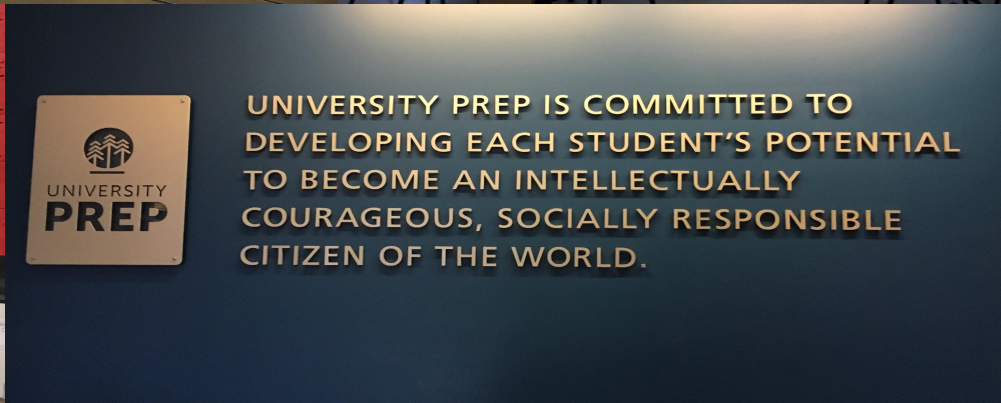
https://maxpull-gdvuch3veo.netdna-ssl.com/wp-content/uploads/2011/03/Rhododendron-1024x707.jpg

Rhododendron Day 2017

University Preparatory Academy, 7th grade Class of 2022

Seattle, Washington USA

University Prep, the school we attend




ORANGE COUNTY
California
UNIVERSITY
PREP

Seattle, Washington, where University Prep is located

https://en.m.wikipedia.org/wiki/Seattle
http://www.citypass.com/seattle/space-needle
http://www.diserio.com/seattleskyline.html

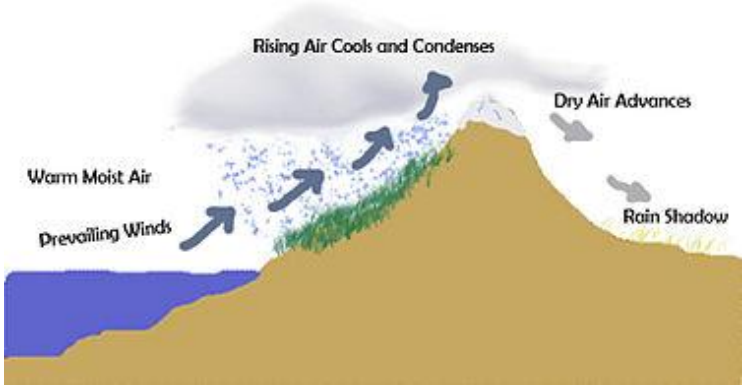
Adaptations, Appearance, and Roles of plants on the Marine Coast in Washington State

https://marinedebrisblog.files.wordpress.com/2012/10/wa_coast_noaa_mdp3.jpg

Climate Features in Western Washington

“Last year on the Washington coast the town of Forks got 121 inches of rain.” http://www.bestplaces.net/climate/city/washington/forks

- Much of the rainforest is located in the Olympic National Park on the Washington Coast.
- Massive rainfall on the coast is due to the rain shadow effect. (See diagram below)



http://www.epodunk.com/cgi-bin/genInfo.php?locIndex=24780

https://en.m.wikipedia.org/wiki/Rain_shadow

Tidal Marsh's geographical features:

- Few trees.
- Many types of grasses (Salt Meadow Hay, Sea Lavender, Salt Grass, Salal, Aster).
- Soil is wet from tides and composed of deep mud and peat (decomposed plants).
- Shallow water.
- This photo of a salt marsh was taken in Western Washington near Forks, WA.
- They drop their roots to steady themselves which also stabilizes the landscape.

https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/reportsdata/hg/terrestrial/Pages/TidalMarsh.aspx

Threats against Tidal Marshes

Housing and apartment development

- Tidal marshes can act as a barrier for pollution. When structures are built on top of them, they no longer can sift out the pollution from the mainland runoff. Pavement can undercut the tidal marshes which speeds up the runoff into the ocean.

Global warming

- With the ice caps melting, the ocean is rising which is changing the locations of the tidal marshes. Some of the plants will be completely covered in salt water which will kill them.

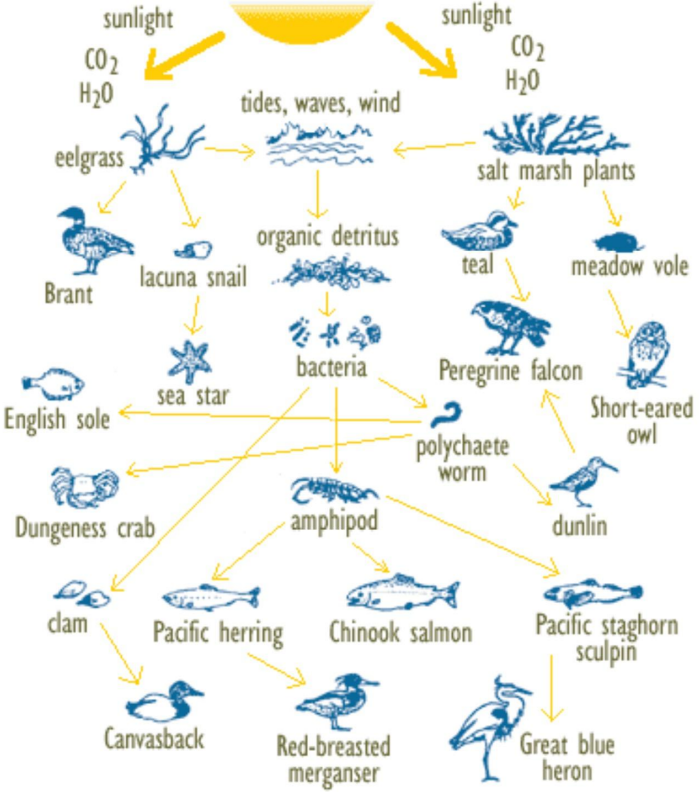
http://www.yorkcounty.gov/CountyGovernment/PublicWorks/Engineering/StormwaterPrograms/TidalWetlands.aspx

http://www.birdsiview.org/spring-break-2016

Healthy food chain for tidal marsh

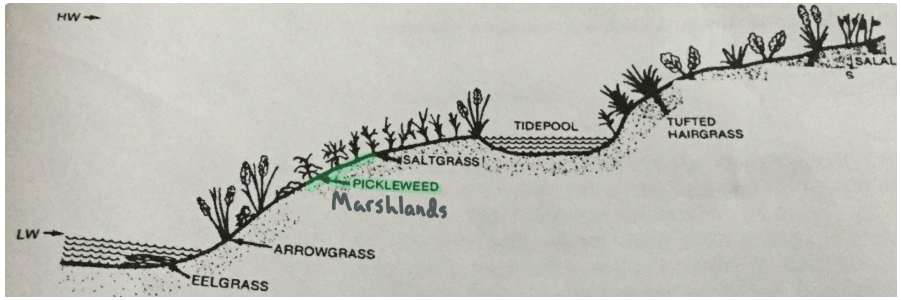
- Decaying salt marsh plants are very important to the food system of coastal areas.
- Dead plants and other microorganism form to make something called detritus which is what a majority feed on.
- Detritus is eaten by fish, birds, snails, amphibians etc.

http://www.ecy.wa.gov/programs/sea/pugetsound/species/detritus.html



Pickleweed (*Salicornia*)

- Native saltmarsh plants live and grow in very high salinity conditions.
- Stores rainwater that *dilutes* the salty water making it possible to grow.
- Larvae (babies) of ***butterflies*** and ***moths*** like to eat pickleweed.
- Grows to be 5 to 30 centimeters tall.
- Grows on *muddy stretches* which flood during high tide. The plants hold the mud back during high tide, so that the mud does not erode.
- Contains ***good bacteria*** which can break down pollution.

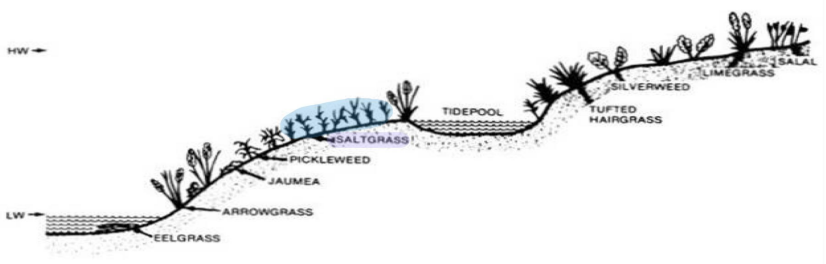


http://www.ecomare.nl/en/encyclopedia/organisms/plants/flowering-plants/goosefoot-family/salicornia/

Pickleweed or Salicornia plant

Saltgrass (*Distichlis Spicata*)

- Grows to be 10-40 centimeters tall.
- Feeds clams, crabs, small fish.
- Provides food for birds.
- Named for ability to be in salty water.
- Provides habitat for spiders and grasshoppers.
- Spiders help keep Washington state's crops healthy since they eat flies.

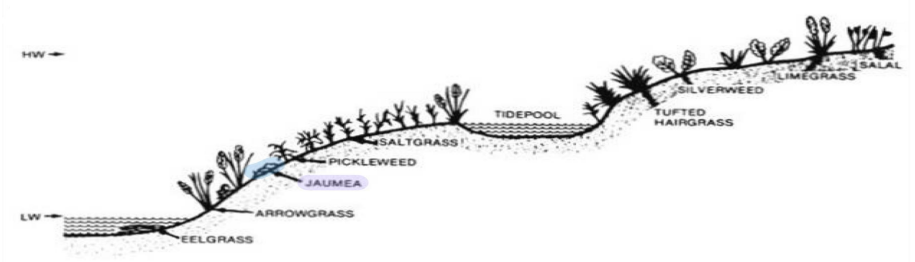


http://calphotos.berkeley.edu/cgi/img_query?enlarge=0000+0000+0805+0545

Steven Matson

Jaumea
(*Jaumea Carnosa)*

- Succulent type plant.
- Grows to be around 10-30 centimeters tall.
- Has shallow but strong roots.
- Important to the ecosystem for filtering groundwater.
- Roots keep the ground stable.



http://biology.burke.washington.edu/herbarium/imagecollection.php
Dana Visalli

Introduction to Beach Dunes

- Dunes stretch over 96 kilometers in Washington.
  "ECY.WA.GOV"
- The longest beach is "Long Beach" on the southern coast in Washington.

- Dunes are created by the sand being pushed by the wind.
- Some of the sand is held down by plants that are found in the Dunes.

http://www.642weather.com/weather/about_us.php

Coastal Strawberry
(Fragaria Chiloensis)

- Prefers lots of sun.
- Spreads low across the sand dunes, lives in moist conditions, at a low elevation, not too far from the sea.
- Can grow to be 25 centimeters in height.
- Roots spread out underground to keep the sand stable and stems grow upward to catch sunlight.
- Flowers that grow on the plants turn into berries for animals to eat.

Coastal Strawberry

By: Dekker

Drawing of Coastal Strawberry

By: Dekker

Beach Morning Glory (*Ipomoea Pes-Caprae)*

- Grows on upper parts of beaches.
- It is salt water tolerant vine.
- It helps to stabilize the dunes.
- Is used for medicinal purposes in Australia, Brazil, and the Philippines.
- It is often called beach bindweed.
- It is eaten by the tortoise beetle.
- Has green leaves and pink flowers.

https://www.flickr.com/photos:55979212@N02/6841328720

Silver Burr Ragweed (*Ambrosia Chamissonis*)

- Blooms from June to September.
- Grows above high tide level.
- Has alternate leaves (one longer, one shorter).
- It is a large plant, growing to about 10 feet tall.
- Its flowers turn to fruits.
- It has both male and female flower heads.
- (group of flowers on one stem).
- It has a long tap root to get water if it needs it.
- It will live if buried because it is too big to be completely submerged in the sand.

http://science.halleyhosting.com/nature/plants/sun/button/ambrosia/bipinnatisecta.html

Drawing By: Harry Bloom

http://biology.burke.washington.edu/herbarium/imagecollection.php

American Sea Rocket (*Cakile Edentula)*

- Grows on the dunes of coastal beaches.
- Its roots grow more intensely if nearby another plant.
- Has thick, edible leaves.
- Has different colors of flowers and small, green fruit.
- Can be torn out of the soil by strong waves.
- Is being displaced by European Sea Rocket.
- Has little seed pods that float and look like rockets.

http://www.pfaf.org/user/Plant.aspx?LatinName=Cakile+maritima

https://www.flickr.com/photos/rud-gr/albums

Coastal Headlands

http://www.oregonlive.com/travel/index.ssf/2016/05/can_you_identify_the_poisonous.html

http://www.beautifulwashington.com/wa/state-parks.html

Healthy Headland Ecosystem

- A healthy coastal headland has:
  - Tall, rocky cliffs.
  - Trees such as Spruce.
  - The cliffs are made of granite, which doesn't erode easily.
  - Other vegetation.

http://www.king5.com/news/local/washington-state-parks-have-2-free-days-in-june/220720146

Beach Pea (*Lathyrus Japonicus)*

- A legume that lives in coastal areas.
- Has purple flowers.
- Grows 50-80 cm long stems.
- Has light green leaves.
- The seeds can survive floating in the ocean which is how this plant is spread.
- The pea pods are edible.

http://arcadianabe.blogspot.com/2014/09/beach-pea-elusive-edible.html

European Beach Grass (*Ammophila Arenaria*)

http://biology.burke.washington.edu/herbarium/imagecollection/imagelarge.php?ImageNumber=34516&TaxonID=4954&SourcePage=taxon&

- Brought to Washington in the 19th century to stabilize the beach dunes, and was native to the coastlines of Europe.
- Blooms every spring with a rough light brown end.
- Grows in sand dunes and on sandy beaches most commonly found in the Queen Charlotte Islands and on Vancouver Island.
- Many animals such as the Short-Eared Owl and the Piping Plover use the beach grass for nesting. Other birds such the Snow Blunting eats its seeds, so if this plant was to go extinct it would harm the arctic fox's diet.
- These plant have underground stems (rhizomes) that go horizontally and sprout more of that plant.

Seashore Lupine (*Lupinus Littoralis*)

http://biology.burke.washington.edu/herbarium/imagecollection/imagelarge.php?ImageNumber=244&TaxonID=1938&SourcePage=taxon

- Seashore Lupine is a plant native to the North America Western coast all the way from California to British Columbia.
- This plant is found in moist sand dunes and beaches.
- It is a long and thin plant with an average height of 60 cm.
- The plant blooms from May to August with purple 5-15 cm long pea-like flowers that produce seeds in pods that are usually around 2 cm long and 7 mm wide that are dark grey, short, and hairy.
- Many insects, slugs, snails, and deers feed off this plant.

Creeping Bentgrass (Agrostis Stolonifera)

- Also known as spreading bentgrass.
- Native to coastal headlands throughout the West Coast of North America.
- Grows in wet, disturbed areas including stream banks, flooded fields, and ditches around mid to high elevation.
- It grows to about 50-80 centimeters tall.
- The flowers are purple spikelets.
- Creeping bentgrass has adapted to be able to cope with heavy metal pollution.

http://flora.uit.no/plant/agrostis-stolonifera

Beaked Hazelnut (*Corylus Cornuta)*

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- Also known as California Hazel.
- Native to coastal headlands, forest edges and openings, thickets.
- Grows in low to middle elevations.
- Grows as a shrub, 1 to 4 meters long with alternate leaves.
- There are nuts encased with a hard shell and a prickly-haired tube originating at the nut's base.
- Beaked hazelnut has adapted to the environment by tolerating draining soils.

http://www.discoverlife.org/mp/20q?search=Corylus+cornuta&guide=Trees&cl=US/CA/San_Mateo/Jasper_Ridge

Consumers of Beaked Hazelnut

- Squirrel
- Grouse
- Deer
- Pheasants
- Native Americans harvest them

Art by Sapphire Le Rougetel

Salal

•Quickly spreading coniferous shrub that can be found on headlands.

•Has tough dark green leaves and small white flowers and dark blue edible berries.
•Has thick, fairly long, woodlike roots that help it cling to the hard ground.
•With lots of leaves it creates a sort of shelter from the wind and rain for small animals. Ground birds often make their nest there because of the protection of predators such as hawks who can't see underneath the layering of leaves.

http://www.backpacker.com/trips/florence-or-haceta-head-and-hobbit-

We hope this presentation makes both our regions better informed about the complex relationship between environment and habitat!

Thank you for your attention!