

GWI infosheet

GORGE WATERWAY INITIATIVE

WORKING TOGETHER TO BALANCE CONSERVATION, RECREATION AND COMMUNITY VALUES

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ESTUARIES: WHERE FRESH WATER MEETS THE SEA

Driving along the Trans-Canada Highway or on Gorge Road, many residents and visitors to Victoria are unaware that the adjacent bodies of water — Portage Inlet and the Gorge Waterway — form a saltwater arm of the ocean called an estuary. The semi-protected waterway is a regionally distinct coastal feature that supports highly productive estuarine habitats and a unique array of important marine life.

IMPORTANT INTERFACE

Estuaries are formed when fresh water mixes with salt water in a partially enclosed body of water. Estuaries comprise only 2.3 per cent of British Columbia's coastline but play a very significant role in the ecology, which is why they are often referred to as the "nurseries of the sea." Protecting estuarine habitat in the waterway is a very high priority.

TIDES OF TIME

Most of the waterway is calm and protected but in the Gorge Narrows, the rocky opening under the Gorge Bridge, the currents are very strong at certain times of the tidal cycle, sometimes reaching as much as eight knots.

The tides of the Gorge Waterway and Portage Inlet have a profound effect on the physical habitat, the visual appearance, and the biology of the waterway. Tidal variations appear quite extreme because much of the area, especially Portage Inlet,

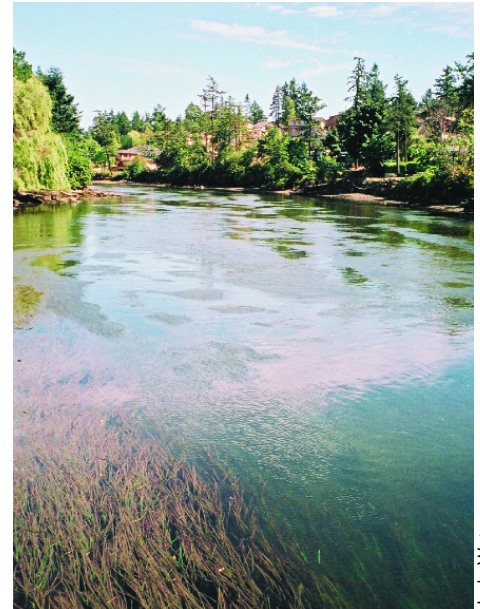
is very shallow. At low tides, large mud flats are exposed such as in Portage Inlet near the mouth of Craigflower Creek. At high tides, shoreline tidal marshes are inundated with salt water.

The constantly moving, nutrient-rich waters, especially in the Gorge, provide lots of food and excellent habitat for dense colonies of sponges, anemones, sea squirts and other marine animals that filter food from the water.

VARIETY OF SPECIES AND HABITATS

Gorge Waterway and Portage Inlet, like most estuaries, are very productive ecosystems. The waterway is constantly being supplemented with sediments from inflowing streams and rivers, which become trapped by vegetation such as eelgrass.

The sediments provide a home for plants, algae, bottom-dwelling worms, clams and other species



Jody Watson

Eelgrass meadows in the Gorge

that supply a diversity of food sources and habitats to support a large array of fish, birds and other wildlife species.

Three significant habitat types occur in the waterway — tidal marshes and meadows, mudflats, and eelgrass beds.

Tidal marshes and meadows

Historically, most of the shores of the Gorge and Portage Inlet were lined with wetlands known as tidal marshes and meadows. Because these wetlands occur in the intertidal zone, they are the most vulnerable areas of the estuary. Long-term disturbance of the shoreline and filling and building walls and other structures has significantly impacted this valuable habitat. Shoreline tidal marshes act as a natural buffering system, prevent erosion, and play a key role in the biological productivity of the area.

Today, tidal meadows and marshes are mostly restricted to around the mouths of incoming creeks that drain into the waterway. Both Colquitz River and Craigflower Creek, which empty into Portage Inlet, have these important areas associated with their outflows.

Mud flats

At low tide, some of the mud substrate of the Gorge becomes exposed. These mud flats have large populations of clams, burrowing worms and other invertebrates that provide a significant food source for birds. One of the largest of these mud flats is at the mouth of Craigflower Creek.

Eelgrass Meadows

Extensive beds of this marine plant are found throughout the Gorge and Portage Inlet. These are the most abundant populations of eelgrass found anywhere in the greater Victoria area.

Eelgrass is a perennial plant that has dark green, ribbon-like leaves and tiny, rarely seen flowers. It grows near the low-tide line in up to six metres of water, sometimes deeper in clear water.

Young salmon and cutthroat trout find food and shelter, and herring use eelgrass for shelter and spawning. Birds such as great blue herons often feed in eelgrass and others such as American Wigeon actually feed on the eelgrass.

Eelgrass helps prevent erosion by anchoring shifting sands and dampening the force of waves.

SPECIAL OYSTERS

Small native or Olympia oysters are a very significant feature of the waterway in the sub-tidal zone — below the lowest tides. The Gorge population of these oysters is probably the largest remaining on the West Coast.



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Portage Inlet mud flats

Overharvest, pollution, and competition from larger introduced oysters, have led to a decline in populations in other parts of BC, and federal scientists have declared the native oyster a “species of special concern.”

Native oysters are filter feeders and help keep the water clear, but this also makes them very susceptible to contaminants from land-based activities. Historically, the oysters were an important food for local First Nations. They are also eaten by birds and larger mollusks.

HOW CAN YOU HELP PROTECT THE ESTUARY?

People can do many things to help protect the estuary habitats:

- Ensure that sediment from land-based construction activities is contained to prevent it from entering nearby streams or the waterway where it can smother vegetation and clog the gills of fish.
- A naturally vegetated shoreline helps to filter pollutants from surface water flowing into the estuary, protects the soil from eroding, and provides habitat for fish and other wildlife.
- Take measures to reduce or avoid the use of lawn and garden pesticides and synthetic fertilizers, properly recycle and dispose of oil, paints and other chemicals, and

maintain your septic system. These actions will help stop polluted water from entering the stormdrains and the waterway where it causes poor water quality.

- Use best practices to reduce the impact of shoreline structures on habitat.
- Estuary plants are very sensitive to trampling and can be destroyed when walked on. Be aware of where you or your dog are walking and stay on existing pathways and trails.
- Try to navigate watercraft away from resting waterfowl and sensitive waterway vegetation such as eelgrass and sensitive marsh habitats to minimize damage to these habitats and disturbance to the species that inhabit them.
- Support local government initiatives to upgrade failing storm and sanitary sewer infrastructure to minimize pollution to the waterway.

LEARNING MORE

Learn more about the significance of the Gorge and Portage Inlet by visiting the GWI website or consult the online Harbours Atlas (www.harboursatlas.ca).

The best way to find out more about the waterway is to join a local natural history group, come out to one of the GWI public talks, or check out your local library or bookstore for more information on estuaries.

For more information on the
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This GWI Infosheet is one in a series on the natural and cultural features of the Gorge Waterway, Portage Inlet and surrounding watersheds

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