

TEST YOUR KNOWLEDGE

1. What is an estuary?
 - a. A coastal habitat that is only found in Long Island Sound.
 - b. A partially enclosed body of water where salt water and fresh water meet.
 - c. All the oceans of the world.
 - d. A type of plant found in brackish water.
2. Which of these statements is TRUE about coastal grasslands?
 - a. Their root systems hold the ground material in place so it will not blow away or shift with the wind.
 - b. It provides habitat for migratory birds and other nesting bird species.
 - c. The plants are very effective at utilizing and absorbing water.
 - d. All of the above.
3. What purpose does peat serve for the salt marsh?
 - a. It filters out the salt from the water so that the plants in the salt marsh only drink fresh water.
 - b. It absorbs the sunlight and photosynthesizes, creating extra food for the salt marsh grass during the winter months when there is less sunlight.
 - c. It is a rich organic layer that absorbs water and filters pollutants.
 - d. Trees can only grow in this special layer of substrate near the edge of the water.
4. In the rocky intertidal zone....
 - a. There is very little water because the tide never reaches this area.
 - b. Rocks hold the sediment in place, preventing erosion.
 - c. Migrating birds come here to nest.
 - d. The silty sediment filters the water, making it cleaner for Long Island Sound.
5. Which of these statements is FALSE about the wrack line?
 - a. The wrack line is always in the same place on the beach.
 - b. The wrack line provides food and nutrients.
 - c. The wrack line occurs because of the tide.
 - d. The wrack line can contain seaweed and dead animals.

6. Which of these is the correct pairing of a type of adaptation with an example of that adaptation?
- a. The body of a plant can bend towards the light using chemical reactions inside the body, which is a physiological adaptation to ensure they can make their own food.
 - b. Snakes create their own venom, which is a structural adaptation that they use to get their prey.
 - c. Diamondback terrapins have a beak to crush their food, which is an example of a behavioral adaptation.
 - d. Blue crabs have a back leg like a paddle to help them swim through the water, which is an example of a physiological adaptation.
7. _____ occurs when animals are better at surviving and are able to pass on genes to their offspring.
- a. Adaptation
 - b. Natural selection
 - c. Morphology
 - d. Genetic diversity
8. Which of these statements is TRUE about having variation within the same population of animals?
- a. There should be no variation, all animals should be exactly the same because they are best fit for that environment forever.
 - b. There should be no variation because if the environment changes, the animal should not be allowed to continue to exist.
 - c. There should be variation within a population because the conditions could suddenly change and then at least some of the animals would survive.
 - d. There should be variation so that each animal can choose the mate they like the best.
9. How is the horseshoe crab's telson an example of an adaptation?
- a. It uses the telson to sting predators that come near it.
 - b. It uses the telson like a rudder to steer through the water.
 - c. It uses the telson to taste the water and make sure the chemistry is right.
 - d. It uses the telson to flip over when it is upside down on the beach.
10. A(n) _____ is the combination of all living and non-living things in an area.
- a. Biotic factor
 - b. Abiotic factor
 - c. Ecosystem
 - d. Estuary

11. Which of these is NOT an example of a biotic factor in Long Island Sound?
- a. The sunlight that is used by producers to make food.
 - b. A producer that makes food from the sun.
 - c. A consumer that eats producers.
 - d. A decomposer that breaks down dead consumers.
12. Which of these statements is FALSE about the salinity in Long Island Sound?
- a. The salinity fluctuates throughout the year.
 - b. The salinity is the lowest in the spring due to all the extra fresh water.
 - c. The salinity is the highest in the winter due to all the direct sunlight on the water.
 - d. Animals that can't adapt to fluctuating salinities move out to the ocean where it is more consistent.
13. What is the crucial job of a mud snail in a mud flat substrate?
- a. Maintaining the salinity of the water so all the animals can live there.
 - b. Giving energy to producers like seaweed so they can photosynthesize.
 - c. Stirring up the mud to bring in oxygen to the lower levels.
 - d. Breaking down dead materials and releasing nutrients back into the environment.
14. Which of these is an example of how an abiotic factor has affected the lobster population in Long Island Sound?
- a. Rising water temperatures have caused the lobster to molt earlier than they are supposed to so they end up getting a shell disease more often.
 - b. Rising water temperatures have caused the lobster to migrate to shallow water later than they are supposed to and as a result the lobsters do not have enough food for the winter.
 - c. Rising water temperatures make the lobster less likely to get diseases, so the populations of lobsters are rising as the water temperature rises.
 - d. All of the above.
15. Why are tillering roots important to the salt marsh grass?
- a. Tillering roots remove the salt from the water before it gets into the leaves of the grass.
 - b. Tillering roots have rhizomes that help to create new root systems and create colonies of plants in an area.
 - c. Tillering roots have a single taproot and some lateral roots because there are so many nutrients in one area of the salt marsh.
 - d. Tillering roots help hold the salt marshes grasses to the rocks so they can move around under the water freely.

16. What purpose does the salt gland serve for *Spartina alterniflora*?
- It converts salt to nutrients for the plant.
 - It stores salt for animals that live on the plant.
 - It makes the plant immune to the salt in the water.
 - It removes salt and expels it on the leaf surface.
17. Compared to coastal plants, marine plants....
- Do not have to worry about sunlight because they are always floating at the top of the water.
 - Get their nutrients with a specialized structure called an air bladder.
 - Do not have root systems, instead they have a holdfast to attach to rocks or substrate.
 - Are not used by marine animals for habitat and food.
18. The tides are controlled by....
- The sun.
 - The moon.
 - The stars.
 - Mars.
19. What makes a semi-diurnal tide different than a mixed tide?
- A semi diurnal tide only has one high tide and one low tide each day and a mixed tide has two high tides and two low tides each day.
 - In in a mixed tide, each of the two high tide is a different height and in a semi-diurnal tide, each of the two high tides is the same height.
 - A semi-diurnal tide only happens on a full moon and a mixed tide only happens on a new moon.
 - A semi-diurnal tide is only half the height of a regular tide height and mixed tide is double the size of a regular tide height.
20. Which tide has the lowest height difference (lower tidal range) between high and low tides?
- Spring tide
 - King tide
 - Neap tide
 - Fall tide
21. Why are tides important to areas like Long Island Sound?
- The tides bring in nutrients from other areas of Long Island Sound and the Atlantic Ocean.
 - The tides move animals around so predators can hunt smaller animals.
 - The tides help prey animals hide from large predators.
 - All of the above.

22. How do boaters know if an area is safe to drive in during high and low tide?
- They should only drive in areas they are used to because there is no way to know how deep the water will be at high or low tide.
 - Boaters can use a bathymetric chart or an app on their smartphone, which tells them the height of the water at high and low tide.
 - Boaters must have a depth sounder instrument on their boat so they know if the area is safe to drive in.
 - Boaters must use a special kind of anchor to measure the depth of the water as they are driving in a body of water.
23. Why are freshwater rivers important?
- They provide nutrients to bodies of water like Long Island Sound.
 - They provide drinking water to people living around them.
 - They provide habitat to plenty of invertebrates and other animals.
 - All of the above.
24. Which of these statements is TRUE about benthic macroinvertebrates?
- You must use a microscope to see them because they cannot be seen easily with your eyes.
 - They can be found at the bottom of the river, down in the sediment.
 - These animals have been introduced by humans to provide food for larger animals in the river.
 - They include animals such as small fish and turtles.
25. If scientists only find invertebrates with a tolerance value of 4 or higher during a survey of the river, it suggests that....
- They should do another survey because the results are inconclusive.
 - They should not be concerned because that means there is no pollution risk in the area.
 - They should be concerned because that means there could be a source of pollution in the area.
 - They should grow the invertebrates in the lab to make sure they identified them properly.
26. Which of these statements is true about monitoring the health of a river?
- Scientists should never monitor the health of rivers.
 - Scientists should only measure the benthic macroinvertebrates once because the health of the river will not change.
 - Scientists should monitor the river regularly because pollution can get into the river in a lot of different ways.
 - Scientists should only measure the benthic macroinvertebrates when adding new buildings directly along the river.