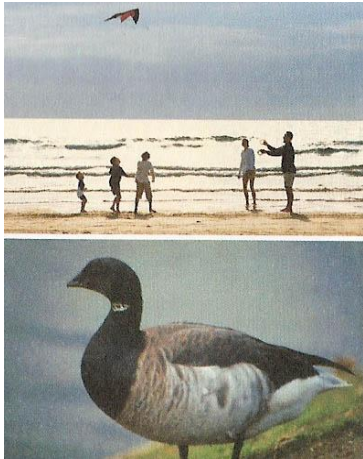


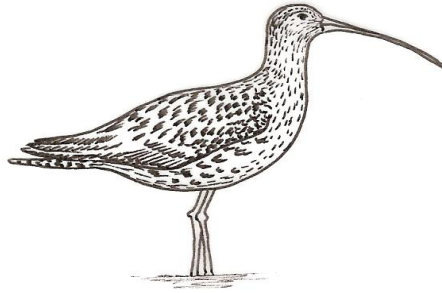
# NORTH BULL ISLAND NATURE RESERVE DISCOVER PRIMARY SCIENCE PROGRAMME



**Discover**  
**Primary**  
**Science**  
and see how your world works  
[www.primaryscience.ie](http://www.primaryscience.ie)



Dublin City Council  
Comhairle Cathrach Bhaile Átha Cliath



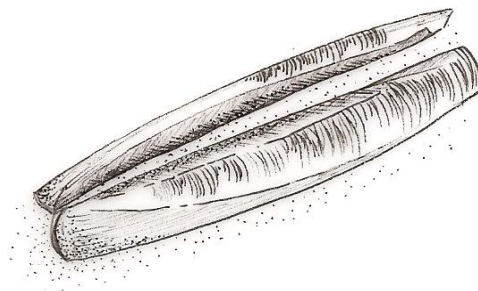
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## CREDITS

The North Bull Island Nature Reserve Discover Primary Science Programme was funded by Discover Primary Science, which is a flagship project run by the Discover Science & Engineering (DSE) awareness programme. DSE is managed by Forfás on behalf of the Office of Science & Technology at the Department of Enterprise Trade & Employment.

The Programme was developed by Marine Dimensions, in association with Dublin City Council and North Bull Island Nature Reserve.

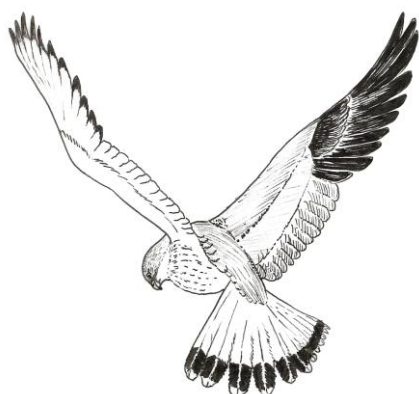
Drawings: © Sinead Begley.

Cover photographs: ©

## Background Information

### North Bull Island Nature Reserve

Established as an environmental area of national and international importance, North Bull Island Nature Reserve is well known for its rich birdlife and diverse fauna and flora. The Island was recognised as an area deserving protection in 1981, when it was designated as the first UNESCO Biosphere Reserve in Ireland. In 1994, Dublin Corporation made a Special Amenity Area Order in order to ensure that the Island retained its Biosphere Reserve status, and now the area is also designated as a Special Area of Conservation (SAC) under the EU Habitats Directive. The island is a particularly good example of an undisturbed sequence of habitats, including beach, fore dunes, mature dune ridges and slacks, grassland and mudflats. The daily management of North Bull Island and its Interpretive Centre is under the care of the Parks and Landscape Services Division of Dublin City Council.



### North Bull Island Interpretive Centre: facilities and resources

Bull Island Interpretive Centre was set up in 1986 in order to enhance public understanding and awareness of biodiversity in the Nature Reserve. The Centre provides a range of educational facilities and resources, including audio visual presentations, interpretive panels, exhibits and displays. Experienced tutors are on hand to cater for visits from primary schools, with the recent introduction of the Discover Primary Science Programme facilitating teachers with coastal science subjects covered through the SESE curriculum. As Ireland's first beach based Discover Science Centre, the Programme includes a range of exciting indoor and outdoor science based Activities.

### North Bull Island Nature Reserve's Discover Primary Science Programme: Information for teachers

#### *The Learning Activities*

The North Bull Island Nature Reserve's Discover Primary Science Programme (DPSP) incorporates a range of Learning Activities that are designed to stimulate learning in the 8-12 yr age group. All Activities place emphasis on the SESE curriculum, with consideration of visual, auditory and kinaesthetic methods of learning. Table 1 lists the DPSP Activities, whilst Table 2 provides background information on curriculum relevance and skills development for the practical element.

**Table 1: The Learning Activities**

	Energy and Forces along our Coasts
Activity 1	Experimenting with the power of wind
Activity 2	Investigating the power of sunlight
Activity 3	Discovering the power of water
	Life on North Bull Island
Activity 4	Learning the language of zoologists
Activity 5	Exploring habitats and observing wildlife
Activity 6	Food chains on Bull Island
Activity 7	The Bull Island Wordsearch

Activities 1, 2, 3 and 5 include practical exercises that take place in and around North Bull Island Interpretive Centre, whilst Activities 4, 6 and 7 are designed to be desk based in the school classroom. A Pupil's Worksheet and Teacher's Support Sheet are provided for each Activity.

**Table 2: Practical Activities provided by the North Bull Island Nature Reserve Discover Primary Science Programme. Other related DPS activities listed below are suitable for preparation or follow up work in the classroom. (They may also be provided by the North Bull Island Interpretive Centre on request).**

<b>North Bull Island Nature Reserve DPS Activities</b>	<b>Content strand and strand unit</b>	<b>Skill development</b>
Experimenting with the power of wind	Energy and forces	Investigating, experimenting, observing
Investigating the power of sunlight	Energy and forces, light	Investigating, experimenting, observing
Discovering the power of water	Energy and forces	Investigating, experimenting, observing
Exploring habitats and observing wildlife	Living things	Observing, investigating
<b>Other Related DPS Activities</b>	<b>Content strand</b>	<b>Skill development</b>
Diving drops and sinking feeling (Bronze)	Forces	Observing, experimenting
Strange sounds (Curriculum)	Energy and forces, sound	Investigating, experimenting, observing
Creepy reflections and floating finger (Silver)	Light	Investigating, experimenting
Design a boat/Making a diver (Silver)	Forces	Designing and making, investigating and experimenting
Surface tension and bubbles (Bronze)	Forces	Investigating, experimenting

### *Booking a programme visit*

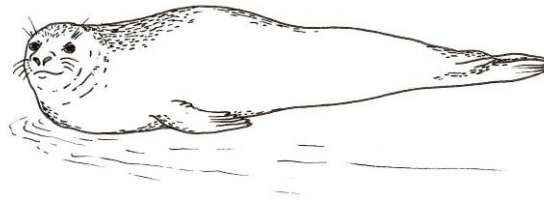
When calling the Bull Island Intrepretive Centre to book a visit, please remember to

- specify that you require the DPS Programme,
- have your DPS registration number ready when you are making the booking,
- confirm the number of children attending (the Centre caters for a maximum capacity of 35 children at any one time),
- specify the age group of the children attending,
- confirm and make arrangements for an adult/pupil ratio of 1:10,
- specify your arrival and departure times (the DPS Programme generally takes about 2 hours),
- alert our staff to any special needs requirements.

### *In class preparation and follow up activities*

Some of the Activities are designed to be taken in the school classroom. For example, Activity 4, *Learning the language of zoologists*, is useful as an ‘in class’ preparation exercise, allowing the children to become

familiar with the vocabulary and terms that they will encounter during their visit to Bull Island. Activity 6, *Food chains on Bull Island*, and Activity 7, *The Bull Island Wordsearch*, are also intended as in class activities, providing teachers with opportunities for follow up work after the visit.



#### *On arrival*

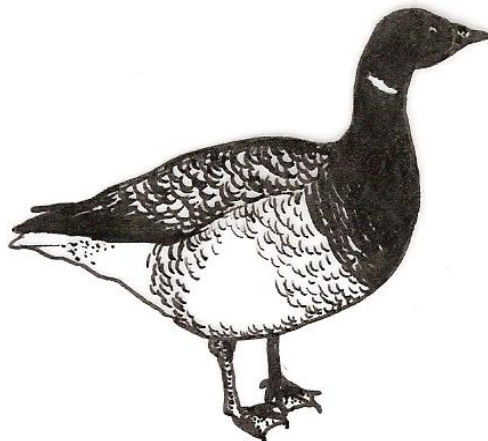
On arrival at The North Bull Island Interpretive Centre, please register at reception. You will be greeted by the DPS Tutor who will then take the class through the DPS Programme. Activities will commence in the Centre's Education Room, where the *Energy and Forces along our Coasts* and *Life on North Bull Island* classes will take place. Some of the Activities also involve outdoor field trips (if weather permits). The Programme is designed to take approximately 2 hours.

#### *Safety considerations and special needs*

The safety and welfare of visitors to North Bull Island is paramount. For this reason, please inform staff of any special needs requirements prior to making a booking with the Centre. Whilst the staff will do their utmost to accommodate special requirements, it may not always be possible to provide suitable facilities in some cases, eg. the Centre does not have wheelchair access. Please also note that the DPS Programme requires an adult: pupil ratio of 1:10 for outdoor activities. Children should also be dressed appropriately, preferably with wellies and raincoats for the field trips.

#### *Useful resources for teachers*

There are a number of organisations and programmes that provide resources for primary school teachers teaching coastal ecology in Ireland (Table 3). Discover Primary Science provides a range of resources, with many of the DPS Activities closely linked to the Activities provided in the North Bull Island Nature Reserve. (Table 2, [www.primaryscience.ie](http://www.primaryscience.ie)).



**Table 3: Organisations and programmes in Ireland providing educational resources for teaching coastal ecology at primary level.**

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**Dublin City Council**

North Bull Island Interpretive Centre provides a range of resources.

Tel: 01 8338341, Website: [www.dublincity.ie](http://www.dublincity.ie)

**ENFO,**

Provide a range of outreach materials, including posters, fact sheets and exhibitions.

Tel: 01 8882001, Website: [www.enfo.ie](http://www.enfo.ie)

**Planet Aqua**

An EU project designed to raise awareness for the aquatic environment. Includes a teachers' resource pack.

Tel: 01 6449008, Website: [www.planetaqua.ie](http://www.planetaqua.ie),

**The Irish Wildlife Trust**

Provide educational materials on Ireland's fauna and flora.

Tel: 01 8602839, Website: [www.iwt.ie](http://www.iwt.ie)

**Birdwatch Ireland**

Provide information on birdlife with downloadable teaching materials online.

Tel: 01 2819878, Website: [www.birdwatch.ie](http://www.birdwatch.ie)

**The Marine Institute**

Provide a range of educational resources including online teaching materials.

Tel: 091 387200, Website: [www.marine.ie](http://www.marine.ie)

**Marine Dimensions**

Provide seashore safaris, school visits and educational conservation projects.

Tel: 01 282 8876, Website: [www.marinedimensions.ie](http://www.marinedimensions.ie)

**The Irish Whale and Dolphin Group**

Provide a range of outreach materials on whales and dolphins.

Tel: 064 24934, Website: [www.iwdg.ie](http://www.iwdg.ie)

**An Taisce**

Run the Green Coasts project, which includes an education programme for schools.

Tel: 01 4541786, Website: [www.antaisce.org](http://www.antaisce.org)

**The Seal Sanctuary**

Provide information on seals and a range of outreach activities.

Tel: 01 8354370, Website: [www.irishsealsanctuary.ie](http://www.irishsealsanctuary.ie)

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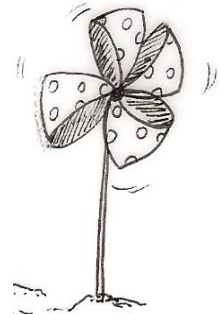
# ENERGY AND FORCES ALONG OUR COASTS

## PUPIL'S WORKSHEET

### Activity 1: Experimenting with the power of wind

#### Interesting Facts

Wind is very powerful. Did you know that North Bull Island is made up of lots of sand dunes that were formed by the wind? If it wasn't for the wind blowing the sand high up on the shore, the dunes would never have been formed and there would be no Island!



Wind is also a source of clean energy. We can use strong winds to make electricity using wind mills and turbines. These turbines help us to provide the energy that we need for the future. A wind farm is made up of lots of wind turbines working together.

#### (a) Experiment To investigate the effect of different wind speeds on a wind turbine.

In this experiment, we will see how electricity can be made using a wind turbine. Ask the Tutor to help you set up the experiment and then follow the instructions in the Method below.

#### Apparatus (the scientific word for equipment)

Fan	Lightbulb
Turbine	Voltmeter

#### Method

1. Switch on the fan so that it is at a low setting. See what happens. Record your results below.
2. Turn the fan on to a high setting. See what happens. Record your results below.

#### Results

When the fan was switched on at a low setting:

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When the fan was switched on at a high setting:

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#### Conclusions (What do you think the results of the experiment have taught us?)

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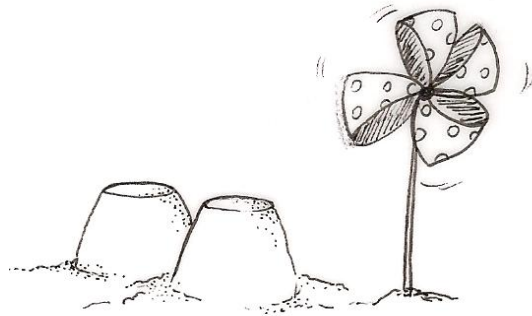
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**ENERGY AND FORCES ALONG OUR COASTS  
PUPIL'S WORKSHEET**

**Activity 1: Experimenting with the power of wind (continued)**

**(b) Exercise: How to make a windmill.**

The Tutor will now show you how to make your own windmill. Listen carefully and follow the instructions. When you have finished making the windmill, you will be able to test it outside if the weather is OK.



**(c) Expedition: Finding a good site for a windmill outdoors.**

You will now be taken on an expedition outdoors (if the weather is OK) to find a good site for a windmill on North Bull Island. Stick with the teachers and listen carefully to their instructions. The Tutor will take you to places on the Island where you can test the strength of the wind for your windmill. See if you can use the windmill to find out which direction the wind is blowing in.

When you return from your trip, answer the questions below:

(i) Where do you think is the best site for a windmill on North Bull Island?

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(ii) Where do you think is the worst site for a windmill on North Bull Island?

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(iii) Were you able to use the windmill to find out which direction the wind was blowing in? If so, what direction was the wind coming from?

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# ENERGY AND FORCES ALONG OUR COASTS

## PUPIL'S WORKSHEET

### Activity 2: Investigating the power of sunlight

#### Interesting Facts

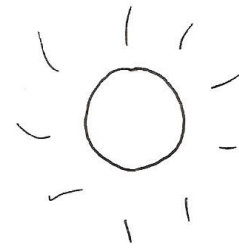
Like the wind, the sun is very powerful. Most animals and all plants need sunlight to survive. Plants use sunlight to make food and all sorts of animals eat plants. We can also use the power from the sun to make clean energy that does not harm the environment. Energy from the sun is sometimes called **solar power**. We can use solar power to make electricity or heat water using **solar panels**.

#### (a) Experiment: To see how much light is needed to make electricity using a solar panel.

In this experiment, we will see how much light is needed in the classroom to make electricity using a solar panel. Ask the Tutor to help you set up the experiment and then follow the instructions in the Method below.

#### Apparatus (the scientific word for equipment)

Solar panel	Light bulb	Torch
Dark cloth	Voltmeter	



#### Method

1. Cover the solar panel of the solar powered generator with a dark cloth so that there is no light shining on it.
2. Switch on the solar powered generator. See what happens. Record your results.
3. Switch on all the lights in the classroom. Remove the cloth. Record your results.
4. Now, experiment with different light settings in the classroom. Try drawing the blinds or switching off some of the lights. Record your results below.

#### Results

When the solar panel was switched on with a dark cloth covering it:

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When the cloth was removed and there were bright lights shining on the panel:

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When the lights were switched off:

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When the blinds were drawn and the lights were switched off:

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**Conclusions** (what do you think the results of the experiment have taught us?)

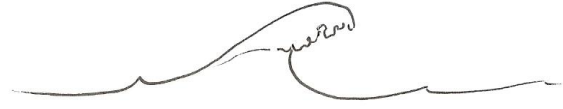
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## ENERGY AND FORCES ALONG OUR COASTS PUPIL'S WORKSHEET

### Activity 3: Discovering the power of water.

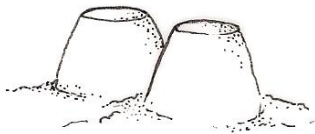
#### Interesting facts

The sea is very powerful and can break rocks into tiny pieces (called pebbles). Have you ever built a sand castle and watched the seawater destroy all your good work? Well, this is a good example of **erosion**. Sand dunes are very important on beaches as they help to prevent erosion of the coast. The strong **marram grass** holds the dunes together, preventing the waves and the wind from breaking down the wall of sand. Just like a very strong sand castle!



#### (a) Experiment: Looking at the effects of erosion on sand castles

Build some sand castles down on the lower shore. Make sure the tide is coming in! Experiment with different kinds of walls around the castles. As the water starts to get closer, record what you see. (If the tide isn't coming in, use some buckets filled with water).



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Which castle was the most successful, and why?

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#### (b) Exercise: Designing a 21<sup>st</sup> century sand castle

Working in teams, see you if you can design a 21<sup>st</sup> century sand castle. Try to consider the following in your design: energy conservation, waste disposal and recycling, erosion. Draw a picture of your castle in the space below.

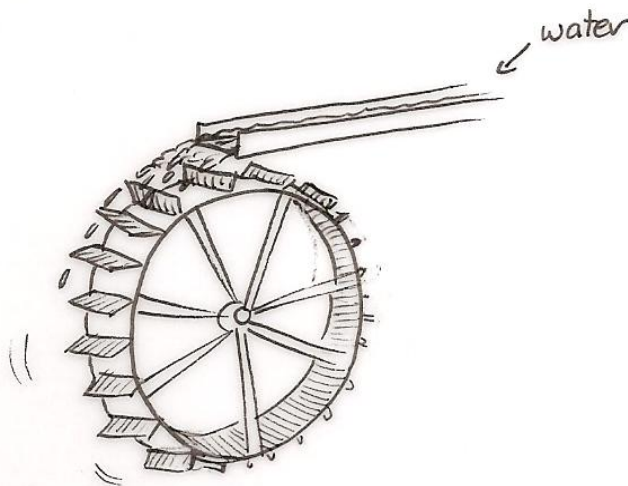
## ENERGY AND FORCES ALONG OUR COASTS PUPIL'S WORKSHEET

### Activity 3: Discovering the power of water (continued).

#### More interesting facts

Water can be used to make clean energy, just like wind and solar power. In Ireland, we use the power of running water to make electricity. Rainwater collects in rivers, lakes and reservoirs. This water is then sent through large pipes, which contain turbines like big water wheels. The turbines are forced to turn by the moving water and as they turn, they make electricity. Scientists in Ireland are now working on ways in which to use the strength of the ocean to make electricity.

Energy that is created by something that can be replaced is called **renewable** energy. Wind turbines, solar panels and water wheels all create clean renewable energy. We need to make as much renewable energy as we can so that we don't have to burn fossil fuels like coal, oil and gas. Many scientists are trying to figure out ways in which we can save the environment.



#### (c) Exercise: How to build a waterwheel

The tutor will now show you how to make a waterwheel, using some cardboard, wood and a compass. Listen carefully and follow the instructions. When you have finished making the wheel, ask the tutor if you can test it under some running water.

# Energy and Forces along our Coasts

## Teacher's Support Sheet

### Activity 1: Experimenting with the power of wind

#### *Background information*

This Activity introduces some simple concepts associated with the properties of wind.

#### *Pupil's worksheet*

##### Facts

- Wind is very powerful.
- The sand dunes on North Bull Island were formed as a result of wind action.
- Wind is a form of clean and renewable energy.
- We can make electricity using wind turbines.

##### (a) Experiment: To investigate the effect of different wind speeds on a wind turbine

The children are invited to participate in a simple experiment that demonstrates how electricity can be generated using wind. Using a simple method involving a fan, a small turbine and a light bulb, the children are asked to vary the fan's power settings in order to see the effect on the wind turbine's ability to generate electricity. The children then record their results and draw conclusions on the Worksheet, which is laid out in a format that is regularly used by scientists, ie. Apparatus, Methods, Results, Conclusions.

##### (b) Exercise: How to make a windmill. (A Sustainable Energy Ireland Activity)

The children are given instructions on how to make their own windmill using a pencil, some paper and some drawing pins. The Tutor acts as a demonstrator and assists the children during this exercise.

##### (c) Expedition: Finding a good site for a windmill outdoors (weather permitting).

The aim of this exercise is to investigate the most appropriate location for a windmill on the Island (within walking distance of the Interpretive Centre). Locations with high and low wind speeds are chosen by the Tutor, eg. sheltered areas behind the sand dunes (worst site for a windmill) and exposed areas on the beach (best site for a windmill). The children are also encouraged to investigate the effect of wind direction on the windmills. The handheld windmills that the children made in Exercise (b) will be used in this exercise.

##### Other Related Activities (suitable for the classroom)

Sustainable Energy Ireland Activities: How to make a land yacht.

EPA Activities:

Euro Power: How to make a wind powered money lifter.

### Activity 2: Investigating the power of sunlight

#### *Background information*

This Activity introduces some simple concepts associated with the power of sunlight.

#### *Pupil's worksheet*

##### Facts

- Most animals and all plants need sunlight to survive.
- Plants use sunlight to make food
- We can use the power of the sun to make clean energy that does not harm the environment
- Energy from the sun is sometimes called solar power.
- We can use solar power to make electricity or heat water.

##### (a) Experiment: To see how much electricity is needed to make electricity.

The children are invited to participate in a simple experiment that demonstrates how electricity can be generated using the power of sunlight with solar panels. Using a simple method involving a solar panel, a small generator and a lightbulb, the children are asked to cover the panel with a cloth in order to see the effect of the reduction in sunlight on the generator. The children then record their results and draw

conclusions on the worksheet, which is laid out in a format that is regularly used by scientists, ie. Apparatus, Methods, Results, Conclusions.

Other Related Activities (suitable for the classroom)

**Sustainable Energy Ireland Activities: Investigation 11, Solar Energy.**  
**Activity 3, Our sun – the primary source of energy**

Include web addresses

**Activity 3: Discovering the power of water**

*Background information*

This Activity introduces some simple concepts associated with the power of water.

*Pupil's worksheet*

Facts

- The sea has the power to break rocks into pebbles.
- Sand dunes help to prevent erosion.
- Marram grass holds the dunes together.
- Water can be used to make clean energy.
- Running water can be used to make electricity using water turbines.
- Energy that is created by something that can be replaced is called renewable energy.
- We need to make as much renewable energy as we can so that we don't have to use fossil fuels.

(a) Exercise: Looking at the effects of erosion on sand castles.

The children are invited to build sand castles as a method of investigating the effects of erosion on our coasts. The walls of the sand castles are used to represent the geology of our coastline, whilst the incoming tide demonstrates the power of water that causes erosion. If tidal times are not suitable for this exercise, the children will be given buckets of water to demonstrate the effects.

(b) Exercise: Designing a 21<sup>st</sup> century sand castle.

This exercise encourages the pupils to consider environmental awareness and care in the construction of a 21<sup>st</sup> century sand castle. The children are asked to consider energy conservation, waste disposal and recycling in the design of their castles.

(c) Exercise: How to build a waterwheel. A Sustainable Energy Ireland Activity.

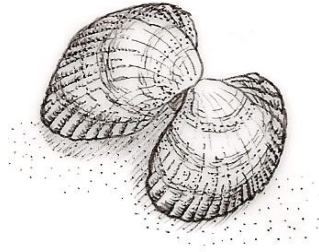
The children are shown how to make a waterwheel by the Tutor. Once completed, the waterwheels are tested under some running water.

Other Related Activities (suitable for the classroom)

**Sustainable Energy Ireland Activities: Rising tides and climate change**

Include web addresses

## LIFE ON BULL ISLAND PUPIL'S WORKSHEET



### Activity 4: Learning the language of zoologists.

People who study animals for a living are called **zoologists**. Zoologists use all sorts of words to describe nature and it sometimes seems like they have their very own language! See if you can get to know some of the more common words below. You will be able to use them when you visit North Bull Island Nature Reserve.

predator	prey	habitat
camouflage	food web	lugworms
brent geese	herbivore	conservation
carnivore	sand dunes	marram grass

#### (a) Exercise

Insert the words into the blank spaces below:

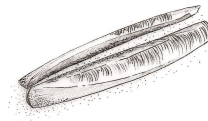
- (a) An animal's natural home is called a \_\_\_\_\_.
- (b) An animal that hunts another animal for food is called a \_\_\_\_\_.
- (c) Creatures that eat meat are called \_\_\_\_\_.
- (d) \_\_\_\_\_ helps to protect endangered species.
- (e) Animals that are hunted and eaten by other animals are called \_\_\_\_\_.
- (f) \_\_\_\_\_ are formed by the wind blowing sand on to the top of the shore.
- (g) Sand dunes are held together by \_\_\_\_\_.
- (h) Bull Island is famous for its wonderful birdlife. Its rich feeding grounds attract thousands of \_\_\_\_\_ each winter.
- (i) Animals that eat plants are called \_\_\_\_\_.
- (j) The curlew has a very long curved beak that it uses to eat the \_\_\_\_\_ that live under the sand.
- (k) Animals and plants on the seashore are connected through a \_\_\_\_\_.
- (l) Some animals use \_\_\_\_\_ to blend into the background.

## LIFE ON NORTH BULL ISLAND PUPIL'S WORKSHEET

### Activity 5: Exploring habitats and observing wildlife

#### Interesting facts

An animal's natural home is called a **habitat**. All animals are adapted for life in a particular habitat. There are all sorts of habitats on our planet, ranging from deep oceans to tropical rainforests. On North Bull Island, the main habitats are sandy shore, dunes, grasslands, freshwater marsh, salt marsh and mudflats. All sorts of wildlife can be found in these areas.



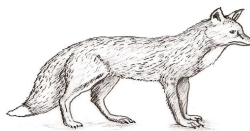
#### (a) Exercise: Getting to know Bull Island's wildlife

The Tutor will now show you some pictures of animals and habitats that are found on Bull Island. See if you can match the following:

1. An animal that lives under the sand on the sandy shore.
2. A plant that grows in the sand dunes.
3. A rare flower that is found in the grasslands.
4. An animal that lives in the salt marsh.
5. An animal that feeds on the mudflats.

#### More interesting facts

An animal that hunts another animal for food is called a **predator**. The animal being hunted is called the **prey**. All animals need to figure out how to avoid predators. For example, some animals use bright colours and spots to warn their predators that they are poisonous. We call this **warning colouration**. Other animals use **camouflage** to avoid their predators. This means that they can blend into the background, making it hard for predators to find them.



#### (b) Exercise: Who eats who? Matching predators and prey

The Tutor will now show you some pictures of more animals. See if you can select the following:

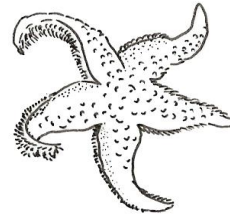
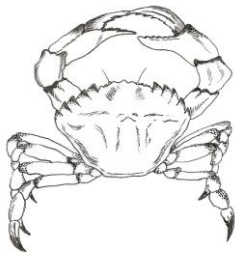
1. An animal that uses warning colouration to avoid predators.
2. An animal that uses camouflage to avoid predators.
3. A predator that eats cockles.
4. A predator that eats rabbits.
5. A plant that is eaten by rabbits.

**LIFE ON NORTH BULL ISLAND  
PUPIL'S WORKSHEET**

**Activity 5: Exploring habitats and observing wildlife (continued)**

**(c) Exercise: Exploring the seashore on North Bull Island**

The Tutor will now take you to visit the seashore on Bull Island. Imagine that you are a zoologist on an expedition looking for a rare or endangered species. Can you see any signs of animal life on the shore?



Can you see any of the following?:

1. A shell. \_\_\_\_\_
2. A predator \_\_\_\_\_
3. Some prey \_\_\_\_\_
4. A carnivore \_\_\_\_\_
5. A herbivore. \_\_\_\_\_

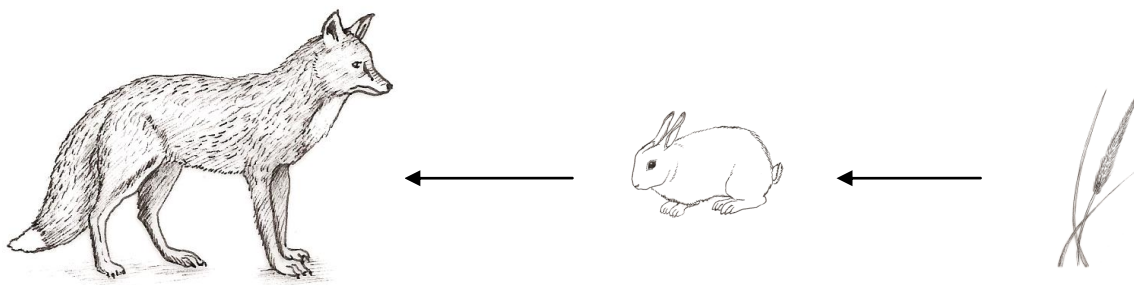
Did you find anything unusual on your expedition? If so, draw a picture of it in the space below:

# LIFE ON NORTH BULL ISLAND PUPIL'S WORKSHEET

## Activity 6: Food chains on North Bull Island

### Interesting facts

Animals and plants are linked together through **food chains** (which then link up to make a food web). For example, foxes eat rabbits, the rabbits eat grass and so on. Plants produce their own food using sunlight, water and carbon dioxide, so we call them **producers**. Animals consume their food. We call them **consumers**. Consumers can be either **herbivores**, **carnivores** or **omnivores**. Herbivores eat nothing but plants, carnivores eat nothing but meat and omnivores are happy to eat both animals and plants!



### (a) Exercise

Now, turn over the page and look at the creatures in the North Bull Island food web. Can you think of any more animals or plants that could be included in the food chains?

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(b) What do you think would happen if all the plants died?

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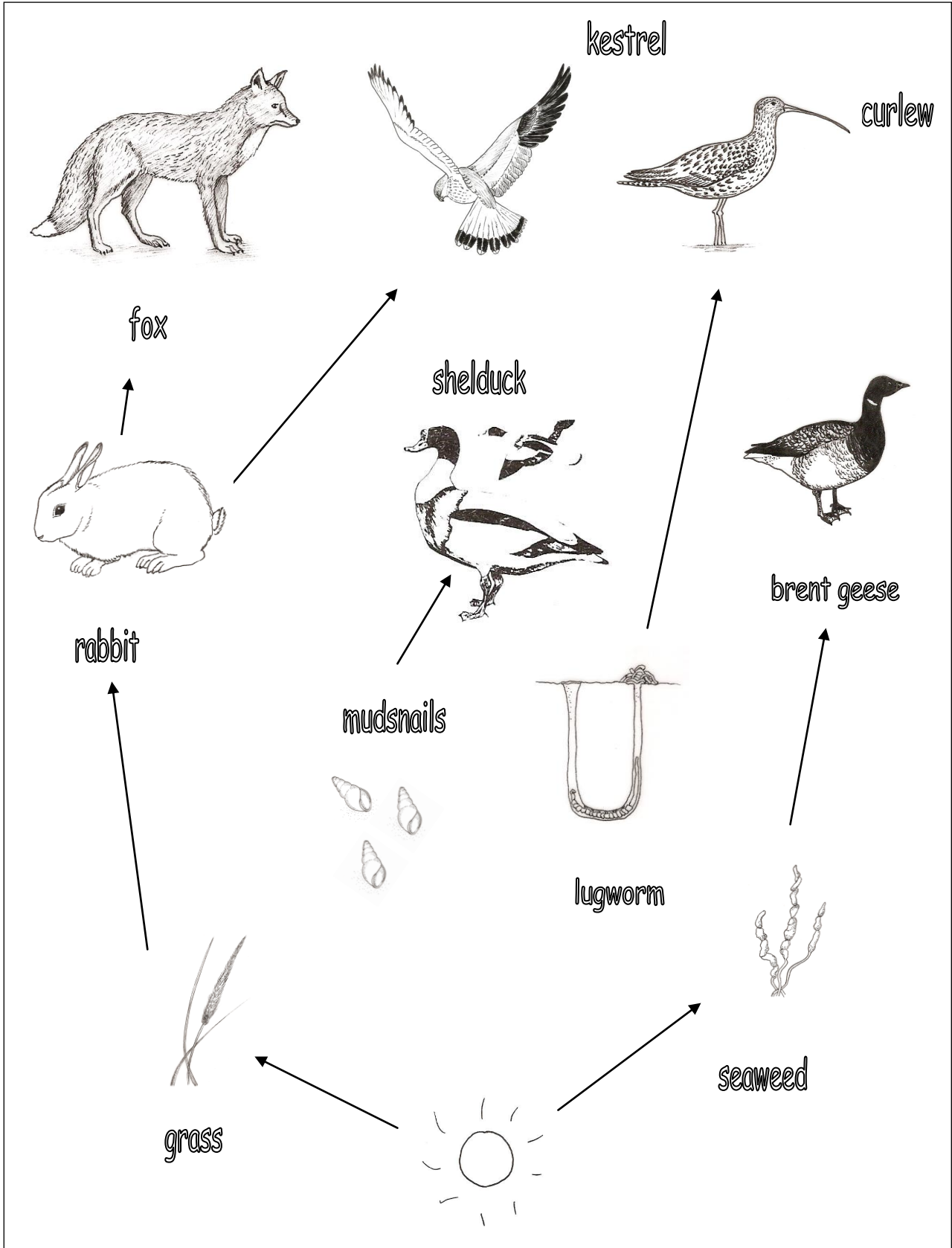
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LIFE ON NORTH BULL ISLAND  
PUPIL'S WORKSHEET

Activity 6: Food chains on North Bull Island

grass



**LIFE ON NORTH BULL ISLAND  
PUPIL'S WORKSHEET**

**Activity 7: The North Bull Island Wordsearch**

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

Find the following words amongst the letters above:

Butterfly

Cockles

Curlew

Dunes

Fox

Geese

Shells

Worms

Kestrel

Orchid

Predator

Prey

Rabbit

Sand

Seals

Seaweed

Snails

Habitat

Marsh

Oystercatcher

#### Activity 4 Learning the language of zoologists

##### *Background information*

This exercise is designed to familiarise the pupils with some of the vocabulary that is regularly used by zoologists and ecologists. Designed to be carried out as an in class preparation exercise, this Activity introduces some of the more common scientific terms that will be used when the class visits North Bull Island Interpretive Centre.

##### *Pupil's Worksheet*

###### (a) Exercise

The children are asked to insert the correct word into the gaps in given sentences.

###### Answers

- |                  |                  |
|------------------|------------------|
| (a) habitat      | (g) marram grass |
| (b) predator     | (h) brent geese  |
| (c) carnivores   | (i) herbivores   |
| (d) conservation | (j) lugworms     |
| (e) prey         | (k) food web     |
| (f) sand dunes   | (l) camouflage   |

#### Activity 5 Exploring habitats and observing wildlife

##### *Background information*

This Activity introduces some basic ecological concepts to the children, whilst focusing on the wildlife and habitats of North Bull Island.

##### *Pupil's worksheet*

###### Facts

- An animal's natural home is called a habitat.
- There are many habitats on our planet, ranging from deep oceans to tropical rainforests.
- On North Bull Island, the main habitats are sandy shore, dunes, grasslands, freshwater marsh, salt marsh and mudflats.
- An animal that hunts another animal for food is called a predator.
- The animal being hunted is called the prey.
- Some animals use warning colouration or camouflage to avoid predators.

###### (a) Exercise: Getting to know Bull Island's wildlife.

The children are shown some pictures of animals and habitats that are commonly found on North Bull Island. These pictures are A5 size with a Velcro backing so that they may be stuck up on an exercise board. The children are invited to match each animal with the appropriate habitat, ie. by placing the correct animal up on the image of its habitat on the exercise board.

###### Answers

1. Cockles/razors/clams/lugworms
2. Marram grass
3. Orchid
4. Mud snails/shrimp
5. Brent geese/waders

###### (b) Exercise: Who eats who? Matching predators and prey

The children are shown some pictures of predators and prey that are commonly found on North Bull Island. They are invited to identify various animals, whilst also selecting examples of various predator avoidance strategies, eg. warning colouration.

###### Answers

- |   |   |   |             |
|---|---|---|-------------|
| 1 | peacock butterfly/six spot burnet moth  | 4 | fox/kestrel |
| 2 | grasshopper/waders/shrimp/ringed plover | 5 | grass       |
| 3 | oystercatcher                           |   |             |

(c) Exercise: Exploring the seashore on North Bull Island

The children are brought on an expedition to the seashore where they are encouraged to identify animals and plants that they have learnt about in the Centre.

**Activity 6 Food chains on North Bull Island**

*Background information*

This Activity builds on the knowledge acquired through the first five Activities, introducing a complex ecological subject in a simple form. It is designed as an in class follow up Activity for the school.

*Pupil's worksheet*

Facts

- Animals and plants are linked together through food chains which link up to make a food web.
- Plants are called producers because they produce their food using sunlight, water and carbon dioxide.
- Animals are called consumers because they consume their food.
- Herbivores eat plants, carnivores eat meat and omnivores eat meat and plants.

(a) Exercise

The children are shown a diagram of a North Bull Island food web and asked to suggest other animals that may be involved in the Island's food web.

Possible answers

Seals, fish, shrimp, plankton, rabbits, beetles, insects, waders etc.

(b) Answer

If all the plants died, all the herbivores would die and if all the herbivores died, all their predators would die. There would be knock on effects for the ecosystem.

## Activity 7 Wordsearch

### Background Information

This Activity is designed as a follow up exercise in the classroom for the school.

### Pupil's worksheet

### Solution

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

(Over, Down, Direction)

BUTTERFLY (14, 1, S)

COCKLES (7, 17, W)

CURLEW (13, 6, N)

DUNES (12, 5, NW)

FOX (7, 14, N)

GEESE (1, 1, E)

HABITAT (7, 1, SW)

KESTREL (12, 6, SW)

MARSH (5, 9, W)

ORCHID (8, 18, NE)

OYSTERCATCHER (13, 16, NW)

PREDATOR (10, 14, NE)

PREY (4, 8, W)

RABBIT (9, 5, W)

SAND (11, 17, S)

SEALS (10, 19, NW)

SEAWEED (18, 2, S)

SHELLS (6, 1, SE)

SNAILS (12, 11, NW)

WORMS (17, 12, N)