

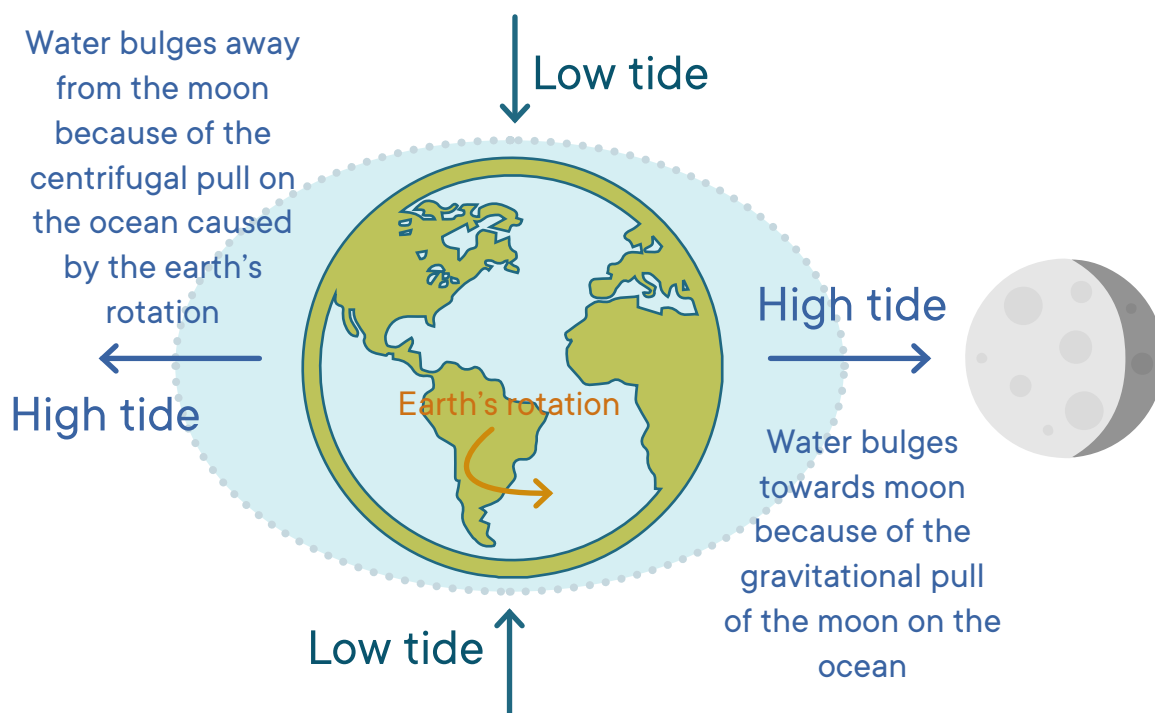
Strandline

Introduction

Strandline

Everything on the shore is influenced by the tides. This daily rise and fall of water is mostly driven by the moon and its gravitational pull on the earth.

The earth's rotation means that we experience two high tides and two low tides in every 24 hours, one high tide because your place on earth is closest to the moon and its gravitational pull, and one because it is furthest away from the moon and the spinning force of the earth's rotation is pushing the water outwards.



The daily changing of the tides means that life on the shore is distributed by its ability to withstand being submerged or drying out. This creates zones which can roughly be divided into upper, mid and lower shore. Species in the upper shore, where they are only submerged by the high tides for a couple of hours at most, can either tolerate desiccation, hide or create their own micro-climate. At the other end of the scale the species of the lower shore can only tolerate being exposed for short periods.

The tide deposits all types of treasures along the shoreline at the highest point of the last tide. This is where you'll find evidence of the species living in our seas. Unfortunately this is also where we see most of the plastic pollution aggregating. The strandline differs from beach to beach depending on the habitats offshore and the prevailing currents and winds. Generally recognisable as a line of seaweed, the strandline can include shells, crab carapaces and mermaid's purses. Unfortunately it also contains plastics, such as nurdles (tiny pellets of plastics that are used by manufacturers in the production of plastic products).

Further research keywords

Tidal ranges, spring and neap tides, rocky shore zonation, intertidal zone, rockpools, crab moult, ocean gyres, nurdles, egg case hunt, marine litter.



Strandline Hunt

Equipment required

- Clipboards
- Collection trays or buckets
- Equipment to explain how tides work
- Something to group objects (e.g. hula hoops)

Before arriving at the beach

1. Introduce the moon as the factor with the greatest influence that causes the tide.

As a result of the gravitational pull, the moon causes a swell in the sea on both sides of the earth, namely the two high tides. This can be explained with pictures, or you can use balls to represent the earth and the moon in order to show how the tide moves around the earth.

Using a large elastic band is a good way of showing how the sea swells on opposite sides of the earth.

At the beach

1. Explain the variety of things that can be found in the strandline, both natural and man-made.
2. Split the class into pairs. Give them a 30min time limit.
3. Encourage learners to find as many items on the list as possible. Challenge learners to add three other objects they found interesting and draw them into the worksheet.
4. Invite the learners to lay their finds out on the beach in groups with similar objects. Analyse the learners' finds. Go through the items on the list and discuss what they are, e.g. mermaid's purse, whelk eggs, mussels.
5. If you still have time you can ask the learners to rearrange the finds into groups based on which zone of the shoreline you would find them and go through their adaptations to that zone.



Strandline Hunt

Below are some facts about the things on the seashore hunt to help get your discussions started.



Mussel shell - mussels live grouped together in beds. They attach to the sea floor using threads. Starfish eat mussels by prizing apart their shells slightly and then inserting their stomachs to dissolve the flesh.



Whelk egg case - also known as sea wash balls, they are the empty egg sacks of a sea snail called the common whelk. As soon as they hatch they start eating each other.



Razor shells - called razor shells because of their resemblance to old fashioned razors, they live vertically in the sand.



Cockle shells - there are different types of cockle. They are food for lots of seashore birds.



Limpets - are adapted to living on the exposed shore by having a hard shell to protect them from heat and waves. They attach so strongly to the rocks that they form a little micro climate around themselves so they don't dry out. Their tongue has been found to contain the hardest biological material known to man.



Shore crab - crabs can only walk sideways. To grow, crabs must get rid of their hard shell and grow another bigger one. This is why we find so many empty crab shells on the beach.



Hornwrack - although it looks like a plant, it is actually a colony of animals called polyps which together are called a sea mat. Some polyps protect it, some feed the colony and others reproduce.




Eggcases are also known as Mermaid's purses, they are often found on the strandline. If they have curly tendrils they are from the cat shark, if they have horns they are from a skate or a ray. Take empty eggcases back to the classroom, soak them in water and they will rehydrate and you can use the guides on the Shark Trust website to identify the species.

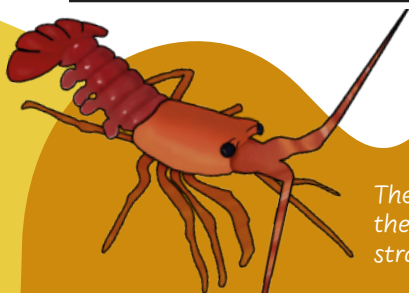


Strandline Hunt



How many items on the list can you find? Collect one of each if you can!

		
<input type="checkbox"/> Mussel shell	<input type="checkbox"/> Whelk egg case	<input type="checkbox"/> Razor shell
		
<input type="checkbox"/> Cockle shell	<input type="checkbox"/> Limpet shell	<input type="checkbox"/> Shore crab
		
<input type="checkbox"/> Hornwrack	<input type="checkbox"/> Lesser spotted catshark eggcase	<input type="checkbox"/> Spotted ray eggcase



The line of dead seaweed along the top of the beach is called the strandline.

* Use the bottom line to add three natural items you have found on the beach.
Draw each item and then add their names

ADDITIONAL
TASK



Sea Search

Equipment required

- Print out of the 'Sea Search' worksheet for all learners
- Pencils or pens
- Internet enabled devices and internet access

To complete the activity

1. Hand out a copy of the 'Sea Search' worksheet to each learner. Ask learners to find all the words in the wordsearch grid and mark them off as they find them.
2. Once learners have found the words, ask them to research and write a fun fact or definition for each one. Encourage learner to use books, the internet, or prior knowledge to complete this, e.g., Starfish can regenerate lost arms!
3. Support learners to create "Who Am I?" riddles based on the words from the wordsearch. Each riddle should include at least two clues about the word, e.g. I have a hard shell, but I am not a crab. I cling to rocks and never move. Who am I? (Answer: Barnacle).

Once everyone has written their riddles, support them to take turns reading them aloud while the rest of the learners guess the answer.

Sea Search



Can you find the seashore plants and animals listed in the word search grid below?

B	A	R	N	A	C	L	E	V	E	Y	I	W	C	L	L	S	D	C	W
E	W	B	J	I	Z	S	T	A	R	F	I	S	H	X	A	W	E	O	A
A	T	H	J	P	T	W	H	A	I	U	S	S	E	Y	R	E	A	C	T
D	S	S	L	U	N	A	P	O	D	I	H	I	P	A	V	L	P	K	C
L	O	I	Z	E	E	F	E	P	R	L	T	P	C	A	T	P	S	L	G
E	L	F	T	G	E	N	N	L	K	E	H	K	I	I	U	X	G	E	J
T	P	R	U	G	V	I	K	B	L	E	C	G	A	C	S	Y	A	T	G
A	H	E	I	C	C	U	E	C	S	P	K	R	S	R	A	E	K	W	U
N	G	T	E	A	O	G	E	E	A	Y	L	V	A	N	K	E	L	P	T
E	X	T	E	S	P	X	B	I	B	S	E	O	J	B	E	L	E	I	W
M	N	U	B	E	L	E	I	O	M	U	S	S	E	L	E	L	H	R	E
O	A	B	H	I	Q	P	T	P	F	S	P	Y	K	S	J	B	W	L	E
N	I	X	D	E	U	M	S	Q	E	H	I	T	X	H	U	J	F	S	D
E	L	H	E	R	M	I	T	C	R	A	B	D	G	J	N	U	T	K	A
O	K	D	F	X	E	L	M	T	Y	W	O	U	P	R	A	W	N	E	N

Shore crab

Whelk

Barnacle

Mussel

Cockle

Limpet

Eggcase

Hermit crab

Gutweed

Wrack

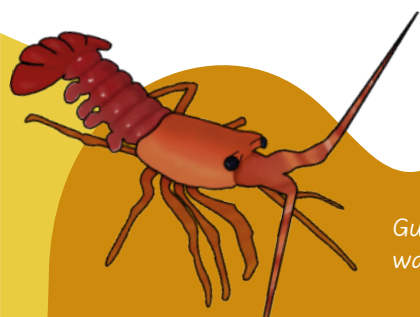
Starfish

Prawn

Beadlet anemone

Kelp

Butterfish



Gutweed is often found where fresh water runs down the beach.



Hidden Haiku

Equipment required

- Print out of the 'Hidden Haiku' worksheet for all learners
- Scrap paper or workbooks
- Pencils or pens

Introduction to haiku

Haiku is a form of short poem originally from Japan. Traditionally they consist of three phases that follow a strict pattern of syllables, five, seven, five. They do not need to rhyme. They have often been used to depict moments from nature.

Example: the lines have been broken into their syllables using bold and non bold.

5 syllables **Whitecaps** on the **bay**
7 syllables **A broken** sign**board** banging
5 syllables **In the** April **wind**.

— Richard Wright, collected in *Haiku: This Other World*, 1998

Before starting the activity

1. Introduce the idea of haiku to the class and share some examples.

To complete the activity

1. Encourage learners to spend time creating their haikus. They could use rough paper to plan the final version before entering it on to the worksheet.
2. Support learners to read out their finished verses, and provide an opportunity for the rest of the class to guess which species they are describing.

Hidden Haiku



Use the lines below to write two haikus describing the seashore plants and animals we have been learning about. Remember not to use the creatures' name, so that other people can work out which animal your poem is describing.

Haiku rules: There are three lines to each poem. Five syllables in the first line, seven syllables in the second and five in the third.

Big sharp claws clicking
Wide orange shell protects me
Walk sideways quickly

**It's describing an edible crab, did you guess it right?*

1

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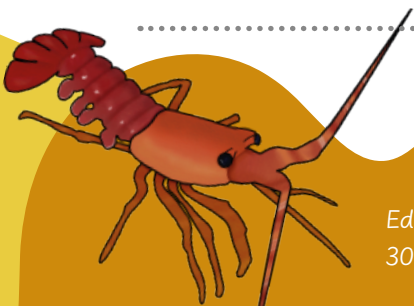
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Edible crabs can grow up to
30cm across!