

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 1200 m (4000 feet) on the plateau of Braeriach, the highest source of any major river in the British Isles. The River 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 Gillie 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/