



ENVIRONMENT
AGENCY



FACT FILES

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Rivers of the New Forest



ENVIRONMENT AGENCY

Environment Agency - a better environment in England and Wales for present and future generations.

The Environment Agency is one of the world's most powerful environmental watchdogs, regulating air, land and water. As 'guardians of the environment' the Agency has legal duties to protect and improve the environment throughout England and Wales and in doing so contributes towards 'sustainable development' - meeting the needs of today without harming future generations.

Created by the 1995 Environment Act, the Agency started work in 1996. It is officially a 'non-departmental public



body', which means that the organisation works for the public and has specific duties and powers.

The Agency has funding of about £585 million, 75 per cent of which is funded from its own charges and the rest from Government.

Nationally, around 15 million hectares of land are managed by the Agency along with 36,000km of rivers and 5,000km of coastline, including more than 2 million hectares of coastal waters.

There are eight regional offices which are split into 26 area offices. Southern Region covers the counties of Kent, Sussex, Hampshire and the Isle of Wight.



— Rivers of the — New Forest

The New Forest is unique. It was established as a 'royal forest' primarily for hunting by William the Conqueror more than 900 years ago. This large area of 450 km² of woodland, heath, grassland and marsh has survived when so many other parts have been completely altered by man's activities this century.

The forest is almost a piece of Medieval England, still with unenclosed heath and woods, with its commoners and stock administered by the Crown (albeit in the shape of the Forestry Commission) and by a Verderers Court descended from the ancient forestal courts. Commoners of the New Forest are those who occupy the land or property to which there is attached one or more rights over the Forest. These rights are common of pasture (ponies, cattle, donkeys and mules), pasture for sheep, mast (the right to turn pigs out to eat

acorns in the autumn), fuelwood, marl (the right to dig clay for improving agricultural land) and turbarry (the right to cut peat for fuel).

Commoners have to apply to the Verderers' clerk if they wish to exercise their right of common pasture. They will be allocated a brand for their animals.

The ponies have been called the 'Architects of the Forest', for it is through their browsing and grazing that the lawns and the trees look as they do today. Without their 'work', and that of the cattle and deer, the Forest would soon be overgrown with brambles, gorse and other coarse herbage. The forest is one of the major lowland pasture woodlands in Europe, and has great recreational and ecological value - all thanks to commoning.

The Court of Verderers, a corporate body set up by the 1877 New Forest Act, is responsible for managing the commoning in the Forest. They have had various other responsibilities added over the years, including the investigation of reports of illegal inclosures (fenced off areas).

Currently, the Court consists of 10 Verderers, five of whom are elected and five appointed.

The Verderers also monitor development within the Forest. They work with English Nature and Forest Enterprise, an agency which administers Crown lands on behalf of the nation.

The Court of Verderers meets every month, except in August. They meet at 10am on a Monday in the middle of the month, and every other month members of the public can make presentations to the Court.

The Verderers employ six Agisters who ride the Forest daily and look after the welfare of the Commoners' stock.

They check the condition of the land and stock, and advise and assist owners in the welfare of their animals. They also collect the 'marking fee', a payment that helps offset the costs of their employment and the running of the Court of Verderers. They tell the Verderers about unmarked stock and impound illegal animals.

The Agisters have an intimate knowledge of the area and the workings of the Forest. Their work is arduous, with long hours as round the clock coverage is needed. Their busiest time is usually the spring when the animals can quickly lose condition.

Most of the ponies are descended from animals that are well suited to local conditions. In the late summer and autumn 'drifts' or round-ups are held throughout the Forest. Mares and foals which will remain on the Forest in the winter are marked, the foals are branded and the tails of the mares are cut in a distinctive pattern that tells the Agisters at a glance that the animals has been paid for and in which area the owner lives. The ponies are also wormed and any to be sold can be held. Separate drifts are held for cattle.

The Forest is divided into areas with an Agister overseeing each one. The Agisters are able to call on each other or the head Agister for assistance.

On average, one animal is killed or injured on the Forest roads every other day, despite strict speed limits. The Agisters deal with such deaths, and can be contacted through the police emergency service by phoning 999.



Conservation

National Nature Reserves	1
Sites of Special Scientific Interest (SSSIs)	13
Water dependent SSSIs	13
Ramsar and/or Special Protection Areas (designated and proposed)	1
Environmentally Sensitive Areas	0

Facts at a glance

Area of New Forest	450 km ²
Population	100,000
Length of main river	215 km
Average annual rainfall	833mm
Licensed abstraction from river	12735m ³ per day

History

There is evidence of very early settlement in the area, including an Iron Age settlement at Buckland Rings, near Lymington. Although much of the history of the area is connected with the management of the New Forest, there are several important historical buildings. These include religious buildings, such as the remains of the Cistercian Abbey at Beaulieu, built in 1204. At Ashurst Lodge there are the remains of an Elizabethan saltpetre mine. There is also one of the last working tide mills in Britain at Eling, near the mouth of Bartley Water where the wheel is turned by the tide flowing out of the river.

During the Georgian and Victorian periods, the coastal resorts also became very popular and numerous buildings remain from the period such as those near the beaches at Hythe.

Landscape

Only half the area known as the New Forest is actually wooded, the rest being composed of open heathland, pasture and small settlements. The area can be divided into two quite separate and distinct types. The Ancient and Ornamental woodlands are traditional forests of oak and beech and are open to the deer and Commoners' animals. The enclosures were initially established as timber producing areas, and are surrounded by fences to keep grazing animals out.

Water Quality

The Forest landscape is dominated by gravel terraces overlying sedimentary clays and sands. These affect the quality of the water which is very different from Hampshire chalk streams.

Nutrients are leached out of the gravels and sands, meaning that the nutrient status of the Forest's rivers and streams is low. Because of humic acid in the peat, the pH of the water is also generally low. The Forest does not have intensive arable farming, which means that no inorganic fertilizers are used on the land, and hence no such chemicals find their way into the water. Stream waters are also usually clear, although a brown discolouration associated with iron precipitate from the gravels can be seen at certain locations.



Farrier at work



Rivers in the New Forest

Within the New Forest several streams drain the sands, gravels and peat. Some flow west to the Avon, while others flow into the Beaulieu or Lymington River valleys, or directly to the Solent. These include the Avon Water, Black Water, Highland Water and Ober Water, the latter being noted for its unusual vegetation and wildlife.

Beaulieu River

The Beaulieu River begins its journey to the sea in the centre of the New Forest, near Bunkers Hill, just north of Lyndhurst, 46 metres above sea level. It flows eastwards 10 km before it swings south, passing through Beaulieu, towards the Solent.

The underlying geology of the area is a mixture of sedimentary sands and clays that have produced a diverse range of habitats. As the river has eroded through the different layers, vegetation has adapted to the differing soil conditions.

Most of these deposits are impermeable and this can result in sudden increases in river flow and localised flooding after heavy rain.

The land immediately next to the river is mostly wooded with a mixture of deciduous and evergreen trees. Apart from the numerous footpaths that follow it, there are several fords and footbridges across the river.



Palace House, Beaulieu

Lymington River

The source of the Lymington River is in the north of the forest, just south of Fritham, about 100 metres above sea level. Woodland surrounds the higher reaches of the river as it flows south eastwards through Brockenhurst, entering the Solent via a wide estuary near Lymington approximately 25 km later. The impermeable rocks mean that there is a risk of local flooding in the winter, when heavy rainfall rapidly runs off the surface. The river does not dry up in the summer, when rainfall is lower and evaporation is higher, because the sand and gravel aquifers and peat bogs in the lower reaches of the river supply modest flows.

The tidal limit is marked by an artificial causeway with sluices to prevent saltwater flowing further upstream. Just upstream of the causeway are reedbeds, cropped to provide thatching reed. Downstream of this point, there are extensive Environment Agency flood defences protecting the town of Lymington.

Most of the rivers and streams in the New Forest have been modified by widening or straightening, resulting in a loss of biological diversity and traditional character. Gravel extraction and land drainage can affect the level of the water table and have led to low flows in several of the rivers and streams.



The Lymington River



Boldre Church



The Lyminster Estuary

Ponds

There are many ponds in the Forest - village ponds, farm ponds, decoy ponds and fish ponds. Most are on clay and sandy soils, although others are found on chalk. Some ponds are natural, the result of high **watertables** - these ponds often formed the centre of a village or farmstead and are ancient settlement sites. Others are the result of long abandoned clay or gravel pits, excavated to provide building or roadmaking materials. A few are the remains of dew or mist ponds constructed to provide drinking water for livestock. Some, like Hatchet Pond, were constructed to store water for the long defunct iron industry.

There are well over 50 ponds, of various sizes, on the open forest alone. Many of these are permanent, while others only last for a short time (ephemeral).



Bogs and Mires

Bogs are found in areas such as the New Forest where the water is acidic.

When water flows through shallow valleys with poor drainage soils, the ground is likely to become waterlogged. Water draining from the heathland is low in plant nutrients, and these factors combine to allow specialised plants to survive and grow. A typical bog is dominated by several species of moss with occasional clumps of heather and bog asphodel. As these mosses decay, peat is formed. These bogs support a range of plants including insect eating plants such as sundew and bladderwort, together with rarities such as pale butterwort and bog orchid. In fact, New Forest bogs such as Cranesmoor, Whitemoor, Denny Bog and Hincheslea Bottom support many plants and animals rare in southern Britain. If left undisturbed

these bog communities are extremely stable. However, the bog surface can be easily damaged by activities such as digging peat, draining, burning, overgrazing and trampling.

The Forest also contains about 90 separate valley mires (boggy or marshy areas). These also have distinctive vegetation and form an important feature of the landscape. These wetland areas have international conservation importance, the New Forest being designated a Wetland of International Importance. The most extensive and important of the valley mires occur on the Crown Lands of the New Forest. They provide an important source of grazing for Commoners' animals, particularly in the early spring. Valley mires are found with heathland in several areas.



Sea Trout



Roach

Flora and Fauna

The geology of a river catchment determines both the alkalinity or acidity (pH) and the plant nutrient level of the water. Water that drains from leached acid soils lacks essential nutrients, such as magnesium and potassium. Such nutrient poor streams are found draining the heathland soils of the New Forest.

The nutrient level of the water will affect the plants and animals that live there, determining both the number and abundance of species. For example, although Ober Water and Hatchet Pond are relatively low in plant nutrients, they have similar plants and animals to those found in nutrient rich waters, but they do not have as many. This is mainly because there are fewer plankton in poorer waters.

Ober Water has a gravel bed covered by silt and mud and is low in both nitrogen and phosphorous. It has unusual vegetation - a mixture of plants associated with the acid streams of upland Britain, and the nutrient rich rivers of the lowlands. However, its invertebrates are typical of gravelly, acid rivers and are very different to those found in nutrient rich water. Species of stonefly, mayfly and dragonfly are found here along with rarer species such as slender marsh,

bedstraw, yellow centaury and Hampshire purslane, found only in the south.

The waters with the lowest nutrient levels are found in the peat pools on the acid heathlands of the New Forest. Here, invertebrates characteristic of acid soil are found. Midge and caddis fly larvae, leeches and water mites may live in the bottom layer of mud, and waterboatmen and mayfly nymphs are often plentiful. Dragonfly also flourish, but insect life is generally sparse compared to waters with higher nutrient levels.

Although the water is generally low in nutrients, a great diversity of life can be found in and around the rivers, streams, pond and lakes of the Forest. In total 29 species of dragonfly are found in the Forest, and the many dragonfly nymphs support a range of other species such as frogs. A variety of aquatic species can be seen in the



New Forest

clear waters, including rare newts and brook lampreys. There are also significant populations of fish species such as sea and brown trout.

Water margins are often a blaze of colour, particularly in the unshaded areas, with plants such as the bog bean. Rarer plants such as the butterfly orchid and wild

gladiolus grow nowhere else in Britain, yet can be found in the shaded conditions of the Forest.

The insectivorous sundew is found in the acid bogs and wet heathland - by trapping and digesting insects, this plants obtains all the nitrogen it needs for growth.

Flooding

The New Forest is drained by many small rivers. Some of these, the Lymington River, the Bartley Water and Avon Water, flow through towns before reaching the sea. As the Forest is mainly impermeable gravels and sands, these rivers fill up very quickly when it rains and can soon reach extremely high levels. The nature of

these rivers mean that they can be very high in the winter, and very low during dry summer periods. In the past, the Forest was drained to increase grazing areas and to improve forestry. This increased the risk of flooding in rivers by removing the natural storage of water in the catchment.



The Environment

Agency has built a flood alleviation scheme in Brockenhurst where a small stream flows through the village centre. This scheme is designed to

help protect properties in the village but road flooding can still occur during storms.

Surrounding the Forest are a number of low lying marshes. At Lymington and Keyhaven the Lymington River and the Avon Water are controlled by **sluices** to allow the discharge of water at low tide and to prevent the tide coming up the rivers. The Environment Agency also maintains the sea wall and a number of flood gates between Lymington and Keyhaven which prevent tidal flooding of the town and surrounding marshes.

Fishing

The predominant species in the streams of the area is the sea trout, which reaches weights of over 10 lbs. They are migratory fish, entering the rivers in mid summer before travelling further up the river in the autumn to spawn. Other fish to be found in the streams include eels, minnows, bullheads and stone loach, whilst in the larger Lymington river, general coarse fish including pike, roach and dace can be found.

Recreation

Over seven million people visit the New Forest every year, taking part in a range of recreational activities including walking, cycling and pony trekking. Many people use the rivers

for water based recreation, especially boating. The tidal reaches of the Lymington River have many marinas, particularly near Lymington itself, as well as several public slipways for launching boats. There is also a marina at Bucklers Hard on the Beaulieu River, where ships for Nelson's fleet were built. The use of local wood resulted in large areas of forest being cleared, so today much of this area is open heathland.

A more unusual use of the water is at Race Plain, south of Brockenhurst, where a lake is the location for model yacht sailing.

Water Resources

Rainfall varies from 800mm per year to over 900mm at the highest points in the forest. Because there are no major aquifers, reliable flows of high quality water are not available for public water supply. However, some water is **abstracted** under licence from the lower reaches of some rivers for spray irrigation of farm land. The only continuous gauging station, on the River Lymington at Brockenhurst is over 30 years old and was rebuilt in 1996. The mean flow here is $0.99\text{m}^3/\text{s}$ with a drought flow (Q95) of $0.05\text{m}^3/\text{s}$.



Brockenhurst water splash

Water Quality

The Forest landscape is dominated by gravel terraces overlying sedimentary clays and sands.

The water quality is very different from Hampshire chalk streams. The nutrient status is low and classified as oligotrophic due to the fact that nutrients have been leached out of the sands and gravels.

The predominant land management does not involve the addition of inorganic fertilizers as would be the case of intensively farmed arable land. The ph is generally low as a result of humic acid in the peat.

Station and Catchment Characteristics

Station level	(mOD)	6.1
Sensitivity	(%)	18.3
Bankfull flow	(m ³ /s)	7.90
Catchment Area	(km ²)	98.9
Maximum altitude	(mOD)	114
FSR slope (S1085)	(m/km)	4.59
1961-90 rainfall (SAAR)	(mm)	854

Except in spate conditions the stream waters are normally clear. A brown discolouration associated with iron precipitate derived from the gravels can be observed at certain location.

Beaulieu River - Bucklers Hard



Preventing Pollution From Waste

The Environment Agency ensures that controlled wastes, that is waste produced by offices, businesses, factories, schools and shops amongst others are handled, transported, treated and disposed of safely.

Other wastes such as agricultural waste and waste from mining or quarrying are not controlled by the Agency.



Agency Officers are active in the New Forest, stopping illegal unregistered waste sites and fly-tipping. The safe disposal of

waste costs money. It is a sad fact that some people try to avoid these costs by dumping their waste illegally.

This is called fly-tipping, it is unsightly and can be a danger to the health of people and wildlife. The Environment Agency will prosecute anyone found to be doing this. However, they would rather protect the environment by educating people about the correct way to deal with their waste.



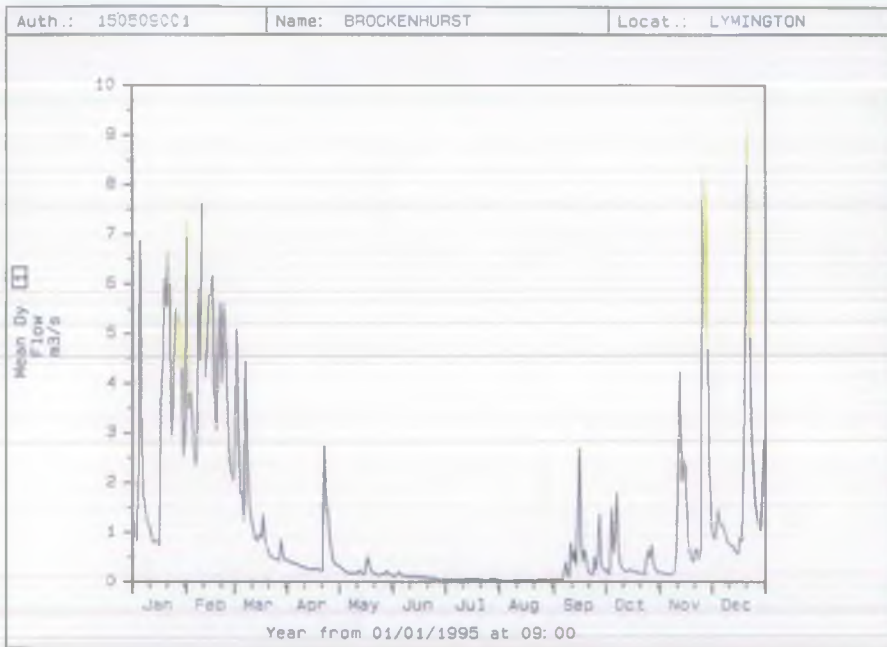
Weed cutting boat

River Maintenance

The Hampshire Area Direct Works force looks after a number of rivers which are designated as New Forest Rivers.

These include the rivers Cadnam, Lymington, Pollards Moor, Danes Stream, Pennington and parts of Bartley Water.

Maintenance of these rivers includes grass and weed cutting of the banks and bed of the river as well as removing debris and blockages. The blockages in the New Forest area usually consist of trees which have fallen in or across the rivers. Much of this work is done in conjunction with the relevant conservation bodies.



Graph representing the mean daily flow of the River Lympington through Brockenhurst. The data represented here was recorded during 1995, and clearly shows how the flow of the river changes through the year.

General Quality Assessment (GQA)

Grading of Water Quality 1996

Sampling points

River Bealieu

Ipley Manor GQA Grade B

Hartford Bridge GQA Grade B

River Lympington

Boldre Bridge GQA Grade B

Whitely Bridge GQA Grade B

Balmer Lawn GQA Grade A

Chemical GQA standards for Grade B

Grade A

Dissolved Oxygen 80% saturation

Biochemical Oxygen

Demand 2.5mg/l

Ammonia 0.25 mgN/l

Grade B

Dissolved Oxygen 70% saturation

Biochemical Oxygen

Demand 4mg/l

Ammonia 0.6mgN/l

*Forest heathland*

Environment Agency Emergency Hotline

Your prompt action could help protect the Environment. If you see an environmental emergency or a pollution incident don't ignore it, report it.



Ring the Environment Agency ENVIRONMENTAL HOTLINE number 0800 80 70 60. This call free number is available 24 hours a day, seven days a week, 365 days a year.

The kind of things to report include:

- Damage or danger to the natural environment
- Pollution
- Poaching
- Risks to wildlife
- Fish in distress
- Illegal dumping of waste
- Flooding incidents

Please do not use this number for routine or general enquiries as you may prevent someone else getting through in an emergency.

For **GENERAL ENQUIRIES** ring your local Environment Agency Office on **0645 333 111** during office hours only.

Glossary

Abstraction	When water is taken from a river or underground rock strata
Aquifer	A layer of permeable rock, deep under the surface, capable of absorbing and storing water
Ephemeral	Lasting for only a short time
Plankton	Very small plants and animals living in the surface layer of a pond or lake
Sluice	A channel that carries fast flowing water, with a sluicgate to control the flow
Watertable	The level in the ground below which the ground is saturated with water

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Saxon House
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For general enquiries please call your local Environment Agency office. If you are unsure who to contact, or which is your local office, please call our general enquiry line.

**ENVIRONMENT AGENCY
GENERAL ENQUIRY LINE**

0645 333 111

The 24-hour emergency hotline number for reporting all environmental incidents relating to air, land and water.

**ENVIRONMENT AGENCY
EMERGENCY HOTLINE**

0800 80 70 60

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