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0 ratings0% found this document useful (0 votes)3K viewsThis lesson plan outlines a science lesson on interactions between living things. The objectives are for students to understand beneficial and harmful interactions and construct a model show...Lhiesly Jhane Jumarito GamayaAI-enhanced title and descriptionSaveSave Gamaya_act 2 Lesson Plan For Later0%0% found this document useful, undefined 5 Science 5 Quarter 2 – Module 6 Interactions Among Living Things and Non-Living Things in Estuaries and Intertidal Zones Self-Learning Module Unasatanan,BATA:Buligan,Amligan,Tudluan,Alalayan!" DIVISION OF BACOLOD CITY 1 Science - Grade 5 Self - Learning Module Quarter 2 – Module 6- Interactions Among Living Things and Non-Living Things in Estuaries and Intertidal Zones First Edition, 2020 Republic Act 8293, section 176 states that: "No copyright shall subsist in any work of the Government of the Philippines. However, prior approval of the government agency or office wherein the work is created shall be necessary for exploitation of such work for profit. Such agency or office may, among other things, impose as a condition the payment of royalties". Borrowed materials (i.e., songs, stories, poems, pictures, photos, brand names, trademarks, etc.) included in this module are owned by their respective copyright holders. Every effort has been exerted to locate and seek permission to use these materials from their respective copyright owners. The publisher and authors do not represent nor claim ownership over them. Published by the Department of Education Schools Division Superintendent: Gladys Amylaine D. Sales CESO VI Assistant Schools Division Superintendent: Michell L. Acoyong CESO VI Development Team of the Self Learning Module Writer: Editors: Janet M. Toriano Edna Rose P. Gueco Reviewers: Edna Rose P. Gueco Illustrator: Layout Artist : Gueco Janet M. Toriano Vivian Tiguelo, Antonitte Clarice S. Yanos, Edna Rose P. Management Team: Janalyn B. Navarro Edna Rose P. Gueco Ellen G. Dela Cruz Printed in the Philippines by Department of Education – Region VI – Division of Bacolod City Office Address: Telefax: E-mail Address: Rosario-San Juan Sts., Bacolod City 6100 (034) 704-2585 [email protected] 2 I Need to Know This Learner's Activity Sheet was designed and written with you in mind. It is here to help you discuss the interactions among living things and non-living things in estuaries and intertidal zones (S5LT-II h-8). The scope of this Learner's Activity Sheet allows you to use it in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using. This Learner's Activity Sheet consists of the lesson on Interactions Among Living Things and Non-living Things in Estuaries and Intertidal Zones After going this activity, you are expected to 1.describe an estuarine ecosystem and intertidal zones, 2.identify the biotic and abiotic factors in an estuary and intertidal zones, and 3.discuss the relationship of the biotic and abiotic factors in an estuary and intertidal zones. I Will Check On This Read each item comprehensively. Choose and write the letter of the best answer on the sheet provided. 1.Which best describes "nurseries of the seas"? a.abiotic factors b.biotic factors c.estuaries d.intertidal zones 2.Which of the following are biotic factors in the estuary? a.aquatic plants and animals b.salinity of water c.tidal waves d.water temperature 3 3. Which of the following groups are abiotic factors in an estuary? a.crabs and crustaceans b.kelps and other seaweeds c.sea anemones and migratory birds d.salinity and amount of sunlight 4 How do abiotic and biotic factors interact with each other in an estuarine ecosystem? a.They need each other in order to pollute the rivers and seas. b.They need each other in order to survive in the estuarine ecosystem. c.They need each other to prohibit life in an adaptive environment. d.They do not care at all in a certain place or habitat. 5. Why is estuary important to living and non-living things? a.Estuary serves as breeding place of biotic factors with the help of abiotic factors. b.Estuary can support a variety of marine life. c.Estuary transports and traps nutrients and sediments through the combined action of fresh water flow, wind and tidal action. d.All of the above mentioned choices are true. 6. Which do you call an area along a coastline that is underwater at high tide and above the water at low tide? a.high tide c. low tide b.intertidal zone d. neap tide 7.In which intertidal zone do purple shoreline crab, barnacles, and blue-green seaweed live? a.High intertidal zone b.Low intertidal zone c.Middle intertidal zone d.Spray zone 8.Which of the following biotic factors are present during the low intertidal zone? a.lichen and periwinkle snails b.barnacles and blue-green seaweed c.mussel bed and snail d.red algae and kelp 4 9. Which of the following best describes the spray zone? a.It is exposed during the lowest spring tide b.It is submerged during rare, very high tides or severe storms. c.It is generally submerged, except for a fairly short period during the the turn of low tide. d.It is flooded during the peak season. 10. Intertidal zone is important to living and non-living things, except One. Which ONE is NOT? a.It serves as home to many kinds of plants and animals. b. Living organisms living in it need to be able to survive extreme conditions in both above and below water. c.It becomes the dumping site of dead bodies of people and other marine/aquatic life. d. If sufficient nutrients are available, intertidal animals reproduce rapidly, so they can compete for space, light, and food. Lesson 6 Interactions Among Living Things and NonLiving Things in Estuaries and Intertidal Zones Lesson Overview The Philippines, being an archipelago, is surrounded by seas and oceans. Philippines is rich in coastal areas which are affected by the rising and receding tides. Figure 1.Intertidal Zones – Shoreline - Foreshore These areas which are constantly exposed to the changing tides are called intertidal zones or commonly known as seashore and foreshore or sometimes referred to littoral zone. The Intertidal zone is the area along a coastline that is between the high tide mark and the low tide mark. Intertidal zones are homes to many kinds of marine animals and birds. 5 Whether it is a rocky coast, a sandy beach, or a salt marsh, life in the intertidal zone needs to survive extreme conditionsboth above and below the water. When the tide is low and then intertidal zone is above water, the things that live there can be exposed to warmer temperature and brighter light than they were below the water. Estuaries are areas of water and their surrounding coastal habitats typically found where river meets the sea. Estuaries are often called "nurseries of seas" because numerous animal species rely for nesting and breeding. They have dynamic environments, where there are variations in water chemistry including water salinity, as well physical changes like the rise and fall of tides, thus organisms living must be Figure 1.Top:Hill-cliff estuary; adoptive. Bottom: River-Lake estuary A. Abiotic Factors Table 1. Abiotic factors and Their Effects to Estuaries Abiotic factors Amount of sunlight Description Effect to estuaries -a sunshine or solar radiation that is visible at Earth's surface -used by photosynthetic organisms like phytoplanktons, seaweeds, and sea grass in making their own food -crucial to produce oxygen for living things in the estuaries -less sunlight in an estuary, less photosynthetic organisms can support other organisms Salinity of water -saltiness or dissolved salt content of a body of water -salinity of estuaries is lower than that of the sea and ocean. 6 - some organisms prefer to breed in places with low salinity Temperatur e or water -the hotness or coldness of water Types of soil -a distinct characteristics that provide growing benefits and limitation - type of soil is determined by the kinds of rock present in the area Waves -a ridge or swell on the surface of a body of water rushing to the shore - temperature of the water must not be too hot or cold for the young organisms to live. - affected by tides and presence of mangroves in the area. - the kind of living things that live in the area depends on the type of soil due to the nutrients it contain -some types of soils are rocks, sand, pebbles, or clay. - affected the type of organisms living in the estuary -some organisms like mussels and seaweeds attach themselves to rocks so that they will not be carried by the waves. B. Biotic Factors Table 2. Biotic factors and Their Homes Habitat Description Aquatic Organisms living Coral Reefs - teeming with many corals -coral reef formations are in this area due to a large number of corals living -serves as a sanctuary for young fishes corals, different kinds of fishes, jellyfishes, sea anemones, and sea stars Mud flats - also known as tidal flats -a large amount of mud deposited on it -usually comes from the sea and river. clams, crabs, 7 migratory birds, mussels, mollusks, sand dollars, and shellfish -protect the coasts against erosion caused by waves, winds, and tides -protect coral reefs and sea grass beds from silting or deposition of sand -breeding grounds for different kinds of fish and shellfish. algae,barnacles, oysters, shrimps, lobsters, crabs, different kinds of fish and shellfish. Rocky shores - shores which have many rocks deposited -rocks serve as the hiding places for the small crabs and prawns. Salt marshes - area filled with sea water during high tide and becomes drained when it is low tide. -marshy due of the decomposing plant matter in the area. barnacles, crabs, hermit crabs, limpets, mollusks, prawns, sea stars and shrimps Clams, mussels, oysters, shrimps, and snails Mangrove Forests C. Shore Zonation Read the selection below and study the life in the Intertidal zone. Intertidal zone is the area where the ocean meets the land between high and low tides. It exists anywhere the ocean meets the land, from steep, rocky ledges to long, sloping sandy beaches and mudflats that can extend for hundreds of meters. Marine biologists divide the intertidal region into four distinct physical subdivisions based on the amount of exposure each gets. These are the spray zone, high or upper intertidal zone, the middle 8 intertidal zone, and the lower intertidal zone. Physical Subdivision Spray zone High or Upper Intertidal zone Middle Intertidal zone Lower Intertidal zone Description *more a part of the land than the ocean * rarely submerged *very high tides on severe storms *flooded during the peak season *once or twice daily high tides * out of the water for the long stretches in between *generally submerged except for a fairly short period during the turn of the low tide *exposed during the lowest spring tides Marine Organisms Present *lichen, periwinkle snails purple shoreline crab, barnacles, and blue-green sea weeds mussel bed, sea urchins, snails, sea stars, and sea anemones Anemones, red algae, Dungeness crab, sea stars, sea urchins, and kelp I Will Do This Activity Proper 1. Directions/Instructions In answering the activities below, read the background information about the topic found in Part I of this activity sheet. Write your answers in a separate sheet of paper. 2. Exercises/Activities Activity 1: Environment and Me Activity 2: My "Picture Perfect Life" Intertidal Zone Materials Activity sheet/photocopy sheet, answer sheet, paste, pair of scissors Safety Precautions: Be careful in handling scissors! Procedure 1.Secure a copy of templates 1-4 for your Activity 1 and 2 which are attached in this LAS. 2. Refer to instructions indicated in the templates 1 and 3. 9 3. Guide Questions: 1. Differentiate estuary from intertidal zone. 2. What are the living organisms and non-living organisms that usually found in an estuary and intertidal zones? Areas of Water Estuaries Intertidal Zones Living Organisms Non-living Organism 3.How living and non-living organisms interact in estuaries and intertidal zones? I Practice This A. In a provided a separate sheet of paper, draw at least two (2) examples of biotic factors in the corresponding habitat where they are adapted to. Biotic factors and their homes Habitats (Estuaries) Coral reefs Biotic factors Mangrove forests Mud flats 10 Rocky shores Salt marshes I Apply This Match the description and effect in estuaries in column A with the abiotic factors in column B. Write the letter of the best answer. Column A Column B 1. These differ in the estuaries A. Amount of sunlight depending on the strength of waves and kinds of rock present in the area. B. Salinity of water 2. This refers to the level of hotness or coldness of water. C. Temperature 3. This refers to the movement of the surface of the water that organisms attach themselves to rocks to keep it from being D. Types of soil carried away. 4. It refers to the amount of salt in the water. 5. It is needed by E. Waves photosynthetic organisms like phytoplanktons in order for them to create their own food. 11 Answer I Learned This I Learned This Write TRUE if the statement is correct and FALSE it is otherwise. 1.Aquatic animals like small crabs and shrimps will lose their source of food if mangrove trees have been cut or destroyed. 2.Too much exposure to sunlight of aquatic animals during lowest tide may lead them to desiccate or dry up. 3.Marine plants and animals need enough temperature in order to survive in an environment. 4. People living near the riverbanks should dispose their wastes in the water._____ 5.Improper disposal of garbage by of the residents who are living near the riverbanks may lead to destroy aquatic plants and animals and even mangrove trees. I Test Myself Multiple Choice: Read each item comprehensively. Choose and write the letter of the correct answer. 1.Which do you call a relationship between biotic and abiotic factors in a certain place? a.archipelago b.ecosystem c.estuaries d.intertidal zone 2.The following best describes the estuaries or estuarine ecosystem. Which ONE is NOT? a.Estuaries are called the "nurseries of seas." b.Estuaries are homes or habitats of both aquatic plants and animals. c.Estuaries contribute to land and water pollution. d.Estuaries filter out sediments and pollutants from rivers and streams. 12 3.Which of the following factors are biotic in an estuarine ecosystem? a.aquatic plants, animals, and microorganisms b.coral reefs, salt marshes and rocky shores c.mangrove forests and mud flats d.amount of sunlight, temperature, and salinity of water. 4.These groups belong to abiotic factors. Which group does NOT belong to the abiotic factors? a.amount of sunlight and temperature b.marine plants and animals c.types of soil and salt marshes d.waves and tides 5.Why do you think that the interaction of between living and nonliving things important in an estuarine ecosystem? a. The amount of sunlight is reponsible for the living organism to survive in an estuary. b.The interaction between living and non-living things has no relevance with the survival of an organism in an estuary. c.Living things can survive alone in an estuary even without the aid of the abiotic factors. d.All answers are correct. 6.It is the area along a coastline that is underwater at high tide and above the water at low tide. a.Archipelago b.bay c.Intertidal zone d.lagoon 7.The following are the abiotic factors in the intertidal zone, except ONE. a.amount of sunlight c. salinity of water b.Barnacles d. waves 8.. Larger plants such as mangroves help moderate the extreme temperature in the intertidal zone. Mangroves are examples of _____ factors. a.abiotic b. biotic c.salinity d.pH level 9.This caused some animals like limpets to be threatened to live in a rocky shore. a.desiccation b. salinity c.tides d.waves 13 10.Mussel bed, sea urchins, snails, sea stars and anemones can be seen in this zone because it is generally submerged, except for a fairly short period during the turn of low tide. a.High intertidal zone b.Lower intertidal zone c.Middle intertidal zone d.Spray zone Reflection Why estuaries and intertidal zone important to living things and non-living things? 14 Answer Key I will Check on this 1. C 6. B 7. A 2. A 8. D 3. D 9. B 4. B 10. C 5. D Activity 1: Environment and Me - Template No.1. Graphic Organizer ("Environment and Me") Activity 2: My "Picture Perfect Life" Intertidal Zone - Template No.3- Graphic Organizer 15 Guide Questions: 1. Estuaries are areas of water and shoreline where river meets the ocean or another large body of water, while intertidal zones are area between the high tide mark and the low tide mark at the coastal shore. 2. Areas of Water Living Organisms Estuaries aquatic plants, marine animals, and microorganisms mussel bed, sea urchins, snails, sea stars, and sea anemones, purple shoreline crab, barnacles, and Intertidal Zones blue-green sea weeds 3. The estuary and intertidal zone are two ecosystems where each group of living and non-living things interacting with each other. The physical environment of the ecosystem is the habitat in which organisms live. The habitat must provide the organisms within it with what they need for survival such as food, water oxygen and minerals. I Practice This: (just choose 2) 1. Coral reefs- corals, jelly fish, sea anemones, sea stars 2. Mangrove forests- clams, crabs, migratory birds 3. Mudflats- algae, barnacles, oysters, shrimps 4. Rocky shores- crabs, hermit crabs, mollusks 5. Salt marshes- clams, mussels,oysters, shrimps, snails I Apply This 1. D 2. C 3. E 4. B I Learned This 1. TRUE 2. TRUE 3. TRUE 4. FALSE I Test Myself 1. D 2. C 3. A 4. B 5. D 5. A 5. TRUE 6. C 7. B 8. B 9. A 10. C Reflection Estuaries and intertidal zones are two ecosystems which can support living and non-living things. They are two ecosystems that served as habitat to many kinds of marine organisms. Estuaries are often called "nurseries of seas" because numerous animal species rely on for breeding and resting. Also, Intertidal zones are homes to many kinds of marine animals and birds. 16 Template Activity 1: "Environment and Me" Template 1: Estuaries Procedure: 1. Using a pair of scissors, cut the materials kit from Template No.2. 2. Paste them in their proper place in your body. Template No.2- "Environment and Me" Material kit 17 Activity 2: My "Picture Perfect Life" Template 3: Intertidal Zone Procedure: 1. Using a pair of scissors, cut the materials kit from Template No.4. 2. Paste them in their proper place. Template No.4 - Intertidal Zone Material kit 18 POST TEST Multiple Choice: Read the sentences carefully. Choose and write the letter of the best answer. 1. The following are the biotic factors in an estuarine system. Which one is NOT? a.crabs and crustaceans b.kelps and other seaweeds c.salinity and amount of sunlight d.sea anemones and migratory birds 2. Which of the following best describes biotic factors in an estuary ecosystem? a.marine animals and plants c. tidal waves b.salinity of water d. water temperature 3. Which is called the " nurseries of the seas" ? a.abiotic factors c. estuaries b.biotic factors d. intertidal zones 4.Which is true about the interaction of abiotic and biotic factors in an estuarine ecosystem? a.They need each other in order to survive in an estuarine ecosystem. b.They need each other in order to prohibit like in an adaptive environment. c.They do not care at all in a certain place or habitat. d.They need each other in order to pollute the rivers and seas. 5.How does an estuarine ecosystem affect to both abiotic and biotic factors? a.Estuary can support variety of marine life. b.Estuary serves as breeding place of biotic factors with the interaction of abiotic factors. c. Estuary transports and traps nutrients and sediments through the combined action of fresh water flow, wind, and tidal action. d.All of these mentioned are true. 19 6. The following best describes the importance of the intertidal zone. Which one is NOT true? a.If sufficient nutrients are available, intertidal animals reproduce rapidly, so they can compete for space, light, and food. b.It becomes the dumping site of dead bodies of people and other aquatic/marine animal and plant life. c.Living organisms need to survive extreme conditions in both above and below water. d.It serves as home to many kinds of aquatic animals and plants. 7.Which do you call an area that is underwater at high tide and above water at low tide? a.high tide c. low tide b.intertidal zone d. neap tide 8.Among the four zones, in which zone do barnacles, purple shoreline crab, and blue-green seaweed live? a.high intertidal zone b.low intertidal zone c.middle intertidal zone d.spray zone 9. Which of the following biotic factors can be seen during the low intertidal zone? a.barnacles and blue-green seaweed b.mussel bed and snail c.periwinkle snails and lichen d.red algae and kelp 10.Which is true about the spray zone? a.It is exposed during the lowest spring tides. b.It is flooded during the peak season. c.It is submerged during very high tides or severe storms. d. It is generally submerged, except for a fairly short period during the turn of the low tide. 20 Post Test Answer Key 1. C 6. B 2. A 7. B 3. C 8. C 4. A 9. D 5. D 10. C 21 Loading... Found a content error? Tell us The lesson plan focuses on harmful interactions among organisms, emphasizing parasitism, competition, and predation. It engages students in dynamic group work, where they create songs, drawings, and collages to express their understanding of these concepts. The plan incorporates evaluation through the identification of relationships between pairs of organisms and encourages students to extend their learning by observing interactions in their community. 100%(8)100% found this document useful (8 votes)5K viewsThis document describes a science lesson plan about harmful interactions among living things. The lesson objective is to describe certain types of harmful interactions and identify them in t...AI-enhanced title and descriptionSaveSave COT_DLP_SCIENCE_4_BY_TEACHER_CRISTINA M. VILLAGANA... For Later100%100% found this document useful, undefined