

# Beach task

## Algae

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Svartkluft (*Furcellaria lumbricalis*)



Tarmgrønske (*Ulva intestinalis*)



Blæretang (*Fucus vesiculosus*)



Sagtang (*Fucus serratus*)



Krusflik (*Chondrus crispus*)



## Animals

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Vanlig strandsnegl (*Littorina littorea*)



Nettsnegl (*Nassarius reticulatus*)



Albuesnegl (*Patella vulgata*)



Sjøstjerne (korstroll) (*Asterias rubens*)



Strandkrabbe (*Carcinus maenas*)



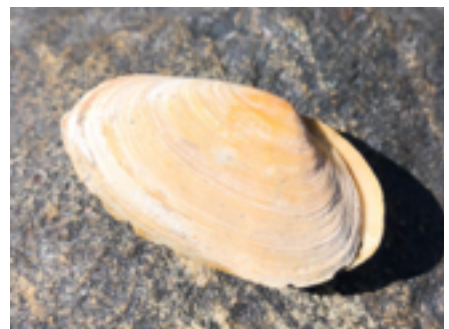
Blåskjell (*Mytilis edulis*)



Vanlig hjerteskjell (*Cerastoderma edule*)



Vanlig sandskjell (*Mya arenaria*)



Østers (*Ostrea edulis*)



Østersjøskeje (Mecoma balthica)



## Why do we have a clear zoning of animals and plants in the littoral zone?

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A water body exists of different zones, each one forms its own habitat. In all of those habitats, there are different living conditions for the organisms. One of those zones is the littoral zone, in the following you will first find a definition.

The littoral zone is typically the shore area of a lake or of the sea, this area is overgrown with plants. The littoral zone merges into the profundal zone, which is the deep zone. The aspect which makes the two zones differ, is light. The bottom zone that is illuminated by light belongs to the littoral. Those different zones are overlapping and are therefore not clearly delineated.

The zones have different living organisms which characterizes this zone. Different biotic and abiotic factors determine how frequently or if at all the species occur. The species are very adaptive to the survival conditions of each zone. This is important because the zones have different environmental conditions. Examples for abiotic factors are: sunlight, nutrients, oxygen and temperature.

Even though the zones are so close to each other, there is a clear zoning in the littoral zone. The sunlit littoral is where most of the photosynthetic activity takes place. Additionally, living organisms must be adapted to the water movements. Due to animals and plants that settle in this habitat, there are zones formed that are clearly separated from each other.

Snails or shore crabs, for example, are moving species. They use their shelter as protection from the drying heat of the sun as well as a hiding place from predators. Furthermore they may also use the shade of seaweed, rocks, sand or mud. Worms, for example, can also use the sand or sediment to burrow under. Organisms which are not mobile, like mussels, use the organic cement of solid substrates to avoid being carried out to sea during tides. They can also use their shells to store water for use at low tide. For plants to be underwater, they either adapt completely or only partially, which often depends on the amount of sunlight. Depending on the species, they can use the aquatic plants to store nutrients or the sunlight.

## **Reflect briefly around bringing children/young people to activities along the shoreline and describe how any challenges can be dealt with.**

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The main challenge when bringing children to the shoreline is, that it can be dangerous. So it is the task of the teacher to ensure that the children are safe. There are different aspects which have to be thought about on this topic. First of all the children have to be aware of the environment of the shoreline. They need to know that water can be dangerous, if they are not aware of the risk and don't know how to act near water it can become dangerous. Especially explaining the high tide is important, so they know that even though there is no water, they should not go too far in because it can all happen really fast. So making the children aware of this helps minimize the risks. The goal of such trips to the shoreline should be about experiential learning. With this, the children will learn to manage new situations, discover different landscapes and make new experiences. Especially for the biology part, this kind of trip can be so useful for them because they learn first hand and get to search for different species and will recognize them over and over. They make experiences with all their senses.

When thinking about the activities itself, it is important that the teacher works with the Affordances the shoreline is offering. With this special area, there are many Affordances that can be used. Either on land or close to the water. There are a lot of different nature produce like rocks, sand, moss, trees or bushes, grass and also animals like shells, algae, fishes and birds. So the teacher can lead the focus on either vegetation, topography and/or wildlife. So the shoreline is an environment which offers a lot of variety.

Furthermore, activities at the shoreline, with not just the biological aspect, promote different important skills. The children will most likely improve their motor skills, they will balance on the rocks or the tree trunks, pick up shells and just be very aware of the environment. The ground will be pretty soggy and therefore the balancing and trying not to "fall" into the water will have a playful way of learning. With the water so close, it can, and probably will, be very tempting for the children to go very close, running or maybe even jumping into the water. They will jump on rocks, pick up things like shells they may cut themselves. The children will check the boundaries, so it is to say, that the environment of the shoreline provides risky play and opportunities for challenges.

An important part of the teachers is, that they don't intervene too much with the risky play and the exploring of the children. There should not be too many rules, or even no official ones. I think it is enough, when the children are aware of the danger that could occur and that they know how to act near water. They also should know how to react if something happens. And if the teacher pays enough attention, the children will be fine and learn so much by doing. Learning from nature, outdoors, is so much more effective as well as more enriching than sitting in the classroom and learn about the different species just in theory. It will be an experience for the children which they remember, especially what they have learnt. They will most likely remember the species even years later.