CLASSROOM WORKSHOP SYNOPSIS

Harbor WildWatch provides a series of interactive science workshops for elementary and middle school students in the South Puget Sound. The *Harbor Outreach Program* (HOP) consists of 20 hands-on workshops that explore topics in biology, ecology, geology, physics, basic chemistry, energy and interdisciplinary environmental sciences through marine topics. Workshops are led by experienced naturalists, are 40-60 minutes in length, and accommodate up to 30 students. All workshops teach to STEM standards and will soon be NGSS aligned.

Harbor WildWatch is a Gig Harbor based 501(c) 3 non-profit organization dedicated to inspiring stewardship in our community. The HOP is funded by grants and private donations from the community, allowing us to provide workshops free of charge to public schools. To best utilize these funds, we request that each school visit include a minimum of three workshops on any given day. This can include different teachers, grade levels, and workshop topics. Schools outside of our immediate area may incur a $50 transportation fee.

To assist in your scheduling, we have arranged all 3-6 grade workshops in a series that build from one another. If the workshop is a part of a series it is listed at the end of the individual descriptions.

- **Geology Series**: Students learn about the types and formation of rocks, causes of erosion, plate tectonics and the role glaciers played in the formation of Puget Sound.

- **Water Series**: Students observe the effects of pollution on a watershed, design and build a functioning wetland, and solve the mystery of the estuary by determining the density of various water samples.

- **Life Series**: Students learn about the incredible journey of salmon by building a life-cycle bracelet, following the transfer of energy through Puget Sound's food web, and designing their own intertidal sea creature.

- **Advanced Life Series**: Students learn about the mammals of Washington by becoming a skull detective, discovering the incredible anatomy of cephalopods by dissecting a squid, and learning about apex predators and biomagnification through the food chain.

**Harbor WildWatch wants to lead your school Field Trip!**

**NEW Explore the Wetland**: Wetlands offer amazing opportunities to experience STEM in action. These guided tours explore the different micro habitats of Sehmel Homestead Park in Gig Harbor. Students will engage their powers of observation to understand how critical wetlands are to clean water. This field trip is available year-round. Best for 1-2 classrooms at a time. Transportation not included.

**Explore the Beach**: Each spring, the Puget Sound area experiences some of the lowest tides of the year. Our guided tours begin with a brief beach etiquette lesson on how to be a guest at the beach, followed by a scavenger hunt. Expert naturalist and volunteers are on hand to answer questions. For the best experience, the tide should be at least -1. Email for date suggestions. Dates are limited, locations vary.

**Explore the Estuary**: Each fall, Chum salmon return to Donkey Creek to spawn. Harbor WildWatch has a three hour field trip that will have your students answering the question “what makes an estuary healthy?” Tours in late November may see live salmon in the stream. Tours in early spring may see small fry migrating out to the estuary. Cost: Free for public schools, $150 for private schools. Transportation not included. Dates fill quickly.
WORKSHOP DESCRIPTIONS

Two by Two (PreK-2) – An early introduction into classification through observation and examining the similarities and differences between terrestrial and marine animals utilizing an interactive matching game. EALR 1.1.1, 1.1.6, 1.2.1, 1.2.6, 1.3.8, 1.3.10, 2.1.1, 2.1.5, 2.2.2

Blubber (K-4) – Marine mammals are found in all the oceans of the world. The greater Puget Sound is home to many, including seals, porpoises, sea otters and three pods of orcas. We investigate what makes mammals unique in the animal kingdom and what adaptations warm-blooded marine mammals have acquired to survive in frigid to near freezing waters. EALR 1.1.1, 1.1.6, 1.2.2, 1.2.6, 1.3.10

Where is the Water? (1-3) - Water is Earth’s most unique and precious compound. This workshop investigates the origins of water and its significance to the workings of our planet. Through an interactive game of bingo, students learn how to identify the properties of water, and explore different states of water as it moves through the hydrologic cycle. EALR 1.1.1, 1.1.5, 1.3.3-.4, 1.3.10, 2.1.3, 2.1.5

Hold On To Your Home (2-6) – Life in the intertidal zone can be harsh. Tides, weather, competition, predation, disturbance and succession all play a role in survival. We discover adaptations that make survival possible while determining ways for a “new” species (designed by students) to be successful in its niche & community. Life Series #3 * This lesson pairs well with a field trip to the beach. * EALR 1.1.1, 1.1.2, 1.2.1, 1.2.7, 1.3.1, 1.3.3-.5

Slip Sliding Away-Erosion (3-5) – Geologically, the Puget Sound is incredibly active with many forms of erosion continually altering the environment. We investigate the physics of gravity, friction and force between wind, water, wave and chemical influences upon our natural world through activities and a PowerPoint presentation. Geology Series #1 EALR 1.1.2, 1.1.4-.5, 1.2.1, 1.3.1-.2, 1.3.5, 3.1.2-.3

Slip Sliding Away-Tectons (3-5) – This workshop continues the exploration into erosion via tectonic forces that deform and create new crust through a volcano model simulation and video examination. Geology Series #2 EALR 1.1.3, 1.2.1-.4, 1.3.3-.4, 2.1.3-.5, 2.2.1-.3, 3.1.1

Movin’ Glaciers (3-5) – Before the last ice age, the Puget Sound basin was at sea level, merely a lowland valley with enclosed lakes, and closed off from the Pacific Ocean. We explore glacial advances, retreats and how ice has shaped our world through hands-on activities with glacial erosion modeling. Geology Series #3 EALR 1.1.1, 1.1.5, 1.2.1, 1.2.3, 1.2.4, 1.3.1, 1.3.3-.5, 2.1.3-5

The Watershed Model (3-5) – We investigate how the hydrologic cycle moves non-point pollutants from the mountains to the sea. Students learn how to define a watershed and how Puget Sound is affected by activities in the local watershed with a 3-D model. Strategies on how to mitigate human impacts upon the marine environment are investigated. Water Series #1 EALR 1.15, 1.2.1, 1.2.2, 1.2.4, 1.3.3, 1.3.6, 2.1.1, 2.1.2-.5, 3.2.4
Working Wetlands (3-8) – Quagmire, marsh, slough, mudflat, and estuary; no matter what you call them, wetlands serve a vital role in the habitats of the sea and water quality. Through group competition, we see who can replicate the best working wetland. Outdoor wetland exploration can also be arranged in place of the classroom activity. Water Series #2
EALR 1.1.1, 1.1.5, 1.2.1-3, 1.2.6, 1.3.6, 1.3.10, 2.1.1-3, 2.1.2-3, 3.2.4

Estuary Mystery (3-6) – Scientists have made a mistake in the lab, and need junior scientists to identify where the water samples originated by testing for salinity through the parameter of density. Students will wor Water Series #3
EALR 1.1.1, 1.1.6, 1.2.1, 2.2.1-3, 2.2.5, 3.1.3, 3.2.3, 3.2.4

Energy through the World Wide Food Web (3-6) – The concept of energy is difficult to learn. We address this topic through building a marine food web, from base level producers through apex predator, using an interactive card game. Life Series #2
EALR 1.1.1, 1.1.3, 1.1.4, 1.1.6, 1.2.1-1.2.3, 1.3.8-10, 3.2.4

Salmon Struggles (3-6) – Salmon have long played an integral role in the history and prosperity of the Pacific Northwest. Learn how unique these indicator species are to our region, their importance to multiple ecosystems, and the obstacles they must overcome to survive by making a life-cycle bracelet. Life Series #1
EALR 1.1.2, 1.1.6, 1.2.1, 1.2.6, 1.2.7, 1.3.10, 2.2.1, 2.2.5, 3.1.3

The Keys to Life (5-8) – Students are members of a very large and complex world. To understand their place in the biosphere we utilize a classification model to discuss how scientists have developed familial hierarchies. Students also learn how to identify living organisms through the use a dichotomous key. EALR 1.1.6, 1.2.1, 1.2.6-8, 1.3.9, 2.1.1-5, 2.2.1-3, 3.2.4

Skull Sleuths (5-8) – A lesson in marine mammal comparative anatomy, told through our bone and fossil collection. Students draw clues from anatomy to match skulls with the animals they came from. Advanced Life Series #1
EALR 1.1.6, 1.2.2, 1.2.3, 1.2.7, 1.3.5, 1.3.9, 1.3.10, 2.2.1-2, 3.2.1-3

Symbiosis, The Great Equalizer (6-8) – Using a PowerPoint presentation and videos, we explore symbiotic relationships, co-evolution and the effects that climate change has on those relationships.
EALR 1.1.6, 1.2.1, 1.2.3, 1.2.6, 1.2.7, 2.2.5, 3.2.4
Squid Dissection (5-8) – An introduction to dissection, students will explore this animal and its adaptations to life in Puget Sound. Students learn about digestive, reproductive, circulatory and nervous systems of cephalopods.  

Advanced Life Series #2
EALR 1.1.6, 1.2.1, 1.3.10, 2.1.1, 2.1.2

Apex Predators (5-8) – Students will become familiar with the adaptations that have helped sharks survive millions of years ago in the primitive oceans as well as today in Puget Sound. Comparisons to Orca whales and other apex predators will be discussed as well as the idea of biomagnification of toxins through the food web.  

Advanced Life Series #3
EALR 1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.6, 1.2.1, 1.2.2, 1.2.6, 1.2.8, 1.3.5, 1.3.9, 1.3.10, 2.1.1, 2.1.3, 2.1.4, 2.1.5, 3.2.3, 3.2.4

Ocean Acidification (5-8) – Carbon dioxide in our atmosphere is absorbed by the oceans, causing them to be more acidic. Students will learn about the effect of acids on a variety of substrates, including corals, and mollusk shells, sand, rocks and more. Discussion of how ocean acidification affects Puget Sound and brainstorming solutions follows the experiments.  

EALR 1.1.1  1.1.5  1.2.1  1.2.3  1.3.3  1.3.6  1.3.8  1.3.9  1.3.10

Your custom workshop (K-12): Harbor WildWatch is willing to work with you to develop a curriculum that works well for your lesson plan and your class. Contact us today to begin planning.

Before you book your workshops:

- Find other teachers at your school who want hands on science. We can teach up to 5 workshops a day.
- Identify some dates that will work with your schedule. Please book at least 2 weeks in advance.
- Plan out the workshop sessions (be sure to work around recess, lunch, specialists, and assemblies)
- Pick the workshop or series that is best for your class. We can make suggestions if you need help.
- Determine the percentage of students who receive free or reduced lunch. (We need this info for grants)

Email Franco@harborwildwatch.org to schedule your classroom workshops today! Once we have your request, we will check our availability and send final confirmation. If you have any questions please call 253-514-0187