

Trustee Notebook

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Islands Trust

Denman Island Forage Fish Feed Whales! New Mapping is a Tool to Protect Them

The problem with forage fish is that they are not charismatic. Grizzly bears are powerful, iconic hunters. Baby seals are irresistibly cute. Bald Eagles are majestic. Salmon are imbued with historical and ceremonial significance. Orcas are downright awe-inspiring. But Sand Lance and Surf Smelt are just skinny little fish. They don't photograph well.

However, these creatures need protection just as much as those more charismatic species. From their place near the bottom of the food chain, forage fish play an essential role in our ecosystems, providing food for many of our favourite marine fishes, seabirds and mammals. For instance, they make up 72% of the diet of Chinook salmon. Salmon, in turn, are food for orcas, bears, eagles, and humans. No wonder forage fish are sometimes called the unsung heroes of the ocean food web.

Scientists are increasingly looking down the food chain when they see larger species in decline. Depleted forage fish populations on the Pacific coast have been associated with failed salmon runs, starved seal pups and declining seabird populations.

So what does this have to do with Denman Island? Quite a bit: forage fish spawn up high on the beach, as long as conditions are right. Denman Island, it turns out, has a lot of great spawning habitat for forage fish: 59.7% of our shoreline – 26 kilometres – is suitable spawning habitat.

We know this because last month, The Islands Trust and The Islands Trust Fund (the conservation arm of the Trust) completed specialized mapping of Denman's shores, identifying suitable spawning habitat for Pacific Sand Lance and Surf Smelt, the two forage fish species that spawn here. The maps and accompanying report will soon be available at www.islandstrust.bc.ca (hover mouse over Denman Island on the map to get to a link, or use the search bar).

For forage fish to successfully spawn, and for the spawn to survive, they need healthy beaches. The right mix of sand and gravel provides the right surface for the eggs. Overhanging trees and bushes provide shade for incubating eggs and habitat for insects which feed the young fish. Beach plants provide buffers from the drying effect of winds. Kelp forests in the ocean nearby provide juvenile fish with shade and shelter, and a way to hide from predators.

This habitat gets destroyed by the construction of buildings, docks, sea-walls, breakwaters, and boulder

groynes; by aquaculture activities such as driving on the beach and the creation of roads; by the clearing of beaches and upland areas for aesthetic reasons; and by invasive species, mainly *Spartina Grass*. It can also be compromised when activity up on top of an oceanside bluff leads to slumping and/or excessive run-off.

So if we want to protect forage fish, the main thing we need to do is leave our beaches in a natural state, or if necessary, restore them to a natural state.

That simple guideline makes it easy for all of us to “save the Sand Lance and Surf Smelt!” through our individual choices, especially those of us lucky enough to live on waterfront property. Here are some specific suggestions:

- trim tree branches and shrubs overhanging the beach, rather than remove them
- don't construct hard structures on the shores. There are wonderful ways to protect your shoreline through “soft” or “greenshore” modifications (Islands Trust staff can lead you towards useful information)
- respect or exceed shoreline setback regulations
- manage storm-water runoff to the beach by using pervious rather than impervious surfaces
- create beach access that serves several landowners rather than having many individual beach accesses, especially in high bank and bluff areas
- don't drive on beaches

If you follow these directions for conserving forage fish spawning habitat, you'll be helping save the whales, the birds, the porpoises, the bears, and the whole marine ecosystem. Forage fish may not be charismatic, but they're worth protecting!

The Islands Trust Beach Spawning Forage Fish Habitat Suitability Assessment Mapping was created in partnership with the British Columbia Marine Conservation and Research Society. The project was led by Marine Biologist Ramona de Graaf, BSc, MSc, with invaluable participation from a group of Denman Island volunteers, who conducted spawning surveys and assisted de Graaf with logistics.

Thank you to everyone involved!

