

College Guild

Reader: Louisa

Student: Richard

Marine Biology Unit 1/5: Marine Environments

1. This is a great point! Scientists often group earth and oceanographic science together. And while you'll be studying ocean life in this course, we will be thinking a lot about the physical environment that the life exists in.
2. I can tell you already have some knowledge about biology. While the crazy looking animals might be more fun, you're right about there being a lot of bacteria. I did a little research and learned that in 1.5 gallons of seawater there are more bacteria than there are people on earth!
3. The trench creatures are really interesting to me too. I can't even imagine what it would be like to go down there and explore!
4. Good point—drone technology is getting more and more advanced. And you're right that getting samples could be a motivation to put money and energy into developing this extreme technology.
5. Yes, both are pretty complex systems. I don't know if this is what you were thinking, but trophic levels in a city might be socioeconomic classes? Also, there's the way that organisms rely on one other for survival in both.
6. Good answer to part a. I don't know that you really answered part b, but if it did get so bad that the barracudas went extinct, they wouldn't eat the tetra fish so that population would go up. More tetra fish would mean that more polyps would get eaten so that population would decrease in size. As a result of there being fewer polyps, there could be more plant matter.
7. It's good to hear that you're so aware of the harmful effects of pollution and global warming!
8. N/A
9. N/A
10. Well done!
11. Again, you have me doing my research. 😊 These are good answers! There are some things too that not all but a lot of them have in common—for example a lot of them have shells or other ways to protect themselves when they are exposed.
12. Here is what the Wikipedia page on exoskeletons has to say—from this I'd say you're right in calling those shells exoskeletons: "An exoskeleton (from Greek έξω, éxō "outer" and σκελετός, skeletos "skeleton"[1]) is the external skeleton that supports and protects an animal's body, in contrast to the internal skeleton (endoskeleton) of, for example, a human. In usage, some of the larger kinds of exoskeletons are known as "shells". Examples of animals with exoskeletons include insects such as grasshoppers and cockroaches, and crustaceans such as crabs and lobsters. The shells of certain sponges and the various groups of shelled molluscs, including those of snails, clams, tusk shells, chitons and nautilus, are also exoskeletons."
13. N/A

14. Yeah, I'm sure the chemicals mess with the food chains—if one species is harmed, other species will also be harmed.
15. Yes! And you make a good point—just because regulations are created it doesn't mean they'll get implemented right away—the monitoring is very necessary.
16. Haha! Short and to the point 😊.
17. It's great that you are thinking locally. Tackling issues of pollution and global warming can feel really overwhelming all at once, but when we focus in on what's going on locally, we can find things that we can help fix.

Richard—Welcome to College Guild! I can tell you are very enthusiastic about studying science. I enjoyed reading your answers because I learned a lot of new things about marine biology from you and you have a great sense of humor. It's okay if you don't want to answer any of the creative writing or art related questions. This is your course and we can't make you do anything you don't want to do. It's up to you what you want to get out of this course 😊. That being said, I would encourage you to give some of these questions a try, because scientists often have to use creativity in their work and it can be good to develop these skills and engage with what you are studying in multiple ways.

I also really appreciate that you want to go beyond what is taught in this course with extra questions! Here are my best attempts at answering them:

1. In my research, I learned that there are plant-like protists, like algae, for example, that can make sugar using photosynthesis and then use that sugar as food. Other protists are heterotrophs and surround and swallow up food with their cell body or absorb nutrients from the surrounding environment (Works cited: Wikipedia, Live Science).
2. I did some research on reactions that produce elemental carbon. Elemental carbon is actually graphite, which is used to make pencils. I learned that there is a chemical reaction that can be used to make graphite called the Bosch reaction, but that this reaction has to be done at very high temperatures and with a catalyst (something to speed up the reaction) like iron. Carbon dioxide and hydrogen react to get graphite and water. Scientists are investigating if this reaction could be used in space stations one day to get rid of carbon dioxide and produce water, however, it would be a tricky reaction to do in space (Works cited: Wikipedia).

Best of luck to you as you continue with your studies! –Louisa