

Welcome to the Dee Riverbank Resource Box

Welcome to the Dee Riverbank Resource Box. This box replaces and updates the two previous blue riverbank boxes that were gifted to schools in 2005/06.

The aim of this box is to make it easier for teachers to teach and children to learn about the River Dee.

Aim of the Box

The contents of this box has been shaped by feedback from teachers within the Dee Catchment and piloted by Logie Coldstone Primary School.

The box contains a Teachers Folder that is split into five parts and contains the River Dee Story that gives information to teach your class about the Dee, indoor and outdoor activities, useful online resources, information for going outdoors and activity sheets. The books, story books and posters are to help children learn more about the Dee.

Teachers can make the most of the clean waters of the Dee catchment and the provision of Ranger Services, by organising a class visit to the River or nearby burn. A list of Ranger Services and contact details are included in Part 4. Outdoor learning equipment was included in the original boxes in a white drawstring bag to encourage you and your class to enjoy the outdoors at a nearby watercourse or in your school grounds.

The original Riverbank Resource Boxes were written by Teachers Pat Thornton and Liz Balharry with the aim of gathering resources that highlight the wealth of natural and cultural history connected with the river. The boxes was funded by the EU 3 Dee Vision Project and by Dee Catchment Partnership partners.

We hope you and your school will enjoy working with the Dee Riverbank Resource Box.

Feedback

We would welcome feedback you have on the contents of the box, please email any feedback to info@theriverdee.org or visit us at www.theriverdee.org



What Does This Box Contain?

	Teachers Folder
Part 1	River Dee Story
Part 2	Classroom and Outdoor Activities
Part 3	Useful Online Resources
Part 4	Going Outside and Ranger Services
Part 5	Activity Sheets 1-48
Books	Story Books
1	Animals of Farthing Wood - Story Collection
2	Give Her the River by Michael Dennis Browne
3	Otter in the Outhouse by Lucy Daniels
4	Richard Rabbit Goes Boating by Truda Mordue
5	River Story by Meredith Hooper
6	The Forest by David Bellamy
7	The River by David Bellamy
8	The Water's Journey by Eleonore Schmid
9	Wind in the Willows (children's version)
10	Wind in the Willows (adult version)
	History Books
11	Aberdeen Remembered by Aberdeen City Libraries and Museums
12	Old Banchory by David Jamieson & W. Stewart Wilson
13	Royal Deeside by George Washington Wilson
14	Valley of the Dee by Robert Smith
	Nature Books
15	Birds - Usborne Pocket Nature
16	Fish - Usborne Pocket Nature
17	Ponds and Streams - Usborne Nature Trail
18	Pond and River - D.K Eyewitness
19	Rivers, Ponds and Seashore - Discovering Nature
20	The River Book - Curriculum Visions, 2nd edition
21	Why do we have? Rivers and Seas
22	Ponds and Lakes - Usborne Spotter's Guide
	Activities for Teachers - Classroom and Outdoor
23	Follow the River - BBC
24	Focus on Rivers Photo Pack and Teachers Book - WWF
25	Nature Detectives - Woodland Trust
26	Primary Geography and Birds - RSPB
27	Second Nature - SNH, RSPB, BP

28	Teaching About Energy - Clare Eastland
	Educational Books
29	Atlantic Salmon Facts - Atlantic Salmon Trust
30	River Runners - SNH
31	A Portrait of the River Dee
Posters	Posters
1	Atlantic Salmon
2	Atlantic Salmon: A Fisherman's Guide
3	Atlantic Salmon Life Cycle - Atlantic Salmon Trust
4	Fishermen's map of salmon pools on the River Dee
5	Otter
6	Things we see in the River - National Riverwatch
Game	Game
1	Dangerous Journey - Salmon and Trout Association
Booklets	Booklets
1	Safety guidelines for working with children near water
2	Key to use on river visits
Pouch 1	Pouch 1 - ID Guides
1	The freshwater name trail
2	A guide to British mammals tracks and signs
3	A guide to commoner water plants
4	A guide to keeping common frog tadpoles
5	The tree name trail
6	The living stream
7	The living stream dial
8	Value for wildlife dial
9	Lichen pollution
Leaflet	Leaflet
1	Uses of the River Dee - Dee Catchment Partnership x2
Map	Map
1	Grampian Highlands and Aberdeen

Activity Sheets	
1	Mind map for biodiversity worksheet
1.a	Mind map for biodiversity - answers
2	Mind map for the River Dee
2.a	Mind map for the River Dee - answers
3	Wind in the Willows lesson plan
4	Wind in the Willows extract
5	Wind in the Willows extract
6	Colour and make river animals activity
7	Colour and make river animals activity
8	Colour and make river animals activity
9	Colour and make river animals activity
10	Colour and make river animals activity
11	Colour and make river animals activity
12	Notes for river food chains and food webs
13	Food web game
14	Food web for the River Dee worksheet
15	Food web for the River Dee - answers
16	Salmon life cycle worksheet
17	Salmon life cycle mobile instructions
18	Salmon life cycle mobile instructions
19	Salmon scale information sheet
20	Salmon scale activity sheet
21	Freshwater pearl mussel life cycle
22	Freshwater pearl mussel life cycle worksheet
23	Water saving tips - Teachers notes
24	How we use water at home worksheet
25	Use of water in the home info sheet
26	How much water does your family use at home? Worksheet part 1
27	How much water does your family use at home? Worksheet part 2
28	How can we save water at home? Activity sheet
29	Campaign to save water information sheet
30	Recycling water information sheet
31	Water treatment activity sheet
32	Putting our used water back into the environment activity sheet
33	Cleaning water activity sheet
34	Making a water filter activity sheet
35	Activities within a river catchment which affect the river information sheet
36	Making space for wildlife information sheet
37	How long does rubbish last activity sheet
38	Think before you flush activity sheet
39	Yellow Fish project information and activity sheet
	Drain Care Guide leaflet x3

	Yellow Fish templates x 3 blank, x1 with answers
40	Water Safety
41	Countryside Code
42	Riverbank Safety Code
43	Riverwatch Safety Code
44	River visit activities
45	River visit activities
46	Map stick activity sheet
47	Environmental improvements in the catchment of the River Dee
48	DeeSong - Memories of the River Dee booklet

Part 1 - The River Dee Story

This River Dee Story contains information required to teach children about the River Dee.

Introduction

The River Dee has flowed 88 miles from the heart of the Cairngorm Mountains into the North Sea at Aberdeen for over 10,000 years. Along the way it is joined by 17 major tributaries, the largest are the Lui, Clunie, Gairn, Muick, Tanar and Feugh. The River Dee flows through different land uses from moorland in the upper reaches to forestry and agriculture in the middle and through the oil capital of Europe in the lower reaches to Aberdeen Harbour.

The River Dee is valuable for many different reasons, not just because it supplies the whole of Aberdeen City and half of Aberdeenshire with drinking water, but also because it supports local economies and jobs, provides wildlife habitat and is enjoyed by many people fishing, canoeing or enjoying a stroll along the riverbank.

Table 1: River Dee Numbers

88 miles, 126km	Main stem of the River Dee length
1,300 miles, 2,100km ²	Catchment area
24	Bridges on the main stem
17	Tributaries
5	Lochs
1.3 million	Freshwater pearl mussels

The River Begins...

The River Dee rises at approximately 1,200m (4,000 feet) on the plateau of Braeriach, the highest source of any major river in the British Isles. The Dee originates from a series of springs called the Wells of Dee before cascading off the plateau in the Falls of Dee in the Cairngorm Mountains above Braemar. For the majority of its course the River Dee flows eastwards through a valley which broadens and becomes much gentler in relief near the coast. The river enters the sea at the busy Aberdeen Harbour.

The River Dee is considered to be the best example of a large natural highland river in Scotland because it is relatively unmodified. The catchment is in relatively good condition as there is no heavy industry or extremely intensive agriculture.

Uses of the River Dee

1. Water

The River Dee and its tributaries provide domestic water supply for the whole of Aberdeen City and over half of Aberdeenshire. Each day over 300,000 people drink water supplied by the River Dee. This has been the case for over 130 years and Dee water is distributed as far as Ellon and Stonehaven. Historically the Dee provided drinking water while the Don provided water for industry such as paper mills.

From drinking water to the water of life, whisky has been produced on Deeside since 1826. Lochnagar Distillery at Balmoral still abstracts water from the River Dee today to produce the Royal Lochnagar Malt.

Water is also abstracted for commercial bottled water and for agricultural crop production and drinking water for livestock. These abstractions need to be managed to minimise stress on the river during low flows.

We also depend on the Dee for waste water disposal from homes and businesses. Treated effluent is usually discharged but during heavy rain untreated waste can enter the water directly. More information can be found in the Drain Care Guide leaflet with Activity Sheet 39.

2. Wildlife Habitat

The River Dee is an internationally important environment for wildlife and is designated a Special Area of Conservation (SAC) for supporting populations of Atlantic salmon, otter and freshwater pearl mussel. Within the Dee Catchment there are 7 Special Protected Areas, 5 National Nature Reserves and 28 Sites of Special Scientific Interest.

The upper half of the River Dee lies within the Cairngorms National Park that is a stronghold for British wildlife, home to 25% of Britain's endangered bird, animal and plant species. For more information visit <http://cairngorms.co.uk>.

3. Fishing

The River Dee is internationally renowned for being one of Scotland's most important salmon fisheries offering first class angling. The River Dee catchment supports one of the healthiest populations of Atlantic salmon in Western Europe, and the spring fishery attracts anglers from all over the world. In addition to the increasing run of spring fish, the river also provides excellent summer fishing for salmon, grilse and sea trout.

It is estimated that salmon fishing on the River Dee contributes £16 million annually to the local economy and supports 500+ jobs. Jobs are sustained on the River Dee with employment of Gillies but also in accommodation, restaurants, cafes, shops and outdoor clothing shops.

The River Dee is split into 48 fishing beats (see Poster No. 4). The average number of salmon caught on the Dee each year varies, but the five year average is around 7,500 fish. The biggest salmon ever caught on the Dee weighed 57lb (25.8 kg), which is the same weight as an 8 year

old child! It was caught in 1884 by Mr C Gordon who was the Ghillie at the Ardoe and Murtle beat.

Salmon catches declined dramatically during the 1980's and 1990's and in 1994 the Dee District Salmon Fishery Board implemented a Conservation Code to protect stocks of wild salmon. It introduced a catch and release policy to ensure adult salmon were returned to the river and could go on to spawn. In recent years 98% of salmon caught on the Dee are released unharmed.

4. Tourism and Recreation

Queen Victoria chose Deeside as her favoured holiday destination over 150 years ago, buying Balmoral in 1848 and that led to a boost in popularity that continues today. The natural beauty and characteristics of the River Dee attract recreation including water based activities such as rowing, canoeing, kayaking, swimming and land based picnicking and dog walking.

Cambus O'May and Potarch Bridge are two 'honeypot' sites on the river and can attract up to 400 visitors on a sunny summer day. This can result in problems for land managers and owners such as litter, toileting, footpath erosion and disturbance to wildlife. It is important for visitors and local people who are enjoying the River Dee to act responsibly and follow the Scottish Outdoor Access Code (www.outdooraccess-scotland.com).

5. Aberdeen Harbour

The River Dee meets the sea at Aberdeen Harbour, one of the busiest ports in Britain. Each year Aberdeen Harbour handles around 5 million tonnes of cargo, valued at approximately £1.5 billion, for a wide range of industries.

Aberdeen Harbour is:

- the centre of activity for the offshore oil and gas industry's marine support operations in North-west Europe
- a principal commercial port in Northern Scotland and an international port for general cargo, roll-on/roll-off and container traffic
- the principal mainland port for freight, passenger, vehicle and livestock services to Orkney and Shetland
- a major centre for forest product imports and finished paper exports
- a gateway for agricultural products and supplies
- an important fishing port, serving a local processing industry
- a port of call for cruise ships.

It is easy to forget that all adult salmon found in the River Dee have navigated their way through this very busy Harbour and up the river to find the area where they hatched.

Threats to the River Dee

The Scottish Environment Protection Agency (SEPA) monitors water quality of the River Dee as well as water levels and temperatures. SEPA classify the ecological quality of surface waters by monitoring and assessing the condition of a number of indicators of ecological quality, including presence of a range of water plants and animals as well as environmental conditions necessary

for water life: good condition of beds, banks and shores and good continuity of rivers for fish migration.

The Dee is regarded as one of the least contaminated of the larger rivers in Scotland because it has not suffered from the impacts of industrial pollution and because the river cannot be navigated except in its estuary.

1. Pollution

The most significant river water quality problem in the catchment is diffuse pollution (pollution that arises from the surrounding land through surface run-off and is not point source).

There has been a measurable deterioration in water quality in the lower parts of the catchment where contaminants enter the watercourse from diffuse sources such as agricultural and urban runoff. Other sources include:

- Forestry management can have positive and negative impacts on water quality as good forestry management can protect and enhance the water environment, while bad can pollute watercourses with the run off of chemicals and soil from newly felled and planted land.
- Road drainage can result in contaminants being washed into watercourses during rain and snow. Depending on the time of year this includes oil, salt and grit.
- The River Dee catchment has a high proportion of householders using septic tanks to treat household waste water. Poorly treated effluent from tanks has the potential to cause significant environmental damage.

2. Invasive Non-Native Species

Non-native species are plants or animals which have been introduced to areas outside their natural range through human actions. Some have been introduced intentionally for use in agriculture and forestry, and some unintentionally such as via the transport of goods.

Many non-native species are harmless, causing little disruption to the environment in their new locations, but some plants and animals spread rapidly and threaten native species by predation, competing for resources such as food and growing space or introducing new diseases. These plants and animals are referred to as invasive non-native species (INNS).

Invasive non-native species are the second most serious threat to global biodiversity after habitat loss and cost the Scottish economy around £264 million each year (Scottish Natural Heritage). For more information visit www.nonnativespecies.org/home/index.cfm.

Many INNS are not new to our shores. The riparian plant species that cause the biggest problems on the River Dee are Japanese knotweed, Himalayan balsam and giant hogweed. These plants were brought to Britain by the Victorians as centrepieces for their gardens.

American mink are an invasive non-native species that have been present on Deeside for at least the last 20 years. They were brought to Britain and many other parts of Europe in large shipments to establish fur farms. The first mink fur farm opened in Scotland in 1938 and at the

peak of fur farming in Britain there were 700 mink farms. It took 70 adult mink to make one fur coat!

The last fur farm closed in the UK in 1993 and during this long period, many animals escaped or were deliberately released into the wild. The population spread quickly especially along rivers and are now widespread in Britain. Mink became widespread in eastern Deeside, particularly between Banchory and the coast. Now numbers on Deeside are relatively low because recording and trapping mink has been carried out since the late 1990s and is ongoing.

Mink have contributed to a dramatic decline of water vole, the beloved Ratty in Wind in the Willows. Water voles are the perfect size for mink to hunt and eat and mink squeeze themselves in water voles riverbank burrows so they cannot escape. Water vole numbers have declined by 95% in Britain due to mink predation, habitat and water quality changes. Other than reducing the water vole population of the River Dee mink also eat juvenile trout and salmon from the river.

Projects to Improve the River Dee

Two organisations are responsible for managing the River Dee - the Dee District Salmon Fishery Board, a statutory body that protects and enhances stocks of salmon and sea trout, and the River Dee Trust, a community-based charity that carries out research to inform restoration projects and delivers educational information to local people. The Dee Catchment Partnership is an umbrella body representing all organisations involved with the River Dee.

1. Removing Obstructions

Salmon make a truly amazing 2,500 mile journey back to the river to spawn and both male and female salmon returning to the river are very focused on travelling upstream and spawning to complete their life cycle. To ensure future numbers of salmon, it is important that as many fish as possible are able to spawn. However preventing some salmon from completing their spawning migration upstream are manmade obstructions including weirs, poorly designed bridges, vehicle fords and culverts under roads. Some are completely impassable to fish and others are impassable in lower flows.

Since 2007 the Dee District Salmon Fishery Board and the River Dee Trust have removed or eased 27 manmade obstructions to fish migration from the River Dee's tributaries. The aim of the work is simple; to allow fish to gain access to their natural spawning grounds.

The largest man-made obstruction on the River Dee is the Culter Dam, a 5m high dam that was a remnant of an old paper mill that closed in the 1980s. In 2014 a fish pass was installed allowing salmon and sea trout to ascend the dam for the first time in over 250 years. Fish can now access 76 miles of habitat for spawning. For more information visit www.riverdee.org.uk/projects/theculterburn.asp.

2. Planting Trees

Trees along a riverbank provide a number of benefits - they provide shade and so reduce water temperatures, stabilise riverbanks and prevent bank erosion, improve the retention of rainwater by the land to reduce flooding, create habitat for wildlife and provide woody debris and leaf litter which is the start of the food chain for invertebrates and then fish.

All these benefits help salmon and trout, in particular providing shade and leaf litter. We are all aware that our climate is changing, with more frequent flood events and milder winters. In good summers water temperatures of over 26°C are recorded on the Dee, which is concerning when you consider that when 27°C is sustained for several days it is lethal to young salmon and trout. While these temperatures are of concern at the moment, government climate change predictions indicate things will get worse with an increase of 4°C by 2080. Planting trees along the riverbank now will provide shade which will alleviate the effect of climate change in years to come.

Through the Pearls in Peril Project 70km of trees will be planted along the upper River Dee by 2016. These trees will take time to establish and provide shade but within a few years they will begin the process of inputting leaf litter into the river and improving the conditions for invertebrates and therefore salmon and trout in the River Dee.

Land Use of the River Dee Catchment

The Dee catchment has two geographically distinct regions: the upland area to the west and lower area to the east.

Agriculture is one of the major land uses in the Dee catchment. Farming plays a central role in the economic and social fabric of the Dee catchment today as it has in previous years, as far back as 4,000BC. Today the soils, climate and topography of the upland west area of the catchment is suitable only for improved grassland, rough grazing, extensive sheep farming and plantation forestry. The lower eastern area of the catchment is more fertile and cereals, sheep and beef are typically produced on mixed farms.

Today only 1% of the original 1,500,000 hectare Caledonian forest remains in Scotland but upper Deeside has an important proportion of Scotland's native pinewood. Regeneration of trees, where they spread naturally without the need for planting, is the preferred means of restoring woodlands in the uplands. Mar Lodge Estate, near Braemar, has defined 50% of the Estate as a regeneration zone where deer numbers are being reduced to aid tree growth.

The forests and woodlands of Deeside form one of the largest networks of woodland in Scotland. Upper Deeside is characterised by extensive, contiguous woodlands composed of 85% native tree species. The forests and woods have a close connection with the river and people of Deeside, where they contribute to the water quality and biodiversity, as well as the landscape, employment and recreation.

More Information

Dee Catchment Partnership - www.theriverdee.org

River Dee Trust and Fishery Board- www.riverdee.org.uk

SEPA water levels - <http://apps.sepa.org.uk/waterlevels/>

River Dee Webcams - www.farsondigitalwatercams.com/

Part 2 - Classroom and Outdoor Activities

	Topic	Indoor	Outdoor	Activity	Resources and Location in Box	Follow Up Activities
1	River Dee - Introduction			Pooled Ideas - a brainstorm to introduce the topic of the River Dee.	Book No. 27 page 187 Book No. 5 Online Resources No. 1 Poster No. 6	Create a biodiversity mind map with the different types of animals that live in and around the River Dee using: Book No. 7 Poster No. 6 Activity Sheets 1,2 Online Resources No. 1
2	River Dee - Introduction			Use maps to identify where the River Dee begins and ends and identify where the closest part of the River Dee is to your school.	Poster No. 4	Identify origins and meanings of place and river names.
3	Rivers Water			Water Write - exploring feelings towards water.	Book No. 27 page 197 Book No. 2	Story Books No. 5,6,7,8
4	Rivers Water			River Crossings - making a boat that floats.	Book No. 27 page 199	Story Books No. 2,4
5	Water cycle			Investigate the water cycle.	Book No. 8 Book No. 20 Online Resources No. 3,4	Create drawings and posters of the water cycle. Look at climate of the River Dee and flooding using Online Resources No. 2,5

	Topic	Indoor	Outdoor	Activity	Resources and Location in Box	Follow Up Activities
6	Rivers Wildlife			ExStream Senses - making nature journals.	Book No. 27 page 205	Create a sensory map by asking children to draw a map and write or draw things they can see, hear and feel. Use the map to make a poem or song back at school.
7	Rivers Wildlife			Images of the Riverbank - Wind in the Willows.	Book No. 27 page 206 Books No. 9,10	Make masks and create a drama using the characters from the story using Activity Sheets 3-5.
8	Wildlife Getting Outdoors			Life at the Edge - being nature, mini-beast and plant detectives.	Book No. 27 page 207 Pouch No. 1 ID Guides Online Resources No. 12,17	Cut pictures out of magazines and collect dry leaves to create a collage or scrapbook.
9	Wildlife Getting Outdoors			Aquatic Detectives - river/pond dipping.	Book No. 27 page 210 Book No. 19 page 12 Book No. 18 Pouch No. 1 ID Guides Online Resources No. 12,17	Ask children to design their own river insect - what features does it have and why. Colour and make fish and insects using Activity Sheets 6-11.
10	Wildlife Food chains			Independence Game - food chains.	Book No. 25 section 6, page 94	Make a River Dee food chain by making masks for creatures or sticky notes with the name written on. Discuss who eats who and connect with pieces of wool until you have a food web using Activity Sheets 12-15.

	Topic	Indoor	Outdoor	Activity	Resources and Location in Box	Follow Up Activities
11	Wildlife Life cycles			Investigate the life cycle of Atlantic salmon. Create a drawing of the life cycle and a mobile to display in the classroom. Investigate salmon scales and what they tell us about salmon.	Book No. 29,30 Online Resources No. 6 Activity Sheets 16-20 Online Resources No. 6,7 Posters No. 1,2,3,4	Investigate the life cycle of freshwater pearl mussels and complete the drawing using Book No. 30 and Activity Sheets 21-22. Discuss why freshwater pearl mussels need trout and salmon. Find out why mussels are protected by law and why their numbers are much lower now than in the past using Online Resource No. 6,7
12	Wildlife Life cycles			Keeping a record - recording the life cycle of frogs.	Book No. 25 section 6, page 95 Book No. 19 page 38 Pouch No. 1 ID Guides	Investigate which animals live in ponds and which live in rivers. Do some animals live in both? Book No. 17,18,19,20,21,22 Online Resources No. 15, 16, 17
13	Wildlife Crime Citizenship			Investigate what is meant by wildlife crime and what measures are in place to eradicate it.	Online Resource No. 7 - Wildlife Crime Detectives Education Pack	Investigate wildlife crime on the River Dee and the role of Bailiffs to police the River.
14	Wildlife Invasive non-native species			Investigate what is meant by the term 'invasive non-native species' and what harm they cause.	Online Resources No. 9, 10	Have a classroom debate on whether all invasive non-native species affect native wildlife.

	Topic	Indoor	Outdoor	Activity	Resources and Location in Box	Follow Up Activities
15	Water Use			Investigate where tap water comes from and how much we use by keeping a water diary. Create a list of water saving tips.	Activity Sheets 23-29 Online Resources No. 3,4	Create posters to put in school toilets asking people to turn off the taps when they are finished. Investigate how water is cleaned and returned to the River Dee using Activity Sheets 30-35 and Online Resource No. 4.
16	Pollution Citizenship			Investigate sources of pollution in the River Dee. Do people cause pollution? What can we do to reduce pollution?	Activity Sheets 35-36 Activity Sheet 39 Online Resources No. 3,4	Discuss the impact of litter on people, the river and wildlife. Find out how long litter lasts using Activity Sheet 37. Create Yellow Fish door hangers using Activity Sheets 38-39. Create a poster to put up around the school.
17	History			Research the history of freshwater pearl mussel fishing, salmon netting, timber mills and water extraction. Find out how significant the Dee was to people in the past.	Book No. 11, 12, 13, 14	Interview local people to find out what living in Deeside was like in the past. How has it changed?
18	Going Outside Visiting the River Dee Citizenship			Prepare for the visit by looking at the ID keys in Pouch No.1. Decide the route, appropriate clothing and safety issues. Ask the class to create their own outdoor/riverside safety code to follow.	Activity Sheets 40-44 Book No. 7, 15, 16, 19, 20 Online Resources No. 11-17 Pouch No. 1 ID Guides Booklets No. 1, 2	While outdoors note plants and animals and report your sightings to the local biological recording centre (www.nesbrec.org.uk). Report squirrels to Saving Scotland's Red Squirrels www.scottishsquirrels.org.uk . Create a map/journey stick using Activity Sheet 45 and complete Activity Sheet No.48 DeeSong memory booklet.

Part 3 - Useful Online Resources

	Topic	Website Name	Address	Contains
1	Wetlands Rivers	Cairngorms National Park Learning Zone	http://cairngormslearningzone.co.uk/ecosystems-biodiversity/habitats-species/wetland-and-rivers/	Information on water uses, pressures on wetlands and rivers, flooding and river animals including otter, mink and water vole.
2	Climate Weather	Cairngorms National Park Learning Zone	http://cairngormslearningzone.co.uk/climate-weather/	Sections on today's climate, climate change, weather spectacles and hazards such as flash floods and avalanches.
3	Rivers Water cycle Flooding Waste and recycling	SEPA Kids (Scottish Environment Protection Agency)	http://www.sepakids.com	Fun, interactive website designed for children. 'Water' section contains water cycle, how rivers work, saving water, pollution and flooding. 'Fun Stuff' section contains short video clips about water, paper, plastic and glass recycling and a water quiz.
4	Water cycle Water use and treatment Climate change Flooding Activities - Classroom	Scottish Water	http://www.scottishwater.co.uk/clearer-fresher-learning	'All About Water' section contains information. 'Discover More' section contains video clips. 'Modules' sections contain classroom activities, most relevant are: 1st level - 'Water in the Home' and 'Save It' 2nd level - 'Water Cycle' and 'Water Safety' 3rd level - 'Pollution' and 'Climate Change'
5	Flooding Activities - Classroom	Education Scotland STEM Central	http://www.educationscotland.gov.uk/stemcentral/contexts/water/learningjourneys/flooding/index.asp	Learning journeys for teaching about flooding and helping students understand the impact of flooding, why it happens and planning for flood prevention.
6	Wildlife Atlantic salmon	Atlantic Salmon Trust Learning	http://www.atlanticsalmontrust.org/learning-zone/index.html	Factsheets, worksheets and an interactive map to bring the resources together. Information and activity sheets

	Life cycles	Zone		about their life cycle, threats at sea and habitat requirements.
7	Wildlife Crime Activities - Classroom	Wildlife Crime Detectives Education Pack	http://www.scotland.gov.uk/Topics/Environment/Wildlife-Habitats/paw-scotland/Resources/wildlife-crime-detectives/contents Or search for 'PAW Wildlife Crime Education Pack'	Teacher's notes, classroom activities and a video containing salmon poaching and freshwater pearl mussel fishing. Activities include looking at evidence to decide whether a crime has been committed, poster design and role play.
8	Wildlife Past and Future Beavers	Scottish Beaver Trial Education Pack	http://www.scottishbeavers.org.uk/docs/scottish-beaver-trial-education-pack.pdf	Information and activities about beaver ecology and their impact on humans. Activities include a debate, writing a newspaper article, mask making and a story for nursery age children.
9	Wildlife Mink Invasive non-native species Activities - Classroom	Scottish Mink Initiative Schools Pack	http://www.scottishmink.org.uk/educational-material-and-resources/	Split into Levels from early to level four. Information and classroom activities include food chains, native or non-native species quiz and information for a classroom debate.
10	Invasive non-native species Activities - Classroom	ARKive Education	http://www.arkive.org/education/teaching-resources-7-11	Teachers notes, presentation and activities about invasive non-native species (INNS). Ages 7-11 section contains an activity for children to design their own INNS. Ages 11-14 section contains a persuasive writing activity.
11	River Activities - Outdoor	SNH Teaching Space Outdoor Learning Activities	http://www.snh.org.uk/teachingspace/what-to-do.asp	Outdoors activities with teachers notes for near rivers and ponds and in the school grounds. Select 'freshwater' or 'school grounds'.
12	Activities - Outdoor Going Outside	Outdoor Learning Pack for Primary School Teachers -	https://www.woodlandtrust.org.uk/learn/children-and-families/resources-for-teachers/outdoor-learning-pack-	Ideas to help teachers deliver outdoor learning in a way that is aligned to Scotland's Curriculum for Excellence. With 28 stand-alone activities which have been put

		Woodland Trust Scotland	for-primary-schools-in-scotland/ Or search for 'Woodland Trust outdoor learning pack'.	together with the support and advice of primary teachers from all over Scotland. These activities can contribute towards the John Muir Award, Green Tree School Award and Eco School status.
13	Activities - Outdoor Local site for education	SNH Muir of Dinnet Pack	http://www.nnr-scotland.org.uk/muir-of-dinnet/visiting/education/	This education pack provides guidance for teachers on visiting Muir of Dinnet National Nature Reserve and activities that can help deliver Curriculum for Excellence through outdoor learning.
14	Getting Outdoors Responsible outdoor access	Scottish Outdoor Access Code Teaching Resources	http://www.outdooraccess-scotland.com/The-Act-and-the-Code/education-resources	Created to teach young people about enjoying responsible access while outdoors. The Activity Guide contains story cards, poster adventures, crack the code dial and a photo quiz.
15	Wildlife Activities - Outdoor and Classroom	Nature Detectives - Woodland Trust	http://www.naturedetectives.org.uk/	Outdoor activities, games and quizzes for each season. Free downloads and activity packs.
16	Wildlife Activities - Outdoor and Classroom	Wildlife Watch	http://www.wildlifewatch.org.uk/activity-sheets	Activity sheets for indoors and outdoors such as how to make a winter bird bath and a tunnel for small animals.
17	Wildlife Activities - Outdoor	Wildlife Watch	http://www.wildlifewatch.org.uk/spotting-sheets	Spotting sheets to help identify wildlife including mini-beasts, hedgerow wildlife, beetles, birds and spiders.
18	Wildlife Birds	RSPB	http://www.rspb.org.uk/	Information on all British birds.
19	Wildlife Mammals	The Mammal Society	http://www.mammal.org.uk/species_hub	Information on all British mammals.
20	Glossary	Cairngorms National Park Learning Zone	http://cairngormslearningzone.co.uk/glossary	Useful for studying geography, landscape and the great outdoors.

Part 4 - Going Outside

Tips for Going Outside

1. Set expectations before you go - explain the activities and times.
2. Ensure children are wearing appropriate clothing and footwear for the weather conditions.
3. If you meet a dog off the lead, ask children to fold their arms and not to touch the dog.
4. When introducing a new activity ask children and adults to create one large circle to ensure everyone can see and is concentrating.
5. Keep it simple and have a clear plan of the session.

What to Take With You

Take a rucksack for necessities containing:

- a first aid kit
- water
- mobile phone
- emergency contact details
- 2 whistles (a gentle one to call the group back together, like a owl hoot or Ocarina, and a sharp sounding emergency one)
- sun cream
- camera
- a spare hat and pair of gloves.

Activities

See list of outdoor activities in [Part 2](#).

See list of online resources in [Part 3](#), particularly No. 11-17.

See activity sheets in [Part 5](#), particularly Activity Sheet 48, DeeSong memories of the River Dee booklet.

More Information

"Health and Safety on Educational Excursions: A Good Practice Guide" - Scottish Executive - www.scotland.gov.uk/publications

Scottish Outdoor Access Code - www.outdooraccess-scotland.com

"Outdoor Issues and Matters" - www.creativestarning.co.uk/advice

Outdoor Learning Pack for Primary School Teachers - Woodland Trust and FCS - www.woodlandtrust.org.uk/learn/

Ranger Services within the Dee Catchment

River Dee Trust

Jamie Urquhart, Biologist
River Office, Mill of Dinnet, Aboyne, AB34 5LA
Tel: 01339 880 411
Email: jamie@riverdee.org or info@riverdee.org

The IntroDee Education Programme offers a free service to schools including riverbank visits to experience fun hands on activities including stream dipping, identifying fish caught by River Dee staff during electro-fishing (May - September weather permitting) and a trip to Raemoir Trout Fishery to try trout fishing. For more information visit www.riverdee.org.uk/introdee.asp

Aberdeenshire Council Ranger Service

Helen Rowe - Marr / Cairngorms National Park Ranger
Burn O' Vat Visitor Centre, Dinnet, Aboyne, AB34 5NB
Tel: 01339 880 868
Email: marr.ranger@aberdeenshire.gov.uk

Helen Young - Kincardine and Mearns Ranger
Viewmount, Arduthie Road, Stonehaven, AB39 2DQ
Tel: 01569 768 292
Email: kincardineandmearns.ranger@aberdeenshire.gov.uk

Alison Sutherland - Garioch Ranger
Bennachie Centre, Chapel Of Garioch, By Inverurie, AB51 5HX
Tel: 01467 681 470
Email: garioch.ranger@aberdeenshire.gov.uk

Aberdeenshire Council Rangers offer a free service to schools, supporting delivery of outdoor learning in the Curriculum for Excellence. For more information visit www.aberdeenshire.gov.uk/rangerservice/SupportforOutdoorLearning.asp

Aberdeen City Council Ranger Service

Ian Talboys, Countryside Officer
Housing and Environment, Environmental Services, Aberdeen City Council, 38 Powis Terrace
Kittybrewster, Aberdeen AB25 3RF
Tel: 01224 897 400

Email: lochinch@aberdeencity.gov.uk or italboys@aberdeencity.gov.uk

Aberdeen City Council Countryside Rangers offer a free service to schools within the City for outdoor learning opportunities. They can offer a range of 'traditional' activities such as pond dipping, minibeast hunts and environmental games but also things like Forest School programmes with shelter building, camp fires, storm kettles etc. These are offered on their countryside sites or in appropriate school grounds. For more details and a list of sites visit www.aberdeencity.gov.uk/rangerservice. Where possible the Rangers like to work with the teachers to develop a programme for their session(s) that delivers what the teacher wants and not what Rangers would like to offer. They can also assist with skill sharing and development for teachers and other staff to help build skills and confidence to take learning outdoors on their own.

Balmoral Estate Ranger Service

Glyn Jones, Head Ranger
Balmoral Estate Office, Crathie, Ballater, AB35 5TB
Tel: 01339 742 556
Email: glyn.jones@balmoralcastle.com

Balmoral Rangers offer guided walks along the River Dee, Loch Muick and the bogs and rivers in Glen Muick and can visit schools. For more information visit www.balmoralcastle.com.

Forestry Commission Scotland

Neil Taylor, Recreation and Communities Ranger
Forestry Commission Scotland, Portsoy Road, Huntly, AB54 4SJ
Tel: 01466 794 161 or 07833 436 676
Email: emily.holmes@forestry.gsi.gov.uk

Forestry Commission Scotland can offer visits to forests and explain how forestry is now designed to take into account recreation, access and water course protection as well as growing trees. For more information visit <http://www.forestry.gov.uk/scotland>

Glen Tanar Charitable Trust Ranger Service

Eric Baird, Head Ranger
Glen Tanar Visitor Centre, Glen Tanar, Aboyne, AB34 5EU
Tel: 01339 886 072 or 07506 279 500
Email: ranger@glentandar.co.uk

Glen Tanar is a private estate which currently works with primary school children on the River Dee; river dipping, identifying and assessing water quality. They use a simple chart/binary key developed for the Water of Tanar, and a simple visual scale of 'pollution'. It is a whole morning activity for P6 upwards and has also been used with older groups. The

21

Rangers also do a hydrology activity, modelling depth velocity profiles, using simple kit. There is also the opportunity to look at geomorphology and study how river channel changes have enabled regeneration. Glen Tanar also works with secondary pupils, using the Water of Tanar to study catchment characteristics, stream water quality and quantity, and human/nature interactions.' Glen Tanar makes no charge, but asks for a donation.

Leys Estate Ranger Service

Thys Simpson, Countryside Ranger
Leys Estate, Banchory Business Centre, Burn O' Bennie Road, Banchory, AB31 5ZU
Tel: 01330 826 506
Email: thys.simpson@leysestate.co.uk

Leys Estate is a privately owned ground with farm, woodland and river habitats, and offers schools an insight into private land ownership and farming in Deeside. Leys Estate mostly work with local schools Crathes, Drumoak, Banchory and Torphins.

National Trust for Scotland

North East Ranger Service Based at Crathes Castle
Fiona Milne, Senior Ranger
Tel: 0844 493 2167
Email: fmilne@nts.org.uk

Educational Membership of the National Trust for Scotland is available which allows up to 60 children from any school free access to one property any day of the year. The annual fee is dependent on school roll and there may be an additional charge for staff assistance. The Ranger Service can deliver a wide range of topics to fit with curriculum needs from nursery to tertiary. Early booking is recommended.

Scottish Natural Heritage

Catriona Reid, Reserve Manager at Muir of Dinnet National Nature Reserve
Burn O'Vat Visitor Centre, Dinnet, AB34 5NB
Tel: 01339 881 667
Email: Catriona.Reid@snh.gov.uk

Scottish Natural Heritage offer free Ranger-led activities to schools at Muir of Dinnet National Nature Reserve. Their education pack has more information on the site and activities and can be read online at www.nnr-scotland.org.uk/muir-of-dinnet/visiting/education/

Part 5 - Activity Sheets

These 48 activity sheets contain sheets taken from the original Riverbank Resources Boxes with the addition of some new sheets and ideas.