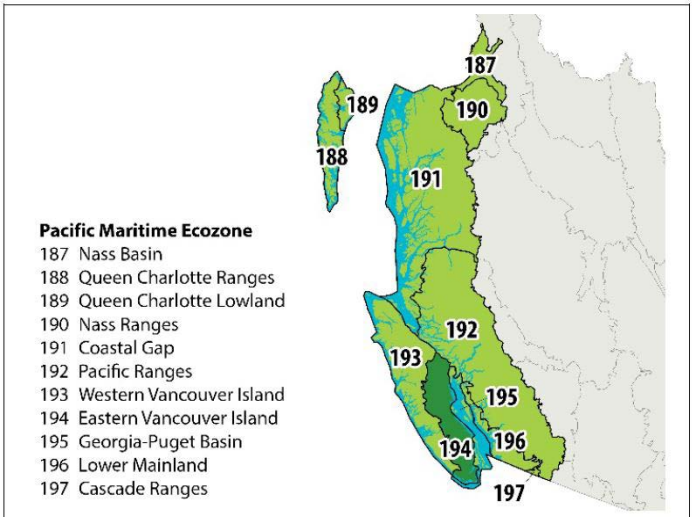
NATURE CONSERVANCY CANADA

EASTERN VANCOUVER ISLAND (#196)

The Eastern Vancouver Island ecoregion stretches along the eastern slopes of the Vancouver Island Ranges to the Pacific Ocean. The forests are characterized by Douglas-fir, western hemlock and grand fir, with scattered examples of globally rare Garry oak ecosystem. It supports more biological diversity than anywhere else in the province and contains many of BC's most ecologically significant estuaries. There are 59 species at risk that have been documented here, and 38 species that are of global conservation concern. Just over 93% of this ecoregion remains in natural cover and 13.8% is within conserved/protected areas.

LOCATION

The Eastern Vancouver Island ecoregion stretches along the eastern slopes of the Vancouver Island Ranges to the Strait of Georgia between Victoria and Nanaimo. This ecoregion is part of BC's Coastal Douglas-Fir Biogeoclimatic Zone, and it is the northern extension of the Central Pacific Coastal Forests, a region of coastal temperate rainforests that extends through southern Oregon to the northern tip of Vancouver Island.



Terrestrial & Inland Water Area	13,315 km^2 (0.13% of Canada)
Provinces	BC
Biodiversity Ranking[1]	HIGHEST (5/5)
Threat Ranking	HIGHER (4/5)
Conserved/Protected Area Ranking	HIGH (3/5)

CLIMATE/GEOLOGY

The climate of the Eastern Vancouver Island ecoregion is characterized by warm, dry summers and wet, very mild winters. Frosts are common in winter, but snow cover at sea level is rare. The mean annual temperature is approximately 9^{0}C, with a summer mean of 14^{0}C and a winter mean of 3.5^{0}C. Mean annual precipitation ranges from 800 millimetres at lower elevations to 2,500 millimetres at higher elevations.

The ecoregion contains low relief on the coast and in valleys, to high mountain peaks in the Vancouver Island ranges toward the central and northern end of the island. There is a diversity of other landscapes, including coastal estuaries and endangered sand dune ecosystems.


Photo by Kerry Dawson

VEGETATION

Forest cover is characterized by stands of Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*) and grand fir (*Abies grandis*), with an understory of salal (*Gaultheria shallon*), Oregon grape (*Mahonia nervosa*) and mosses. Mixed stands of Douglas-fir and western hemlock and grand fir, with an occasional Oregon white oak also known as Garry oak (*Quercus garryana*), Pacific dogwood (*Cornus nuttallii*) and Pacific madrone (*Arbutus menziesi*) are common in the driest portions of the ecoregion. Open Garry oak meadows in drier areas were maintained by Indigenous Peoples through regular managed fires. Higher elevation forests are composed of yellow cedar (*Chamaecyparis nootkatensis*), amabilis fir (*Abies amabilis*) and mountain

[1] Ranking categories for biodiversity threat and conserved/protected area are relative to other ecoregions in the southern Canada study area (5=highest, 4=higher, 3=high, 2=low, 1=lower, 0=lowest). The lowest score for conserved/protected area is 1. For biodiversity and threat, the highest category based on measures and criteria approach is used.

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FRESH WATER AND COASTS

The Eastern Vancouver Island ecoregion borders the Pacific Ocean. Major rivers include the Cowichan and Campbell rivers (Figure 1). There are several lakes in this ecoregion, and inland waters cover approximately 3.8% of the land base. Wetlands are very rare and only comprise 0.7% of the ecoregion.

This coastal region includes sea stacks, sandy beaches, rocky coastal cliffs, coastal headlands, tidal pools, mud flats and salt marshes. Rare coastal sand dune ecosystems are found in scattered locations along the coast of Vancouver Island and on some of the nearby Gulf Islands. There are approximately 2,092 kilometres of marine shoreline in this ecoregion, including estuaries and river deltas.


Photo by Marsgal Hedin

AT-RISK VEGETATION COMMUNITIES

Globally at-risk vegetation communities have been very well documented in this ecoregion and primarily occur within Garry oak ecosystems. Some of the associations that are at greatest global risk include:

- grand fir/dull Oregon grape
- grand fir/three-leaved foamflower
- Douglas-fir/Alaska oniongrass
- western red-cedar/vanilla-leaf
- western red-cedar/Indian-plum
- Roemer's fescue - junegrass
- Garry oak - arbutus
- Garry oak/California brome
- Garry oak/oceanspray
- red alder/slough sedge (black cottonwood)
- western hemlock - western red-cedar/deer fern
- Douglas-fir/sword fern
- Douglas-fir/dull Oregon grape
- arbutus/hairy manzanita
- tiny mousetail - montias - Macoun's meadowfoam
- slender sedge - white beak-rush
- black knotweed- yellow sand-verbena
- large-headed sedge herbaceous vegetation
- northern wormwood – red fescue/grey rock-moss

WILDLIFE

Characteristic wildlife includes mule deer *(Odocoileus hemionus*), cougar (*Puma concolor*), gray wolf (*Canis lupus*), American black bear (*Ursus americanus*), raccoon (*Procyon lotor*) and sea otter (*Enhydra lutris*). Many species of shorebird, seabirds and waterfowl occur throughout the year. The ecoregion also supports several species of salmon.

AT-RISK PLANTS AND ANIMALS

There are 59 national species at risk in the ecoregion. In addition, there are 38 species of global conservation concern. The southern portion of the ecoregion has the highest numbers of national and global species at risk, many of which do not occur anywhere else in Canada (Figure 2).

Species at risk include:

- Macoun's meadowfoam (Limnanthes macounii)*
- Oregon vesper sparrow (Pooecetes gramineus affinis)*
- dense-flower lupine (Lupinus densiflorus var. densiflorus)
- common sharp-tailed snake (Contia tenuis)
- Edwards' beach moth (Anarta edwardsii)

* nationally and globally at risk (NatureServe)

The ecoregion is home to several endemic species to Canada: Macoun's meadowfoam *(Limnanthes macounii*), Vancouver Island ermine (*Mustela erminea anguinae*), Vancouver Island marmot (*Marmota vancouverensis*) and Vancouver Island white-tailed ptarmigan (*Lagopus leucura saxatilis*).


Photo by NCC

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Photo by NCC

LAND USE

Most of this ecoregion is managed for forest production under various forms of public and private tenure, particularly in the mountains. Coastal lowlands include some concentrated areas of cropland (1% of the ecoregion) and urban (5.5% of the ecoregion) (Figure 3). Recreational activities, tourism and commercial fishing are important activities in this ecoregion.

Land use change in this ecoregion (2000-2010) was moderate. The land uses with the greatest net gain are settlement and roads (Table 1).

Major urban areas include Victoria, Nanaimo, Campbell River and Courtenay. The total population is 730,655 (2016), with a growth of 20% in the last 20 years.

CONSERVATION CONCERNS

The diverse terrestrial, freshwater and marine ecosystems of this ecoregion are being impacted by several threats, including habitat conversion, invasive species and climate change. This region has one of the greatest diversity of species in Canada, including many species of conservation concern. The ecoregion is part of the Central Pacific Coastal Forests, which has been identified as one of 200 global ecoregions that are a priority for conservation.

Very high and high threats identified from the Nature Conservancy of Canada's (NCC's) Natural Area Conservation Plan (NACP) (Salish Sea) that apply to this ecoregion include:

- urban and agricultural expansion
- invasive species in terrestrial, freshwater and marine ecosystems (e.g. feral domestic cats, brown trout, green crab)
- problematic native species (e.g. resident Canada geese that impact wetlands)
- over-harvest (intertidal and sub-tidal marine molluscs and salmon)
- fire suppression (coastal Douglas-fir ecosystems)
- observed impacts of climate change, including an increasing frequency of droughts and rising sea levels
- oil tanker traffic
- water pollution
- shoreline modifications

Specific impacts to Garry oak ecosystems include direct human impact on habitat (habitat loss and fragmentation), fire suppression, invasion of exotic plant species and grazing and herbivory (Parks Canada 2006).

Populations of many shorebirds and seabirds that breed or stopover in this ecoregion have been declining.

CURRENT CONSERVATION STATUS

Over 93% of the ecoregion remains in natural cover, although this includes large areas of regenerating clear-cuts. In general, the largest, most connected habitat blocks occur in the mountains, with smaller patches and increased fragmentation along the coast. The most intact areas are associated with Strathcona Provincial Park (Figure 4).

Almost 14% of the Eastern Vancouver Island ecoregion is in conserved/protected areas, primarily in provincial parks (Figure 5). There are several large parks that protect marine environments in this ecoregion, including Victoria Harbour Migratory Bird Sanctuary and Rock Bay Marine Park.

The ecoregion has nine Key Biodiversity Areas. Many of these designate globally and nationally important landbird, shorebird, waterbird and waterfowl habitats. These include K'omoks, Chain Islets and Great Chain Island, Cowichan Estuary, Little Qualicum Estuary to Nanoose Bay and Sidney Channel.

Other conservation designations include the Mount Arrowsmith Biosphere Reserve. The eastern edge of Clayoquot Sound Biosphere Reserve also intersects the ecoregion.

NCC has one NACP[2] within the ecoregion (Salish Sea), which covers 36.6% of the ecoregion. NCC has completed eight land securement projects in the Campbell River Estuary, Chase Woods Nature Preserve and Cowichan Garry Oak Preserve, protecting over 260 hectares (642 acres).

[2] NACPs that cover >5% of the ecoregion as of December 31, 2017.

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POTENTIAL CONSERVATION STRATEGIES

The Eastern Vancouver Island ecoregion is important for national and global biodiversity. There are significant opportunities in this ecoregion to conserve and restore habitats for species at risk, migratory birds and marine wildlife.

Potential conservation strategies for this ecoregion include:

1. Maintain natural cover at over 90% over the next 10 years, with a focus on large, intact landscapes, coastal habitats and sites with high concentrations of species at risk and migratory birds.
2. Increase the amount of conserved lands to 17% in the next 10 years, including accounting for existing lands protected by provincial land trusts and municipal parks.
3. Accelerate efforts to monitor and manage invasive species, with a focus on Garry oak ecosystems and estuaries.
4. Identify and implement focal areas for species at risk recovery and the protection and restoration of habitats of global conservation concern, including support for the Garry Oak Ecosystems Recovery Team.
5. Ensure "green infrastructure" and coastal resiliency are incorporated into climate change adaptation plans to respond to rising sea levels.

KEY REFERENCES

Demarchi, D.A. 2011. *An Introduction to the Ecoregions of British Columbia*. Ecosystem Information Section, Ministry of Environment. Victoria, British Co lumbia.

Ecological Stratification Working Group. 1995. *A National Ecological Framework for Canada*. Agriculture and Agri-Food Canada, Research Branch, Centre for Land and Biological Resources Research and Environment Canada, State of the Environment Directorate, Ecozone Analysis Branch, Ottawa/Hull. Report and national map at 1:7500 000 scale.

Parks Canada Agency. 2006. *Recovery Strategy for Multi-Species at Risk in Garry Oak Woodlands in Canada*. In Species at Risk Act Recovery Strategy Series. Ottawa: Parks Canada Agency. 58 pp.

Ricketts, T., E. Dinerstein, D. Olson, C. Loucks, W. Eichbaum, K. Kavanagh, . . . W. Walters. 1999. *Ecoregions of North America: A Conservation Assessment*. Washington DC: Island Press.

World Wildlife Fund. 2013. *Estuaries of British Columbia.* Available at: http://awsassets.wwf.ca/downloads/estuary_fact_sheet.pdf

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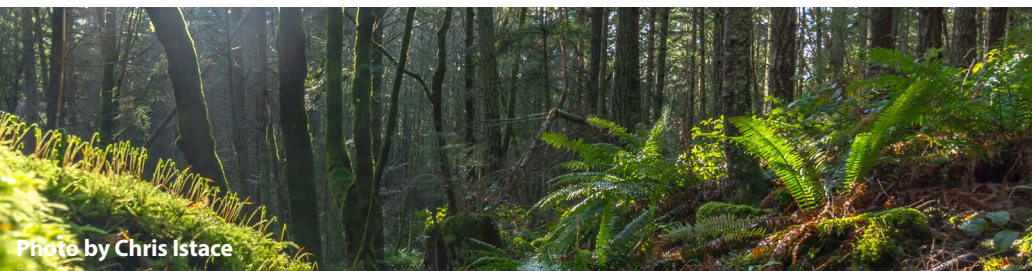

Photo by Chris Istace

LARGEST CONSERVED AREAS

(TOP 10, BY SIZE)

1. Strathcona Provincial Park (248,019 hectares/612,868 acres)
2. Victoria Harbour Migratory Bird Sanctuary (1,810 hectares/4,472 acres, MARINE)
3. Cowichan River Park (1,414 hectares/3,494 acres)
4. White Ridge Park (1,343 hectares/3,318 acres)
5. Elk Falls Park (1,055 hectares/2,607 acres)
6. Gowlland Tod Park (955 hectares/2,359 acres)
7. Parksville-Qualicum Beach Wildlife Management Area (947 hectares/2,340 acres, MARINE)
8. Haley Lake Ecological Reserve (888 hectares/2,194 acres)
9. Rock Bay Marine Park (523 hectares/1,297 acres, MARINE)
10. Goldstream Park (456 hectares/1,126 acres)

To learn more about this ecoregion and NCC's conservation assessment for southern Canada, visit **natureconservancy.ca/casc.**

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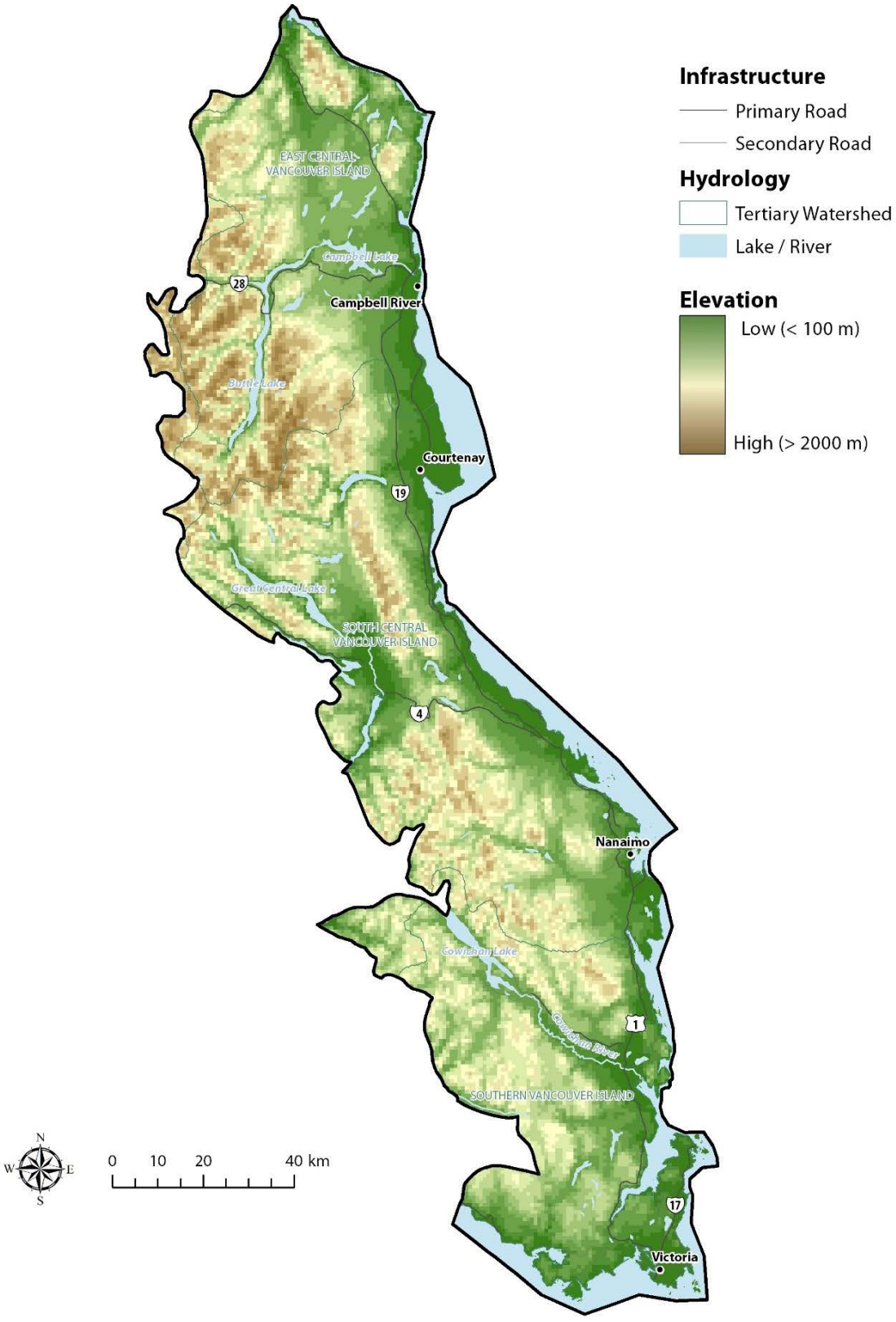

Figure 1: Context of the Ecoregion. This map shows towns, roads, elevation, rivers, lakes and watersheds.

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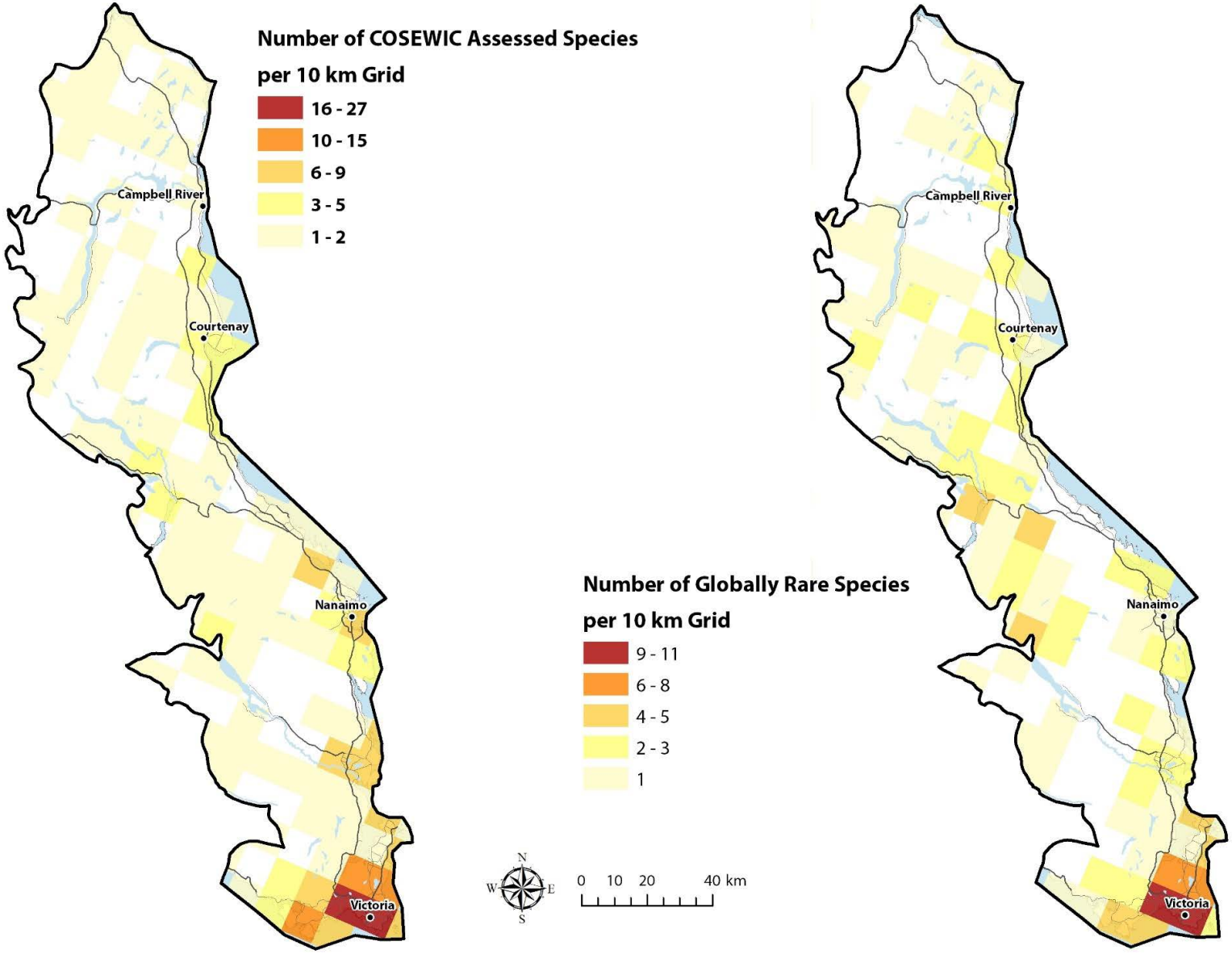

Figure 2: Species of Conservation Concern (COSEWIC and global). These maps show the number of different Committee on the Status of Endangered Wildlife in Canada (COSEWIC)-assessed and globally rare species. The information is current to 2015. Some areas of the ecoregion may be data deficient and higher numbers of species of conservation concern may occur.

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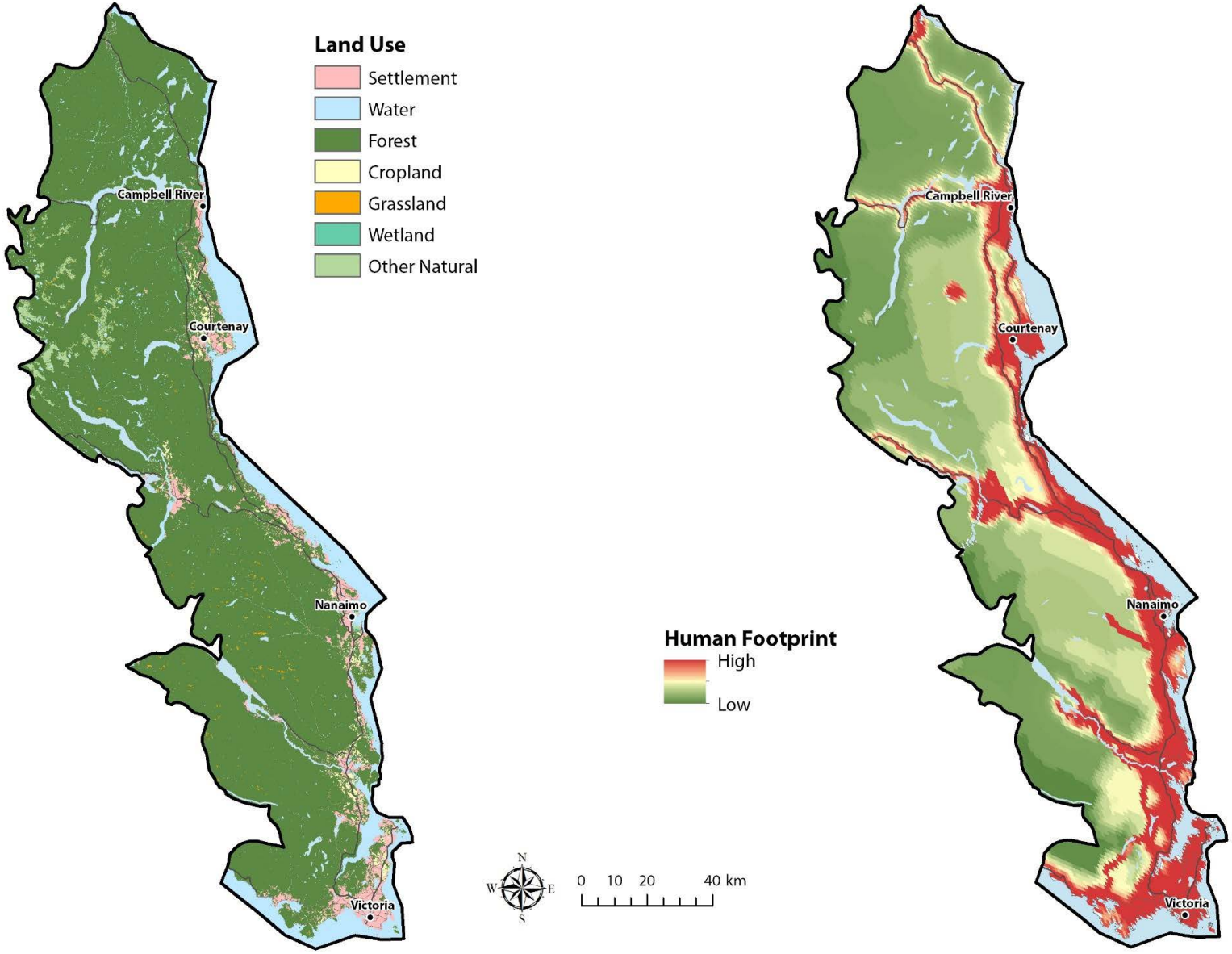

Figure 3: Land Use & Human Footprint. These maps show the dominant land uses and the human influence on the landscape. Human footprint is highest in urban areas, around major roads and on lands that have been converted to croplands. The human footprint map does not show some stresses that may occur, such as invasive species.

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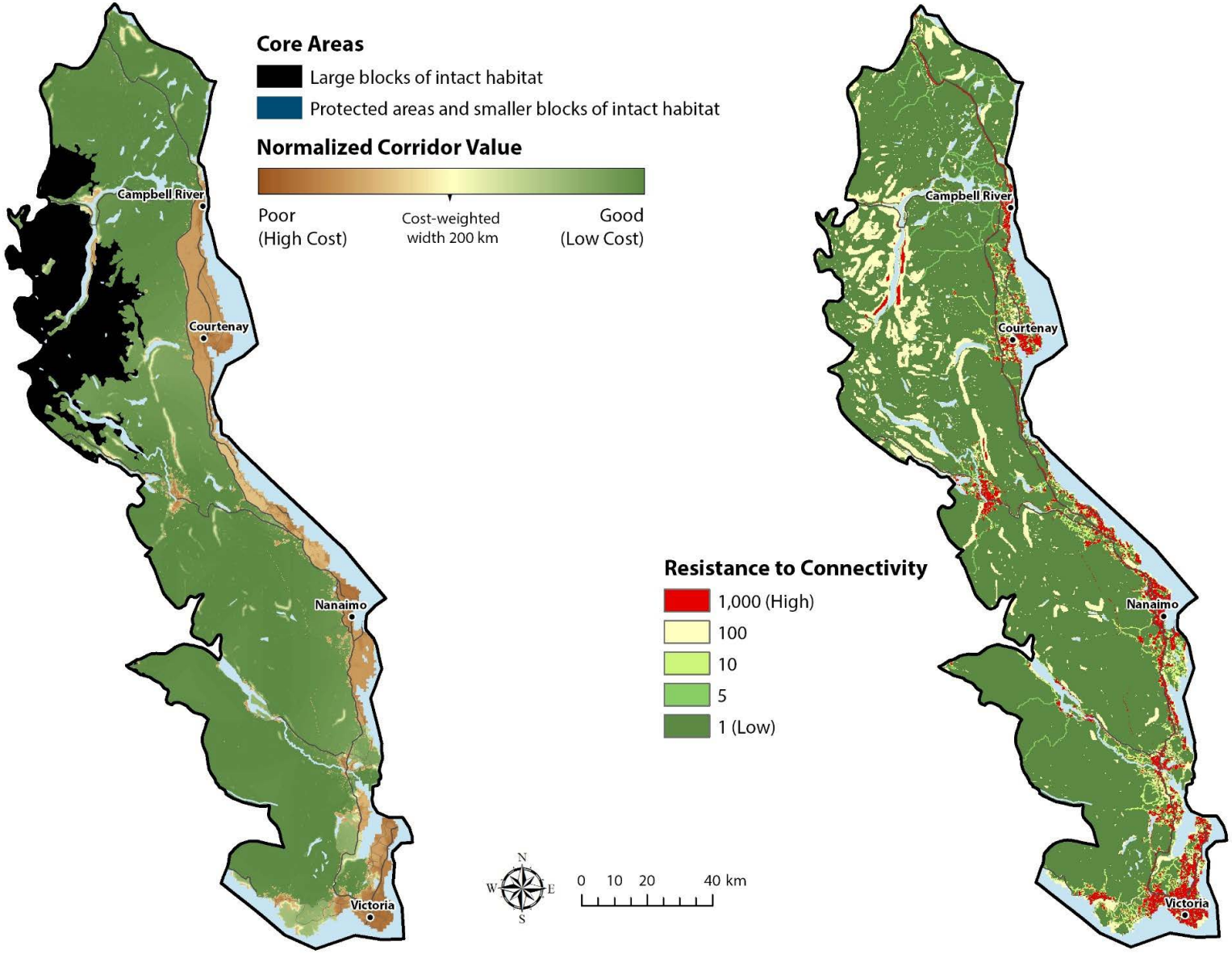

Figure 4: Connectivity. These maps show connectivity between protected/conserved areas and large blocks of intact habitat. The map on the right depicts those regions (green) that have a higher probability of being connected within the ecoregion.

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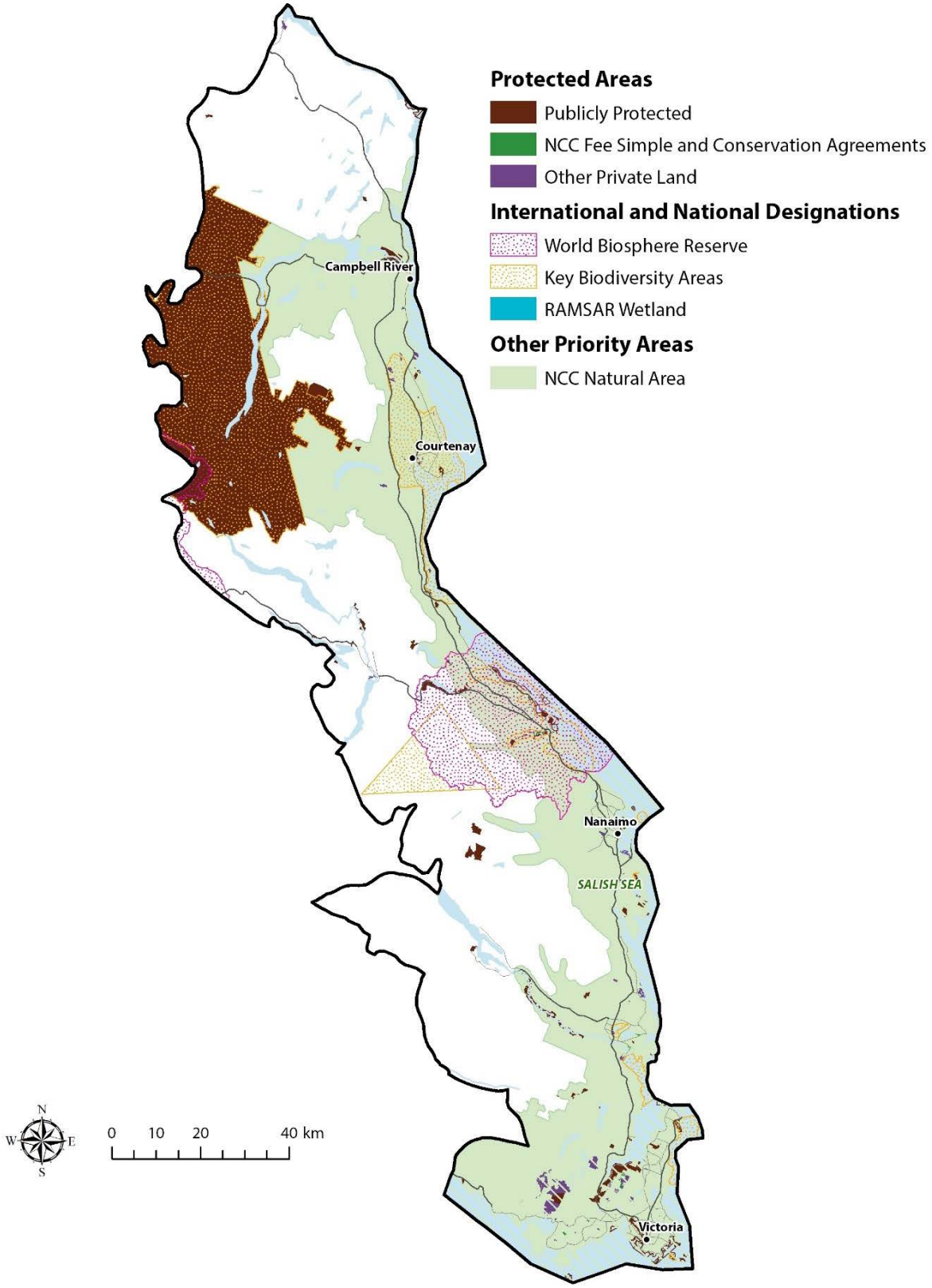

Figure 5: Protected/Conserved Areas. This map shows protected/conserved areas in the ecoregion, including publicly protected areas (such as national and provincial parks), properties conserved by NCC and other non-governmental organizations (private). The map also shows biodiversity designations, such as Key Biodiversity Areas (primarily Important Bird Areas). These designations only highlight important areas, and are not protected or have legal status unless they are also within a protected/conserved area. The map also shows the boundaries of the NCC Natural Area Conservation Plan.

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Table 1: Change in Land Use, 2000-2010

Change From 2000 (km²)			Change To 2010 (km²)														Total (From)	Percent (%) of Total Change
	Land Use Class	Code	11	21	25	31	41	42	45	46	51	61	62	71	73	74	91		
	Unclassified	11		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*0.0*
	Settlement	21	0.0		41.76	2.71	20.65	0.04	1.01	0.05	1.96	0.0	0.02	0.17	0.17	0.09	0.32	68.94	17.9
	Roads	25	0.0	46.11		0.40	19.51	0.02	0.34	0.02	1.48	0.0	0.00	0.10	0.13	0.02	0.13	68.25	17.7
	Water	31	0.0	2.61	0.55		26.12	0.39	0.98	0.31	0.15	0.0	0.01	0.47	0.61	0.40	2.05	34.67	9.0
	Forest	41	0.0	58.66	26.26	24.37		3.18	0.60	1.69	6.82	0.0	4.78	2.27	5.91	0.56	9.77	144.88	37.6
	Forest Wetland	42	0.0	0.05	0.03	0.39	3.65		0.08	0.00	0.11	0.0	0.0	0.04	1.17	0.10	0.01	5.62	1.5
	Trees	45	0.0	5.13	0.73	0.87	0.00	0.05		0.05	0.55	0.0	0.08	0.13	0.14	0.09	0.62	8.46	2.2
	Treed Wetland	46	0.0	0.07	0.03	0.77	1.62	0.0	0.05		0.06	0.0	0.00	0.03	0.60	0.10	0.02	3.34	0.9
	Cropland	51	0.0	4.05	1.52	0.17	6.27	0.02	0.54	0.04		0.0	0.01	0.33	0.05	0.06	0.13	13.17	3.4
	Grassland Managed	61	0.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0
	Grassland Unmanaged	62	0.0	0.02	0.00	0.04	4.92	0.0	0.08	0.00	0.0	0.0		0.02	0.01	0.00	1.05	6.14	1.6
	Wetland	71	0.0	0.50	0.12	0.77	1.98	0.04	0.12	0.08	0.36	0.0	0.01		0.26	0.08	0.06	4.39	1.1
	Wetland Shrub	73	0.0	0.31	0.08	1.26	4.49	1.63	0.14	0.92	0.04	0.0	0.00	0.24		0.75	0.08	9.95	2.6
	Wetland Herb	74	0.0	0.13	0.01	0.48	0.51	0.15	0.09	0.13	0.05	0.0	0.0	0.08	0.68		0.11	2.43	0.6
	Other	91	0.0	0.91	0.16	1.94	9.49	0.01	0.66	0.02	0.11	0.0	1.25	0.10	0.07	0.12		14.83	3.9
Total (To)			0.0	118.5	71.2	34.2	99.2	5.5	4.7	3.3	11.7	0.0	6.2	4.0	9.8	2.4	14.3	**385.1**	
Net Change (To-From)			0.0	49.6	3.0	-0.5	-45.7	-11.2	-3.8	-0.0	-1.5	-3.4	0.0	-0.4	-0.2	-0.0	-0.5		
Percent (%) of Total Change			*0.0*	30.8	18.5	8.9	25.8	1.4	1.2	0.9	3.0	0.0	1.6	1.0	2.5	0.6	3.7		
Net Gain/Loss %			0.0	12.9	0.8	-0.1	-11.9	-0.0	-1.0	-0.01	-0.4	0.0	0.01	-0.1	-0.0	-0.01	-0.1		

** Diagonal represents unchanged land use*