

MARINEreview: The Deep Sea

Your most important resources are www.sciencrush.net and PowerSchools. Use them! I am available every day before school, after school, and during lunch for extra help. Let me know if there is anything I can add to this review to help you.

Marine Organisms of the Day

1. Pacific Barreleye Fish (*Micropinna microstoma*): This fish has eyes that can look upwards as well as forwards. Their organs glow due to the presence of symbiotic bioluminescent bacteria. To avoid detection, the fish uses counterillumination, which uses light to break up the fishes' silhouettes so that when they are viewed from above, they blend in with the ambient light from the surface.

<https://www.youtube.com/watch?v=Zoygy-8PTtU> (1:57)

2. Frilled Shark (*Chlamydoselachus anguineus*): The Frilled Shark exhibits characteristics of more ancient fish. No one has ever seen a frilled shark feeding, but it is known to be an ambush predator. It gets its name from its six pairs of collar-like gills with frilly edges.

<https://www.youtube.com/watch?v=qYH32gKMHuc> (1:14)

3. Fangtooth fish (*Anoplogaster cornuta* and *Anoplogaster brachycera*): Fangtooths are named for their very large teeth compared to body size (the fish only grows to about 6 inches long). The largest teeth actually fit into special sheaths on either side of its brain so it can shut its mouth.

<https://www.youtube.com/watch?v=1Owi6upg4I> (2:10)

4. Hairy Anglerfish (*Caulophryne polynema*): The Hairy Anglerfish is one of over 200 species of anglerfish, all of which are known for the bioluminescent lure that females have to attract prey. Males are much smaller and lack the lure. The Hairy Anglerfish is covered in sensory filaments to detect motion around it.

<https://www.youtube.com/watch?v=AW93uB5fDLO> (4:37)

5. Vampire Squid (*Vampyroteuthis infernalis*): The scientific name of the vampire squid literally means “Vampire Squid of Hell”, though it is only six inches long and feeds primarily on floating detritus. The vampire squid does not have an ink sac, but can eject a bioluminescent mucus when disturbed.

<https://www.youtube.com/watch?v=G4U0vG2bxy0> (4:11)

6. Giant Squid (*Architeuthis dux*): The species that gave rise to the mythological kraken, the Giant Squid grow to about 45 feet long. It was only first filmed in its natural habitat in 2012, although that specimen was only 24 feet long. And here is that video!

<https://www.youtube.com/watch?v=jCWop491Q9Y> (2:31)

Top 10 Terms for This Exam

Zones of the Ocean

Oxygen Minimum Zone

Hydrothermal Vent

Chemosynthesis

H₂S

Pressure in the Deep

Temperature in the Deep

Characteristics of Mesopelagic Fish

Characteristics of Bathypelagic Fish

Tubeworms

The Gimme Questions for This Exam

1. Deep sea organisms have a number of unique biochemical adaptations because

- low temperatures require different biochemistry
- pressure affects protein function and membranes
- many deep sea species are “living fossils”
- the lack of light requires different pathways

2. Many species of deep sea crustaceans are predominantly red in color because

- crustaceans are usually red
- this makes them harder for predators to digest
- the available nutrients only support the production of red pigments
- the color actually makes them appear black in ambient light

3. In contrast to most deep sea communities, hydrothermal vent areas are biologically noteworthy because
- many of the species are suspension feeders
 - bacteria are important
 - a number of vent species are large and form dense populations
 - many of the species are new to science
4. Which of the following are indications of the challenges faced by predatory fish in the deep sea?
- disproportionately large mouths and teeth that curve backwards
 - many are bioluminescent
 - they show secondary adaptations for filter feeding
 - they have disproportionately large swim bladders

Finding Nemo Clips for This Exam

11 – Anglerfish

End Credit