

The Western Toads of Lasqueti Island and Coastal BC

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“This genial little fellow is frequently met in our rambles, squatting motionless on a log or ensconced under a stone, near water. Common on Vancouver Island.” (Hardy, 1925)

Hardy was referring to what was then called the North-western Toad, that portly, rough-skinned, slow moving frog of the forest floor with the distinctive white stripe down the middle of its back. Mention this toad on a ferry ride over to Lasqueti Island, and you’ll get enthusiastic recounts of the most recent visitor to a yard or the abundance of toads on the island! Survey for this toad on the south coast of BC, and you’ll hear fond stories of common ‘garden toads’ taking up residence for years in old plant pots or hidey holes, or in special toad houses provided by landowners for their resident toad.



We came to Lasqueti in June to collect toad tadpoles for a genetic study of the distribution of Western Toads (*Anaxyrus boreas*) in coastal BC. There are only 60 known breeding sites across the southwest coast of BC, and two of those are on Lasqueti Island. Breeding sites occur in persistent, open-water lakes, ponds, wetlands, and low gradient rivers, with sheltered, shallow shorelines rich in emergent vegetation where eggs can be anchored and protected from wind and currents. Warm water temperatures promote egg development and tadpole growth.

Western Toads have a fascinating reproductive ecology. As explosive aggregate breeders, adults gather for a week or two each spring, from March to May (depending on location and weather). Hundreds of toads may aggregate, and males compete for the chance to externally fertilize eggs by amplexus with a female (i.e. grasping her about the waist and fertilizing the eggs as she lays them). Each individual breeding female lays thousands of eggs – up to 10,000 or 12,000 – in long thin gelatinous strings of small black eggs, which hatch into small black tadpoles forming large schools along warm shorelines. Tadpoles grow through spring and early summer and metamorphose into tiny, white-striped toadlets sometime between

To our knowledge, there are no reported occurrences of Western Toads on any of the Gulf Islands except Lasqueti. (photo: Elke Wind)

late June and early August, depending on water temperature.

Toadlets emerge en masse from their aquatic habitats in mid to late summer and disperse out into the surrounding terrestrial environment where they mature and live for up to 11 years. Western Toads have a lengthy adolescence, not reaching sexual maturity until 3-4 years for males, and 4-6 years for females. After that, toads may not breed every year, and in some cases, females may not breed more than once in their lives. Given the length of time it takes to produce a sexually mature breeding toad and maintain it between breeding events, continuous availability of terrestrial habitat with complex ground cover is essential.

Toads face the challenges of any small, cold-blooded ground predator – hunting for food and seeking

shelter from larger predators, temperature extremes, and inclement weather. Radio-telemetry studies have followed adult toads up to 7 kilometres away from their breeding sites in the summer, finding they return in the autumn to within a kilometre of the breeding sites to hibernate for winter.

Eighty percent of BC is within the range of the Western Toad, and for the most part, toads are relatively common and abundant in the province. There are concerns, however, about declines and extirpations along the western and southern extents of its North American range. Though not considered at risk as a species in BC, the Western Toad is a Species of Special Concern under the federal Species at Risk Act. On the southwest coast and coastal islands of BC, there are reports of declines, and once plentiful breeding sites are now gone or substantially reduced in size. We know south coast landscapes and the toads that live in them are under unprecedented pressure from human settlement, land development and resource use, as well as invasive species such as the American Bullfrog and amphibian disease agents

like the chytrid fungus. The cumulative pressure of increased drought frequency and intensity on the coast as climate changes adds a sense of urgency for better science for Western Toads, and all species reliant on surface water habitats.



The ecology of Western Toads on the coast is poorly understood, making it difficult to quantify population response to environmental pressures, identify the scope of the problem, and develop effective conservation strategies where needed.

Our research explores the degree of genetic differentiation between populations on coastal islands and the south coast mainland, compared to populations in the interior of BC, to better understand the adaptive capacity of coastal toad populations. We will assess gene flow and examine the effects of landscape fragmentation on Western Toad population connectivity. Which brings us back to Lasqueti Island. Western Toads have been a part of the landscape of the BC coast and coastal islands for millennia; Western Toad remains from 18,000 to 16,000 before present have been found in the Port Eliza cave on northwest Vancouver Island (Harington 2009). Several Western Toad breeding sites occur on the Discovery Islands, including the Rendondas, Cortes and Quadra. But to our knowledge, there are no reported occurrences of Western Toads on any of the Gulf Islands except Lasqueti. Why are Western Toads so common and abundant on Lasqueti? And how are Lasqueti toads responding to the pervasive threat of bullfrogs and climate change impacts? Our research will hopefully shed some light on the origins of the Lasqueti Island toads and insight into their capacity to adapt and endure. Stay tuned!

For more info: <http://www.sccp.ca/species-habitat/western-toad>

Cited:

Hardy, G.A. 1926. Amphibia of British Columbia in *Report of the Provincial Museum of Natural History for the year 1925*. Provincial Museum of Natural History, Victoria, BC. Page C23.
Harington, C.R. 2009. Quaternary cave faunas of Canada: a review of the vertebrate remains. *Journal of Cave and Karst Studies* 73(3): 162-180



photo left: breeding toads and eggs

photo right: pair in amplexus

Photos by
Melissa Todd

How you can help

In a previous issue, we described the very rare nature of our Coastal Douglas-Fir Ecosystem that we live in. Protecting as much overstory (tree canopy) as possible is really important for both carbon storage and the protection of precious shade and water. Protecting understory (low lying plants and shrubs) is important to protect the soil, and to provide precious food and cover for bees, butterflies, amphibians and birds. This is achieved by keeping as many mature trees as possible, and ensuring that the sheep are fenced out so that the new trees and understory plants can survive.

Learn more about the native and invasive species that live here. Invasive species are a problem because they can outcompete and inhibit the growth and survival of native species. Yet not all non-native species are invasive. In each issue of this newsletter we will be highlighting both a native specie and an invasive one common to our island. Your help in removing invasive species will help native species survive.

Bigg's orcas in the Salish Sea shifting habitat of resident killer whales

There has been a trend lately to find Bigg's or Transient orcas socializing in the Salish Sea. "Stephen Pincock, owner of Ocean EcoVenture in the Cowichan Valley, recognizes the significance of seeing Bigg's orcas – slightly larger, mammal-eating killer whales – in the endangered Southern residents' long-time habitat. "It's kind of opened the door for the mammal-eaters to come in and take their place," he said." (Nina Grossman, *Oak Bay News*)

Increasing Salish Sea boat noise is one threat among many for the Southern Resident killer whales, who use sound to locate their food. Killer whales echo-locate their prey, using sonar to find fish and capture it. Any loud noise can interrupt that signal. Keeping well away with boat engines will help!

Native and Invasive Plants found on Lasqueti

Oceanspray – a native beauty

by Hilary Duinker

At this time of year, the abundance of oceanspray (*Holodiscus discolor*) on Lasqueti is readily apparent as the blooming flowers really stand out when peering through the forest. These lilac-like flower clusters will fade to brown but remain on the plants over winter.

Also known as *ironwood* because of the hardness and strength of the wood, virtually all coastal indigenous peoples traditionally used oceanspray for tools and implements such as digging sticks, spear, harpoon and arrow shafts, inner bark scrapers, halibut hooks, cattail mat needles and knitting needles. The wood can be made even harder by heating over a fire and it was then traditionally polished with horsetail stems. The wood won't burn so is a great material for roasting tongs, skewers and salmon barbecuing sticks. Before the use of nails, oceanspray pegs were used in construction.

Oceanspray appears to be palatable to native slugs, and it does provide good cover for birds, small mammals and amphibians. Flowers are pollinated by insects and seeds are generally disseminated by wind but can also be dispersed by animals.



Amphibians are at the top of the list of species threatened by pollution and climate change. They breathe through their skin, which is susceptible to pathogens and weakened immune systems. They breed according to temperature and moisture, so local changes can affect them. Protect understory, especially around wetlands.



Photo: R Mueller, Invasive Species Council of BC

Yellow Flag Iris – an invasive specie

by Sheila Ray

Yellow Flag Iris, Water Iris or *Iris pseudacorus* was introduced to North America in the 1800's as an ornamental plant for ponds and water gardens. It was also planted in wastewater ponds because it is known to absorb heavy metals. On Lasqueti it is popular because the sheep do not eat it and so it can be planted outside fences. It is the iris that is growing in the ditch in front of the school. So what is the problem?

Yellow Iris spreads by rhizomes and can form huge dense mats that can change a wetland to a drier ecosystem. It grows so thickly that it displaces native wetland plants, such as rushes and reeds that birds and other wildlife depend on. It can clog drainage ditches. The rhizomes are poisonous to animals and the sap can irritate and blister skin.

Yellow iris spreads by rhizomes that send up new shoots as well as by seeds that can float great distances. New plants can also grow from broken off bits of rhizomes. It is very hard to get rid of and digging it up can help it spread if bits of rhizomes are left that will continue to send up shoots. The best way to control its spread is not to plant it. Leaving wetlands alone and allowing them to grow native vegetation is the best alternative.

Keep informed and join the conversation

<https://www.facebook.com/LINCBC/>

Contact us: linc@lasqueti.ca 250-333-8754

Donations to support our work are tax deductible

LINC, Lasqueti Island, BC V0R 2J0

www.lasqueti.ca/linc information about our charity.

Charity BN #84848 5595



Leithen M'Gonigle's Bee Talk

Leithen gave a fascinating talk about bees in late June on Lasqueti. He described his work as an Evolutionary Ecologist, focussing on creating habitat for bees by developing programs to encourage farmers to plant hedgerows of native plants on the edge of their lands.

His take home notes for Lasquetians were:

- ❑ Clean out your mason bee tubes each year or start fresh because parasites and other diseases can accumulate in them.
- ❑ Eat organic food because some classes of pesticides currently in use (neonicotinoids) are systemic throughout the crop (meaning, you cannot wash them off). These pesticides also affect flowers and pollen that bees eat. Buying organic is a way to make a small statement about what sort of food systems you want, each time you buy groceries.
- ❑ Honey bees are not native to North America and their declines are pushing farmers to think about more sustainable alternatives. Native bees are one such alternative, but they need habitat to nest and forage in, such as hedgerows along farm edges.

Record temperatures in the Arctic: May 11, 2019

“Near the entrance to the Arctic Ocean in northwest Russia, the temperature surged to 84 degrees Fahrenheit (29 Celsius). Meanwhile, the concentration of carbon dioxide in the atmosphere eclipsed 415 parts per million for the first time in human history. By themselves, these are just data points. But taken together with so many indicators of an altered atmosphere and rising temperatures, they blend into the unmistakable portrait of human-induced climate change. [This] steamy 84-degree reading was posted in Arkhangelsk, Russia, where the average high temperature is around 54 this time of year. The city of 350,000 people sits next to the White Sea, which feeds into the Arctic Ocean’s Barents Sea.” (Jason Samenow, *Washington Post*)

Seen In Passing



Top Photo:
blooming Oregon stonecrop
Centre photos:
seastars hanging on at Jervis Island, wasp nest & snake, by Sheila Harrington
Lower: bullfrog tadpole, by Kalia Van Osch
toad tadpoles at Lambert Lake, by Melissa Todd



Squitty Bay - Salish View Day

Come join the Lasqueti Island Nature Conservancy and the Islands Trust Conservancy to celebrate protected areas on Lasqueti and surrounding islands.

Many thanks to all the generous donors who have made these conservation sites a reality! Everyone welcome.

Sunday, August 25th
11:00 brunch & refreshments
1:00 site tours & kids workshop
4:00 Announcements & Makeke Marimba

Conservation Options

How to protect your land for the future

by Sheila Harrington

The effects of drought and climate change are vividly clear on our island. Many species that we share this island and planet with definitely need our help. More than 50 percent of Canadian wildlife species are currently declining. They need protected habitat to survive. In the last LINC newsletter, we proposed that conserving natural areas is one of the most effective ways of mitigating and adapting to climate change. This issue, we'll look at some options for protecting and conserving land for now and for the future.

Some of the most biologically diverse intact natural areas in BC are on small pockets of private land in the most densely populated parts of BC— the southern Okanagan, the Lower Fraser Valley and south-eastern Vancouver Island, including Lasqueti island. Even if a landowner wants to conserve some attributes of their property, without legal protection, it only takes one future owner to destroy them. Thankfully, there are a number of legal tools that we can use to conserve land.

Conservation Covenants:

A conservation covenant is a legal agreement voluntarily registered by a landowner that will stay on title when the property is transferred to another owner. It is held by a conservation organization, such as LINC or the Islands Trust Conservancy, or another of the over 30 land trusts in BC. In effect, a caring landowner can ensure that specific areas of their land are protected into the future. Land use can be restricted to protect existing natural features or areas, and it can include all or only a portion of the land. You could protect a forested area, or a wetland or stream, but leave another area, including your home and garden, at the discretionary use of yourself or future owners. The terms of the covenant are negotiable until it is registered. You can still live on and enjoy the land, keeping your agreement to protect the covenanted area, knowing that you have significantly contributed to conservation on the island, which helps all the species that live and migrate here.

In some cases, a conservation covenant can have reduced tax consequences for the owner. For example, if the covenant re-



Mt. Trematon
donated to the Islands Trust Conservancy

stricts subdivision, then the value of the land would be reduced. The property is appraised using the before and after method. The difference between them is the “value” of the newly created conservation covenant. A charitable tax receipt would then be issued by the land trust who holds the covenant for the change to the value of the land. Primarily though, people register conservation covenants not for the money, but because they want to protect significant natural or cultural features in perpetuity.

Natural Area Property Tax Exemption Program (NAPTEP)

The Islands Trust's Natural Areas Property Tax Exemption Program offers even more tax benefits.

After years of negotiations with the Province this unique program administered by the Islands Trust Conservancy can offset up to 65% of property tax on the area covenanted every year! It is especially beneficial for owners of waterfront property. The Islands Trust Conservancy has created a guide to calculating NAPTEP benefits and costs to help landowners determine how NAPTEP could be financially beneficial. For more information, see their website: www.islandstrustconservancy.ca.

Bequests in a Will

A charitable bequest is a gift to a charity made in the donor's will. Such gifts can take a number of forms, including a lump sum of money, a gift of securities, a gift of real estate or personal property, a named percentage or portion of the donor's estate, a named percentage or portion of the residue (amount left after expenses, taxes, and other bequests have been paid).

You can donate your land to a land trust, such as LINC or the Islands Trust Conservancy in your will. If the land is ecologically significant, this is a tremendous benefit to the island and to the wildlife that can now have permanently protected habitat. Mount Trematon

and the Johnny Osland Reserve were acquired by the Islands Trust Conservancy through generous donations from islanders. The Osland Reserve was donated outright to the Islands Trust Conservancy in Johnny's will. LINC and NALT (Nanaimo and Area Land Trust) also hold a conservation covenant on the land, using local conservation organizations as the management body with eyes on the ground.

Bequests of land to The Lasqueti Island Nature Conservancy or any land trust should be discussed before setting this out in a will.

Capital Gains Tax

Upon death, the value of one's land is appraised at the current fair market value. So, if you bought your land decades ago, its value will likely have increased substantially. Your estate will be required to pay a capital gain (estate tax) on the difference between the property's value upon purchase and upon disposition (sale or donation). However, if you donate all or a portion of your property to a conservation organization, the estate will receive a charitable tax receipt for the value of the gift and your estate will receive a 50% reduction in the capital gain.

Ecological Gifts

"Canada's Ecological Gifts Program provides a way for Canadians with ecologically sensitive land to protect nature and leave a legacy for future generations. Made possible by the terms of the Income Tax Act of Canada and the Quebec Taxation Act, it offers significant tax benefits to landowners who donate land or a partial interest in land [a conservation covenant] to a qualified recipient. Recipients ensure that the land's biodiversity and environmental heritage are conserved in perpetuity." ([Environment & Climate Change Canada](#))

LINC is a qualified recipient of this program.

If a property or a conservation covenant is designated as an Ecological Gift, there would be 0% capital gains tax. That's significant for larger properties, and certainly for any beneficiaries who will inherit from the estate's proceeds.

Outright Donation of property

One can also donate a property while you are living. The Mt. Trematon property was purchased and then donated to the Islands Trust Conservancy. We are very grateful for this generous gift to nature and Lasqueti of the Mt. Trematon Nature Reserve.

If donated land is certified as an Ecological Gift, through a donation or bequest, the capital gains tax is reduced to 0. The generous donor receives the satisfaction of seeing the land protected now and receives tax savings as well. All individual tax situations are unique, so a discussion with an estate lawyer



Osland Reserve, donated by Johnny Osland

Life Estate

Another option is to donate your land for conservation while you are living, yet continue to live there, and set up a Life Estate. This arrangement allows for the owner/donor to bequest the land, and maintain the right to continue to live there until the current owner dies. "The owner of a life estate (the life tenant) has the right to occupy, use, and deal with real and/or personal property for his or her lifetime. In general terms, a life tenant is entitled to use the property, but they must treat the property in such a manner that it is not damaged and does not deteriorate, beyond reasonable wear and tear. When the life tenant dies, the remaining interest in the property then passes to the next person or organization or charity."¹

Other Ways to Help protect nature:

You can help LINC with its programs and conservation work by donating cash directly. Donations of other items, such as art, would need to be appraised, so that a charitable receipt could be issued for the item's value. Other opportunities to donate that offer tax benefits include Life Insurance, Securities, RRSP's, RIF's and TFSA's. A donor may give all or part of his or her RRSP, RRIF or TFSA to a charity upon death. "This may be accomplished by direct designation outside the donor's estate. The gift is not subject to probate and other estate settlement fees and is less susceptible to will challenges. Because the charitable tax credit offsets any tax on the distribution, the gift passes to the charity tax free." (Green Legacies)

Any of these options will help protect species at risk and build the resilience of nature in a changing climate.

¹ Trevor Todd & Judith Milliken QC, "Life Estates" *The Scrivener*, Volume 17 Number 4 Winter 2008, p 80.