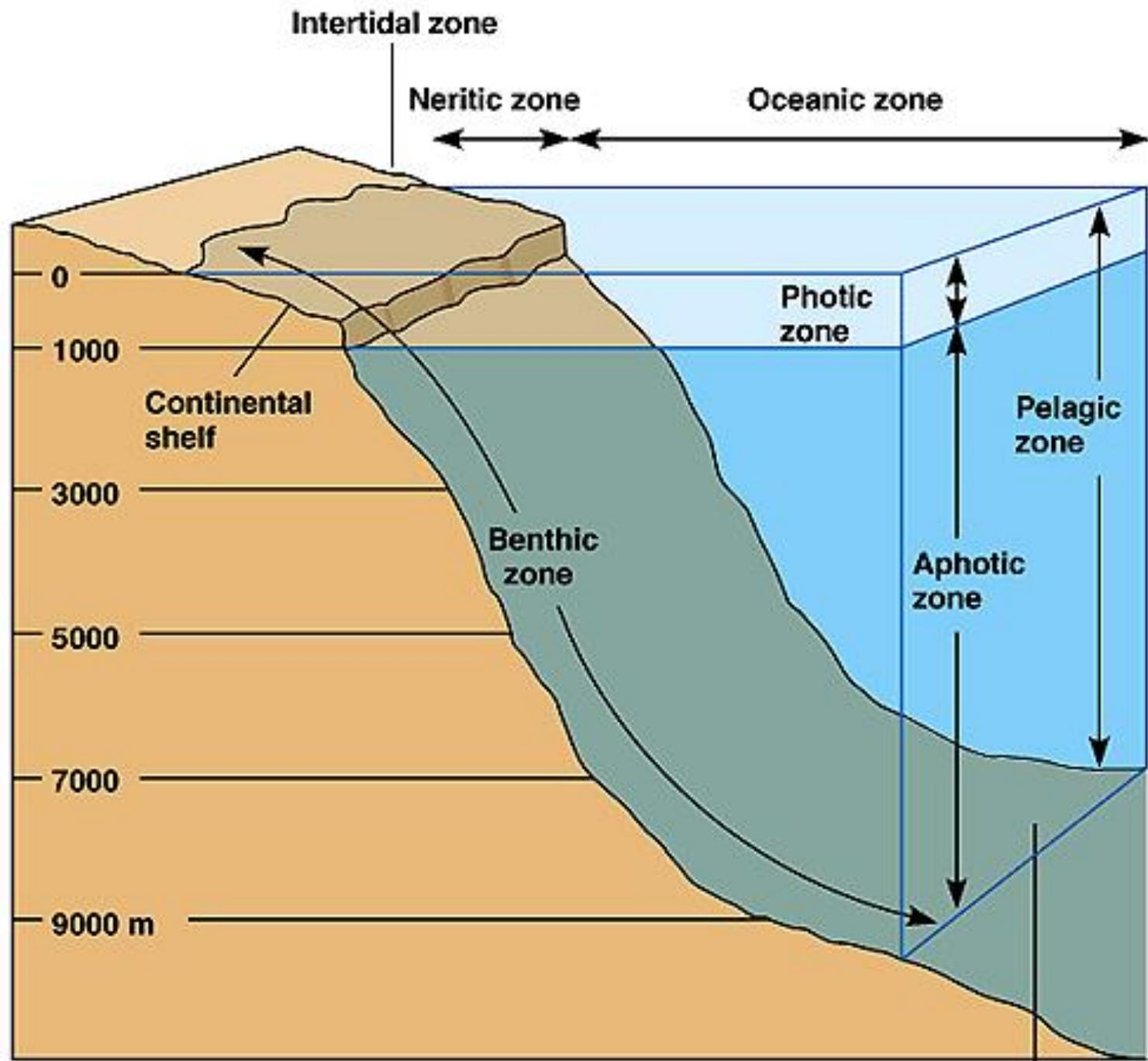


# Oceanic Zone



# Oceanic Zone

- Open ocean past the continental shelf
- Water can be very deep
- Nutrients are scarce
- Fewer organisms live in this zone
- Includes photic and aphotic zones



# Photic Zone

- Top 200m of water
- This zone has enough sunlight for photosynthesis
- More living things here than in the aphotic zone



# Photic Zone



- There are two options for survival in this zone:
  - Float along on the currents and wait for food to drift by, saving energy as you go. Many jellyfish travel by riding the waves and currents of the ocean to find new areas of food.
  - Constantly be on the move, quickly covering the ocean expanses to find enough food so you don't starve. Whales, sea turtles, and tuna can cross thousands of miles each year in search of food.
  - <https://www.youtube.com/watch?v=ZSokXtmXuj8>

# Photic Zone



- Even though the open ocean biome takes up a large area and has plenty of light, it is relatively barren. This is because the water is low in nutrients and there is little or no structure. Whenever nutrients are blown out to sea or creatures like whales die, surface dwellers are quick to eat it up before the food sinks. If they don't, it will quickly fall to the bottom of the ocean.

- <https://www.youtube.com/watch?v=PA66nEJYaAU>

# Photic Zone



- Some animals are able to cross between the two depth zones to search for food. The sperm whale and Southern elephant seal are able to dive into the aphotic zone to hunt, even though the intense water pressure squishes their bodies.
- Every night after the sun goes down, millions of hungry mouths swarm up from the depths to feed on the organisms peacefully floating in the warm photic zone. Many copepods and invertebrate larvae come up to shallower waters to eat the phytoplankton, which attracts many predators like squid, hatchet fish, and lantern fish.
- [https://www.youtube.com/watch?v=DArqBmkO\\_po](https://www.youtube.com/watch?v=DArqBmkO_po)

# Photic Zone



- Much like food, it's also hard to find shelter and hiding places in the open ocean. Something as simple as a floating leaf or floating garbage can attract a whole community of ocean dwellers. This debris serves as a landmark and a home in the endless blue of the ocean. Often, this debris can be dangerous for many fish, turtles, or other creatures if they get caught in it.
- But before long, these temporary rafts sink into the depths too, and it is time for their residents to find a new home.

# Photic Zone



- Ocean currents also serve as sea highways, helping to move migrating species around ocean basins quickly in search of their next meal. Many ocean species (especially large ones like whales, sharks, and sea turtles) follow ocean currents to and from their feeding and breeding grounds.
- Often you will find other creatures following these living landmarks around the ocean. Smaller fish hitch a ride on these swimming dinner buffets. They do this in part for protection. But they can also cling to the skin to ensure they are always around to gobble up scraps, dead skin, and sometimes even the flesh and blood of their gracious host.

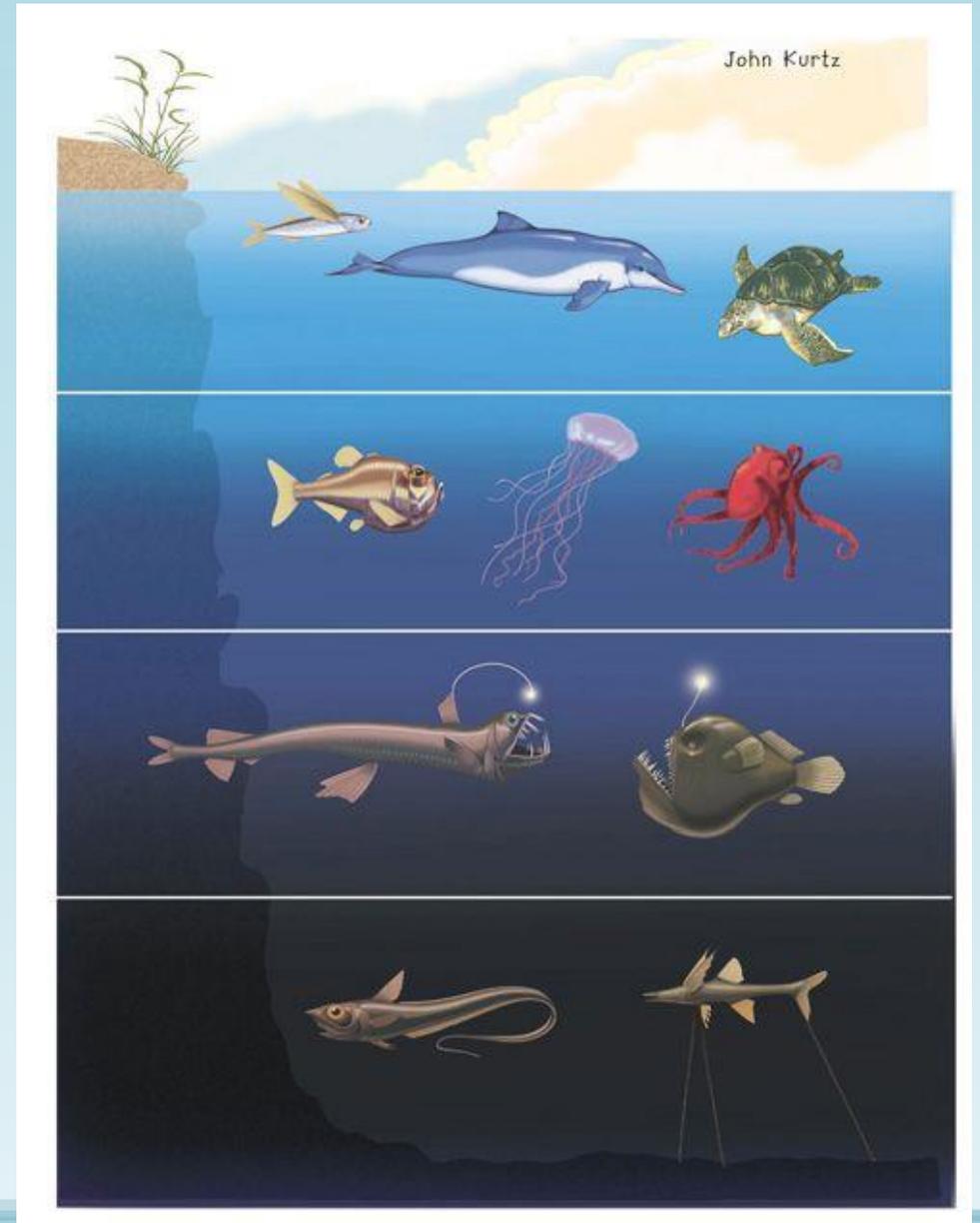
# Animals of the Photic Zone

- Tuna
- Humpback Whale
- Sperm Whale
- Orca
- Great White Shark
- Sea Turtles
- Jellyfish



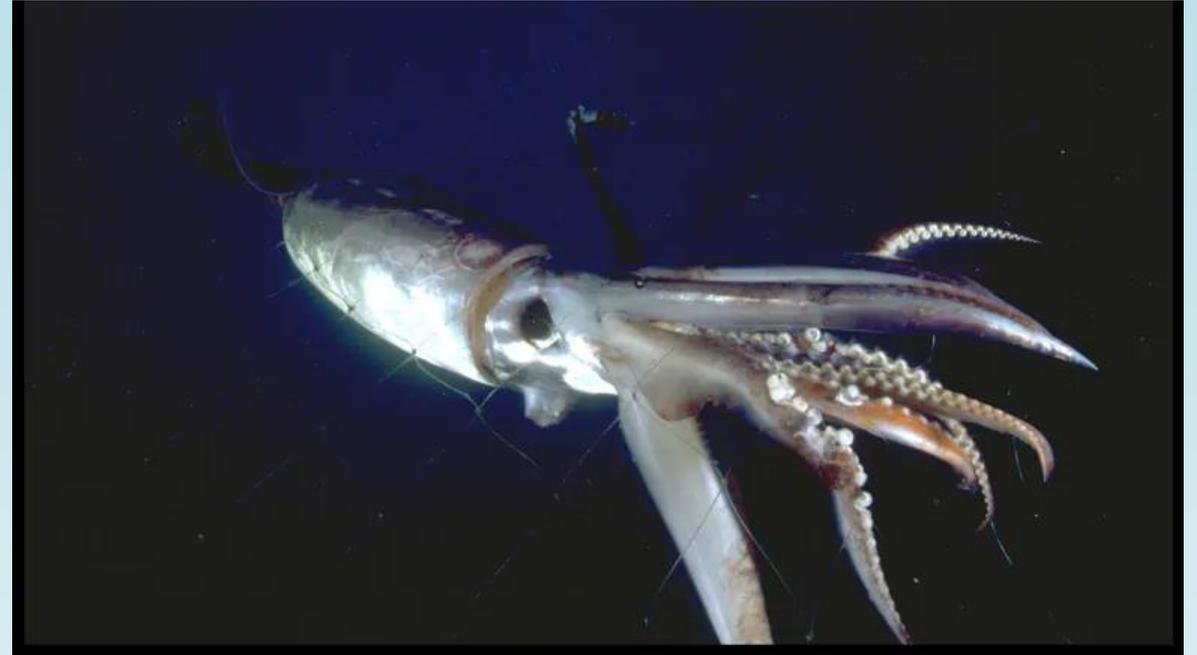
# Aphotic Zone

- Water below 200m
- Not enough light for photosynthesis
- Living things must eat whatever drifts down or each other
- Fewer living things here than at the surface
- [https://www.youtube.com/watch?v=Lt7b8\\_kBjYM](https://www.youtube.com/watch?v=Lt7b8_kBjYM)



# Aphotic Zone

- Deepest layer of the world's oceans
- Devoid of sunlight, sometimes called the midnight ocean.
- The temperature of the aphotic zone decreases with depth, fluctuating between 0°C to 6°C.
- It is also characterized by high pressure.
- <https://www.youtube.com/watch?v=dRHU918PDbU>



# Aphotic Zone

- Most species inhabiting the aphotic zone rely on detritus (i.e., the remains of dead organisms that sink to the ocean floor), while some rise to the biodiverse photic zone at night to feed.



# Aphotic Zone

- In the absence of photosynthesis, one will expect a severe shortage of oxygen at such depths, but that is not the case. Oxygen levels are definitely lower as compared to the photic zone, but far from what can be considered 'severe shortage'. This can be attributed to the temperature of the water, with cold water dissolving more oxygen than warm water.



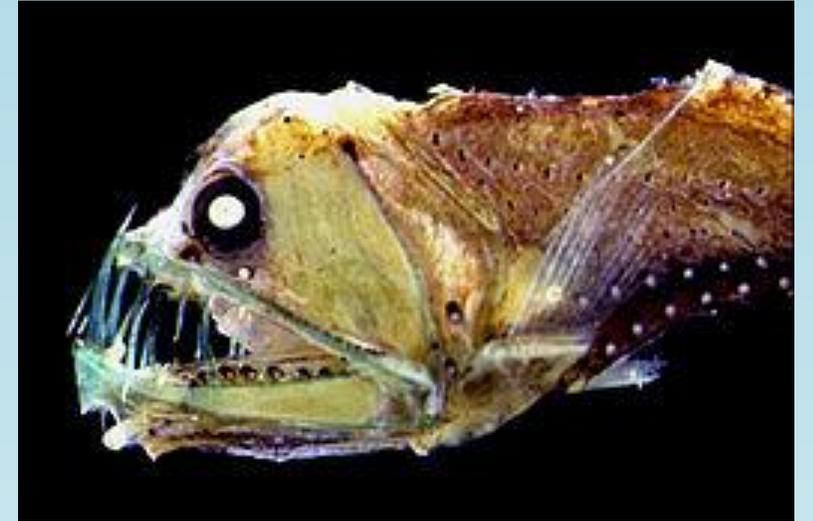
# Aphotic Zone

- After a certain depth, the only light visible in the aphotic zone is that of bioluminescent species, like anglerfish, lanternfish, and some species of jellyfish. These species use the light produced by physiological processes to lure their prey, thus saving themselves the trouble of chasing it, which turns out to be cost-efficient in terms energy spent.
- <https://www.youtube.com/watch?v=rfR5zsorlbU>



# Animals of the Aphotic Zone

- Despite the harsh abiotic factors, some species thrive in this part of the ocean. The gulper eel, giant squid, vampire squid, cookie-cutter shark, anglerfish, lanternfish, nudibranchs, tripod fish, giant tubeworms, giant isopods, woodlice, besides a whole lot of jellyfish species.
- With their hinged jaws, sharp protruding teeth, large eyes, and water-filled bodies, the fish found in this region may look ugly, but these are the physical adaptations that help them survive in the harsh environment of the aphotic zone. For instance, the hinged mouth of the deep-sea fish helps them eat prey much larger than themselves, while their large eyes help them see well in the dark.



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