Coastal and Marine Ecology

by
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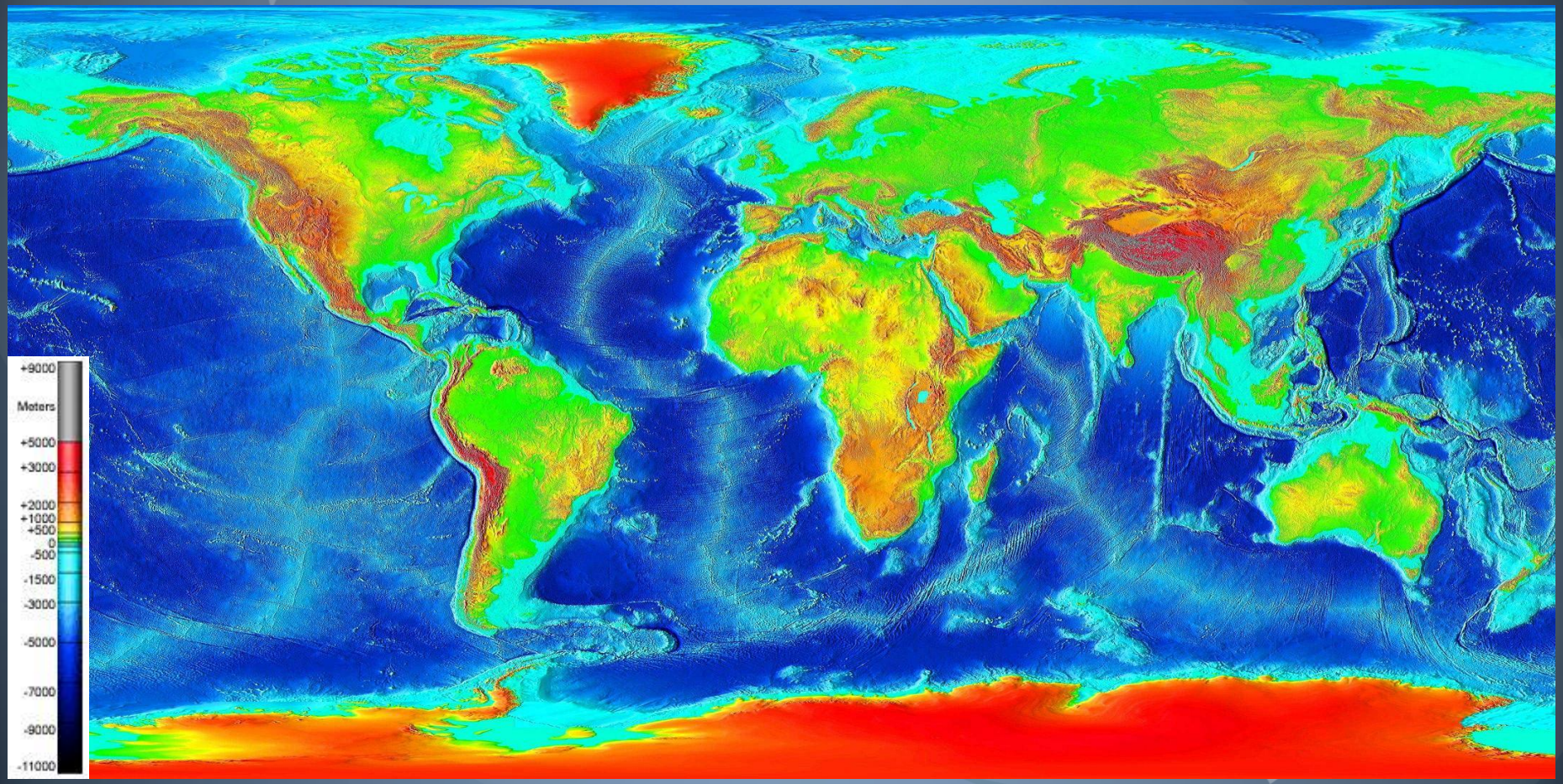
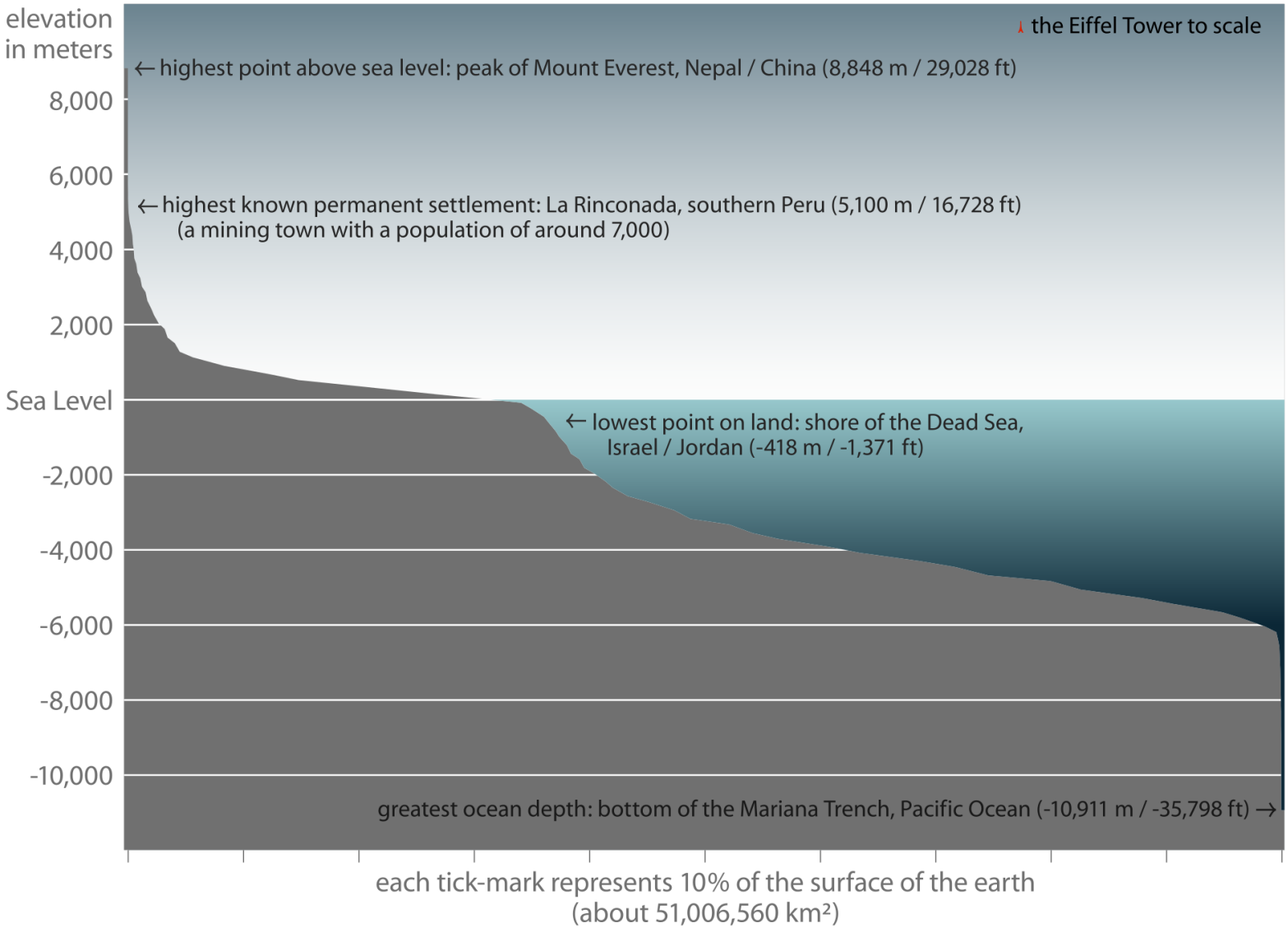
25 March, 2014

for
ITCOO Short Course On
Remote Sensing of Potential Fishing Zones and Ocean State Forecast

A World Without Water

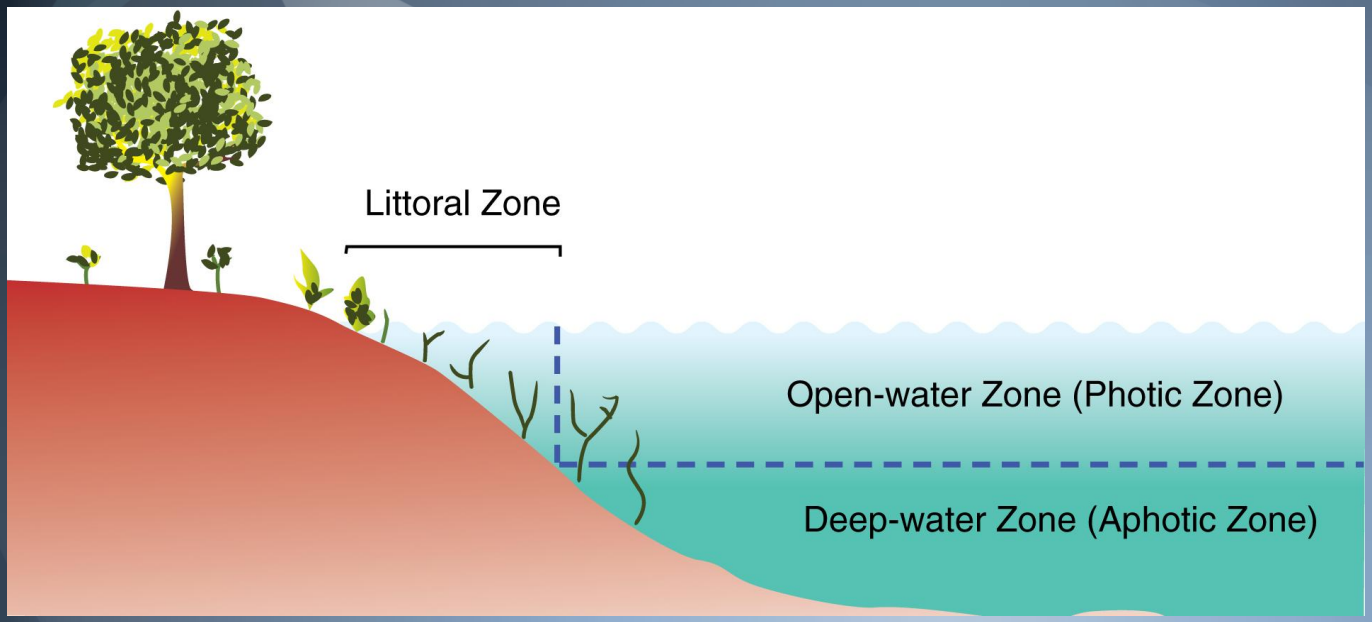


Elevation Histogram of the Earth's Crust

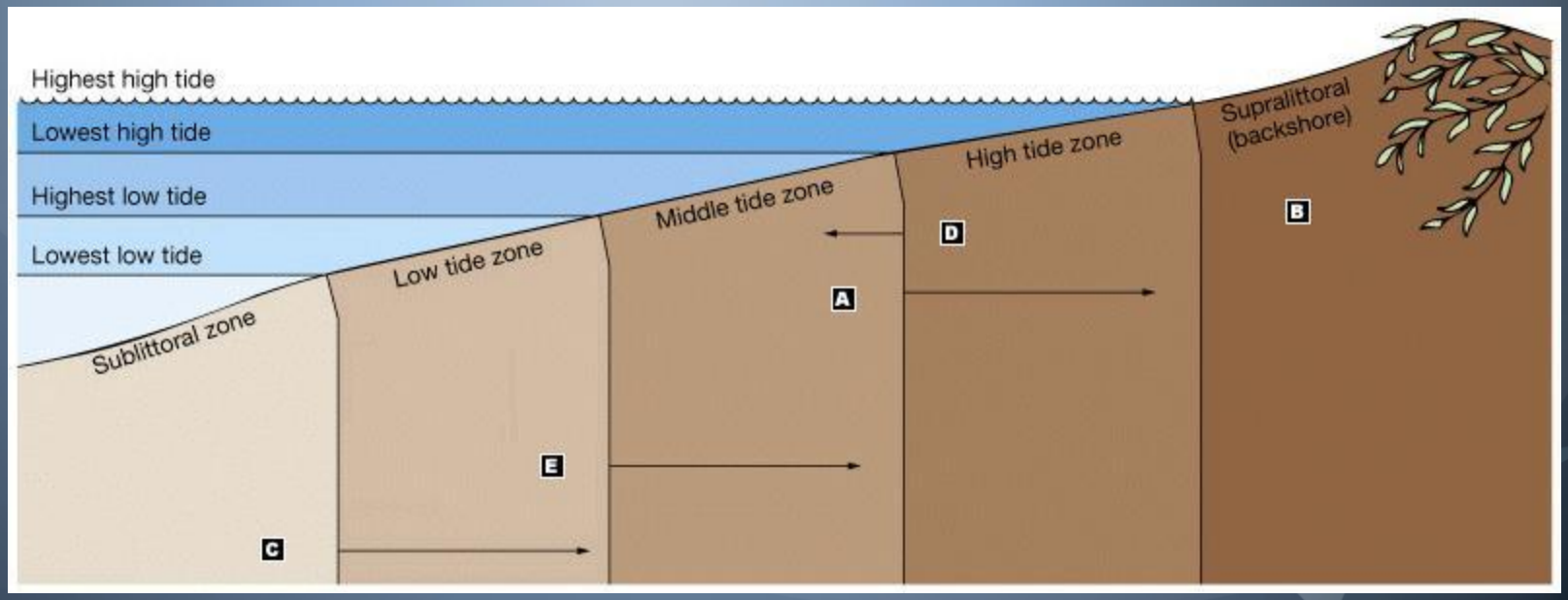


Source: Wikipedia

Starting From the Simplest

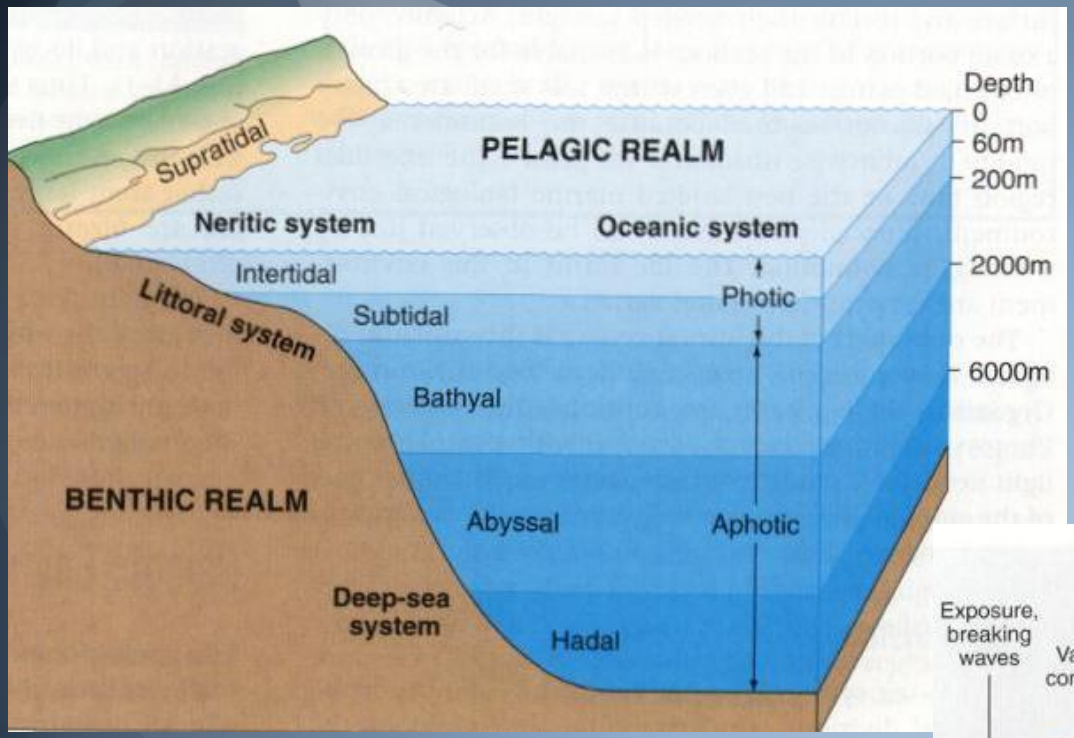


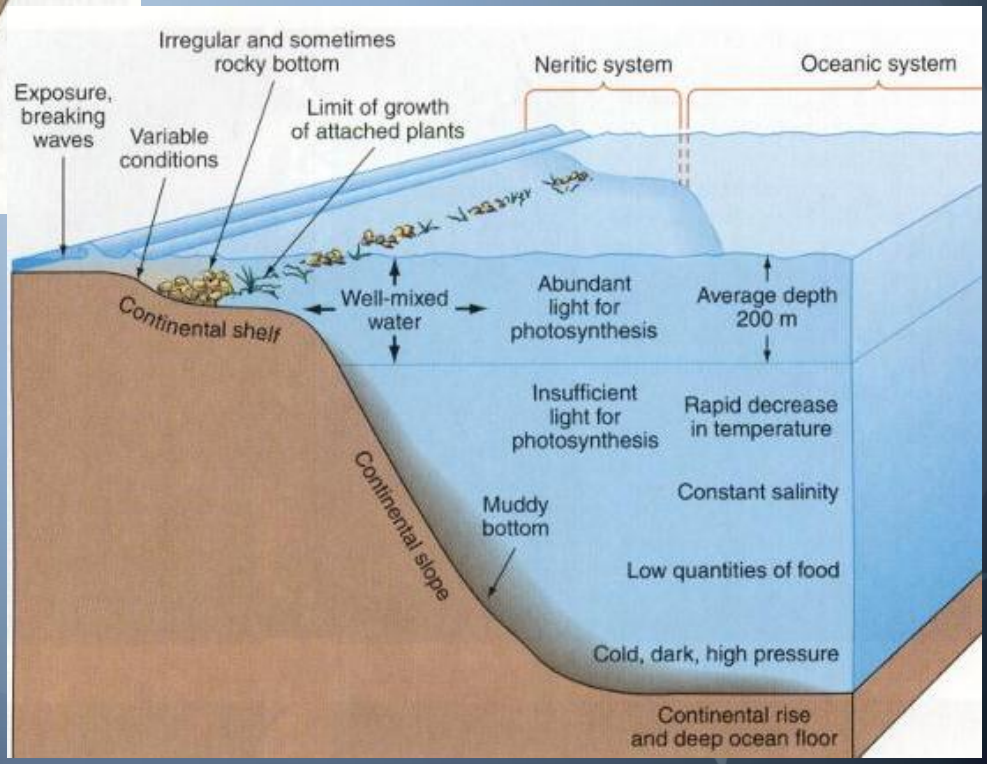
Source: Wikipedia



Source: http://wps.prenhall.com/esm_thurman_essofocean_8/22/5778/1479289.cw/content/

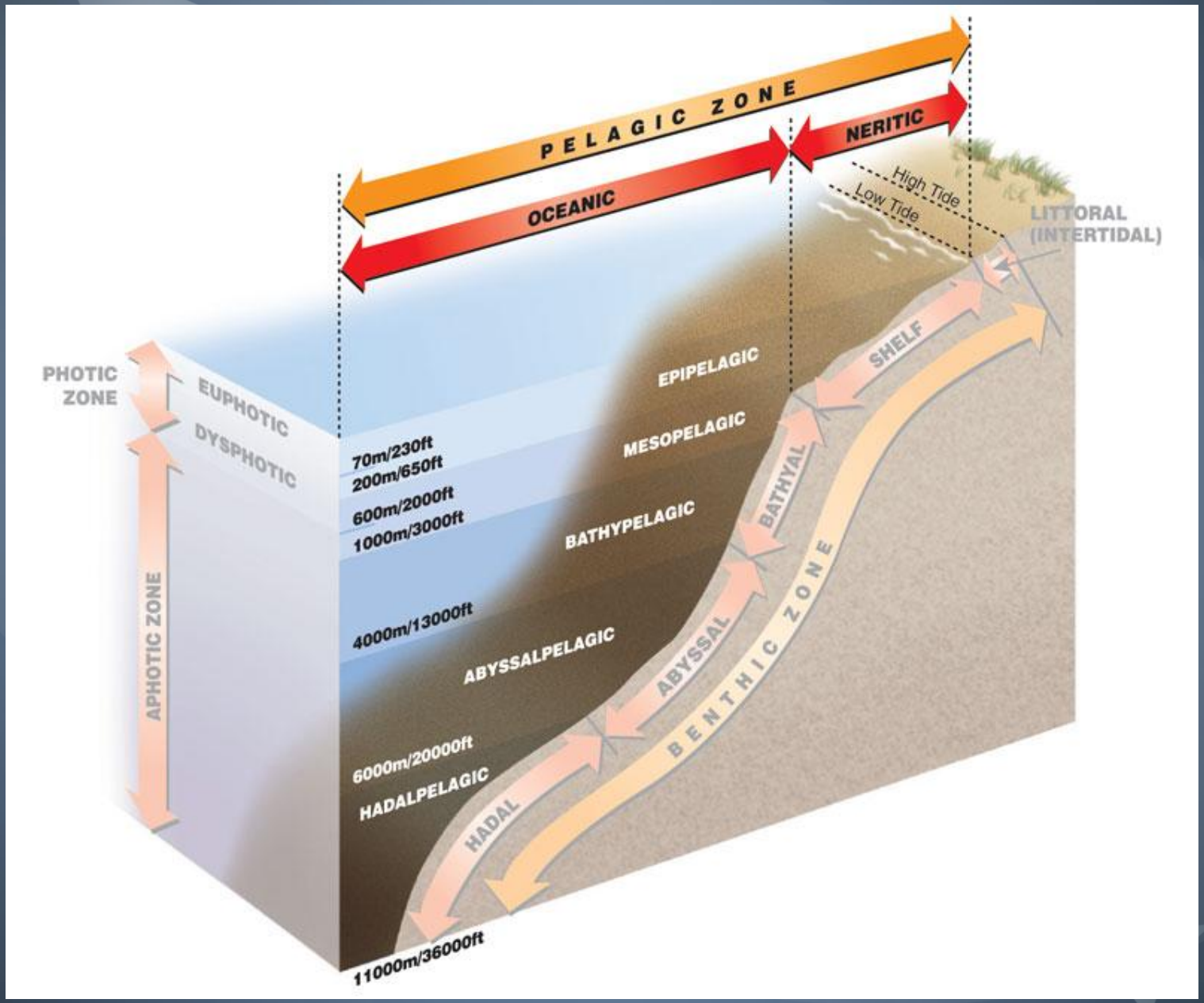
Getting Deeper





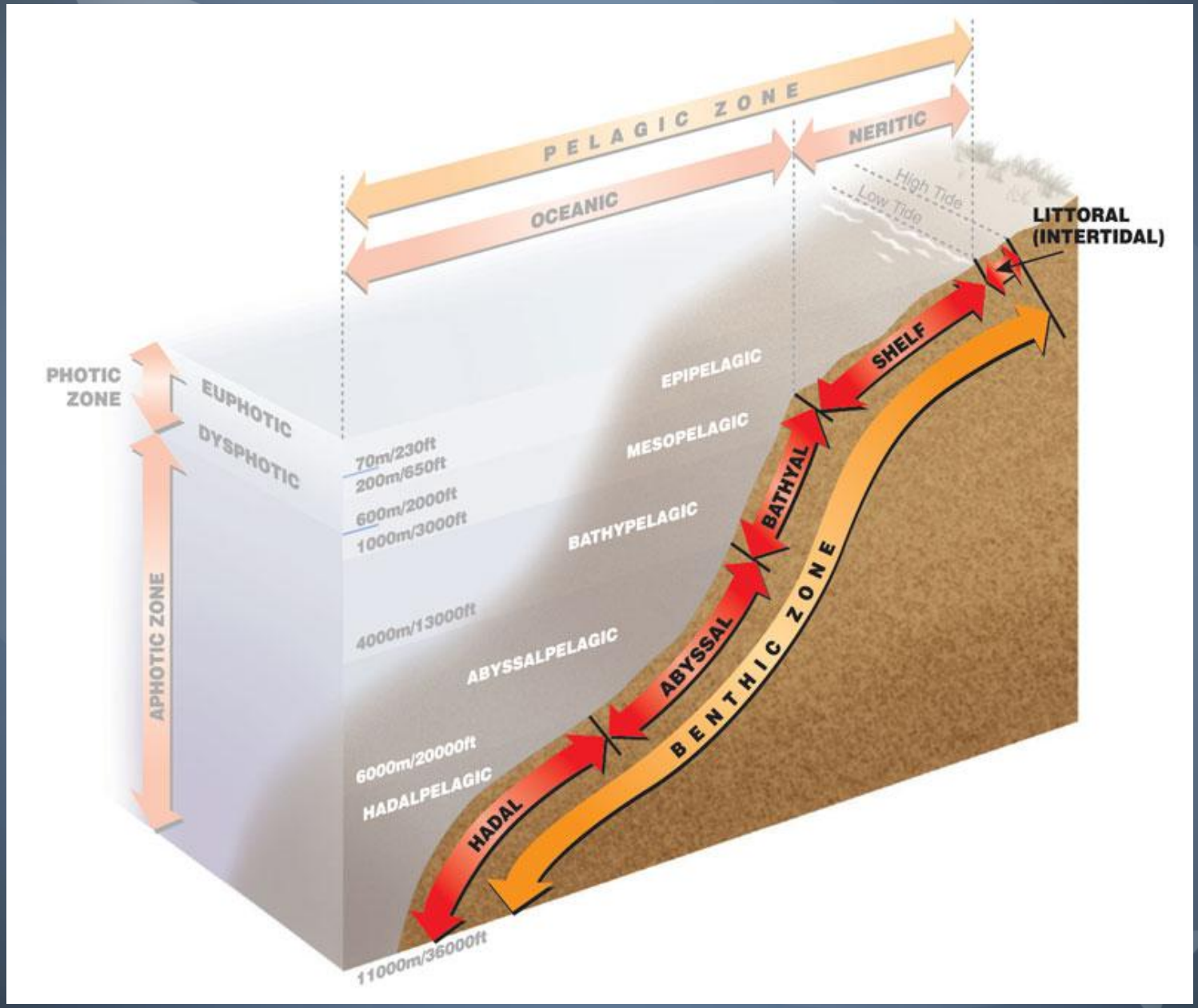
Source: http://geosci.sfsu.edu/courses/geol102/ex9.html

Over the surface and…



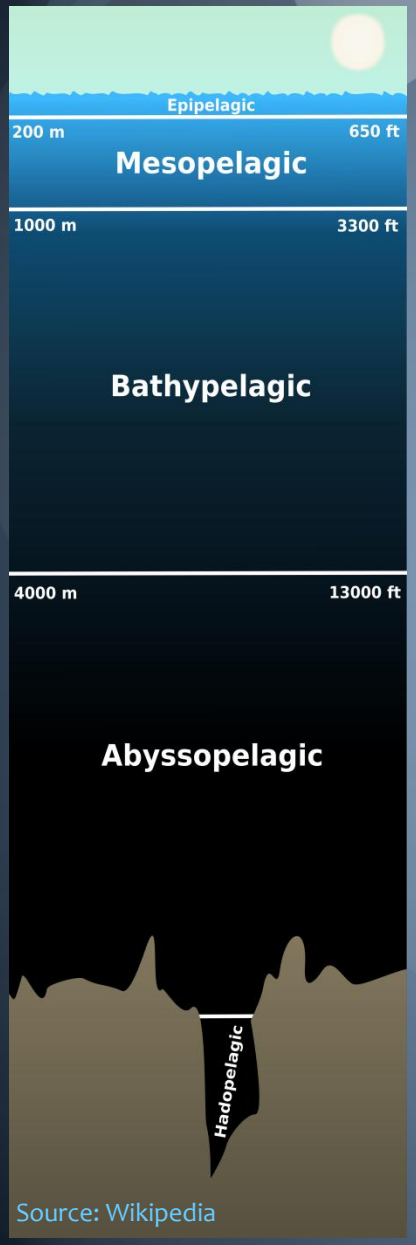
Source: https://www.oceanclassrooms.com/ms101_u4_c1_sb_1

… at the bottom

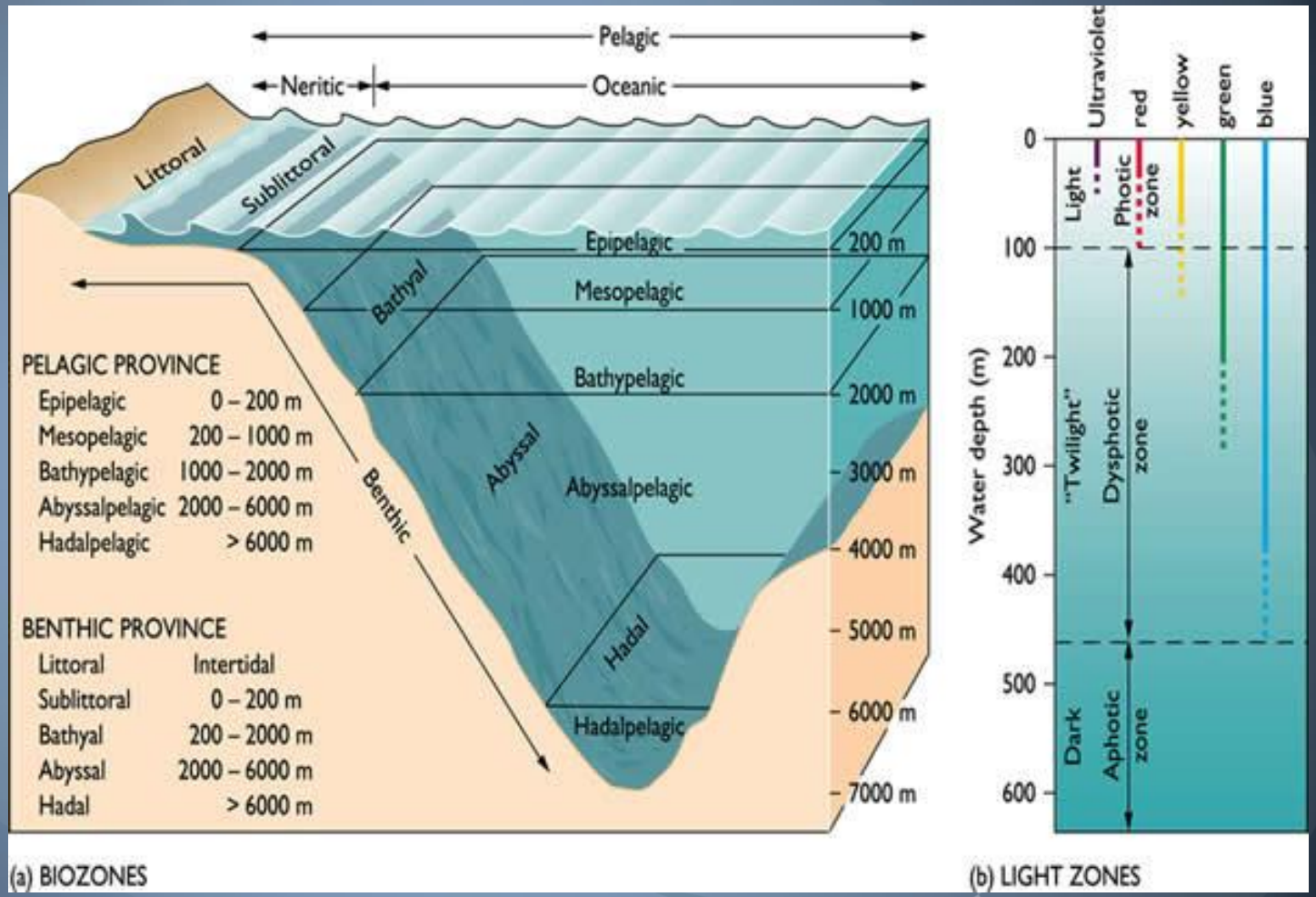


Source: https://www.oceanclassrooms.com/ms101_u4_c1_sb_1

Realm of Light in the Oceans

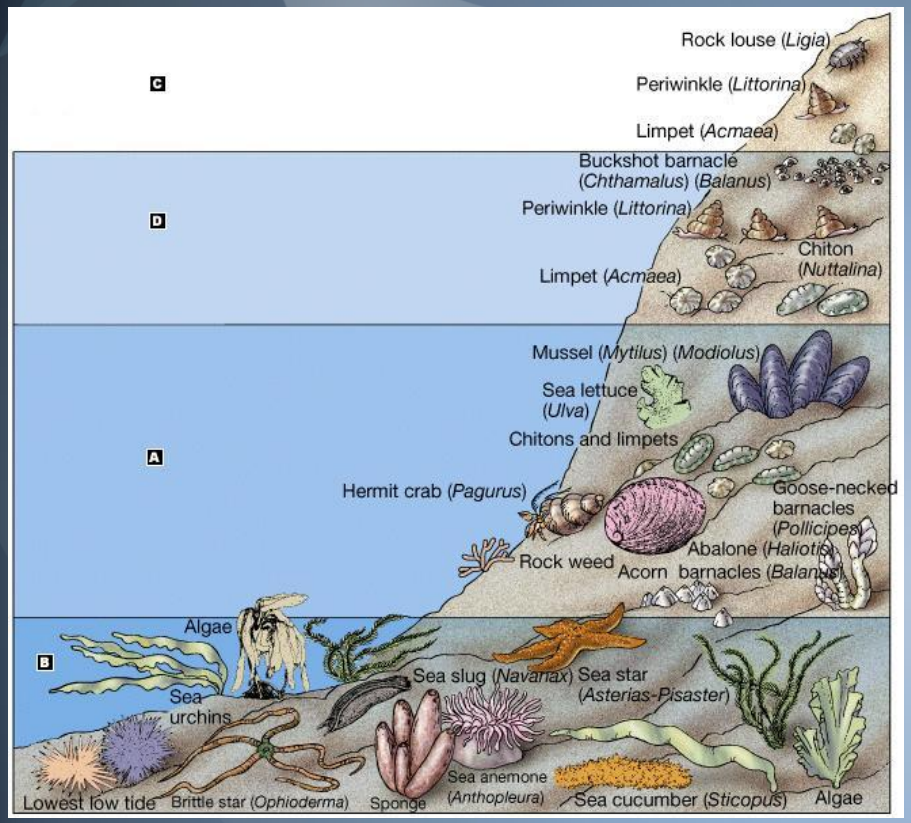


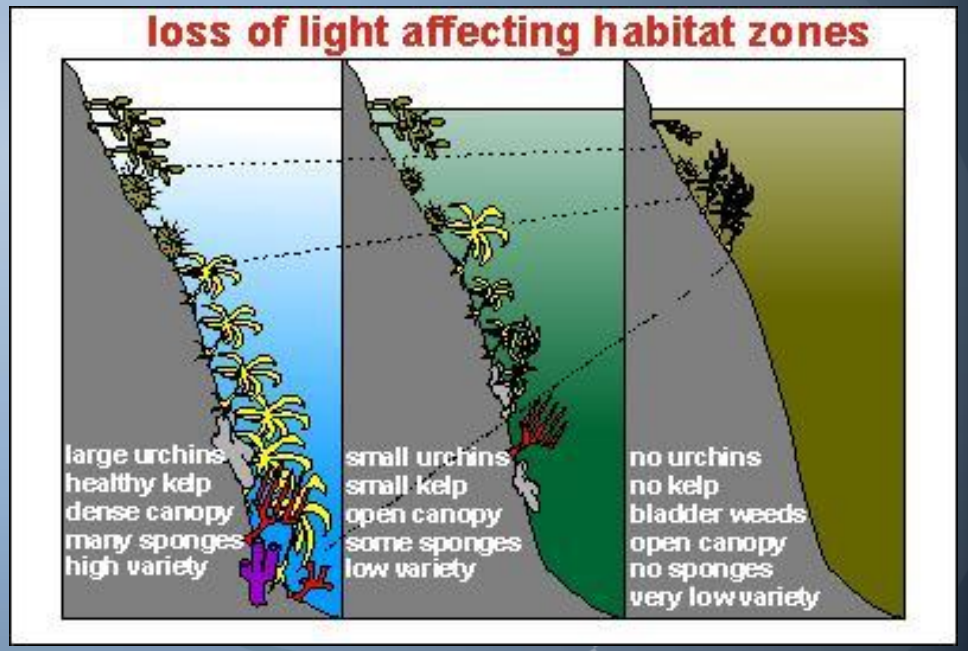
Source: Wikipedia



Source: http://www.marine-conservation.org.uk/marine_ecology.html

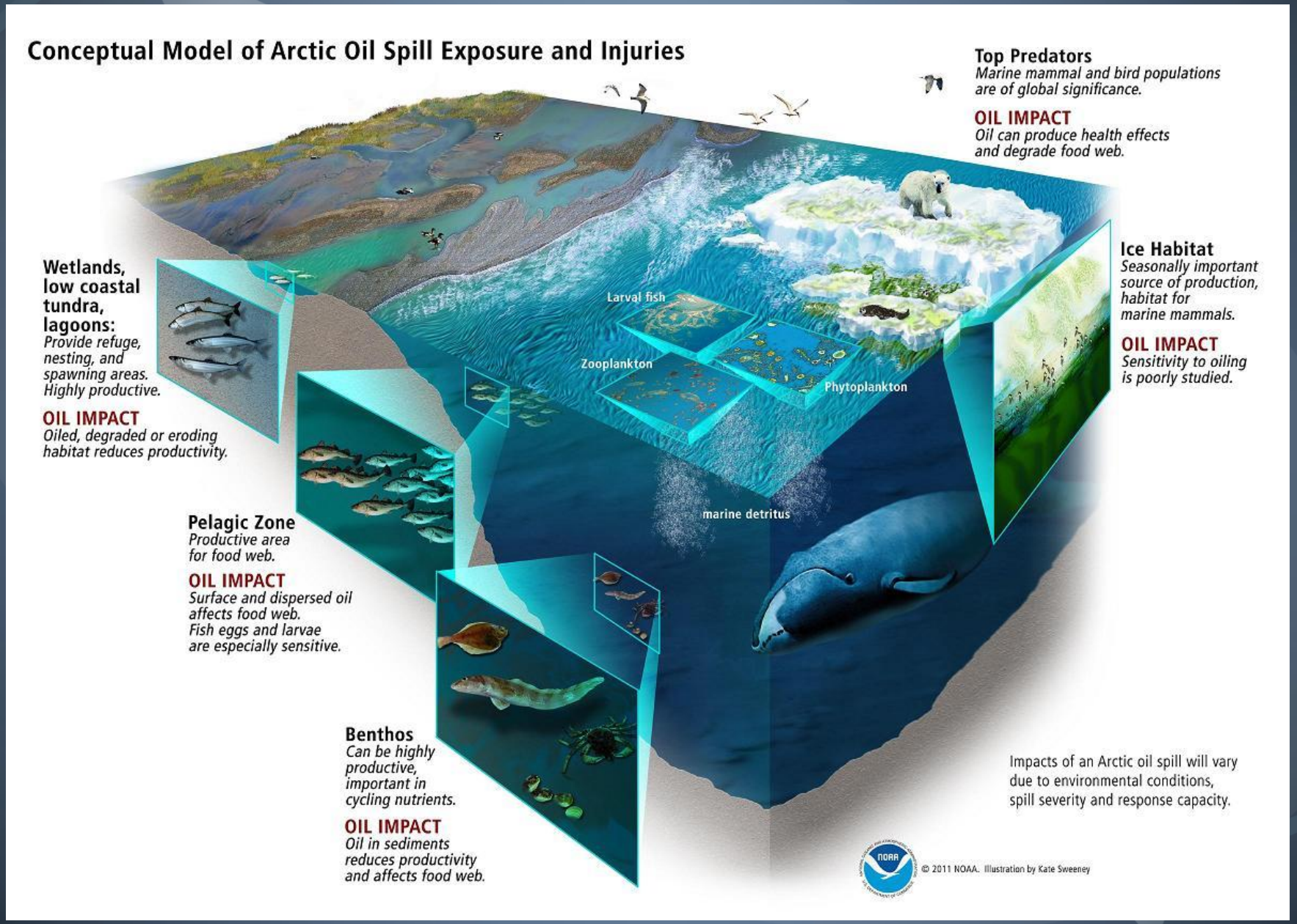
Light : The Life-line





Source: http://wps.prenhall.com/esm_thurman_essofocean_8/22/5778/1479289.cw/content/

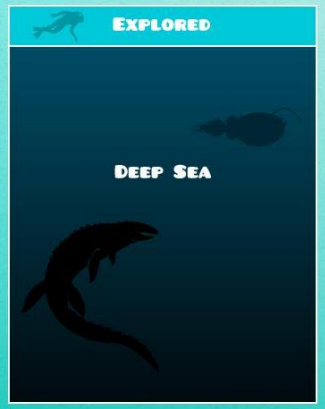
Source: http://www.seafriends.org.nz/issues/cons/marine.htm



Source: http://usresponserestoration.wordpress.com/2012/07/09/how-would-chemical-dispersants-work-on-an-arctic-oil-spill/

Few Fast Facts : Wealth and Wrath

Marine Habitat:
The Beautiful World Underneath



The oceans contain **99%** of the living space on the planet.

Less than **10%** of that space has been explored by humans.

90% of the volume constitutes the dark, cold environment we call the deep sea.

A crab's teeth are in its **stomach**.

An octopus has **3 hearts**.

Seahorses consume **3,000** or more brine shrimp per day.

Sea turtles seem as though they're crying because the salt absorbed from the sea is **excreted through their eyes**.

The swordfish and marlin are the fastest fish in the ocean reaching speeds up to **75 mph** in quick bursts.

Jellyfish have been around for more than **650 million years**, meaning they outdate both sharks and dinosaurs.

Sharks attack about 50-75 people each year worldwide, with 8-12 fatalities. Whereas, **humans kill somewhere between 20-100 million sharks** every year.

The blue whale is the largest animal on our planet ever (exceeding the size of the greatest known dinosaurs) and has a **heart the size of a Volkswagen**.

Scientists have named and classified around 1.5 million species.

About **44%** of the toxic contaminants come from runoff via rivers and streams.

Air pollution is responsible for **33%** of the toxic contaminants that end up in oceans and coastal waters.

44%	33%	23%
Runoff via Rivers & Streams	Air Pollution	Other Methods

More oil reaches the oceans each year as a result of **leaking automobiles and other non-point sources** than the oil spilled in Prince William Sound by the Exxon Valdez or even in the Gulf of Mexico during the Deepwater Horizon/BP oil spill.

EXXON bp

Each year, two times as much garbage is dumped into the world's oceans as the weight of fish caught.

Most Endangered Sea Creatures

Bluefin Tuna

The greatest enemy of tuna is overfishing, overfishing, overfishing.

Sea Turtles

Fishing gear is the sea turtles' worst enemy, as well as loss of habitat and climate change.

Gray Whale

Centuries of overfishing have left one population extinct and one critically endangered.

Coral

Ocean acidification and bottom trawling commercial fishing are its major threats.

Vaquita

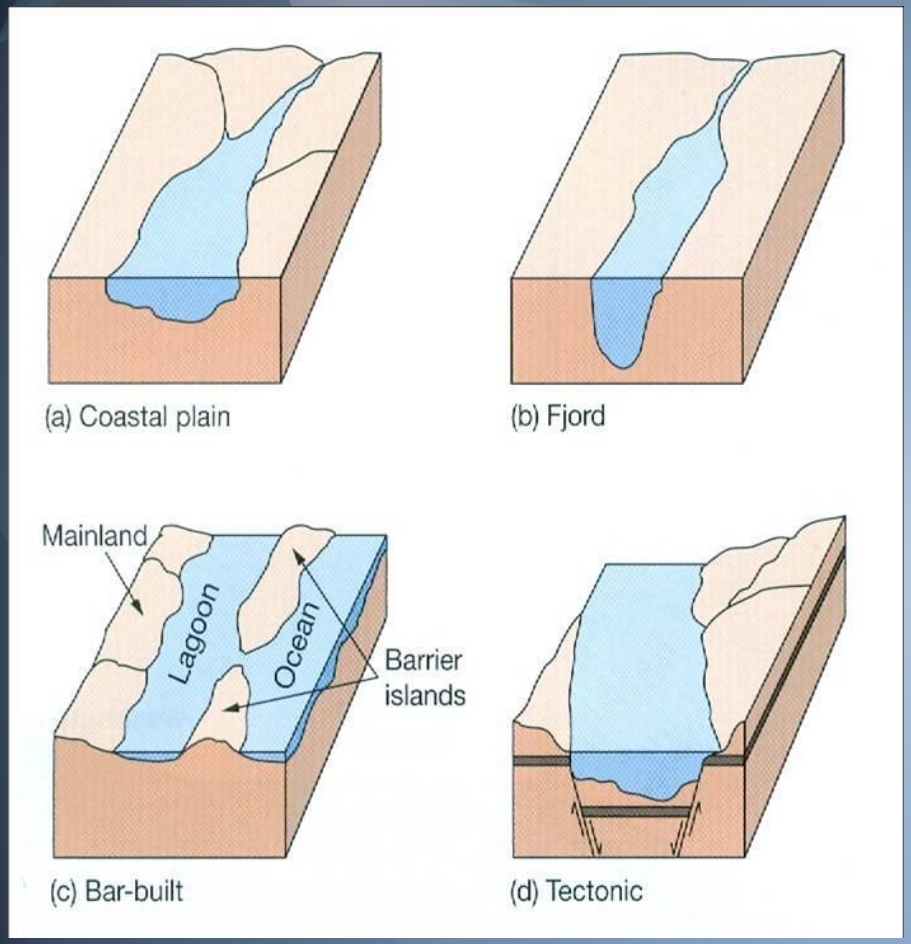
Threatened by the gill nets used to catch fish, they are often killed unintentionally as bycatch.

SOURCES:
http://aquaviews.net/explore-the-blue/amazing-marine-animal-facts/
http://aquaviews.net/explore-the-blue/amazing-facts-about-our-oceans/
http://marinebio.org/marinebio/facts/
http://www.thedailygreen.com/weird-weather/weather-categories/endangered-sea-creatures-pictures-03112

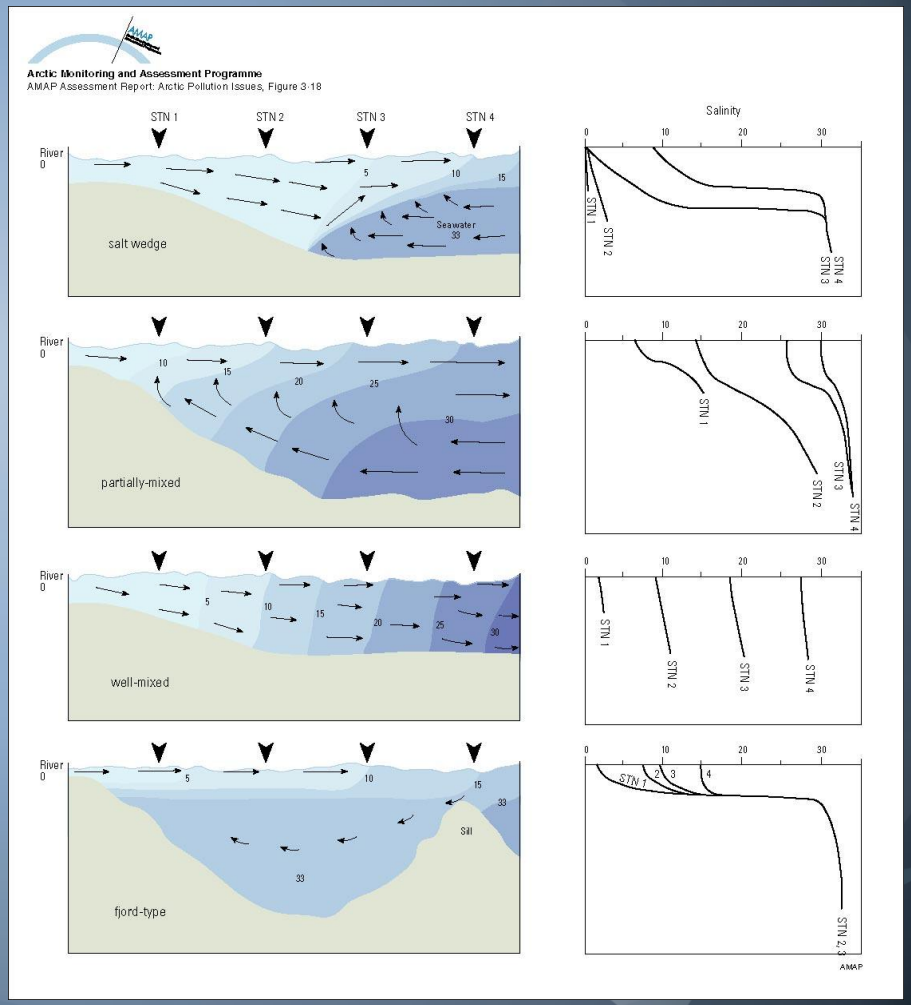
Designed by Samantha Sanders

Infographic Presented By:
ReuseThisBag.com™
Created By: OBizMedia.com

Estuaries : Bonding Land to Oceans



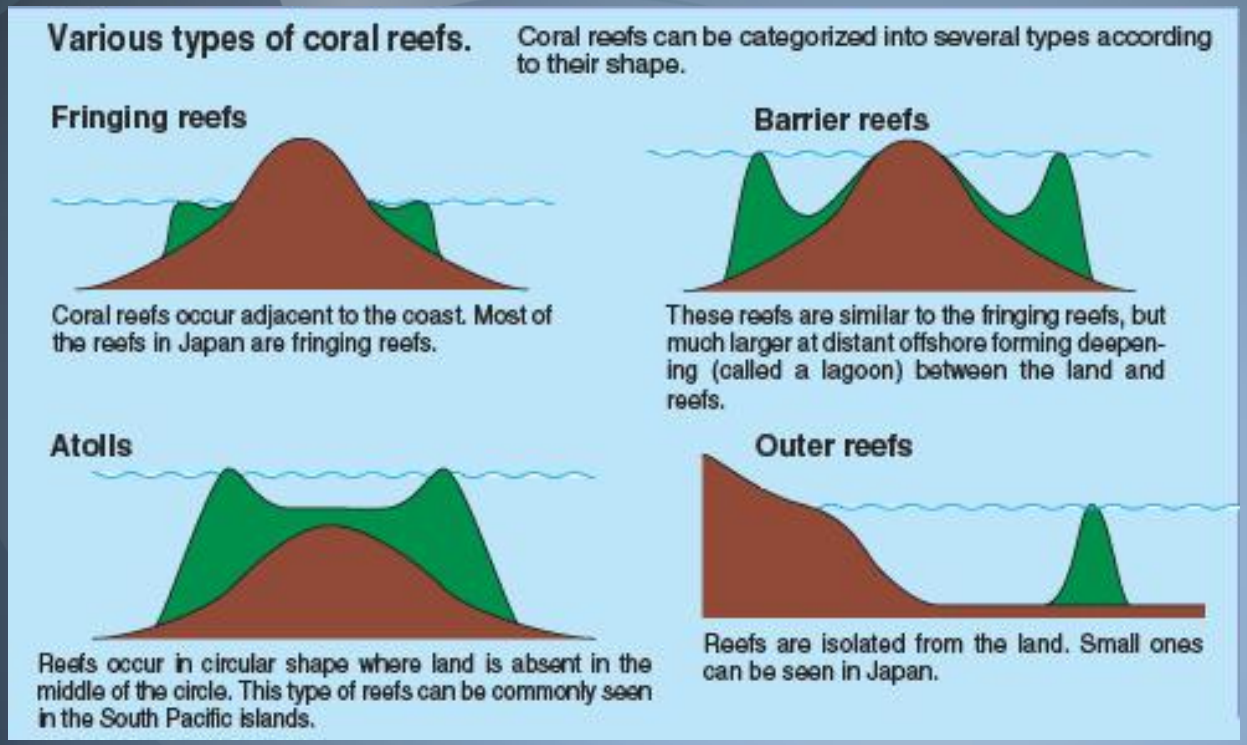
Source: http://www.studyblue.com/

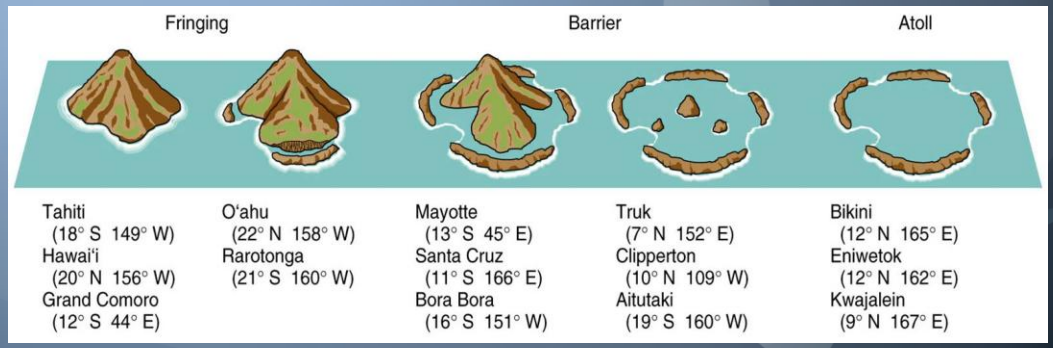


Source: http://www.amap.no/

- ✓ Coral Reefs
- ✓ Mangroves
- ✓ Sea Mounts
- ✓ Kelp Forests
- ✓ Sea-grass beds
- ✓ Hydrothermal Vents / Cold Seeps

Reefs : Metropolis of Marine Diversity





Source: http://junior4-mrslewis.weebly.com/science.html

Source: http://nolimitsscuba.com/blog/category/coral-reefs/

Nature v/s Nature

Why Are Living Marine Habitats Important to Coastal Communities?

Coastal habitats absorb wave energy and help to protect shoreline areas from storm damage, inundation and erosion.

Mangrove forests provided protection from storm damage, flooding and erosion for many people during the 2004 tsunami in the Indian Ocean.

At present, mangroves, along with other coastal habitats, are threatened both directly and indirectly by human activities, resulting in a significant loss of natural coastal protection worldwide.

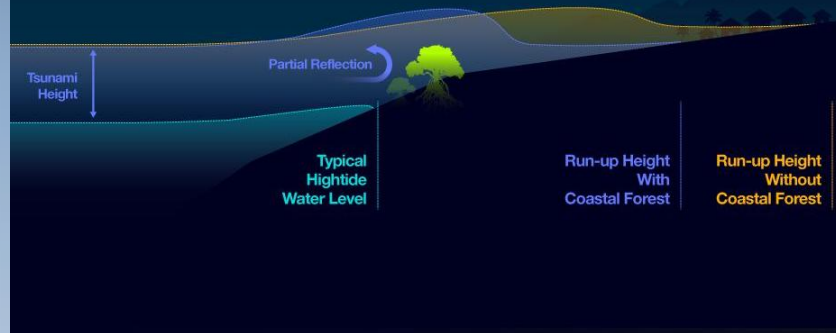
Coastal Habitats Protect Against Storm Damage, Flooding and Erosion

Coastal Habitats Play a Critical Role in Protecting Human Lives and Property

Following the 2004 Indian Ocean tsunami, coastal forests were recognized as an important factor in the mitigation of potentially destructive impacts.

Mangrove Forests Absorb Impact Forces and Mitigate the Energy of Tsunami Waves

During a large storm event, water can be reflected, and energy progressively absorbed, as it passes through the permeable structure of coastal forests. Water depth, velocity and force can be reduced, and waves may not achieve maximum height.



Mangrove Populations Are Declining Worldwide

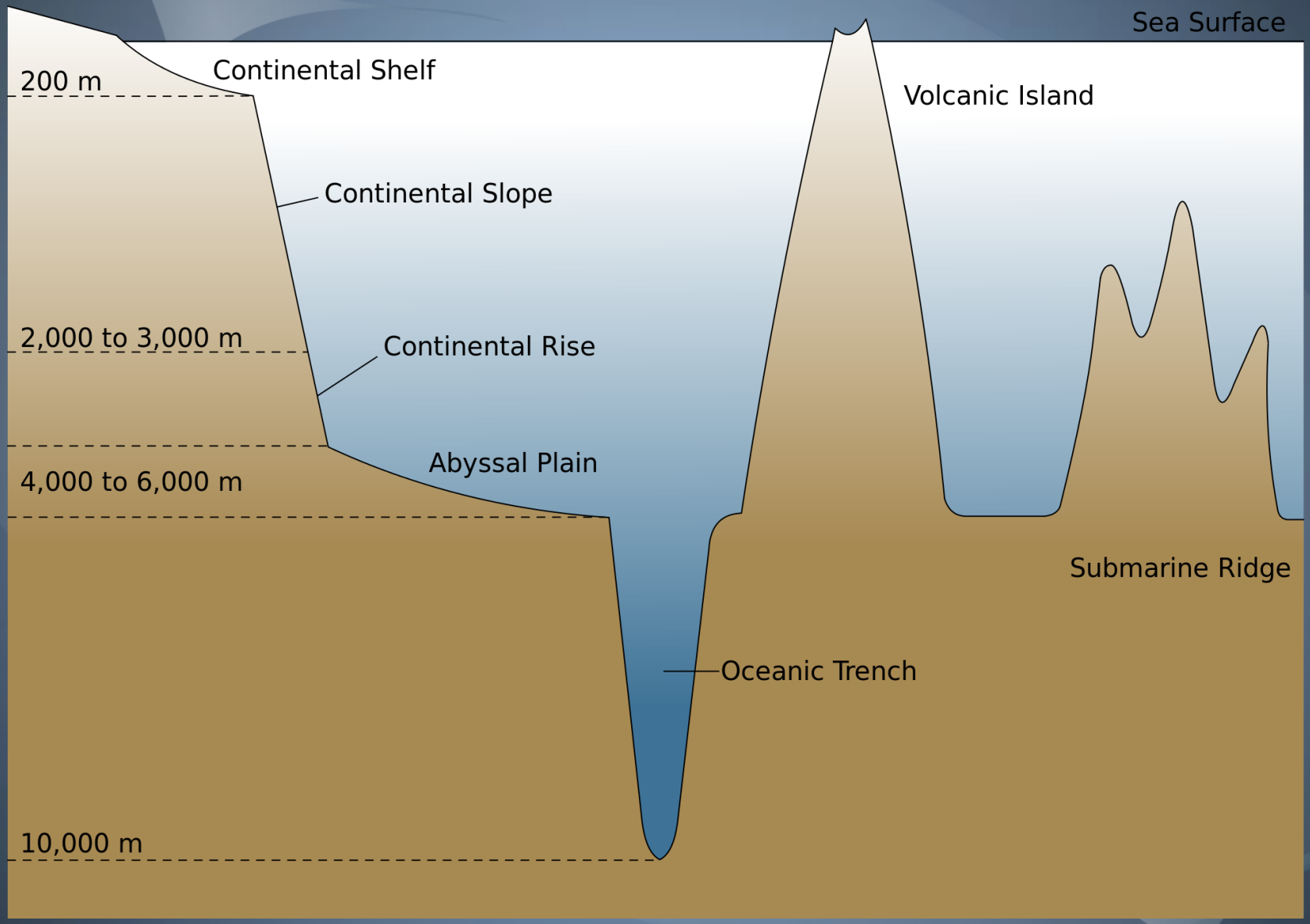
Between 1980 and 2005 there has been a total loss of 3.6 million hectares of mangroves worldwide.

SOURCE:
FAO. "The World's Mangroves 1980-2005", Global Forest Resource Assessment, 2007.
FAO. "The Role of Coastal Forests in the Mitigation of Tsunami Impacts". RAP, Bangkok. 2007.

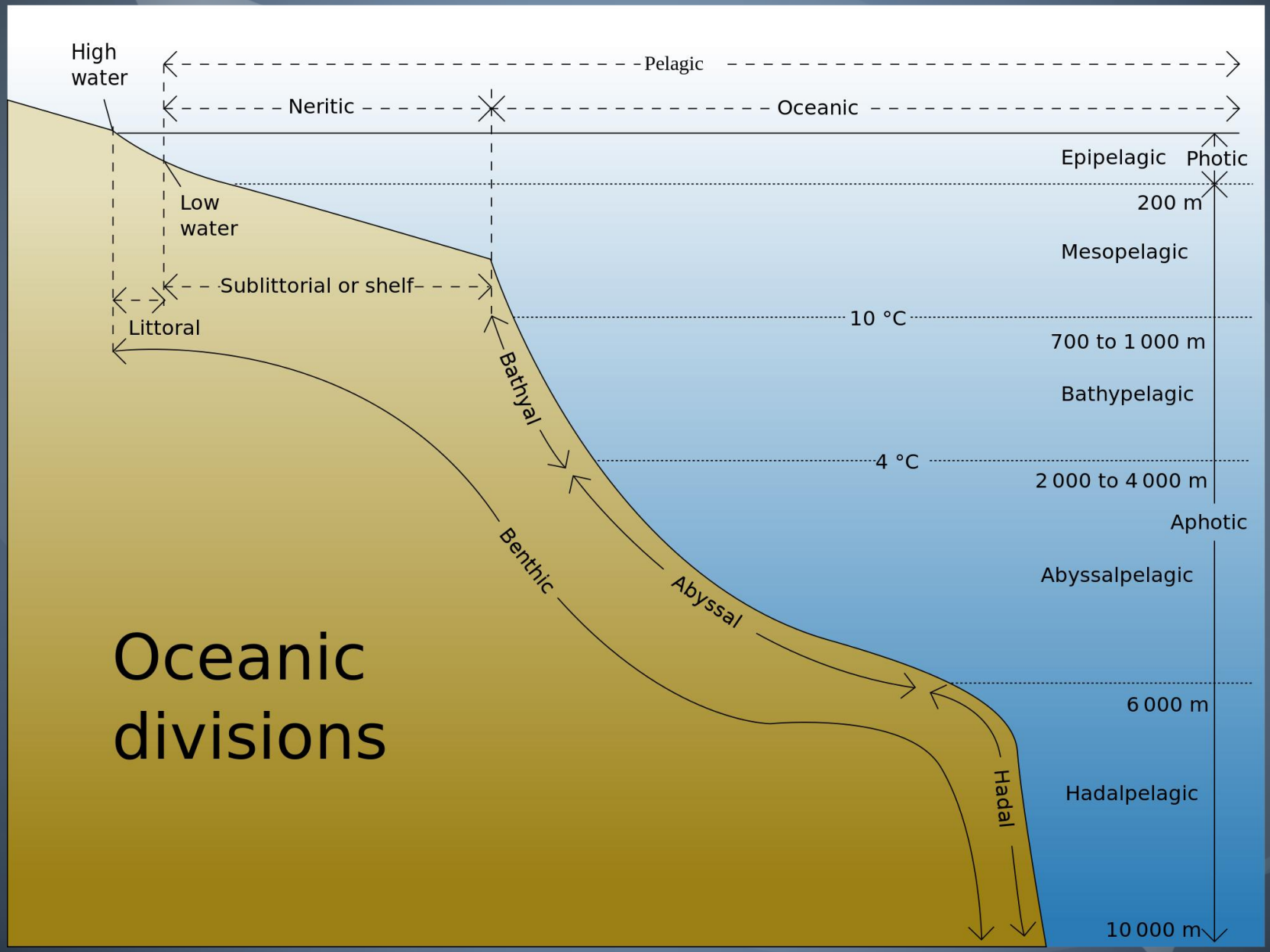
Source: http://www.oceanhealthindex.org/Goals/Coastal_Protection

- Pollution
- Marine Debris
- Eutrophication
- Overexploitation
- Destructive practices
- Temperature, pH and Radiation

Quick Recap



Source: Wikipedia



Source: Wikipedia

Food or Food for thought?