

The Eelgrass Bed Slide Show Narrative - Expanded Version

- Slide #1: From January to May, the high peaks of northern mountains are still covered by snow. Flocks of Black Brant are coming in from their wintering grounds in Mexico, to rest wherever they can find an abundant supply of their primary food, eelgrass in quiet coastal bays and estuaries.
- Slide #2: Black Brant (*Branta nigricans*) are smaller cousins of the Canada Goose (*Branta canadensis*). Instead of the white "chinstrap" marking of the Canada Goose, brant have a white neck band to complement their smoky brown coloring. They are dabblers rather than divers - they harvest eelgrass from shallow waters by tipping forward into a "bottom- up" position. Brants are so dependent on eelgrass that in the 1930's, when there was a widespread dieback of the plant along the East Coast, brant populations there were wiped out too.
- Slide #3: If we could go beneath the surface of the water, we would find a world in which lives are in progress, a community of plants and animals strange to us, unaware of us and our world, functioning and continuing within a definite order and sequence. Some of these organisms live on the green blades of eelgrass. Others swim among them. Still others live out their lives on the sandy or muddy bottom amid the stems and roots, or burrowing beneath them. It is a world quieter than ours, in which fish like this Sculpin seek to reproduce themselves, eat, and are eaten.
- Slide #4: Bright touches of orange on a white or yellowish body make the Clown Nudibranch (*Triopha catalinae*) so conspicuous that it is probably trying the common strategy of advertising its unpalatability, other animals do not like their taste. As a matter of fact, fish have been seen spitting out these brightly colored nudibranchs. Nudibranchs are related to the snails. They feed by rasping away at their food with file-like tongues, just as their cousins, the slugs, do in our gardens.
- Slides #5-7: One of the most unusual eelgrass inhabitants is the Hooded Nudibranch (*Melibe leonina*) almost 10 centimeters (4 inches) in length - large for a nudibranch. It feeds on larval crustaceans by using its large hood, fringed with slender tentacles as a net. On its back are six flattened cerata which look like leaves. They are thought to aid in respiration. Although the Hooded Nudibranch may often be seen attached to the blade of

eelgrass, it may also be free-swimming, moving through the water by using a thrashing motion.

- Slide #8: Looking like another sea slug, this animal is really a snail, the Bubble Snail (*Haminoea virescens*). It may be found gliding along the slender leaves of eelgrass, its 2-3 centimeter body spilling out of its one centimeter shell, or it may be seen swimming among the eelgrass, using the specially adapted wing-like flaps that are the sides of its foot.
- Slide #9: Eelgrass beds are important habitats for many species of small fish as well as the young of larger fish. There is plenty to eat and abundant cover in which to hide from one's own predators. Shiner Perch (*Cymatogaster aggregata*) are about 6 centimeters (2 inches) long at birth. They are born tail first, one at a time, and swim away. Shiner Perch will grow to 15 cm. (6 inches) in length in about six years.
- Slide #10: In the eelgrass beds, Shiner Perch are often joined by Tube-snouts (*Aulorhynchus flavidus*) very elongated, slender, little fish whose cylindrical bodies are about 17 centimeters (7 inches) long. Their snouts are long, ending in a very small mouth with a hinged upper jaw, which bears tiny teeth directed inward. Tube-snouts eat planktonic crustaceans and the larvae of fish, including their own species. They build nests in algae. The female lays the eggs, which begin hatching after about two weeks. The male defends the nest as the eggs develop.
- Slides #11-12: Also found lurking among the eelgrass leaves are the perfectly camouflaged Pipefishes (*Syngnathus leptorhynchus*), relatives of the tropical seahorse. Their tiny mouths have no teeth: they inflate their cheeks to suck in planktonic crustaceans. They often assume a vertical position in the water, sometimes twining their elongated green bodies around eelgrass leaves. Like the seahorse, the male pipefish has a brood pouch in which the fertilized eggs are deposited and develop until the young hatch and swim out. While adults are about 33 centimeters (13 inches) long, these newly hatched swimmers are about 2 cm. (3/4 inch) long.
- Slide #13: Eelgrass beds always have large amounts of detritus, decaying organic material composed mostly of the eelgrass plants themselves. This is especially true in fall and winter when the plants die back. This detritus is a source of great quantities of "food" in a complex food web that begins with several detritus eating crustaceans (detritivores) and continues on with their

predators. In turn, these predators are eaten by other predators such as the Shiner Perch shown here.

Slide #14: Another secondary predator of eelgrass beds, especially those on a sandy bottom, is the bright green Penpoint Gunnel (*Apodichthys flavidus*) which eats small crustaceans and mollusks. The eel-like body of the Penpoint Gunnel grows to be 46 centimeters (18 inches) long. Its common name comes from the sharp anal fin which looks like the old fashioned penpoint (nib) that had to be dipped into ink wells. The dark line helps hide the outline of its eye, helping it to blend in with the background.

Slides #15-16: We have seen some of the animals that live on the eelgrass itself and some of those which swim among the plants. There are other animals in the eelgrass community that spend their lives on the sand or mud at the base of the plants. Among these are several species of flounders, soles, and sanddabs, all flat fish whose method of swimming requires an unobstructed bottom. Newly hatched flat fish young look generally like any fish, but as they develop, one eye, usually the left one, migrates over to pin the other eye on the fish's right side. After this occurs, the fish settle down to the bottom with their blind side down. The C-O Sole (*Pleuronichthys coenosus*) shown here is recognized by the fact that its eyes are very prominent - it can look both forward and backwards at once - and it has a spot in the center of its flat body.

Slide #17: Beneath the eelgrass plants, a bump under the sand shifts position and a Dungeness Crab (*Cancer magister*) reveals itself to other inhabitants. Before it moved, only two eyes and a pair of antennae were visible, keeping watch for both its predators and its prey. Larval crabs are planktonic: as they grow and eventually settle out of the water column, some find themselves in eelgrass beds in estuaries. Studies have shown that these crabs grow faster than crabs in more open water. Although adult Dungeness crabs spend much time in deeper water, they often come inshore to shed their shells (molt), especially in late spring and early summer, and it is at this time that mating takes place, as shown in this slide. About two million eggs are carried under a flap on the abdomen of the female.

Slide #18: Gliding along the bottom at up to three meters per minute, "Warp Ten" speed for seastars, is the Sunflower Star (*Pycnopodia helianthoides*) a large, soft seastar with 20 or more arms. Its underside carries a hidden army of tube feet.

Although it is soft and floppy in our hands, it is a powerful predator much feared by its neighbors even the normally lethargic sea cucumber jumps when it feels the touch of this seastar.

Slide #19: Sitting on the bottom or burrowing just below its surface is the Heart Cockle (*Clinocardium nuttallii*) prevented from burrowing deeply by its short siphons through which it must get a constant supply of fresh water. It gets its common name from the heart shape we see when viewing it from either end. Even the approach of the Sunflower Star sends the Heart Cockle into a frenzy of escape - a muscular foot as long as the shell itself explodes out to dig or even just flip the cockle away from its predator.

Slide #20: On protected sandy beaches and mud flats, you may sometimes in spring or summer see something that looks like an old rubber ring, some refuse littering the shore. What is it? Maybe the next slide will help.

Slide #21: Doesn't this help? Look for the snail on the right. It is the biggest snail in many areas, the Moon Snail (*Polinices lewisii*) whose fleshy foot doesn't usually fit inside its shell. What looks a little like an old inner tube is the egg case of the Moon Snail. It glues its eggs and beach sand together on the outside of its big, soft body. Then it crawls out from underneath. The egg case sits on the beach until a high tide comes and covers it. Then the sand falls apart and the eggs are hatched in the sea.

The Moon Snail seeks its prey as it plows along under the surface. When it comes across clams or other snails, it rasps a hole in their protective shells with its file-like tongue and eats them. Sometimes you might see one of its victims, with a neat little round hole in its shell and nobody home anymore.

Slide #22: Other fierce predators lurk beneath the surface of the eelgrass bed, like the Proboscis Worm (*Glycera rugosa*). Not only is this worm large (10-15 inches), but it has the astonishing ability to transform its rather pointed head into a club-shaped structure armed with four black jaws by rapidly extending its proboscis (snout) up to 70 times a minute. The person on this slide should be careful - Proboscis Worms can bite hard!

Slide #23: Eelgrass beds are important. They provide abundant food, moderated conditions, increased oxygen levels, and protective cover for animals. Most of the animals in this slide show are

lifelong residents of the eelgrass community, but its importance extends to temporary residents as well, such as the Dungeness crab. The young salmon, shown here, hatch in our streams and rivers in the spring and migrate downstream, where they pause for the summer in protected waters of the estuary's eelgrass bed. In these areas, the streams meet the salt water of bays and oceans. Within the estuary, salmon make the physiological changes from freshwater to saltwater. The eelgrass bed provides abundant food and cover, a "nursery" situation, to nurture them until they move out to sea. The importance of this protected environment cannot be over-emphasized. You will be learning more about eelgrass beds and what we can do to insure that they are maintained in an unspoiled condition.

Slides used with permission from the Seattle Aquarium.
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