





HCMC UNIVERSITY OF NATURAL RESOURCES AND ENVIRONMENT FACULTY OF MARINE RESOURCE MANAGEMENT

Topic 2 - MARINE RESOURCES 2.1. Benefit of Biological resources

Lecturer: MSc. Dang Thi Thanh Le MSc. Tran Thi Kim MSc. Phung Thi My Diem







1. Determinate the division of the sea

2. Biological resource









Co-funded by the Erasmus+ Programme of the European Union

Mesopelagic zone: extends from 200 to 1,000 meters (660-3,300 feet) below the surface of the ocean. This area is known as the twilight zone, as it sits between the epipelagic zone, which receives the most light, and the bathypelagic zone, which receives no light. The water temperature here is colder than the surface layer. The species that live here are usually crustaceans and many muscles such as shrimp, crab, etc.







Co-funded by the Erasmus+ Programme of the European Union

6

Bathypelagic zone: A layer of the oceanic zone lying below the mesopelagic zone and above the abyssopelagic zone, at depths generally between about 1,000 and 4,000 m (3,280-13,120 ft). The bathypelagic zone receives no sunlight and water pressure is considerable. marine ecologic realm extending down from the edge of the continental shelf to the depth at which the water temperature is 4° C (39° F).







Co-funded by the Erasmus+ Programme of the European Union

7

Bathypelagic zone: It is always dark, the water temperature is cold and only a few animals live. Most of the animals here have low metabolic rates due to the nutrient-deficient waters, fragile skin, little muscle, and slippery bodies. Some typical species include: squid, starfish, octopus, viperfish, etc. Due to lack of light, the animals living here have small or no eyes, and cannot see their prey, so they have adapted by developing wide mouths and elongated teeth, such as the gulper eel. The fish here move slowly and have strong gills to get oxygen from the water







Co-funded by the Erasmus+ Programme of the European Union

8

Abyssalpelagic zone: (or abyssal zone) extends from 13,100 feet (4,000 meters) to 19,700 feet (6,000 meters). It is the pitch-black bottom layer of the ocean. The name (abyss) comes from a Greek word meaning "no bottom" because they thought the ocean was bottomless. The temperature in this sea is below 2 degrees Celsius, and salty water, high water pressure. But there is still life here, for example, and sea worms, sea urchins. Quite a few species have bioluminescence.







Co-funded by the Erasmus+ Programme of the European Union

9

Abyssalpelagic zone: the abyssal zone, due to its depth, is an extremely demanding environment for living beings: it is an aphotic region, i.e. it lacks light; the temperature ranges between 0 °C and 3 °C.

Hadalpelagic zone: the depth from 6000-10000m, is the deepest, darkest and coldest place of the ocean. Only very few creatures exist here, such as sea cucumbers, sea spiders, sponges, etc.







Co-funded by the Erasmus+ Programme of the European Union

Abyssalpelagic zone: there is a shortage of nutrients, which makes it difficult for the species that inhabit it to feed and grow; and the hydrostatic pressure increases with depth, for example, in the Challenger Deep, the deepest point of the ocean at almost 11,000 metres, the pressure is a thousand times higher than at sea level.. But there is still life here, for example, and sea worms, sea urchins. Quite a few species have bioluminescence.







Co-funded by the Erasmus+ Programme of the European Union

Hadalpelagic zone: also known as the hadopelagic zone, is the deepest region of the ocean, lying within oceanic trenches. The hadal zone is found from a depth of around 6,000 to 11,000 metres (20,000 to 36,000 ft), and exists in long narrow topographic V-shaped depressions.

It is the deepest, darkest and coldest place of the ocean. Only very few creatures exist here, such as sea cucumbers, sea spiders, sponges, etc.







2) **BIOLOGICAL RESOURCES**

The East Sea Plants More than 400 species of hard corals. 653 species of seaweed. 537 species of phytoplankton. 94 species of mangrove plants. 15 species of seagrass.



2) **BIOLOGICAL RESOURCES**



Co-funded by the Erasmus+ Programme of the European Union

Plants and elementary organisms

Plants that stick to the bottom: are species of algae, algae

bottom-dwelling in the high-tide and sub-tidal zones with a small depth



Dream group

seaweed group the sentence





Frozen seaweed group



Porphyra (Porphyra)



Unicorn seaweed group



Seaweed (Gelidiaceae)

14



2) **BIOLOGICAL RESOURCES**



Co-funded by the Erasmus+ Programme of the European Union

Group of floating plants: As species of algae: green algae,

Blue-green algae, thyroid algae, siliceous algae live floating in the surface water.

- BILLION Give the sea a magical blue color the color of sea water.
- OLD It plays the most important role in the food chain in seas and

oceans

Play an important role in sea water

Photosynthesis of phytoplankton to form plant organic matter depends on **4 basic elements** : solar radiation energy in the visible light spectrum, sources of carbon dioxide (CO2), and mineral salts in water and the characterization of plant communities.

















Types of Algae Armor

Silica Algae (Bacillariophyta)

16





Outside out there higher plant form, salt-loving, like to record with the scene "half water, half land" of the tidal zone (as in Vietnam) such as tiger, parrot, trout, mangrove, fish sauce, cork... creating a unique landscape. :







2) **BIOLOGICAL RESOURCES**

The East Sea

MARE

So far, in this sea, about 12,000 species of creatures have been discovered.

Animal

- 6,400 species of benthic animals.
- 15 species of sea snakes.
- 21 reptile species.
- 657 species of zooplankton.
- 12 species of marine mammals.
- 2,038 fish species.
- 5 species of sea turtles.
- 225 species of marine shrimp.





Floating animals and the first source of animal food

Floating animals (*Zooplankton***):** is a group of invertebrates, eating floating plants, living in aquifers, but most abundant in surface water and shallow waters of the continental shelf.





Protoplasm (Protozoa)

Crustacean (Crustaceae)



Cavity intestine (*Coelenterata*)



Soft body (Mollusca)

20

There are also Roundworms (*trochelminthes*), Worms bite (*Annelida*), Joint foot (*Arthopodata*) and a multitude of benthic larvae, including fish



Double hole (foraminifera) Radioactive bacteria (Radiolaria)







21



Starfish larvae



2) **BIOLOGICAL RESOURCES**



Co-funded by the Erasmus+ Programme of the European Union



- Rich marine life, rich in species composition. Many species have high economic value, and some are rare.
- In addition to fish, shrimp, crab, squid ... the sea has many other specialities such as tortoiseshell, snail, sea cucumber, abalone, blood cockle...
- There are many species of seabirds; NTB has many swiftlets bird's nest (swallow's nest) is a high value export item.



2) **BIOLOGICAL RESOURCES**

MARE

Benthic animals and benthic resources

 Bottom-dwelling invertebrates : forming a bottom food source, at the same time many species of them are important exploitation objects by humans such as shellfish, oysters, sea cucumbers, pearl mussels, abalone, shrimp, crabs, etc..



Hole body (Porifera)



Cavity intestine (*Coelenterata*)



Bivalve molluscs (Bivalvia)



Co-funded by the

Erasmus+ Programme of the European Union

Shellfish (Tunicata)

The development of the number and biomass of benthic animals, in addition to the dependence on food and environmental factors, is also determined by the species structure of the communities. 24





Fish and fish resources: This is the most exploited resource in the East Sea

- The most important secondary biological productivity created in the sea is fish.
 - Group of bottom fish:





Red snapper



Stretch fish



2) **BIOLOGICAL RESOURCES**



Co-funded by the Erasmus+ Programme of the European Union

Group of floating fish:





Potential fish stocks focus on groups of fish living in the surface and near bottom layers. In general, fish caught in the East Sea belong to two main groups of fish: continental shelf fish and oceanic fish.





2) **BIOLOGICAL RESOURCES**

Some types of seafood in Vietnam

- Lobster
- Rock oysters
- Crab
- Clams
- Abalone
- Squid
- Sacrifice





2) **BIOLOGICAL RESOURCES**



Co-funded by the Erasmus+ Programme of the European Union

Dried seafood products:

- Dried shrimp.
- Dried octopus.

....

٠

• Dried fish.





2) **BIOLOGICAL RESOURCES**

Other biological resources

REMOVE The sea also has other potential biological resources, creating important values in exploitation such as: **turtle** , **sea snake** , **bird**



MARE





Our country's sea has about how many seaweed species: A.550 species. B. 653 species. C. 680 species. D.700 species.

T



Of the following types of seaweed, Which seaweed is the most important:

A. Seaweed and paper seaweed.
B. Rock seaweed and shaved seaweed.
C. Seaweed and seaweed dream.
D. Frozen seaweed and unicorn seaweed.

Number of fish in our waters up to: A.More than 100 species. B. More than 200 species. C. More than 1500 species. D.More than 2000 species.

T

