Big Seaweed Search for schools:
What you need and what to prepare for lesson two

1. Equipment for Lesson 2

HO = Handout

Prop/handout/materials needed	For	See Instructions/Handout/website	Lesson Slide
Any products you can find with seaweed in at home	Pre-lesson Task	• Teachers Lesson 2 a pre-lesson task Instructions • Lesson 2 pre-lesson task HO	Pre-task/ 43
Samples of Big Seaweed Search for schools 7 species ((or as many as you can find) knife, bubbly, egg, curly, groovy, pretty, pink paint –optional as can use the seaweed snap cards if no samples). White trays or paper, numbers on rocks/pegs/card	Activity 3	• Teachers Lesson 2 Activity 3 Seaweed Quiz Instructions • Activity 1/Seaweed Snap handout (if missing samples)	4
BSS Schools i-d handout	Run through 7 species	BSS Schools i-d handout	5
Photos of seaweed art by your pupils at the beach (optional)	Discussing seaweed as an art material/inspiration	Teachers Practical instructions	7-8
Results/summary of your pupils survey	Discussing what your results found	Teachers Lesson 2 Options for Presenting Results	11-15
Video of tides, or demonstration using props (optional)	Teaching about tides	• Tide video from Arkive • Demo of tides using props – see example	19
Videos of limpet grazing/fighting - optional	Showing that limpets do move	Arkive video 1 eat Arkive video 2 fight	21
Props – grazers shells (limpet, topshell, periwinkle) - optional	Teaching about food chains		22
Wool/string at least 60 pieces c1m long, Printed elements for the pupils, extra wool/string, scissors	Food Web Game	• Teachers Lesson 2 Activity 4 Food Web Game elements • Teachers Lesson 2 Activity 4 Food web game Instructions	26

Prop/handout/materials needed	For	See Instructions/Handout/website	Lesson Slide
NASA video	Climate change explanation	NASA video	29
Products with seaweed in (from pre-lesson task if possible)	Uses of seaweed	Teachers Lesson 2 a pre-lesson task Instructions	43
Alginate solution, Calcium Chloride solution, pipettes, plastic cloth, goggles, gloves, food colouring etc. Takes a bit of prep. Alternative to show video, make a seaweed snack	Lesson 2 Activity 5 Amazing Algae	• Teachers Lesson 2 Activity 5 Amazing Algae instructions • Video	44
A range of different types of seaweed collected by children on your practical if poss. If not then gather samples of different colours, textures. Use drift as much as possible rather than growing seaweed and wash carefully in seawater to remove any animals. It can be any species. Or use books.	Seaweed Naming Project	• Teachers Naming project Instructions • Seaweed Naming project Examples HO	49
Seaweed dance video	The seaweed dance!	Video online (stop after 1m 40s)	51
Flipchart 2 Facts Mind Map from Lesson 1	Evaluating learning		52
Flipchart 1 Thoughts/Feelings from Lesson 1	Evaluating experience		53

2. Prepare for Lesson 2

Reason/For	Prepare	Slides
Pre-lesson task	Assign pre-lesson task (see Teachers Instructions and Pupils Handout). Tell pupils when to bring in products/photos/lists of what they found. Find a few products yourself if possible	1, 43
Seaweed Quiz Activity 3	Prepare your seaweed quiz Lesson 2 Activity 3 using either samples or photos or a combination (use the Seaweed Snap cards from lesson 1 and cover names). Place quiz around the room to encourage movement	4
	Print out the BSS Schools i-d HO again,	
Showcasing your class' achievements positively	Select some photos from your day at the shore – art and other activities and add to presentation	7-8

Reason/For	Prepare	Slides
Demonstrate scientific understanding from data	Gather in the forms from the shore survey. Prepare a summary of the results (see Teachers Lesson 2 Options for Presenting Results) Add your figures to slide, explain what the class results found out about the shore and the seaweeds there	12-15
Understanding tides & shore zonation (where things live & adaptation)	Decide how you wish to include the section on shore zones and tides. Tides are important for all children to know about for safety, but the detail on zones is more suitable for older/more advanced students; section can be adapted for your particular class. Use the videos or props to help explain tides.	16-19
Enhancing understanding of food chains	Gather some shells of limpets, topshells, periwinkles - optional	21-22
Food Web Game Activity 4	Cut up at least 60 bits of string or wool for children to form a web. They need to be at least over 0.5m to enable the web to spread out (more if you have space). You'll need some spare so bring wool ball/string in with you. Familiarise yourself with the game (see Teachers Lesson 2 Activity 4 Web Game Instructions). Print out the web game elements and cut them up so each child can have one (there are 30)	26
Climate change visual demo	Make sure you can access and run the NASA video	29
Activity 5 Amazing Algae	Prepare your alginate coloured solutions and calcium chloride solutions for the Amazing Algae (seaweed goo) demonstration (Teachers Lesson 2 Activity 5 Amazing Algae instructions). Rinse out some clear glass jars and find gloves, a tea strainer and pipettes. Check out the video so you know what the demo should look like (or run the video in class if you cannot get the materials – but it is an impressive demo!). ..	45
Evaluation of learning and developing awareness	Prepare evaluation flipcharts, 1 for feelings and thoughts, one for facts known about seaweed. Use the example outline for a seaweed mind map if you wish	4,5,45
Seaweed Naming project	Retrieve the range of samples taken from the shore for the Seaweed Naming Project from fridge/freezer. Or use seaweed books/identification charts. The Field Studies Council have seaweed guides.	49/50
Seaweed dance	Check the seaweed dance video works, or you could do seaweed yoga (see the Follow Up activities sheet) or get pupils to make up a song or dance	51
Evaluation	Retrieve the flipcharts from Lesson 1	52/53

NB for all activities alternative ideas are provided and options for not having fresh seaweed samples in the Teachers Instructions for the activity.
Real seaweed is great to have and enhances the experience, but the lesson could be done without it - just be sure to gather some when class is at the shore.

BIG SEAWEED SEARCH
MARINE CONSERVATION SOCIETY
NATURAL HISTORY MUSEUM
NORTH DEVON COAST
Areas of Outstanding Natural Beauty

Teach on the Beach Big Seaweed Search Lesson 2 Pre-Lesson Task Teacher Instructions

Lesson 2 of the Big Seaweed Search investigates current and future uses of seaweed a little more. Pupils to try pre-lesson Task 1; if unable to find any products, try task 2 or 3 (online; requires internet access).

At home task 1:

Pupils look for any products that contain seaweed extract at home. Seaweed extract can be listed in the ingredients as seaweed or:

- Alginate
- Ascophyllum
- Agar
- Agarose
- Blackweed
- Carrageen or carrageenans
- Fucus
- Himanthalia (sea spaghetti)
- Kelp
- Laminaria

Look in the bathroom at products like shampoo, shaving foam or gel, toothpaste, make-up, face masks, vitamin pills and moisturiser.

Look in the garden or where you keep house plants. Plant food or fertiliser that makes plants grow may contain seaweed

Look in the kitchen at ingredients of ice cream, cheeses, cakes, noodles, sushi etc:

- Write down any products you find with seaweed ingredients in
- Write down the seaweed ingredient (look at ingredients list on the packet)
- Bring it into class if you can, or draw it/photograph it and bring in the picture
- Students handout list the product ingredients above

Task 2:

Students come up with their own idea for a product with seaweed in. It can be something really useful, something where seaweed could replace something currently used, something that needs to be sticky or something really wacky like seaweed pants or even sci-fi inspired.

- What would it be?
- Why would seaweed be a good thing to have in it?
- What name would it have?

Task 3 (online):

Make a search of the internet for seaweed products. List some of the products that you find.

Teach on the Beach Big Seaweed Search Lesson 2 Activity 3 Seaweed Quiz Instructions

Purpose: reviewing the 7 types of seaweed from Lesson 1 and their key characteristics
5-10 minutes

Samples:

You will need either samples or pictures of some of the seaweeds used in lesson 1. Use between 4 and 7 of the kinds looked for on the shore:

- knife – serrated wrack,
- bubbly – bladder wrack,
- egg- knotted wrack,
- curly – spiral wrack,
- groovy – channelled wrack,
- pretty – wireweed and
- pink paint – calcified crusts;

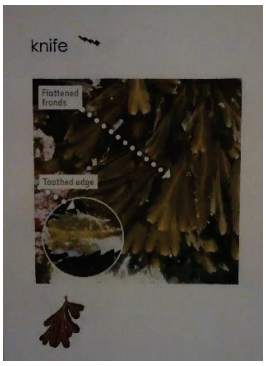
See BSS for Schools i-d Handout for pictures if you do not have fresh/frozen/dried seaweed

Additional materials:

- Trays for the samples
- Cards, papers, wooden pegs or stones labelled 1- however many samples you have)
- Pencil and paper
- Flipchart or whiteboard to write up the answers

Method:

- Put each sample in a tray and give it a number
- Put the trays at the front/back of the class or spread around the room, if possible
- Students write number 1 to however many samples you have on a piece of paper
- Students visit each tray to try to identify the seaweed. Rotate them around the room but make sure they know to visit all the trays.
- They should write down their answers against the correct number
- To make it easier if you are running this session some days after the shore session, you could give each student or pair a handout BSS for Schools i-d Handout
- After sufficient time for students to visit each question, sit the students down and go through the answers, asking them to put their hands up if they know the answer.
- Write up the answers on a flip chart. Ask how many pupils had them all correct as a method of evaluating learning



To run this activity with handouts if you don't have real seaweed:

- Use the Handouts for Activity 1/ Seaweed Snap in lesson 1
- Print them out, black out or cover up the labels with a sticker
- Mix up the order and place them around the room – label each with a number

Students visit the cards and try to identify the seaweed – is no 1, 2, 3 etc knife, bubbly, egg, curly, groovy, pretty or pink paint

Or you can hand out a set of cards for each table

Teach on the Beach: Big Seaweed Search for Schools
Lesson 2 Options for presenting the Big Seaweed Search shore results

Results that you decide to present, investigate and discuss can be varied according to the age and level of experience of the class in understanding scientific results, data and diagrams.

Lesson 2 Slide 14 showing % squares occurs in for different seaweed types as a bar graph.

To amend this for your shore results:

- Calculate how many total squares were surveyed (from the pupil's results forms) = n
- Total up how many of those squares each of the seaweeds that you found appeared in = x
- For each type of seaweed calculate the % of total squares in which it was found = (x÷n) x100
- Enter the numbers in to the table on the slide.
- Then right click on the bar chart. Go to 'Edit Data' and enter the correct figures there too. The bar chart should adjust accordingly

Compare the seaweed found in most squares to what children said was most 'common'.

Lesson 2 Slide 15 Presenting what seaweed grows where and how much there is

Option 1 to demonstrate patterns of presence and abundance

- Go through results sheets.
- Using the table below enter HIGHEST score recorded for each species for that square from all of the recording forms (only alter as you go through if a group has given a higher score).
- Generates a record of the highest score for each type in the different squares surveyed. This will roughly equate to how abundant it is at different points down the shore profile.
- Copy & paste (as an object) into the slide, or edit directly the table embedded into the slide
- You can also colour code the table cells shading for more impact. Darkest shading for 3, middle for 2 and lightest for 1.
- This will show up visually a pattern of roughly how much (density) of each seaweed growing, and where on the shore it is most abundant.

Example:

	Knife	Bubbly	Egg	Curly	Groovy	Pretty	Pink paint
1		3		2	3		3
2		3		2	2		3
3		3					2
4	1	3		2			3
5	1		1				2
6	1			2			2
7		3	1			1	1
8	1	2				2	3
9		1	2	1			
10	3	3	1				1

Towards the sea will be square 10 and towards the top of the beach will be square 1.
You can relate the patterns that you see to zones different seaweed prefers to grow in

- High shore seaweeds (Curly - spiral wrack, groovy - channelled wrack)
- Upper mid shore seaweeds: Bubbly - bubble wrack, egg - knotted wrack
- Lower mid to low shore species: Knife - serrated wrack
- Pretty tends to be in rockpools and
- Pink paint is widespread in and out of the water (although not usually on the very high shore)

Option 2: Presenting simply what seaweed grows where

A simpler method is to mark with a symbol and just shade any cell in the table to represent the squares the seaweed is growing in.
This will demonstrate a simple chart of where on the shore the seaweeds are found (not abundance). You can use to discuss where on the shore different seaweeds grow and introduce the idea of zones if appropriate (see above).

Example:

	Knife	Bubbly	Egg	Curly	Groovy	Pretty	Pink paint
1		Y		Y	Y		Y
2		Y		Y	Y		Y
3		Y					Y
4	Y	Y		Y			Y
5	Y		Y				Y
6	Y			Y			Y
7		Y	Y			Y	Y
8	Y	Y				Y	Y
9		Y	Y	Y			
10	Y	Y	Y				Y

Option 3 Presenting only maximum score for each type, but not location on shore.

Record only the maximum score for each seaweed type. This may not show very much about patterns of growth, but it does give a quick idea of which types are the most common.

	Knife	Bubbly	Egg	Curly	Groovy	Pretty	Pink paint
Highest score	3	3	2	2	3	2	3

Teach on the Beach: Big Seaweed Search for Schools: Activity 4: 'Food Web Game' for Lesson 2

Purpose: review marine food webs, importance of seaweed and phytoplankton as providers of food discussed in Lesson 1. 15-20 minutes

You will need:

- 60-100 pieces of string cut to at least 1m and a big ball of string/wool and some scissors
- Printed copy of Create a Food Web lesson. Cut out each element from the worksheet
- Extra copy of the Food Web Elements handout on A3

Method

Print out the Food Web Elements handouts, ideally A3. Cut out each element.

Move to an open space if possible - a hall or classroom with tables moved is ideal.

Display the 'Elements' sheets showing marine organisms on the on the whiteboard or as posters; run through each element with the class and identify any unknown animals. Draw attention to the smaller text showing where each organism gets its energy. Tell children this is really important for the game.

Fish: Make sure that they know that flatfish and basking shark are counted as fish

Mix up and allocate each child an element of the food web or let them pick from face down cards

Start with the source of all energy, the sun at the front of the class. Next the 'producers' of the food web in the sea – the plankton and seaweed that get their energy from the sun. Join up all the 'elements' by asking what gets their energy from…

When you have created a web from all the 'elements', explore what happens if vital links in the web are broken, for example if shellfish or seaweed are overexploited and lost from the web.

Teacher's script for building the web

Whoever is holding the 'sun' come and stand at the front.

Which of you **gets energy from the sun** (**plankton and seaweed**).
Don't forget that plankton can be phyto plankton (tiny algae that get their energy from the sun) but there is also zooplankton (not included) that eat the phytoplankton. Here we just have plankton.

Seaweed and plankton, both of you come and stand in the next row. Connect yourselves to the sun using string as you get your energy from the sun.

Which of you other animals gets your energy from eating seaweed? (1 = sea urchin) link yourselves together, seaweed and sea urchin, with string.

Which of you gets energy from eating plankton (basking shark, mussel, worms), each of you link yourselves to plankton.

Continue to go through each of those in turn asking which creature gets energy from eating them and making connections.

Continue until all children are linked together using string.

When you have built a food web from the cards, explore the idea of what inter-connectedness means: Ask the children:

Script to explore effects of losing web elements

Are there any connections missing? **Does anything other than sea urchins eat seaweed**?
Yes, **shellfish** eat **seaweed as we've talked about** (limpets, topshells and periwinkles are all shellfish). Add another connection between seaweed and shellfish.
Add any other connections that children come up with too.

What happens if one element is removed from the web?
Remove seaweed or shellfish from the web – ask seaweed or shellfish to sit down.

Everyone that doesn't now have a link sit down.

Anyone whose linked creature is sitting down, sit down.

Who doesn't now have any food to eat because your connections have all been broken? Sit down.

Who now has less food to eat (one of your food sources has gone)? You sit down too.

What has happened to the web? Hands up who is still connected?

You can see what an effect it has just to lose seaweed/shellfish from the web. The web collapses.

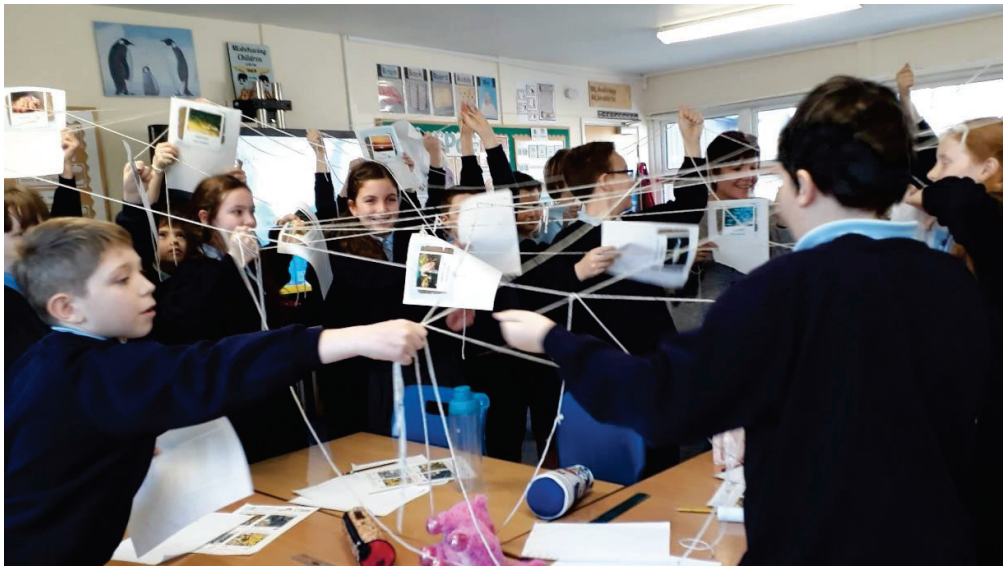
How could shellfish or seaweed be removed from the food web in real life? Eating or harvesting too many shellfish, picking too much seaweed, climate change, pollution

What would be the impact of removing seaweed or shellfish (animals feeding on seaweed and shellfish would have less food, possibly reducing their numbers).

Creatures that **shellfish feed on would also become MORE plentiful** as they wouldn't be eaten as much.

Our conclusion has to be that each element in a food web affects the others in a very big way.

They are all reliant on one another and taking elements out of the food chain, or reducing their numbers a lot, can cause big changes and the collapse of the whole system.



Alternative activities

Our lesson 'Rockpool Explorer - Inside' provides students with the opportunity to explore our fascinating rockpool habitats and some of the creatures found there:

https://www.mcsuk.org/what-you-can-do/fun-learning/primary-learning/teaching-resources/upper-primary/amazing-ocean/#ר-indoor-rockpool-explorers

Teach on the Beach: Big Seaweed Search for Schools: Activity 5: 'Amazing Algae' Lesson 2

Aim: to demonstrate how useful (and fun) seaweed extract can be.

You will need:

- Pipettes (large if possible)
- Deionised water - buy at any garage
- Calcium chloride granules/powder – buy online
- Sodium alginate (seaweed extract) – buy online
- 3 x 500 ml plastic bottles – clean
- At least 2 clear glass jars (without labels, with lids)
- Measuring jug
- Weighing scales
- Easy clean tablecloth or tarpaulin
- Kitchen roll (white ideally)
- Rubber or latex gloves
- Safety goggles (optional)
- Tea strainer (optional)

Equipment should be available for less than £15.00

Alginate is found in many products, especially food, but also has other uses. It is a naturally occurring molecule extracted from brown algae (kelps). It can be used to make seaweed caviar (little spheres of seaweed), larger blobs or seaweed worms. A modified version of the spheres made in this demonstration are being trialled as edible and biodegradable containers, a potentially more ocean-friendly replacement for single use plastic drink bottles and condiment sachets.

This activity is a demonstration done in front of the class to show them the magic of seaweed. It uses calcium chloride, a skin and eye irritant, and so is best done as a teacher demonstration rather than a hands on pupil activity. You can mix up your solutions beforehand and bring them into class already mixed for ease of use.

Preparation Method

Put on gloves and cover your work surface.

Make up a 2% solution of sodium alginate powder dissolved in de-ionised water. 2% is 2g in 100ml, 1g in 50ml and 10g in 500ml. You will need to weigh the sodium alginate out (not 100% precisely).

To make the solution, stir vigorously, or whisk, the sodium alginate powder into the water, in a clean glass jug or beaker. If it is too lumpy add a bit more water. If too runny to make spheres, add a bit more powder. Mix until smooth.

Colour the solution with food colouring. Colours need to be strong to see the 'goo' in the demonstration. Make up two batches of different colours – one for the spheres, one for the worms. If pre-preparing, keep the batches mixed and ready to use in plastic bottles.

Next make up a solution of calcium chloride of 25g in 500ml (or 50g in 1 litre). This doesn't have to be as exact. Be careful not to get the powder on skin or in your eyes (wear safety goggles if you need to). Again mix the solution in a (different) jug or beaker. Don't use the one you used for sodium alginate unless you've cleaned and dried it.

Mix it well until all the powder has dissolved and the liquid is clear. You can try using calcium carbonate powder instead (also available online).

If you are pre-preparing, decant the calcium chloride solution into a bottle with a well-fitting lid. Label it to make it clear it is an irritant. Keep out of reach of children and animals.

Classroom Demonstration 1 Seaweed Spheres or 'caviar'

Use a table or desk in the centre of the class room or lab. Cover the work area with a plastic tablecloth or tarpaulin. Gather the children around, standing a little way back.

Put on your goggles and gloves (makes a good science-y effect!)

Shake your calcium chloride solution well. Into a clean glass jar (clear of labels), pour out an amount of solution to reach about half way up the jar.

Shake the coloured sodium alginate solution to make sure the ingredients are mixed. Using a fairly large pipette if you have one (or through a squeezy bottle lid if you don't) add drops of sodium alginate slowly onto the surface of the solution in the jar. Dropping the solution from a bit of a height makes the best effect. You should see lovely coloured spheres of sodium alginate appear. Show the jar around the class.

Use a tea strainer to fish the spheres out of the solution to show them to the class (make sure you mop up any spilt calcium chloride solution with paper towels). You can turn the spheres out onto the towels for viewing, or pick them up in your gloves, but don't let them be touched with any bare hands.

Chefs have done this using coloured fruit juice instead of water to create 'seaweed caviar'.

Classroom Demonstration 2 Seaweed 'worms' or blobs

Into a 2nd glass jar, pour out another batch of calcium chloride solution (shake well first).

Put a pipette into the other colour sodium alginate solution and suck up a full amount. Put the tip of the pipette under the surface of the solution in the jar and then squeeze out the contents. This will form strings or worms of alginate. You can lift the worms out of the solution using your gloved hands to show the class.

You can also create larger blobs with a large pipette and squeeze out the contents to show how alginate capsules could be used to contain liquids.

Sodium alginate is incredibly useful as it has so many applications and innovation in seaweed products may help in the future for us humans to break away from dependence on single use plastic.

Be careful how you clear away; remember the calcium chloride is an irritant, so make sure all surfaces are dried. Seal the jars used and dispose of the contents carefully later into the refuse (not down the sink).

Online Demonstration

To see how the demo is done (useful beforehand) watch the Chemistry Calendar video (the same video is available on two different platforms)

RU Clip https://ru-clip.net/video/w6xU145T_vQ/chemistry-experiment-gel-beads-and-alginate-worms.html

You Tube www.youtube.com/watch?v=w6xU145T_vQ

Alternative activity ideas

Video
Show the video above (Online demonstration)

Pre-lesson task follow up
Examine the products brought in by children or photographed/drawn in the pre-lesson task
Are there any surprising products that seaweed was found in?

Did anyone find plant food? Seaweed is used in land plant food and fertilisers. Seaweed fragments added to water makes land plants grow really well. Why do pupils think this might be the case?

Seaweeds contain lots of minerals they have taken from the sea. Land plants might not be able to get these easily as they live in a different environment. This is one theory about why putting seaweed on gardens, fields helps to make land plants grow more quickly and strongly.

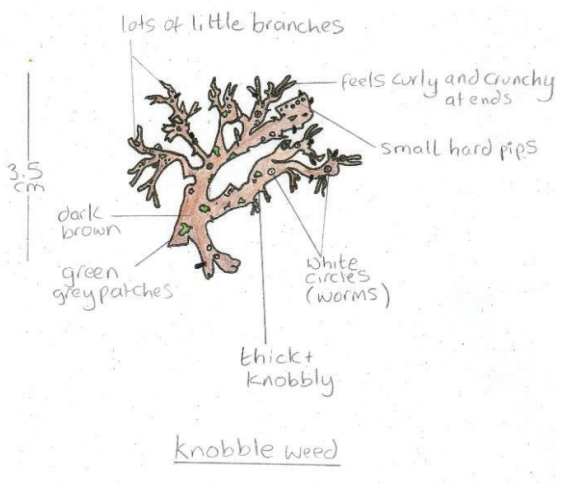
Did anyone invent an imaginary product? Explore what kind of things seaweed could be added to. What name could you give your product. You could ask the class to design an advertisement for a seaweed product.

Seaweed recipe
Make a seaweed recipe (see follow on activities) and ask the children to taste a food with seaweed in (check allergies before trying this)! Simple seaweed snacks can be made in just a few minutes using nori sheets from major supermarkets.

Seaweed Naming Project – examples

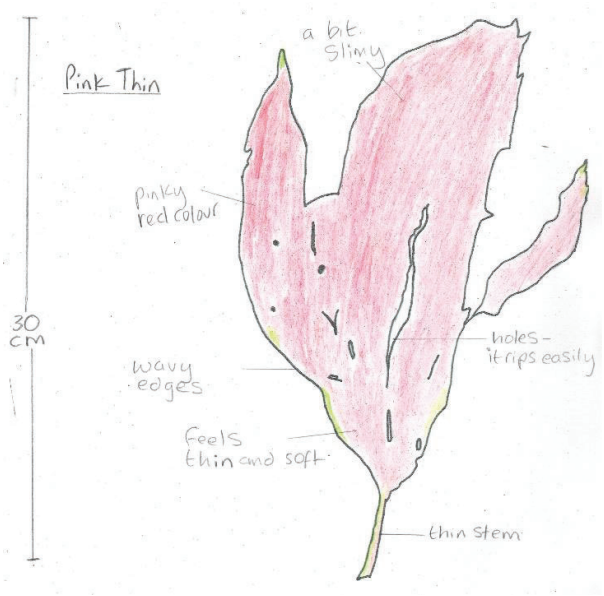
Seaweed A

Photo of real seaweed
(*Mastocarpus stellatus*)



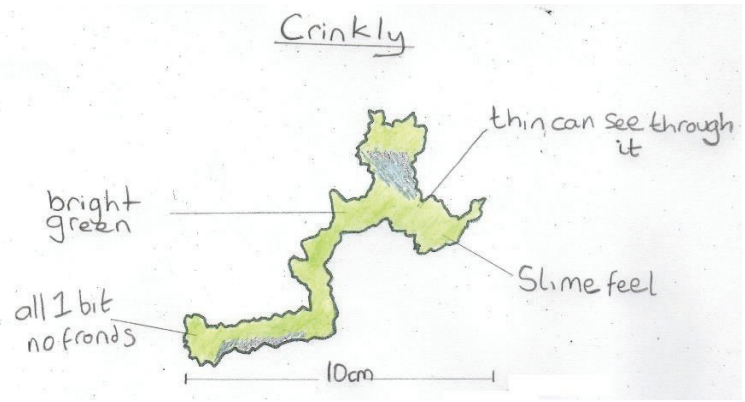
Seaweed B

Photo of real seaweed
(*Stenogramma interrupta*)



Seaweed C

Photo of real seaweed (*Ulva spp*.)



Method

During the practical session, ask children to choose a favourite seaweed on the shore.

Take a photo of it, or collect a small bit of it (making sure to wash it first so there are no creatures on it) and put in a bag with a scrap of paper in the bag identifying the collector. Take it back to the class.

Or collect some seaweeds on your pre-site visit and ask pupils to choose from your collection.

Back in class, in Lesson 2 start to draw the seaweeds and create an identification card for each. Pupils to:

- Give the seaweed a name that describes it best (this is a made up name).
- Measure it and show how big it is in centimetres with a scale and label.
- Colour it in.
- Name and label the features that help to tell it apart from other seaweeds (air bubbles, patterns, shapes of fronds and blades, the holdfast, hairs, what it feels like).

Timing is variable as the project can continue after the lesson with pupil research and drawing of different seaweeds. You can eventually create an encyclopaedia of seaweeds or gallery in class.

Taking Samples

A batch of seaweeds can be found during the practical or another day. Samples can be stored in a fridge for a couple of days or a freezer for longer (keep kelps, the big brown seaweeds, in a separate bag; they do not last long and will turn sticky). Make sure all samples are carefully washed on the shore with seawater prior to collection, to avoid accidentally freezing attached creatures. Only take small samples of drift, not growing algae. Do not collect if you can use photographs/drawings.

Alternatives to Samples

You can use photos of seaweed from the slides in this session or in the online resources (below), or seaweed books if you have no samples.

Online seaweed identification

Students can look online or in a seaweed book to find the correct species names, but the aim is to create their own names and features to help to remember the different types. It may not always be possible to find correct species without a microscope).

- Marine Life Information Network www.marlin.ac.uk/gallery/species
- Algae Base www.algaebase.org/

Teach On The Beach Big Seaweed Search for Schools: Lesson 2 Follow Up Activities

Revisit the Shore

Revisit the same shore at a different time, a different season or in 1 year. Repeat the survey and exercises that you did. Try to do the search in exactly the same place, using the same method.
Re-do your limpet count.
Compare your results. What has changed if anything with the seaweed? With the limpets?

Visit a different shore

Repeat the Seaweed Search in the same way (as long as it safe and relevant to do so) and the seaweed snap

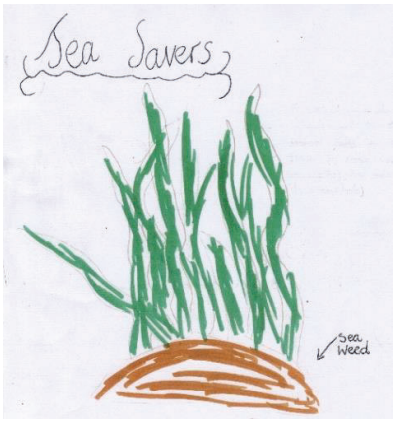
- Do a limpet count.
- Look for other grazers.
- Repeat seaweed art

How does this shore compare to the other – did you find the same seaweeds?
Compare your art – does it look different on a different shore? If you re-do the seaweed naming project or seaweed snap, did you find new and different seaweeds?

Learn More about the Big Seaweed Search

Download the information, guide and forms to do a full Big Seaweed Search
http://bigseaweedsearch.org/
Visit the data site of the Big Seaweed Search. Look at the map to see where people have been taking part. Compare your results with The Big Seaweed Search Data and photographs.
http://bigseaweedsearch.org/explore

Save Our Seaweed Poster or Flyer



Design a poster about why are seaweeds important and why do they need to be saved. Pick a title (or make up your own)

- Save Our Seaweeds
- Seaweed Superheroes

Design a poster about the Big Seaweed Search

- Help the Big Seaweed Search
- See More Seaweed

See example posters online:

Seaweed pressing

Make seaweed art by pressing it. Just like flowers, seaweeds can be pressed. If they are arranged carefully in water before pressing the shapes can look amazing. You will need to change the paper daily until it dries out totally to avoid mould, so it is not a short term project, but very worthwhile.
Online instructions; There are various online sites that advise on how to press seaweed e.g.
www.hawaii.edu/gk-12/opihi/classroom/algae_pressing.pdf
or www.whoi.edu/science/B/people/kamaral/pressedseaweed.html

This video of how to press seaweed is useful for teachers, but not suitable for children.
www.youtube.com/watch?v=HRxLmRAd2sc

Story Writing

The Day the Seaweeds Died
Write a story about the day the seaweeds died. Think about what could kill all the seaweeds or take them away? What would the beach look like without any seaweed?
What animals would not have a home or something to eat? What would they do?
How would it affect people? What would they do? Who or what could save the seaweeds and how?

The Alien
Write a story about a plant or animal that arrives somewhere and takes over. What does it eat, why does it grow bigger or do better than the other creatures? How can it be stopped? Think of the examples in Lesson 2 (grey squirrels, American bullfrogs, carpet sea quirt) and The Blob!

Marine Life poetry

Read out some marine life poetry for example 'The Mermaids Purse' book of poems by Ted Hughes (with illustrations by Flora McDonnell published by Faber and Faber 1999 0-571-19789-2). There is a poem entitled 'bladderwrack' and also limpet, crab and others. Pupils could research other poems about the sea and/or try writing and illustrating their own poem.

Seaweed Pairs Game

Memory game. Use the Activity 1/seaweed snap 'cards' to play a pairs game. Print out two or more (even number) sets of the cards. Mix them up. Lay them face down in rows. Pupils take turns turning two cards over. If the two cards match, keep them. If they don't match, turn them back over. The aim is to try to remember what was on each card and where it was and watch and remember during the other player's turn.
The game is over when all the cards have been matched. The winner is the one with most cards.

Seaweed recipes

Make some seaweed recipes for pupils to try eating seaweed (in school or at home). Wash all seaweed thoroughly before use, or substitute shop bought versions if you are unsure.

Easy Seaweed Snacks

There are many easy snack recipes online that use 'nori' seaweed sheets you can buy from supermarkets. Search for a recipe, or for a basic version, brush the sheets with sesame oil, sprinkle salt and add anything else you like (horse-radish, mustard, chilli flakes). Cook on baking sheet at 180 degrees for 5 – 7 mins one side then flip. Look for bright green colours at edges when done. Cut into shapes for 'crisps'. For anyone allergic to sesame, rape seed or sunflower oil can be substituted.

Author Rachel Lambert has kindly allowed the use of her wild foraged seaweed recipes for Carrageen Ice Cream and Honey Roasted Seaweed from her book Seaweed Foraging in Cornwall and the Isles of Scilly for this teacher's pack. More info and foraging books and courses at www.wildwalks-southwest.co.uk/books/.

Rachel Lambert's Carrageen Ice Cream

- 550 ml whole milk
- 500 ml double cream
- 1 vanilla pod
- 100g unrefined sugar
- 10g dried carrageen

For a perfect seaweed ice cream: Put all ingredients into a medium sized pan. Bring to the boil and then simmer for 15 minutes. Strain through a jelly bag (don't squeeze); use what easily comes through. Put into a 600ml, lidded, plastic freezer container and allow to cool. Freeze the ice cream for 1 hour, remove, mash and re-freeze. Repeat 3-5 times, or until fully frozen. Allow 20 mins to 'sit' outside of the freezer before serving.

Rachel Lambert's Honey Roasted Seaweed (serves 4)

- 3tbsp (60g) honey
- 2 dessert sp (20ml) vegetable/sunflower oil
- 3 tbsp (45ml) water
- 50g salted, roasted pistachio nuts (in shells)
- 15g or very large handful of sea lettuce (dried)
- 40g pumpkin seeds

A slightly salty, chewy, crispy, seaweed treat!
Pre-heat oven to 16o°. Line a large baking tray with baking paper. Heat the honey, oil and water in a small pan, bring to the boil and simmer for 5 minutes to reduce the liquid a little. Meanwhile, remove the pistachio nuts from their shells, and rub off any of the skin that you can. Roughly crush the pistachios under a flat knife blade, just enough to break them up but do not pulverize. Cut the sea lettuce into approximately 2.5cm pieces. Over a very low heat, add the sea lettuce, pistachio nuts and pumpkin seeds to the honey mixture. Stir thoroughly. Ensure the whole mixture is covered with the honey water. If there seems to be a bit of excess liquid in the pan, keep stirring until it is absorbed; if not, turn off the heat. With a wooden spoon, spread the mixture evenly on to the baking paper and bake in the middle of the oven for 30 – 35 minutes. Take out and cool. Break into pieces. Stored in an air-tight container it will keep for several days.

Follow Up/Background Videos and Podcasts

Seaweed
BBC Big Blue Live 360 degree exploration of a kelp forest (in a US aquarium)
www.bbc.co.uk/programmes/articles/5ccLHbtgXBFXsvMN0VdYSJX/360-diving-exploration-of-a-kelp-forest-aquarium

BBC Big blue live – Steve Backshall being mobbed by sea lions (with seaweed in back ground) leads in to other marine themed sessions such as marine animals.
www.bbc.co.uk/programmes/articles/5rzf5zGSk2ddgYXHn32jswb/360-dive-with-steve-backshall-being-mobbed-by-sea-lions

Rising tide on a rocky shore. Watch how tide affects the shore and the seaweeds
www.arkive.org/habitats/rocky-shores-uk/video-H346

Fish swimming in seaweed (You Tube) www.youtube.com/watch?v=JgodnbPYf2c

More videos

Discovering hidden kelp forests on vimeo https://vimeo.com/217456337
Kelp forests (with subtitles) made by Perfect View video production for
Dan Smale at the Marine Biological Association. All about why they are studying kelp.

Harvesting seaweed www.cornishseaweed.co.uk/about-us/

Why Scottish Sheep Eat Seaweed: A Great Big Story. North Ronaldsay sheep eat only seaweed. But why did they start? https://videosift.com/video/Why-These-Scottish-Sheep-Eat-Seaweed

Seaweed art – making a seaweed panel at the NHM and why seaweed is important
www.nhm.ac.uk/discover/seaweeds-a-hidden-habitat-under-threat.html

Limpets
Feeding, moving and fighting by Arkive
www.arkive.org/common-limpet/patella-vulgata/video-08.html
www.arkive.org/common-limpet/patella-vulgata/video-03.html

Capturing Our Coast Seaweed Vs Limpets www.capturingourcoast.co.uk/specific-information/seaweed-vs-limpets

Tides
An explanation about how the sun/moon and earth affect tides that you can demonstrate using a piece of string, a biscuit, a smartie, a pickled onion and an orange (You Tube)
www.youtube.com/watch?v=CTQ6ciHENgI . More about tides including lesson plans from National Oceanic and Atmospheric Administration (US government educational resources)
https://tidesandcurrents.noaa.gov/education.html

Climate
Ocean Acidification by the Pew Trust www.pewtrusts.org/en/research-and-analysis/video/2016/what-is-ocean-acidification-a-cartoon-crash-course

Climate Change resources by WWF.
Explore climate change in more depth with KS2/3 resources from WWF
www.wwf.org.uk/get-involved/schools/resources/climate-change-resources

NASA global warming graphic from Lesson 2
https://climate.nasa.gov/climate_resources/139/graphic-global-warming-from-1880-to-2017/

Fun
The seaweed dance - kids version (You Tube) www.youtube.com/watch?v=zva39wbBy6E

Seaweed yoga for children (You Tube) Captain McFinn's underwater yoga
www.youtube.com/watch?v=17oB2J0gm3w