

Coastal and Nearshore Oregon

Using and protecting
our natural
resources

July, 2012



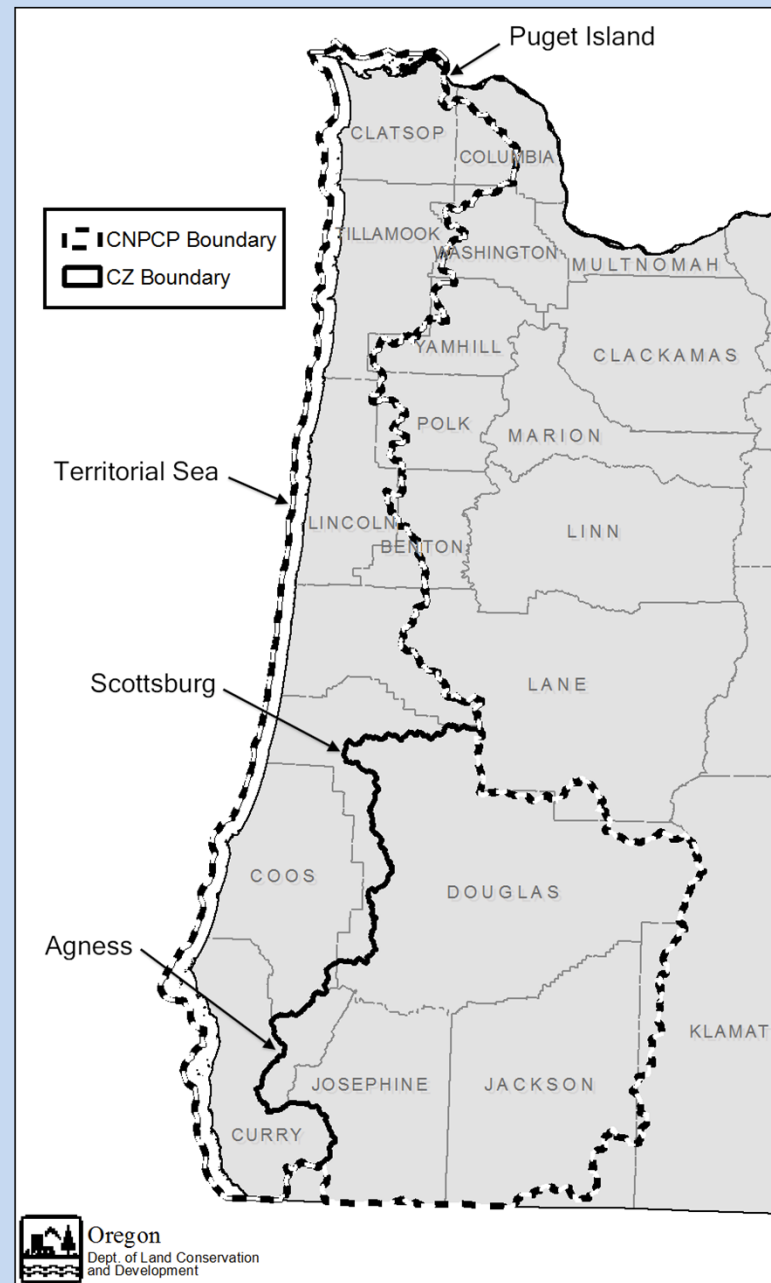
Oregon's Coastline and Coastal Zone



- 360 miles
- Extends 3 miles off shore (territorial sea)
- Rises to crest of coastal mountains
- Coastal Zone:
 - Extends up the Rogue and Umpqua Rivers
 - Extends to end of Puget Island on the Columbia



Oregon's Coastal Zone and Oregon's Coastal Non-Point Pollution Control Program



Who manages the coast?

Management of the Oregon Coast involves a complex weave of treaties, laws, agency regulations and plans at the international, federal, state and local levels.



International Regulations

- 1958 Geneva Conventions on Law of the Sea
- 1982 United Nations Convention on the Law of the Sea.



Federal:

- National involvement includes:
 - Coastal planning
 - Pollution control and other environmental measures
 - Fisheries and wildlife management
 - National refuges and wilderness designations



Federal Regulations

- Specific Actions:
 - Coastal Zone Management Act of 1972 (voluntary)
 - Oregon's Coastal Management Program approved in 1977
 - National Ocean Policy – 2010
 - Executive Order : *Stewardship of the Ocean, Our Coasts, and the Great Lakes*
 - National policy to ensure protection, maintenance and restoration of Coastal and Great Lakes ecosystems and resources



Regional

- A voluntary partnership with California and Washington through the West Coast Governors Alliance on Ocean Health provides for regional coordination and action on issues of mutual concern.



State:

- Beach Bill 1967 (public recreation easements)
- Planning goals
 - Goal 16: Estuaries
 - Goal 17: Coastal Shorelands
 - Goal 18: Beaches and Dunes
 - Goal 19: Ocean Resources
- Oregon Plan for Salmon and Watersheds 1997



State:

- Oregon Resources Management Act of 1987/1991
 - Established Oregon Resources Management Program (Ocean Plan)
 - Established Ocean Policy Advisory Council (OPAC)
 - Mandates:
 - Ocean Resources Management Plan (Ocean Plan)
 - Territorial Sea Plan (TSP)



Oregon Resources Management Program (Ocean Plan)

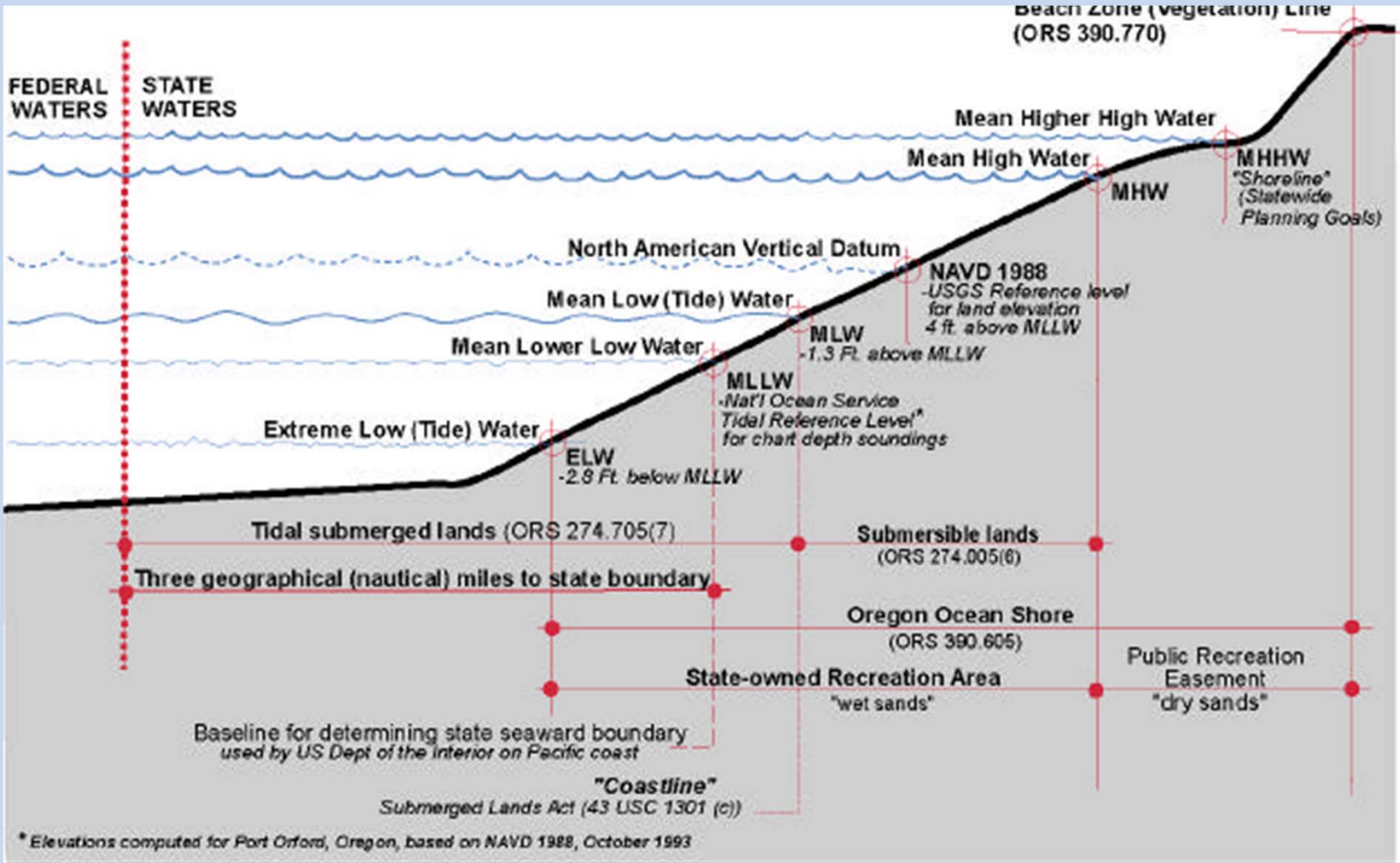
- Ocean stewardship area
- Ocean resource conservation
- Ocean fisheries
- Marine birds and mammals
- Intertidal plants and animals
- Recreational and cultural resources
- Marine water and air quality
- Oil and gas
- Oil spills
- Marine minerals



Territorial Sea Plan

- Covers state and federal programs and activities within the 3 mile strip of territorial sea.
- Adopted in 1994, amended in 2001 and 2009.
- Goal: conserve the long term values, beliefs and natural resources of the nearshore ocean and continental shelf.
- Recognized the need for a “spatial map.”

Territorial Sea Mapping

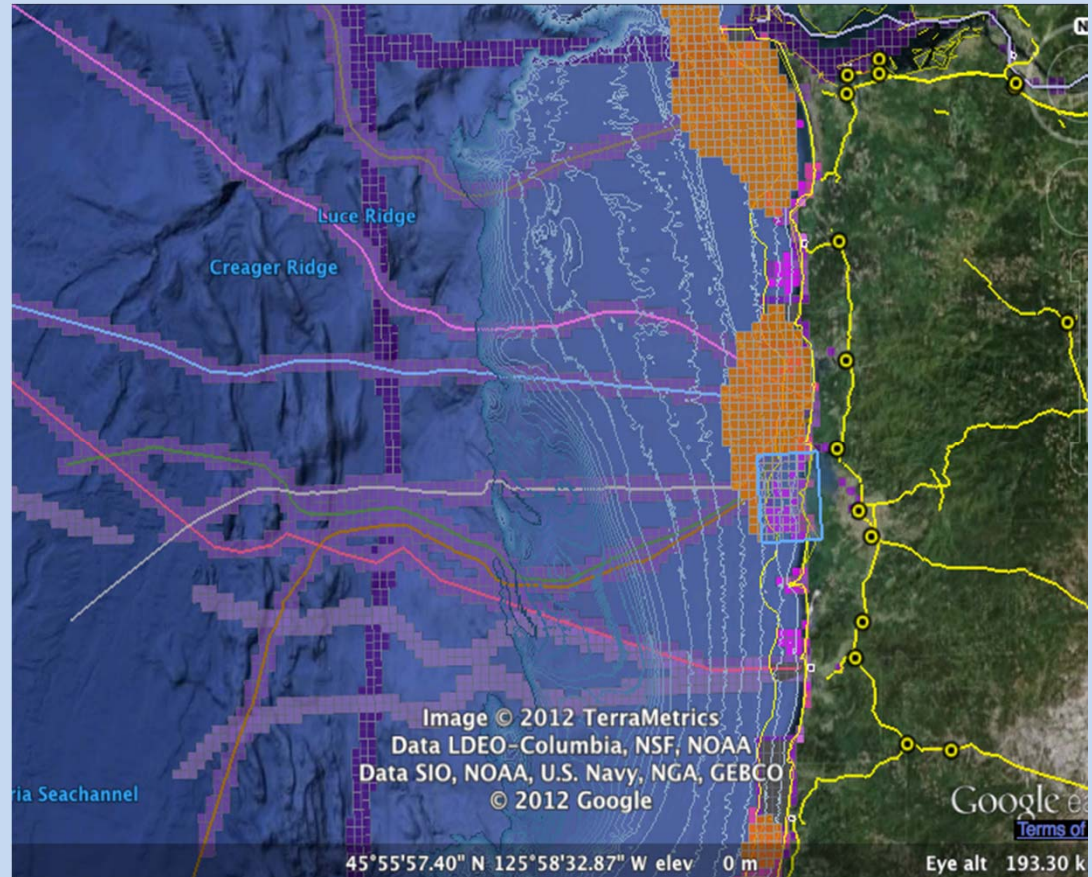


Territorial Sea Plan Spatial Mapping

Oregon MarineMap

display of northern coast:

- Territorial Sea boundary line
- Proposed renewable energy site
- Undersea telecommunication cables
- Commercial shipping lanes
- Electrical transmission lines and substations, and
- Draft map of Level 1 (highly valued) resources and existing beneficial uses of the Territorial Sea.



Local Government



- Comprehensive plans
- Land Use ordinances

Federal regulations and the TSP require consistency with comprehensive plans and consultation with local governments affected by any major offshore development. The TSP provides procedures for resolving disagreements between the local government and a federal or state agency.

Coastal Environmental Characteristics

- Basalt, mudstone, sandstone cliffs, mountains, beaches, sand dunes
- Seismically active
- Sea level rising
- Habitat to many species
- Migratory Routes
- Important ecological areas





Estuaries

- Wetland transition zone (saltwater to fresh water)
- Intense biologically productive area
 - Plant and animal nursery and habitat
 - Natural water cleaning zone
- Mitigation zone for storms and floods
- 22 major Oregon estuaries



Estuaries

- Altered by human development
- Endangered due to rising sea levels
- Impacted by ocean acidification

- Costly to restore
- Additional research required on both functions and effectiveness of restorations

Coastal environment

The People and the Economy

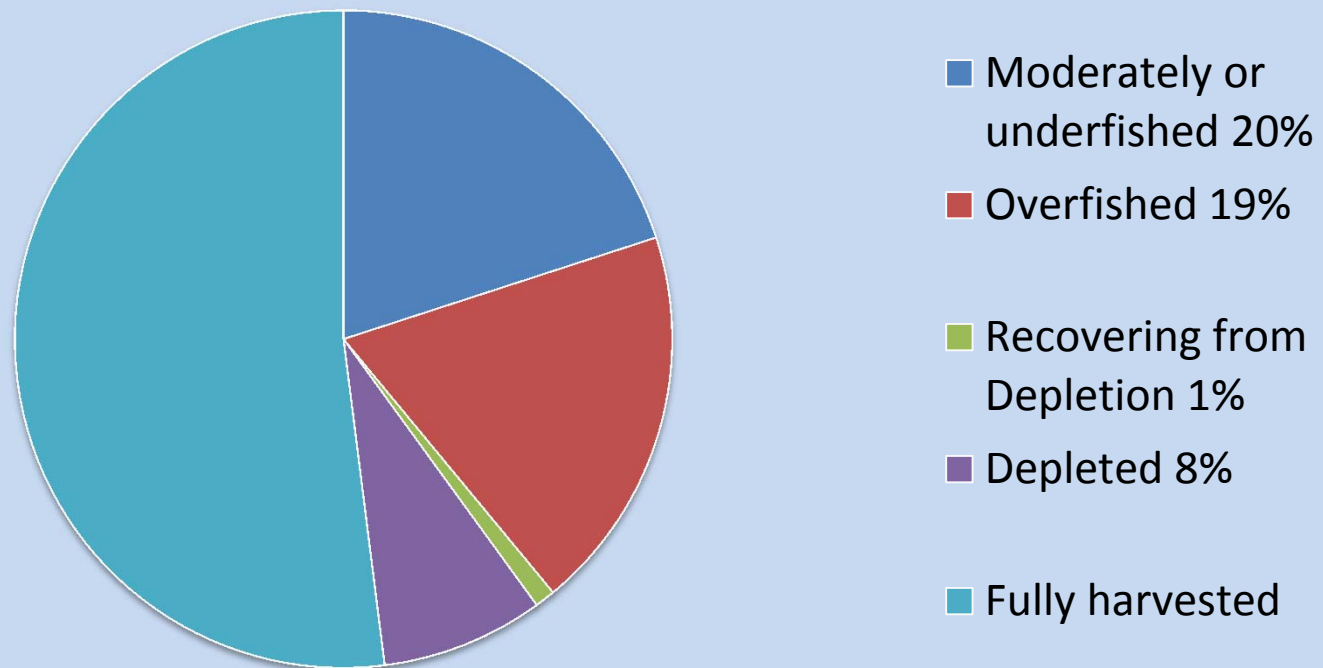
- Older population, limited area for development
- Basically rural (farms) and seasonal
- Significant income from investment and pensions
- Natural resources (fisheries and forestry) provide 15% of income
- Tourist attraction
- Important Oregon ports

Fisheries

- Traditional Oregon industry – salmon, bottom fish, crab, shrimp, clams, oysters
- Popular tourist activity
- International demand for fish protein
- Limited fish farming in Oregon (oysters and hatcheries)
- Heavily regulated at both state and federal levels

Fish population in decline worldwide

2007 Levels of Harvest
of
World Fish Stocks



Oregon Fisheries

- Eight species of bottom fish are considered overfished – remediation plans in progress
- Several fisheries have achieved the Marine Stewardship Council Certified Sustainable Fisheries standard that reflects sustainable practices. These include:
 - Pink shrimp fishery
 - Dungeness crab fishery
 - Pacific albacore (American Albacore Fishing Assoc. and Western Fishboat Owners Assoc.)
 - Pacific hake midwinter trawl in the North Pacific



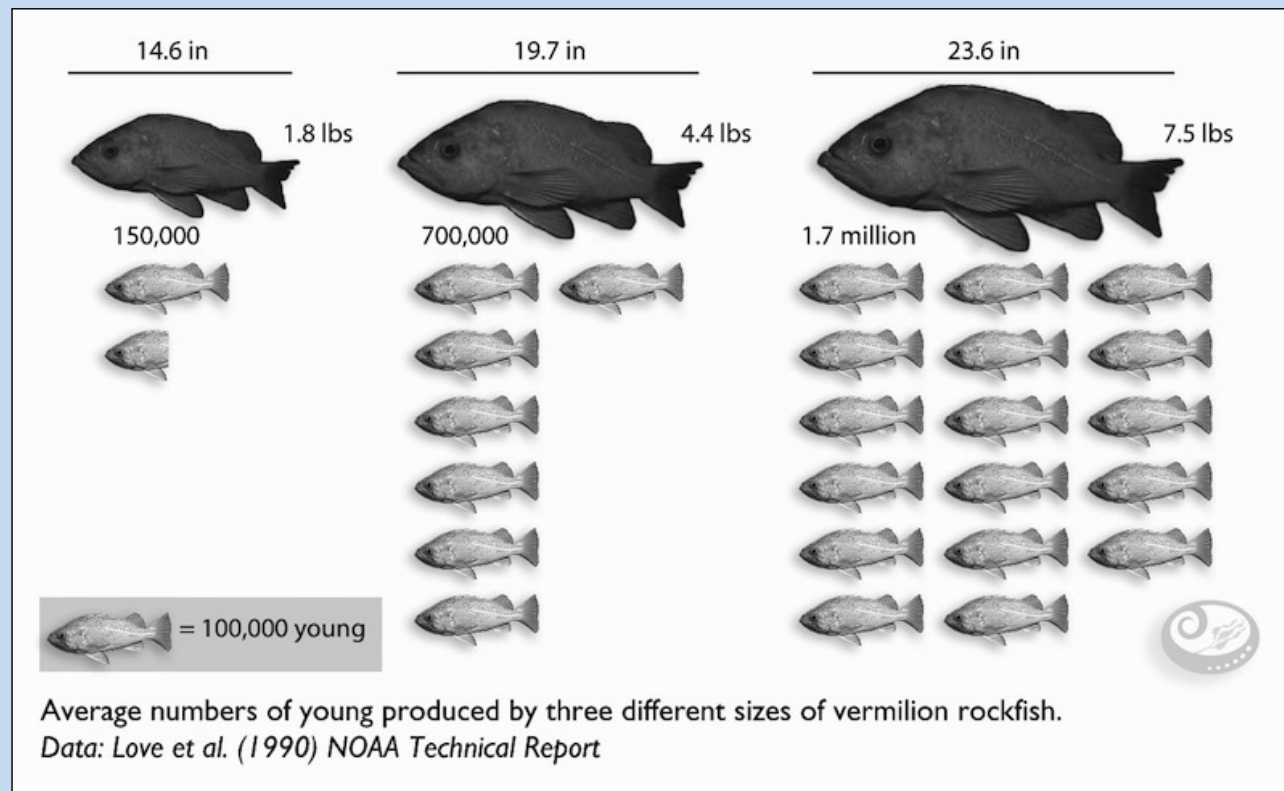
Marine Reserves and Protected Areas

- Marine reserves: ocean areas that are fully protected from activities that remove animals and plants or alter habitats, except as needed for scientific monitoring.
- Marine Protected Areas: lower levels of protection.



Marine Reserves and Protected Areas

- Studies show increase in the plants and animals – size, diversity and density.
- The larger fish are more prolific and successful producers.



Marine Reserves and Protected Areas

- Design:
 - Location: does area include necessary habitats and are boundaries enforceable?
 - Size: is the area large enough to protect the species within?
 - Number and distance between – are reserves close enough to work as a network? Do they include habitats to allow mobile species to move from one to another?



Marine Reserves and Protected Areas

Socio – economic considerations

- Perceived loss of fishing grounds possibly balanced by spill over effect of increased fish from reserves
- Increased fishing cost (travel time and cost)
- Benefits from non-extractive recreational activities
- Monitoring
- Compliance and enforcement



Oregon Marine Reserves and Protected Areas

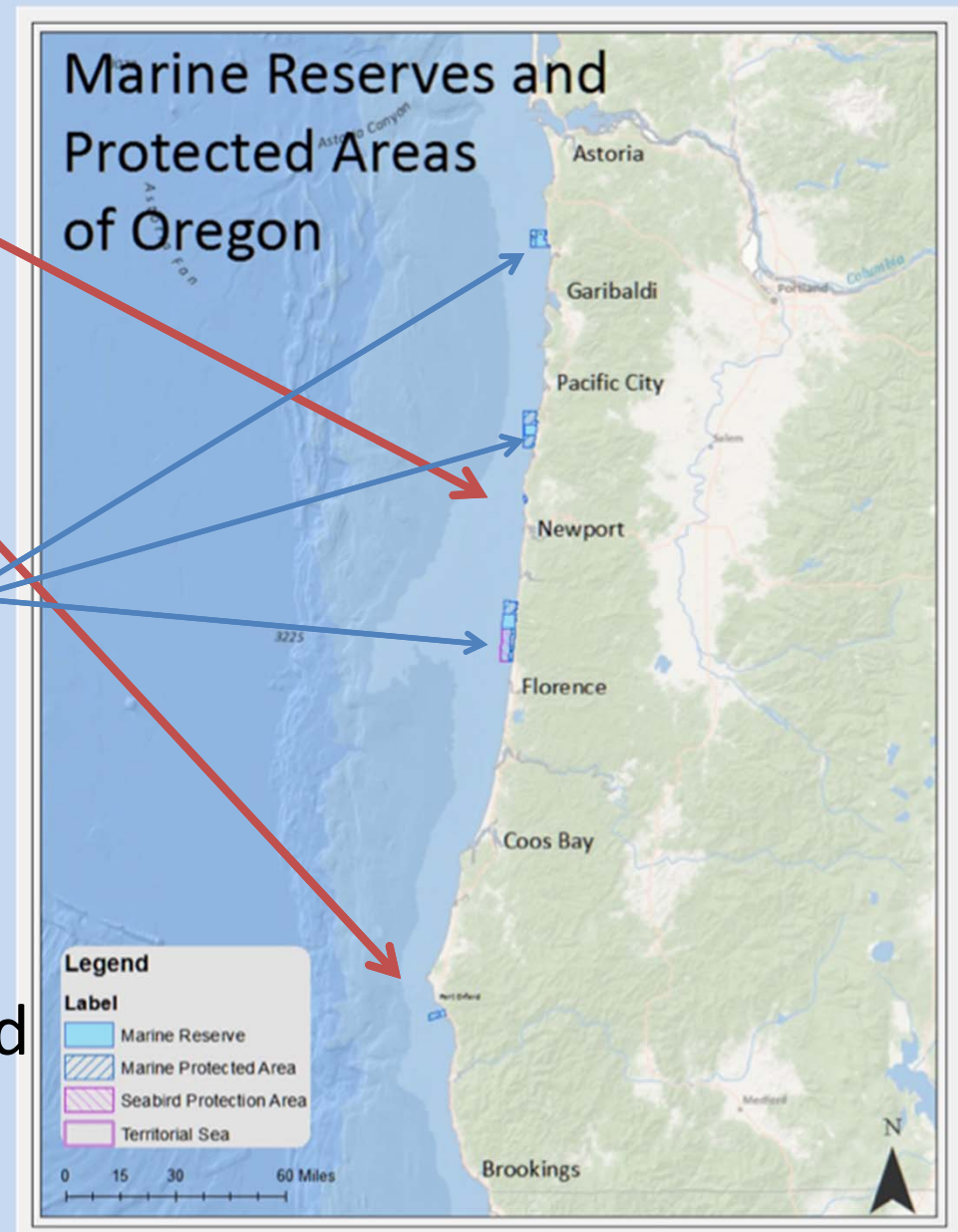
- Process started in 2002
- 2008 – Executive order calling for 9 or fewer sites
- 20 proposals submitted
- Extensive community involvement and discussion



Red Fish Rocks and Otter Rocks – pilot projects in 2009 – fully protected as of 1/2012

2012 – Cape Perpetua, Cascade Head and Cape Falcon added.

May 21, 2012 process completed as bill is signed into law.



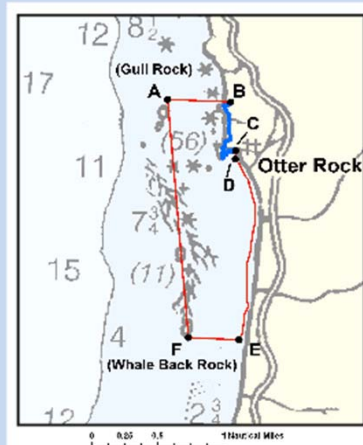
• THE NEXT STEPS: Complete full protection and on-going DATA COLLECTION



Harvest Restrictions Otter Rock Marine Reserve



The following activities are unlawful to undertake in a marine reserve. If in doubt about whether an activity is prohibited or allowed, please contact the regulating agency, or the Oregon Department of Fish and Wildlife's Marine Resources Program at (541) 867-4741 prior to engaging in the activity. This summary is provided for informational purposes only; please consult the Oregon Administrative Rules (OARs) for the complete text of the regulations.



Otter Rock Marine Reserve Boundary Points		
Point	Latitude	Longitude
A	44° 45.175'	-124° 04.53'
B	44° 45.175'	-124° 3.8583' (~ MHWL)
B-C	From points B and C represents the MHWL	
C	44° 44.7933'	-124° 3.7833'
D	44° 44.7283'	-124° 3.7833' (~ ELWL)
D-E	From points D and E represents the ELWL	
E	44° 43.315'	-124° 3.6567'
F	44° 43.315'	-124° 4.2'

MHWL- Mean high water line; ELWL- Extreme low water line

Prohibited

- Take of any fish, invertebrate, or wildlife species
- Take of kelp or other seaweeds
- Deployment of fishing gear
- Intertidal area between points B and C
 - Collecting, picking, mutilating, or removing non-living natural products from the ocean shore
 - Giving or offering food to any wildlife
 - Pursuing, injuring, or molesting any wildlife or disturbing their habitats
 - Digging up or removing any soil, sand, rock, fossil material, archaeological, cultural, or historic material

Exceptions/allowances

- Intertidal area between points C and E is not included in the marine reserve
- Removing fishing gear that has drifted into the area: must notify Oregon State Police (1-800-452-7888) and receive permission prior to retrieving gear*
- Transiting or anchoring with catch onboard*
- Take with valid scientific taking permit

*additional regulations apply

Full Rules

- ✓ Oregon Department of State Lands Regulations: OAR 141-142-0010 through 0040; Contact: (503) 986-5200
- ✓ Oregon Department of Fish and Wildlife Regulations: OAR 635-012-0020 through 0060; Contact: (541) 867-4741
- ✓ Oregon Parks and Recreation Department Regulations: OAR 736-029-0010 through 0050; Contact: (503) 986-0707

www.oregonocean.info/marinereserves

OREGON DEPARTMENT OF FISH AND WILDLIFE



Monitoring for reserves and comparative areas

Detailed assessments include:

- **Oceanographic condition:** temperature, salinity, chlorophyll, dissolved oxygen, and light
- **Habitats:** depth, relief, substrate type, and biogenic features
- **Focal species:** presence, distribution, abundance, density, and size

Ocean Energy

- The ocean provides a variety of energy resources:
 - Wave energy,
 - Thermal energy conversion,
 - Tidal power,
 - Wind technology
- Oregon has adopted a Renewable Portfolio Standard for energy that supports seeking alternate sources including ocean energy.

Wave Energy

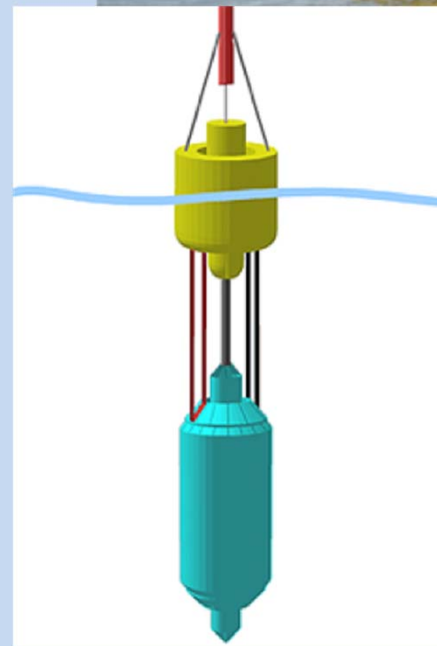
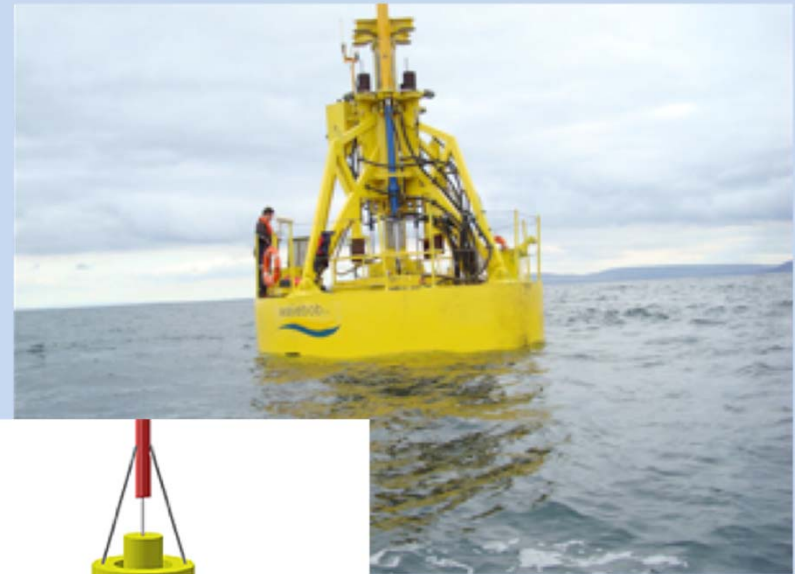
- Advantages:
 - Higher availability
 - Lower variability
 - Greater forecastability
 - Good match for Oregon energy needs (more wave power in winter months)
- Disadvantages:
 - Technology and research still in infancy
 - Potential impacts on habitat

Existing Wave technologies

- Point absorber
- Oscillating water columns
- Overtoppings
- Attenuators
- Aquamarine Power's Oyster

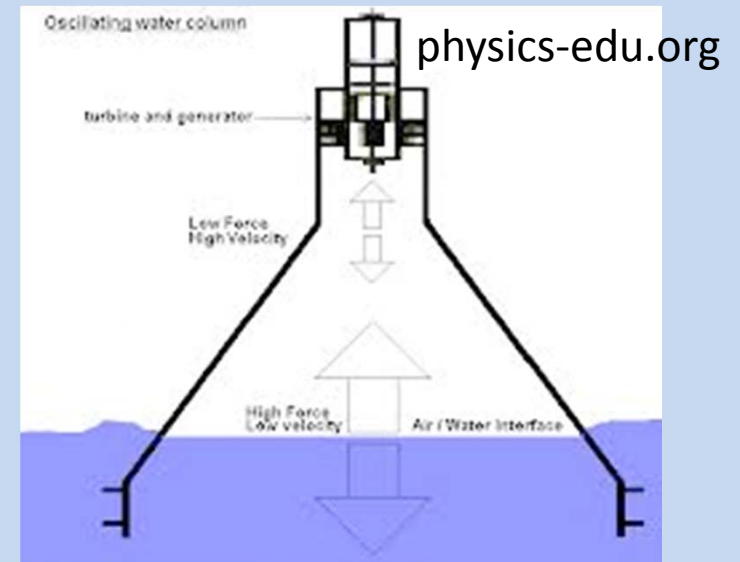
Point Absorbers

- Bottom mounted or floating
- Capture energy from up/down motion of wave
- Fully or partially submerged



Oscillating water columns

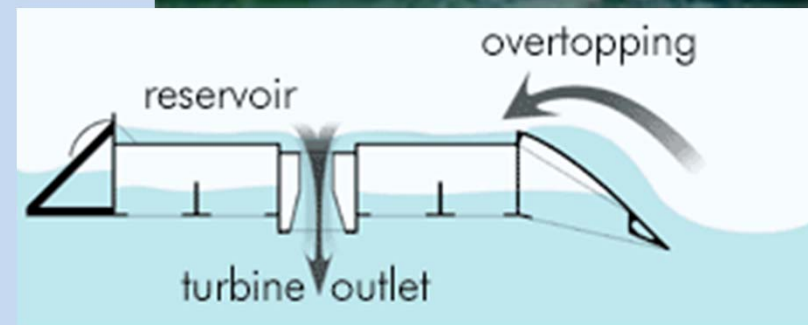
- Acts as piston on trapped air
- Air travels through turbine generator to produce electricity



Overtoppings

Funnel waves over
the top of structure
into a reservoir

Water turns turbine
as it returns to sea



<http://www.wavedragon.net>

Attenuators (linear absorbers)

- Long Devices oriented in direction of incoming waves
- Articulated structures rotate relative to each other driving generators

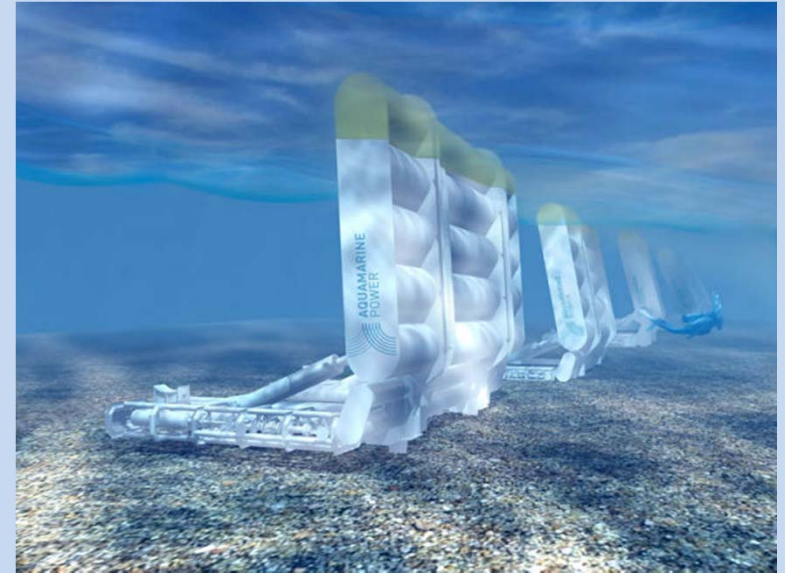


mywindpowersystem.com



Aquamarine Power's Oyster

- Deployed near shore.
- Wave activates a pump which delivers high pressure water via a closed-loop sub-sea pipeline to the shore.
- High-pressure water is converted to electrical power onshore, using hydro-electric generators.



rechargenews.com



Impacts of wave energy devices

- remove energy from the ocean, making less available for natural processes,
- introduce many large, hard structures, thus creating new and different habitat types.
- Alter the views of the coast
- Make ocean areas off limits



Other concerns with wave energy

- Is it competitive?
- Will it close areas to fishing?
- Problems with connecting to electrical grid?
- What is the economic impact?
- Technology still in early development.
- What are the costs?
- How should the public be involved?



Oregon Wave Energy Development

- A variety of federal and state agencies will be involved with the Federal Energy Regulatory Commission (FERC) taking a lead role.
- Oregon and FERC have signed a MOU on the development in Oregon
- Oregon's TSP part V specifies guiding principles for decisions on wave energy.
- The Oregon Wave Energy Trust provides funding.
- The Northwest National Marine Renewable Energy Center does research.



Current status

- A number of permits have been requested
- Ocean Power Technologies plans to deploy test buoy off Reedsport in late 2012



Invasive or Introduced Species

- Plants, fish, amphibians, invertebrates, mammals and microbes, have entered Oregon both accidentally and intentionally.
- Compete with native species for food and habitat.
- May alter habitat.
- Control can be expensive.
- Examples include: Spartina, Japanese Knotweed, zebra mussels.



Invasive or introduced species

- Major pathways for introduction
 - Ballast water
 - Biofouling of ships
 - Introduced as exotics for gardens, aquariums, food industry
- Regulation
 - Variety of regulatory agencies International, federal, state
 - Regulation requires staffing and funding

Forestry

- Level of production and export has declined, but remains important to the Coastal Economy.
- Concern with runoff from forestry practices.
- Current on-going law suits regarding Best Management Forest Practices under Clean Water Act.
- Oregon has agreed to develop specific Total Maximum Daily Loads (TMDL) for pollution from forestry activities in the Coastal Zone.

Dredging

- Excavation of material under fresh or salt water
- used to:
 - Deepen and widen shipping channels,
 - Change the course of stream flow,
 - Harvest crustaceans,
 - Enrich eroding beaches,
 - Harvest rocks, gravel and sand, to extract minerals,
 - Place underwater cables,
 - Construct bridges and
 - Develop waterfronts.

Maintenance of navigation channels is crucial to ports

Dredging issues

Pros:

- Necessary for navigation
- Provides jobs
- Supplies materials for commerce
- Supports development

Cons:

- Destroys natural habitat
- Changes hydrology of streams
- Increases turbidity
- Damages fish habitat for reproduction
- Destroys riparian vegetation



Dredging requirements

- Dredging requires permitting including biological opinions.
- Currently looking at developing more Regional General Permits.
- Suction gold mining takes place in remote sites and requirements for monitoring can offer challenges. Involves one or more miners.



NonPoint Source Pollution

- Both nonpoint and point source pollution contaminate our ocean, groundwater, streams, estuaries, lakes and aquifers.
- Point source pollution comes out of a pipe, culvert, or channel.
- Nonpoint source pollution comes from contamination of stormwater and other runoff water that collects pollutants from surfaces.



Coastal NonPoint Pollution Control Program

- Has specific requirements to control pollutants in the coastal region.
- Extends Coastal Zone Region Boundary to include the entire Umpqua and Rogue River watersheds
- Introduces new TMDLS that are “implementation-ready.”
- Impacts forestry, mining, dredging, agriculture.



Other Pollution Issues

- Septic System failure
 - Problematic in rural areas.
 - Communities resist costly changes.
- Trash
- Noise pollution
- Beach monitoring



Climate change

- The elephant in the room
- Can expect to see
 - Sea level rise
 - Changes in waves (height and run-up)
 - Loss of habitat including beaches, dunes and estuaries
 - Movement of habitat
 - Increase salinity in estuaries and streams



Public involvement

- State Planning Goal 1 directs DLCD to create policy informed by public comment. The future for Oregon's coastline involves addressing the issues and requires significant public input and support.
- Reaching the public in a timely manner remains challenging.





- The natural resources of Coastal Zone in Oregon face many challenges. Future planning must incorporate both ecological and economic factors.

Questions?

Oregon's Coast and Nearshore Oregon: Using and Protecting Our Natural Resources

- <http://voteoregon.org/issues/study-reports/recent-study-reports/>



League of Women Voters of Oregon