

The Galiano Island Stewardship News

A newsletter of the Galiano Conservancy Association, where the people of Galiano Island can share ideas, stories and perspectives on stewarding the land.

Staff and volunteers remove invasive yellow flag iris during Make a Difference Week 2022



**Galiano
Conservancy**
ASSOCIATION

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Restoring a Watershed

Cedars for the Next Century at the Millard Learning Centre

By Adam Huggins, GCA Restoration Coordinator

Picture yourself in a grove of massive western redcedars. You're standing on a spongy mound, looking straight up the trunk of a five-hundred year old tree, its lattice-like bark extending high up into the canopy overhead. All around you, water-filled depressions are alive with tadpoles, which glide underneath the giant outstretched leaves of skunk cabbage and shelter below the rotting hulks of the fallen trees that rest on the uneven ground. Overhead, ripe salmonberries dangle in shafts of filtered light passing through openings in the canopy. Delicate, feathery fluffs of seed 'snow' drift lazily by, probably from a nearby cottonwood tree. Somewhere, in the distance, you hear the unmistakable, impatient tail-slap of a beaver.

Ecosystems like this were once common in the low, wet valleys that occur across Galiano Island. Western redcedar - known in Latin as *Thuja plicata* and in Hul'qumi'num as X'pey, the tree of life - would have dominated these swampy lowlands, providing habitat and shade for many native species. Freshwater would filter slowly through these forested wetlands, lingering on the surface before seeping into subsurface aquifers. In the present day, however, these ecosystems have become quite rare, largely as a result of early European colonists clearing and draining these rich areas to promote agriculture and settlement.

The 26-hectare Chrystal Creek watershed at the Millard Learning Centre (MLC) is a prime example of one such area. Historical aerial photographs clearly indicate that the entirety of the lower watershed was cloaked in mixed redcedar and deciduous swamp forests. Some of these areas were cleared in the early 1900s, while others survived up until the most recent round of logging in the early 2000s, just prior to the Galiano Conservancy acquiring the property in 2012.

Starting in the fall of 2020, we began to restore healthy forested wetland ecosystems across the watershed. Restoration treatments have already been implemented across a 10-hectare area that was previously clear-cut and used for pasture, agriculture, and forestry.





Red-legged frog tadpole from new wetlands



Red-legged frog



HOW YOU CAN GET INVOLVED!



Volunteer day in March 2022

Across the restored area, we have cleared hazardous debris and dilapidated structures, removed ditches and old roads, decompacted the soils, excavated around 50 wetland pools, and established native plants - including, of course, western redcedar trees. Already, the blue-listed northern red-legged frog and other amphibians are using the new wetlands for breeding. Visitors to the MLC can access a brand new trail to view the wetlands as they develop (see page 15). In 2023, we plan to restore an additional 2.5 hectares around the final reach of the creek, before it enters the ocean at Chrystal Cove.

This work has taken years of preparation and many hands. Field classes and volunteer groups from the University of Victoria, BCIT, UBC, and SFU have all gotten their hands dirty. Wetland restoration expert Robin Annschild, biologist and former GCA Executive Director Keith Erickson, machine operator Stuart Callison, and many core and seasonal GCA staff have driven the project forward. Dozens of volunteer community members have made their mark. Penelakut Elders Karen and Richard Charlie have provided valuable observations and feedback. Practitioners with the BC Wildlife Federation's Wetlands Institute have come to inform, learn from, and observe our efforts.

Thank you to everyone who has contributed so far!

Working together, we can address the mistakes of the past and ensure that future generations will be able to continue to live alongside the tree of life and all of the many and varied species that it provides for.

If you would like to be involved in the next phase of watershed restoration, we hold volunteer sessions every Friday, between 10am and 2pm at the Millard Learning Centre.

Email restoration@galianoconservancy.ca or visit galianoconservancy.ca/volunteer to sign up.



RESTORATION PROCESS



Watch a time-lapse video of the restoration in process.



360° VIRTUAL TOUR



Take a virtual tour of the restored area.

This project was undertaken with the financial support of:
Ce projet a été réalisé avec l'appui financier de :



Environment and
Climate Change Canada

Environnement et
Changement climatique Canada

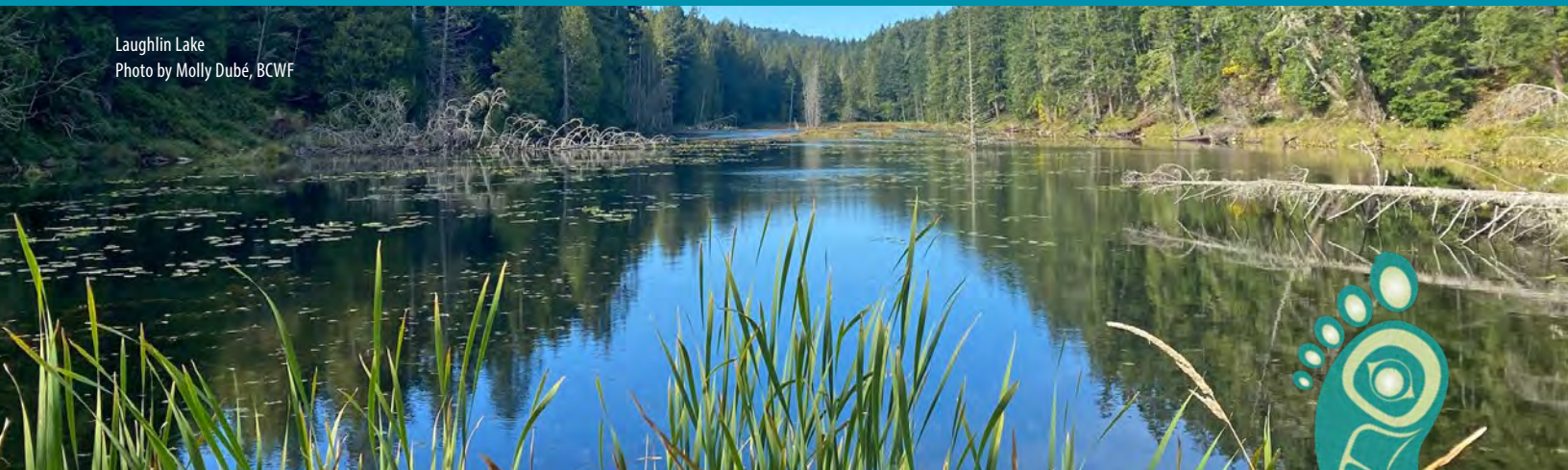


One Island, One Earth

An Ecological Footprint and Fingerprint for Galiano Island

By Michelle Thompson, *One Island, One Earth* Coordinator and Adam Huggins, *GCA Restoration* Coordinator
Assembly by Lily Scholz, Illustrations by Shar Wilson

Laughlin Lake
Photo by Molly Dubé, BCWF



“You know, everybody that lives in this world has a footprint, eh? They’re leaving a footprint. Everywhere you walk you leave a footprint. But I always try to think of how I’m leaving this world for my grandchildren.” – KAREN CHARLIE



On March 13, 2019 the Islands Trust declared a “Climate Change Emergency” in response to the 2018 Special Report of the Intergovernmental Panel on Climate Change (IPCC) on

“Global Warming of 1.5° C”. At the time, however, there was a **lack of locally-relevant baseline data to guide climate action** across the Southern Gulf Islands.

Looking around the world, we were inspired by a unique study by Dr. Beate Ratter of Universität Hamburg that examined the **ecological footprint of a small island** in Germany called Helgoland. The Galiano Conservancy Association decided to attempt a similar analysis of Galiano Island. To do so, between 2020 and 2022, the Galiano Conservancy collected extensive data on the Galiano Island community’s way of living. We wanted to look at Galiano Island in isolation, as a **microcosm of the planet**, to see what we could learn.

WHAT IS AN ECOLOGICAL FOOTPRINT?

The *Ecological Footprint* is an indicator of sustainability that shows us how much biologically productive land and water a community needs to produce all the resources it consumes and to absorb the waste it generates.

It is measured in **global hectares (gha)**, a unit of measurement based on the average productivity of a bioproductive hectare on Earth. For example, a single hectare of a sagebrush desert ecosystem will almost certainly contribute fewer global hectares to the biosphere than a single hectare of tropical rainforest ecosystem. This system recognizes that some surface areas of the planet have greater potential to support life than others.

How do we know how many global hectares are available to support our way of life? The concept of **Biocapacity** allows us to evaluate the ability of ecosystems to produce biologically useful material and absorb human-produced waste under present-day conditions. At a global level, Biocapacity provides an annual “budget” for life on planet Earth; at a local level, Biocapacity represents Galiano Island’s contribution to that budget. Biocapacity is also measured in global hectares.

101

PLANETARY BUDGETING 101



Imagine you have a bank account for the planet. At this bank, global hectares (gha) are the currency, biocapacity is the annual income, and the human ecological footprint is the annual expenditures.

When our ecological footprints (i.e. our expenditures) **exceed** the planet's available biocapacity, this is known as **overshoot**. Like a bank account with some savings, expenses can exceed income for a time, but over many years the savings will be depleted. In the case of the planet, depleting the savings results in pollution, destruction of ecosystems, extinction of species, soil erosion, climate change, and other negative impacts that reduce the Earth's ability to support life.

$$\frac{\text{ECOLOGICAL FOOTPRINT (gha)}}{\text{BIOCAPACITY (gha)}} = ?*$$

* More than one = Overshoot
Less than one = One Planet Living

In 2021, there were an estimated 1.6 global hectares available to support each person on the planet, assuming human beings used up the entirety of the planet's annual productivity, leaving nothing behind for wildlife.

CHECK OUT OUR INTERACTIVE MAP

The online map has multiple clickable layers, including an oral history layer that displays quotes and videos from our interviews with long-term community members, as well as aerial imagery, LIDAR imagery, and detailed information about each Ecological Footprint category.



Use this QR code to access the interactive *One Island, One Earth* webmap, or simply visit map.galianoconservancy.ca



Land Use Classification of Galiano Island

2004 vs 2021

LEGEND

- | | |
|---|---|
| Cliff (0.6% in 2004 & 2021) | Young Forest, 30 - 80 yrs. old (28% in 2004; 33% in 2021) |
| Garry Oak Meadow or Woodland (2% in 2004 & 2021) | Pole Sapling Forest 15 - 30 yrs. old (8% in 2004; 15% in 2021) |
| Herbaceous (0.2% in 2004 & 2021) | Recent Harvested, less than 15 yrs. old (17% in 2004; 1% in 2021) |
| Lake / Pond (0.2% in 2004 & 2021) | Agricultural Land (2% in 2004; 1% in 2021) |
| Wetland (1% in 2004 & 2021) | Rural Settlement (8% in 2004; 12% in 2021) |
| Beach / Mudflat (0.3% in 2004 & 2021) | Developed roads, utility corridors, exposed soil etc. (5% in 2004 & 2021) |
| Mature Forest, 80 - 250 yrs. old (26% in 2004; 25% in 2021) | Riparian Forest influenced by wetland or water course (1% in 2004 & 2021) |
| Old Growth Forest, + 250 yrs. (0.07% in 2004 & 2021) | |

0 0.5 1 2 3 4 km

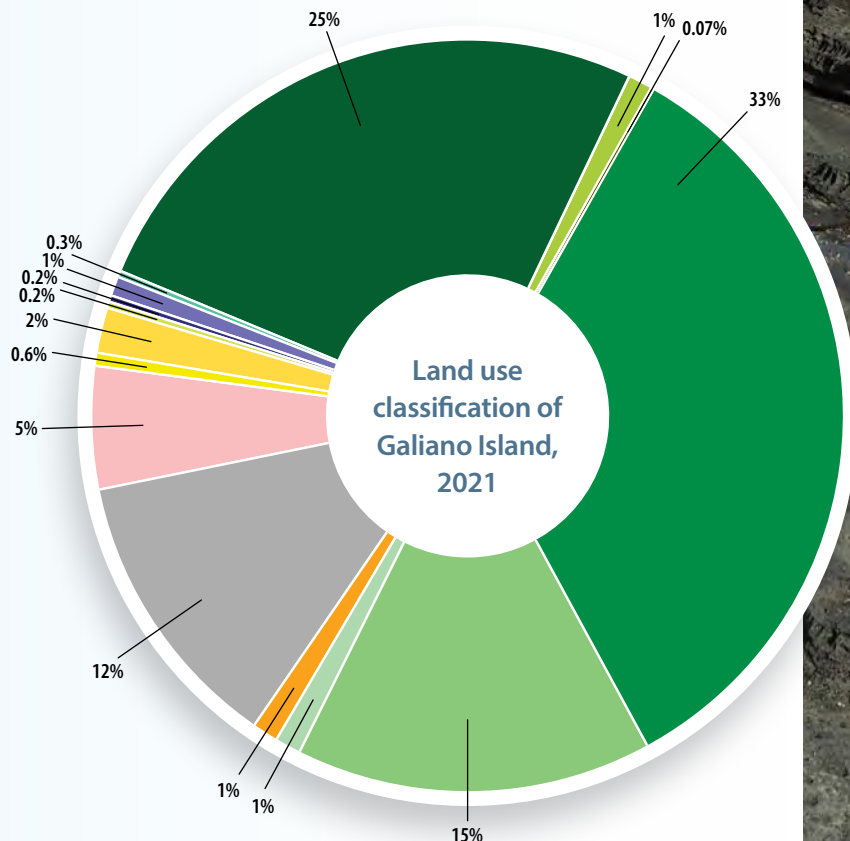
Maps produced by Galiano Conservancy Association
Projection: UTM Zone 10 NAD83

Conservation plays a critical role. We found that 33% of Galiano Island's biocapacity enjoys some form of protection. This means that the Galiano Island community can be proud of its achievements in preserving productive natural areas. However, many sensitive ecosystems still lack protection and require active restoration.

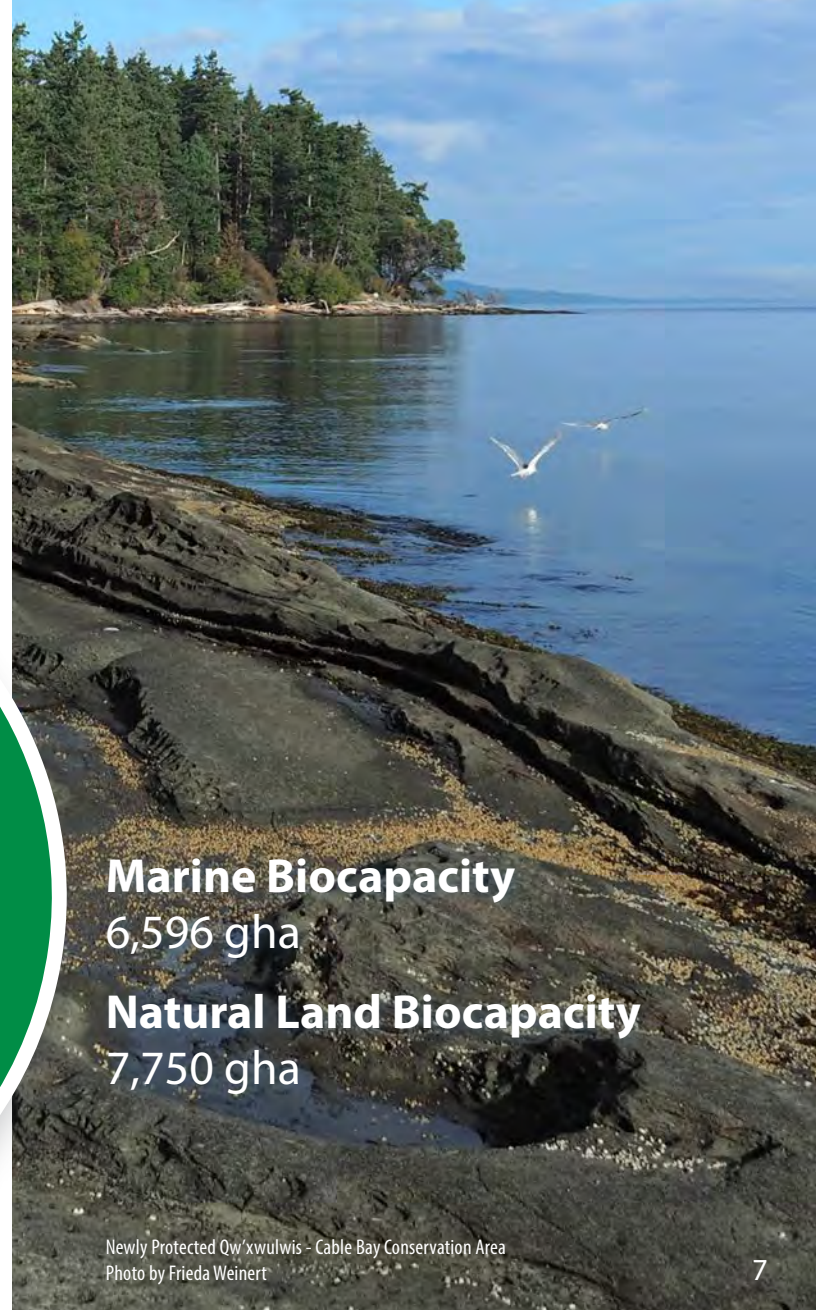
“Much of the forest land on this island has been in a state of neglect [...] And that’s kind of benign neglect, in the sense that you’re letting nature take its course. But you’re not helping nature. Your land has been seriously impacted and impoverished ecologically.”

– BOWIE KEEFER

Notable land use changes over the past two decades include **forest succession of the majority of recently harvested areas** (less than 15 years in 2004) to pole sapling (15 to 30 years), and young forest (30 to 80 years) ecosystems, with some conversion of recently harvested areas to rural settlement. **Agricultural land use has decreased by about 34%**, with conversion of these areas to rural settlement or wetland. **Wetland areas increased by 8%**, with beaver activity causing increased flooding within wetland areas. **Rural settlement areas have had an increase of 37%** through conversion of other land uses to homes, lawns, gardens, and fields.



Galiano Island's ecosystems contribute a disproportionately **LARGE** amount of biocapacity to the biosphere.



Marine Biocapacity
6,596 gha

Natural Land Biocapacity
7,750 gha

FOOD



Food comprises an estimated 33% of the community-level footprint. We found that island residents consume less meat and more legumes than the average Canadian, and that in 2021 about 13.5% of

the food consumed on the island by weight was locally produced. Nevertheless, animal products are very resource-intensive to produce and are still the largest contributor to the food footprint. Food waste in the supply chain also plays a major role.

WHAT CAN WE DO?

- Reduce food waste through better meal planning, gleaning, and using all parts of food products
- Support and expand local, sustainable food production
- Facilitate local hunting, fishing, and foraging opportunities



Although water is a critical component when considering sustainability, it is not included in this ecological footprint assessment. Scan for information about Galiano's freshwater sustainability.

WASTE & CONSUMABLES



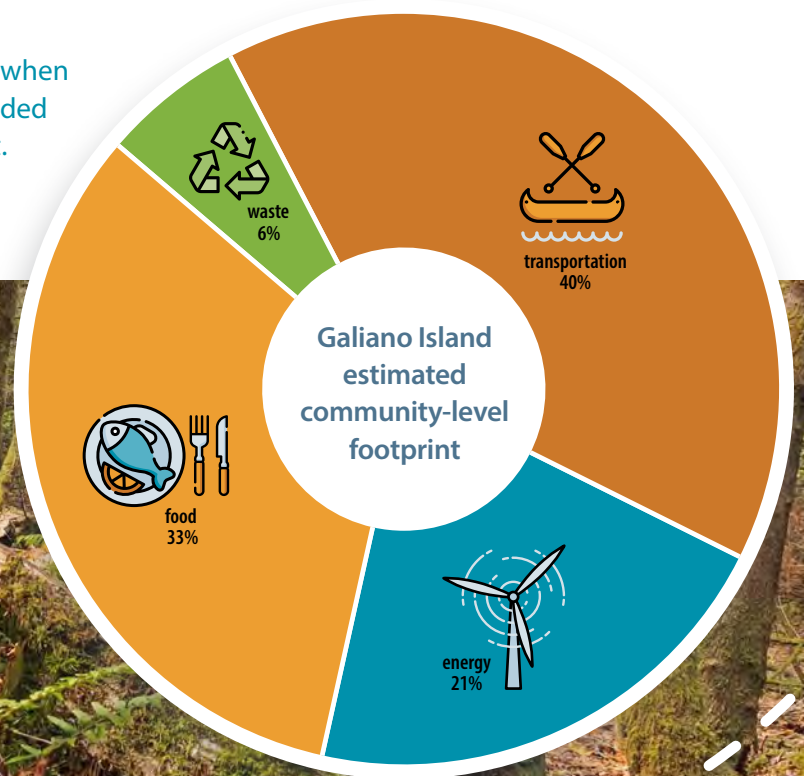
Consumer goods and waste comprise an estimated 6% of the community-level footprint. This is lower than other BC jurisdictions, largely because the Galiano Island community has been very successful

in encouraging and supporting a culture of reusing, recycling, and composting. Of all the footprint categories, though, consumables and waste is **most likely an underestimate**, as the full scope of this category is difficult to capture using surveys and existing data.

WHAT CAN WE DO?

- Reduce, reuse, and recycle consumer goods
- Produce more products locally using materials that are recyclable or biodegradable
- Install composting toilets and/or septic aerators to reduce septic field emissions

EXPLORING OUR ECOLOGICAL FOOTPRINT



TRANSPORTATION



Transportation comprises an estimated 40% of the community-level footprint. This is higher than other BC jurisdictions and the **largest contributor to our community's environmental**

footprint. We found that our community drives less than the BC average, but that we also fly and take ferries much more often than the BC average. The addition of seasonal residents and tourists increases the transportation footprint.

Many residents are already adjusting their transportation habits. Galiano has three public EV charging stations and EV ownership has been increasing since 2015. However, uptake of active transportation is limited due to concerns over safety.

WHAT CAN WE DO?

- Advocate for ferry electrification
- Create safe, accessible active transport infrastructure
- Support the adoption of electric vehicles
- Take fewer flights
- Improve public transportation options
- Move towards one-car households
- Decommission and restore old, unused road surfaces
- Experiment with island-adapted transport solutions, for example:
 - Electric truck co-op
 - Delivery services
 - Vehicle sharing
 - Revival of canoe culture

ENERGY & BUILDINGS



Energy and buildings comprise an estimated 21% of the community-level footprint. The relative impact of the built area is much higher than for other BC jurisdictions due to a pattern of low-density single-family

home development and clearings scattered across the island. The operating emissions, however, are lower, because island residents typically heat their homes with electricity and wood as opposed to fossil fuels. Overall, the island's electricity use is higher than the BC average, but this electricity derives largely from hydropower, which emits relatively few greenhouse gasses compared to fossil fuels. It is important to note that existing ecological footprint methodologies do not take into account the negative impacts of hydroelectric dams on ecosystems and communities, such as: floods, hindered fish migrations, methane emissions, and embodied emissions from concrete production.

In 2021, we found that a little over 1.5% of the electricity used on Galiano Island is produced by local solar installations.

WHAT CAN WE DO?

- Convert all household energy use to electricity
- Improve household insulation and air-sealing
- Switch to energy-efficient appliances, such as heat pumps
- Find creative ways to reduce the per capita footprint of the built environment
 - Increase occupancy of existing structures
 - Increase density of existing built areas
 - Ensure that new builds are compact, dense, and affordable
 - Invest in rainwater harvesting and other water conservation measures
 - Protect and restore native ecosystems in degraded areas that are no longer in active use

"[...] putting in our heat pump was probably the greatest thing I've ever done. Yes, it's very good for the environment. But it's also very good for me, because I don't need to get firewood. And it uses, you know, much less energy. [...], so the one thing that we should all do is put in a heat pump, it's kind of a no-brainer." – GEORGE HARRIS

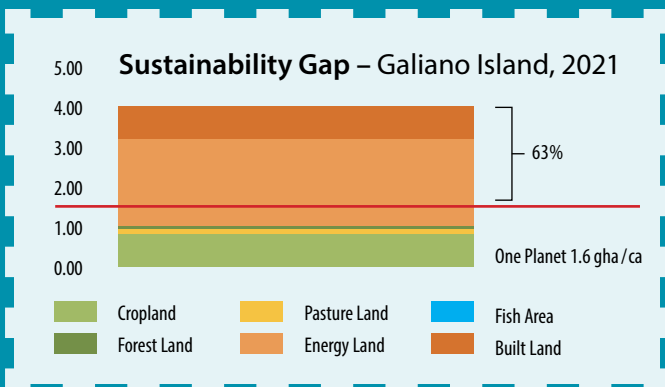


ONE PLANET LIVING

The goal of "One Planet Living" is to achieve a global human population with an ecological footprint that:

- (a) Requires less than one Earth to support; and
- (b) Is distributed equitably among communities and individuals

Like most, if not all communities in Canada, the Galiano Island community is in overshoot. Our ecological footprint is a little bit larger than the footprints of nearby cities such as Vancouver and Victoria, much larger than the average community on the planet, and significantly larger than would be consistent with One Planet Living. In order to achieve One Planet Living on Galiano Island, we must pursue a **63% reduction of our ecological footprint.**



WHAT DID WE LEARN?

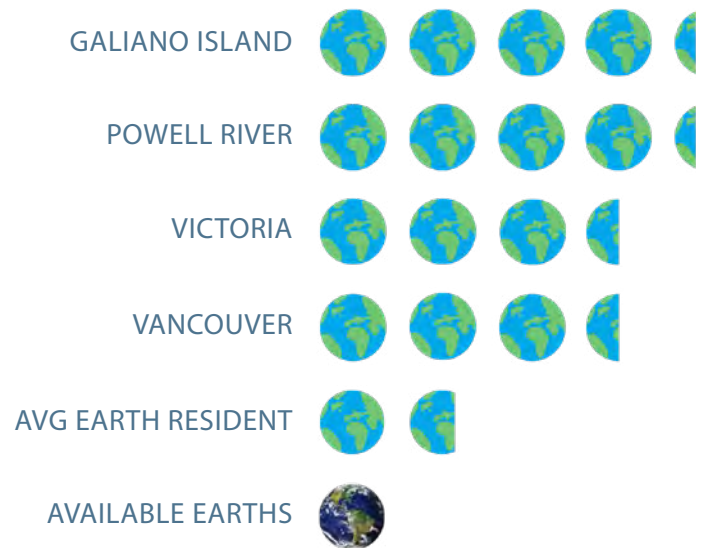
We found that the Galiano Island community has an ecological footprint of 18,600 global hectares, with an average of 6.8 global hectares per person (gha/ca).

This means that our community footprint would require the equivalent of **4.3 "Earths"** to support it, if all humans on the planet lived like us!

About half of the footprint accounts for the 1396 full-time residents (9,700 gha) and the other half for the estimated 1,327 full-time equivalent part-time residents and tourists (8,900 gha).

Despite the relatively high productivity of Galiano Island's ecosystems, the combined footprint of full-time residents, part-time residents, and visitors **exceeds the annual productivity of the island's ecosystems by 29%.**

About 1.7 "Earths" of the Galiano Island community's footprint represents our share of the footprint of national and provincial government services (healthcare, military, administrative, police, etc.) We don't have any direct local control of this component; however, the remaining **2.6 "Earths" can be addressed locally** (or about 4.1 gha/ca). Of the footprint categories, **transportation is the largest contributor**, followed by food, energy & the built environment, and consumables & waste.



BCIT completed Ecological Footprints of nearby municipalities using the same methodology in 2018. This figure includes the footprint of national and provincial government services.



Throughout this project, we were confronted with the seemingly simple question: What is an island? We quickly learned, however, that there is more to an island than first meets the eye.

“Places like Galiano didn’t traditionally have one name for the whole island, it was the waterways that had whole names...the main thing connecting us was the waterways, was the ocean, was the different straits” - LEVI WILSON

We also learned that this conception of the island existing in relation to the surrounding islands and waters has deep roots in the worldviews of hwalmuhw mustimuw - the Indigenous, Hul’qumi’num speaking peoples whose territory includes Galiano Island.

This understanding of bays and waterways, and not individual islands, as central to community life challenges the idea that we can view Galiano Island in isolation. Nevertheless, a vibrant community with its own unique identity has developed on the island over the course of the past century. We try to hold these seemingly contradictory perspectives together by understanding the **Ecological “Fingerprint”** of the Galiano Island community.

“The Ecological Fingerprint is a measure of the particular attitude, self-image and intrinsic values an island chooses for itself with respect to global resource use.” - DR. BEATE RATTER

Our Ecological Fingerprint takes the form of a qualitative study that can provide context for the quantitative data from the ecological footprint. We decided to capture the Ecological Fingerprint of the Galiano Island community by surveying residents and interviewing 23 long-time islanders about their experiences of environmental change and their attitudes towards sustainability, community, and island ecosystems.



Take our 10-minute online survey and let us know what you think our next steps should be.



CAPTURING OUR ECOLOGICAL “FINGERPRINT”



WHAT YOU TOLD US...

Our survey results represent 20% of the full-time island resident population, and were generally encouraging. A few key takeaways include:

- Over 99% of respondents said they believed that climate change will personally affect them
- 60% of respondents reported engaging in active transportation (biking, walking, etc.) at least occasionally
- Over 10% of respondents had installed solar panels
- Over 70% of respondents reported preserving some of their own food and composting
- Over 20% of respondents reported hunting and fishing locally
- The majority of participants have engaged in water conservation activities, including installing rain barrels, cisterns, greywater systems, and/or composting toilets

One the other hand, many survey respondents expressed concerns about:

- Road safety for active transportation
- Over-reliance and over-use of limited groundwater resources
- Lack of affordable housing
- Heat waves and wildfires
- Lack of local food production

Interviews with long-time community members illuminated additional concerns relating to:

- Lack of access to traditional harvest areas
- Increased traffic and development
- Impacts of tourism and short-term rentals
- Pollution and ecological degradation

OUR **ECOLOGICAL FINGERPRINT**
HELPS US RECOGNIZE OUR
COMMUNITY'S CULTURE &
VALUES TO DETERMINE
SUSTAINABILITY INITIATIVES.
THEY HELP

Guide collaboration &
community action

PUTTING IT ALL TOGETHER...

We find that the ecological footprint and the fingerprint together provide a vivid illustration of the challenges and opportunities that small island communities - such as Galiano Island - face on their journeys towards sustainability. By considering these distinct and complementary sources of knowledge and data side by side, we can imagine solutions to the climate crisis that make sense for the island and will improve everybody's lives.



Read the full *One Island, One Earth* report, the executive summary, and technical reports from project partners at galianoconservancy.ca/oneisland



POTENTIAL COMMUNITY ACTIONS

Here are some examples of potential community actions inspired by an integration of the footprint and fingerprint:

FOOTPRINT RECOMMENDATIONS*	FINGERPRINT CONSIDERATIONS	POTENTIAL COMMUNITY ACTIONS
80% reduction in food waste	Desire to grow / harvest more food locally	Increase access to harvest areas + localize production
85% reduction in settlement area	Limited groundwater resources + desire for rural lifestyle	Rainwater harvesting + modest densification where possible
50% reduction in septic emissions	Limited groundwater	Composting toilets + septic aeration
80% reduction in non-paved roads	High biocapacity ecosystems + old underused logging roads	Decommissioning and ecological restoration of old roads
50% decrease in vehicle fleet	Increased traffic and safety concerns + reliance on vehicles	Improved active transport infrastructure + car / truck share
100% transport electrification	Community desire for electrification	Facilitate transition to EVs + advocate for ferry electrification
Maintain and increase local biocapacity	Legacy of forest-based economy + increased wildfire risk	Ecological restoration + sustainable forestry & enhanced management

* From our project partner, the BCIT Centre for Ecocities

THANKS TO ALL OF OUR PROJECT PARTNERS AND FUNDERS!



New Trails Showcase Diverse Habitats

Coastal lookouts, constructed wetlands, and old-growth giants await you on the expanded mid-island trail network



The Galiano Conservancy is pleased to announce the opening of major new additions to the Mid-Island Protected Areas Network trail system. Islanders and visitors to these conservation lands are now invited to enjoy the following trails:



TRANQUILITY BLUFF TRAIL

Beginning at the info kiosk at the entrance to the Millard Learning Centre (MLC), this 2.5 km interpretive trail winds its way across open, shaded ridgeline

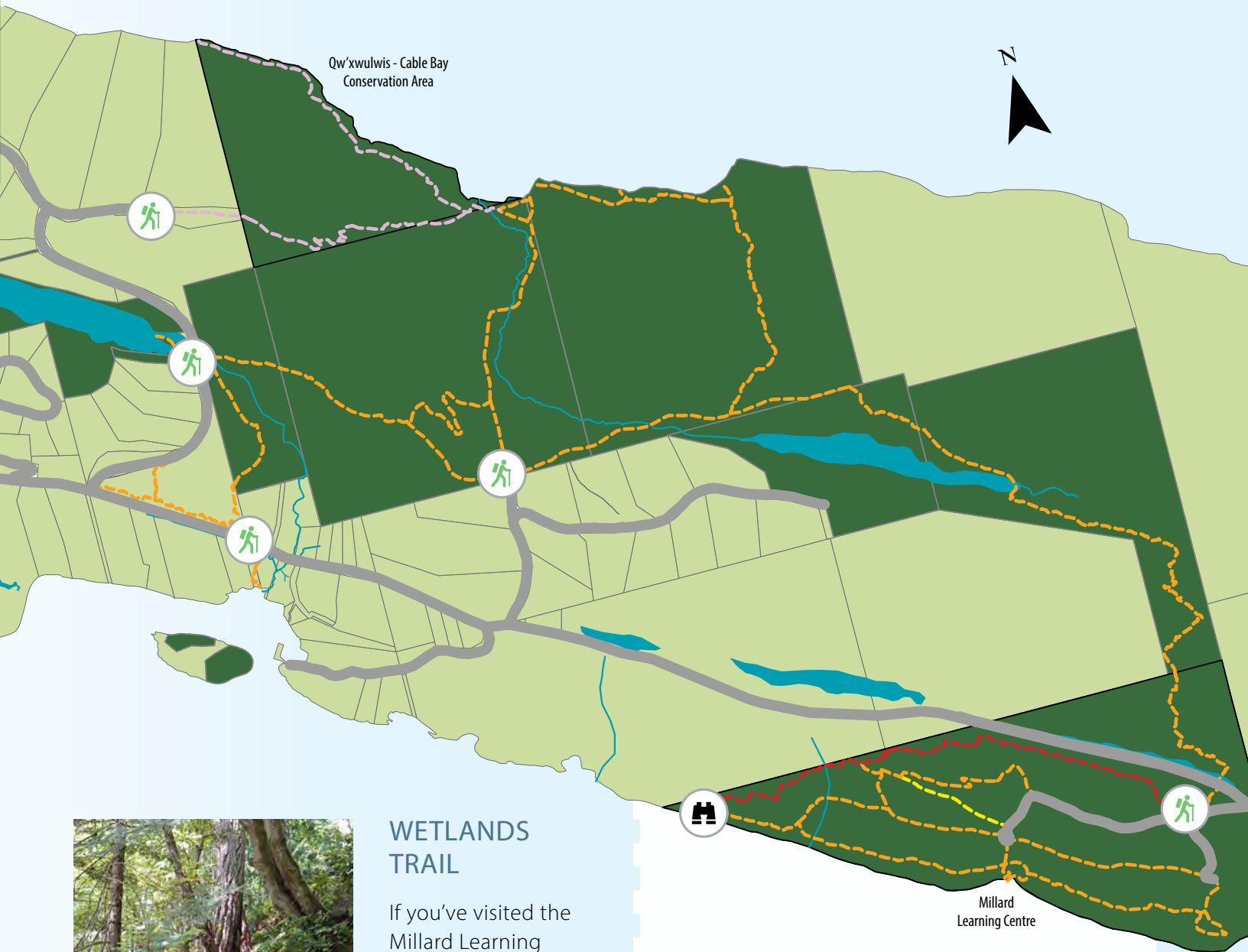
forests towards the northwestern tip of the property. Along the way, hikers will encounter interpretive signage, active restoration sites, renewable energy infrastructure, panoramic views of the GCA's food forest, and secluded wetland ecosystems. The trail concludes at "Tranquility Bluff," a peaceful and scenic overlook with views across Trincomali Channel, where it reconnects with the preexisting MLC trail network.



QW'XWULWIS - CABLE BAY CONSERVATION AREA TRAILS

Established in 2022 through a partnership with the Nature Trust of British Columbia, the newest protected

area on the island can be accessed from Cable Bay or Bodega Beach Drive and boasts 65 acres of diverse forest and 1 km of beautiful coastline with views of Georgia Strait and the coast mountains. Vibrant wildflowers, old-growth giants, glacial erratics, a grove of yew trees, carpets of moss, and a chorus of birdsong are just some of the natural features that will greet you along the new trails. Ambitious hikers can create a loop by walking for 1 km along the road between the Laughlin Lake and Bodega Beach Drive trailheads.



WETLANDS TRAIL

If you've visited the Millard Learning Centre lately, you may have noticed that the more inland of two roads to the Food Forest has been

removed as part of the 'Cedars for the next Century' restoration project, an ambitious multiphase effort to reforest the degraded Chrystal Creek watershed. Just uphill from the erased road, a new trail passes through mature forest overlooking the recently restored wetland ecosystems in the lower watershed, allowing visitors to observe how they evolve over time. This scenic route to the Food Forest is a staff favorite, passing directly beneath some of the oldest, fire-scarred trees on the property.

MID-ISLAND PROTECTED AREAS NETWORK TRAIL MAP

- New Qw'xwulwis Trails
- New Wetlands Trail
- New Tranquility Bluff Trail
- Existing Trails
- Roads
- Trailheads
- Protected Areas
- Streams and Wetlands
- Tranquility Bluff

Date: December 2022 Projection: UTM Zone 10N, NAD83 Scale: 1:14,200

POWERFUL WAYS TO GIVE

JOIN US AND SUPPORT
NATURE TODAY!

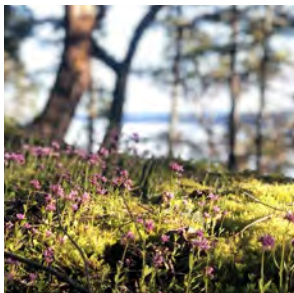


MEMBERSHIP & SINGLE OR MONTHLY DONATIONS



From maintaining public trails, to providing nature-based youth programs, to initiating projects like those highlighted in this issue, the Galiano Conservancy's diverse activities are made possible through the generosity of supporters like you. Any gift, no matter how small, is important to us and is a meaningful contribution to our mission. All donations of \$10 or more include an annual membership and are eligible for a tax receipt. Become a member or renew your membership today, and help to protect natural areas where a healthy environment, learning, and a love of nature can flourish. **Scan the QR code below** or visit galianoconservancy.ca/donate to give online, send a cheque by mail, or contact us to discuss other ways to contribute.

ANNUAL GIVING CIRCLE



One of the keys to a strong foundation for any non-profit organization is a reliable source of unrestricted funding to maintain core services and address unanticipated needs and opportunities. Our Annual Giving Circle provides that cornerstone and enables the Conservancy to pursue ambitious goals, year after year. The Giving Circle program is based on financial support at four levels – **Sea Blush Member** (\$250-\$499/yr.), **Camas Member** (\$500-\$999/yr.), **Arbutus Member** (\$1,000-\$2,999/yr.), and **Salish Sea Member** (\$3,000+/yr.). Your gift can be made through monthly installments or with a single annual contribution. Become a pillar of conservation on Galiano by joining this visionary group of Conservancy supporters!

LEGACY GIFTS



When you include a gift in your will for the Galiano Conservancy, you are creating a legacy of environmental stewardship for the future, while minimizing the tax burden on your estate. By sharing your values through a charitable bequest, you help preserve our island's natural heritage, and influence others to do the same. Legacy gifts empower our staff with the resources to protect and restore threatened and degraded habitats, foster hands-on learning in nature, increase our island's resiliency to climate change, and so much more. To learn about planned giving options and how you can leave a legacy on Galiano Island, please contact giving@galianoconservancy.ca, call Martine Paulin at 250-539-2424 or visit willpower.ca/galiano-conservancy.



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