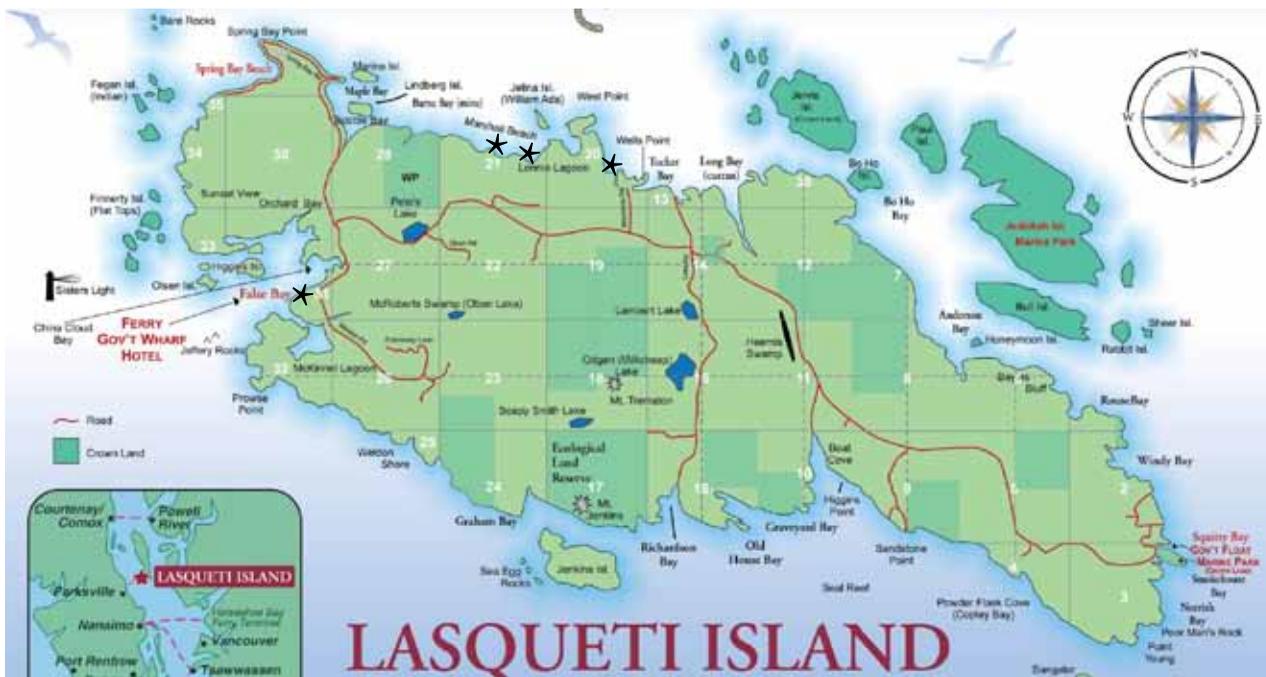




Photo Credits: left: heron eating (E. Marshall)
 centre: surf smelt spawn (R. de Graaf)
 right: krill on Lasqueti beach (B. Dorner)
 Map below - courtesy of A. Sperling
 front cover - images by B. Dorner except
 salmon at Adams River - by C. Haist



- * Forage fish spawning beaches found so far by Lasqueti Island Forage Fish Team (LIFFT):
 - False Bay (Matheson Beach) - Pacific sandlance
 - Marshall Beach - Pacific sandlance
 - Sandy Cove - sandlance
 - Queen's beach - surf smelt and Pacific sandlance



What's the problem?

Salmon, rock fish, birds, and marine mammals such as sea lions and seals, as well as people, all depend on small fish – called forage fish – for their food.

Forage fish include surf smelt, Pacific sandlance (needlefish), eulachon, herring and capelin. These small feeder fish form the cornerstone of marine food webs, critical to the survival of fisheries and thousands of predators from fish, birds and marine mammals to people.

An adult Chinook salmon's diet consists of 50% Pacific sandlance!

Here on the coast of BC, we once had untold millions of herring to both feed us and all the other marine life we shared this fish with. Now, Qualicum Beach is one of the last commercially viable herring areas in the Salish Sea.

Surf smelt are declining, archeological data show dramatic declines for eulachon, and capelin were extirpated from the Salish Sea in 1970's.

Today, the populations of these critical small fish are only a fraction of levels prior to exploitation by European settlers and commercialized fisheries. As a result many of the birds, fish and mammals that rely on them are in precipitous decline.

Why us, and why here?

On Lasqueti Island, as in the larger Salish Sea, surf smelt and Pacific sandlance lay their tiny eggs on our sand and gravel beaches - just below the high tide line. As they hatch and grow these young fish drift out, feeding on plankton just below the sea surface.

For the past two years the Lasqueti Island Forage Fish Team (LIFFT) has been surveying our beaches to find and learn about surf smelt and Pacific sandlance. There are now a number of beaches which have been positively identified as spawning beds for these forage fish! We are learning more about the specific species and time of year they spawn. Thankfully we still have undeveloped beaches that draw these tiny fish like magnets – where they lay their minuscule eggs in hopes that their offspring will survive.

Healthy spawning beaches are essential for forage fish, for a healthy fishery and for the survival of thousands of larger predators from salmon and rockfish to birds and marine mammals.



the perfect spawning beach

Sand and gravel are naturally renewed on our beaches by the push and pull of waves and natural erosion. Unfortunately seawalls and other ‘hard shore’ structures increase wave action, remove critical beach material, and eventually destroy the spawning habitat of forage fish and other marine life.



What Can We Do?

Keep Our Shores ‘Soft’

Natural materials such as gravel and sand, logs and root masses absorb wave energy, protecting spawning beaches, eelgrass beds (and real estate values). Unknowingly, people build seawalls or bulkheads believing they are protecting their waterfront property. However, these ‘seawalls’ do just the opposite. They create harder wave action – eventually eroding and removing the beach itself.

- Keep our shores ‘soft’ by maintaining natural shoreline vegetation, seaweed beds and embedded driftwood to help reduce wave energy.

Build High and Back & Protect your Home

In the Salish Sea, our high tide levels have already risen due to climate change. (Predictions over the next 50 years are 1 - 1.5 metres!)

The following actions will help stabilize the beach in the face of rising ocean levels, as well as protect and feed our forage fish.

To reduce risk:

- Locate buildings on high ground, well back from the projected future high tide line.
- Avoid creating seawalls and work with local beach processes to protect your waterfront home.
- Keep natural vegetation between your buildings, roadways and the ocean to help reduce runoff and sedimentation. This will maintain the integrity of the foreshore and our spawning beaches

Let the Shade Hang Over the Beach

Trees and vegetation that hang over the beach and in streams provide shade that shelter the eggs and juvenile fish from the sun, create habitat for other creatures, and drop food such as insects into the water for the growing fish.

- Allow a natural variety of vegetation to grow down to the beach.
- Learn what invasive species to avoid, so that the native species aren’t wiped out by our unfortunate lack of knowledge.
- Maintain native plants, and minimize lawns.



Protect the beaches

Protecting shorelines and beaches will increase forage fish habitat and will also protect local oyster and clam beds.

- Avoid activity that stirs up the sand and gravel on the beach such as hauling heavy logs, driving vehicles and heavy equipment or removing sand and gravel.
- Locate piers, docks and moorings away from sensitive habitats.





Protect Eelgrass and Seaweed Beds

Eelgrass beds and seaweed beds, such as kelp forests, are natural fish rearing areas that supply food and shelter young fish from predators.

Facts about eelgrass:

Eelgrass is the nursery for 80% of commercially important fish & shellfish.

Eelgrass sequesters carbon (99% more than forests).

Eelgrass grows 1 meter or more high.

- Avoid anchoring in seaweed beds, or dragging boats through the eelgrass.
- Keep docks away from seaweed beds, and use 'fish friendly' dock designs that allow sunlight to filter through.

Keep it Clean – Naturally

As long as water moves downhill, the oceans will be the final receiver of pollution.

Untreated storm-water pollution, oil and gas from cars and boats, and sewage decreases water quality and harms wildlife. Landscaping and land clearing deposit sediment into the ocean, clogging fish gills and reducing marine vegetation growth. Docks and marinas block sunlight necessary for marine life survival.

Excessive nutrient loading from fertilizers and sewage stimulates growth of bacterial mats coating the sea bed and algae that smothers eelgrass. In summer, warm surface waters combined with nutrient loading can decrease oxygen available for fish.



For more information on rising sea levels and fisheries data, see

State of physical, biological, and selected fishery resources of Pacific Canadian marine ecosystems in 2012, J.R. Irvine¹

and W.R. Crawford², editors

¹ Fisheries and Oceans Canada, Pacific Biological Station, 3190 Hammond Bay Rd., Nanaimo, BC V9T 6N7

² Fisheries and Oceans Canada, Institute of Ocean Sciences, 9860 West Saanich Rd., Sidney, BC V8L 4B2

<http://www.dfo-mpo.gc.ca/>

Csas-sccs/publications/resdocs-docrech/2013/2013_032-eng.pdf

For information about shorelines & protecting your property

<http://www.livingbywater.ca/erosion.html>

<http://www.stewardshipcentrebc.ca/portfolio/gs/>

See www.ecy.wa.gov/puget_sound/index.html and www.greenshores.ca

Lasqueti Shoreline zone maps: <http://www.islandstrust.bc.ca/trust-council/projects/green-shores-for-homes.aspx>



Photo Credits:

top left: juvenile copper rockfish in eelgrass (S. Jeffery)

bottom left: herring on eelgrass in Boat Cove (G. Scott)

above - surf smelts spawning (K. Perry)

below LIFFT surveying Lasqueti beach (M. Fall)

below - single smelt egg (R. de Graaf)

below - smelt versus sand lance (D. Penttila)

Previous Page:

perfect spawning beach (C. Haist)

young eagle on beach (B. Donner)

eroding bluff and pebble/sand shoreline (R. de Graaf)

River Otter on beach (B. Donner)

this booklet thanks to Ramona de Graaf, Connie Haist

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