

# SUSSEX MARINE EDUCATION PROGRAMME

**Shoreham Beach Local Nature Reserve marine programme delivered locally and across Sussex**

Includes our new outreach sessions for 2014,  
'Bringing the Seashore into the Classroom'

# Site visits and what they can add to classroom study

This varied programme provides many opportunities for schools to engage with the Sussex Coast to enhance local studies or to give a local dimension to a wider topic. Sussex has a wealth of marine wildlife and fascinating coastal geography entwined with maritime history.

Schools can visit the Shoreham Beach Local Nature Reserve and explore the rare vegetated shingle habitat and coastline. For schools that are unable to visit the nature reserve our education staff can also visit your school with an outreach session or support a visit to your own local beach.

Our education coordinator is a biologist, environmental educator and natural history author with 28 years of experience working with local schools.



Goring West Sussex



Shoreham West Sussex



Brighton East Sussex



# SHOREHAM BEACH LOCAL NATURE RESERVE



In 2006 Shoreham Beach was made a Local Nature Reserve to help protect the local and internationally rare habitat called vegetated shingle.

The nature reserve can be visited by schools or studied as an example of local coastline, including science, geography and local history.



Over 90 different plants have been recorded on the nature reserve.

Visiting schools can explore the nature reserve and discover how these plants are adapted to survive the very harsh conditions on a shingle beach.





Schools can also experience how vegetated shingle supports a rich biodiversity of terrestrial animals. These include birds, insects and lizards that find food and shelter amongst the shingle plants.





Guided activities can be provided to help support investigation and identification of the shingle plants and wildlife.

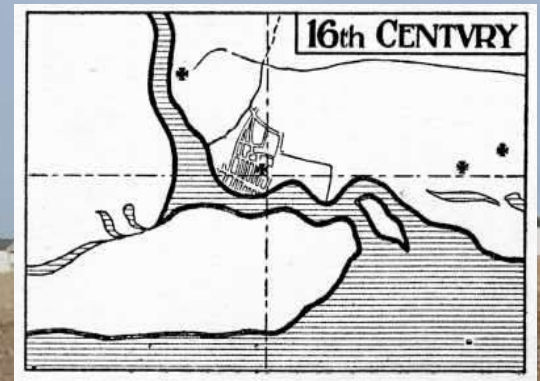
Habitat and wildlife surveys undertaken on the beach can be repeated in the school grounds to compare these two habitats





## Secondary school: Coastal geography

The Sussex coastline has many locations suitable for studying coastal processes, and coastal management. This includes Shoreham beach, a shingle spit formed by the action of river deposition and longshore drift. This is a region that has been recognised as being at risk from future flooding by the Environment Agency.





We also provide various opportunities for secondary and higher education to study the rare vegetated shingle habitat, and global and local conservation issue.

Students can also learn about the management problems of running a nature reserve, balancing the conservation of a rare habitat with public access.





# New Primary Science Curriculum

Last year we delivered a marine education presentation at several primary science teacher conferences . In a workshop session we discussed future development of our programme which led to the inclusion this year of the following topics.

## Seasonal Changes

The vegetated shingle on Shoreham Beach is an example of dramatic seasonal changes overcoming desert like conditions with fascinating adaptations and by laying dormant beneath the shingle during from Autumn to early spring.

This also affects the seasonal visitors, birds and invertebrates that visit the shingle plants. This can be used as part of a wider look at seasonal changes and can be compared with other habitats such as school grounds.

**Plants** We have expanded our plant activities looking at plant features, adaptations and pollination. Looking at bees as the most important pollinators on Shoreham Beach. This activity can be repeated and compared with your school grounds.



January 2013



May 2013



## Rocks

It's not just the living things that make Shoreham Beach fascinating but also the very pebbles that the beach is formed from.

The shingle spit formed over many centuries and the pebbles have been pounded, eroded and transported around by the waves.



Pupils will discover the rock types that are present on Shoreham Beach including flint, quartzite, Larvikite, sandstone, chalk, and sea coal. Each pebble also has a fascinating story to tell.

This session can also include crystals (present in some pebbles) and fossils

A rock investigation activity is now included in our school visit beach activities and can also be included in a visit to the school





# STUDYING THE INTER-TIDAL ZONE

At the eastern end of the nature reserve, by the old fort, we are able to run session that reveal the life between the tides.





**If you are unable to come to Shoreham we can provide a guided visit, with activities to your own local beach.**

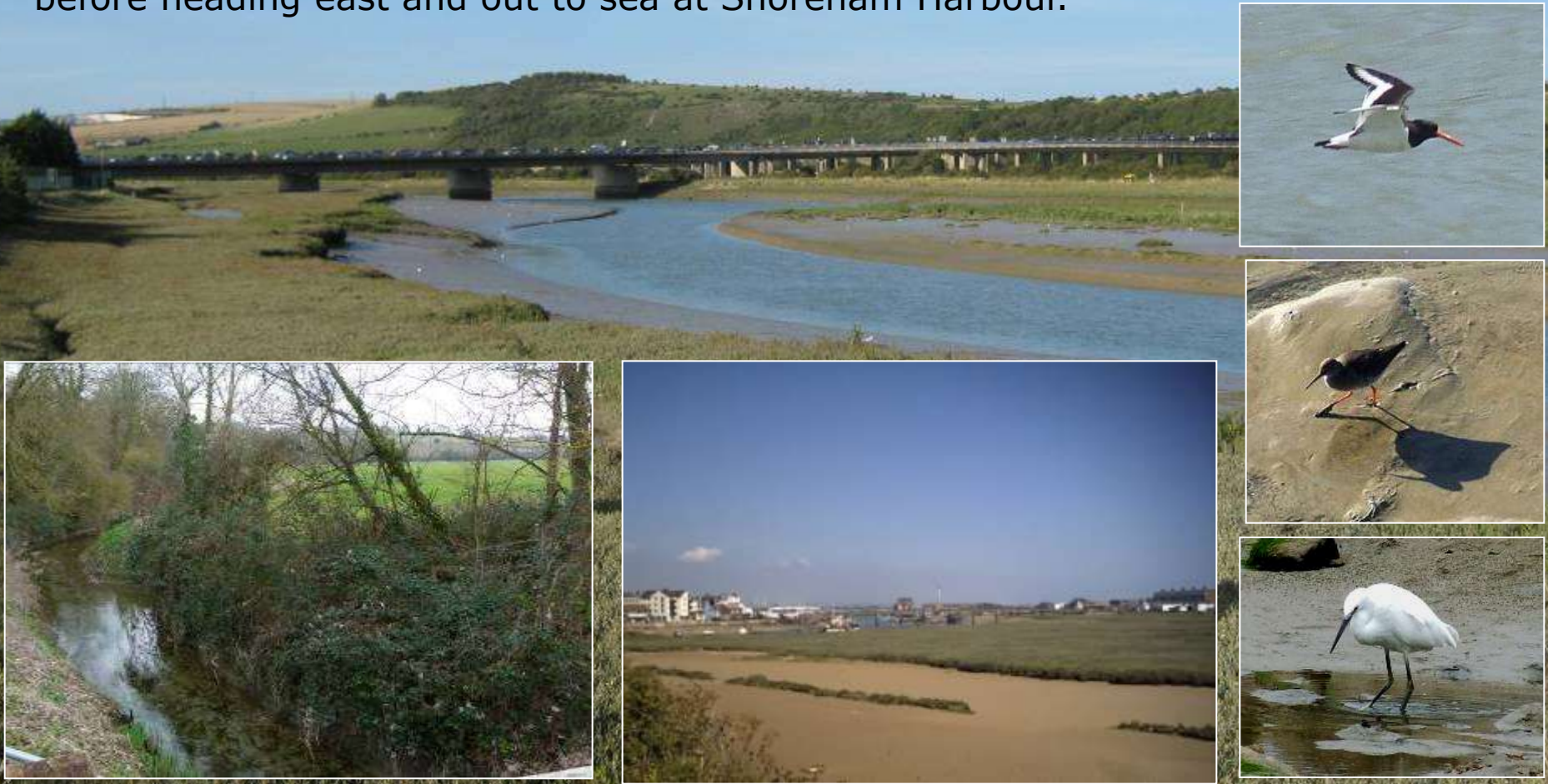




# From River to Sea

The River Adur is tidal up to about 11 miles inland and flows down to the sea at Shoreham. The river meanders down to the sea, in places flanked by flood plains where salt making took place in the past and joined by numerous small streams that support freshwater fish and a variety of bird life including kingfisher.

The river eventually reaches the Adur estuary a valuable habitat for wildlife, before heading east and out to sea at Shoreham Harbour.





# Outreach Programme

## Bringing the Seashore to the Classroom





# The Seashore – An Exciting and Dynamic Habitat

The seashore is an exciting and dynamic habitat but it is not always possible for schools to visit the coast. This might be due to the age of the pupils, distance from the coast, cost of transport or other reason. Teachers at educational events have increasingly mentioned these issues.

To help support teachers with marine topics we have expanded our outreach programme which focuses on bringing the seashore into the classroom. This document explains the main sessions we have developed for 2014



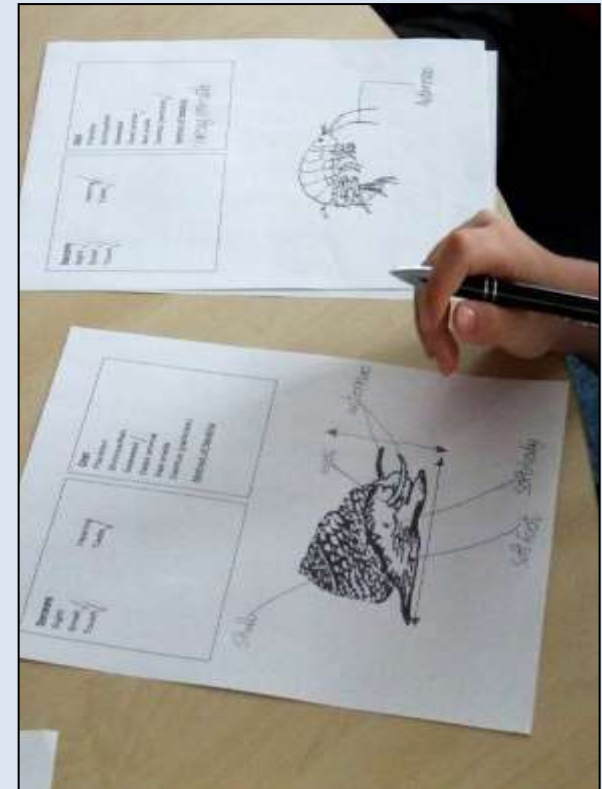


# Bringing the Seashore into the Classroom



We have developed a special outreach visit displaying live marine life using a digital microscope and projected for the whole class to see using a media projector.

The session looks at various topics including habitats, adaptation, locomotion, life processes, food chains and more.



The session is supported by a coastal PowerPoint and activity sheets



The main aim of the session is to provide the opportunity for pupils to observe and investigate a variety of live seashore animals. They will be encouraged to speculate on adaptation, locomotion and the life processes of each animal.

Sample jpeg images from a school session



Shore crab



Sea anemone



amphipods



Cockle



Blenny fish



Barnacle



The children usually work in 2 or 3 groups depending on the size of the year group. During the session they will be guided to observe the animals and their features.



6 very different animals will be examined in more detail and the pupil's observations and thoughts are recorded on a class sheet (example above). This information can also be used by the school in follow up work to compare how they are similar, different and can also be used to work on classification.



## ADDITIONAL TOPICS

**Secrets of the seashore.** This session is based around the fascinating objects that you can find washed up on the beach at low tide. The pupils will be able to investigate and identify a selection of objects and learn more about the natural history of the animals that the objects come from.



Dogfish egg case



whelk eggs



Ray egg case



Dogfish egg



Adult whelk



Ray



This includes the use of photographs of marine animals and how they relate to the objects, fascinating facts and also myths and folklore surrounding seashore objects. We also discuss how the strandline is a habitat in its own right.



**Marine debris.** This session focuses on plastic pollution and other man-made objects that pollute the sea. This can be investigated as a local and global issue including various examples of the harm that it causes in the marine environment.

Pupils can investigate why plastic is such a problem and also the sources of beach litter, including the results of a local beach litter clean/survey that took place in Sept 2013



This session can be included as part of the Secrets of the Seashore session and can also include an activity looking at things that once lived and never lived.

### **Marine conservation**

If the main focus of the topic is plastic pollution, or marine conservation, you might be interested in the following project <http://seawatch17.wix.com/one-world-one-ocean>

This project focuses on both the local and global aspects of the marine environment – looking at how our local coastline is linked to the global ocean and also how global issues such as marine debris, climate change, sea level rise may affect our coastline. We will also focus on local and global marine life. This is a project that links pupils with scientists and their work.



**Marvellous Molluscs.** This session looks at the fascinating world of molluscs from your garden/ school grounds, ponds and marine habitats

Molluscs are a fascinating animal group that have adapted to live in a wide range of environments. (Octopus are molluscs too!). Molluscs provide opportunities for pupils to undertake first hand scientific investigation on the needs and requirements, adaptations and senses of snails and slugs. This project is also suitable for urban schools with small grounds.

In this session we bring to the school some examples of marine molluscs for children to investigate. If you do not have a school pond we can usually bring some freshwater snails as well. We also bring along some large tropical shells for the pupils to examine.

Pupils can examine and record the molluscs we bring as part of the wider study including mollusc in the school grounds focusing on similarities and differences. We discuss facts such as why slugs/snails are slimy and how shells grow.

Our session can be used as a start point for or can be used mid-way to introduce marine molluscs to the pupils terrestrial mollusc investigations. (We can provide ideas and activities for studying terrestrial molluscs)





**Comparing water habitats.** This session can be used to compare a rock pool and a pond. This project has been particularly designed for schools that have a pond in their grounds. We can bring some live marine animals for the pupils to study.



We will encourage the pupils to think about the physical differences between a rock pool and a pond and the wildlife associated with each habitat.

While we will discuss both the rock pool and pond habitat we will focus on providing an opportunity for the pupils to investigate some live rock pool animals as previously mentioned in this document.

Pupils can start to explore their school pond prior to our visit and continue this investigation afterwards or you can use the project as a start point.



**Maritime History.** Shoreham has a wealth of history that entwines with the history of Shoreham Beach. In fact Shoreham was far more important than Brighton until the Victorian period. Shoreham Port has been important since the 11<sup>th</sup> Century.



Bungalow town



Norman Church



Lighthouse



Old Napoleonic Fort



Pupils can learn how we have shaped the coast and how we use the coast has changed in both leisure and industry.

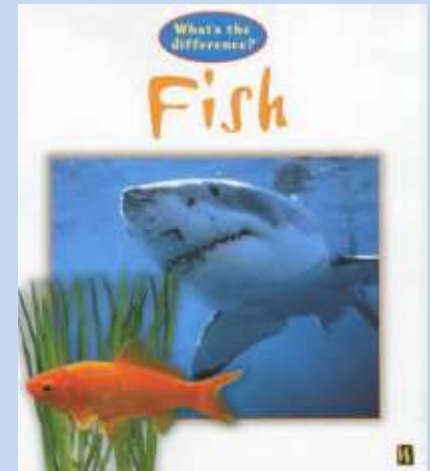
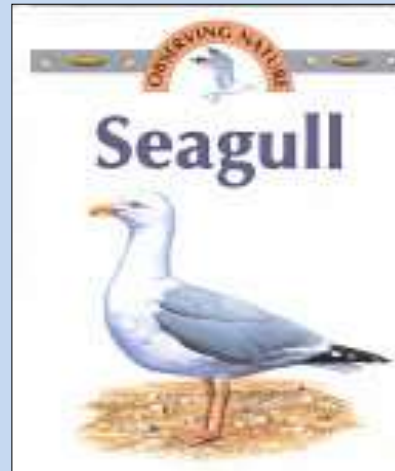
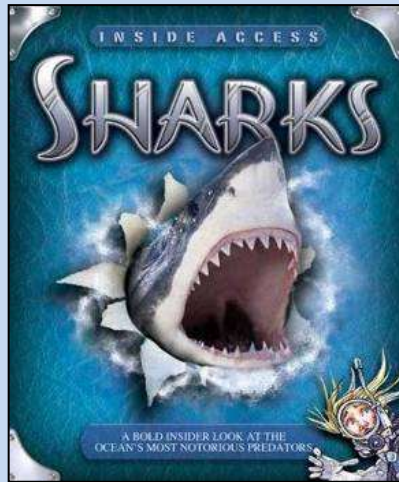
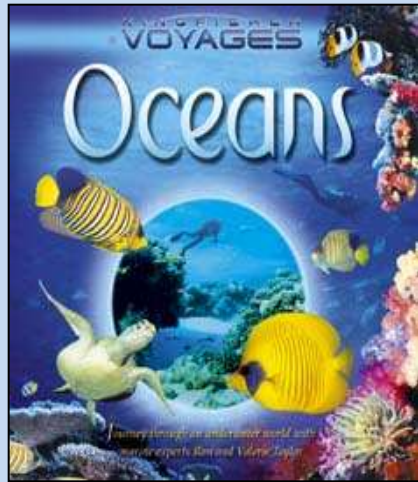


Historic ship building



**Literacy.** Our education coordinator is a wildlife author with over 40 children's wildlife books and can provide sessions based around some of his books.

Book project. Learning about how a non-fiction book develops from the initial idea to the finished book. Starting in the session and continuing throughout the term, the pupils will create their own book. Alternately, they can create a fiction book where they will turn fact into fiction. Example, 'A day in the life of a dolphin at Brighton'



Storytelling. We also run a storytelling session based around the objects that can be found on our local beaches and the hidden stories they can reveal.

Ed the Bear. A session that follows the global travels of Ed the Bear as he dives on coral reefs and shipwrecks, visiting penguins in Antarctica and comes face to face with great white sharks. He also visits scientists and investigates conservation threats . The story is based on a real teddy bear that the author has been sending to locations around the world (see more on the page below)



# ONE WORLD ONE OCEAN THE ADVENTURES OF ED THE BEAR

A factual story seen through the eyes of a fictional character

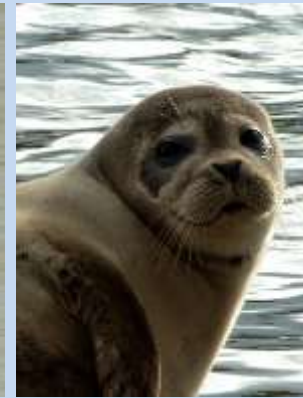
The One World One Ocean Project explores the fascinating global travels of Ed the Bear through literacy, science and sustainability. Schools can follow his oceanic journey from the Sussex Coast to the Atlantic and Pacific Ocean. In 2012 Ed visited great white sharks in Africa and also visited Antarctica.

Ed the Bear has been travelling since 2009 and the places he visits are real and everything that happens good or bad are true accounts. This provides both a powerful and also uplifting message.

The project looks at how we are apart of one ocean that we rely on every day for our weather, freshwater and much more. It celebrates local and global marine biodiversity, explores conservation issues and looks at how we can all help the ocean by living more sustainably.



**Sussex Sea Mammals.** This session is based around a life sized inflatable dolphin used to teach pupils about the dolphins that visit Sussex. Our educator has involved in of Sussex sea mammals research since 1991 and will include many pictures and examples of local sightings of dolphins and seals.



This can also include a dolphin rescue demonstration (linked to plastic litter theme).

**Amazing Sharks.** This session looks at shark natural history from a local and global perspective and their prehistoric ancestors. Pupils will also discover the valuable role sharks have in food webs and discuss our perception of sharks and if sharks are as dangerous as their reputation suggests.

Pupils will also discover why sharks are endangered and why they need protecting. The session includes high quality images and includes the chance to handle a seal shaped decoy that has been chewed by great white sharks





**A school visit can often include a combination of topics illustrated in this document**

**You can find out more about the Sussex Marine Education Programme and also the Shoreham Beach Local Nature Reserve on our website below.**

**<http://www.fosbeach.com/education-on-shoreham-beach/>**

**For further information and fees please contact our education coordinator Stephen Savage on [stevep.savage@ntlworld.com](mailto:stevep.savage@ntlworld.com)**

**For more information about the Adventures of Ed the Bear – from Shoreham Beach to the Atlantic, pacific and Antarctica see the website <http://seawatch17.wix.com/one-world-one-ocean>**