

Tidal effects on organisms

The intertidal zone is the area of shoreline that is underwater during high tides, and exposed during low tides. For the plants and organisms that live in this zone, the changing tides create challenges for survival. At low tide, marine organisms are exposed to changing environmental conditions. As the water level drops, waves smash against the rocks, tearing away those that do not have a strong hold on the substrate. The wave action brings food and oxygen and removes the wastes from the tidal areas.

At low tide the sunlight is no longer diffused and weakened by seawater and the rate of photosynthesis increases significantly. The temperature can vary as much as 20°C between the water and the air which is difficult for organisms to deal with. Evaporation from tidal pools removes water surrounding marine organisms and plants. This reduces oxygen levels and the surroundings become extra salty. When heavy rainfall occurs during extreme low tides, the fresh water runoff leads to rapid salinity changes causing marine organisms to become stressed. Organisms are also exposed to predation by land and air animals. When you walk along the shore at low tide, you can see how marine organisms have adapted to these regular tidal rhythms.

Instructions

1. Draw the possible positions of the moon relative to the earth at low tide at the location marked with an X.



2. Positive and negative effects of life in the intertidal zone


Fill in the empty boxes of the table from information provided in the text above.

	Positive effects	Negative effects
Wave action		
Effects of Exposure at Low Tide		

3. Think pair share

Have you ever seen a Chinese hat snail (limpet) on the rocks around the intertidal rock pools? Or a cast (group) of soldier crabs marching across the mudflats?

From your experiences and knowledge, what adaptations do they have to cope with in the intertidal zone? Fill in the table below.

Animal adaptations to intertidal conditions					
Animal	Picture	Location	Forces of wave action	Increased temperature	Exposure to predators
Limpet					
Soldier Crab	