Central Interior Ecoregional Assessment Map Volume

September 2010

1. Central Interior Terrestrial Study Area
2. Central Interior Freshwater Study Area
3. Land Ownership and Management
4. Terrestrial Assessment Units
5. Terrestrial Ecological Systems
6. Terrestrial Fine-filter Data
7. Ecosystem Services: Carbon Storage
8. Ecosystem Services: Recreational Angling
9. Ecosystem Services: Timber Production
10. Freshwater Assessment Units
11. Freshwater Ecological Systems
12. Freshwater Fine-filter
13. Terrestrial Suitability Index
14. Freshwater Suitability Index
15. Terrestrial Conservation Value
16. Freshwater Conservation Value
17. Terrestrial “Best” NCC Marxan Output
18. Terrestrial Summed Solution NCC Marxan Output
19. Terrestrial Summed Solution Ecosystem Services Marxan Output
20. Freshwater „Best’ NCC Marxan Output
21. Freshwater Summed Solution NCC Marxan Output
22. Prioritized Terrestrial Portfolio
23. Protected Areas and Terrestrial Portfolio
24. Prioritized Freshwater Portfolio
25. Protected Areas and Freshwater Portfolio
26. Terrestrial and Freshwater Portfolio Overlaps
27. Terrestrial Climate Change Summed Solution Marxan Output
28. Terrestrial Climate Change Comparison with NCC Output
29. Freshwater Climate Change Summed Solution Marxan Output
30. Freshwater Climate Change Comparison with NCC Output
31. Comparative Analysis: Terrestrial Portfolio & Climate Corridors
32. Comparative Analysis: Grizzly Bear Habitat Model
33. Comparative Analysis: Northern Caribou Probability of Occupancy Model
34. Comparative Analysis: Wolverine Probability of Occupancy Model
35. Comparative Analysis: Fisher Probability of Occupancy Model

CENTRAL INTERIOR ERA:

Map 1: Central Interior Terrestrial Study Area

Ecoregions are large areas of land or water defined by their distinct climate, geology and native species. The study area boundary corresponds with that of the Montane Cordillera Ecoregion as originally delineated by Bailey (1995) and Environment Canada (Wiken 1986) and then modified by TNC and NCC for use in their Ecoregional assessments in the continental United States, Alaska, Hawaii and Canada. The terrestrial study area spans 25,685,488 ha. Two ecoprovinces (Sub-Boreal Interior and Central Interior) are found within the Montane Cordillera Ecoregion. For the purposes of this ecoregional assessment the study area is referred to as the Central Interior.

Scale 1:3,000,000

0 15 30 60 Kilometres

0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

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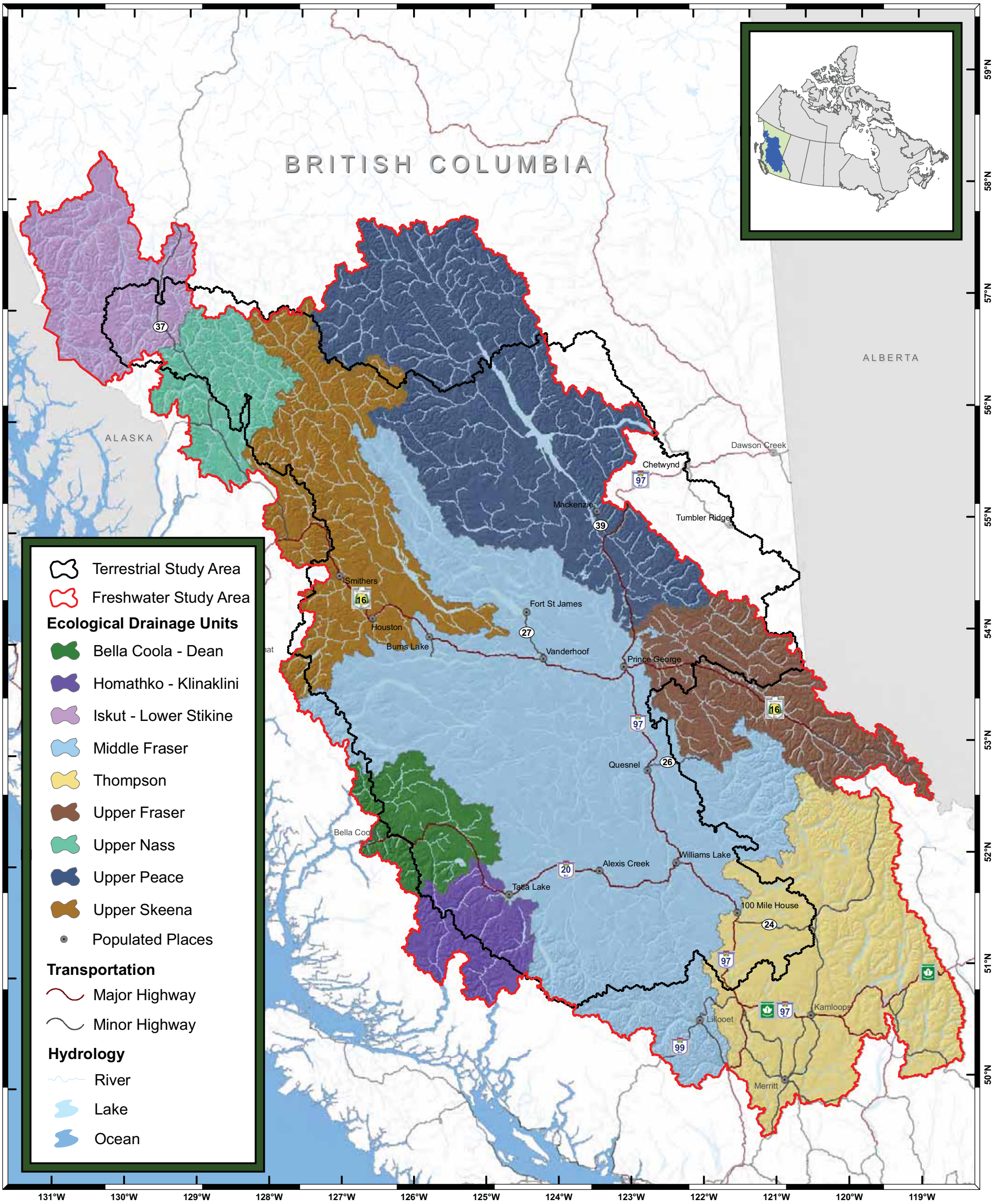


CENTRAL INTERIOR ERA:

Map 2: Central Interior Freshwater Study Area

Ecological drainage units (EDU) are comprised of river ecosystems that share a common zoogeographic history and therefore likely have a distinct set of freshwater assemblages and habitats. The freshwater study area includes EDUs that have the majority of their area within the terrestrial boundary. Complete drainage systems were included in the analysis rather than cutting them at the terrestrial boundary and this resulted in a study area that is larger than its terrestrial counterpart. The area of the freshwater study area is 38,729,060 ha.

Central Interior EDUs (ha)

Middle Fraser	12,850,388
Upper Peace	7,208,395
Thompson	5,582,784
Upper Skeena	4,043,694
Upper Fraser	2,769,423
Iskut – Lower Stikine	2,288,476
Upper Nass	1,530,849
Bella Coola - Dean	1,292,179
Homathko - Klinaklini	1,162,873

Scale 1:3,700,000

0 20 40 80 Kilometres

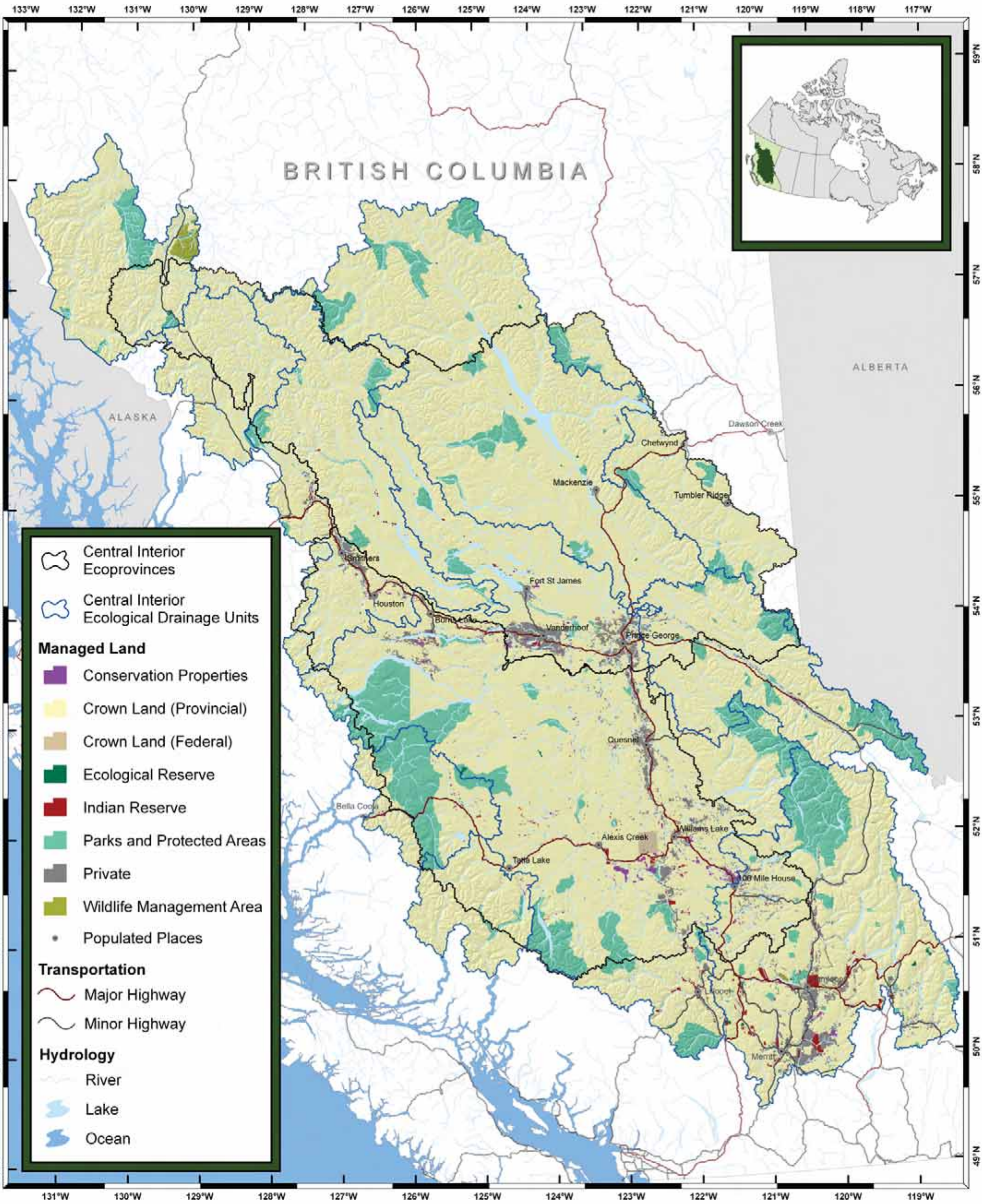
0 20 40 80 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation Nature Canada



CENTRAL INTERIOR ERA:

Map 3: Land Ownership and Management

The majority of the Central Interior Freshwater and Terrestrial study areas is provincial crown land, followed by protected areas and private land.

Managed Land
Provincial Crown Land.....84%
Provincial Park / Protected Area.....12%
Private Land.....3%
Indian Reserve.....<1%
Conservation Trust Land..... <1%
Federal Crown Land.....<1%

Scale 1:3,700,000

0 20 40 80 Kilometres

0 20 40 80 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada

BRITISH COLUMBIA

ALASKA

ALBERTA

Dawson Creek
Chetwynd
Mackenzie
Tumbler Ridge
Smithers
Fort St James
Houston
Burns Lake
Vanderhoof
Prince George
Quesnel
Bella Coola
Williams Lake
Alexis Creek
Tatla Lake
100 Mile House
Kamloops
Lillooet
Merritt

- Central Interior Ecoprovinces
- Terrestrial Assessment Unit
- Populated Places

Transportation

- Major Highway
- Minor Highway

Hydrology

- River
- Lake
- Ocean

131°W 130°W 129°W 128°W 127°W 126°W 125°W 124°W 123°W 122°W 121°W 120°W 119°W

58°N 57°N 56°N 55°N 54°N 53°N 52°N 51°N 50°N

CENTRAL INTERIOR ERA:

Map 4: Terrestrial Assessment Units

For the terrestrial analyses, 500 hectare hexagons were used as the assessment units. There are a total of 51,651 hexagons used in the Central Interior Ecoregional Assessment. Using a consistently sized assessment unit eliminates one variable of uncertainty in the MARXAN algorithm. The rationale for this size was that it was "sufficient for efficiently representing local-scale targets in small functional sites while allowing for aggregation of ecological systems into extensive landscape scale conservation areas" (Neely et al. 2001).

Scale 1:3,000,000

0 15 30 60 Kilometres

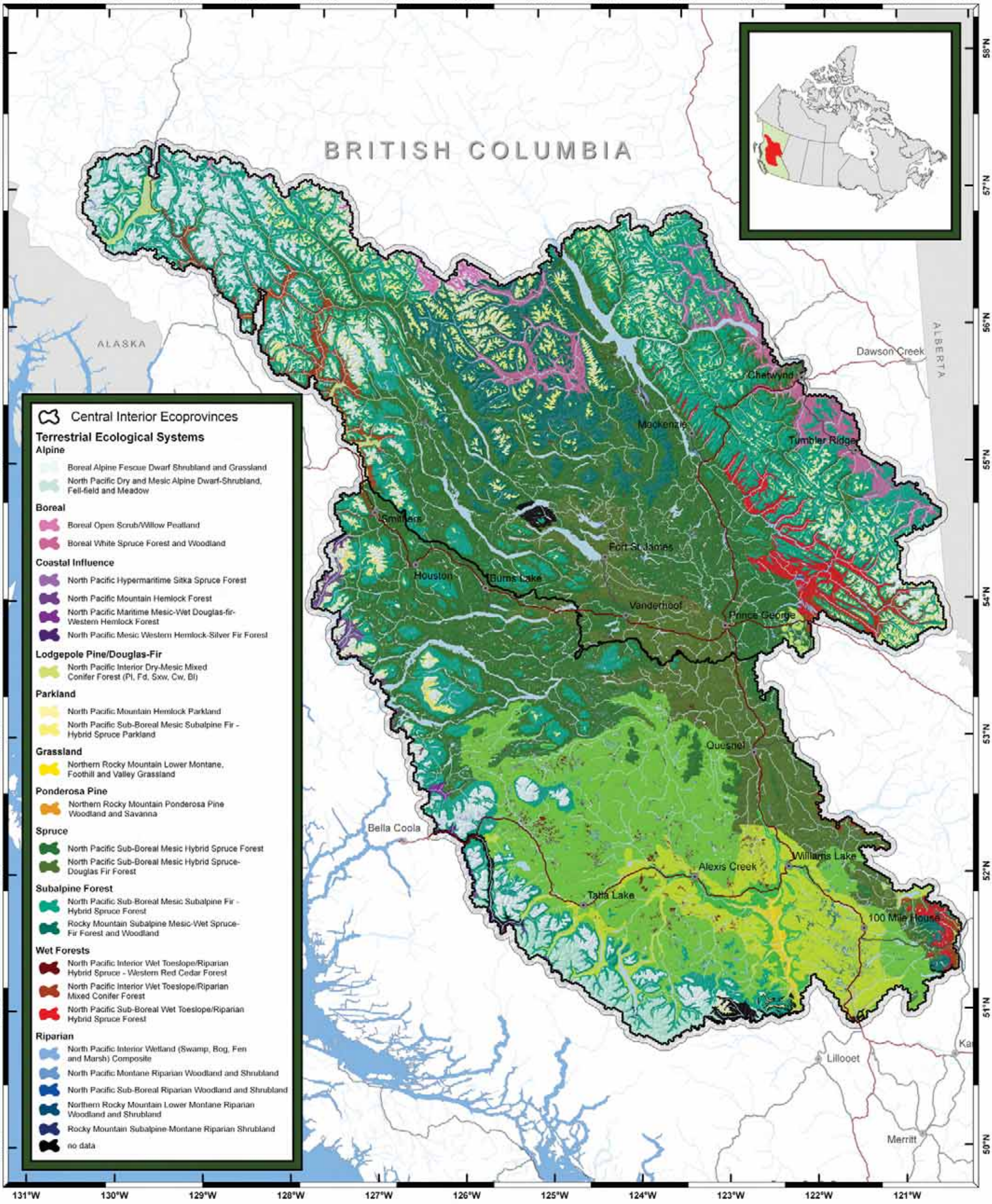
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 5: Terrestrial Ecological Systems

This map represents the predicted distribution of the 25 ecological systems, or "coarse filter" conservation targets within the terrestrial study area. Terrestrial ecological systems are groups of plant community types that tend to co-occur within landscapes with similar ecological processes, substrates, and/or environmental gradients. Biogeoclimatic Zones, Vegetation Resource Inventory, and DEM-derived topographic features were combined, along with expert knowledge, as input for this predictive model.

Scale 1:3,000,000

0 15 30 60 Kilometres

0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

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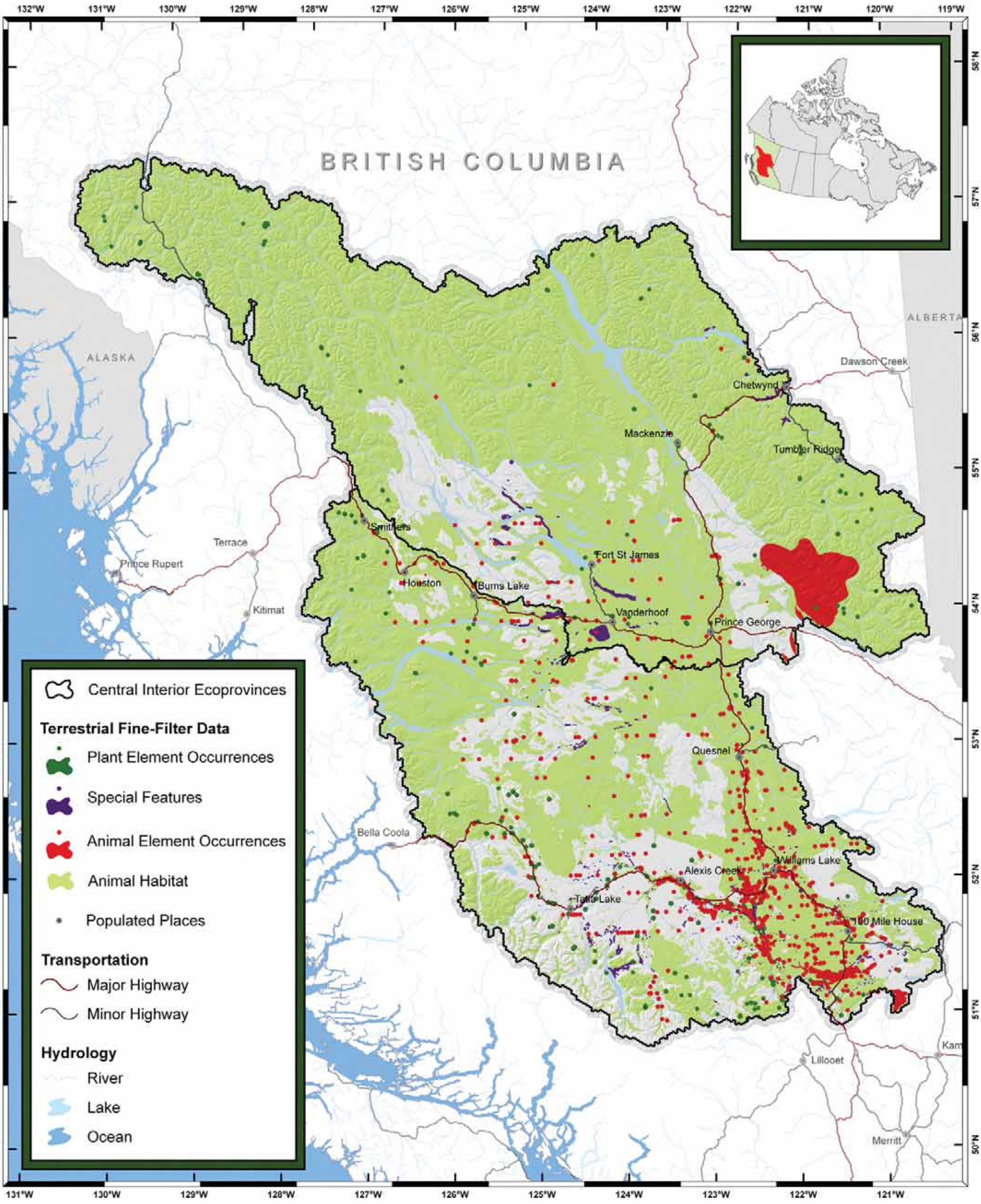


CENTRAL INTERIOR ERA:

Map 6: Terrestrial Fine-Filter Data

This map represents the locations of individual terrestrial plant and animal target species and populations / sub-populations for the Central Interior ERA. Special features (e.g., karst, hot springs) and rare communities (e.g., Sitka Spruce/Salmonberry Dry) are also represented in this map. The terrestrial fine-filter data were derived from a number of sources including the BC Conservation Data Centre along with other agencies and individuals in British Columbia.

Scale 1:3,000,000

0 15 30 60 Kilometres

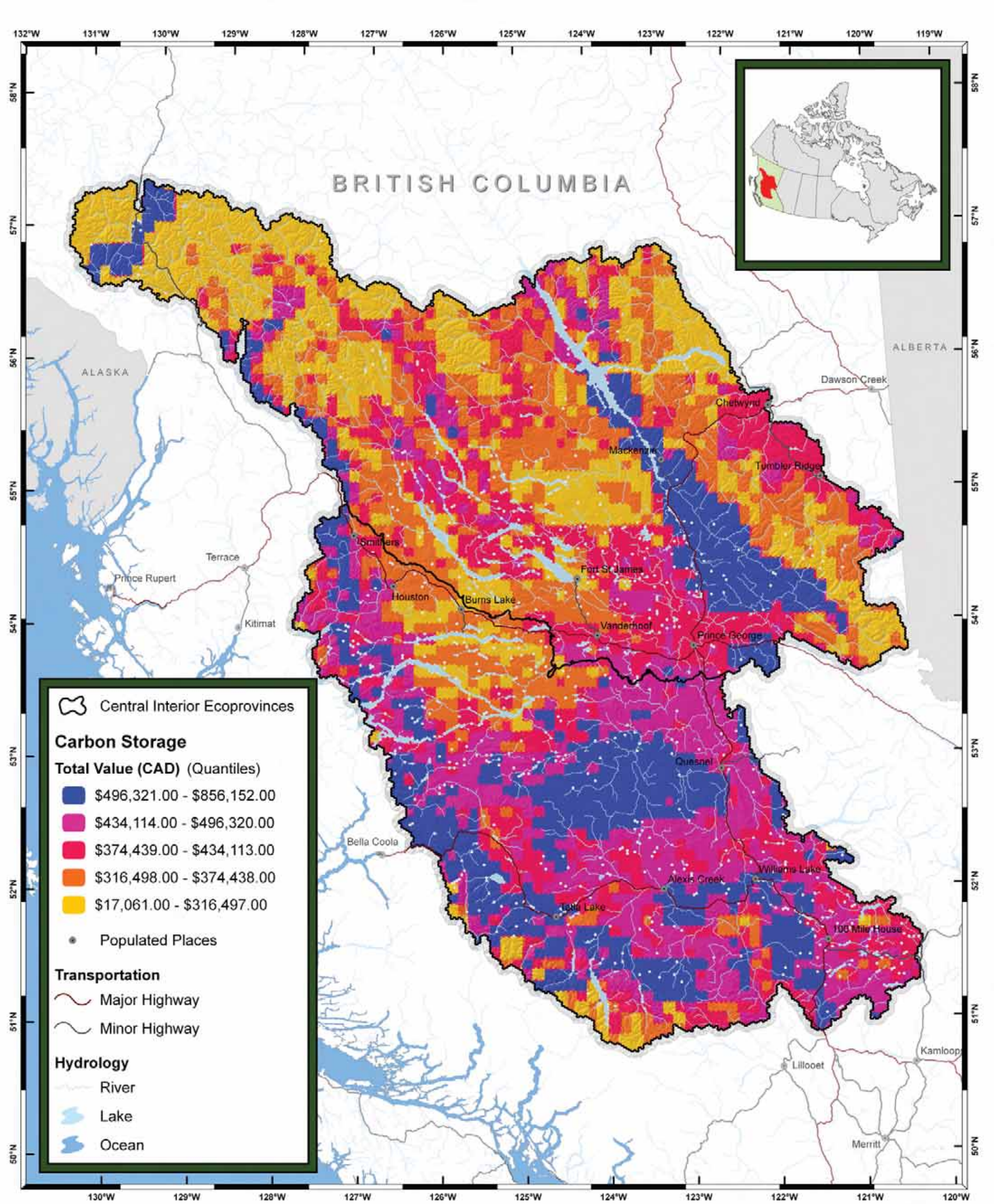
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 7: Ecosystem Services - Carbon Storage

Ecosystem services are a measure of the benefits to humans from the resources and processes of natural ecosystems. To help inform decision makers economic values are often assigned. Carbon Dioxide value was used to represent the ecosystem service value of carbon storage. Raw carbon storage data came from the World Resources Institute and was originally measured in tonnes/hectare on a grid of approximately 83 km2. The data were adapted to account for a managed landscape rather than the assumed natural landscape; the value of carbon was decreased by 10% (roughly adapted from Kurz, Beukema and Apps, 1998). Large bodies of water were not included in the final layer. To convert carbon to carbon dioxide the carbon values were multiplied by 44/12 (the ratio of the molecular weight of carbon dioxide to carbon). Finally the amount of carbon dioxide was multiplied by $8.46 (the price per tonne of carbon dioxide on the Chicago Climate Exchange and New South Wales and the EU Emissions Trading Scheme on March, 19th, 2008) to obtain an economic value for carbon dioxide.

Scale 1:3,000,000

0 15 30 60 Kilometres

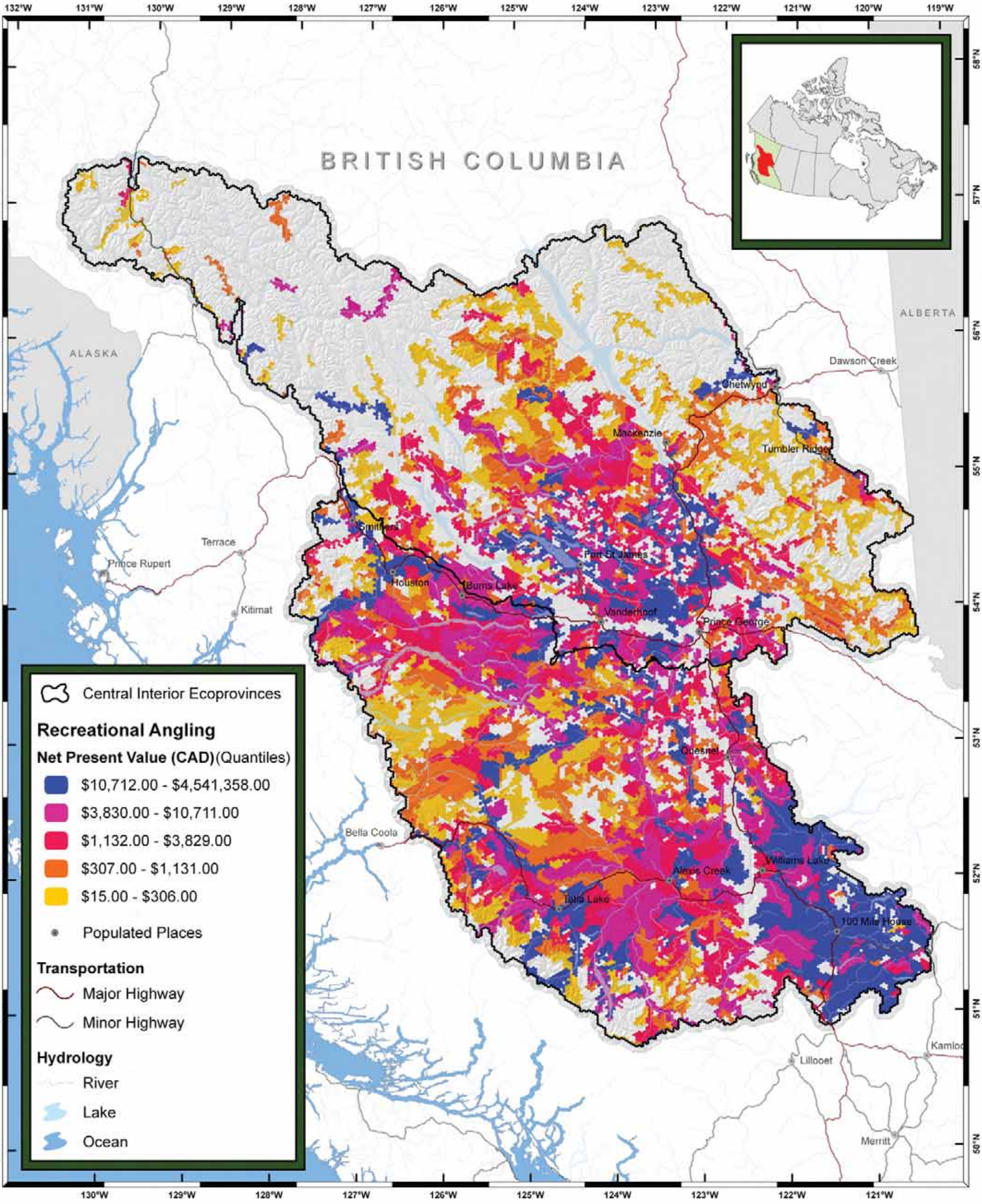
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 8: Ecosystem Services - Recreational Angling

Ecosystem services are a measure of the benefits to humans from the resources and processes of natural ecosystems. To help inform decision makers economic values are often assigned. Recreational angling ecosystem service value was developed based on modeled angler effort and watershed sensitivity databases supplied by Eric Parkinson (UBC, Ministry of Environment). Areas with stocked lakes were excluded. Net present value was calculated with a 4% discount rate over a time scale of 25 years. The number of angler days supported by each watershed was calculated. The angler days were multiplied by $240.47 (this value is the approximate amount of money spent by anglers per day fishing in BC's freshwater regions in 2005 from the Recreational Fishing Survey of Canada) to give the economic value. A multicriteria evaluation (MCE) incorporating slope, annual precipitation, density of alluvial streams, soil, percent of forest land cover, and lake buffering capacity was used to create a sensitivity score. The MCE value was multiplied by the economic value to give an economic loss score. The economic loss value was subtracted from the economic value to give the net present value.

Scale 1:3,000,000

0 15 30 60 Kilometres

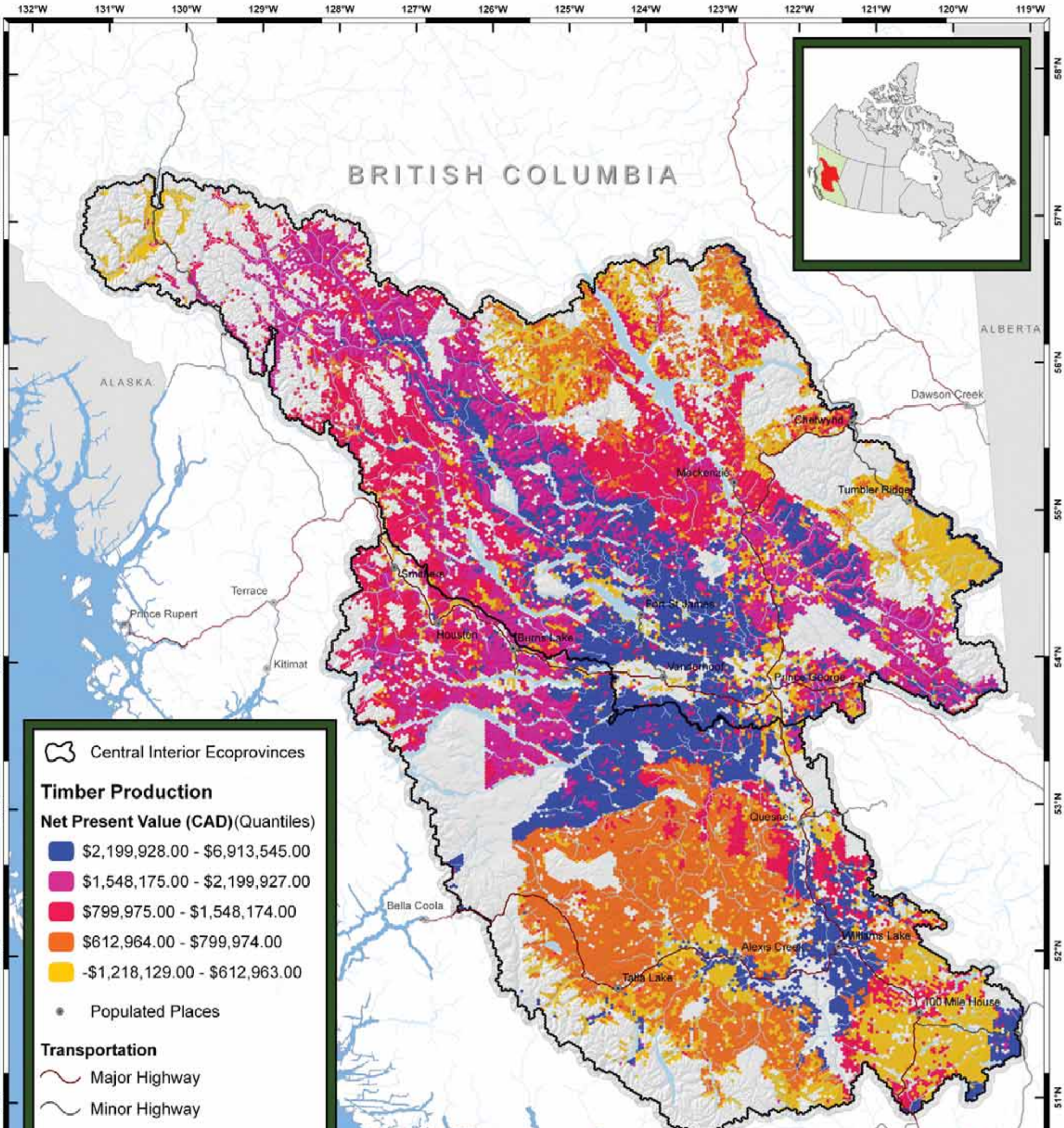
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 9: Ecosystem Services - Timber Production

Ecosystem services are a measure of the benefits to humans from the resources and processes of natural ecosystems. To help inform decision makers economic values are often assigned. Timber supply (volume) dataset was supplied by Olaf Schwab, Faculty of Forestry, UBC, as a 1.6km² grid. Areas outside the Timber Harvesting Land Base (thlb) or within large bodies of water were removed. Timber net present value was calculated with a 4% discount rate over a time scale of 1000 years. The final net present value was calculated by subtracting costs (slope based harvest costs, transportation to processing centre, and silviculture) from benefits (average selling price of species ($/m3) * timber supply volume (m3/ha)).

Scale 1:3,000,000

0 15 30 60 Kilometres

0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

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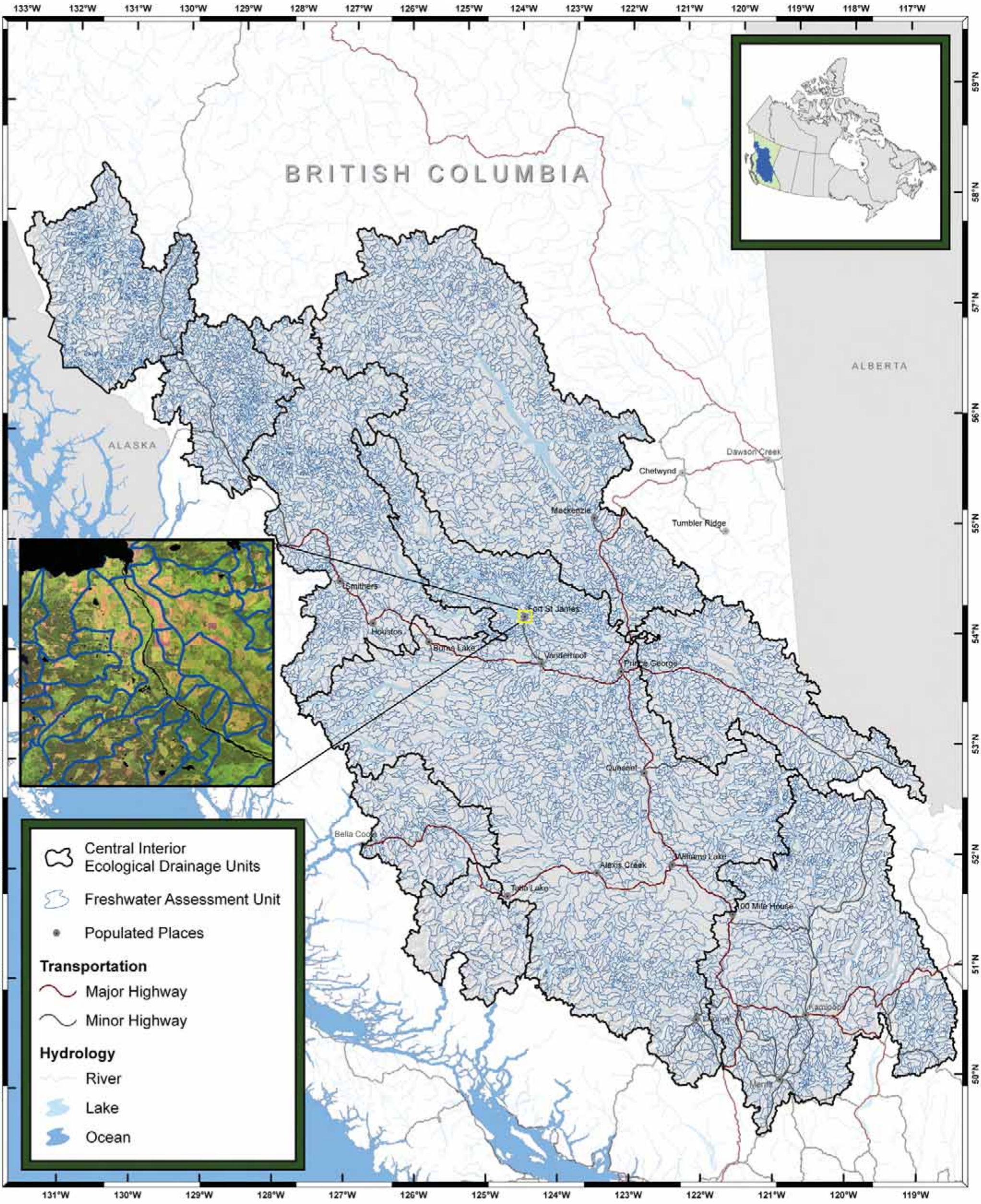


CENTRAL INTERIOR ERA:

Map 10: Freshwater Assessment Units

Freshwater assessment units are third order watersheds from BC's watershed atlas. There are a total of 7,297 watersheds, ranging between 26 and 255,529 hectares, within the study area.

Scale 1:3,700,000

0 20 40 80 Kilometres

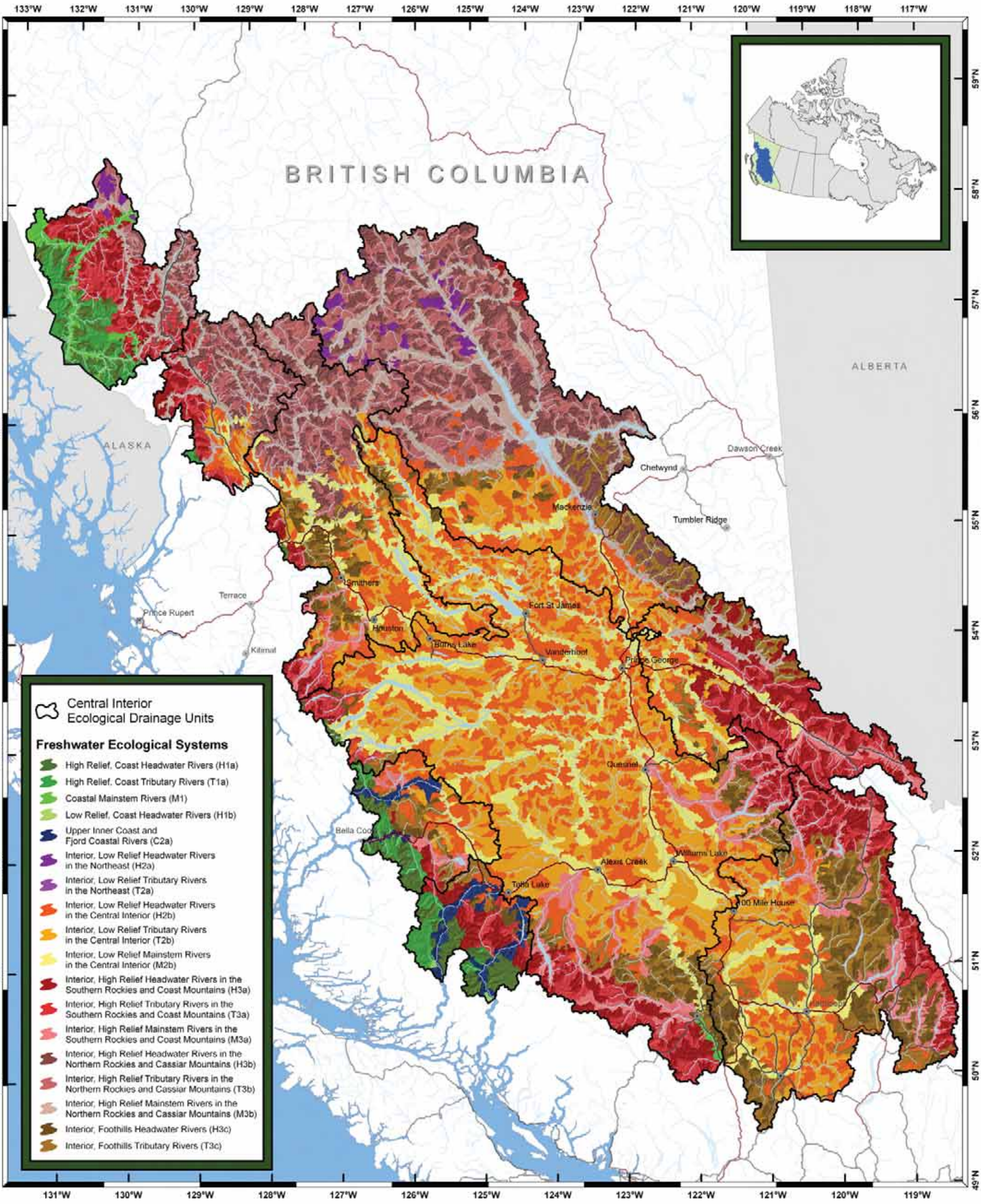
0 20 40 80 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 11: Freshwater Ecological Systems

This map represents the distribution of freshwater river types across the nine ecological drainage units (EDUs) that were part of the Central Interior Ecoregional assessment. Freshwater ecosystems are nested spatial units that are composed of stream and lake networks that are distinct in geomorphological patterns, tied together by similar ecological characteristics and processes. Freshwater ecosystems are used as "coarse-filter" conservation targets to guide conservation area selection for the freshwater component of the ecoregional assessment. Within an EDU, the different shades of a given colour represent distinct freshwater ecological systems.

Scale 1:3,700,000

0 20 40 80 Kilometres

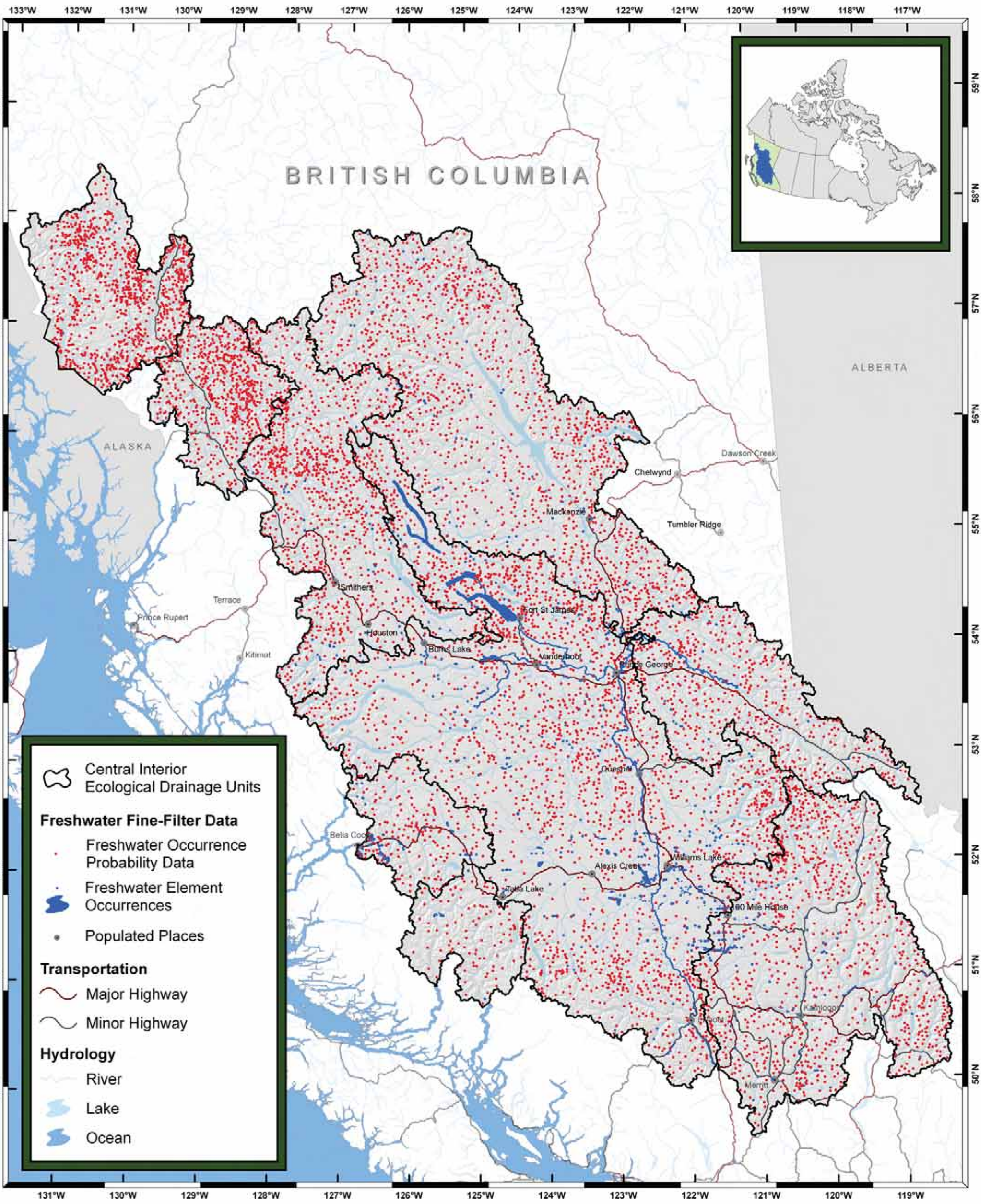
0 20 40 80 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 12: Freshwater Fine-Filter Data

This map represents the distribution of freshwater fine-filter targets across the nine EDUs that were part of the Central Interior Ecoregional Assessment. While coarse-filter targets capture ecological systems and their functions, fine-filter targets represent rare or vulnerable populations of species or habitats that may not be adequately represented within coarse-filter targets. Freshwater targets were selected at multiple spatial scales and levels of biological organization. Targets are generally defined as those species that are currently imperilled, threatened, or endangered; make up species aggregations or groups; or are of special concern due to endemic, disjunct, vulnerable, keystone, or wide-ranging status. Fine-filter data were derived from a number of sources including the BC Conservation Data Centre along with other agencies and individuals in British Columbia.

Scale 1:3,700,000

0 20 40 80 Kilometres

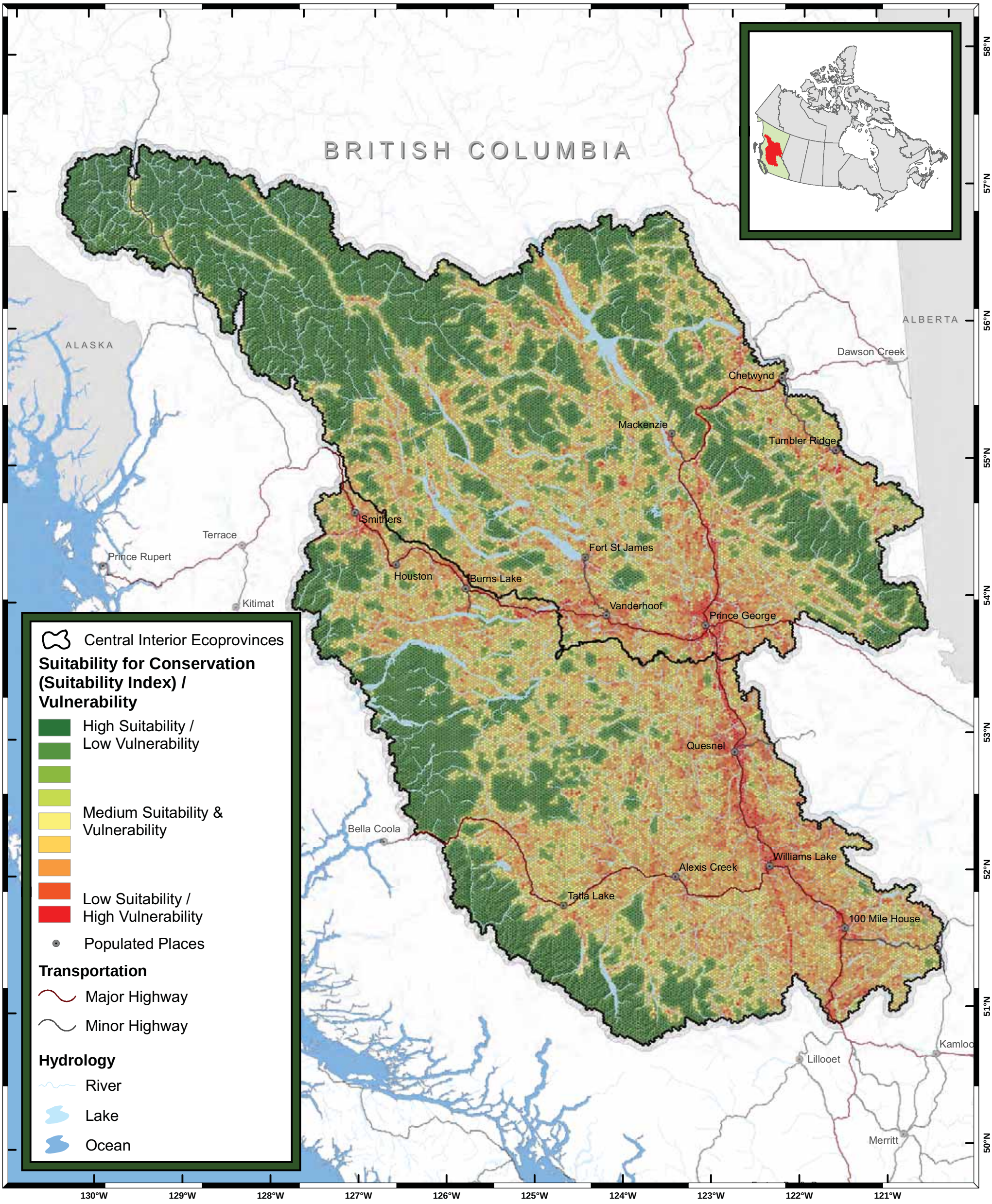
0 20 40 80 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 13: Terrestrial Suitability Index / Vulnerability

The objective of a suitability index is to prompt Marxan to select areas of lower threat to conservation when all other factors are equal, rather than randomly selecting less intact, fragmented, or less viable areas. The suitability index is a measure of human influence on the landscape and the level of threat from associated activities (logging, oil and gas development, urbanization, etc). Linear features (roads, railways, pipelines), which are directly linked to human activities and threats to conservation, were used to develop the suitability index layer. The areas of low suitability index value are areas with higher threats to conservation (higher density / proximity to roads).

Vulnerability is another way to view the suitability index. Areas that are highly suitable for conservation will have low vulnerability i.e. they are less vulnerable to threats.

Scale 1:3,000,000

0 15 30 60 Kilometres

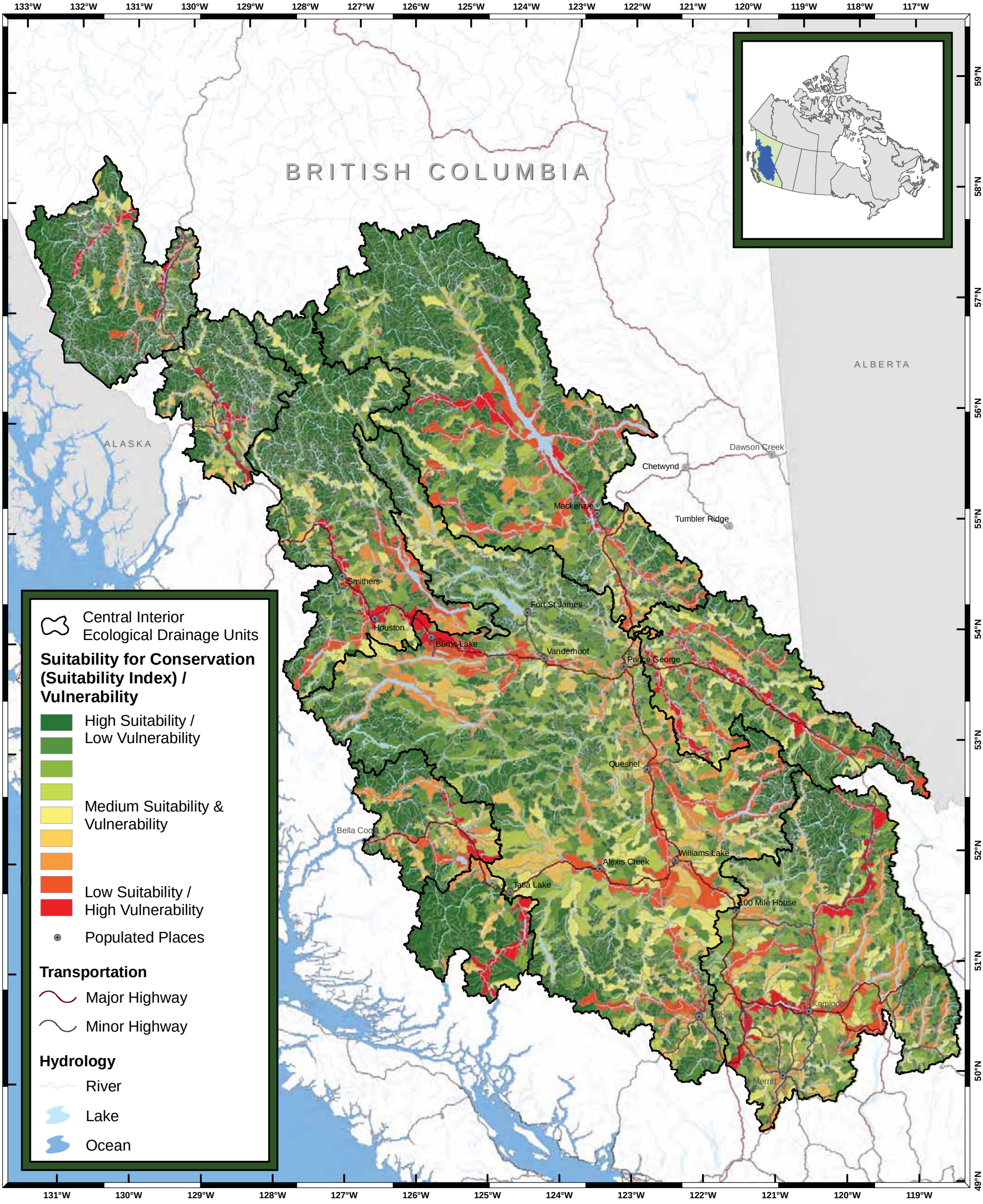
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation with Nature Canada



CENTRAL INTERIOR ERA:

Map 14: Freshwater Suitability Index / Vulnerability

The objective of a suitability index is to prompt Marxan to select areas of lower threat to conservation when all other factors are equal, rather than randomly selecting less intact, fragmented, or less viable areas. The suitability index is a measure of human influence on the landscape and the level of associated threat to conservation value. Three threats to freshwater conservation value were used to develop the freshwater suitability index: road-stream crossings, water demand, and physical obstructions. The number of road-stream crossings was determined by intersecting streams with roads. Water demand was determined by subtracting the amount of water licenced from the amount of water available per watershed. The number of physical obstructions is from the dams and other diversion datasets. The three factors were weighted according to the methods described in Holt et al. (2003) to obtain a single suitability index value for each watershed.

Vulnerability is another way to view the suitability index. Areas that are highly suitable for conservation will have low vulnerability i.e. they are less vulnerable to threats.

Scale 1:3,700,000

0 20 40 80 Kilometres

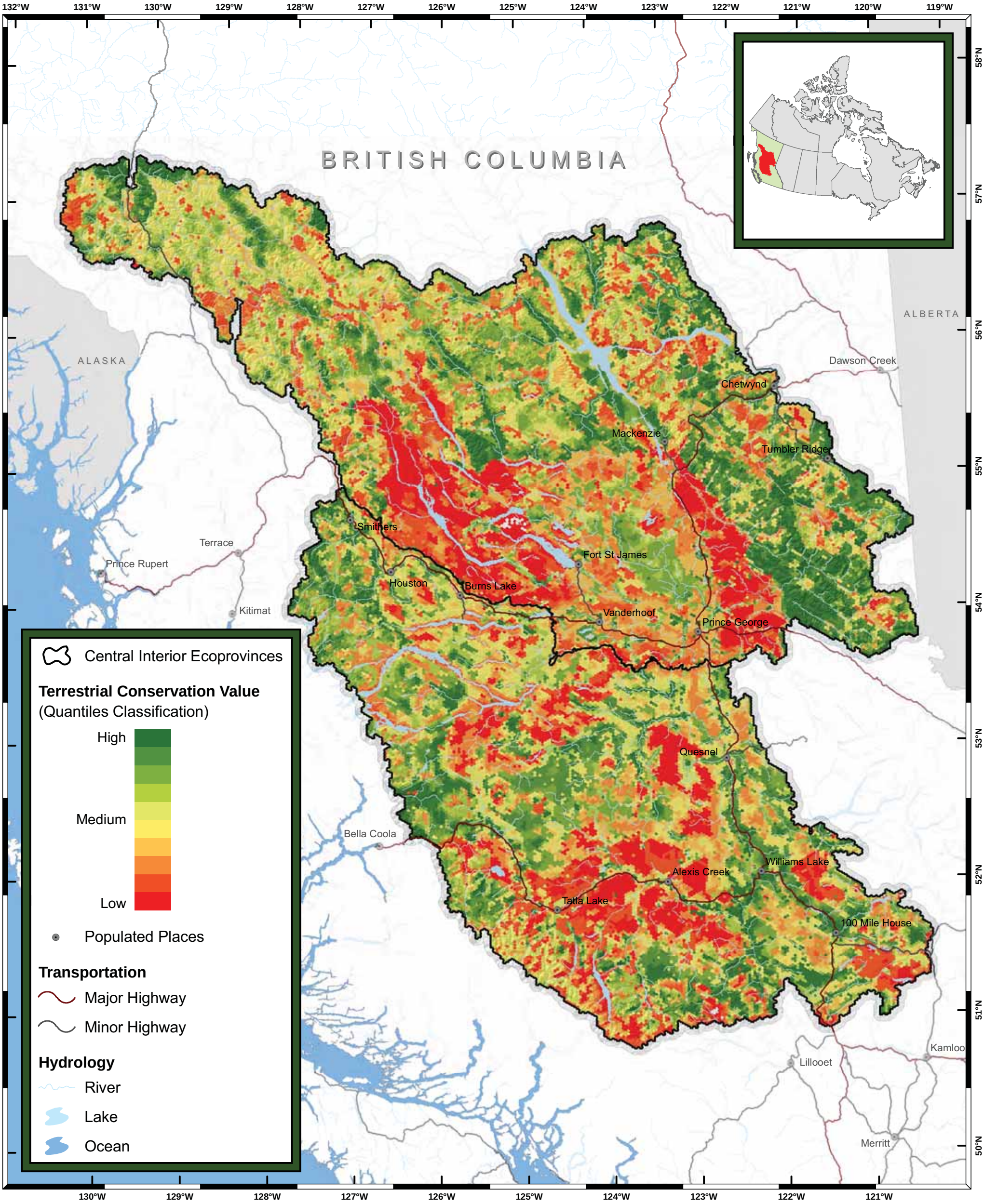
0 20 40 80 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation with Nature Canada



CENTRAL INTERIOR ERA:

Map 15: Terrestrial Conservation Value

Conservation value is a measure of the rarity, diversity, richness, and irreplaceability of species targets located within the study area.

- Rarity is the average of global rank (GRank) scores for targets within each assessment unit.
- Diversity is the number of different types of targets within each assessment unit divided by the total number of different types of targets within the ecoprovince.
- Richness is the number of different targets per planning unit divided by the total number of different targets within the ecoprovince.
- Irreplaceability is the average summed solution value for each assessment unit from six different Marxan runs without suitability index as cost layer with all targets set at 5%, 10%, 20%, 30%, 40%, and 50% goals respectively.

These four factors were calculated, scaled between 0 and 1, and summed together to create the overall conservation value for each assessment unit.

Scale 1:3,000,000

0 15 30 60 Kilometres

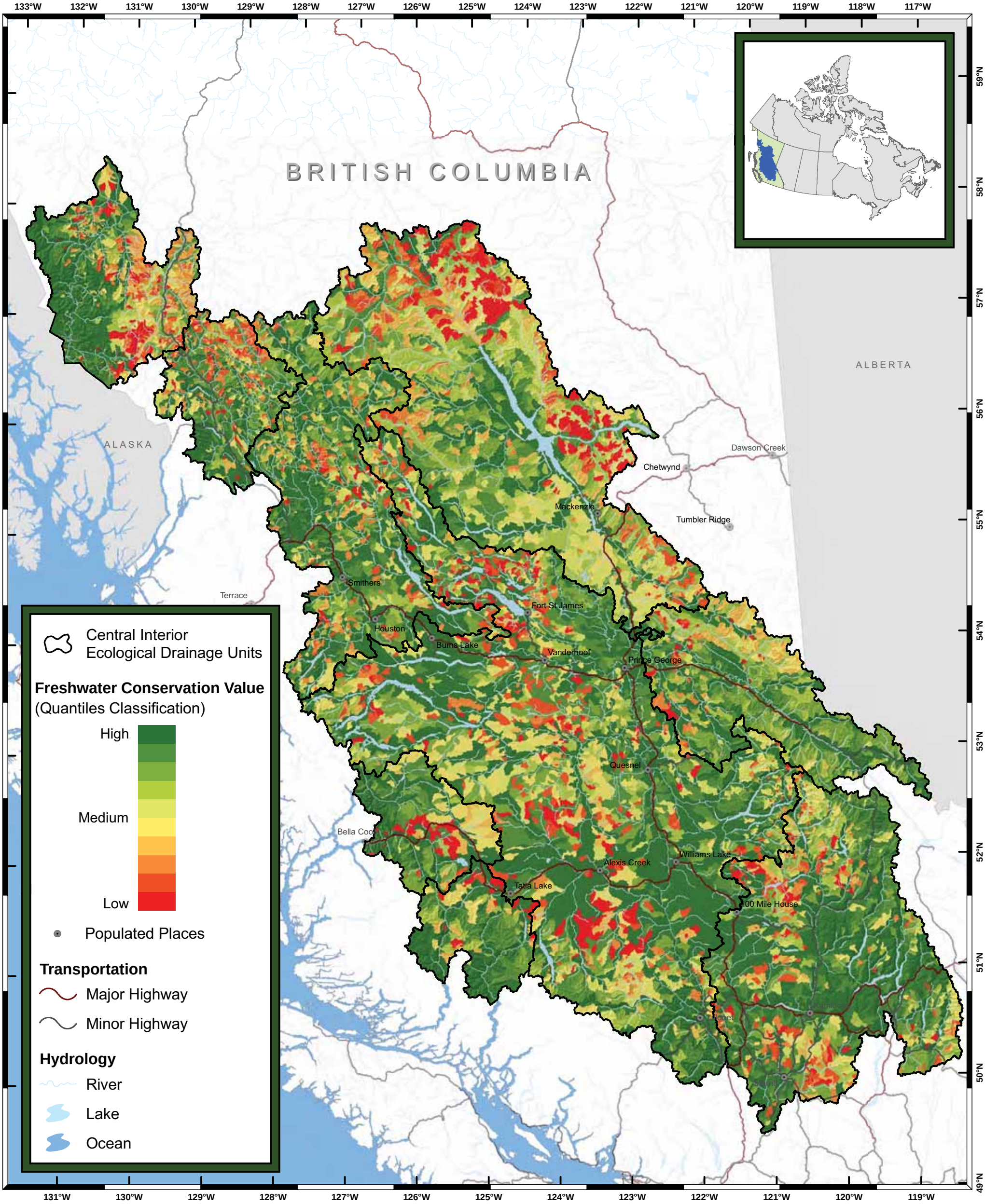
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 16: Freshwater Conservation Value

Conservation value is a measure of the rarity, diversity, richness, and irreplaceability of species targets located within the study area.

- Rarity is the average of global rank (GRank) scores for targets within each assessment unit.
- Diversity is the number of different types of targets within each assessment unit divided by the total number of different types of targets within the EDU.
- Richness is the number of different targets per planning unit divided by the total number of different targets within the EDU.
- Irreplaceability is the average summed solution value for each assessment unit from six different Marxan runs without suitability index as cost layer and all targets set at 5%, 10%, 20%, 30%, 40%, and 50% goals respectively.

These four factors were calculated, scaled between 0 and 1, and summed together to create the overall conservation value for each assessment unit.

Scale 1:3,700,000

0 20 40 80 Kilometres

0 20 40 80 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada

BRITISH COLUMBIA

ALASKA

ALBERTA

Dawson Creek
Chetwynd
Mackenzie
Tumbler Ridge
Smithers
Terrace
Prince Rupert
Kitimat
Houston
Burns Lake
Fort St James
Vanderhoof
Prince George
Quesnel
Bella Coola
Williams Lake
Alexis Creek
Tatla Lake
100 Mile House
Kamloops
Lillooet
Merritt

Central Interior Ecoprovinces

Terrestrial Portfolio

- Automated Marxan Selection
- Core Team/Expert Selection
- Populated Places

Transportation

- Major Highway
- Minor Highway

Hydrology

- River
- Lake
- Ocean

CENTRAL INTERIOR ERA:

Map 17: Terrestrial "Best" NCC Marxan Output

The best output is the Marxan run that best met conservation goals set out in the NCC analysis. Additional assessment units have been manually added to the best output for connectivity purposes.

The "NCC" Marxan analysis included all fine filter and coarse filter targets, as well as the recreational angling and carbon storage ecosystem service targets. The suitability index was used as the assessment unit cost, and land management was used as the boundary length between planning units. Parks and protected areas were locked into the final output.

Scale 1:3,000,000

0 15 30 60 Kilometres

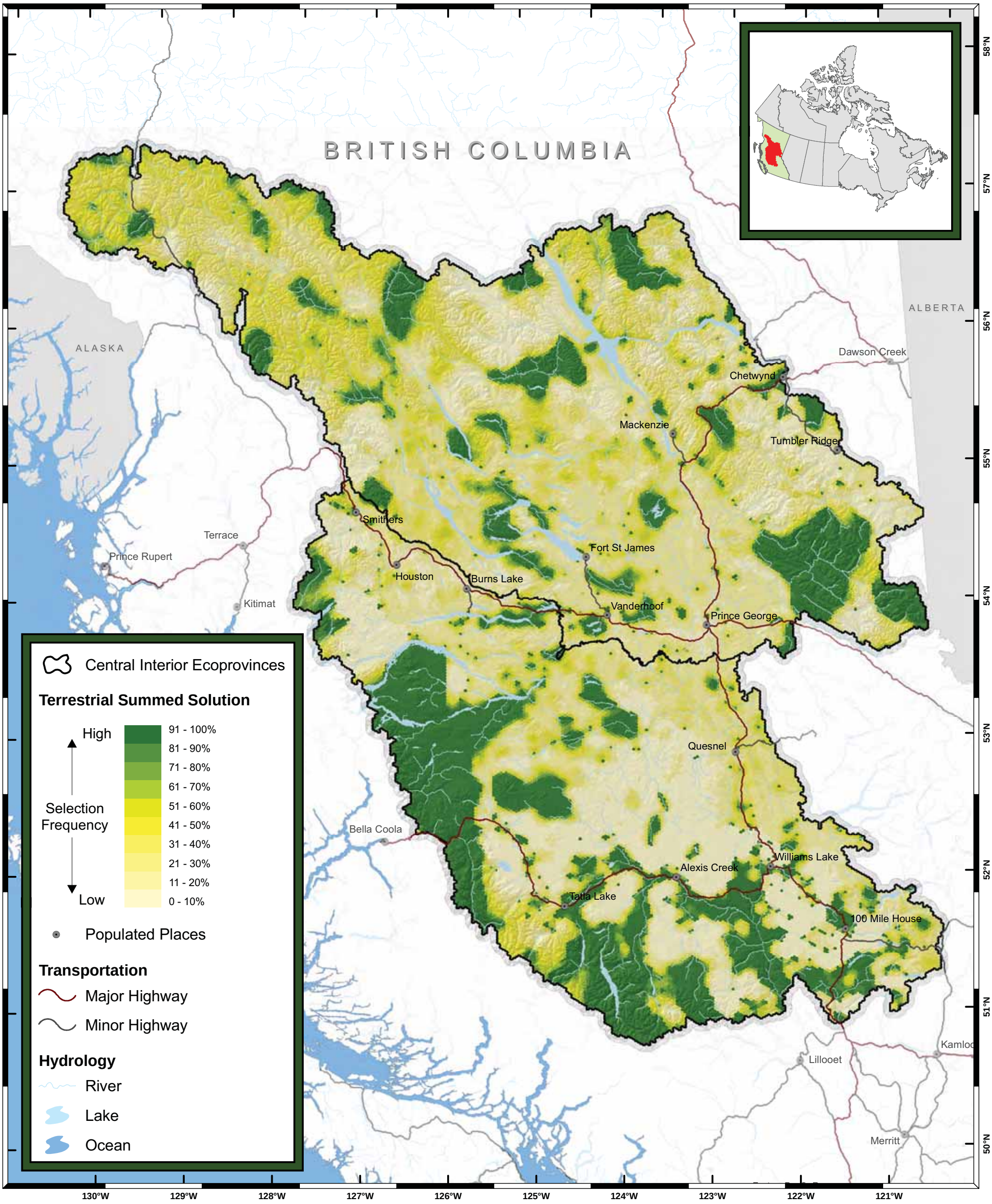
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 18: Terrestrial Summed Solution NCC Marxan Output

The summed solution output is the summation of the number of times an assessment unit was included in each of the 500 Marxan runs that were performed to determine the “best” NCC Marxan output. The summed solution is a good measure of hotspots across the landscape. It should be used alongside the “best” output.

Scale 1:3,000,000

0 15 30 60 Kilometres

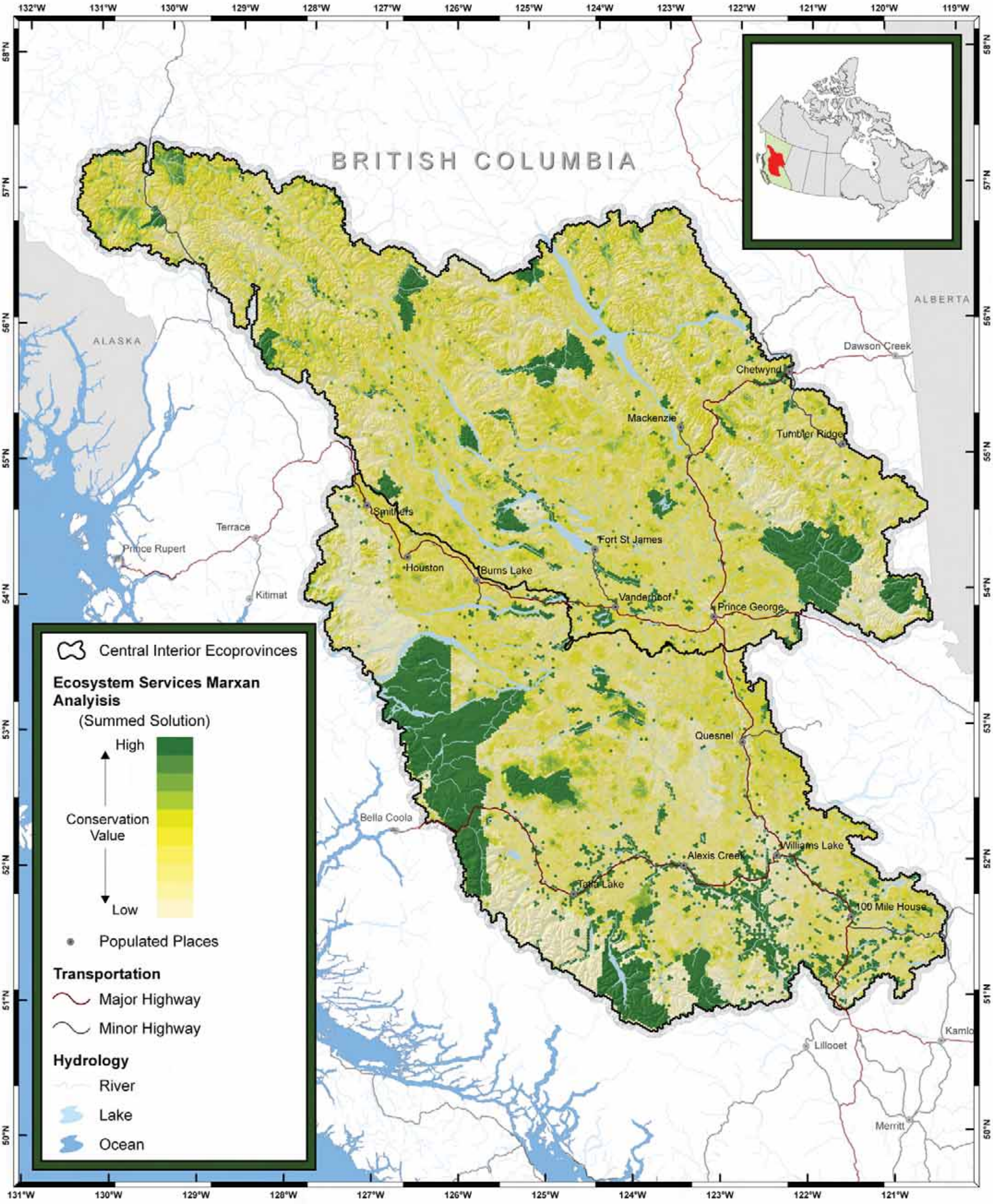
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 19: Terrestrial Summed Solution Ecosystem Services Marxan Output

Marxan was run with ecosystem services incorporated into assessment unit cost. The suitability index was modified by including carbon storage and recreational angling as benefits, and timber production as a cost. Unlike the NCC Marxan analysis ecosystem services were not included as targets.

Scale 1:3,000,000

0 15 30 60 Kilometres

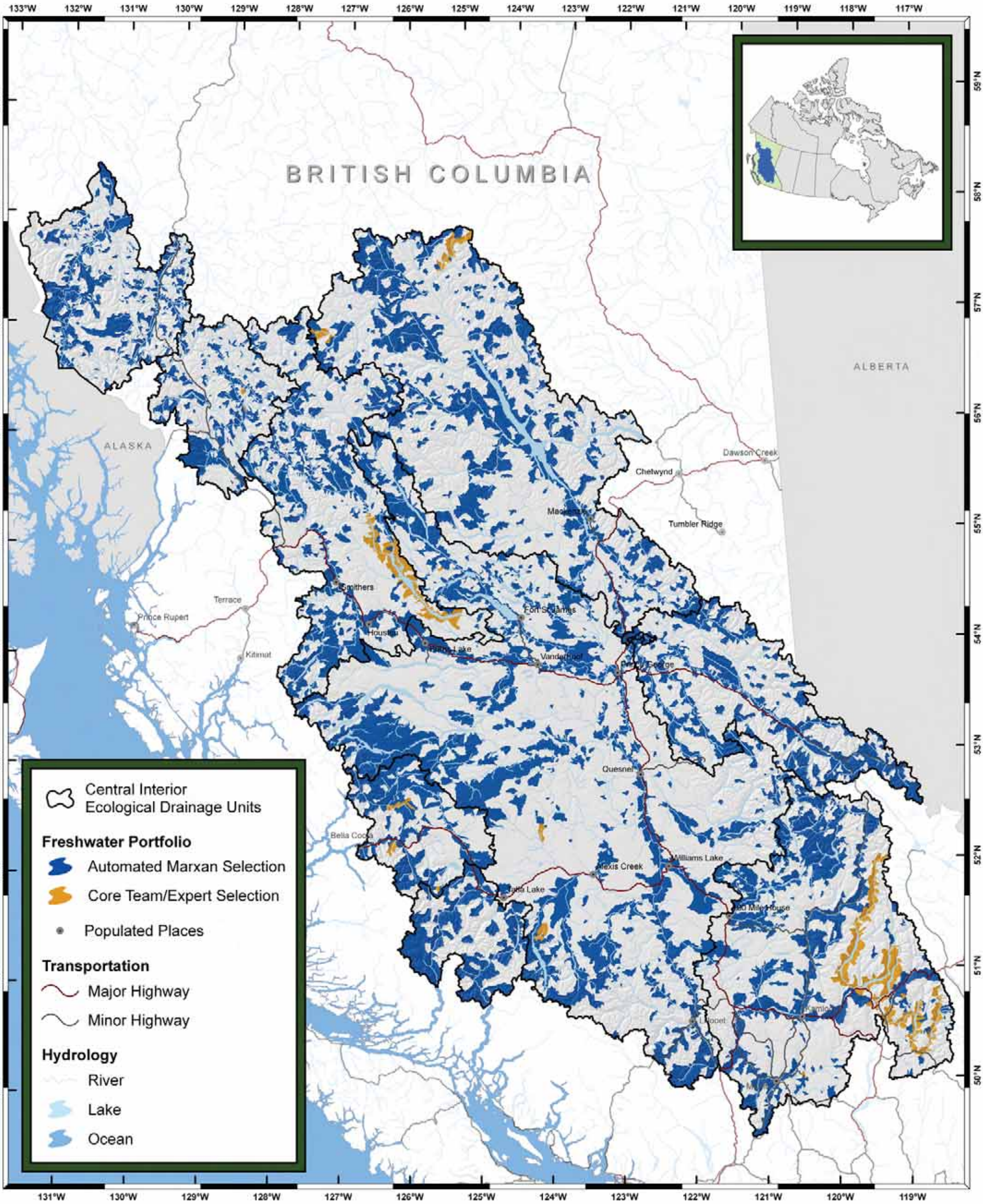
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 20: Freshwater "Best" NCC Marxan Output

The "NCC" Marxan analysis included all fine filter and coarse filter targets with goals determined by the freshwater core team. The suitability index was used as the assessment unit cost, and vertical stacking, a system where hydrologically connected watersheds are assigned connectivity, was used as the boundary length.

Scale 1:3,700,000

0 20 40 80 Kilometres

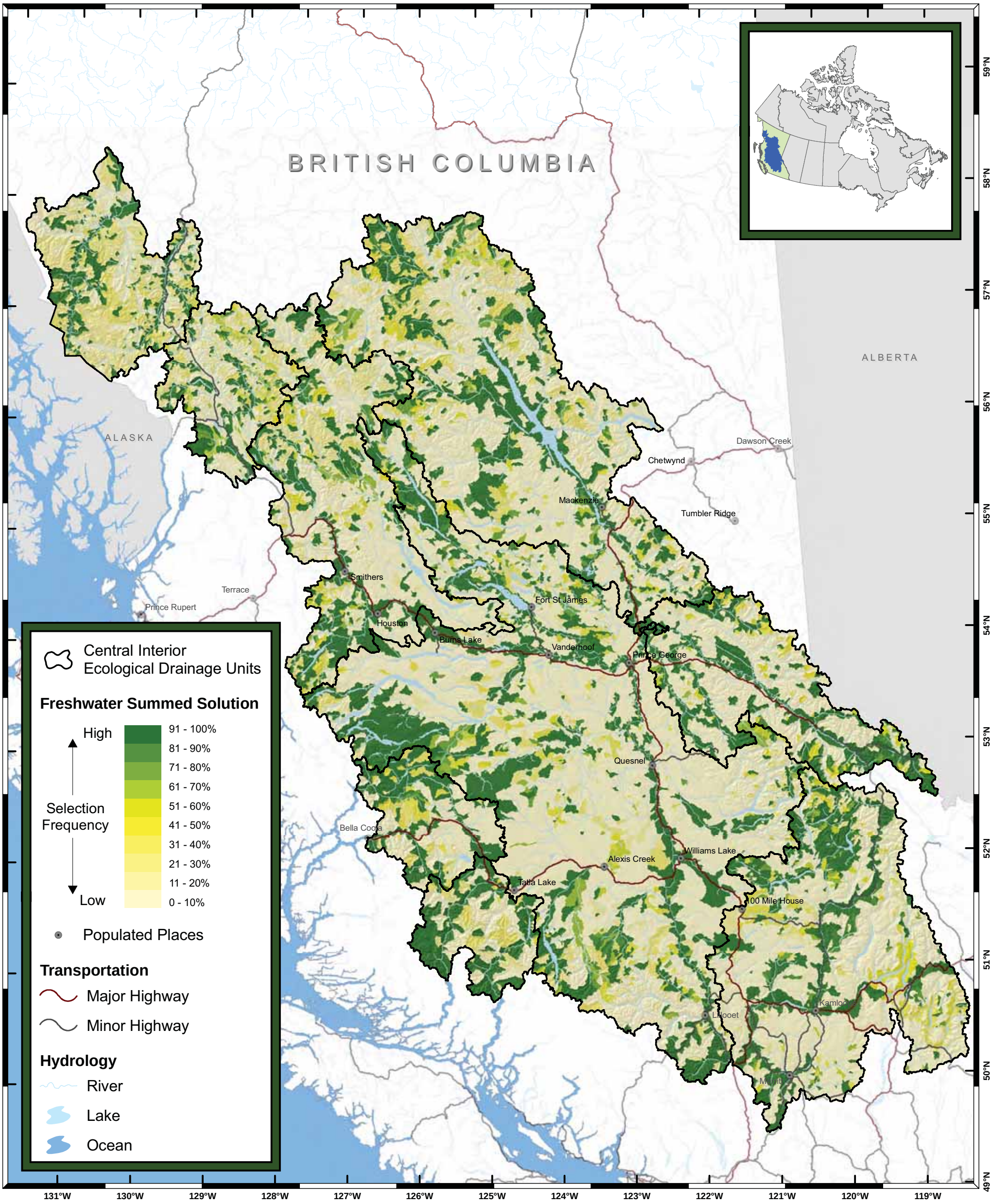
0 20 40 80 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 21: Freshwater Summed Solution NCC Marxan Output

The summed solution output is the summation of the number of times an assessment unit was included in each of the 500 Marxan runs that were performed to determine the “best” NCC Marxan output. The summed solution is a good measure of hotspots across the landscape. It should be used alongside the “best” output.

Scale 1:3,700,000

0 20 40 80 Kilometres

0 20 40 80 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada

BRITISH COLUMBIA

ALASKA

ALBERTA

Dawson Creek

Chetwynd

Mackenzie

Tumbler Ridge

Fort St James

Smithers

Terrace

Prince Rupert

Kitimat

Houston

Burns Lake

Vanderhoof

Prince George

Quesnel

Bella Coola

Alexis Creek

Williams Lake

Tatla Lake

100 Mile House

Lillooet

Kamlo

Merritt

Eastern Pacific Ranges

Central Interior Ecoprovinces

Terrestrial Prioritization

Conservation Value

Vulnerability

Populated Places

Transportation

Major Highway

Minor Highway

Hydrology

River

Lake

Ocean

CENTRAL INTERIOR ERA:

Map 22: Prioritized Terrestrial Portfolio

Conservation value (map 15) and Vulnerability (map 13) were combined using a 4x4 matrix (see map legend) to prioritize the portfolio. Portfolio sites are numbered and ranked according to value and vulnerability.

The sites can be divided further into four categories:

- Priority/Tier 1: high value, high vulnerability
- Priority/Tier 2: high value, low vulnerability
- Priority/Tier 3: low value, high vulnerability
- Priority/Tier 4: low value, low vulnerability

Scale 1:3,000,000

0 15 30 60 Kilometres

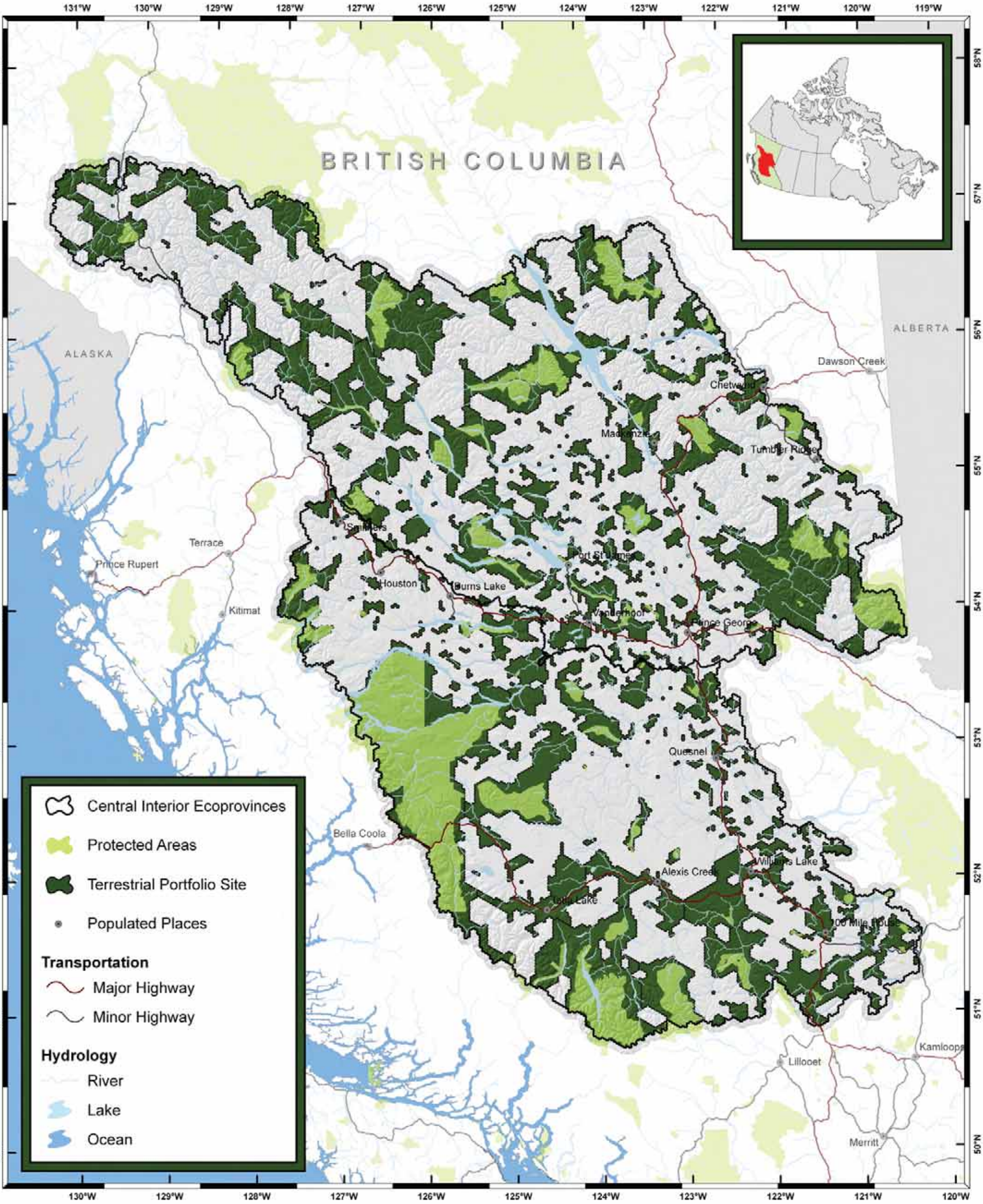
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 23: Protected Areas and Terrestrial Portfolio

This map shows protected areas overlaid on the terrestrial portfolio. Portfolio areas outside the protected areas are regions of high value that would need to be protected to meet all the conservation goals set for the NCC analysis

Scale 1:3,000,000

0 15 30 60 Kilometres

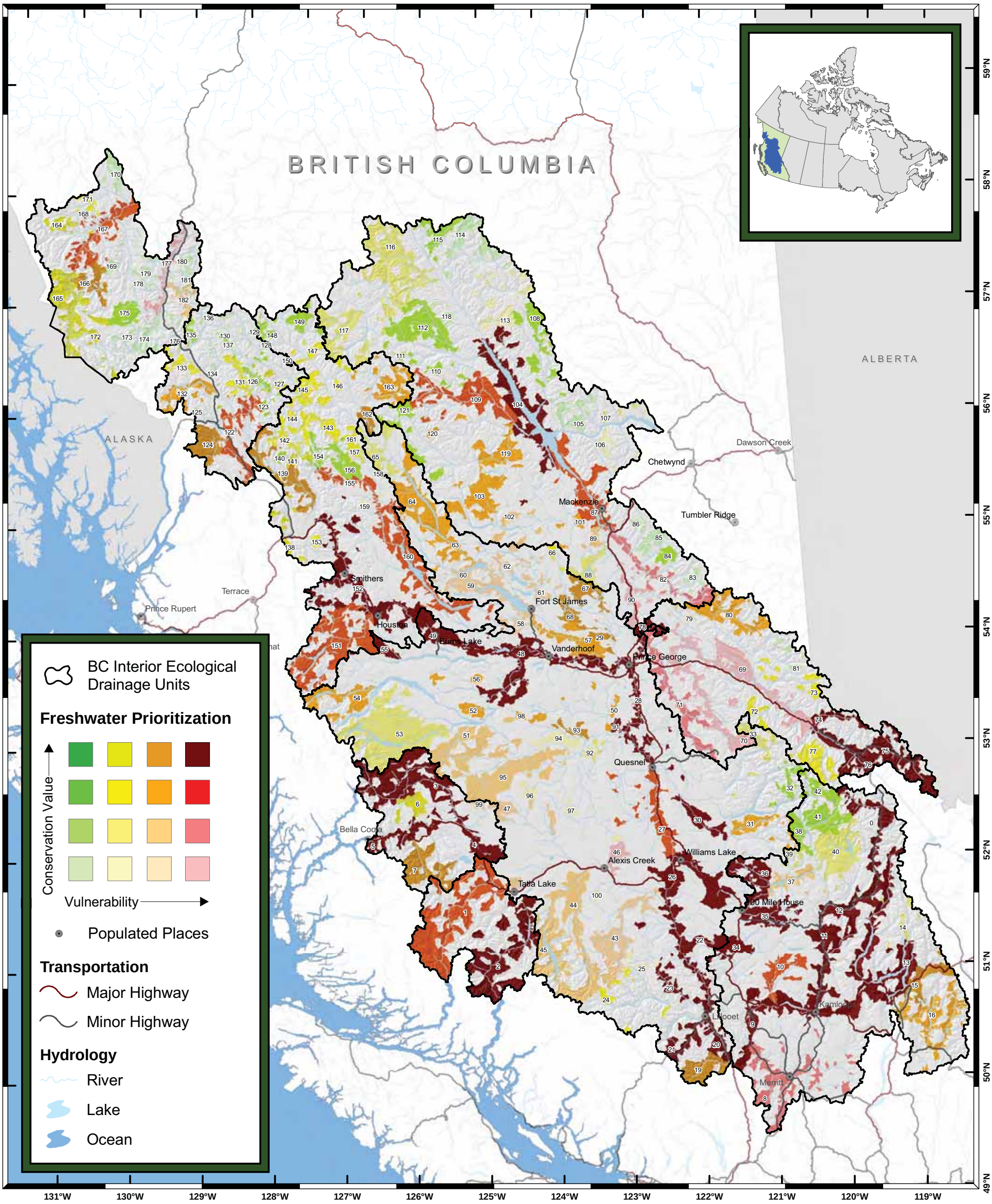
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 24: Prioritized Freshwater Portfolio

Conservation value (map 16) and Vulnerability (map 14) were combined using a 4x4 matrix (see map legend) to prioritize the portfolio. Portfolio sites are numbered and ranked according to value and vulnerability.

The sites can be divided further into four categories:

- Priority/Tier 1: high value, high vulnerability
- Priority/Tier 2: high value, low vulnerability
- Priority/Tier 3: low value, high vulnerability
- Priority/Tier 4: low value, low vulnerability

Scale 1:3,700,000

0 20 40 80 Kilometres

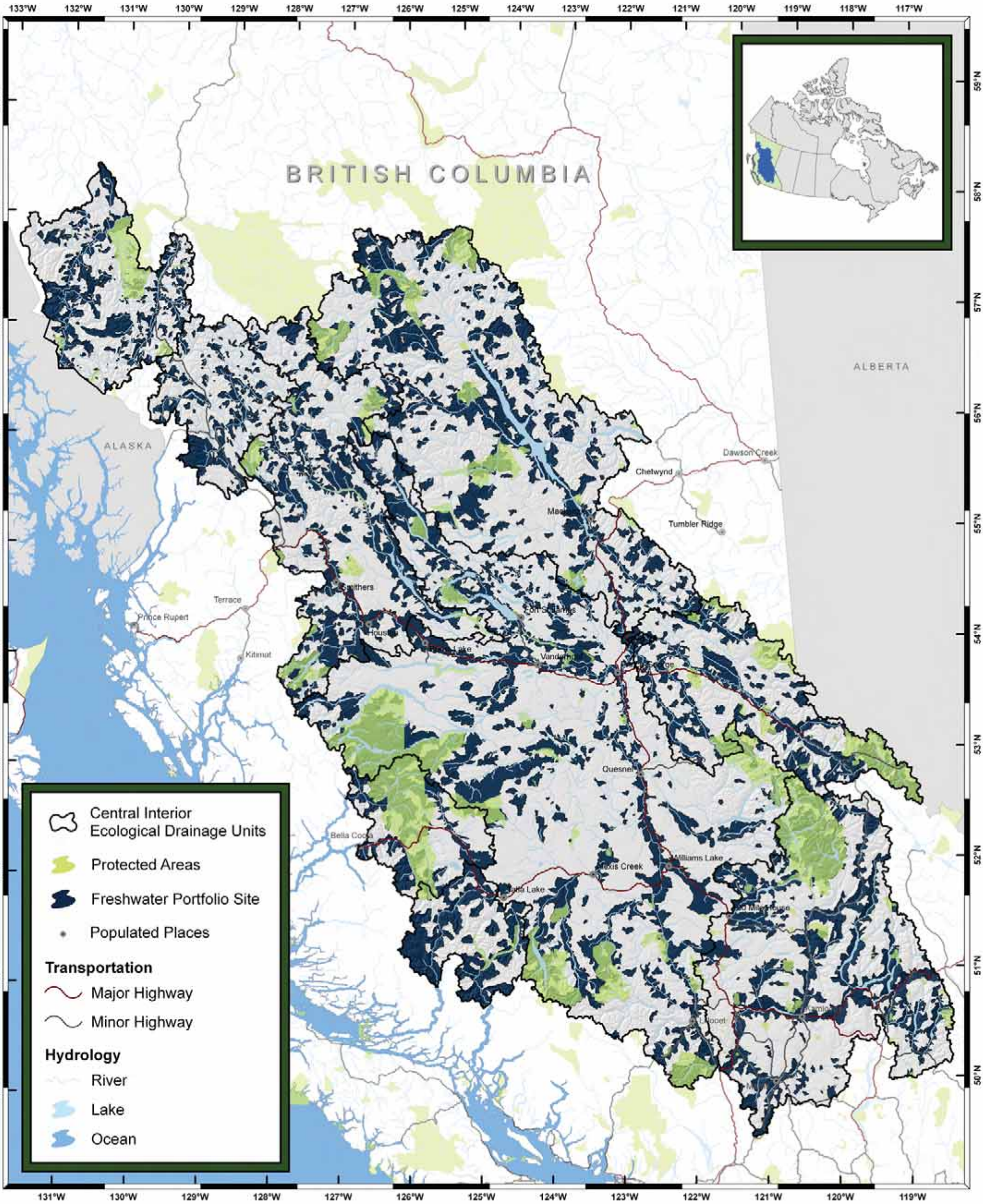
0 20 40 80 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 25: Protected Areas and Freshwater Portfolio

This map shows protected areas overlaid on the freshwater portfolio. Portfolio areas outside the protected areas are regions of high value that would need to be protected to meet all the conservation goals set for the NCC analysis.

Scale 1:3,700,000

0 20 40 80 Kilometres

0 20 40 80 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada

BRITISH COLUMBIA

ALASKA

ALBERTA

Dawson Creek

Chetwynd

Mackenzie

Tumbler Ridge

Smithers

Terrace

Prince Rupert

Houston

Burns Lake

Fort St James

Kitimat

Vanderhoof

Prince George

Quesnel

Bella Coola

Williams Lake

Alexis Creek

Tatla Lake

100 Mile House

Kamloops

Lillooet

Merritt

58°N 57°N 56°N 55°N 54°N 53°N 52°N 51°N 50°N

131°W 130°W 129°W 128°W 127°W 126°W 125°W 124°W 123°W 122°W 121°W 120°W 119°W

Central Interior Ecoprovinces

Combined Terrestrial and Freshwater Portfolio Site

Terrestrial Portfolio Site

Freshwater Portfolio Site

Populated Places

Transportation

Major Highway

Minor Highway

Hydrology

River

Lake

Ocean

CENTRAL INTERIOR ERA:

Map 26: Terrestrial and Freshwater Portfolio Overlap

This map shows areas of overlap between the terrestrial and freshwater portfolios. When combined the two portfolios cover 19,633,141 ha (48%) of the combined terrestrial and freshwater study areas. Of this, 10% of the combined study areas (4,036,824 ha) was identified in both the terrestrial and freshwater portfolios.

Some possible reasons for the relatively little overlap between the two realms include:

- Different analysis units (watersheds vs hexagons).
- Terrestrial portfolio sites tend to be in areas with the least impact whereas freshwater portfolio sites include main stream reaches, where development occurs.

Scale 1:3,000,000

0 15 30 60 Kilometres

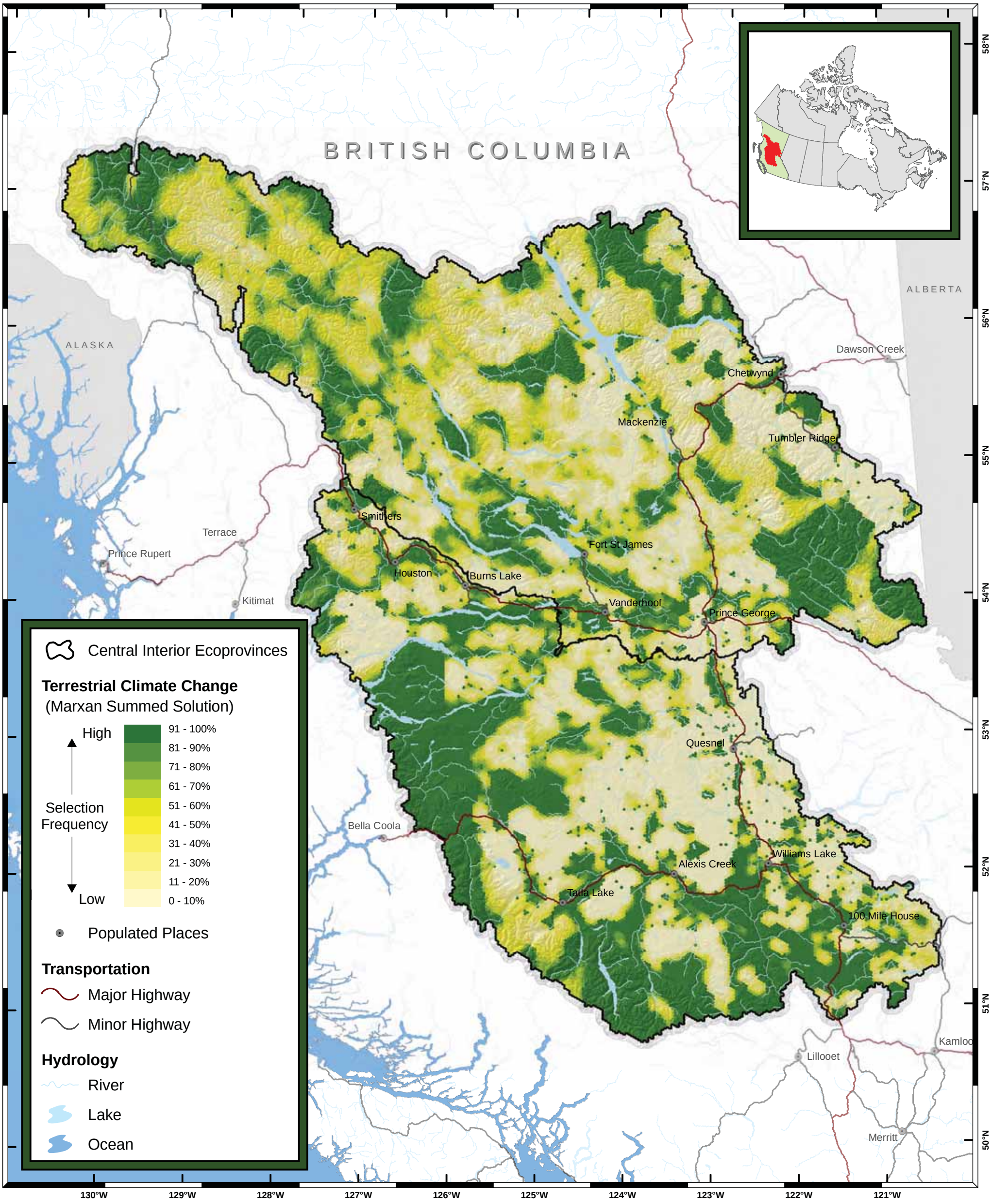
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 27: Terrestrial Climate Change Summed Solution Marxan Output

This map shows the summed solution results of running the NCC Marxan analysis with targets set to climate change goals. Typically these goals were larger than the ones used in the non-climate change analysis.

Scale 1:3,000,000

0 15 30 60 Kilometres

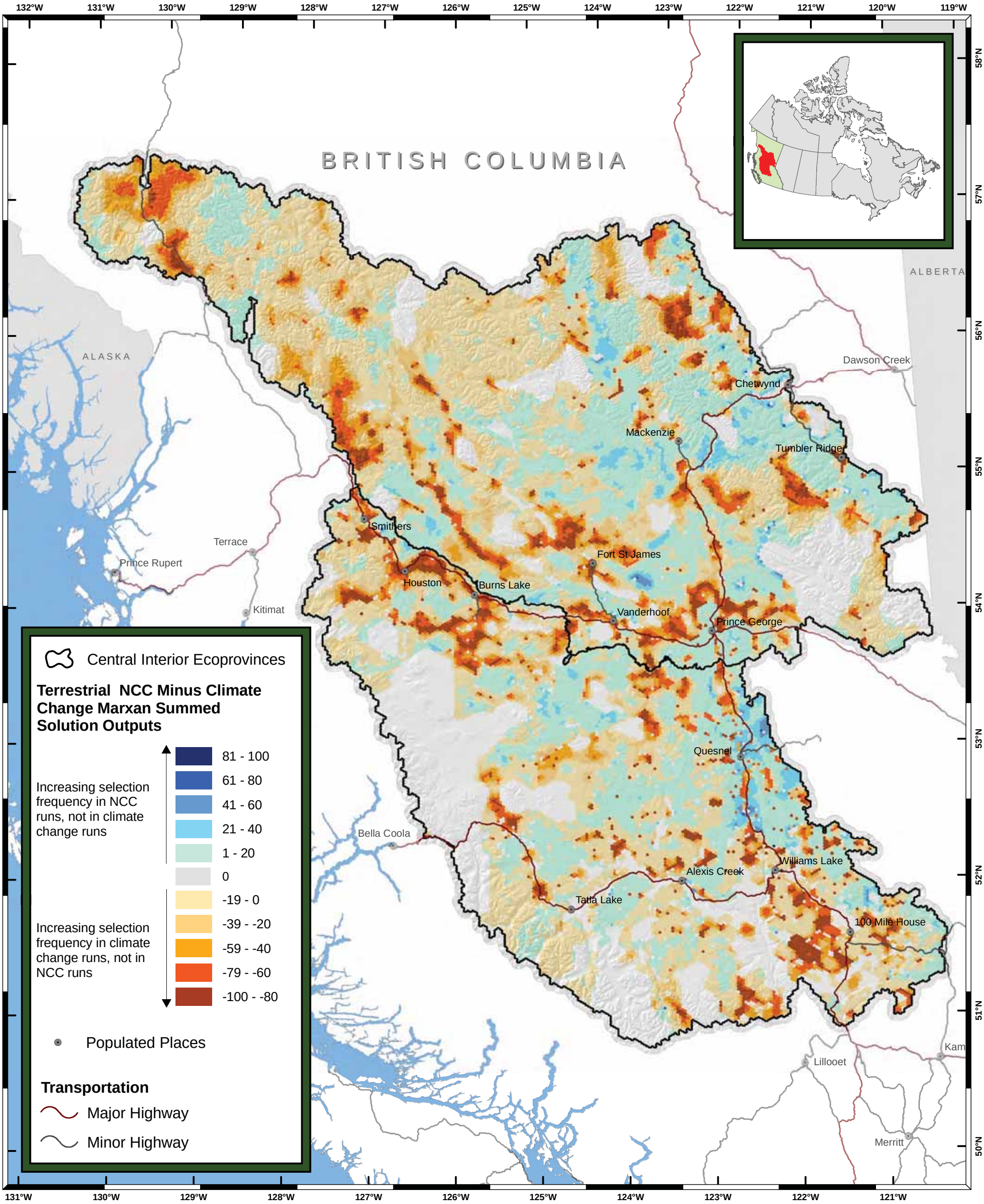
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 28: Terrestrial Climate Change Comparison with NCC Output

This map shows the result of subtracting the climate change summed solution from the NCC summed solution output. Areas with higher (positive) value are areas that were selected more in NCC runs than Climate Change, and vice versa. Dark red areas were selected more for climate change runs, and dark blue areas were selected more for NCC runs.

Please note that grey areas (no change in selection between NCC and Climate Change runs) include any locked in planning units (protected areas).

Scale 1:3,000,000

0 15 30 60 Kilometres

0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Sonora

Conservation de la Nature Sonora

133°W 132°W 131°W 130°W 129°W 128°W 127°W 126°W 125°W 124°W 123°W 122°W 121°W 120°W 119°W 118°W 117°W

59°N 58°N 57°N 56°N 55°N 54°N 53°N 52°N 51°N 50°N 49°N

BRITISH COLUMBIA

ALBERTA

ALASKA

Dawson Creek
Chetwynd
Mackenzie
Tumbler Ridge
Terrace
Smithers
Houston
Burns Lake
Fort St James
Vanderhoof
Prince George
Quesnel
Bella Coola
Alexis Creek
Williams Lake
Tatla Lake
100 Mile House
Lillooet
Kamloops
Merritt

Central Interior
Ecological Drainage Units

Freshwater Climate Change
(Marxan Summed Solution)

High
Selection Frequency
Low

- 91 - 100%
- 81 - 90%
- 71 - 80%
- 61 - 70%
- 51 - 60%
- 41 - 50%
- 31 - 40%
- 21 - 30%
- 11 - 20%
- 0 - 10%

Populated Places

Transportation

Major Highway

Minor Highway

Hydrology

River

Lake

Ocean

CENTRAL INTERIOR ERA:

Map 29: Freshwater Climate Change Summed Solution Marxan Output

This map shows the summed solution results of running the NCC Marxan analysis with targets set to climate change goals. Typically these goals were larger than the ones used in the non-climate change analysis.

Scale 1:3,700,000

0 20 40 80 Kilometres

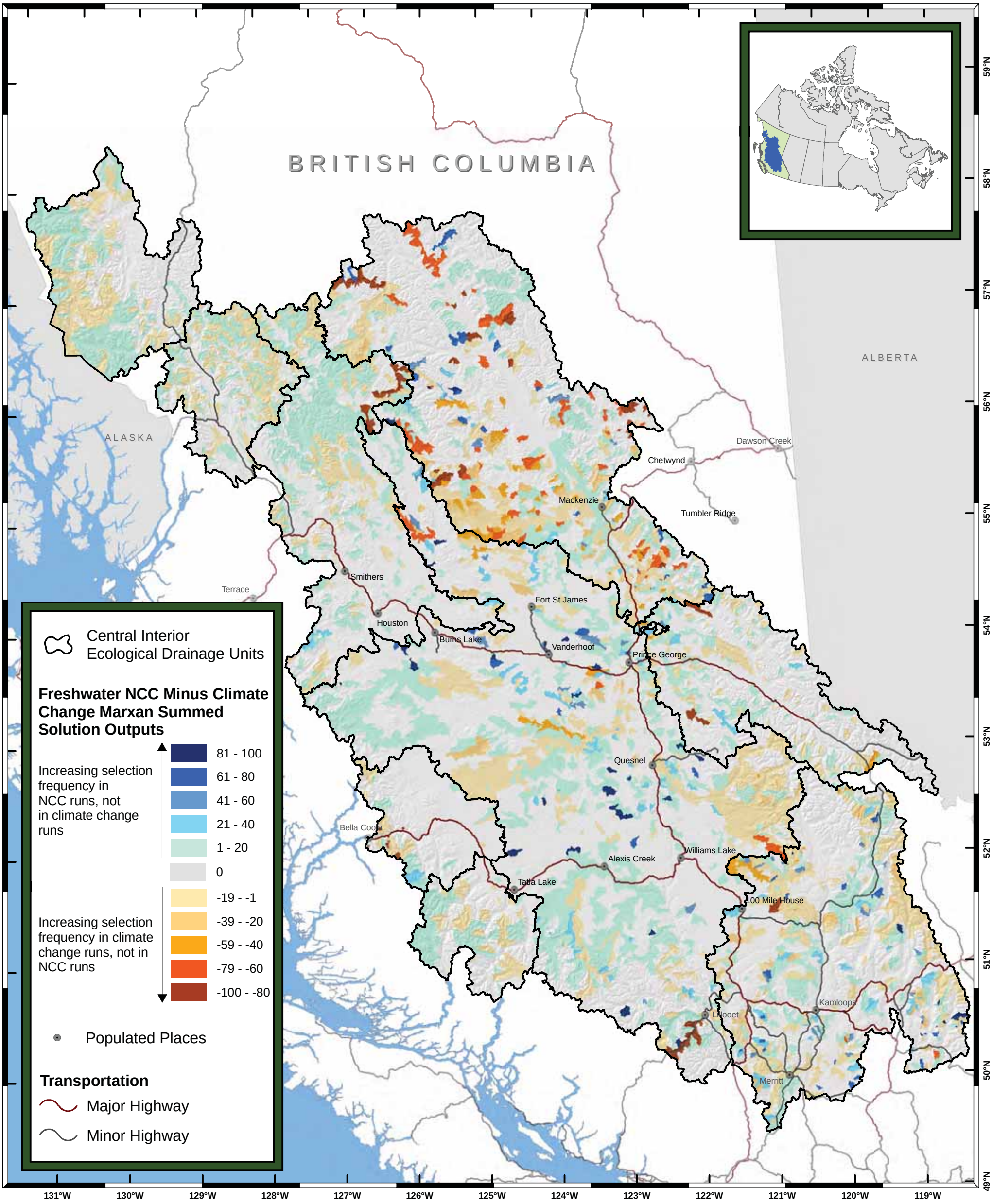
0 20 40 80 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 30: Freshwater Climate Change Comparison with NCC Output

This map shows the result of subtracting the climate change summed solution from the NCC summed solution output. Areas with higher (positive) value are areas that were selected more in NCC runs than Climate Change, and vice versa. Dark red areas were selected more for climate change runs, and dark blue areas were selected more for NCC runs.

Please note that grey areas (no change in selection between NCC and Climate Change runs) include any locked in planning units (protected areas).

Scale 1:3,700,000

0 20 40 80 Kilometres

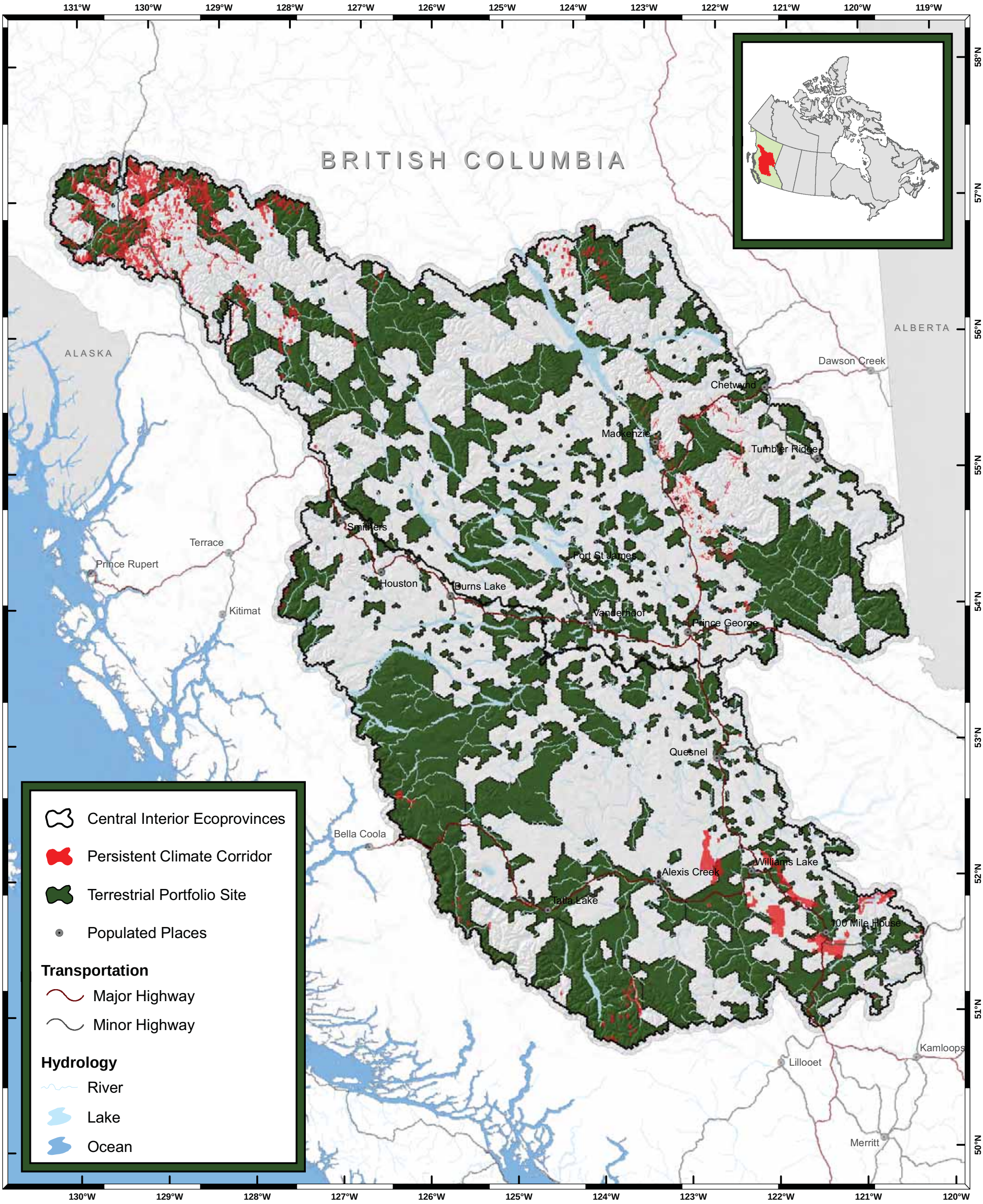
0 20 40 80 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 31: Comparative Analysis - Terrestrial Portfolio & Climate Corridors

Climate corridors are locations where current habitat or species are predicted to persist throughout climate change. Climate modelling software (ClimateBC and ClimatePP) were used to generate future climate models to the 2080s. Areas called “suitable climate spaces” were identified; these are areas where climate is predicted to persist from the baseline (1961-1990s) to the 2080s. Areas where suitable climate spaces overlap with current distribution are the persistent climate corridors. Corridors were developed for both biogeoclimatic zones (based on BEC mapping) and rare plant species (based on occurrence data). All corridors are show on this map overlaid on the terrestrial portfolio.

Scale 1:3,000,000

0 15 30 60 Kilometres

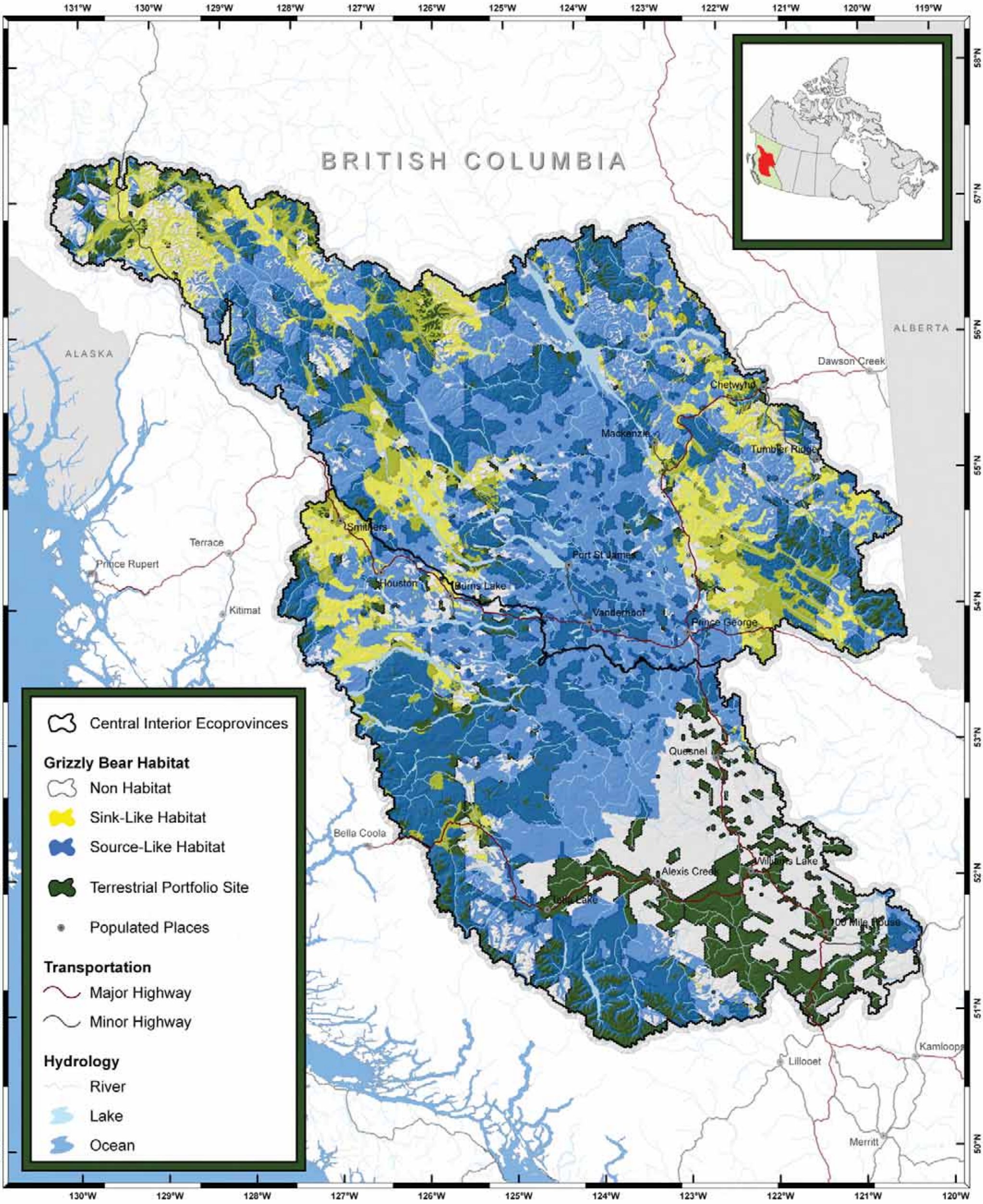
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation Nature Canada



CENTRAL INTERIOR ERA:

Map 32: Comparative Analysis - Grizzly Bear Habitat Model

This map shows grizzly source and sink habitats compared with the terrestrial portfolio.

Using the habitat and mortality risk models, habitat states were estimated for the study area following the 2-dimensional habitat state concepts of Naves et al. (2003) and the methods for estimating the 2-dimensional habitat states from Nielsen et al. (2006; 2008). Since risk to population decline (habitat sinks) depends on population size, source- and sink-like habitats were based on different thresholds of risk (Table 4) where a higher mortality risk was necessary for sink-like conditions to occur in areas of high grizzly bear density. Finally, habitat state conditions were further re-classified into a simple binary landscape of source- and sink-like conditions for ease of reporting and for ecoregional planning situations where density-specific states are unnecessary.

Scale 1:3,000,000

0 15 30 60 Kilometres

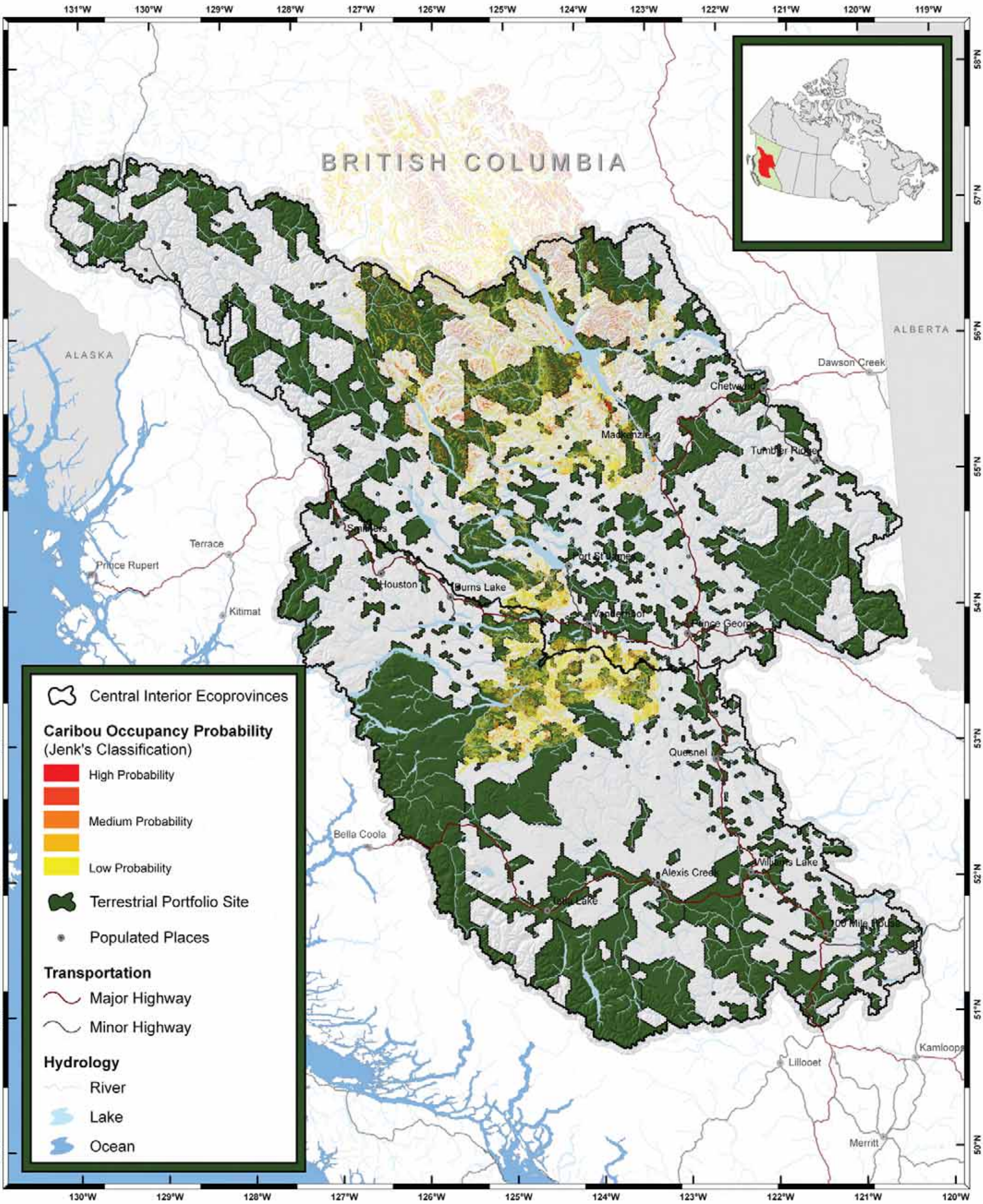
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 33: Comparative Analysis - Northern Caribou Probability of Occupancy Model

Northern Caribou probability of occurrence models were developed for the Mackenzie, Fort St. James, Vanderhoof, and Prince George Forest Districts. These models show high value areas that are predicted to contain Northern Caribou.

This map shows the terrestrial portfolio overlaid with the Northern Caribou model.

Scale 1:3,000,000

0 15 30 60 Kilometres

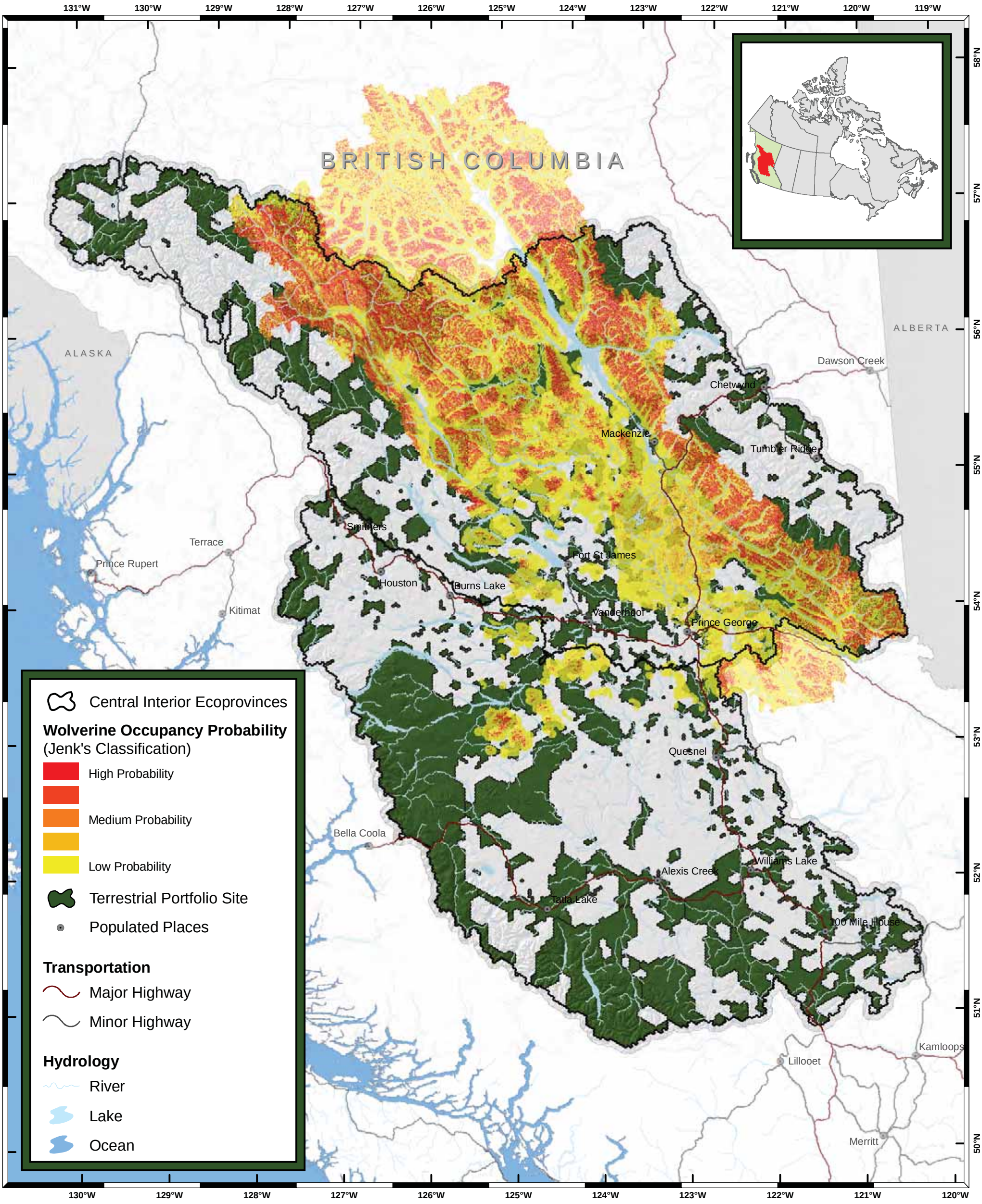
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada



CENTRAL INTERIOR ERA:

Map 34: Comparative Analysis - Wolverine Probability of Occupancy Model

Wolverine probability of occurrence models were developed for the Mackenzie, Fort St. James, Vanderhoof, and Prince George Forest Districts. These models show high value areas that are predicted to contain Wolverine.

This map shows the terrestrial portfolio overlaid with the Wolverine model.

Scale 1:3,000,000

0 15 30 60 Kilometres

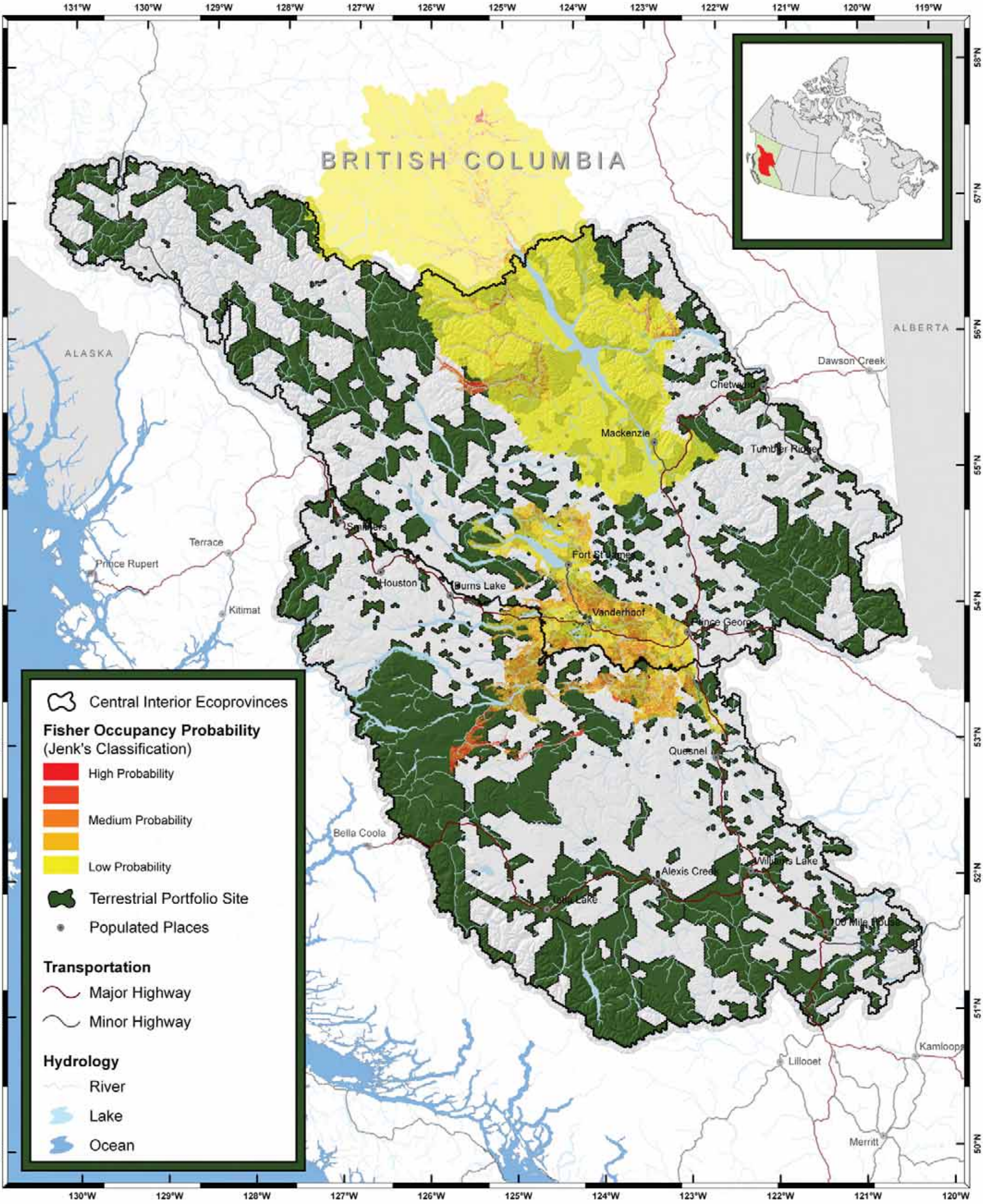
0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation Nature



CENTRAL INTERIOR ERA:

Map 35: Comparative Analysis - Fisher Probability of Occupancy Model

Fisher probability of occurrence models were developed for the Mackenzie, Fort St. James, Vanderhoof, and Prince George Forest Districts. These models show high value areas that are predicted to contain Fisher.

This map shows the terrestrial portfolio overlaid with the Fisher model.

Scale 1:3,000,000

0 15 30 60 Kilometres

0 15 30 60 Miles

August 2010

Projection: BC Albers Equal Area

Nature Conservancy Canada

Conservation de la nature Canada