



Galiano Island Biocapacity Methodology Report

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1. Purpose and scope

The landscape and biocapacity of Galiano Island are comprised primarily of forested areas and the surrounding marine areas. This report is produced for the Galiano Conservancy Association and is intended for internal use, though figures are provided for external use. This report presents the results of a biocapacity assessment of Galiano island, as well as the methodology developed for the analysis. The methodology is presented here with the intent to provide a general process that can be reproduced in the future. Data was provided by the conservancy, as well as obtained from EarthDatat.nasa.gov and SeaAroundUs.org. Relevant constants and yield factors are sourced from the National Footprint and Biocapacity Accounts (data.footprintnetwork.org).

2. Summary of Results

Table 1. Biocapacity results by land class. For descriptions of land classes see appendix. *The biocapacity of developed land (roads, industrial areas, built up space) represents the biocapacity of the underlying ecosystem, 100% of which is currently being 'used' by the infrastructure on top of it, and is not otherwise accessible.

Summary By Land Class:	Area	Biocapacity	% of Total Biocapacity
	Hectares	Global Hectares	
Rural	699	965	7%
Herbaceous	11	9	0%
Woodland	137	111	1%
Agriculture	77	44	0%
Young Forest	1,597	2,149	14%
Mature Forest	1,522	2,318	16%
Wetland	79	63	0%
Pole Sapling	921	1,239	8%
New Young Forest	456	614	4%
Cliffs	38	50	0%
Littoral	5	6	0%
Lacustrine	20	11	0%
Old Growth Forest	4	5	0%
Recently Harvest	47	63	0%
Riparian	68	105	1%
Natural Land	5,681	7,750	52%
<i>(Protected Areas Network)</i>	<i>1,702</i>	<i>2,361</i>	<i>16%</i>
Marine	10,112	6,596	44%
<i>(Rockfish Conservation Area)</i>	<i>3,847</i>	<i>2,510</i>	<i>17%</i>
Total functional Biocapacity	15,793	14,347	97%
Developed Land*	312	492	3%
Total Biocapacity	16,105	14,839	100%

Table 2. Galiano results in context. Canada and World values from National Footprint Accounts 2022 Edition, data year 2018.
 * Full time resident population 1396, Part time resident population 1327. Land area excludes biocapacity of marine areas.

	Total Biocapacity (gha/cap)	Land Area* Biocapacity (gha/cap)	Total Ecological Footprint (gha/cap)
Galiano (Population 2723) *	5.4	3.0	6.8
Canadian Average	14.8	11.5	8.1
World Average	1.6	1.4	2.8

3. Interpretations

What is biocapacity?

Biocapacity represents the potential productivity of an area's biologically productive land and water surfaces. Biocapacity is measured in global hectares.

What is a global hectare and how does it compare to a hectare on Galiano island?

A global hectare (gha) is a unit of biocapacity, representing the productivity of a bioproductive hectare on earth with average productivity. The natural land on Galiano island has an area of 5,681 hectares and a biocapacity of 7,750 gha – this means that a hectare of natural land on Galiano island is approximately 36% more productive than an average bioproductive hectare on planet earth.

Similar to how a Canadian Dollar is a standard which represents economic value, a global hectare is a standard unit for bioproduction value. It allows us to compare the amount of bioproduction that is demanded by populations or activities, which we call Ecological Footprint, against the potential bioproduction of land and water, which we call biocapacity.

Additional context:

A hectare of forest on Galiano island is approximately 4% more productive than an average hectare of forest globally but is 48% more productive than an average hectare of Canadian forest. This is because Canadian forests are less productive than average: A hectare of Canadian forest is 29% less productive than an average hectare of forest on earth, and is 11% less productive than an average hectare on planet earth, considering all land-use types. These values are derived from the National Footprint and Biocapacity Accounts, and the specific calculation factors (including Yield Factors) can be downloaded at www.footprintnetwork.org/licenses/calculation-factors-free/

Some major takeaways from the results:

- A little less than half (44%) of Galiano's biocapacity is in the 2km Marine buffer.

- When considering both full time residents and part time residents, Galiano has a much lower biocapacity per capita than Canada on average (5.4 vs 14.8 gha). Canadian biocapacity and Ecological Footprint are both much higher than global average
- Protected areas (land and marine) represent a total of 33% of Galiano's biocapacity (30% of natural land and 38% of the marine biocapacity).

Methodological Notes

Limitations: The biocapacity concept as currently calculated is generally considered an overestimate for several reasons. Our current technical ability to capture and monitor how the production/harvest of regeneration flows affect the underlying stock are still limited. For example, when we harvest more wood than forests can regenerate, we deplete stocks (eg. deforestation), with our current monitoring systems, this data is captured. However, we are limited in our ability to quantify this stock-flow relationship for human managed areas like cropland. For example, we can quantify the regeneration of crops (flow), however we cannot easily quantify how our current agricultural production practices may deplete the soil (stock) and compromise future production. Without this, ecosystems may not appear to decrease in productivity when experiencing topsoil loss or ecosystem biodiversity loss because of lag times. Additionally, artificially increased yields through fertilizer or other energy intensive practices can mask ecosystem degradation while under active management. Lastly, comparing biocapacity to Ecological Footprint does not consider that some biocapacity must remain intact for biodiversity.

The marine biocapacity calculated for this report is likely an underestimate, as the area around Galiano island was allocated the average biocapacity per hectare of western Canada's exclusive economic zone (EEZ), which extends out 370km from the coast. Marine primary production tends to be higher closer to the coast and in inland waters, therefore the average primary production of the EEZ is likely lower than that of the waters immediately surrounding Galiano. This simplification was necessary as data on marine primary production is only available from seaaroundus.org at the EEZ level.

Ecological Footprint and biocapacity accounting allow for a high-level comparison of what we consume against what our productive areas can regenerate, and this is possible by using standard units for bioproductivity, namely the global hectare. As described in the details of this report, the key dataset used to scale Galiano Island's bioproductivity data to global hectares using an area of known biocapacity is net primary productivity. Prior to future assessments, we recommend reviewing the availability of input datasets, which may provide ways to improve assessments.

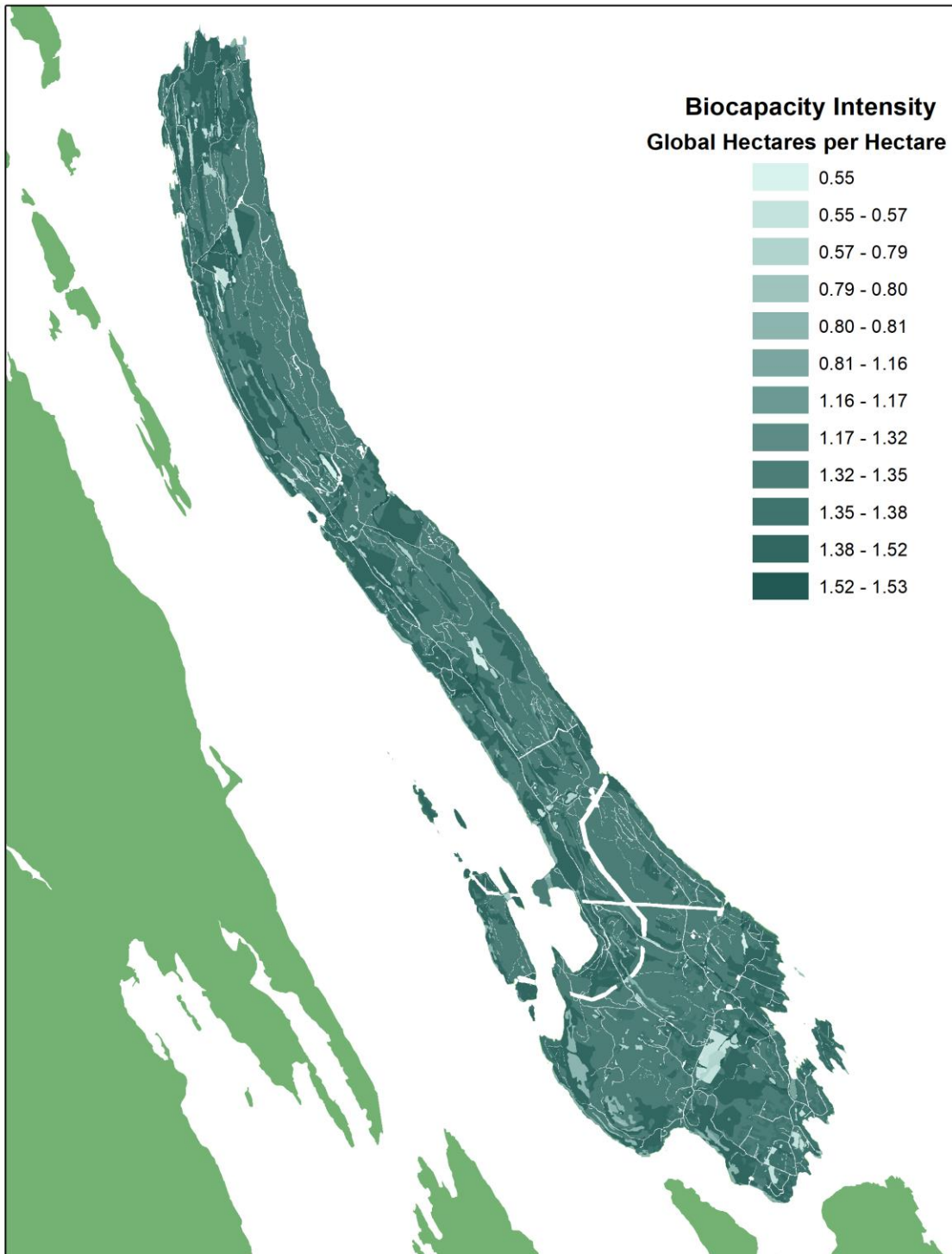


Figure 1. Biocapacity concentration on Galiano island. Developed land areas and surrounding water areas are shown in white.

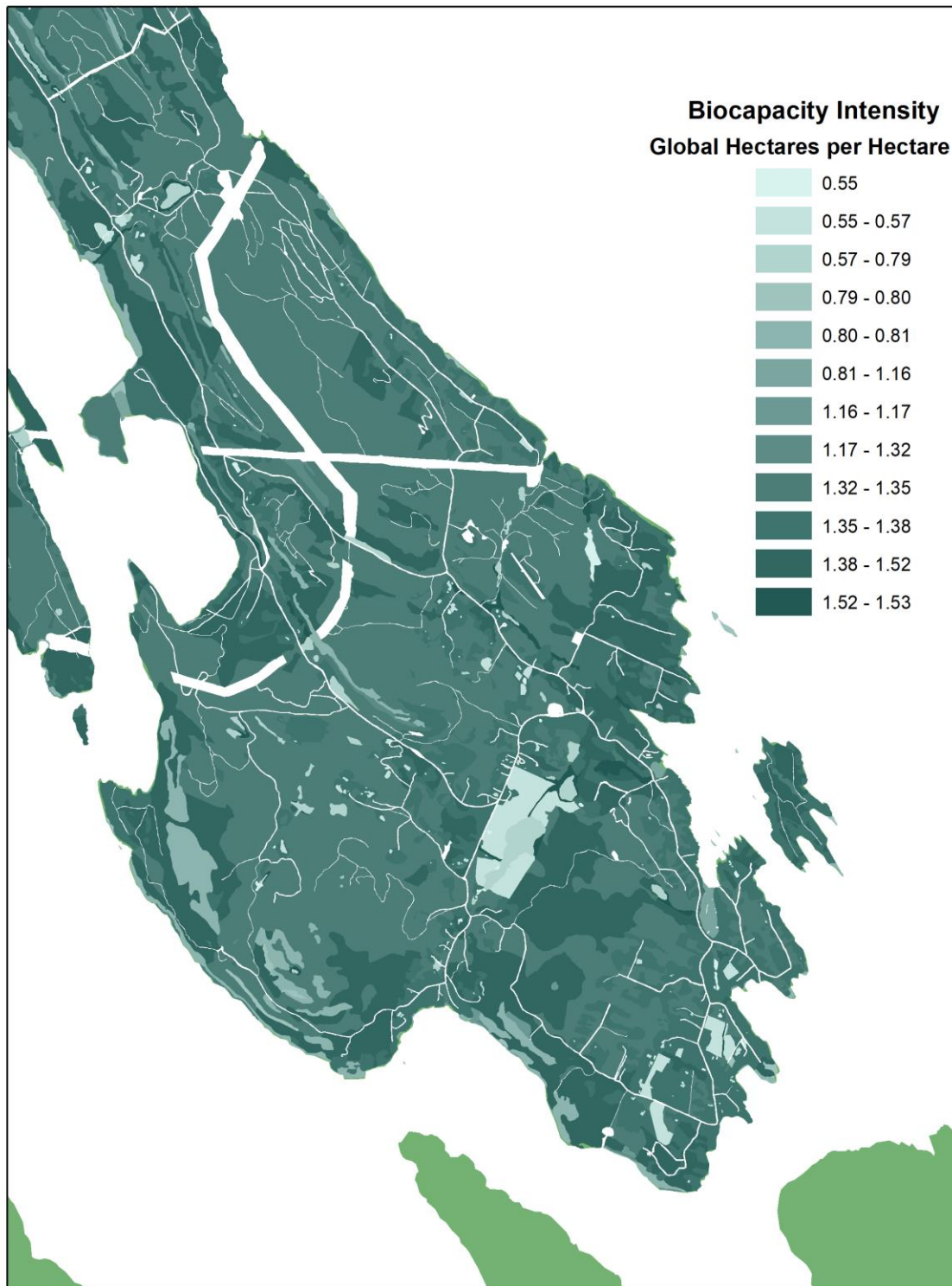


Figure 2. Closeup map of south Galiano. Developed land areas and surrounding water areas appear in white.

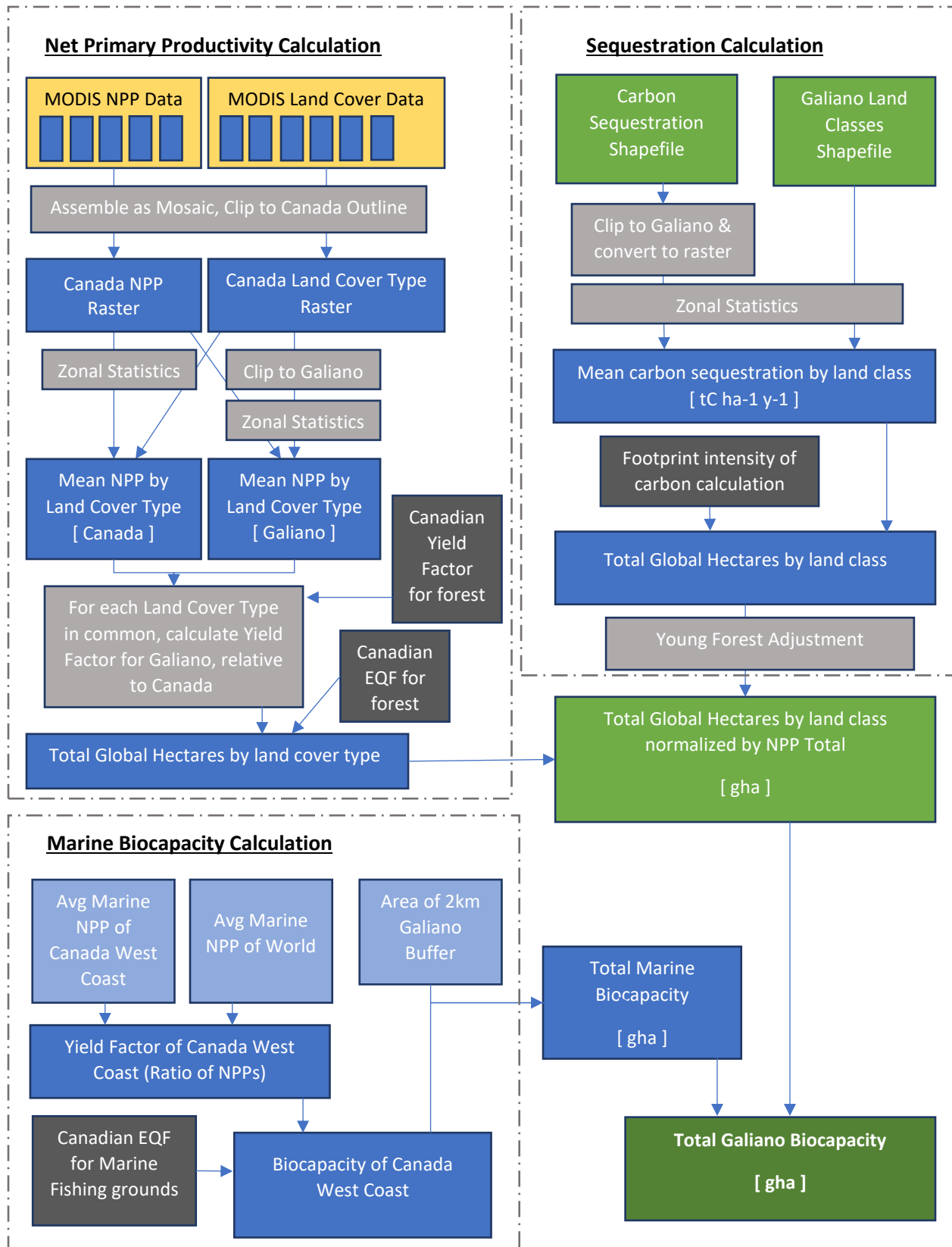


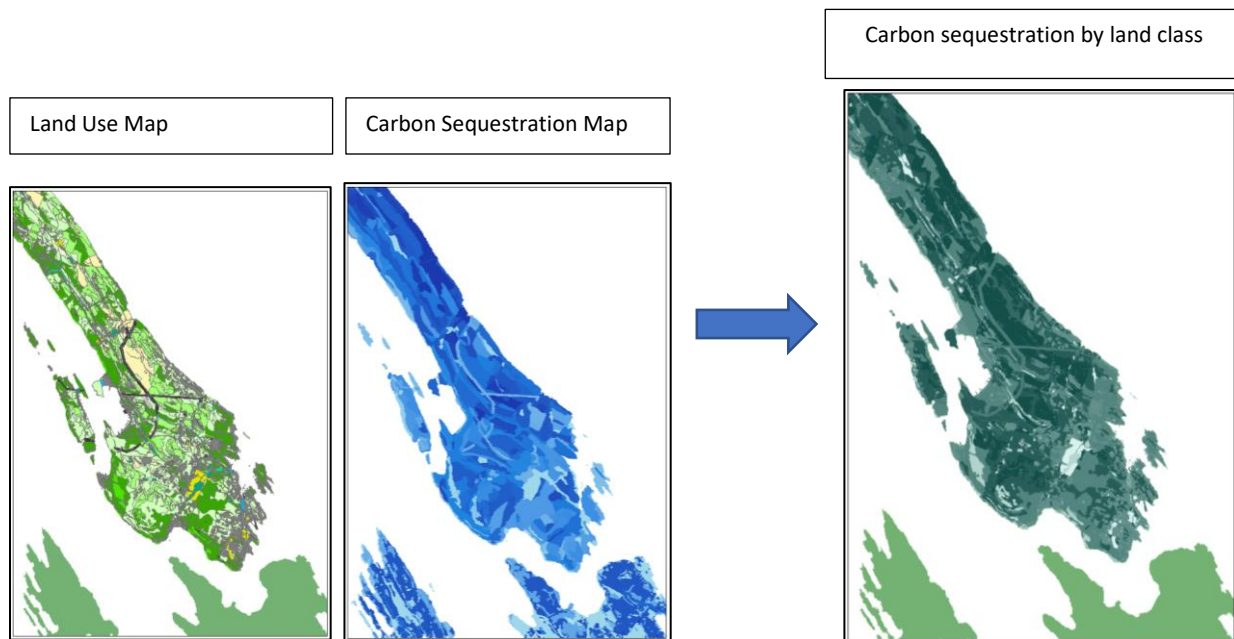
Figure 3. Overview of Methodology. Note that the sequestration calculation refers to Land Classes, while the NPP calculation is based on Land Cover Types.

4. Methodology

Conceptually, calculating the biocapacity of an area first involves understanding an area’s bioproductive potential, and secondly, converting that value to global hectares. For this report, a spatially explicit carbon sequestration dataset provided by the conservancy was used as the base productivity dataset (see section 4.1). The base productivity data was then normalized to global hectares using net primary productivity data which existed for both Galiano Islands and Canada (see section 4.2).

4.1 Sequestration calculation: understanding biocapacity distribution

Half of the process of calculating Galiano island’s terrestrial biocapacity is based off carbon sequestration data obtained from the Galiano Conservancy. This process involves the calculation of a mean carbon sequestration rate for Galiano’s various land classes. The sequestration rate is then translated into global hectares using a global value for sequestration per global hectare (derived from the National Footprint and Biocapacity Accounts (NFA)), resulting in a high-resolution account of the spatial distribution of Galiano’s biocapacity in global hectares. However, because these values are derived using data sources and methodologies that are different from those used to produce the forest carbon sequestration value in the NFA, they were normalized to a known value using satellite derived net primary productivity values – see section 4.2.



Data Sources:

1. Land classes from GIC
 - a. File name: *LandClass2021Galiano_forSharing.shp*
2. Carbon sequestration values from GIC
 - a. Background:
 - i. Evaluation of Carbon Storage within Forests in the Coastal Douglas Fir Zone(2012)
 - ii. Carbon and Biodiversity Mapping and Assessment for the Islands Trust Area (2014)
 - b. File name: *TEM_SEM_rd_Carbon.dbf*
 - c. Column value: Seq_t_ha_y

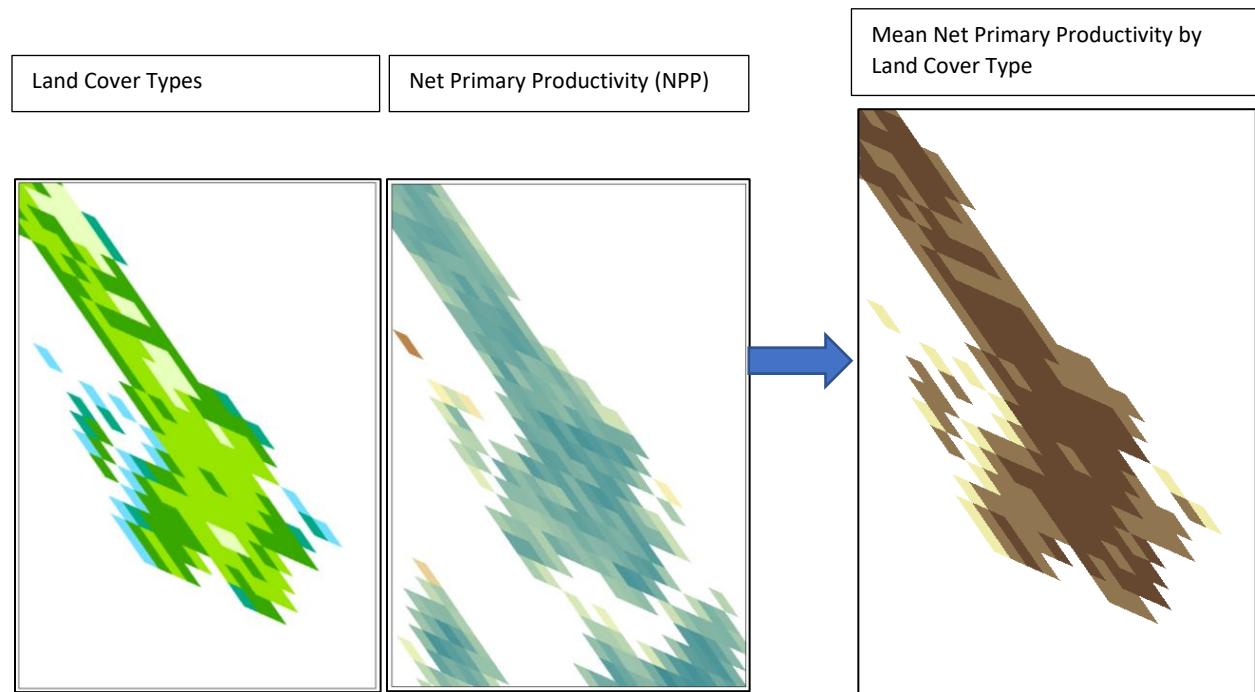
Methodological Steps:

Executed in *Zonal Stats, Sequestration* Tab of calculation workbook.

1. Convert sequestration map to raster. This is required for the use of the zonal statistics tool.
2. Use the zonal statistics tool to calculate mean carbon sequestration rate per land class.
3. Using the areas associated with each land class, determine total tons of carbon sequestered per land class on Galiano Island.
4. Convert tons of carbon sequestered per land class into global hectares, using the following method, outlined in the '*Constants*' Tab:
 - a. EQF/CSF = Footprint Intensity of Carbon, where:
 - b. Carbon Sequestration Factor (CSF) = 0.730 [t C wha⁻¹yr⁻¹]
Value represents the carbon sequestration rate of an average hectare of forest land on earth (wha, or world hectare).
 - c. Equivalence Factor (EQF) of Forest Land = 1.276 [gha wha⁻¹]
Value represents the number of global hectares per world hectare.
 - d. Both values calculated as part of Global Footprint Network's National Footprint and Biocapacity Accounts.
 - e. Footprint Intensity of Carbon is therefore EQF/CSF = 1.75 [gha (t C (yr⁻¹))⁻¹]
 - f. This value, multiplied by the sequestration rate in tons of carbon per year [t C (yr⁻¹)], results in the number of Global Hectares represented by each land class.
5. Modifications due to fast-growing young forests:
 - a. Once a 'biocapacity intensity' (Global Hectares per hectare) is calculated for each land class, it is clear that younger forest classes (Young Forest, Pole Saplings, Recently Harvested) have higher levels of biocapacity than Mature Forest or Old Growth Forests. This is assumed to be due to their more rapid accumulation of organic matter in the aftermath of logging activities, leading to a higher modeled rate of Carbon Sequestration.
 - b. Younger forest classes were assigned the average biocapacity intensity of older forests ('Steady State Intensity'), to represent the 'steady state' potential.
 - c. Total biocapacity was re-calculated.

4.2 Net Primary Productivity calculation

A variety of methods for calculating carbon sequestration can yield different results depending on the technique (whether modeled, satellite derived, or physically measured) and spatial scale at which it is applied. To ensure consistency, we used NPP data, which was available for both the target area, Galiano Island, and for Canada, which represents a reference area of known biocapacity. The biocapacity calculated using the sequestration methodology was then scaled to the NPP-derived biocapacity, resulting in both a total biocapacity that is consistent with global datasets, while providing a high level of resolution by land class.



Data Sources:

1. Net Primary Production Data
 - a. Name of dataset: *MOD17A3HGF v006 - MODIS/Terra Net Primary Production Gap-Filled Yearly L4 Global 500 m SIN Grid*
 - b. Year: 2019
 - c. Documentation: <https://lpdaac.usgs.gov/products/mod17a3hgv006/>
 - d. Downloaded from EarthData.nasa.gov website:
 - i. [https://search.earthdata.nasa.gov/search/granules?p=C1631984056-LPDAAC_ECS&pg\[0\]\[v\]=f&pg\[0\]\[gsk\]=-start_date&q=MOD17A3HGF&tl=1638572811.037!3!!](https://search.earthdata.nasa.gov/search/granules?p=C1631984056-LPDAAC_ECS&pg[0][v]=f&pg[0][gsk]=-start_date&q=MOD17A3HGF&tl=1638572811.037!3!!)
2. Land Cover Type Data
 - a. Name of dataset: *MCD12Q1 v006 - MODIS/Terra+Aqua Land Cover Type Yearly L3 Global 500 m SIN Grid*
 - b. Year: 2019
 - c. Documentation: <https://lpdaac.usgs.gov/products/mcd12q1v006/>
 - d. Downloaded from EarthData.nasa.gov website:

- i. [https://search.earthdata.nasa.gov/search/granules?p=C186286578-LPDAAC_ECS&pg\[0\]\[v\]=f&pg\[0\]\[gsk\]=-start_date&q=MCD12Q1&t=1638572811.037!3!!](https://search.earthdata.nasa.gov/search/granules?p=C186286578-LPDAAC_ECS&pg[0][v]=f&pg[0][gsk]=-start_date&q=MCD12Q1&t=1638572811.037!3!!)

Methodological Steps:

Executed in **Zonal Stats_NPP** Tab of calculation workbook.

1. Assemble both datasets into a single raster each using the Mosaic tool.
2. Clean data - Reclassify NPP values for 32762, 32763, 32764, 32765, 32766, replace with NoData.
3. Clip both datasets to the outline of Canada
Link: <https://open.canada.ca/data/en/dataset/a883eb14-0c0e-45c4-b8c4-b54c4a819edb>
4. Duplicate the datasets, clip the duplicate to the outline of Galiano island.
5. Use the Zonal Statistics tool to calculate the mean NPP per land cover type for both Galiano island and Canada.
6. Calculate Biocapacity of each of land cover class on Galiano:
 - a. For each land cover type, determine a Galiano Yield Factor, which is the ratio of mean NPP (Galiano / Canada) for the selected land cover type. This is multiplied by the Canadian Yield Factor for forests, obtained from Global Footprint Network's country workbooks.
 - b. The Galiano Yield Factor is multiplied by the Equivalence Factor for forest land (also from the country workbooks), and finally the area of the land cover type on Galiano.
7. Because of a discrepancy between the areas of Galiano Island when calculated using the sequestration or NPP methods, the resulting Biocapacity is scaled to the area of Galiano island defined by the land use classes (see sequestration calculation). This is approximately a scaling factor of 1.11.

4.3 Scaling sequestration-derived Biocapacity to NPP-derived Biocapacity

The sequestration calculation yields a biocapacity of 23,896 gha once adjustments have been implemented. The NPP calculation yields a biocapacity of 8,243 gha. The data from the sequestration calculation is therefore scaled by a factor of 0.34 to obtain the results presented at the start of this document, and in the Summary tab of the workbook.

Table 3. Calculation results

Calculation	Total Biocapacity (gha)
Sequestration Calculation	29,880
Sequestration Calculation w/ Young Forests adjustment	23,896
NPP Calculation	7,410
NPP Calculation scaled to 5,994 hectares	8,243
Marine Biocapacity	6,596

4.4 Marine Biocapacity Calculation

There is no official delineation of the marine area associated with Galiano island. Therefore, we agreed with the conservancy team to develop a simplified calculation. This calculation involves defining a 2km buffer around Galiano island, and applying an intensity of marine biocapacity equivalent to that of Western Canada (meaning that the final value is likely an underestimate; see the section methodological notes).

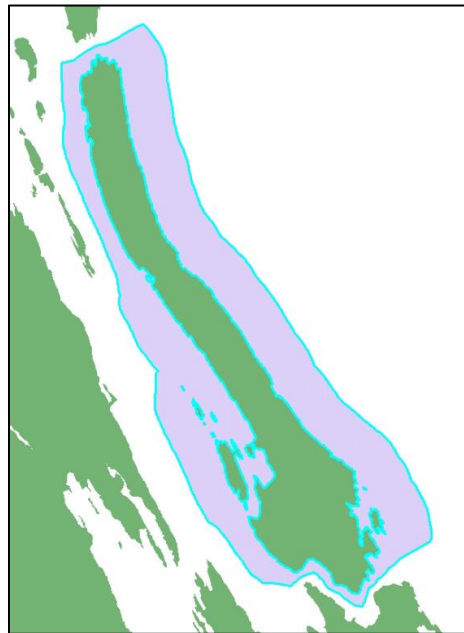


Figure 4. Marine buffer around Galiano Island

Data Sources:

1. Marine Primary Production data
 - a. Data for global and Canadian (west coast) NPP obtained from SeaAroundUs.org
 - b. Link to data for Canada west coast:
<https://www.searounds.org/data/#/eez/925?chart=catch-chart&dimension=taxon&measure=tonnage&limit=10>
 - c. Link to Global EEZ data: <https://www.searounds.org/data/#/global?chart=catch-chart&dimension=taxon&measure=tonnage&limit=10&subRegion=1>

Methodological Steps:

Executed in *Marine Biocapacity* Tab

1. Define 2 km buffer around Galiano island and determine its area.
2. Calculate biocapacity of Canadian west coast in gha.
 - a. Define Yield Factor as the ratio between west-Canadian and Global NPP
 - b. Yield Factor is multiplied by the Equivalence Factor for Marine Fishing Grounds (from Global Footprint Network country workbook), and finally the area of the Canada west coast zone in hectares, to obtain the total biocapacity of the region in global hectares.
3. The biocapacity intensity (in gha / ha) of the Canadian west coast is multiplied by the area of the Galiano marine buffer.

APPENDIX

Galiano Land Classes:

Natural Ecosystems - Landscape units with little or no human development. In the Trust Area these are usually rare and/or Fragile ecosystems	
Class	Subclass
OF - Old Growth Forest Large patches of forest that have not been subject to recent human disturbance (in the last 150 years). Areas display a wide variety of tree sizes, spacing and age. Old veteran tree comprise a major component of the site. Characterized by large dead standing and dead fallen trees of varying states of decay, canopy gaps, understory patchiness high organic matter accumulations, and multiple canopy layers. Average tree age of the dominant canopy is 250 years or more.	co - Conifer: > 75% of tree cover is coniferous
	mx - Mixed: mixed with broadleaf component >25%.
MF - Mature Forest Large patches of forest where old-growth characteristics are beginning to develop. Usually with multi-storied canopies, well developed understories, and diverse structural features such as large dead standing and dead fallen trees. Average tree age is 80 - 250 years.	co - Conifer: > 75% of tree cover is coniferous
	mx - Mixed: mixed with broadleaf component >25%.
WD - Woodland Dry, open stands of deciduous forest, generally with between 10 and 25% tree cover. Woodlands may include non-forests openings, often with shallow soils and bedrock outcropping.	mx - Mixed: mixed with conifer component > 15%
	Bd - Broadleaf: Dominant Broadleaf
HB - Herbaceous Non-forested ecosystems with less than 10% tree cover. Most have shallow soils and bedrock outcrops.	mx - Mixed: mixed with conifer component > 15%
	cs - Coastal herbaceous: Rocky shoreline, influenced by the marine environment and characterized by grasses, forbs, mosses and lichen.
	sp - Spit: Sand and gravel deposits with low to moderate cover of grasses and herbs.
	du - Dunes: Sand Dunes with a low cover of grasses.
	sh - Shrub: Shrubs account for more than 20% of the vegetation.
RI - Riparian Streamside areas along creeks, streams, gullies, canyons and larger floodplains.	fl - Low bench: areas flood at least once every two years for part of the growing season; plants are adapted to extensive flooding and abrasion.
	fm - Medium bench: areas flooded every one-six years for short periods (10 - 25 days); usually deciduous or mixed forests with trees tolerant of flooding and sedimentation.

	<p>fh - High bench: areas periodically and briefly inundated by high waters; typically conifer-dominated floodplains of larger coastal rivers.</p>
	<p>ff- Fringe: Narrow, linear areas along open water bodies (River, lakes and ponds).</p>
	<p>gu - Gully: where the watercourse is in a steep V-shaped gully.</p>
<p>ST - Stream Watercourse formed when water flows between continuous, definable banks.</p>	<p>fp - Perennial: Creek or stream that flows continuously throughout the year. fs - Seasonal: Stream that flows only at certain times of the year, (e.g. when the groundwater table is high and/or when it receives water from springs).</p>
<p>WN - Wetland Areas characterized by daily, seasonal or year-round water at or above the surface</p>	<p>bg - Bog: Shrubby or treed, nutrient-poor peatlands with distinctive communities of plant species adapted to highly acid and oxygen-poor soil conditions.</p> <p>ff - Fen: Peatlands where groundwater inflow maintains a high mineral content within the rooting zone.</p> <p>ms - Marsh: shallowly flooded mineral wetland dominated by emergent grass-like vegetation.</p> <p>sp - Swamp: Forested, mineral wetland dominated by broadleaf shrubs and trees on sites with a flowing, semi-permanent, near surface of water table.</p> <p>sw - Shallow Water: Aquatic ecosystems dominated by rotted, submerged and floating aquatic plants.</p> <p>wm - Wet Meadow: Seasonally inundated wetlands, dominated by grasses, sedges, or rushes. They generally occurs on mineral soil and have little or no peat accumulation. Tree cover is less than 10%.</p>
<p>CL - Cliffs Steep, vertical or overhanging rock face -sparse vegetation may occur in crevices or on ledges.</p>	<p>cc - Coastal Cliffs: cliffs with a marine interaction. Generally near vertical bedrock with accumulation of soil limited to fissures and ledges.</p> <p>ic - Inland Cliffs: Typically formed as a result of erosion, catastrophic failures or mass wastage. Generally characterized by rapid drainage and the accumulation of soil that is limited to bedrock fissures and ledges.</p>
<p>LC - Lacustrine Lacustrine ecosystems are freshwater ecosystems where total vegetated cover of the surface area is less than 5%.</p>	<p>la - Lake: a naturally occurring static body of water, greater than 2m deep in some portion.</p> <p>pd - Pond: A small body of water greater than 2m deep, but not large enough to be classified as a lake. Most ponds in our dataset are artificial in origin rather than natural, but both are categorized here.</p>
<p>LT - Littoral Ecosystems are marine influenced where total vegetated cover of the surface area is less than 5%.</p>	<p>mu - Mudflat: Flat, plain-like areas dominated by fine-textured sediments and exposed at low tide; includes estuaries.</p>

	Be - Beach: Area that expresses sorted sediments, reworked by wave action in recent times.
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Modified - Landscape units with human development or disturbance.	
Class	Subclass
<p>YF - Young Forest Self-thinning has become evident and the forest canopy has begun to differentiate into distinct layers (dominant, main canopy, and overtopped); vigorous growth and a more open stand than in the pole sapling stage; begins as early as age 30 and as late extends to 50-80 years. Young Forest that was designated in the 2004 land classification has retained its classification as Young Forest.</p>	co - Conifer: > 75% of tree cover is coniferous
	mx - Mixed: Neither coniferous or broadleaf account for > 75% of tree cover.
	bd - Broadleaf: > 75% of tree cover is broadleaf
<p>NYF - New Young Forest Self-thinning has become evident and the forest canopy has begun to differentiate into distinct layers (dominant, main canopy, and overtopped); vigorous growth and a more open stand than in the pole sapling stage; begins as early as age 30 and as late extends to 50-80 years. The New Young Forest classification has been automatically applied to all areas that were classified as Pole Sapling in the 2004 Land Classification data.</p>	co - Conifer: > 75% of tree cover is coniferous
	mx - Mixed: Neither coniferous or broadleaf account for > 75% of tree cover.
	bd - Broadleaf: > 75% of tree cover is broadleaf
<p>PS - Pole Sapling Dense regeneration of clearcut area between 15 and 30 years old, but can range upwards of 50 years if growing under poor conditions. Trees are greater than 10m tall and have overtopped shrubby and herbaceous vegetation.</p>	co - Conifer: > 75% of tree cover is coniferous
	mx - Mixed: Neither coniferous or broadleaf account for > 75% of tree cover.
	bd - Broadleaf: > 75% of tree cover is broadleaf
	cc - Clearcut: This describes areas that were automatically updated to the Pole Sapling class (clearcut subclass from those that were designated as Recently Harvested in the land classification data published in 2004. Aerial imagery from 2017 and LiDAR from 2019 confirm the successful regeneration of dense stands of trees, however no ground truthing has been done so species composition cannot be verified.
	gs - Group Selection: This describes areas that were automatically updated to the Pole Sapling class (group selection subclass) from those that were designated as

	<p>Recently Harvested in the land classification data published in 2004. Aerial imagery from 2017 and LiDAR from 2019 confirm the successful regeneration of dense stands of trees, however no ground truthing has been done so species composition cannot be verified.</p>
<p>RH - Recently Harvest Stands less than 15 years of age that are undergoing the initial stages of regeneration (Usually dominated by shrubby and herbaceous vegetation, trees species less than 10m tall) in areas where timber has been removed.</p>	<p>st - Seed Tree Retention:This describes areas that were automatically updated to the Pole Sapling class (seed tree subclass) from those that were designated as Recently Harvested in the land classification data published in 2004. Aerial imagery from 2017 and LiDAR from 2019 confirm the successful regeneration of dense stands of trees, however no ground truthing has been done so species composition cannot be verified.</p> <p>cc - Clearcut: Clear-cuts and heavily logged areas, mostly or all stripped of native vegetation, may be replanted or naturally regenerating. Naturally regenerating sites are dominated by seedlings, shrubs and herbaceous species (usually with a large component of exotic species). Replanted sites will vary in composition depending on silvicultural applications. Includes human caused serious erosion areas.</p> <p>st - Seed Tree Retention: Clear-cuts where individual trees or groups of trees have been retained for regeneration or aesthetic purposes.</p> <p>gs - Group Selection: Areas where timber harvest has occurred using group or individual tree selection methods including commercially thinned forest.</p> <p>r - Restoration: Land where restoration has taken place. Area may or may not have been cleared recently, but attempts to restore natural ecological processes have begun within the last 15 years.</p>
<p>RW - Rural Area in which human developments are interspersed with forest range, farmland, and native vegetation or cultivated crops.</p>	<p>se - Settlement: Residential, commercial or other structures are interspersed with native vegetation farmland or cultivated crops.</p> <p>gc - Golf Course: Grass-covered fairways and open areas for the playing of golf.</p> <p>pk - Park: Groomed areas including parks, playgrounds, aesthetic areas, and cemeteries.</p> <p>ar - Arrested Reforestation: Area previously deforested which has failed to return to forest after more than a decade. Instead of tree species, area dominated by grasses, forbs, shrubs, and/or bare soil. Likely cause deer browse, invasive plant species, and/or compacted soils. Up to 10% tree cover/regeneration.</p>
<p>AG - Agriculture Area where dominant use is for agriculture purposes.</p>	<p>co - Cultivated Orchard: An agricultural area composed of single or multiple tree species planted in rows.</p> <p>cv - Cultivated Vineyard: Vineyard</p>

	c - Cropland: Land used by commercial enterprises (most crops are sold rather than consumed by household) to cultivate crops and livestock feed.
	p - Pasture: Is land used for grazing by domesticated livestock. 2021 update: we included backyard poultry in this category.
	g - Garden: A small piece of ground used to grow vegetables, fruit, herbs or flowers for use by a household.
	n - Nursery: Mixture of covered and open spaces for propagating agricultural plants
	r - Restoration: Agriculture using only native plants
DP - Developed Areas where human features or disturbance are dominant.	ca - Canal: Artificial watercourse created for transport, drainage, and/or irrigation purposes.
	sz - Developed/Occupied Foreshore: Dock marina or shellfish lease.
	rz - Road Surface: Area cleared and compacted for vehicle transport.
	gp - Gravel Pit: Area exposed for the removal of sand and gravel.
	ur - Urban/suburban: Area in which residences and other human developments form an almost continuous covering of the landscape.
	uc - Utility Corridor: Area permanently altered to allow for the passage of a public or private utility.
	es - Exposed Soil: Area of exposed soil; not included in any of the other definitions.
lq - Unrestored landfills and quarries: Includes large-scale soil, rock and debris dumping, gravel/rock quarries, major ditching disturbances.	