

The beach task

Animals

Vanlig strandsnegl (*Littorina littorea*)



Nettsnegl (*Nassarius reticulatus*)



Albuesnegl (*Patella vulgata*)



Sjøstjerne (korstroll) (*Asterias rubens*)



Strandkrabbe (*Carcinus maenas*)



Blåskjell (*Mytilus edulis*)



Vanlig hjerteskjell (*Cerastoderma edule*)



Vanlig sandskjell (*Mya arenaria*)



Østers (*Ostrea edulis*)



Østersjøskjell (*Mecoma balthica*)



Algae

Svartkluft (*Furcellaria lumbricalis*)



Tarmgrønske (*Ulva intestinalis*)



Blæretang (*Fucus vesiculosus*)



Sagtang (*Fucus serratus*)



Krusflik (*Chondrus crispus*)



2: Clear zoning of animals & plants in the littoral zone

A body of water consists of different zones, each forming its own habitat. These habitats each provide different living conditions for organisms. To find out why we have a clear zonation of animals and plants in these zones, especially in the littoral zone, it is important to first define the littoral zone.

The so-called littoral zone usually means the shore area or shore zone of a lake or the sea that is overgrown with plants. The littoral zone merges into the profundal zone, the deep zone. The criteria for distinguishing between the two regions is light: the bottom zone that is illuminated by light belongs to the littoral. It is important to understand that the different zones are not clearly delineated, they overlap.

In each zone, different living organisms can be found that characterise it. The occurrence or frequency of species is determined by various biotic and abiotic factors. Each species adapts to the survival conditions in its zone, where it finds different environmental conditions. These abiotic factors are sunlight, nutrients, oxygen and temperature.

However, a clear zoning can be observed in the littoral zone. The sunlit littoral is where most of the photosynthetic activity takes place. In addition, living organisms must be adapted to the water movements. Therefore, the animals and plants that settle in this habitat form zones that are clearly separated from each other.

Moving species, for example snails or shore crabs, use their shelter as protection from the drying heat of the sun as well as a hiding place from predators. They may also use the shade of rocks, seaweed, mud or sand that is in their zone. Worms can also use the sand or sediment to burrow under.

Organisms such as mussels, which are not mobile, 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.

Plants adapt either completely or only partially to being underwater. The amount of sunlight plays a role here. Depending on the species, they can use the aquatic plants to store nutrients or the sunlight.

3: Activities & challenges along the shoreline

The biggest challenge when you take children to the shoreline is that it can be dangerous. So it is the teacher's job to make sure that the children are safe. There are several aspects that need to be considered on this topic. First of all, the children need to be aware of the shore environment. They need to know that water can be dangerous. If they are not aware of the risk and do not know how to behave around water, it can be dangerous. So making children aware of this helps to minimise the risks. The goal of such trips to the shore should be experiential learning. In doing so, the children learn how to deal with new situations, discover different landscapes and have new experiences. Especially for the biology part, such an excursion can be very useful, as they learn first-hand and can look for different species and recognize them again and again. They gain experience with all their senses.

Thinking about the activities themselves, it is important that the teacher works with the affordances that the shore offers. In this particular area there are many affordances that can be used, either on land or near the water. There are a lot of different natural products like sand, rocks, trees, bushes, moss, grass, algae and also animals like fish, shells and birds. So the teacher can focus on either the topography, the vegetation and/or the wildlife. The shoreline is therefore an environment that offers a lot of variety.

Moreover, not only from a biological point of view, the activities on the shoreline promote several 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 above all be very aware of their environment. The ground will be quite wet and therefore balancing and trying not to "fall" into the water will be a playful way of learning. Since the water is so close, it can and will be very tempting for the children to get very close, run or maybe even jump into the water. For example, they will pick up shells that they might cut themselves on or hurt themselves on sharp rocks. The children will test their limits, which means that the shore environment offers risky games and opportunities for challenges.

An important part of the educators is not to interfere too much with the children's risky play and exploration. There should not be too many rules, or even no official ones. It is enough if the children are aware of the possible dangers and know how to behave around water. They should also know how to react if something happens. And if the teacher pays enough attention, then the children are fine, have a good time and learn a lot in the process. Learning in nature, outside, is so much more effective and also enriching than sitting in the classroom and learning about the different types of plants and animals only in theory. It will be an experience for the children to remember, especially what they have learnt. They will most likely still remember the species years later.