Eelgrass

What’s happening with eelgrass?

Native eelgrass (Zostera marina) in Howe Sound serves as critical habitat for marine wildlife, including waterfowl, shellfish, fish and invertebrates (Figure 1). Up to 80 percent of important fish species and marine invertebrates use eelgrass during some part of their life cycle. These important and richly diverse habitats are most vulnerable to loss and degradation because they grow in shallow marine waters close to human activity.

Eelgrass subtidal habitats in Howe Sound are presently at risk. Specific shoreline development practices, log storage locations (past and present), and boat moorage in eelgrass beds are the major impediments to the plants flourishing in the Sound.

Figure 1. Native eelgrass (Zostera marina) with juvenile fish.
(Photo taken in Sechelt Inlet by Jamie Smith)
Eelgrass provides up to $87,000 in ecosystem services per hectare per year.

- Resting & feeding habitat for migratory birds (e.g., eagles)
- Traps carbon and stores it in sediment
- Stabilizes adjacent marsh
- Habitat & food source for resident waterfowl
- Reduces wave energy
- Nursery habitat for juvenile salmon, herring, & other species
- Stabilizes adjacent marsh
- Habitat refugia for adult salmon
- Sediment deposition improves water clarity
- Roots & rhizomes stabilize sediment and prevent erosion

Up to 80% of fish species and marine invertebrates use eelgrass during some part of their life cycle.
Eelgrass provides up to $87,000 in ecosystem services per hectare per year. Eelgrass habitat is vulnerable to loss and degradation from nearby human activities.

- Traps carbon and stores it in sediment.
- Sediment deposition improves water clarity.
- Roots & rhizomes stabilize sediment and prevent erosion.
- Habitat & food source for resident waterfowl.
- Resting & feeding habitat for migratory birds (e.g., eagles).
- Stabilizes adjacent marsh.

Hard shorelines reflect wave energy & increase erosion of sediment.

Sunlight
- Log booms & jetties shade essential sunlight needed for eelgrass growth.

Nutrients & toxins
- Contaminants such as fertilizers, pesticides, plastics, & household wastes impact water quality.

Runoff
- Runoff from roads and industrial activities impacts water quality.

Bark waste from log booms smothers eelgrass and changes chemical, physical, and biological health of sediments.

Boat anchors & propellers damage delicate eelgrass roots and leaves.

Excess nutrient pollution creates algal blooms that reduce sunlight and overgrow eelgrass.

Removal of vegetation increases sediment runoff which smothers eelgrass.

Eelgrass habitat refugia for adult salmon.
Why is eelgrass important?

Eelgrass beds provide highly valued ecosystem services to wildlife and humans alike. Within the lower reaches of the Salish Sea, the estimated value of carbon sequestration and storage, habitat refugia, nursery and nutrient cycling provided by eelgrass is about $80,000 per hectare per year. Factoring these economic benefits into decision-making would reinforce the economic, cultural and ecological values of near-shore habitats within the Sound.

The meadows assist with coastal protection by providing a physical baffle (leaves) and reducing erosion (roots & rhizomes). Eelgrass also has important influences on ecological processes such as the cycle in which chemical elements and simple substances are transferred between living systems and the environment (biogeochemical cycling), sediment stability and the food web.3,4

Does eelgrass play a role in First Nations cultural and spiritual heritage?

First Nations in British Columbia harvest eelgrass for food, ceremony, cooking, and for other purposes. T’anuu ‘Ilngaay (Eelgrass Town) is located in Haida Gwaii and its name conveys the importance of the plant to coastal indigenous communities. Tending the Meadows of the Sea provides a wealth of information about historical uses and harvesting of eelgrass by local First Nations.5

TABLE 1. PERCENT OF SHORELINE COVERED BY PATCHY EELGRASS HABITAT AROUND THE ISLANDS OF HOWE SOUND.

<table>
<thead>
<tr>
<th>ISLAND</th>
<th>% OF SHORELINE</th>
<th>SURVEY YEAR</th>
<th>POTENTIAL RESTORATION SITES</th>
<th>OBSERVED THREATS TO EELGRASS HABITATS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowen</td>
<td>11.6</td>
<td>2013</td>
<td>yes</td>
<td>Docks, moored boats, boat anchoring, boat wakes</td>
</tr>
<tr>
<td>Bowyer</td>
<td>11.4</td>
<td>2013</td>
<td>no</td>
<td>Docks, chain debris</td>
</tr>
<tr>
<td>Gambier</td>
<td>8.3</td>
<td>2012</td>
<td>yes</td>
<td>Historical log storage practices, docks, wharves</td>
</tr>
<tr>
<td>Passage</td>
<td>15.7</td>
<td>2013</td>
<td>no</td>
<td>Ropes, floating docks, moorings</td>
</tr>
<tr>
<td>Islands west of Bowen</td>
<td>13</td>
<td>2013</td>
<td>yes</td>
<td>Docks, log booming, moored boats, water park play structures</td>
</tr>
</tbody>
</table>

* Shelter, Home, Preston, Ragged Islets, Pasley, Mickey, Worcombe, Hermit, Little Popham, Popham, Grace, Woolridge, Anvil.
What is the current state?

A recent survey by the Islands Trust of all the islands of Howe Sound identified eelgrass beds along eight to 16 percent of shorelines (Table 1). Eelgrass is most likely present where the bottom is sandy or mixed with small pebbles, and most beds surveyed are described as patchy and sparse. Eelgrass does not flourish where there are large boulders or shallow sand. The survey did note areas with suitable sediment but a lack of eelgrass. This may suggest damage to native eelgrass beds and opportunities for re-colonization.

Several sites within the bays of southeast Gambier Island were identified during the surveys as potential restoration areas (Figure 2). These bays have been severely impacted by historical log boom activities. Potential restoration sites around other islands were also identified. For all maps and reports on native eelgrass in Howe Sound and related subjects, please refer to: www.seagrassconservation.org

Fish species and other marine wildlife observed in eelgrass during mapping in Howe Sound indicate that these habitats are functioning, but few eelgrass beds were classified as dense and robust. Most are continuous fringing, or patchy and sparse. Specific shoreline development practices, log storage locations both past and present, and boat moorage that block light needed for growth, create excess sediment, or physically disturb the plants are the major impediments to eelgrass flourishing in the Sound. For example, boat anchor chains that sweep across the bottom with changing tides and winds can destroy plants. Eelgrass is dependent on good water quality and thus healthy eelgrass beds serve as an indicator of good water quality near coastal communities.
Figure 2. Existing eelgrass and sites identified for potential restoration, Southeast Gambier Island. (Data provided by Islands Trust. For complete maps and reports on native eelgrass in Howe Sound see [www.seagrassconservation.org](http://www.seagrassconservation.org))
More on threats...

There are a variety of shoreline structures and activities that are detrimental to eelgrass meadows. Docks that shade the bottom can inhibit plant growth. The removal of backshore native plant vegetation can increase the amount of fine sands and soil entering shoreline waters and smother the plants. Hardening the shore with built walls reflects wave energy back to shallow eelgrass beds and, over time, erodes the fine sediment in which eelgrass grows. Chemical contaminants, such as fertilizers, pesticides and household hazardous wastes, runoff from roads, and industrial activities add to the toxic composition of muddy bottoms of eelgrass meadows.8

Anchoring of recreational boats along the nearshore disturbs eelgrass rhizomes, the plant’s underground root system. Boat propellers can cut eelgrass beds in very shallow waters. Creating protected zones for eelgrass, and promoting the use of mooring buoys for recreational boats outside of large eelgrass beds may help the entire eelgrass ecosystem in Howe Sound.

Log booms along shorelines in Howe Sound are often located in areas suitable for eelgrass growth. Log booms are detrimental to eelgrass as they shadow the seafloor and produce large volumes of bark waste that settle on the bottom sediments and change their chemical, physical and biological health. Eelgrass beds and the organisms within them are not adapted to this debris. Storage of these logs in deeper waters or on land can mitigate these problems in some instances.

What is being done?

Eelgrass habitat can be replanted and restored. The Squamish River Watershed Society has replanted eelgrass in the Squamish estuary. Community volunteers are an essential part of these restoration efforts. Other potential restoration sites in Howe Sound were identified during the Islands Trust mapping surveys, and the work of planting and monitoring small test plots of 800–1000 eelgrass shoots has been undertaken.
What can you do?
SOME ACTIONS CONTRIBUTED BY CORI

Individual and Organization Actions:

- Protect eelgrass by learning where eelgrass beds are in Howe Sound.
- Howe Sound islands: [www.islandstrustfund.bc.ca/initiatives/marineconservation/eelgrass-mapping](http://www.islandstrustfund.bc.ca/initiatives/marineconservation/eelgrass-mapping)
- Shoreline landowners can minimize the impact of docks by using light-penetrating materials, and using shared community docks rather than private docks.
- Shoreline owners can maintain trees, shrubs and ground cover plants close to the shore to reduce erosion and detrimental sedimentation.
- Join or contribute to funding eelgrass restoration efforts. Eelgrass habitat needs to be monitored and mapped every three to five years to evaluate changes over time.
- Avoid boating or anchoring in eelgrass beds.
- Participate in eelgrass restoration activities, and encourage your organization to participate.

Government Actions and Policy:

- Continue to financially support community eelgrass restoration and monitoring practices within Howe Sound. Ensure monitoring and mapping is occurring every three to five years, and updated data is made widely available.
- Support and facilitate community education and stewardship involving the importance of eelgrass, the threats eelgrass faces, and how coastal citizens can help.
- Consider relocating log boom tenures, or reducing size and restoring eelgrass beds.
- Prohibit shoreline armouring near eelgrass.
- Create protected zones for eelgrass areas identified as important. Within these areas; restrict removal of backshore native plants, encourage a “no anchor zone,” restrict the installation of non-light-penetrating docks, and restrict the implementation of new logging operations.
- Allow no new tenures in eelgrass habitat or habitat suitable for eelgrass restoration.
- Ban harmful chemical fertilizers and pesticides.
Resources

Learn about eelgrass and related conservation efforts in the Salish Sea.
seagrassconservation.org

Learn about best practices for protecting shorelines from both erosion and environmental deterioration.
greenshores.ca

Footnotes


7 Continuous fringing beds provide a continuous, connected habitat for salmon and other marine wildlife, although they may contain less biomass than continuous flat beds of eelgrass.