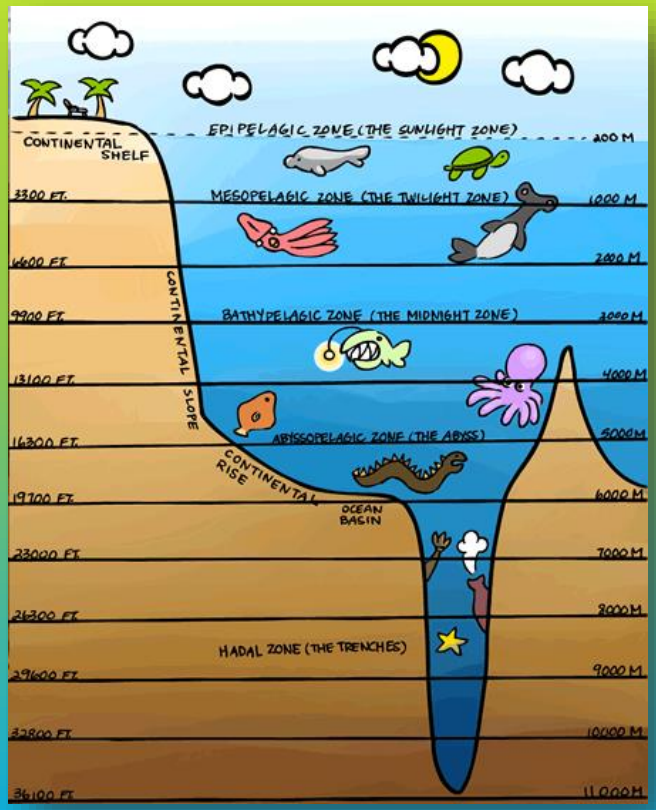
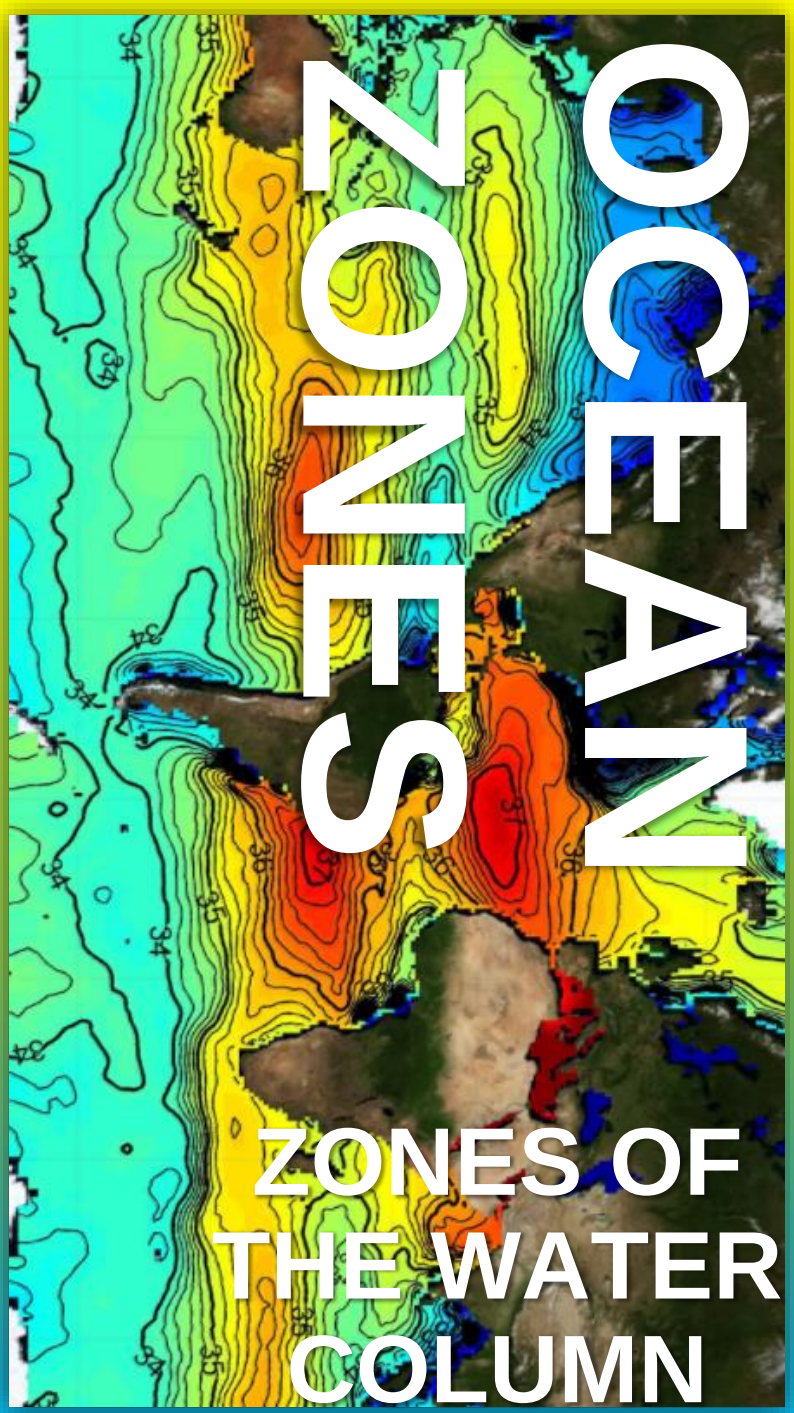
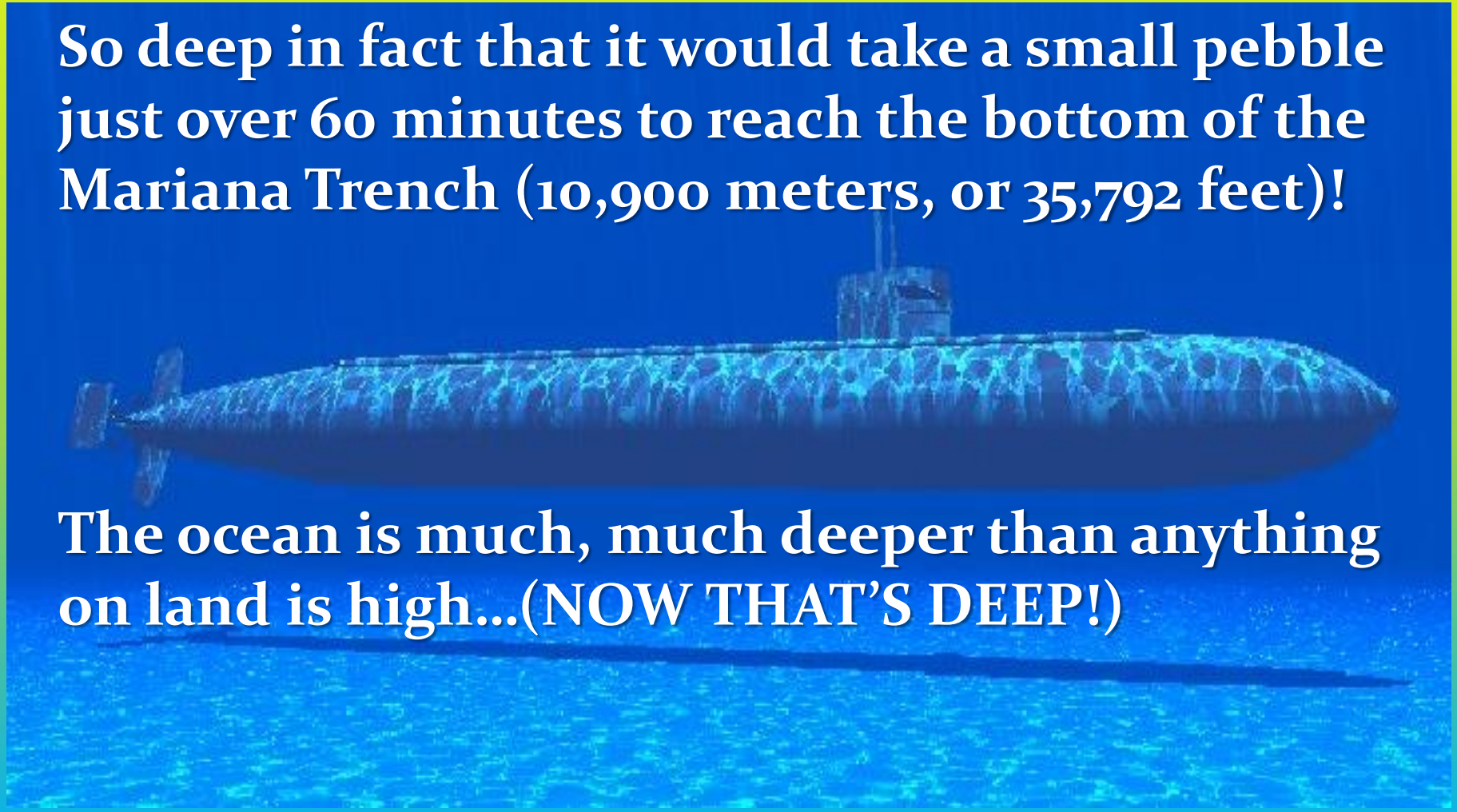

food-chain
Arctic
anglerfish
tides
jellyfish
dolphin
carnivores
biome
algae
omnivores
marine-life
trenches
dark-zone
octopus
twilight-zone
coral
ocean-floor
amphibianwaves
Atlantic-Ocean
phytoplankton
eel
zooplankton
deep-vallejus
starfish
Pacific-Ocean
salt-water
abyss
mountain
coast
plant-eaters
OCEANS
herbivores
Indian-Ocean
fish
sunlight-zone
environment
habitats
oysters
continents
plankton
turtle
Earth
whales
peaks
mammal
shark
squid
Ocean
shore


EPIPELAGIC ZONE (THE SUNLIGHT ZONE)
200 M
CONTINENTAL SHELF
3300 FT.
MESOPELAGIC ZONE (THE TWILIGHT ZONE)
1000 M
6600 FT.
2000 M
9900 FT.
BATHYPELAGIC ZONE (THE MIDNIGHT ZONE)
3000 M
CONTINENTAL SLOPE
13100 FT.
4000 M
16300 FT.
ABYSSOPELAGIC ZONE (THE ABYSS)
5000 M
CONTINENTAL RISE
19700 FT.
6000 M
OCEAN BASIN
23000 FT.
7000 M
26300 FT.
8000 M
HADAL ZONE (THE TRENCHES)
29600 FT.
9000 M
32800 FT.
10000 M
36100 FT.
11000 M


OCEAN ZONES
ZONES OF THE WATER COLUMN

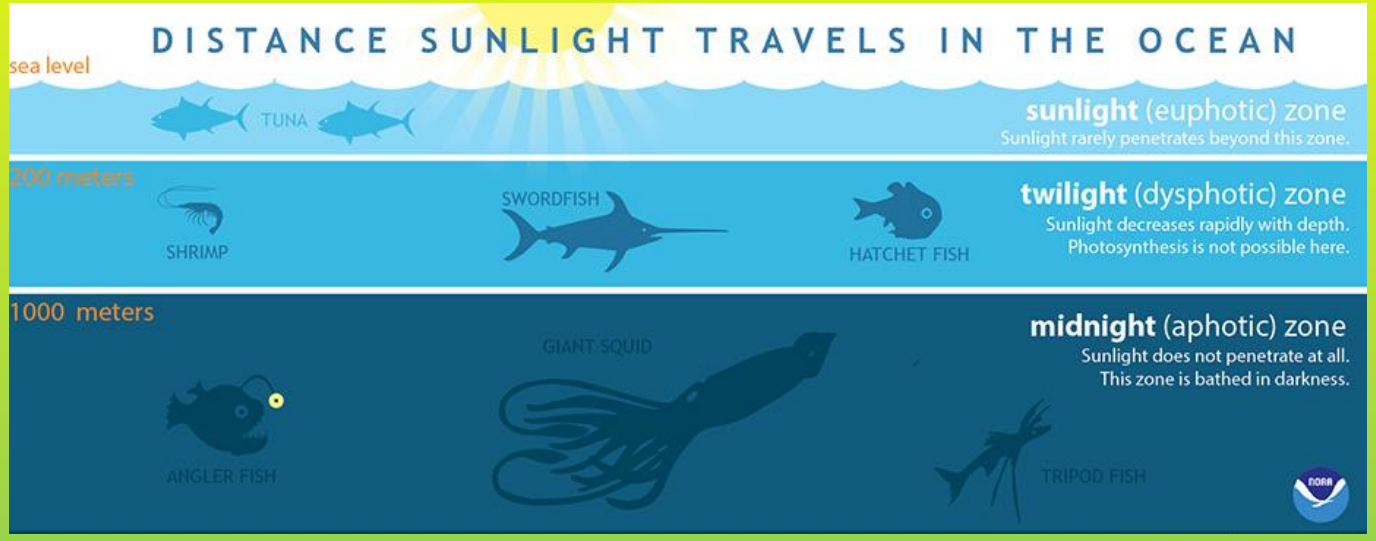
We are looking DEEP into the ocean…

So deep in fact that it would take a small pebble just over 60 minutes to reach the bottom of the Mariana Trench (10,900 meters, or 35,792 feet)!



The ocean is much, much deeper than anything on land is high…(NOW THAT'S DEEP!)

There are……
3 General Zones!



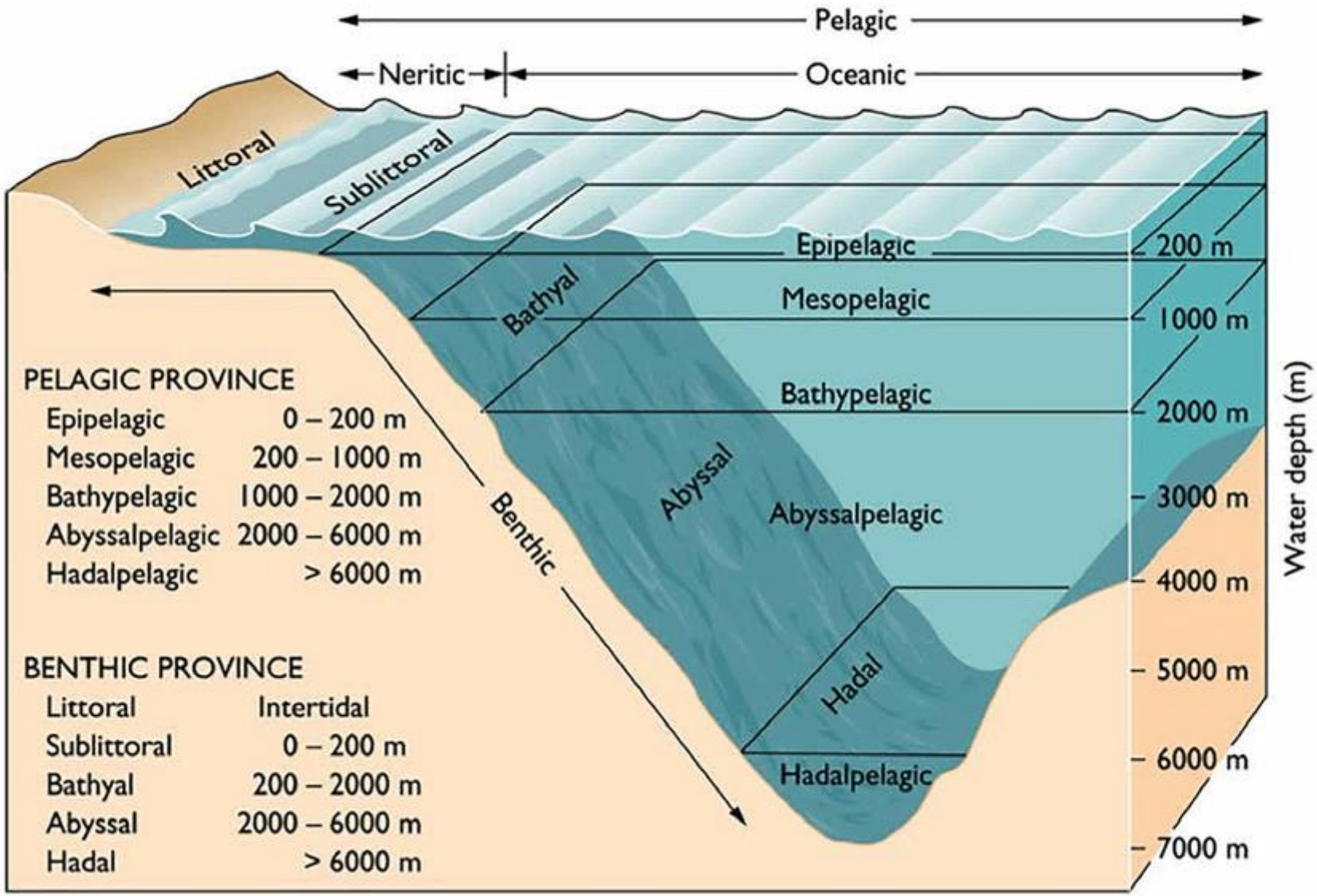
- Surface Zone
- Transition Zone
- Deep Zone

- The four major zones are :
- Intertidal Zone
- Neritic Zone
- Oceanic Zone
- Benthic Zone

- Epipelagic
- Mesopelagic
- Bathyalpelagic
- Abyssalpelagic
- Hadalpelagic

- Pelagic
- Bathyal
- Abyssal
- Hadal

Open ocean vs. continental crust



Ocean Zones

- How are the intertidal, neritic, and oceanic zones different?
- How deep does sunlight travel into the ocean and how does that affect plants and animals?
- What technology is used to explore the ocean?
- What are hydrothermal vents and why are they important?

Our first stop along the way…

SURFACE ZONE

From the surface to about 200 meters down…

- As you begin your descent you see that the ocean is absolutely teeming with life forms of every sort. From the microscopic plankton, to bony fishes of every shape and size, to sea stars, and warm-blooded, oxygen-breathing mammals. You can see the most fantastic array of colors; reds, pinks, purples, bright yellows, oranges, blues, greens

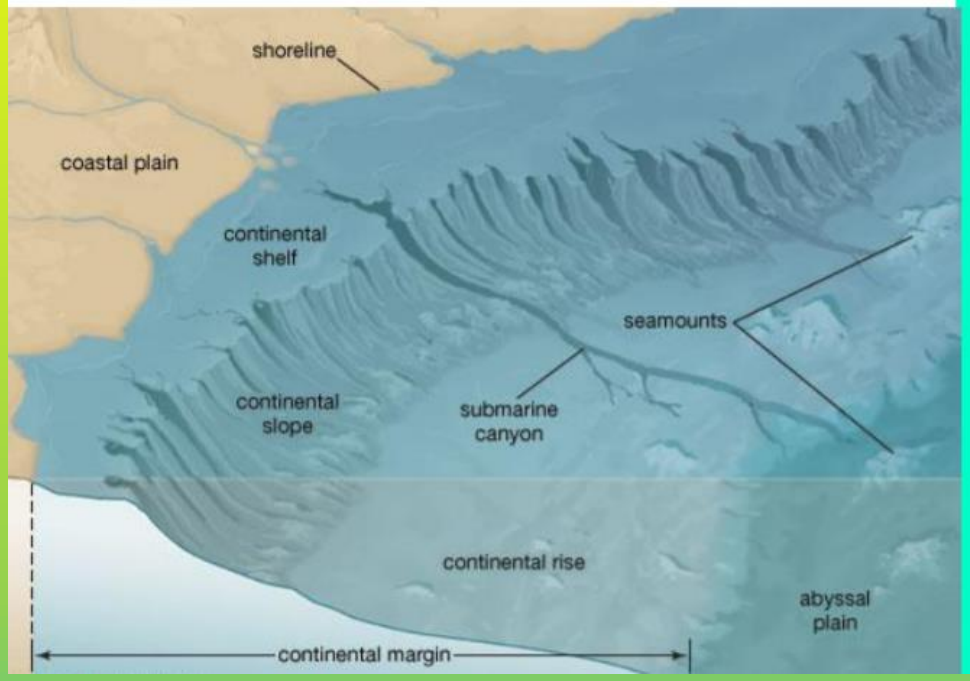
Intertidal Zone

The intertidal zone is the area between high tide and low tide. Think tide pools

Creatures that live here

- Crabs
- Starfish
- Sea Urchins
- Anemones
- Clams
- Oysters
- Octopuses
- Some Fish
- Some Zooplankton

Neritic Zone



The neritic zone is the area on top of the continental shelf.

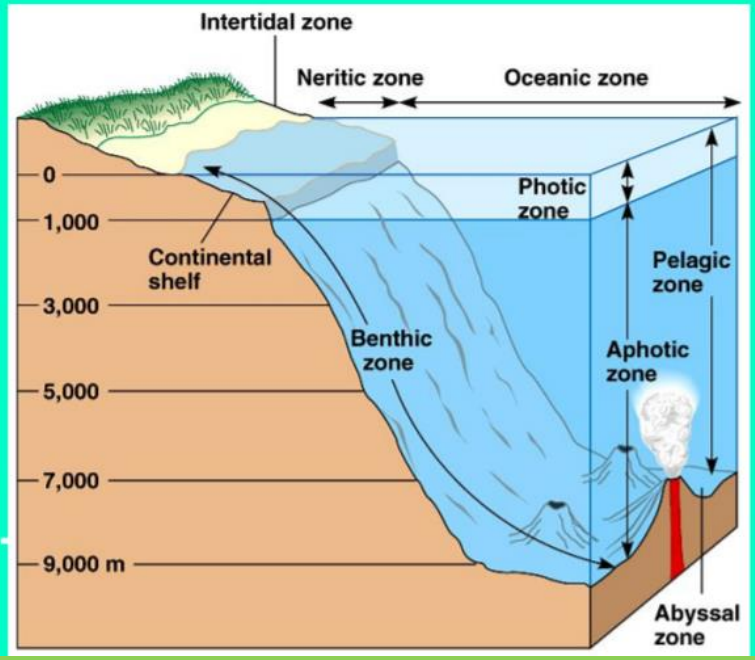
It is between the intertidal and oceanic zones.

Ecosystems

- Coral Reefs
- Kelp Forests
- Seagrass Meadows

Oceanic Zone

Past the continental shelf is the open ocean. Most of the ocean is open ocean.

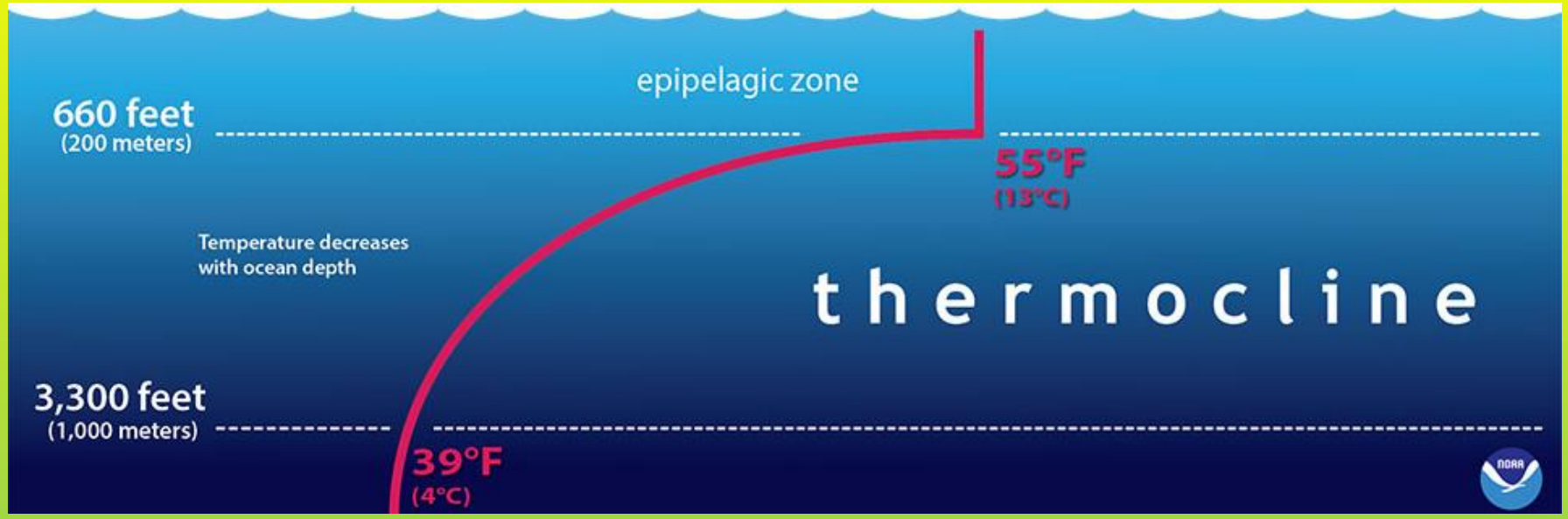


TRANSITION ZONE

In the Middle…

- As you dive deeper in the sea, you will also quickly notice the effects of water pressure on your body. The deeper you dive the more water is over the top of you. The more gallons of water you put between you and the surface of the ocean, the greater the pressure is on your body because of the weight of the water over the top of you.
- You also notice that there is remarkably less light here. It's getting much darker.
- Producers have a hard time- no light for photosynthesis.

In the middle…



Warm!

Cold

Surface Zone
Transition Zone

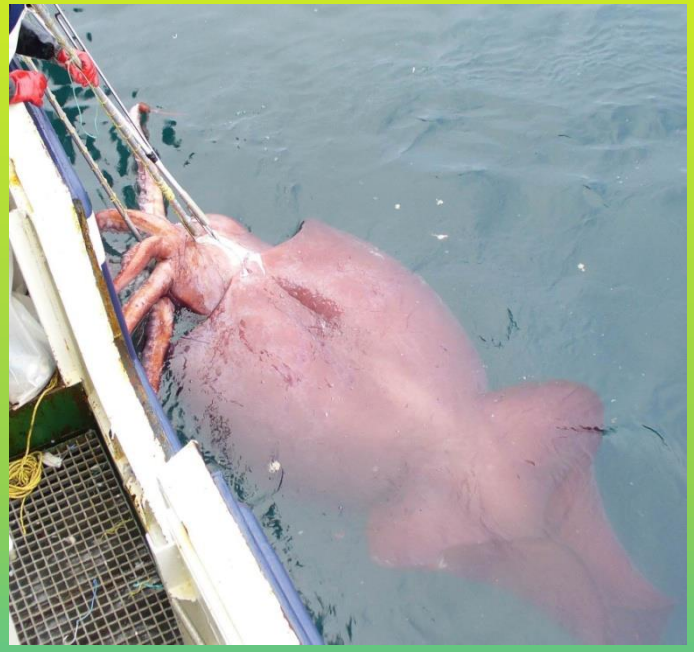
- 200 m
- 1 km

TRANSITION ZONE

- The water pressure in the transition zone is much greater and special suits and diving crafts are necessary for humans to explore this layer of the water column.

TRANSITION ZONE

- There is less food available here (fewer producers) so you begin to see less life in this zone. But- here are some examples…



Deepest, darkest…

Deep Zone!

- The deepest, darkest regions of the ocean are found from about 2000 meters down to the sea floor. It is a realm of perpetual darkness, where even the faintest blue tendrils of sunlight cannot penetrate. It has been called the “Midnight Zone” because it is continually plunged in utter blackness, even when the brightest summer sun is perched high above the surface, there is no “daytime” here.

Bathyal Zone!

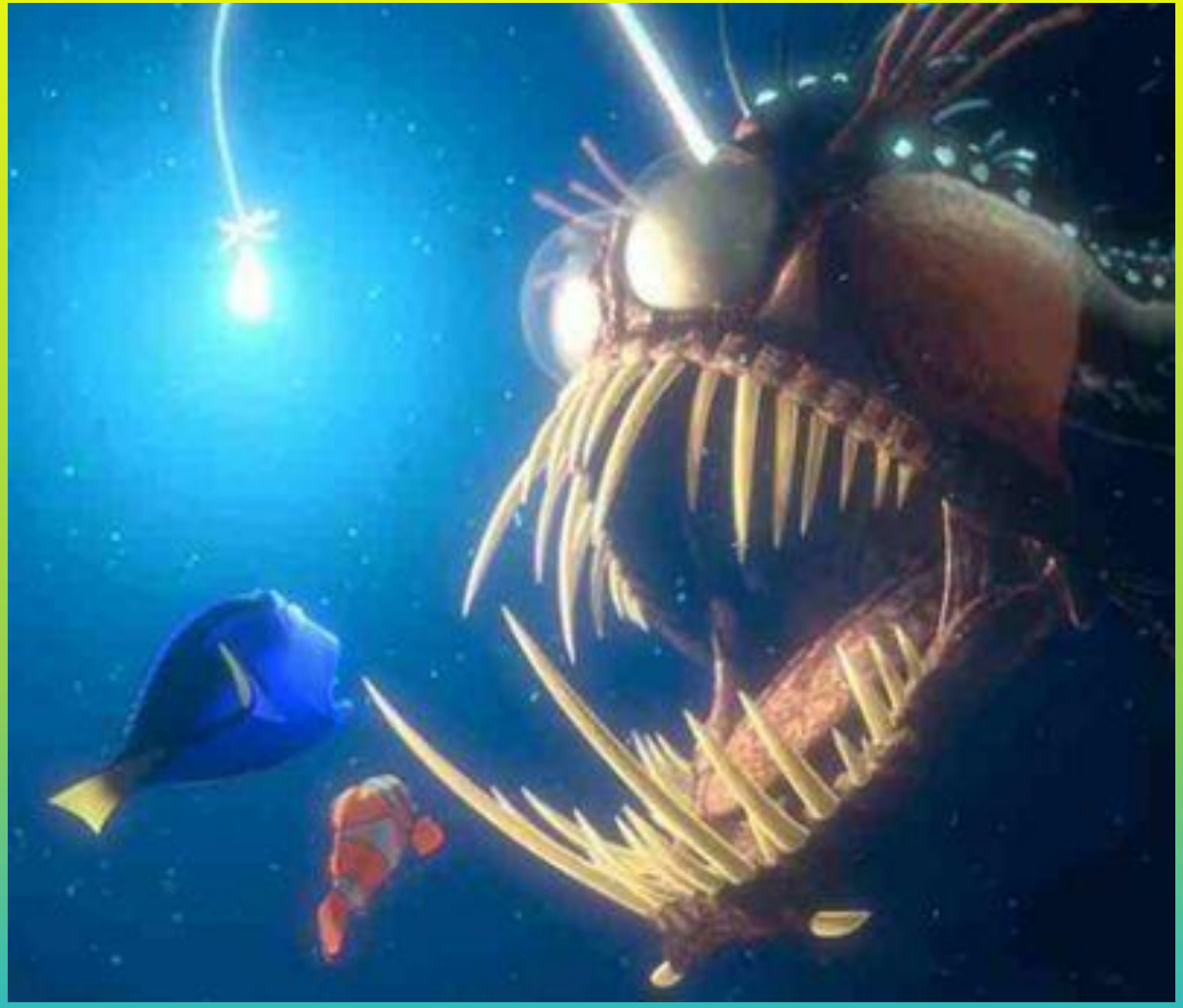
Deep Zone!
Abyssal zone has light?

- Many of the creatures thriving in the deep sea have taken on fascinating, gruesome, and horrifying appearances, developing special adaptations to surviving in this harsh environment.

- One of these is what we call **bioluminescence.**

- **Which means that they GLOW!!**

If you thought Finding Nemo was just fake…

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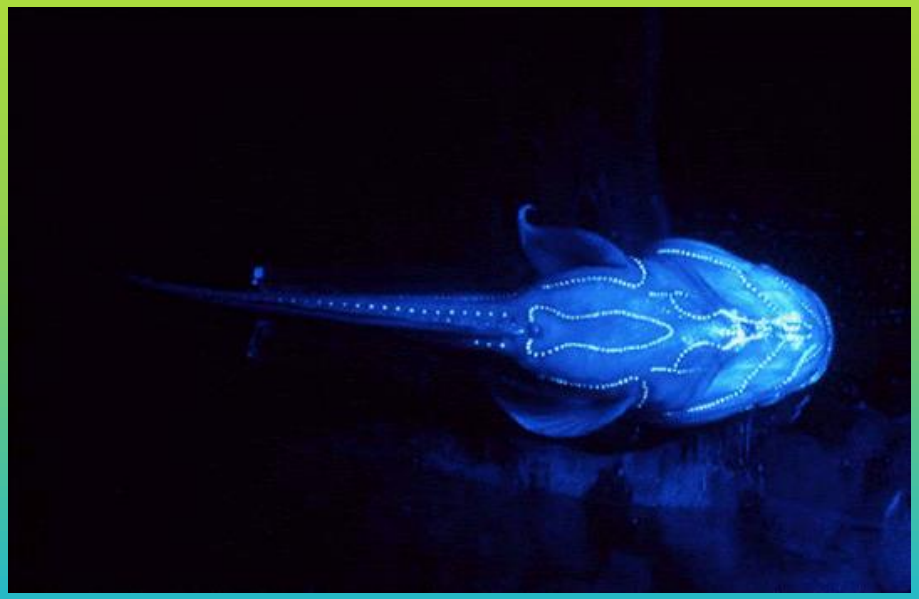
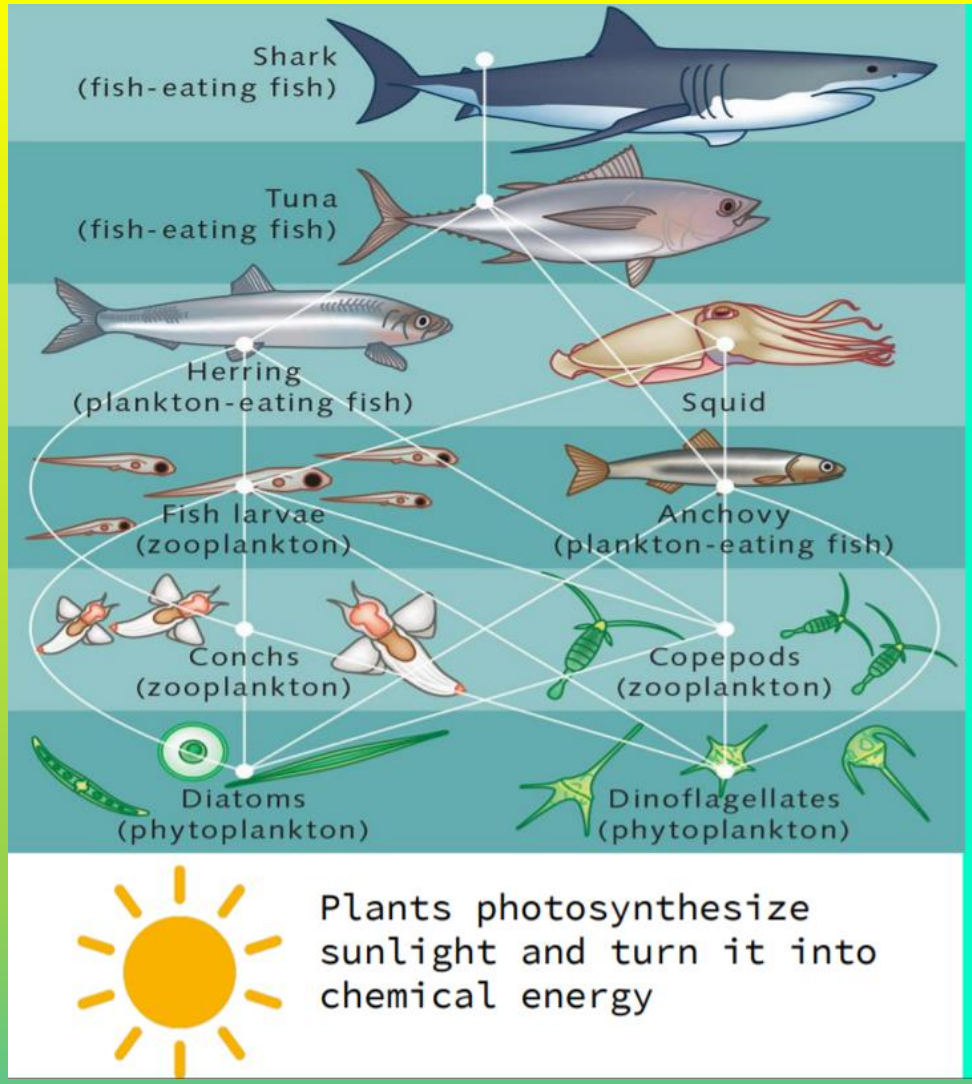


Ocean Ecosystems

- What is the source of energy for ocean ecosystems?
- How are the oceans involved in oxygen production and carbon capture?
- What are the major threats to ocean ecosystems?



The ocean is a complex food web made of thousands of food chains.

The sun is the source of energy for nearly all ocean foodchains.

Some ocean food webs include land animals. For example seals eat fish and polar bears eat seals.

Phytoplankton

Ocean plants include sea grass, kelp, corals, and most importantly phytoplankton.

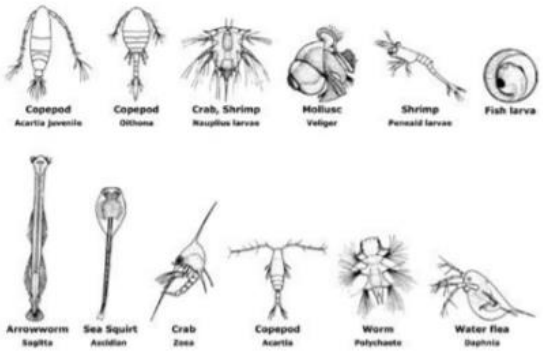
The most abundant ocean plants are phytoplankton. Phytoplankton are any microscopic floating plants like algae.

Phytoplankton absorb energy from the sun and nutrients from the water to make their own food.

Zooplankton

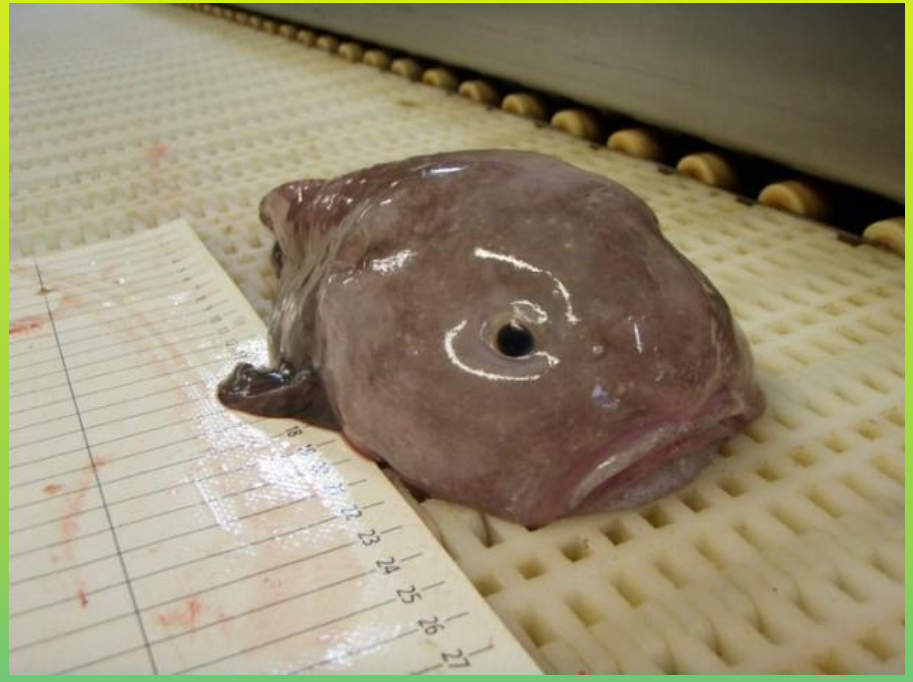
Phytoplankton are tiny plants that are consumed by tiny animals called zooplankton.

Zooplankton are an extremely important part of ocean foodwebs. Zooplankton support massive populations of whales, fish, penguins, and many other creatures. Krill are one of the most successful species of zooplankton.



What do you think this is called?

It's a blobfish – found off the coast of East Australia. It is endangered because of over fishing.



Temperature and Salinity…