Coral Reef.  WebQuest 50 points Introduction: When we look at the living world, we have learned that it can be both complex and diverse. All the organisms found in a location are called a community. The community along with the non-living environment, (abiotic), in which they live is called an ecosystem. The energy of a system flows through the biotic environment through pathways of photosynthesis, feeding, and decomposition. The main chemical elements that flow through an ecosystem are Carbon, Hydrogen, Oxygen, Nitrogen, and Phosphorous. Energy flows through an ecosystem through various trophic levels or “feeding levels”. An autotroph can synthesize its own food (organic materials) and is referred to as a primary producer. A heterotrophic organism must obtain their energy by consuming molecules synthesized by primary producers, at some level. Consumers exist at different levels including primary, secondary, and decomposers. The energy passed along in food consists of steps and much of it is lost as heat in the process. Processes such as photosynthesis and respiration in organisms lead to the complex interplay between members of an ecosystem, particularly related to feeding. Ecosystems can change over time in response to selective pressures but also in response to natural disturbances and disturbances caused by humans. Coral reefs are among the most productive and biologically diverse ecosystems on Earth. They supply vast numbers of people with goods and services such as seafood, recreational possibilities, coastal protection as well as aesthetic and cultural benefits. Estimates of coral reef cover range from approximately 0.1–0.5% of the ocean floor. Nevertheless, almost a third of the world’s marine fish species are found on coral reefs and the catch from reef areas constitutes around 10% of the fish consumed by humans. More than 100 countries have coastlines with coral reefs. In those countries at least, tens of millions of people depend on coral reefs for part of their livelihood or for part of their protein intake. Coral reefs are now affected by deforestation, intensive agriculture, urbanization, and consequent increases of nutrient and sediment loads as well as other kinds of pollution. Other human-associated factors that degrade coral reefs are overharvesting of reef organisms, destructive fishing methods, uncontrolled tourism, new diseases, and possibly global climate change. WebQuest Project: You will use the internet and other resources to research answers to questions related to a coral reef ecosystem. You will discover how reefs are established and explore the many organisms that make up the reef. You will also learn how humans and natural occurrences affect these delicate reef systems. This assignment will be submitted through Turnitin to check for plagiarism. Do not just simply copy and paste answers from weblinks. Read and paraphrase your answers. You have enough time to work on this assignment, so please form structured and complete sentences not yes or no. Useful links to help answer the questions. Use “Ctrl+Click” to follow link or copy and paste link directly into browser. http://www.coris.noaa.gov/about/what\_are/ http://coral.org/coral-reefs-101/coral-reef-ecology/coral-reef-biodiversity/ https://www.usgs.gov/centers/pcmsc/science/coral-reef-facts?qtscience\_center\_objects=0#qt-science\_center\_objects http://kids.nceas.ucsb.edu/biomes/coralreef.html Structure of coral reefs (18pts) 1. Are coral plants or animals? Explain. 2. How do coral polyps obtain their food? Are they autotrophs or heterotrophs? 3. How do corals reproduce? 4. What environmental conditions must be present for a coral reef to form? 5. Does a reef consist mainly of living or non-living coral? Explain 6. About how fast does a coral reef grow annually? 7. Describe the types of coral reefs. 8. Name 3 examples of reef systems and their locations. Biodiversity of a Coral Reef Ecosystem (8pts) 1. Name at least 5 animals that inhabit a coral reef. 2. Name at least 2 plants that inhabit a coral reef. 3. There are many symbiotic relationships among organisms living in a coral reef. Give an example of commensalism, mutualism, and parasitism that would exist in a coral reef ecosystem. 4. Are there any predators of the coral organism? Name them. Benefits of Coral Reef Ecosystems. (10pts) Useful links: http://www.qm.qld.gov.au/microsites/biodiscovery/05human-impact/importance-ofcoral-reefs.html https://floridakeys.noaa.gov/corals/biodiversity.html 1. Describe the importance of coral reefs regarding ecosystem services they provide. 2. Coral reef ecosystems are sometimes compared to rainforests. Why? Reef Destruction (14 pts) Useful site: https://www.aims.gov.au/docs/research/climate-change/coral-bleaching/coralbleaching.html https://noaa.maps.arcgis.com/apps/MapJournal/index.html? appid=4f7e03fe4c3748849426d15e12491d22 1. What, if any, effect does global warming have on the health of a reef ecosystem? 2. Describe 3 effects that were observed and are of concern for scientists after the hurricane season of 2017, using the second NOAA link above. You will need to scroll through the information using the left side of the screen. 3. Name 3 different types of corals that they feature and describe the type of destruction that affected them. 4. Go to https://www.sciencedaily.com/releases/2015/04/150409101952.htm Summarize the article and explain about the problem associated with the use of chemical dispersants to clean oil spills. 5. Go to https://www.sciencedaily.com/releases/2015/10/151020103704.htm Describe the problem, the research done regarding this problem, and the conclusions made along with recommendations. 6. https://www.cnn.com/2018/07/09/health/hawaii-sunscreen-ban-questions/ index.html Summarize the article. Should human health be considered in regard to the ban?