

Programme 3: Mournes**Geography**

BROADCAST DATES

BBC2 NI 10.30-10.50AM

Programme	Title	Broadcast Date
3	Mournes	Tuesday 9 th May 2006
4	Lough Neagh	Tuesday 16 th May 2006

PROGRAMME 3: MOURNES

This programme looks at the natural environment of the Mournes and finds out about some of the human activities connected with the Mournes.

LEARNING OUTCOMES

This unit will support the revised Northern Ireland Curriculum for Geography at KS2. It will expand their awareness of people and places and how people use the earth's natural resources close to home.

By the end of the programme the pupils will have learned about:

- Enquiry skills - encouraging observing, recording, presenting and discussing.
- Map work skills - using plans, photographs and maps at different scales and for different purposes;
 - o Using a key of O.S. symbols to identify some familiar features;
 - o Using the contents and index in an atlas to locate places - e.g. within the six counties of Northern Ireland.
- The importance of natural resources;
 - o The effect of the use of a natural resource and the steps which can be taken to conserve the environment;
 - o How the use or demand for a resource in one place can harm the environment in another place.

ABOUT THE PROGRAMME

In the programme, Shauna Lowry, the presenter, looks at the natural environment of the Mournes and finds out about some of the human activities connected with the Mournes.

The programme is divided into seven sections which are:

The Rocks of the Mournes

The Mournes are comparatively "young" mountains and are composed of hard granite rocks. They developed when a vast block of ancient shale subsided deep into the earth's crust. As it did so, the molten granite welled up in stages around the sides of the descending block and filled in the "roof cavity" left in its place. Their formation complete, the granite Mournes were still concealed

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beneath an overlying mantle of the original shale which has almost all since gone; worn away by millions of years of rain, ice and running water.

Since their formation some 50 million years ago, periodic climatic changes have altered the appearance of the mountains. Erosion and deposition occurred during a series of ice ages. Ten thousand years ago the last ice sheets retreated depositing vast quantities of sand and gravel in their wake. This covered the coastal plain to a depth of many feet and included countless granite boulders swept down from the mountains. At higher levels the shape of many valleys was modified by the advancing ice. This produced a striking "U" shaped profile which in recent times has proved ideal for the creation of reservoirs at Ben Crom, the Silent Valley and Spelga.

In the programme Shauna looks at the hard granite rocks of the Mournes. She shows us how the rocks are made up of quartz crystals that sparkle in the light. She also looks at the distinctive smoky quartz crystals, known locally as "Mourne diamonds" that are to be found in places like the Diamond Rocks.

Water

Shauna visits the Ben Crom and Silent Valley reservoirs in the heart of the Mournes and tells us something about how water gathered there is brought to consumers in Belfast and County Down. Ben Crom and Silent Valley reservoirs gather water from a mountain catchment area that extends over most of the High Mournes. The area has an annual rainfall of around 70 inches (1760 mm) which provides pure and unpolluted water which is piped North to Belfast by gravity.

The lower Silent Valley dam was completed in 1933 after prolonged difficulties created by an unexpected depth of glacial material. This created a need for deep excavations. This reservoir draws its supply from the catchment area of the Kilkeel river. It also collects water diverted from the Annalong Valley through a 2.25 mile (3.6 km) tunnel that runs through the solid rock of Slieve Bignian.

In 1957 an additional dam was built across a "U" shaped valley at Ben Crom. This dam is composed of concrete, unlike the earth and rock construction of the Silent Valley dam. Presently the catchments of the Silent and Annalong valleys provide about 400,000 consumers with up to 30 million gallons (130 million litres) of water every day. Nowadays, computers help to monitor the quality, flow and distribution of the water.

Facts about water use

There is increasing water use year by year due to rising living standards and greater leisure facilities. On average each person in Northern Ireland uses 28 gallons (128 litres) of water each day.

For instance:

- Automatic washing machine uses 22 gallons (100 litres)
- Bath uses 17 gallons (77 litres)
- Dishwasher uses 11 gallons (50 litres)
- Shower uses 6 gallons (27 litres)
- WC uses 2 gallons (9 litres)

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- Drinking and cooking accounts for only 1.50 gallons (6.8 litres) per person daily.

Farming

We visit one of the many farms around the fringes of the Mournes. This is a mixed farm run by Donal Hughes which lies between Annalong and Slieve Bignian.

We see Donal gathering a flock of sheep together. His dog Glen has trouble controlling the sheep because the ewes have young lambs to protect. Donal brings his sheep to the farm yard where he shears them. This is a job that he does at the beginning of every summer. Usually, he does the job with electric shears but when the wool is wet he works with hand shears. When the heavy fleece is cut off the sheep is cooler for the warmer summer weather. Donal sells the wool when he has enough fleeces gathered together.

Donal also keeps young bullocks that he feeds silage to fatten them up for sale. His milk herd graze in the field and are brought indoors everyday to be milked. The milking parlour is mechanised and everything has to be kept spotlessly clean to prevent the spread of infection. The cows eat high nutrition feed while they are being milked.

Stone Walls

There are a great many granite boulders throughout the Mourne area which have to be cleared away to create fields. Many of the boulders are built up into stone walls which can be seen throughout the area.

We see Phelim Doran rebuilding a stone wall on a farm near Annalong. Phelim has been working with stone for all of his adult life. He used to do all the work by hand but now has a tractor to help him shift the larger rocks. The largest stones are placed at the bottom of a wall to support all of the smaller ones. The walls taper up to the top.

Traditionally stone was also used to build cottages and other farm buildings. We visit Annalong to see the Corn Mill and the harbour which are both built of granite.

Fishing

Fishing has been the main industry in Kilkeel for generations and today about 100 boats work out of the sheltered harbour.

When the boats are in harbour the fishermen make repairs, refuel and take on new supplies before venturing out once again into the Irish Sea. Fishing trips can last for up to 5 days. Nets are trawled along the muddy sea bed to catch prawns and many other varieties of fish such as whiting, cod, plaice and sole. The catch has to be sorted, washed and packed into boxes covered with ice before returning to Kilkeel for sale. They are auctioned off to the highest bidder.

Once sold, fish such as whiting and cod are taken to local factories where the bones and head are removed in a process known as filleting. The boneless fillets of white fish are then sold to the public at fishmongers' shops and are also used by fish and chip shops in Northern Ireland and the rest of the UK. Prawns are also bought by local factories in Kilkeel where they are made into

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scampi. Fish such as flatfish and monkfish are more valuable and often fetch high prices and may end up in expensive restaurants in France and Spain.

Forestry

There are several different forest parks in the area including Castlewellan and Tollymore which are both close to Newcastle.

Castlewellan was originally a private estate and it contains a great variety of different sorts of trees. It also has a lake and camping ground and is a very attractive place to visit. In parts of Castlewellan Forest Park trees are grown for commercial use. We see a forester cutting down a larch tree as part of a planned programme of re-forestation. The felled trees are cut into lengths that will be sold to sawmills. The best quality timber is used for building houses. Smaller logs are used for the manufacture of boxes, pallets and fencing.

In the programme we also see damage caused to sections of Annalong Wood by a fire which started during the Easter holidays of 1995. The burnt trees will have to be cut down and the area replanted before a new cycle of tree growth can begin again. It could be a further 40-60 years until the trees reach maturity again. We don't know whether the fire was accidental or was started deliberately but the incident illustrates how careful we must be with a very valuable resource.

Holidays

Newcastle is one of Northern Ireland's premier holiday resorts and people have been coming to the town for over 100 years to enjoy the sea air and mountain scenery. Many like to stay in hotels or traditional Bed and Breakfast accommodation but nowadays many others camp or stay in caravans. The nearby forest parks provide well managed facilities with all the facilities of home. The forest parks also provide open space for walking although these areas are vulnerable to environmental pollution. In the programme we see rubbish left near waterfalls in Donard Park. This emphasises the fact that it is the responsibility of all of us to look after our environment so that everyone can enjoy their holiday in "the Kingdom of Mourne"

KEY WORDS USED DURING THE PROGRAMME

Granite, Reservoir, Catchment area, Fleece, Harbour, Forestry, Environment

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1. CLASSROOM ACTIVITIES – Before the Programme

Activity	Tasks	Worksheets	Relevance to NI Curriculum
Investigating the local environment	<p>Discuss the meaning of the Keywords</p> <p>Discuss the location of the Mountains of Mourne in relation to your school.</p> <p>Discuss if anyone in the class ever been to the Mournes area. What would they expect to see when they got there?</p> <p>Look at the maps of Northern Ireland and of the world. Locate Northern Ireland and the Mountains of Mourne respectively.</p>		<p>Talking and Listening Taking part in discussion – obeying the conventions of discussion.</p> <p>Geography Enquiry skills-consideration of the local environment</p> <p>Mapwork skills -locating places and features on a map</p>

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2. CLASSROOM ACTIVITIES – After the Programme

Activity	Tasks	Worksheets	Relevance to NI Curriculum
Investigating the use and supply of water	<p>Draw a diagram showing all of the different uses to which water is put in the home.</p> <p>Discuss the problems which engineers might face in trying to supply water to an area that is a considerable distance away from the original source. Refer to the pictures in the programme showing Ben Crom dam and the entrance to the Bignian tunnel.</p>		<p>Geography Observing, recording and presenting information</p> <p>Talking and Listening Taking part in group and class discussion sharing, responding to and evaluating ideas</p>

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Activity	Tasks	Worksheets	Relevance to NI Curriculum
Investigating the subject of farming	In the farming section, look at the pictures of the various animals that Donal has on his farm and discuss what it would be like to run a farm. What would be the advantages and disadvantages?		Talking and Listening Taking part in group and class discussion sharing, responding to and evaluating ideas Geography What people do- Understanding the different jobs people do to provide goods

Activity	Tasks	Worksheets	Relevance to NI curriculum
Investigating Forestry	<p>Find a map of the Mournes area and locate the various areas of forest. Does the class think that it is a good idea to plant forests?</p> <p>Where would they locate new ones and what sort of trees would they plant in them?</p>		Geography Map skills- locating features on a map The Environment- land-use, natural resources and conservation Talking and Listening Taking part in group and class discussion sharing, responding to and evaluating ideas. Making decisions using objective criteria.

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Activity	Tasks	Worksheets	Relevance to NI Curriculum
Discussion of holiday destinations	In the programme different locations for holidays are shown. What would the differences be between a holiday spent in the resorts of Newcastle and a forest park like Castlewellan or Tollymore? Where would the class prefer to spend their holidays?		Geography The Environment and tourism Talking and Listening Talking with confidence and developing ideas. Showing the ability to explain views and opinions.

Activity	Tasks	Worksheets	Relevance to NI Curriculum
Considering conservation of the environment	In the programme there are pictures of a forest fire and rubbish left behind by visitors to Donard Park. Discuss what practicable measures could be taken to protect and enhance the environment.		Geography The Environment - understanding how people affect the environment - issues associated with conservation of the environment Talking and Listening Talking with confidence and developing ideas. Showing the ability to explain views and opinions.

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- Visitors guide to counties Armagh and Down
<http://www.armaghanddown.com/>
- A broad range of photographs of the Mournes is available to view on
<http://www.bbc.co.uk/northernireland/yourplaceandmine/gallerypop/mournes/index.shtml>
- The Mourne Heritage Trust website
<http://www.mournelive.com/>
- The Agriculture and Rural Development's Forestry website
<http://www.forestserviceni.gov.uk/home.htm>
- Newry and Mourne Councils' visitor's guide
http://www.newryandmourne.gov.uk/tourism/activities/forest/silent_valley.asp

Programme 4: Lough Neagh**Geography**

BROADCAST DATES

BBC2 NI 10.30-10.50AM

Programme	Title	Broadcast Date
3	Mournes	Tuesday 9 th May 2006
4	Lough Neagh	Tuesday 16 th May 2006

PROGRAMME 4 - LOUGH NEAGH**LEARNING OUTCOMES**

This unit will support the revised Northern Ireland Curriculum for Geography at KS2. It will expand their awareness of people and places and how people use the earth's natural resources close to home.

This programme will give pupils the opportunity to learn about:

- Some of the plants and animals that live in Lough Neagh
- Some landscape features of Northern Ireland
- Some of the ways people affect the environment locally
- A local habitat and the relationship between the animals and plants found there
- The main stages in the life cycle of eels
- Ordering living things in a simple food chain and understand the dependency of one on the other

ABOUT THE PROGRAMME

The programme is divided into three sections, '**Under the Lough**', '**On the Lough**' and '**People and the Lough**'. This is to provide an opportunity to pause the programme for more in-depth discussion, if desired

UNDER THE LOUGH

In this section we take a trip under the lough to discover an underwater world that is teeming with life. It is here that we start to explore the notion of a food chain. Donna explains that, to understand how all life around the lough is connected, we must start by looking at the first link in the food chain - algae. Donna makes the point that algae, although very small, are the main food source for the millions of small animals and insects that live on the lough bed. These, in turn, become food for fish and bird-life. During this section we see examples of different insects and fish that live in and around the lough.

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ON THE LOUGH

Life on the lough's shoreline is as interesting and varied as life below. In this section Donna illustrates the importance of the plants around Lough Neagh, not just as a source of food but as a habitat. She explains that there are three types of plants that live in and around the lough; **submerged plants** (which live underwater), **water margin plants** (which live half in and half out of the water) and **marsh plants** (which like to live in ground that is wet all year round). We see how these plants provide homes for insects, animals and birds.

The programme explains why, during winter, Lough Neagh attracts the largest number of wildfowl in the British Isles (up to 100,000). These birds, mostly ducks, come from Iceland, Russia and Scandinavia. Donna then takes a trip to one of the hundred islands that are dotted throughout Lough Neagh. Most of these islands are part of the Lough Neagh National Nature Reserves which are managed by nature wardens. They protect the thousands of rare birds that breed on the islands.

PEOPLE AND THE LOUGH

In this final section Donna looks at the relationship humans have had with the lough, including their part in the food chain. For 8000 years people have lived around the lough and in that time they have brought about many changes. We examine those changes and their effects on the environment. Donna looks at industry on the lough in the form of tourism, fishing and sand dredging. She also examines the environmental changes that people have created; how we have lowered the water level in the lough to control flooding, how we use the lough's water to drink, how we pump our waste into it and how we have increased pollution levels in the lough. The programme ends by suggesting that it is the responsibility of people to ensure that the lough stays healthy so as not to harm the animal and plant-life.

BACKGROUND

Lough Neagh is the largest freshwater lake in Great Britain and Ireland. Being a lowland lake, Lough Neagh is very fertile with lush and diverse species of plant-life, some of which are rare in other parts of Northern Ireland. These plants provide a great variety of natural habitats for insects, birds and fish to feed and nest in. Designated as an area of special scientific interest, Lough Neagh is one of Europe's most important wetland environments. Each winter the lough attracts the largest number of wildfowl in the British Isles (up to 100,000), which makes it one of the most important refuge sites for birds in Europe. Lough Neagh is also a very rich fishing ground and consequently supports the largest eel fishing industry in Western Europe.

The lough is also a major source of drinking water, supplying 460,000 of Northern Ireland's 1,600,000 population. After use, much of this water returns to the lough via sewage treatment works making the lough an important waste outlet. Unfortunately, over the last century the lough has become slowly more polluted. This decade has seen the levels of pollution once again on the rise. There is a very real threat that, if unchecked, this could lead to the death of fish and insect life. In turn, this could have a serious effect on people who make a living from the lough.

Programme 4: Lough Neagh**Geography****Pollution and the Lough**

Various studies of Lough Neagh's water have shown that since the turn of the century, when people first started to pump their waste into the lough, it has slowly become polluted. The pollution takes the form of a slow build up of normally harmless nutrients (any substance which provides nourishment), called phosphates. Phosphates are a form of plant food which encourage the growth of vast amounts of algae. When the algae die, like all living things they decay. Unfortunately it is this process of decay which uses up most of the oxygen in the water. This can cause the death of fish and insect life. The only way to solve this problem is to lower the amount of phosphate getting into the lough.

Phosphates enter the lough from three different sources: **domestic, agricultural and industrial** waste. Although sewage is treated to ensure that very little phosphate finds its way into the lough, this was not always the case. In the past people only partially treated their sewage, which is high in dissolved nutrients, and this is exactly what algae require to grow.

The most common cause of pollution is the escape of silage effluent and other farm waste into rivers. Another threat comes from agricultural fertilizers which are used by farmers to add nutrients to their land. Over many years the soil itself has become so rich in these nutrients that when it rains, they are washed out into the watercourses which flow into Lough Neagh. Industrial spillage remains a threat but most companies have very strict guidelines to ensure that this remains a rare occurrence.

KEY WORDS

Food Chain, Habitat, Pollution, Migrate, Sewage, Fertilizer, Nutrients, Algae, Freshwater Lake

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Geography

1. CLASSROOM ACTIVITIES – Before the Programme

Activity	Tasks	Worksheets	Relevance to NI Curriculum
Investigating the local environment	<p>Discuss the meaning of the Keywords</p> <p>Look at maps of Northern Ireland and of the World. Locate Lough Neagh on a map of Northern Ireland. Use Ordnance Survey Holiday Map : North 1 : 250,000.</p> <p>Discuss the proximity of the lough to members of the class. Do they know anybody who fishes in it, bird watches, windsurfs etc.?</p>		<p>Talking and Listening Taking part in discussion – obeying the conventions of discussion.</p> <p>Geography Enquiry skills -consideration of the local environment</p> <p>Mapwork skills -locating places and features on a map</p>

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2. CLASSROOM ACTIVITIES – After the Programme

Activity	Tasks	Worksheets	Relevance to NI Curriculum
Investigating wildlife and their habitats	<p>Draw a food chain involving algae, insects, fish, and humans.</p> <p>On a world map show where the visitors to Lough Neagh come from (e.g. Eels from the Sargasso Sea; birds from Iceland, Russia, Scandinavia; tourists).</p> <p>In the programme you will see a number of birds diving beneath the water. Ask the class why these birds dive to the lough bed and for what?</p>		<p>Geography Observing, recording and presenting information</p> <p>Mapwork skills -locating places and features on a map The Environment -investigating animals associated with the local environment</p> <p>Talking and Listening Taking part in group and class discussion sharing, responding to and evaluating ideas.</p>

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Activity	Tasks	Worksheets	Relevance to NI Curriculum
Considering conservation of the environment	<p>Discuss pollution and how it might upset the food chain.</p> <p>Discuss what effect this pollution might have on jobs around the lough?</p> <p>Ask the class what measures they would take to control the amount of pollution getting into the lough.</p>		<p>Geography</p> <p>The Environment</p> <ul style="list-style-type: none"> - investigating animals associated with the local environment - understanding how people affect the environment - issues associated with conservation of the environment <p>What People Do</p> <ul style="list-style-type: none"> - understanding the different jobs people do to provide goods <p>Talking and Listening</p> <p>Talking with confidence and developing ideas. Showing the ability to explain views and opinions.</p>

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Activity	Tasks	Worksheets	Relevance to NI curriculum
<i>Debating conservation issues</i>	<p>Although the level of water in the lough has been lowered by 3 metres, farmers on the south coast of the lough would like it reduced further. This would allow them to reclaim many acres of land for grazing. What effect do they think this would have on the insect, animal and bird life?</p> <p>Split the class into groups, each group representing people who would have an interest in a proposal. Each group must research and then discuss what effect the proposal would have on them. Debate the issue and come to a conclusion - should the proposal go ahead?</p>		<p>Geography The Environment-land-use, natural resources and conservation Enquiry skills -consideration of the local environment</p> <p>What People Do - understanding the different jobs people do to provide goods</p> <p>ICT Internet research</p> <p>Talking and Listening Taking part in group and class discussion sharing, responding to and evaluating ideas.</p> <p>Making decisions using objective criteria.</p>

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Activity	Tasks	Worksheets	Relevance to NI Curriculum
Investigating the supply of Water	If any of the class live in Belfast, Armagh, Antrim, Portadown, Craigavon, Lurgan, Banbridge, Ballymena, Larne and Glengormley, then they may be drinking water that comes from Lough Neagh. There are plans to increase the amount of water we take from Lough Neagh. How does the class think this might affect the lough?		Geography Enquiry skills- consideration of the local environment Talking and Listening Talking with confidence and developing ideas. Showing the ability to explain views and opinions.

Activity	Tasks	Worksheets	Relevance to NI Curriculum
Lough Neagh worksheet	Ask each pupil in the class to fill in worksheet 1. This question sheet consolidates the programme's learning outcomes.	Worksheet 1- Lough Neagh	Geography/ English

Programme 4: Lough Neagh**Geography****RESOURCES****Oxford Island National Nature Reserve**

Oxford Island, Craigavon

Co. Armagh BT66 6NJ

Contact Number: (028) 3832 2205.

e-mail: oxford.island@craigavon.gov.uk

<http://www.oxfordisland.com/loughneagh.shtml>

A series of free fact sheets relating to natural habitats are available from:

The Environment Service

Commonwealth House

35 Castle Street

Belfast BT1 1GU

Lough Neagh and Lower Bann website

<http://www.loughneagh.com/>

Information about the Lough Neagh Discovery centre

<http://www.craigavon.gov.uk/tourism/loughneagh.asp>