

Sediment runoff - altered food webs

Moreton Bay is famous for its extensive seagrass meadows which provide food for large populations of green sea turtles and dugongs. Unknown to most people, Moreton Bay is an important habitat for corals. Corals are important because they provide food and shelter for fish and other marine creatures. A coral's health is extremely susceptible to changes in the environment. This makes coral an important species to monitor and use to indicate environmental conditions. Moreton Bay is part of a precious environment which needs to be protected from environmental damage caused by humans and their activities.

High sediment levels entering our waterways is a major environmental concern. Floods, river bank erosion and soil washed into rivers and creeks from farmland and construction sites are some of the many causes. Sediment suspended in the water causes high water turbidity reducing sunlight penetrating through the water column and smothering benthic organisms such as seagrass and corals. With this, other organisms down the food chain are affected. The loss of seagrass and corals results in less food available for many animals such as fish, turtles and dugongs. Additionally, the break down of the coral's structure affects small organisms such as crabs and snails that seek shelter in and between corals.

This exercise will examine the effects on a food web when the community structure and biodiversity in the ecosystem is altered.

Questions

1. Draw a food web including, coral, seagrass, turtles, dugongs, coral-eating fish, plankton, plankton-eating fish, and sharks. Sharks are predators of fish, turtles and dugongs.
2. Consider what would happen to the food web in the event of large amounts of rain pushing extra sediment into Moreton Bay and how it may affect the system. Put a red cross through the organisms directly affected by the sediment in your food web.
3. Describe what effect this would have to all organisms in your food web. What about organisms at higher orders of consumption? Would anything happen to those organisms?
4. Draw a new food web for the ecosystem based on the alterations you have described for the first food web. How has the large amount of rain falling on the city effected biodiversity?
5. In groups of three consider some ways to help reduce the sediment running into the area. Describe what this may do in the short, medium and long term and report this back to the class.
6. Consider what your area may have looked like prior to European settlement.
7. How do corals and coral bleaching fit into your food web and discussions? Can you think of any events that may have caused coral bleaching and or smothering with sediment that may have been observed by indigenous groups in the area at the time? Are these events still a possibility today?

