

One Island, One Earth

An Ecological Footprint and Fingerprint for Galiano Island

June 2022

Galiano Conservancy Association

Project Acknowledgements

We wish to thank everyone that contributed to this project, from all of the Galiano households that completed our surveys, to the many people who provided us with insight and feedback. We wouldn't have been able to do this project without you, and we hope you see yourselves reflected in it.

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Unless otherwise noted, all of **the artwork in this report is by Gitxsan artist Shar Wilson** - to find more of her work, visit <https://finawear.ca/>.

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Partners

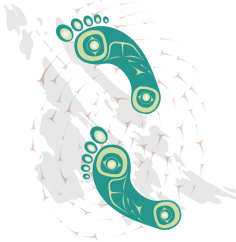


Funders



Executive Summary

In this report, we assess the Ecological Footprint of the small Salish Sea community of Galiano Island for the first time. To put the results in context, we situate Galiano Island within the broader territories of Hul'qumi'num, SENĆOŦEN, and Halkomelem-speaking Indigenous Peoples, and we undertake a qualitative study that we refer to as the Ecological *Fingerprint*. We also generate a Biocapacity estimate for the lands and waters that comprise Galiano Island.



One Island, One Earth

An Ecological Footprint and Fingerprint for Galiano Island

One Island?

We attempt to answer the question: **“Is the Galiano Island community living sustainably within and relative to the resources provided by Galiano Island?”**

We assert that the answer to this question is **“No,”** finding that equivalent of **4.3 “Earths” would be required to support the lifestyle of the Galiano Island community** if every human community on the planet shared these standards. We also find that, despite the relatively high productivity of the terrestrial and marine ecosystems of Galiano Island, the combined footprint of full-time residents, part-time residents, and annual visitors **exceeds the annual productivity of island ecosystems by 29%**. After accounting for Galiano’s share of the services provided by the national and provincial government, **transportation is the largest component of the footprint**, followed by food, energy and the built environment, and consumables and waste. Water availability is not accounted for in existing footprint methodologies and is discussed separately. The **inclusion of part-time residents and seasonal visitors doubles the overall footprint**. We estimate greenhouse gas emissions to be 9.0 tCO₂e/ca.

One Earth?

We also attempt to answer the question: **“What can the Ecological Footprint of a small island community tell us, and what are its limitations?”**

We assert that the Ecological Footprint effectively frames local accountability, demonstrating that the Galiano Island community’s **footprint is less than the Canadian average** but more than **double the global average** and more than **four times higher than sustainable, equitable “One Planet Living.”**

Footprints & Fingerprints

The **Ecological Footprint** is an estimate of how much biologically productive land and water area an individual or population needs to produce all the resources it consumes and to absorb the waste it generates; in other words, the area that would be required to support a defined human population and material standard indefinitely. It is measured in global hectares (gha), where a global hectare is a biologically productive hectare with globally averaged productivity for that year.

The **Ecological Fingerprint** is an evaluation of the particular attitude, self-image and intrinsic values a community adopts with respect to global resource use.




Promisingly, we find that the Galiano Island **community has the ability to make reductions across 60%, or 2.6 “Earths” of the footprint**, and that a two-thirds reduction in this portion of the footprint would be required to achieve “One Planet Living” on Galiano Island. We discuss the feedback we received in our interview-based Ecological Fingerprint study, and apply it to the results of the Ecological Footprint to generate **ten recommendations for priority actions** to reduce the community’s footprint.

Finally, we underline that **island communities are not “islands unto themselves.”** They must seek connections through and across the Salish Sea waters - and beyond - to effect meaningful change.

Summary At a Glance

The Ecological Footprint of the Galiano Island community in 2021:

- Required the equivalent of **4.3 “Earths”** if scaled to the planet’s human population
 - Canadians on average use 5.1 “Earths”
 - The world population uses 1.7 “Earths”
- Used **significantly more** of the Earth’s resources than its “fair share”
 - The Galiano Island community used about 6.8 global hectares per capita (gha/ca)
 - There are an estimated 1.6 gha/ca available for every person on the planet
- Used **29% more** of the Earth’s resources than Galiano Island provides back to the biosphere
 - Galiano Island’s ecosystems contribute about 14,373 gha to the biosphere
 - The Galiano Island community used about 18,600 gha in 2021

The Galiano Island community **has the ability to make reductions across 60%** of its footprint, or about **2.6 “Earths”**

- A **62% footprint reduction** would achieve “One Planet Living” at the community level
- Our **One Planet Scenario** calls for a **66% reduction in the community footprint**
- [Take our Survey](#) to share your thoughts

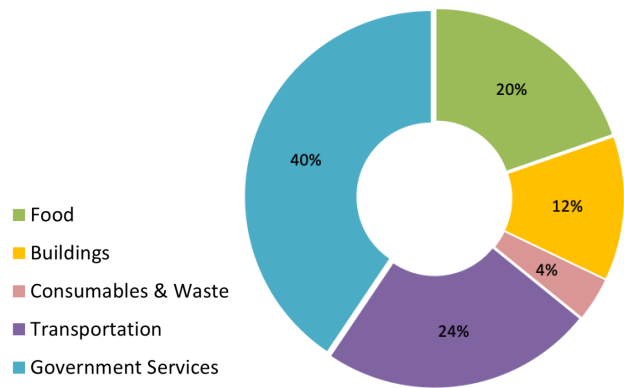


Figure 1. Galiano's Ecological Footprint, 2021



Figure 2. Galiano's Ecological Footprint in Earths

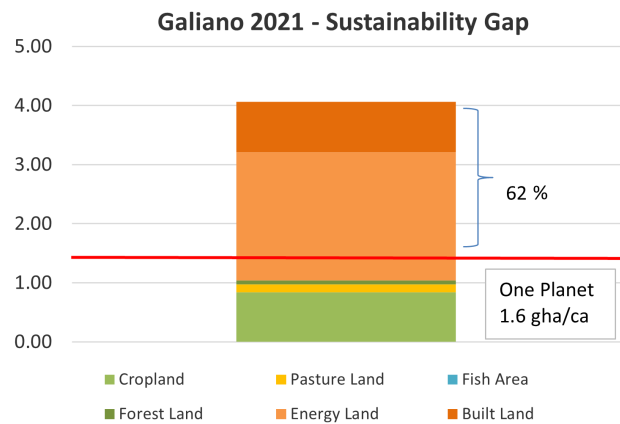


Figure 3. Comparison of community level footprint with threshold for “One Planet Living” (red line)

About this Report

Who We Are - the Authors

Hello! We - *the authors of this report* - are Michelle Thompson (She/Her) and Adam Huggins (He/Him). We are relative newcomers to Galiano Island, and we created this report in the course of our work for the Galiano Conservancy Association on the *One Island, One Earth* project.

Michelle is of German, English and Scottish ancestry, and was born and grew up on the traditional land of the Huron-Wendat, the Seneca and Haudenosaunee territories (Toronto, Ontario). She moved to Galiano Island in May 2021 specifically to pursue this project.

Adam is of Croatian, Scandinavian, and British ancestry, and was born on Ohlone territory in the Bay Area of California. He grew up in California and Florida, and immigrated to Canada in 2015. He has lived and worked on Galiano Island since 2018. He proposed, secured funding for, and assisted Michelle in the implementation of this project and the drafting of this report.

We are going to use the word “we” a lot in this report. “We” means just that - Michelle and Adam. While we consider ourselves to be members of this community, in this report we endeavour to speak only for ourselves, and to report as accurately as possible what we did, saw, heard, and learned as part of this project.

We spoke with people both on and off of Galiano Island to inform this report, and you will see their voices represented throughout, in their own words. We benefited greatly from the many perspectives that were shared with us, and we hope that you, too, will come away from this document with a new perspective on this place we call Galiano Island, whether it is your home, or just a place you are learning about for the very first time.



Where We Work - Galiano Conservancy Association

The Galiano Conservancy Association (GCA) is a community based non-profit society and registered charity founded in 1989, with a mission to “protect, steward and restore Galiano Island ecosystems by creating a network of natural areas where a healthy environment, learning and a love of nature flourish.” The GCA has active programs in conservation, environmental education, ecological restoration, sustainable food systems, and climate adaptation.



Galiano
Conservancy
ASSOCIATION

The GCA also has a history of community-based mapping projects. This report takes inspiration from and builds upon the results of the 2004 Galiano Island UP-CLOSE Habitat Conservation Project,¹ providing an updated landscape classification for 2021, and revisiting the subject of community values almost two decades after the publication of UP-CLOSE. It also directly responds to a key recommendation of the 2004 report, which was to provide education “for the community about ways of living sustainably and minimizing our Ecological Footprint.”

The “One Island, One Earth” project

The **One Island, One Earth** project was inspired by two publications: the 2018 Special Report of the Intergovernmental Panel on Climate Change (IPCC) on “Global Warming of 1.5° C², and a 2012 paper entitled “From Ecological Footprint to Ecological Fingerprint - Sustainable Development on Helgoland.”³

The former publication was a landmark report which received significant attention⁴ and catalyzed the Islands Trust to declare a “Climate Change Emergency” on March 13, 2019.⁵ At the time, it prompted us to consider what additional contributions the GCA could make to climate mitigation.

The latter publication certainly received less attention at the time of publication, but was equally influential on our process. In it, Dr. Beate Ratter and her student at the time, Jan Petzold, presented - for

¹ Emmings, K., & Erickson, K. (2004). *Galiano Island Landscape Classification and UP-CLOSE Workshop Series Final Report*. Galiano Conservancy Association, Galiano Island, BC.

https://galianoconservancy.ca/wp-content/uploads/2016/11/final_report_complete.pdf

² IPCC. (2018). *Global Warming of 1.5°C: An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Retrieved on May 9, 2022 from <https://www.ipcc.ch/sr15/>

³ Ratter, B., & Petzold, J. (2012). From Ecological Footprint to Ecological Fingerprint - sustainable development on Helgoland. In Larsen, K. T. (Ed.), *From One Island To Another - A Celebration of Island Connections* (pp. 191-204). Centre for Regional and Tourism Research.

⁴ Davenport, C. (2018, October 8). *Major climate report describes a strong risk of crisis as early as 2040*. The New York Times. Retrieved May 9, 2022, from

<https://www.nytimes.com/2018/10/07/climate/ipcc-climate-report-2040.html?searchResultPosition=5>

⁵ See <https://islandstrust.bc.ca/document/letter-climate-change-emergency-declaration/>

the first time, to the best of our knowledge - an Ecological Footprint analysis for a small island community. After presenting their results for Helgoland, a small island off the northwest coast of Germany, they argue that small island communities are unique enough to necessitate the creation of an Ecological Fingerprint, which we take to be a qualitative study of a community that complements the more quantitative Ecological Footprint.

We decided that we would attempt a similar analysis for the Galiano Island community, and in addition we would also calculate the Biocapacity of Galiano Island as a point of comparison. We hoped that this study would be useful for Galiano Island residents, as well as for policy makers and residents of other small island communities looking for innovative ways to address the Climate Crisis at a local level.

Who And What This Report Is For

We wrote this report for people who would like to read in detail about the results of the **One Island, One Earth** project. Maybe this is you? Then again, maybe you'd appreciate a more dynamic format - for that, you can find our interactive map online at <https://galianoconservancy.ca/oneisland/>.

This report summarizes the first Biocapacity, Ecological Footprint, and Ecological Fingerprint analysis that has been performed on Galiano Island, and, to our knowledge, on any small island community in the world. It is for island residents, academics, policy makers, students, and anyone else who is interested in helping to make their community more sustainable, resilient, and equitable.

The original purpose of the project was to ask the question: **“Is the Galiano Island community living sustainably within and relative to the resources provided by Galiano Island?”**

As the project developed, we added a second question: **“What can the ecological footprint of a small island community tell us, and what are its limitations?”**

This report represents our attempt to capture a “snapshot” of Galiano Island at a particular point in time, using a particular lens. It is not perfect, or comprehensive. To create this snapshot, we did our best to analyze the data that was available to us, and to collect data directly from the community when it wasn't. The report is built on the work of many other people and organizations, and wherever possible we acknowledge and link to that work. It features interviews and quotations from many island residents, who we thank for allowing us to include their voices. The intent of this report is not to pressure or guilt individual island residents, but instead to help inform conversations about community-scale responses to the climate, biodiversity, and social crises that characterize this moment in time. We are grateful to you for taking the time to read it - huy ch q'u!

Glossary

Key Terms

Biocapacity - Biocapacity represents the productive potential of an area's biologically productive land and water surface; in other words, the capacity for ecosystems to regenerate plant matter. Biocapacity is measured in global hectares (gha).

BCIT Centre for Ecocities - An arm of the British Columbia Institute of Technology with the mission "to help cities and communities close their sustainability gap."

Tonnes of Carbon Dioxide Equivalent (tCO₂e) - Carbon Dioxide Equivalence expresses the impact of each different greenhouse gas in terms of the amount of CO₂ that would create the same amount of warming when released into the atmosphere. This enables reporting total greenhouse gas emissions with one measurement.

Carbon Sequestration - A natural or artificial process by which carbon dioxide is removed from the atmosphere and held in solid or liquid form.

Carrying Capacity - The number of people, animals, or crops which a region can support without environmental degradation.

Climate Crisis - Refers to the planetary threat posed by continued anthropogenic emissions of greenhouse gases into the atmosphere; the term has come to replace 'climate change' and 'global warming' in discourses concerning global climate.

Consumption-based Emissions Inventory (CBEI) - A form of greenhouse gas emissions inventory that enables a region to quantify the emissions that are attributable to activities of individuals that reside within that region. CBEIs do not replace traditional 'territorial' inventories (see below), but rather they are complementary to them. CBEIs include the emissions that are generated during the production, shipping, use and disposal of all goods consumed in the region, regardless of where they are produced, as well as the impacts of residents and local businesses while they are travelling outside the community's borders.

ecoCity Footprint Tool - A tool developed by Dr. Jennie Moore, with the capacity to create multiple outputs for a community using "bottom-up" data sets: a territorial greenhouse gas emissions inventory, a consumption-based greenhouse gas emissions inventory, and an ecological footprint. See ecocityfootprint.org

Ecological Fingerprint - An evaluation of the particular attitude, self-image and intrinsic values a community adopts with respect to global resource use.

Ecological Footprint - An estimate of how much biologically productive land and water area an individual or population needs to produce all the resources it consumes and to absorb the waste it generates; in other words, the area that would be required to support a defined human population and material standard indefinitely. It is measured in global hectares (gha), where a global hectare is a biologically productive hectare with globally averaged productivity for that year.

Ecosystem Services - The direct and indirect contributions of ecosystems to human well-being. Ecosystems services including provisioning, regulating, supporting, and cultural values.

Embodied Energy - Energy used in creating and delivering a material (e.g., consumable good or infrastructure), including energy used for extraction of raw materials, manufacturing and transportation of the end product.

Embodied Emissions - Greenhouse gas emissions associated with creating and delivering a material (e.g., consumable goods or infrastructure), including those associated with energy used for extraction of raw materials, manufacturing and transportation of the end product.

Exclusive Economic Zone (EEZ) - The area of the sea in which a given nation state asserts special rights regarding the exploration and use of marine resources. In Canada, the EEZ extends 370 kilometers offshore.

Food Miles - The distance food travels from where it is grown or made to where it is purchased or consumed by the end user.

Global Hectares (gha) - A global hectare (gha) is a unit of biocapacity, representing the productivity of a bioproductive hectare on earth with average productivity. There are just over 12 billion biologically productive hectares on Earth. Global hectares are often expressed in terms of global hectares per capita (gha/ca).

Global Footprint Network - An international nonprofit organization founded in 2003 with a mission “to help end ecological overshoot by making ecological limits central to decision-making.”

Islands Trust - The Islands Trust is a special purpose government mandated to preserve and protect over 450 Islands in the Salish Sea. The Province of British Columbia created the Islands Trust in 1974 in response to the potential environmental effects of dense residential subdivisions that were in development in the Gulf Islands. The mandate of the Island Trust is “to preserve and protect the Trust Area and its unique amenities and environment for the benefit of the residents of the Trust Area and of British Columbia in cooperation with municipalities, regional districts, improvement districts, First Nations, other persons and organizations and the government of British Columbia.”

Net Primary Production - The difference between the energy fixed by autotrophs and their respiration; most commonly equated to increments in biomass per unit of land surface and time.

One Planet Living - A lifestyle that, if adopted by everyone, could be supported indefinitely by the regenerative capacity of Earth's ecosystems.

Operating Energy - The energy used in the function of a product, building, vehicle, etc.

Operating Emissions - The greenhouse gas emissions associated with operating energy.

Overshoot - Global overshoot occurs when humanity's demand on nature exceeds the biosphere's regenerative capacity or supply. Such overshoot leads to a depletion of Earth's life-supporting natural capital, including the buildup of waste such as ocean acidification from excessive CO₂ or climate change from greenhouse gas accumulation in the atmosphere.

Rockfish Conservation Areas - Areas designated by Fisheries and Oceans Canada where any fishing activities that impact on rockfish, lingcod, or their habitat (including activities resulting in bycatch of these species) are prohibited.

Senior Government Services - Services provided by Federal and Provincial governments to the citizenry; in Canada, this includes military, health care, administrative, and other high-level services that aren't accounted for at the local level.

Sustainability Gap - The difference between the estimated Ecological Footprint of a population and the Ecological Footprint that would achieve "One Planet Living" (see above).

Territorial Emissions Inventory - Also known as a Sectoral Inventory, a territorial inventory identifies direct greenhouse gas (GHG) emissions from all sources within a region. This is the standard type of GHG emissions inventory compiled by local, regional, provincial and federal governments.

A standardized approach to territorial inventories is prescribed by the GPC (Global Protocol for Community-Scale Greenhouse Gas Emissions Protocol).

Two-eyed seeing - According to Mi'kmaw Elder Albert Marshall: "to see from one eye with the strengths of Indigenous ways of knowing, and to see from the other eye with the strengths of Western ways of knowing, and to use both of these eyes together"

Acronyms

BCIT - British Columbia Institute of Technology

CBEI - Consumption-based Emissions Inventory

CRD - Capital Regional District

CSPGS - Coast Salish Peoples of Galiano Society

CO₂/Co₂e - Carbon dioxide/Carbon dioxide equivalent

EF - Ecological Footprint

eF Tool - ecoCity Footprint Tool

EEZ - Exclusive Economic Zone

GCA - Galiano Conservancy Association

GFN - Global Footprint Network

gha - Global Hectares

gha/ca - Global Hectares per Capita (person)

ghg - Greenhouse Gas

GIRR - Galiano Island Recycling Resources

GPC - Global Protocol for Community-Scale Greenhouse Gas Emissions Protocol

ICBC - Insurance Corporation of British Columbia

MSW - Municipal Solid Waste

NPP - Net Primary Production

RCA - RockFish Conservation Area

SSREC - Salish Sea Renewable Energy Co-op