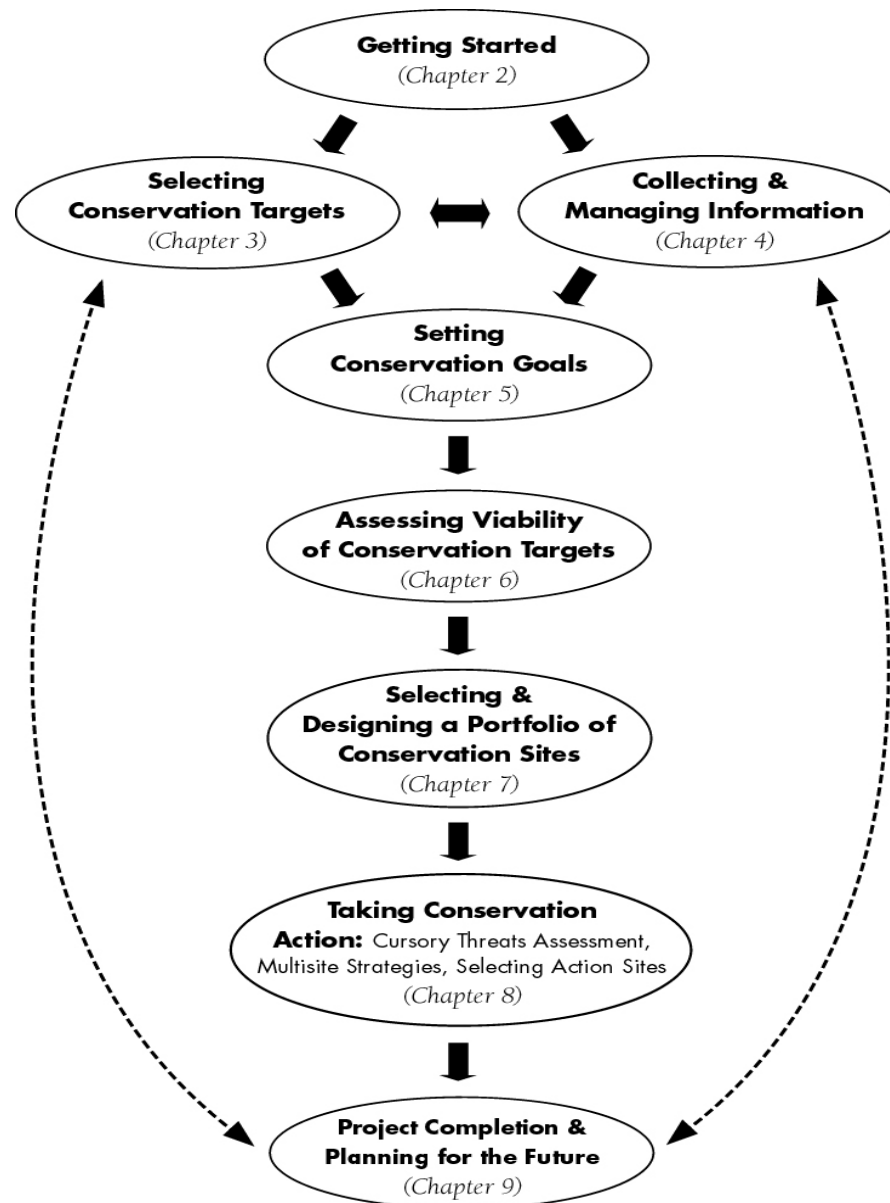
Systematic Conservation Planning

- The Nature Conservancy
- WWF Ecoregion-based Conservation
- Margules and Pressey 2000



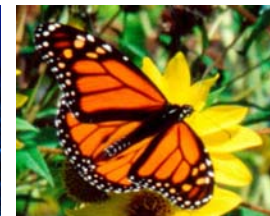
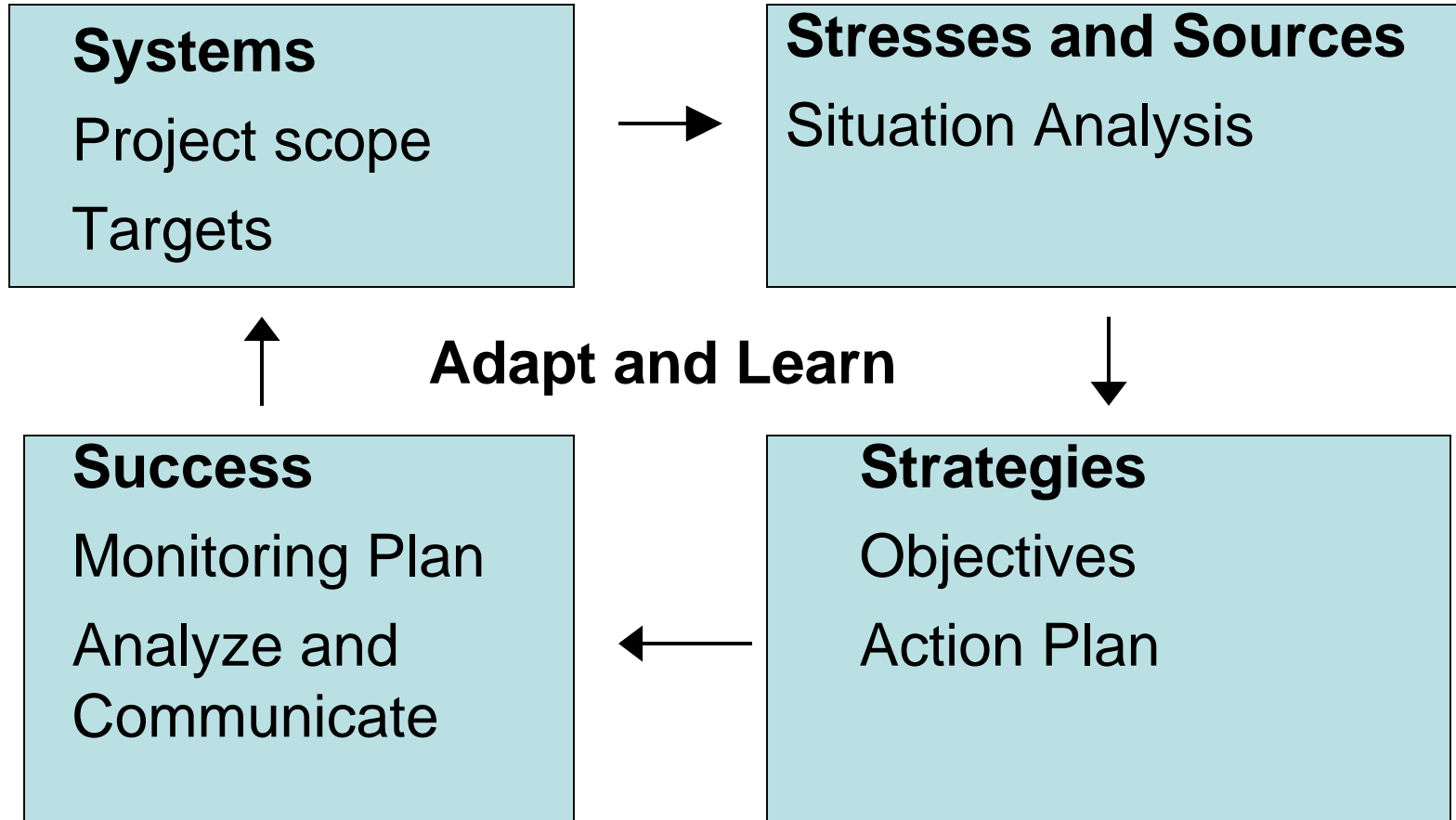


TNC Geography of Hope



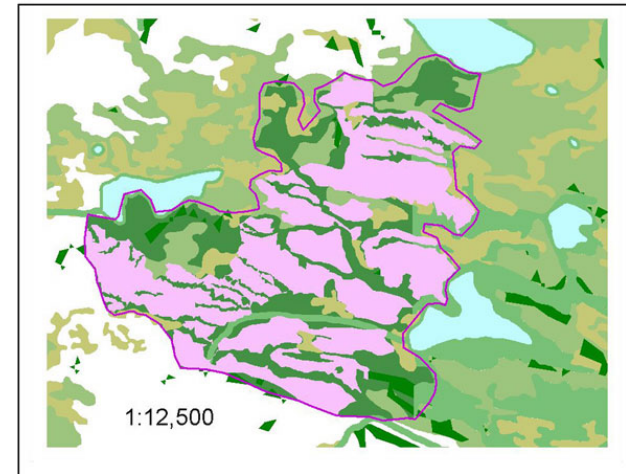
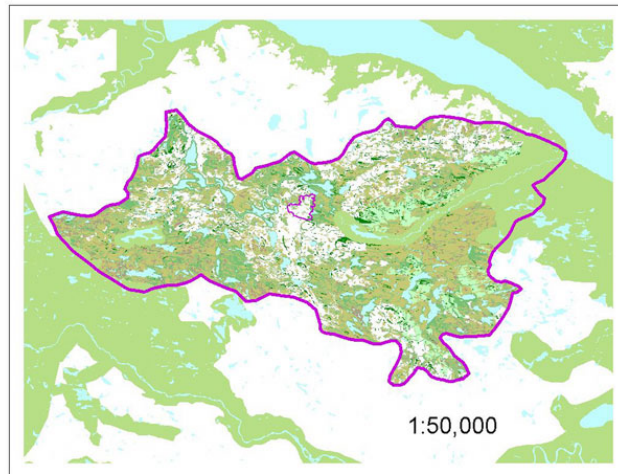
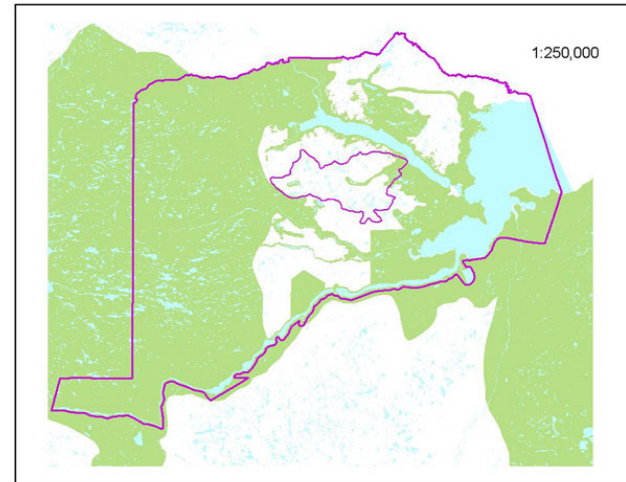
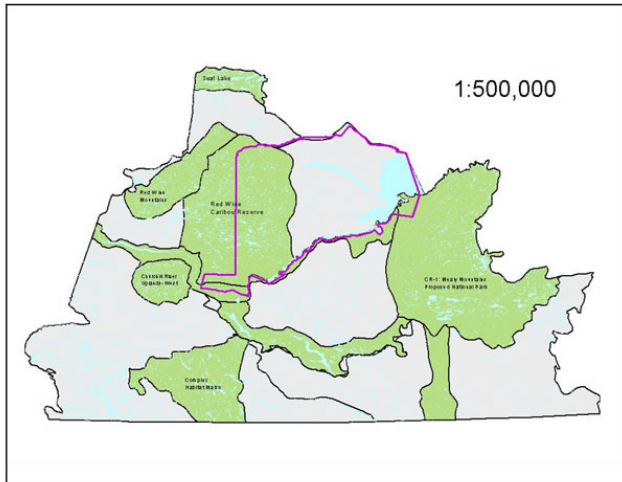


TNC 5-S Project Management Framework





Innu Ecosystem-based management





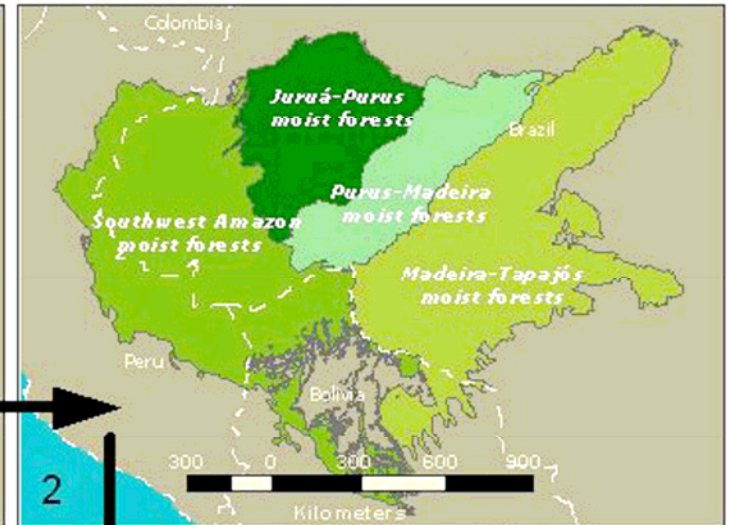
WWF Ecoregion Conservation



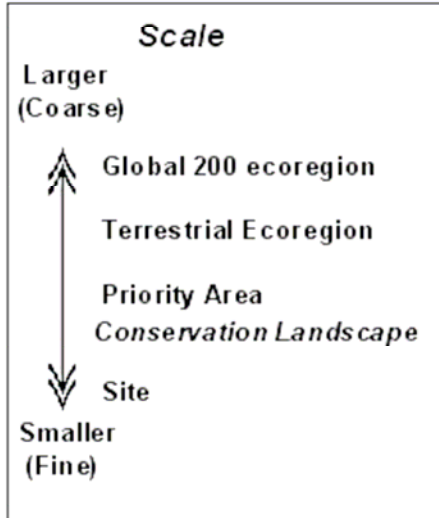
Southwestern Amazon moist forests
Global 200 terrestrial ecoregions



Global 200 Ecoregion



Terrestrial Ecoregions



Site - Protected Area



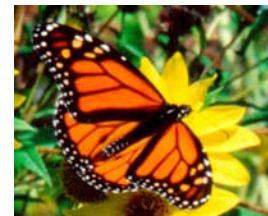
Priority Area - Conservation Landscape



WWF Ecoregion Conservation

The fundamental conservation goals of a biodiversity vision are (Noss 1991a):

- Representation of all native habitats
- Maintenance of viable populations of all native species
- Maintenance of essential ecological processes
- Maintain resilience to ecological change





WWF-Canada Conservation Planning Tools

- Goals/Targets
- Gaps
- Site selection
- Peer review
- Conservation action and adaptive management

- Enduring features Assessment of Representation GIS routine
- High Conservation Value Forest Assessment





WWF-Canada Conservation Planning Tools

Consistent with conservation design principles:

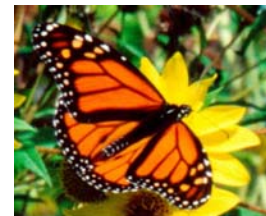
- coarse-filter - representation;
- fine-filter - critical habitat of significant species and special elements, and;
- guiding principles of maintaining viable populations of native species and sustaining ecological processes in the application of the coarse- and fine-filter techniques





Presentation Overview

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- Conservation planning context
- **HCVF framework**
- AoR conservation planning tools





HCVF – Brief History

- Emphasis within FSC shifted from special status to old growth and virgin forests to concept of High Conservation Value Forest
- Most outstanding or critical forests
- 1998 advisory panel (2001 report)
- WWF and IKEA Co-operation





Global HCVF toolkit

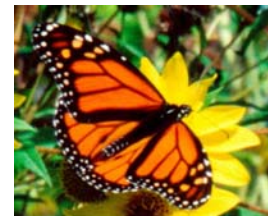
- ProForest developed a working draft in early 2002
- Convened a workshop in March 2002 (UK) with participants from Brazil, Canada, China, Indonesia, Russia, Sweden, UK, and US
- Final toolkit in 3 parts available as of January 2004 at <http://www.proforest.net/>





National HCVF framework

- Initial development with Westwind and Tembec in advance of global toolkit
- Informed ProForest effort
- Current approved framework (by FSC Canada) as appendix to national boreal standard (Fall 2004)
- Consistent with ProForest toolkit with some additional focus (e.g. focal or regionally significant species)





HCV1: Concentrations of biodiversity values

Attributes:

- HCV1.1 Species at risk
- HCV1.2 Endemic species
- HCV1.3 Critical habitat for seasonal concentrations of species
- HCV1.4 Critical habitat
- HCV1.5 Edge of range or outliers
- HCV1.6 Existing or candidate designations





HCV2: Large landscape level forests

Boreal Thresholds:

- Globally significant: > 500,000 ha.
- Nationally significant: 200,000 to 500,000 ha.
- Regionally significant: 50,000 to 200,000 ha.





HCV3: Rare ecosystem types

Attributes:

HCV3.1 Rare ecosystem types

HCV3.2 Declining ecosystem types

HCV3.3 Remnant intact fragments

HCV3.4 Diverse or unique forest ecosystems





HCV4: Basic services of nature

Attributes:

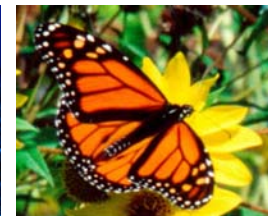
HCV4.1 Forests critical as source of drinking water

HCV4.2 Forests critical to mediating drought or controlling stream flow and water quality

HCV4.3 Forests critical to erosion control

HCV4.4 Forests providing barriers to destructive fire

HCV4.5 Forests mediating micro-climate?





HCV5 and HCV6: Cultural values

HCV5: fundamental to meeting basic needs of local communities

HCV6: critical to local communities' traditional cultural identity

*As defined by local communities through consultation

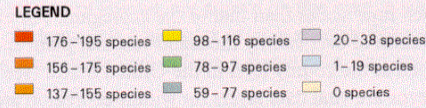
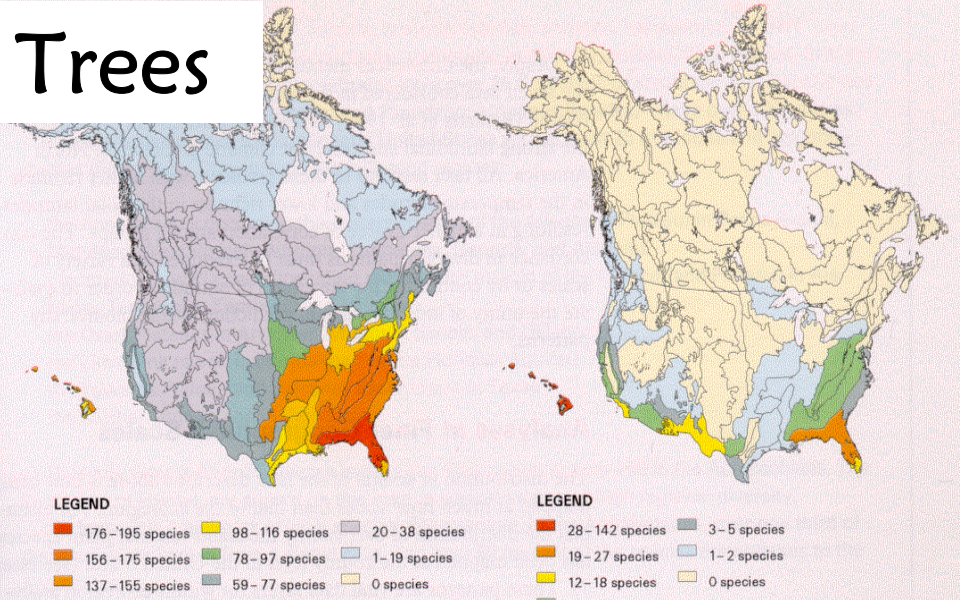


Terrestrial Species



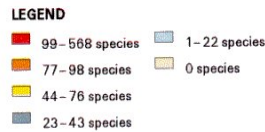
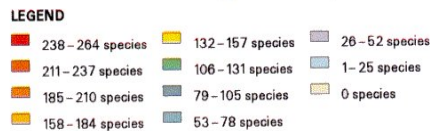
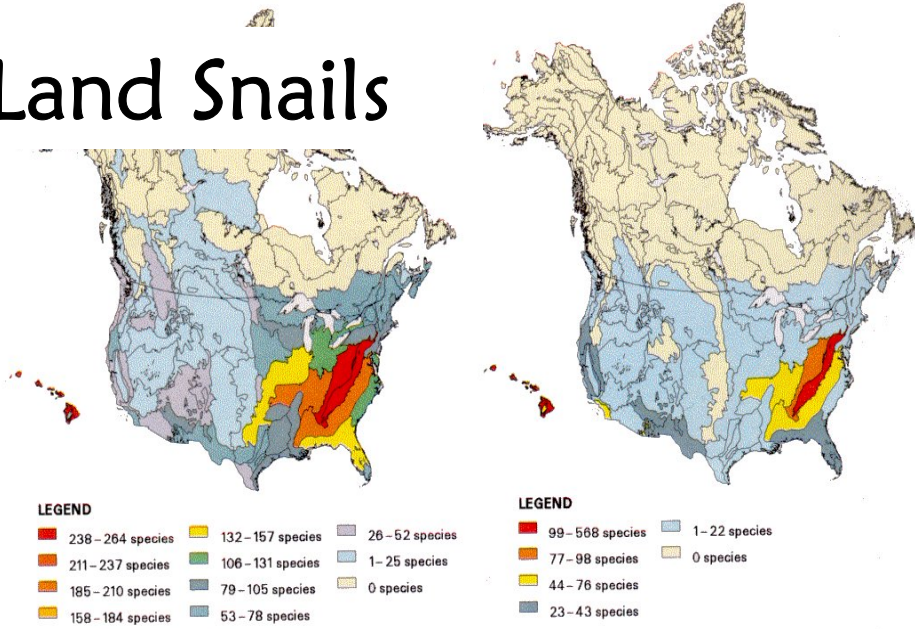
[Source: Ricketts et al. 1999]

Trees



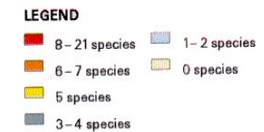
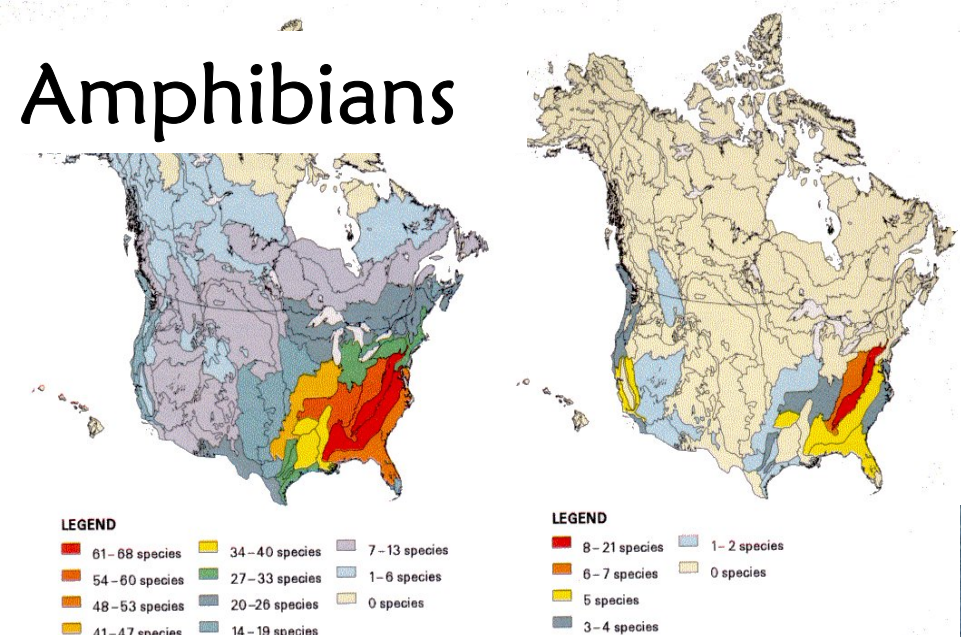
175 species * 8 endemic

Land Snails



400 species * 220 endemic

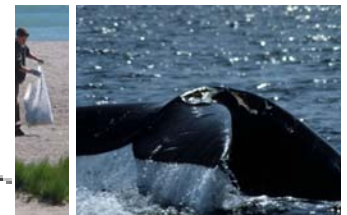
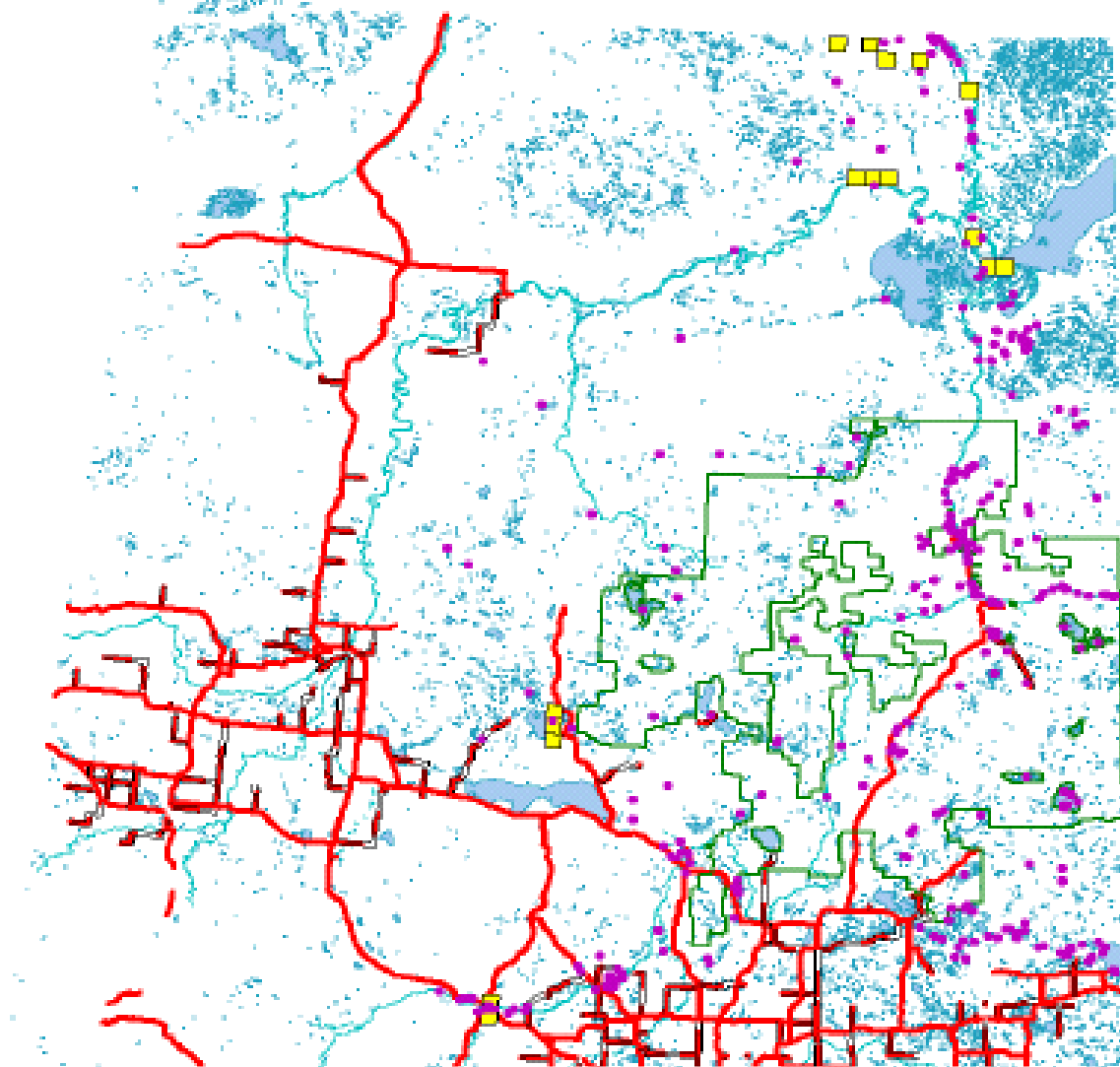
Amphibians



80 species * 21 endemic



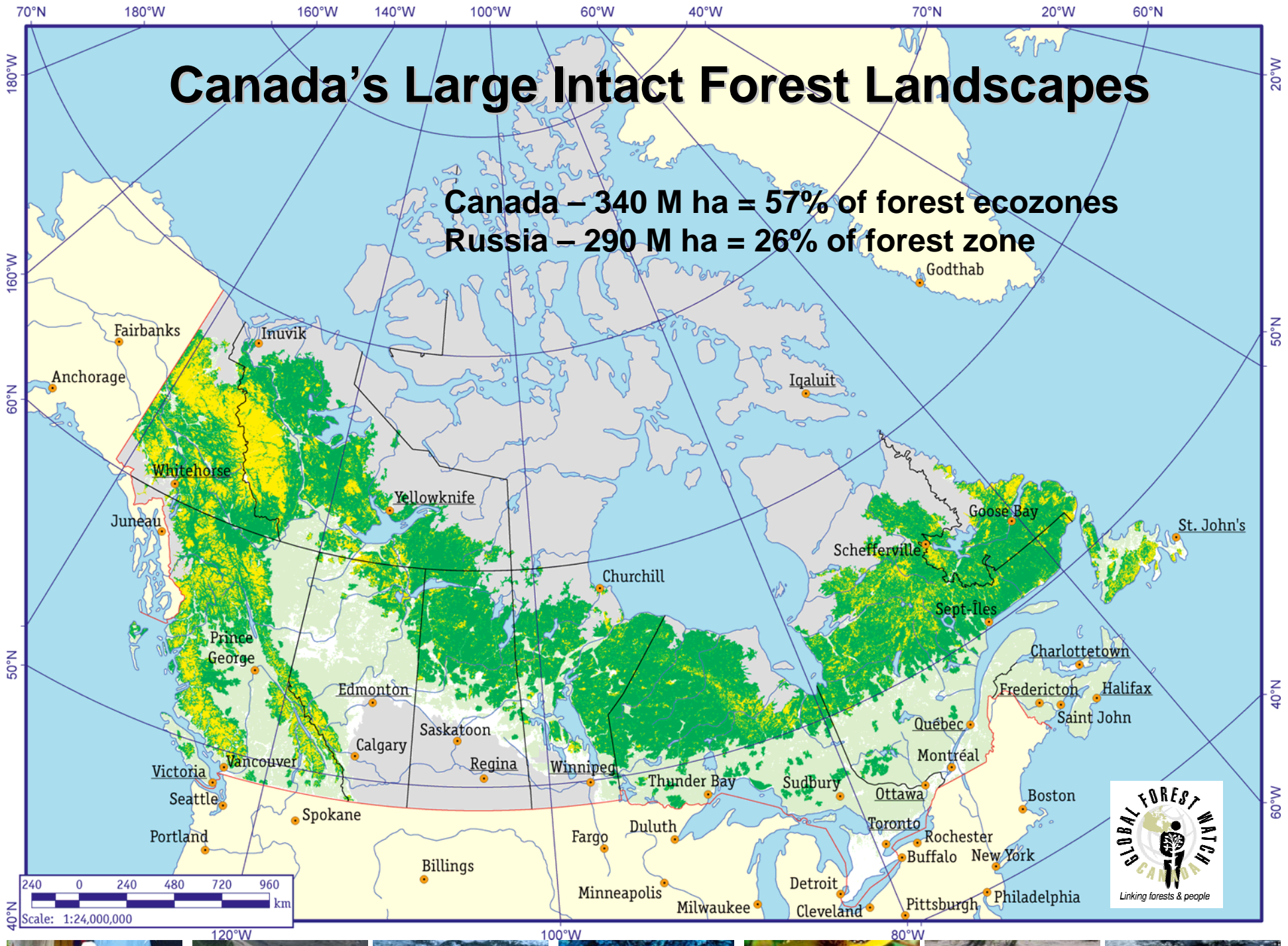
Locations of Nest Sites of Peregrine Falcons, Whooping Cranes, Rare Species, and Bird Colonies in NE Alberta.



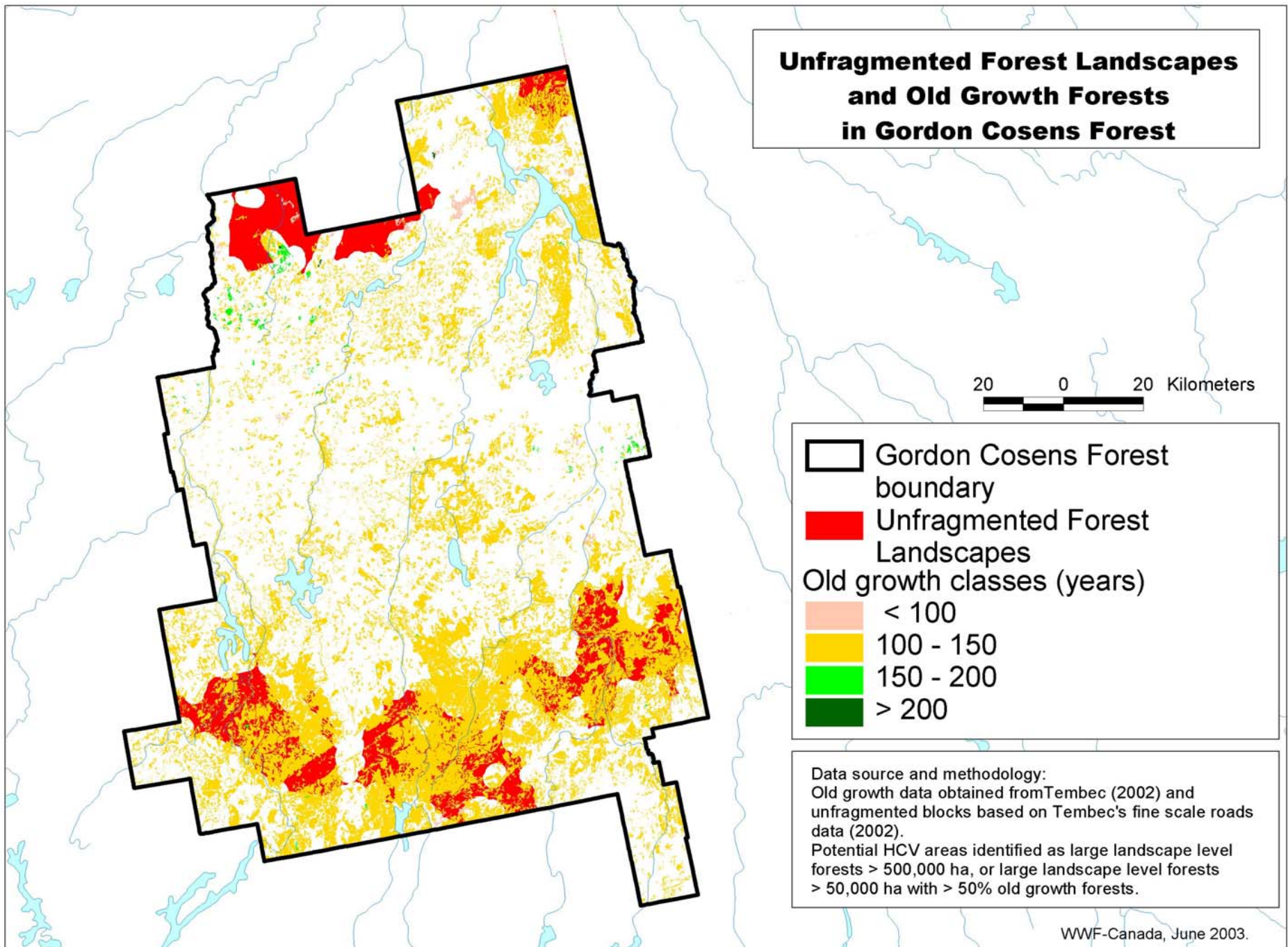
100 0 100 Kilometers

Canada's Large Intact Forest Landscapes

Canada – 340 M ha = 57% of forest ecozones
Russia – 290 M ha = 26% of forest zone



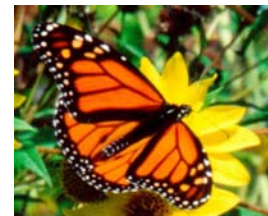
Unfragmented Forest Landscapes and Old Growth Forests in Gordon Cosens Forest





National HCVF Framework

| Item | Rational | Possible Sources | Guidance on assessing HCV |
|---|--|--|---|
| <p>3. Does the forest include critical habitat containing globally, nationally or regionally significant seasonal concentration of species (one or several species, e.g. concentrations of wildlife in breeding sites, wintering sites, migration sites)?</p> | <p>Addresses wildlife habitat requirements critical to maintaining population viability (regional “hot spots”)</p> | <p><i>Global:</i> BirdLife International, Audubon Society.</p> <p><i>Regional/national:</i> National and local agencies with responsibility for wildlife conservation; Results from habitat models Local experts, traditional knowledge</p> <p>Bird Studies Canada. Ducks Unlimited Canada</p> | <ul style="list-style-type: none"> - Is there an IBA (Important Bird Area) in the forest? (DEFINITIVE) - What proportion of the global, national or regional population (i.e. > 1% is the threshold used in the RAMSAR Convention) uses the wildlife concentration area? (GUIDANCE) - How protected are similar wildlife concentration areas within the region? (GUIDANCE) - Is it a wildlife concentration area for more than one species? (GUIDANCE) - Are there any landscape features or habitat characteristics that tend to correlate with significant temporal concentrations of species (e.g. where species occurrence data is limited)? (GUIDANCE) |



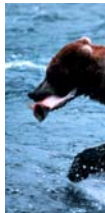
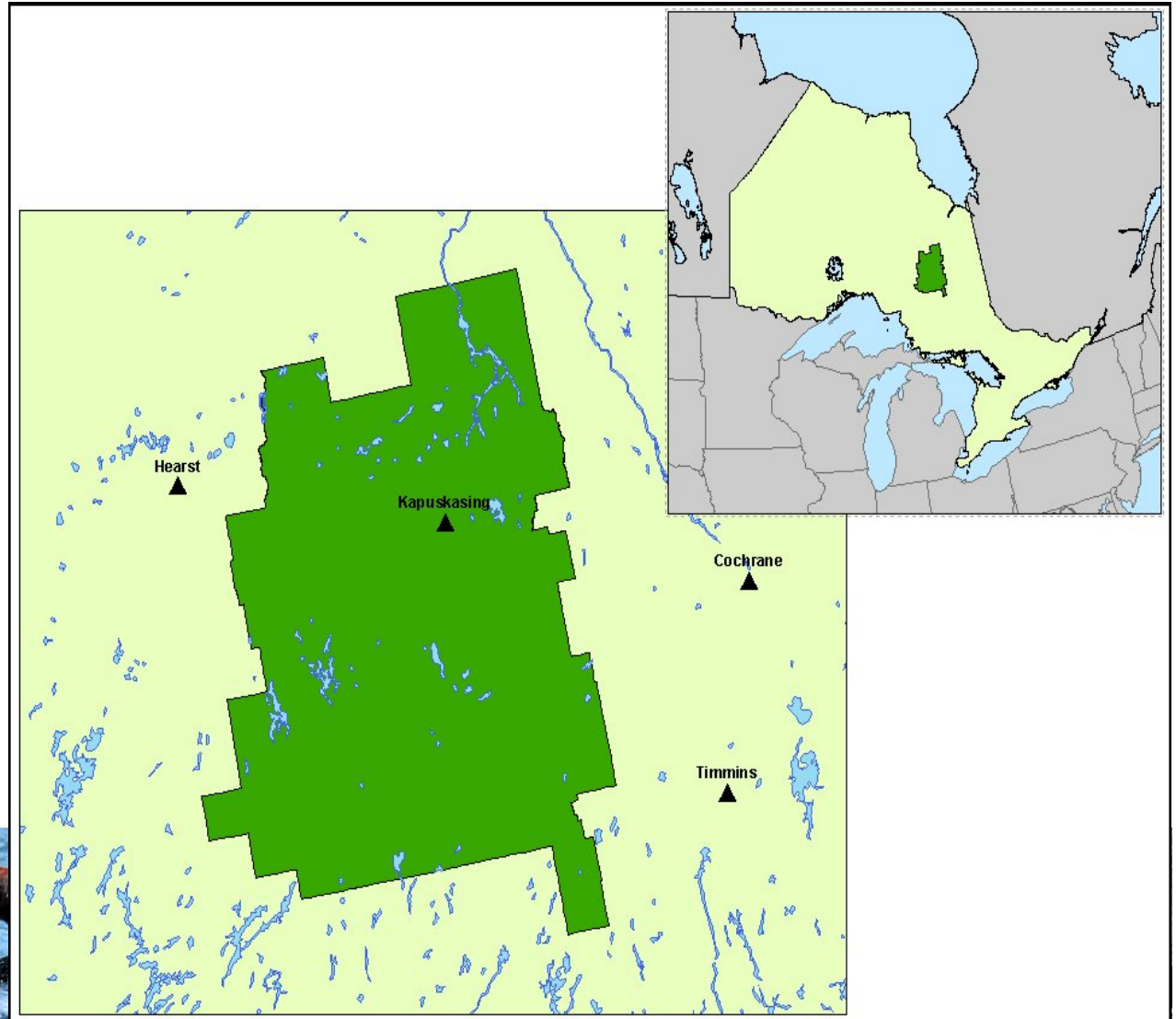


Gordon Cosens Forest HCVFs

Nationally significant -
Woodland caribou

Regionally sig. -
lake sturgeon

Large landscape
level forests





Gordon Cosens Forest HCVFs

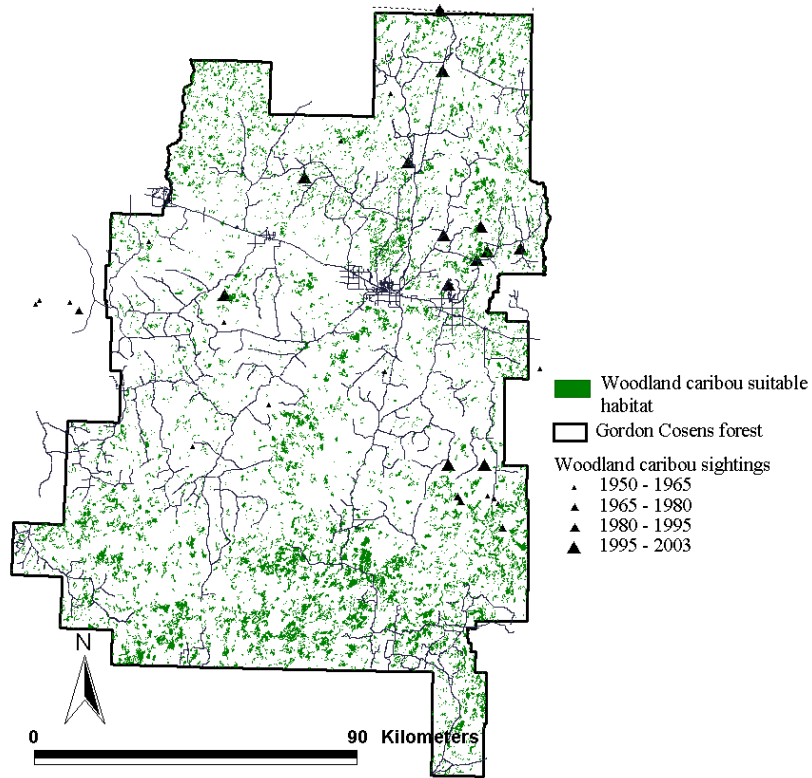
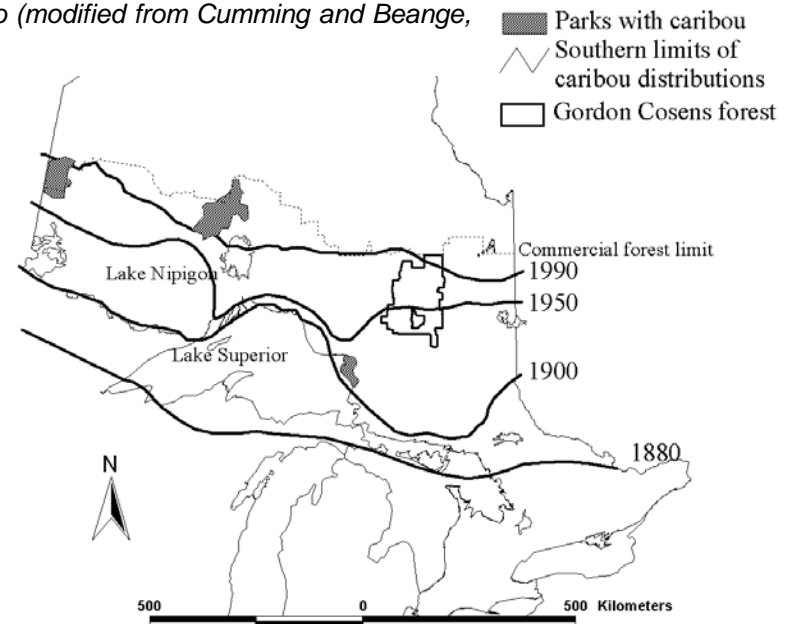
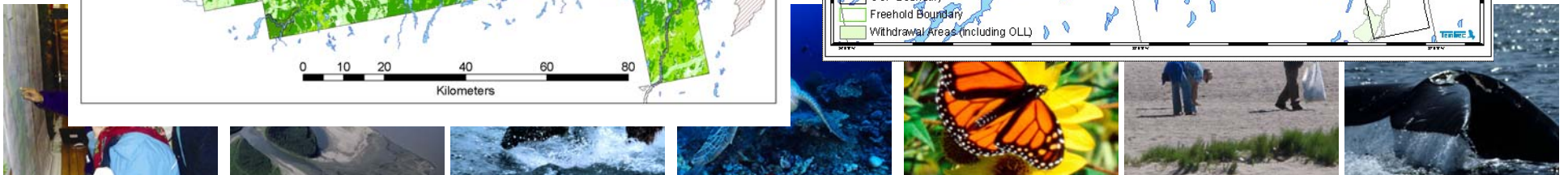
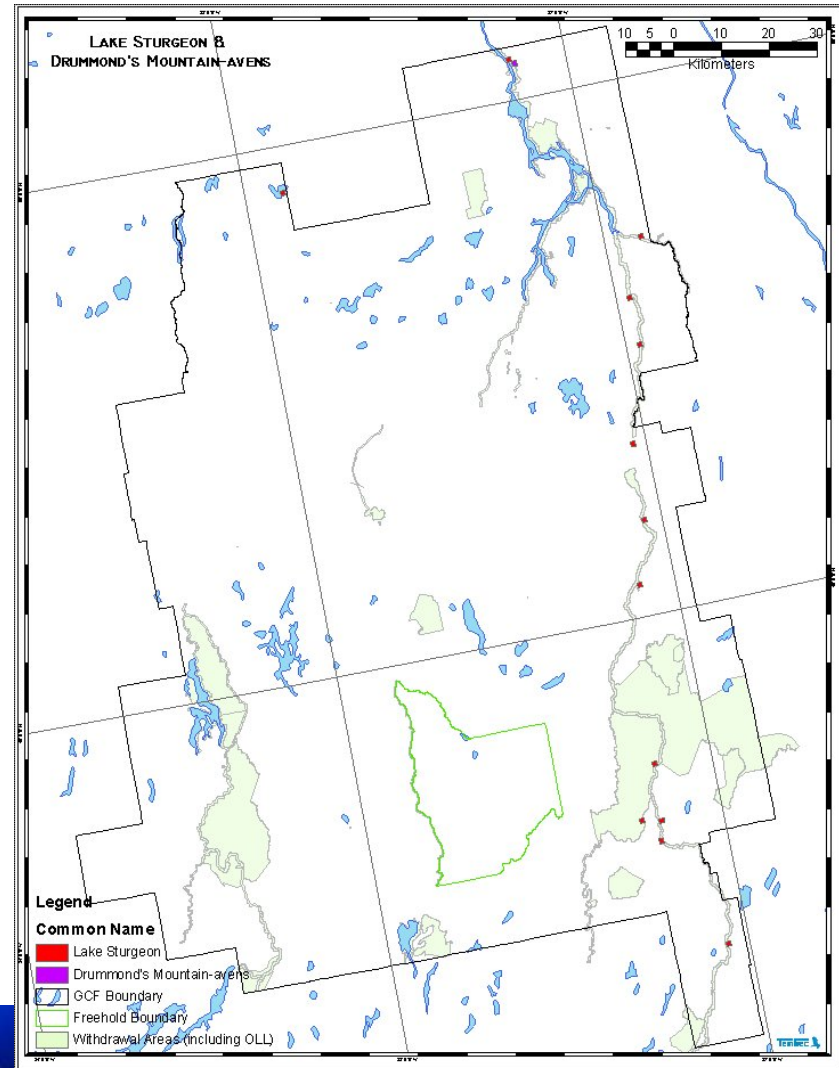
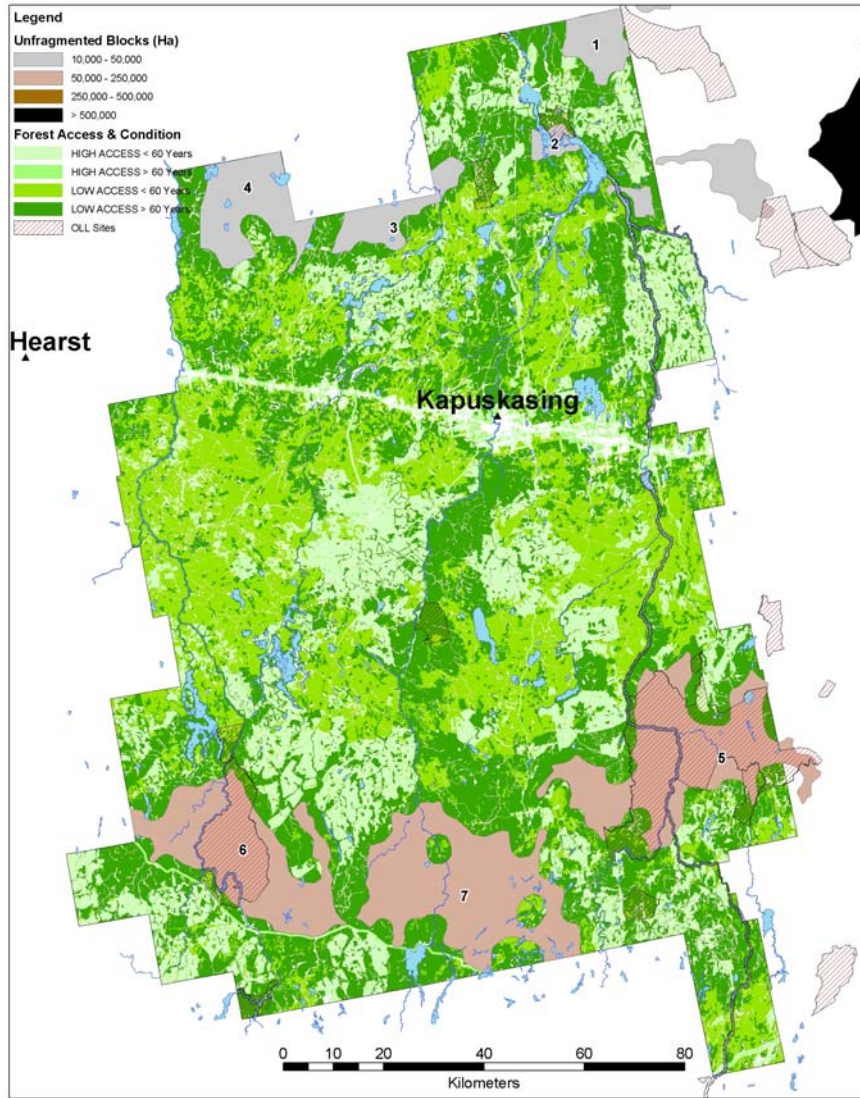


Figure 5. Changes in the southern limit of woodland caribou continuous distribution in Ontario (modified from Cumming and Beange, 1993).





Gordon Cosens Forest HCVFs





AI-Pac FMA HCVFs

Woodland caribou habitat

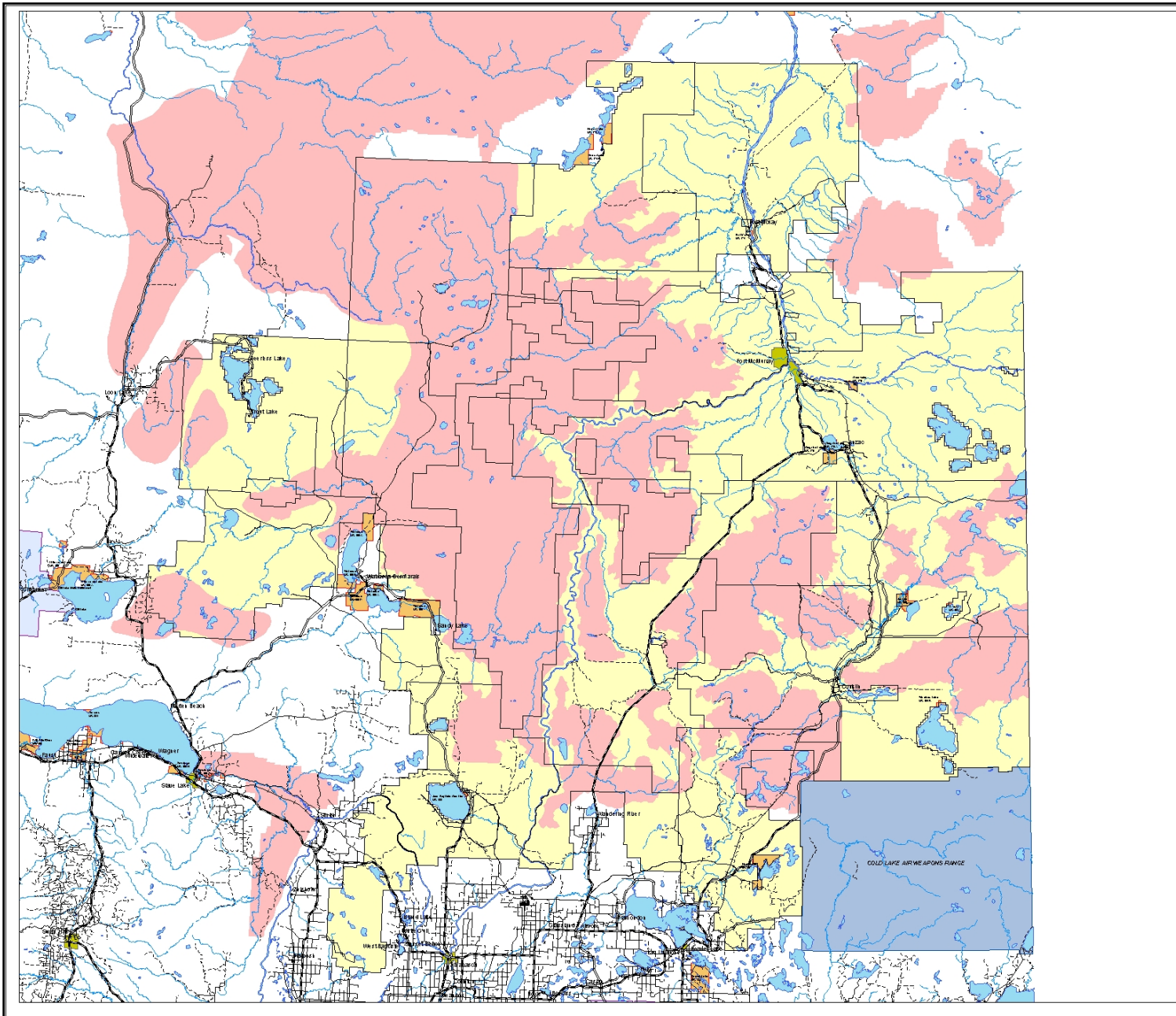
Existing protected areas

Concentrations of select biodiversity at risk

Large landscape level forests

Old growth





**Woodland Caribou
Management Zones**

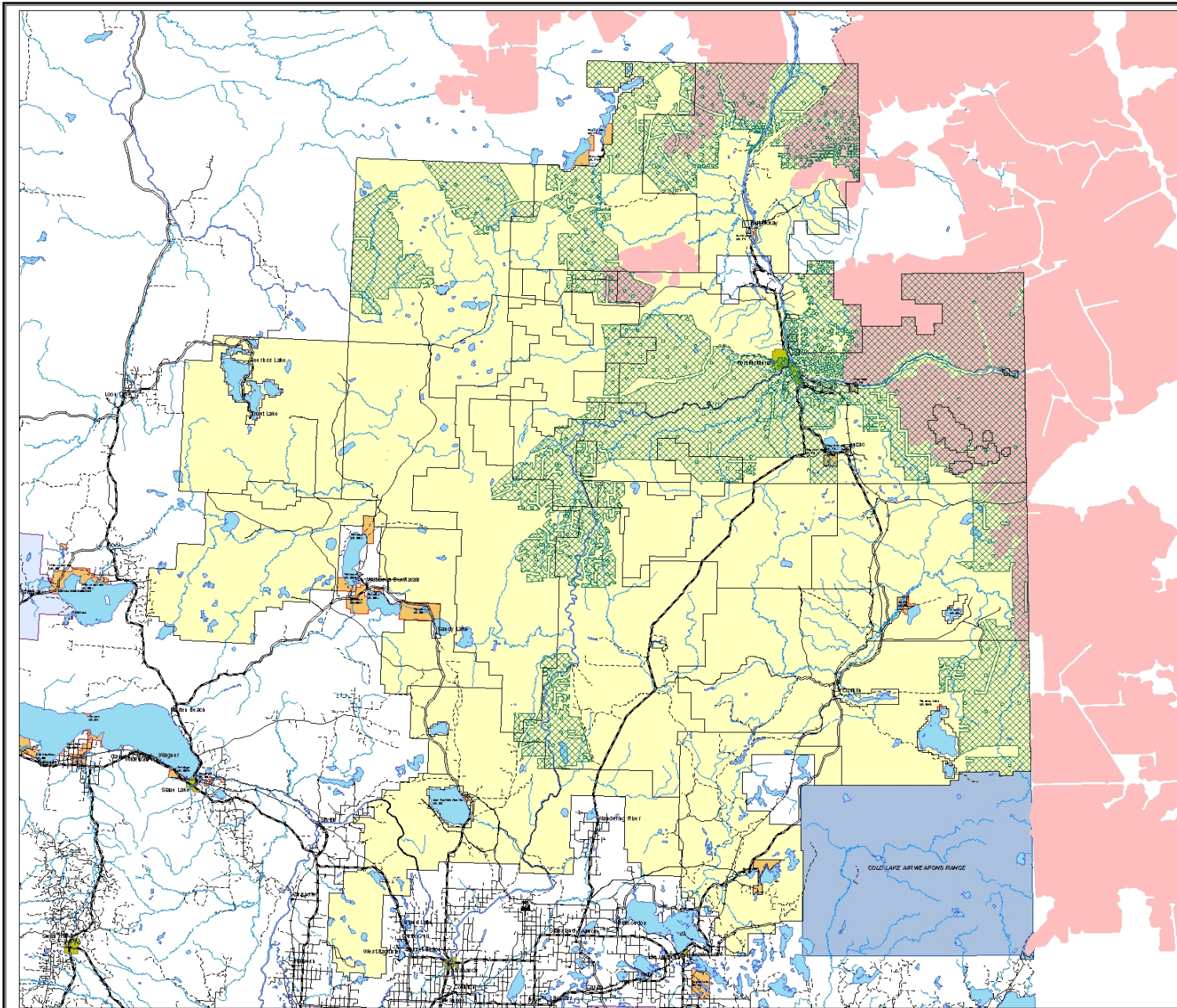
(Map 1)

Legend

- Caribou Management Zones
- Métis Settlements
- Indian Reserve
- Military Reserves
- Village/Hamlet
- Cities, Towns and Urban Service Areas
- Paved Road
- Gravel Road
- Improved Road
- Unimproved Road
- Railway
- Alberta-Pacific Forest Management Units
- Alberta-Pacific Mill Site



1:250,000 Base Map Purchased from
 Spatial Data Warehouse (c)
 1:2,000,000 Base Map, Government of Canada
 (Natural Resources Canada) (c) 1999



Matthew Smith
Environmental and Cultural GIS Consulting

Global Forest Watch Intact Forests and Timoney (2003) Intact Forests with Seismic Densities less than 2 km/km² (Map 4)

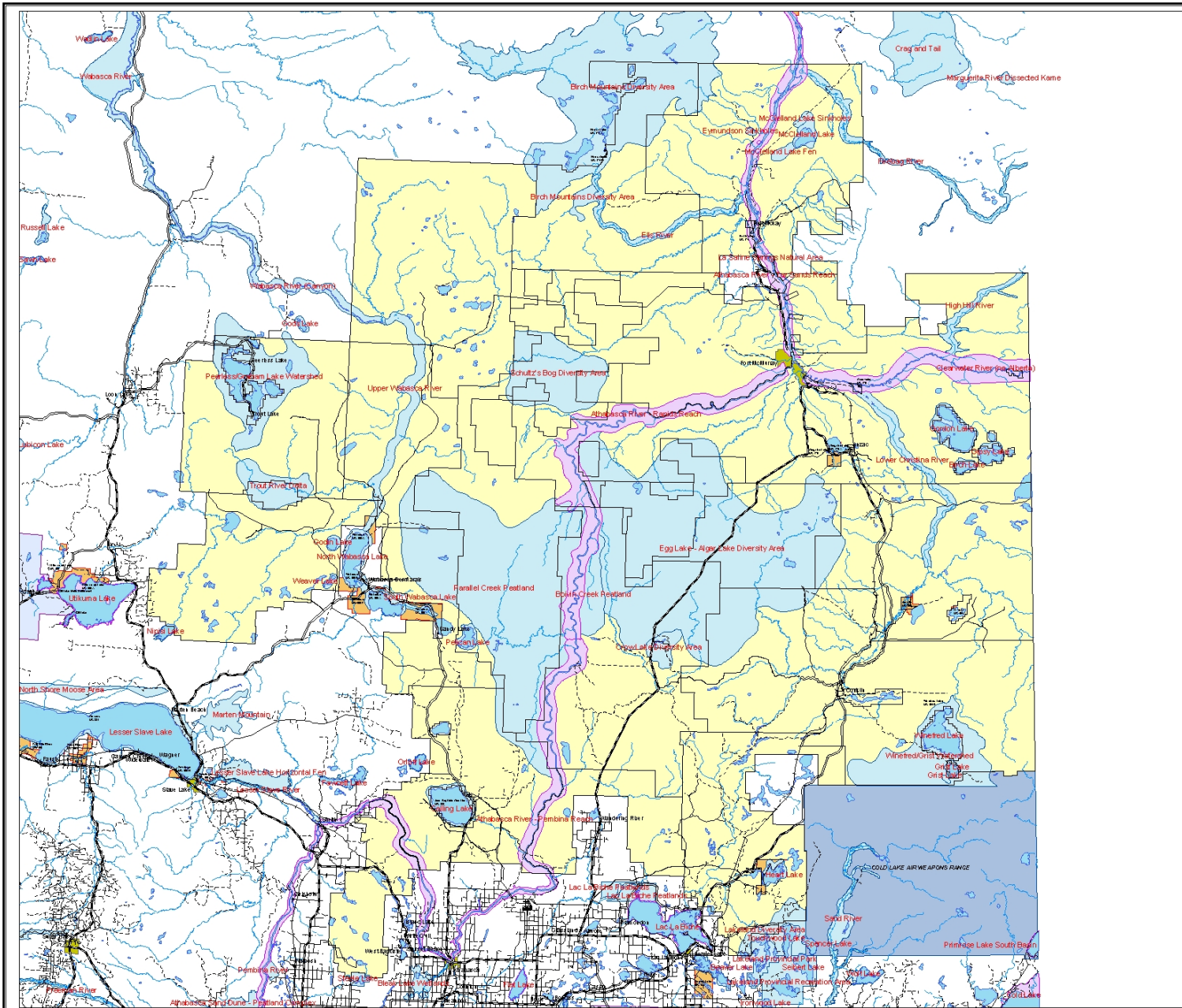
Legend

- Timoney (2003) Large Landscape Level Forests
- Global Forest Watch Intact Forests
- Metis Settlements
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0 25,000 50,000
Meters

1:250,000 Base Map Purchased from Spatial Data Warehouse (c)
1:2,000,000 Base Map, Government of Canada (Natural Resources Canada) (c) 1999



**National and Provincial
Environmentally Significant
Areas (ESA)**

(Map 6)

Legend

- National ESA
- Provincial ESA
- Metis Settlements
- Indian Reserve
- Military Reserves
- Village/Hamlet
- Cities, Towns and Urban Service Areas
- Paved Road
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0 25,000 50,000
 Meters

1:250,000 Base Map Purchased from
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 (Natural Resources Canada) (C) 1999



HCV1 Issues

- Species recovery
- Taxonomic level of endemics (e.g. range restricted populations)
- Concentration areas for widely dispersed populations (e.g. many boreal species)
- Critical vs. suitable vs. available habitat for regionally significant species
- Potential distribution
- Definition of range edge
- HCV status of protected areas





HCV2 Issues

- Clarity for thresholds (permanent disturbance, non-permanent human disturbance, forest quality criteria)
- Adjacency and linkages





HCV3 Issues

- Predictive ecosystem mapping and/or pre-industrial condition
- Narrow ecosystem parameters





HCV4 Issues

- Watershed scale vs. local scale
- Flood and erosion prevention vs. adaptation (e.g. buffering capacity)





HCVF Observations - Positive

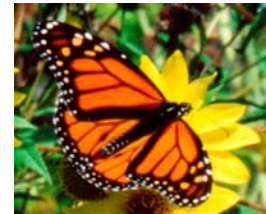
- Good uptake by forest industry
 - 10 to 12 completed HCVF reports
 - ~ 1.2 M ha of candidate protected areas identified across 10 M ha of forest tenures (~ 500,000 ha immediately deferred)
- HCVF framework is comprehensive and robust
- Forest practitioner innovation in HCVF application and, in general, improvement with each application





HCVF Improvements

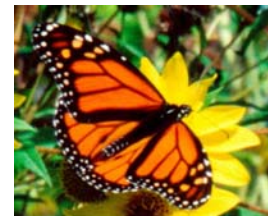
- HCVF application delivering about 50-60% of potential
- Good compilation of information, but generally lacks integration
- Forest managers still tend to approach HCVs through knowledge of existing regulations and policy





HCVF Improvements

- Guidance on HCV thresholds provided, but practitioners largely responsible for setting clear *a priori* thresholds, where possible
- Current guidance may not be sufficient to ensure consistency of application (e.g. logic of decision rules)
- Threats assessment not explicitly described in the HCVF framework

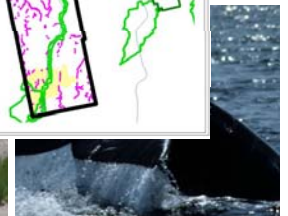
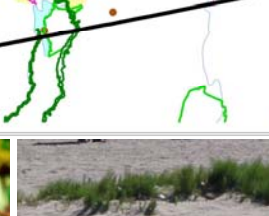
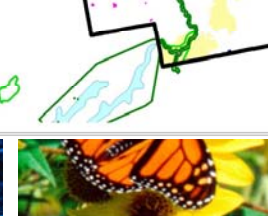
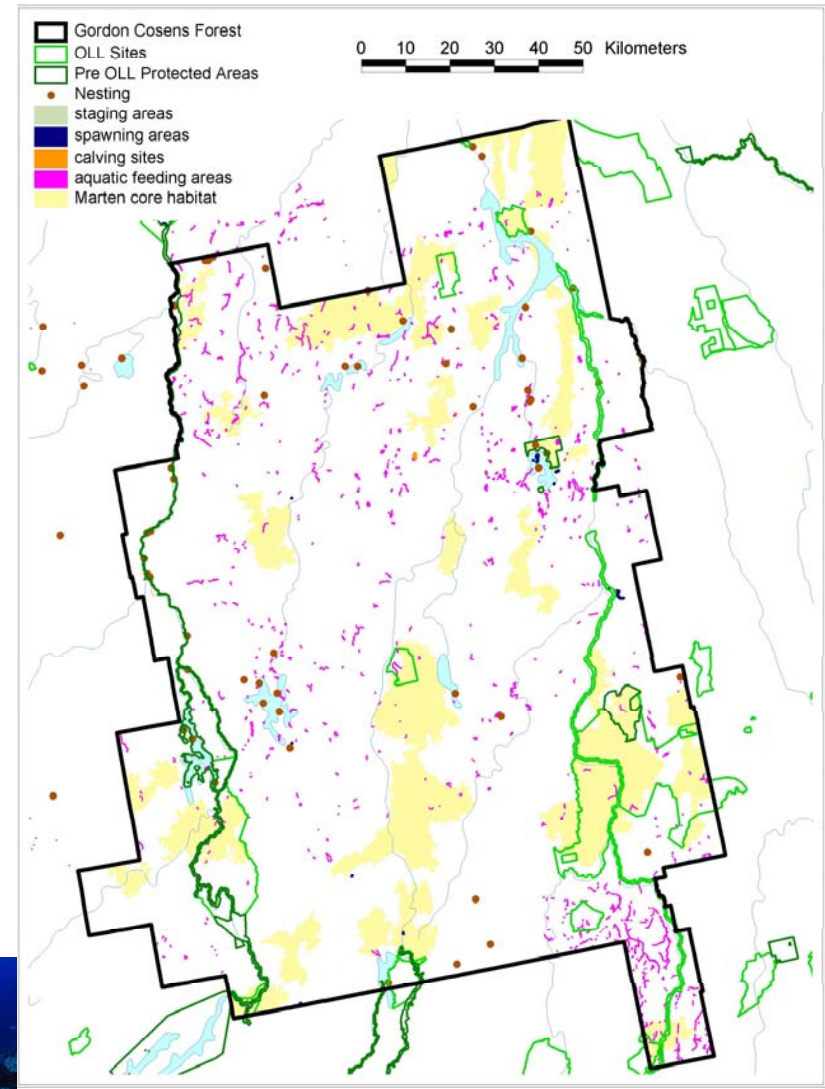




HCVF Improvements

Precautionary Approach

- How to delineate HCVFs where there are data deficiencies (e.g. lack of biological surveys regarding species concentrations)





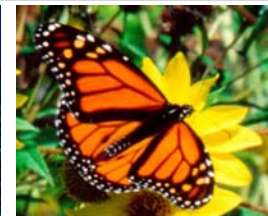
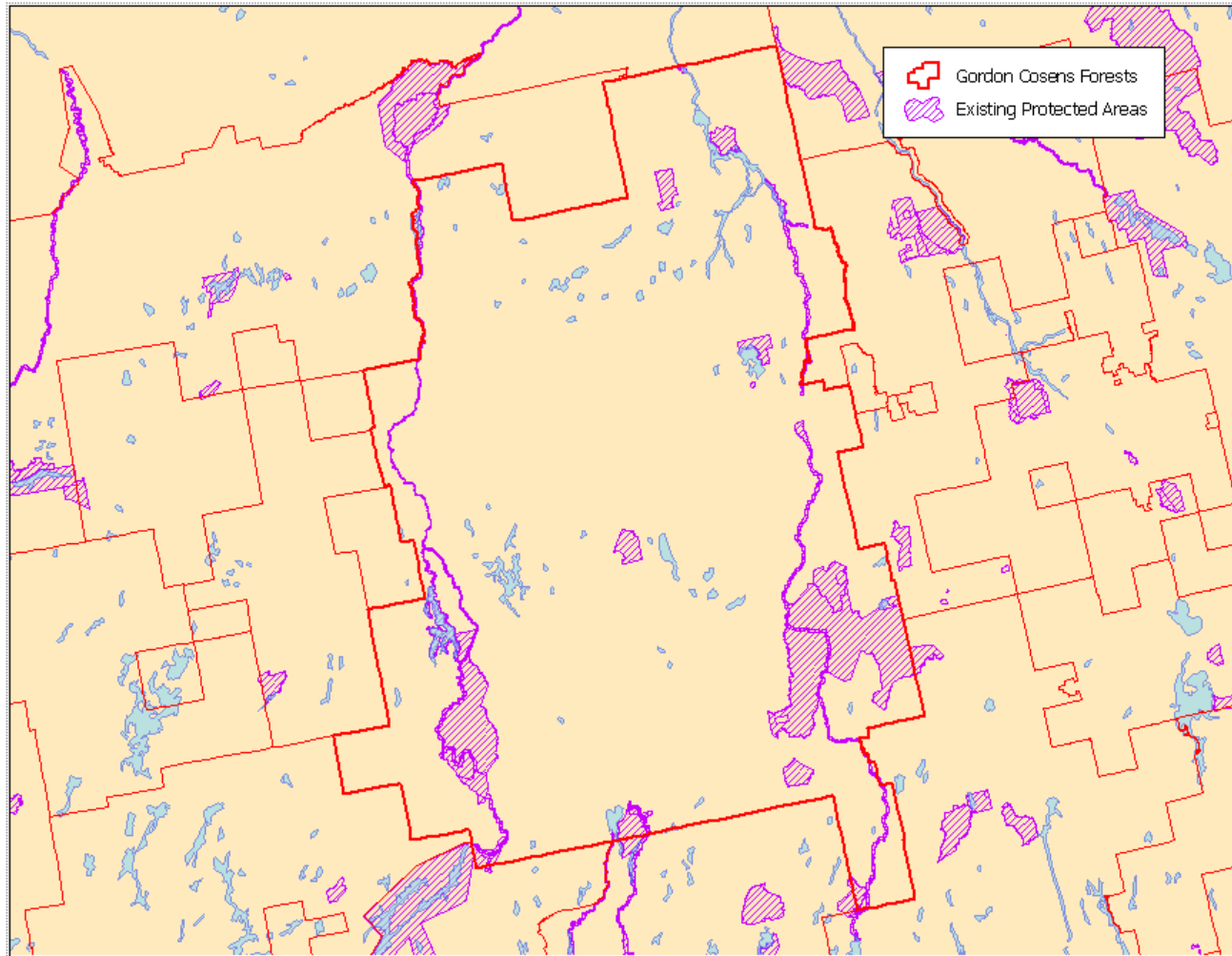
Linkage to Conservation Planning

- Explicit link between HCVF and PAs representation only in one location in the framework (guidance note in Question #19)
- Use of HCV elements to set conservation targets for protected areas not well described and/or communicated
- Maximizing conservation targets and minimizing constraints not quantitatively assessed



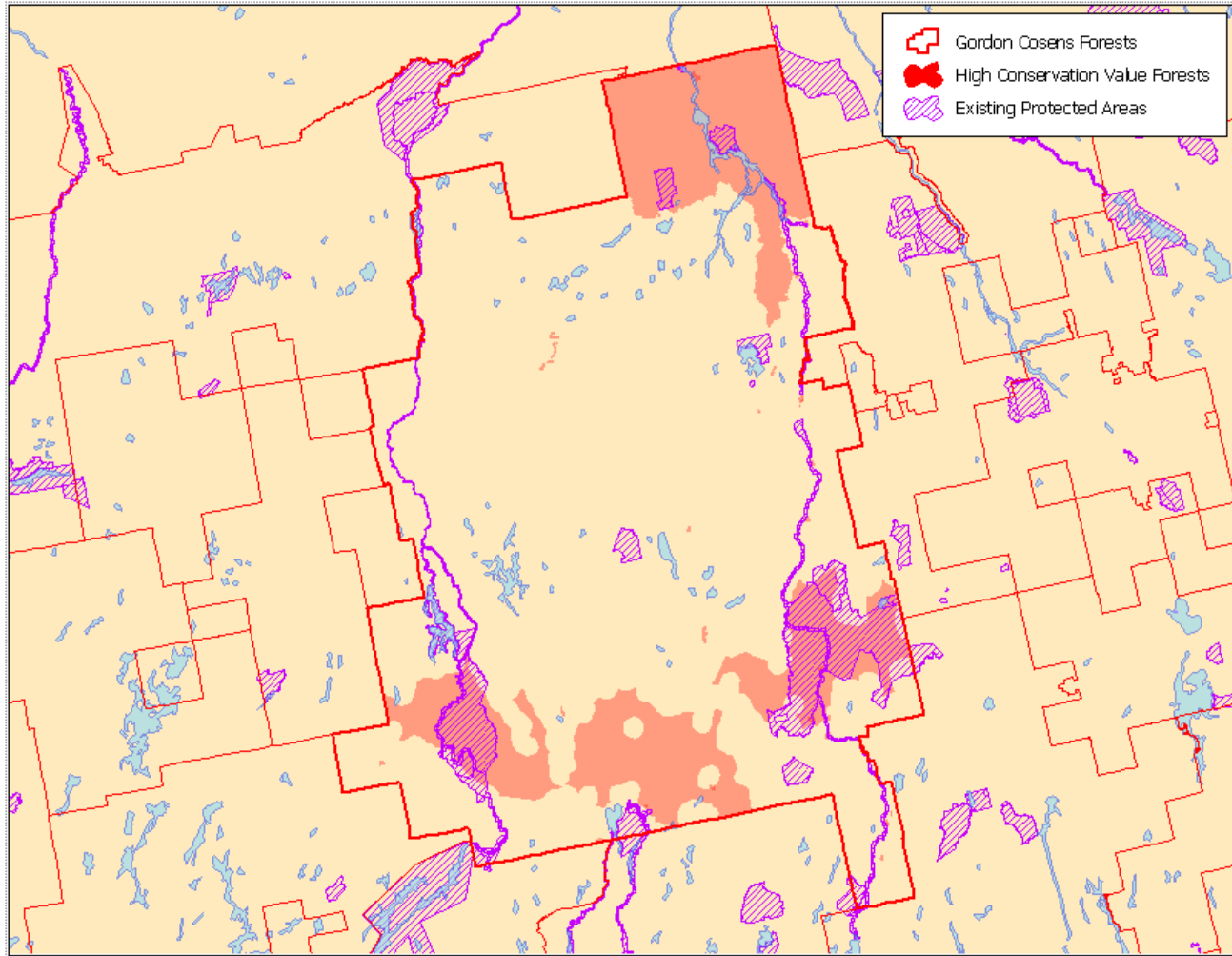


Gordon Cosens Forest Example: Existing Protected Areas



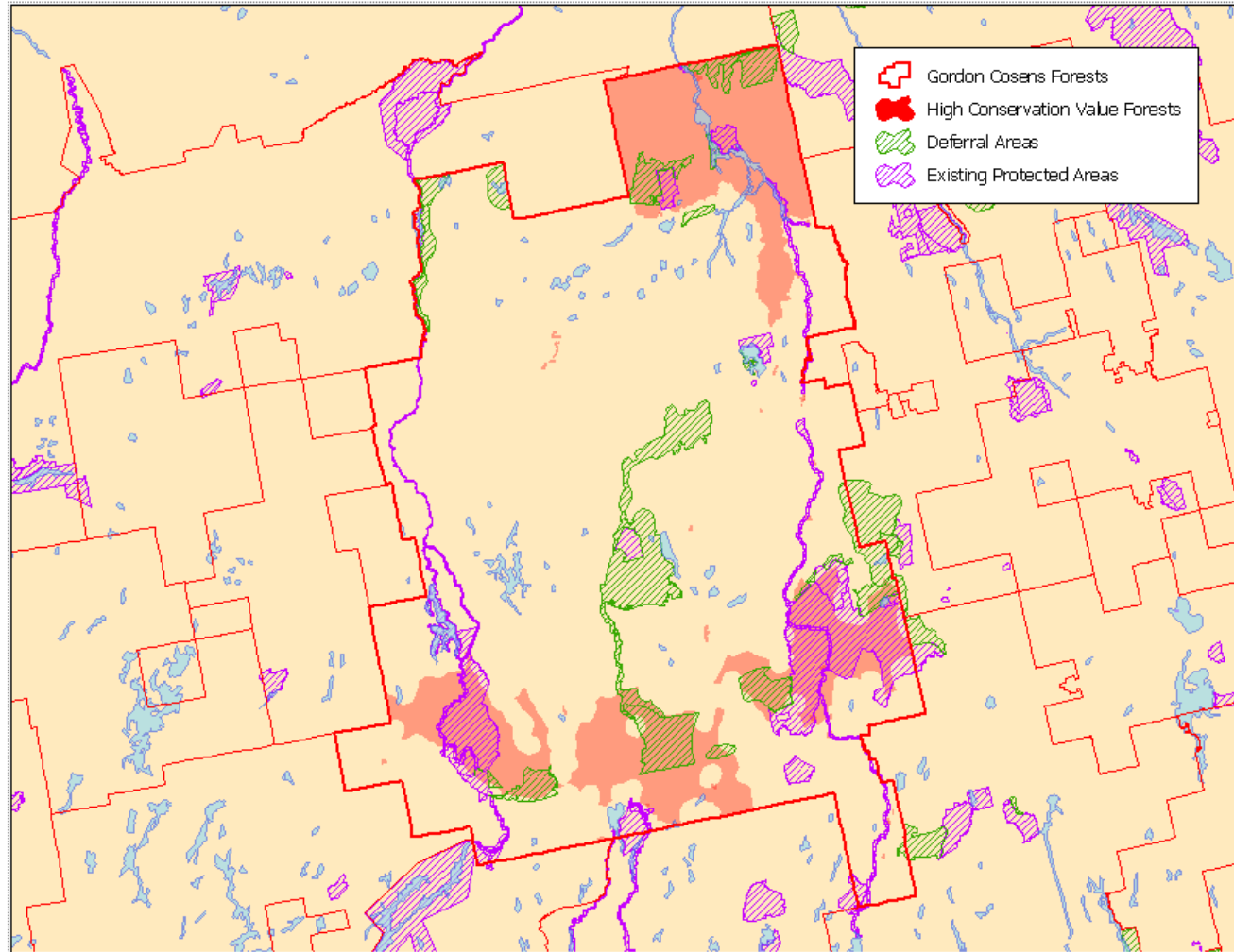


Gordon Cosens Forest Example: High Conservation Value Forests





Gordon Cosens Forest Example: Deferral Areas

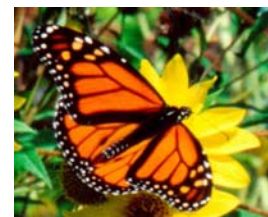




Gordon Cosens Forest Example: Summary of Areas

- Values captured in Protected Areas (including deferrals) and High Conservation Value Forests

| | <i>Total Area (ha)</i> | Late Seral Stands | | Caribou Habitat | |
|------------------------|------------------------|--------------------------|----------------------|------------------------|----------------------|
| | | <i>Area (ha)</i> | <i>Prop Captured</i> | <i>Area (ha)</i> | <i>Prop Captured</i> |
| GCF | 2,015,941 | 481,501 | N/A | 174,650 | N/A |
| Protected Areas | 292,732 | 134,739 | 28.0% | 45,336 | 26.0% |
| HCVF Zones | 398,895 | 181,944 | 37.8% | 56,688 | 32.5% |
| PAs + HCVFs | 547,656 | 229,030 | 47.6% | 76,984 | 44.1% |





HCVF Summary

- Offers a rational, comprehensive approach to forest assessment
 - Filter to help sort landscape into priorities for protect-manage-restore
- Can tackle ecological and social values
- Can be used within FSC or independently
- Requires precaution on identified sites, but...
 - Doesn't require all identified forests to be strictly protected
 - Doesn't permit all sites to be logged
- Allows companies to be pro-active on improving PA networks
 - By preserving options (i.e., not logging) in forest types currently under-represented in protected area networks
- Potential alignment with Endangered Forests

