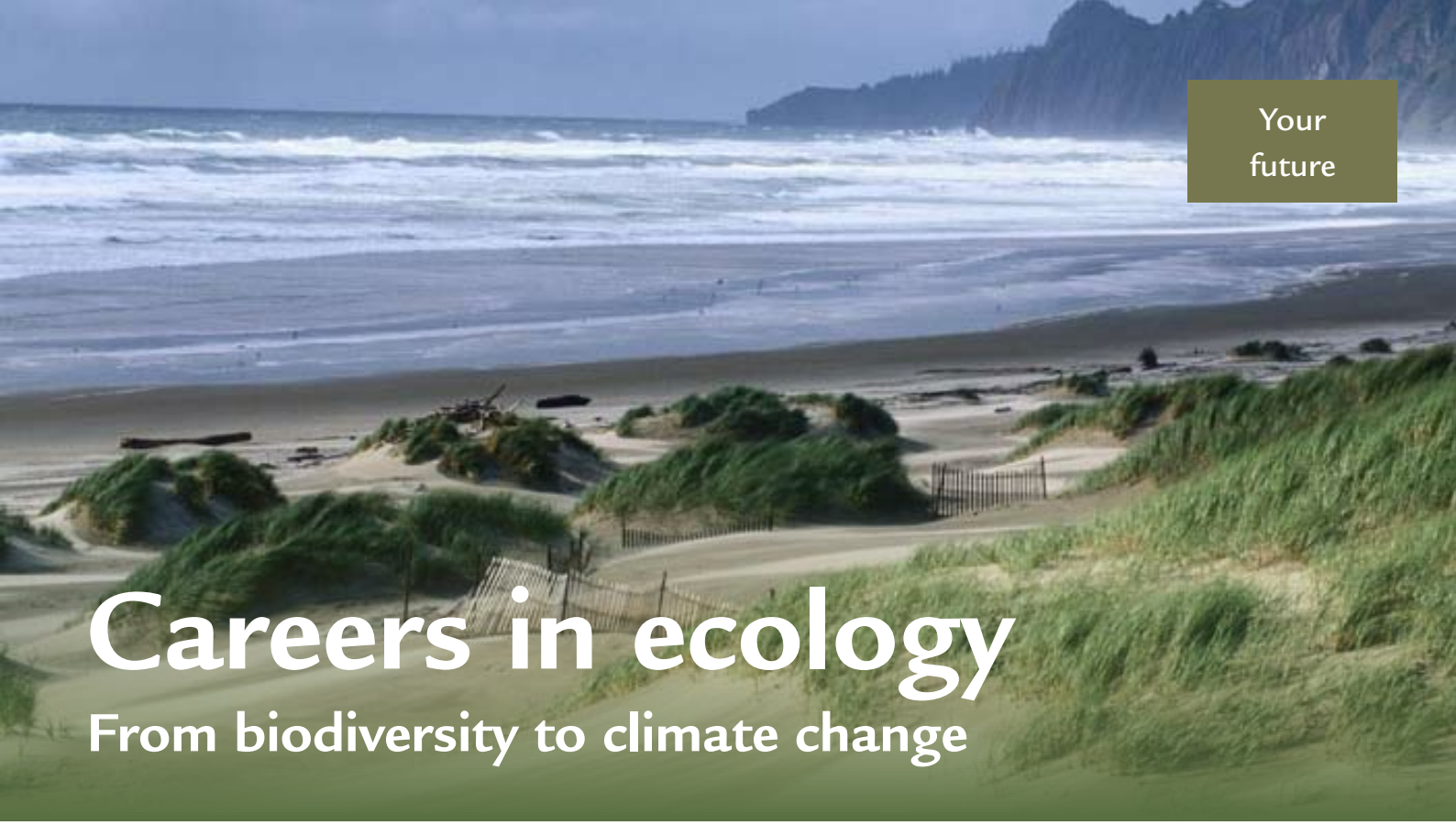


Careers in ecology

From biodiversity to climate change

Why do we need to understand how a food chain works? Why does biodiversity matter? How do we know that climate change is happening?

Ecology is the branch of biology that looks at how organisms, plants and animals, depend on each other and their surroundings. It's about life and living things. It also looks at how humans impact the world we live in.

Where there's smoke … The cooling towers on the left (top) are fairly harmless - they are just giving out water vapour. The chimney (bottom), at a sugar refinery gives out water vapour but also products of combustion including carbon dioxide and gases such as sulphur dioxide which cause acid rain.

Ecologists in demand

There are many careers in ecology and its related fields. In fact business is booming with the demand for skilled ecologists at an all time high.

But what does a job in ecology look like? A job in ecology today is very different to the job of an ecologist 100 years ago. Once upon a time ecology meant a job looking after the environment, perhaps as a countryside ranger or a warden, protecting, managing and monitoring a habitat and the plants and animals within it, and educating the public about it. People did the work because they loved working outdoors and had a passion for the natural world; others campaigned and lobbied governments to protect plants, animals and their habitats, working with such organisations as WWF and the RSPB.

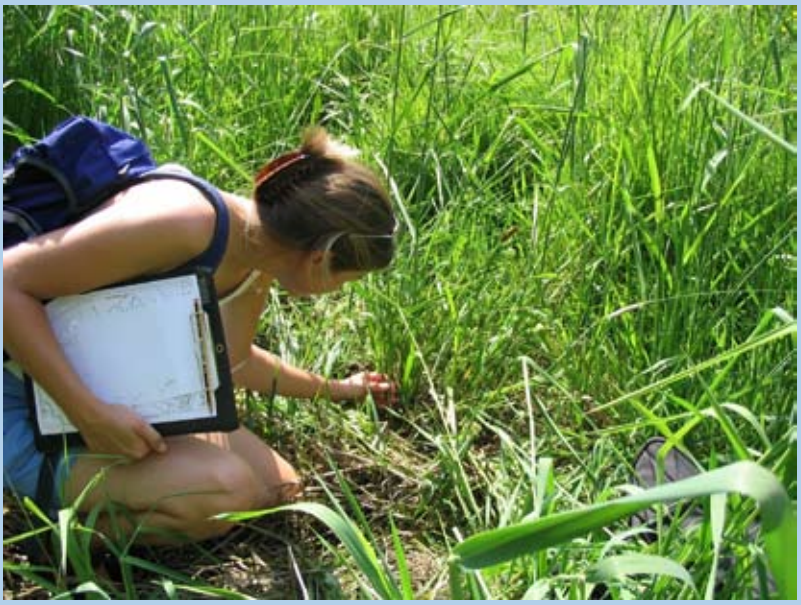
Ecologists told us which animals were rare and needed to be protected, which habitats needed special consideration. They did not expect to get paid a good salary.

However over the last few years legislation and policies related to the environment such as biodiversity, protecting species and their habitats, sustainable development and monitoring climate change have meant there are more opportunities than ever to find employment.

There's a shortage of skilled ecologists and like all careers where there's a shortage of skilled workers, salaries are increasing.

Some habitats need protection from simple human effects, like these badly trampled sand dunes.

TV programmes such as Springwatch show a great deal about the work of an ecologist employed by the many Non-Governmental Organisations (NGOs) such as the Woodland Trust; they may gather information on when the first swift arrives in the UK each spring, or when oak leaves start to turn red and gold in autumn. Analysing this data is the work of ecologists who can report on how the seasons are changing and how our climate is being affected. Such ecologists find themselves at Westminster advising the government. Communication skills are essential



The photo shows ecologist/botanist Hannah Graves with the rarity Fox Sedge *(Carex vulpina)*. In Britain this species is now classified as 'vulnerable'. It receives general protection under the Wildlife and Countryside Act 1981.

Hannah's first job was with her local County Wildlife Trust. She studied six botany modules at the University of Birmingham, learning to identify hundreds of plant species. These qualifications developed her recording and reporting skills, and allowed her to teach volunteers.

Now Hannah works for British Waterways, surveying plant life in the canals of south east England.

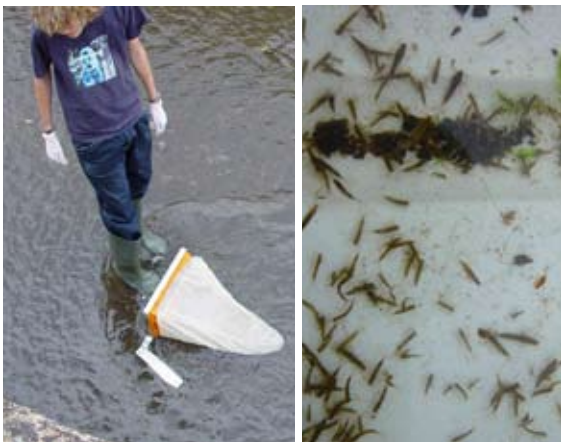
Ecological consultant

In ecological consultancy, one of the biggest growth areas in ecology, ecologists will conduct field surveys, mapping the distribution of organisms and monitoring sites. This work may be carried out as part of an **impact assessment**. Impact assessments must be carried out for all industrial, building or transport schemes in order to determine the impact a proposed development might have on a habitat, local water reserves and the surrounding environment. The information the ecologist gathers in this process in considered when permission is given for work to go ahead. It can be difficult work, but when two groups of people are arguing about whether or not a new road should be built, the assessment of the ecologist can help determine if a habitat is too important to be destroyed by a road.

Even an environmentally-friendly development such as the erection of wind turbines must go through an environmental impact assessment, a job which heavily involves trained ecologists.

Clearing up

People are messy though and an essential group of ecologists are those involved in waste management, environmental management and pollution prevention and control. They develop the strategies not just to dispose of our waste safely but also how to regenerate damaged land.



An ecologist uses a Surber sampler to assess the quality of water. The sample contains mainly mayfly larvae, showing that the water is of quite good quality.

Skills and qualifications

Ecologists are very skilled people; they usually have a driving licence, and have gained voluntary experience in identifying plants and animals or sampling different habitats. Most have a first degree and many have gone on to obtain higher degrees.

They are committed people with a fascination for plants and animals. They love fieldwork and are able to enthuse others to protect the natural world. They understand the need to protect the natural world alongside allowing human society to develop in a sustainable way. When they need to they can provide the scientific evidence about the ways in which humans affect the world around them.

Karen Devine *is Education Officer of the British Ecological Society*

Why worry about plants?

Common spotted orchid and bee orchid

Status	Orchid examples
Extinct – no longer present	Summer Ladies-Tresses
Critically Endangered	Lady's slipper orchid
Endangered	Fen orchid
Vulnerable	Military orchid
Nationally Rare – occurs in 15 or fewer 10 km squares	Small-flowered tongue orchid
Nationally Scarce – occurs in 16-100 10 km squares	Man orchid

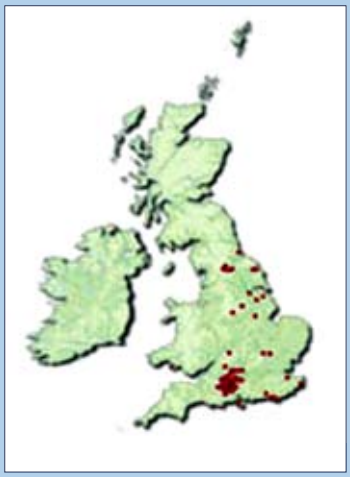
Table 1 Some rare plants are rarer than others.

Some ecologists work with endangered plant species. But should we really care if an individual species disappears from these islands? Jill Sutcliffe, a scientist who has worked for several different environmental organisations, explains:

'In this country, there are some 1700 different flowering plants – from those harbingers of spring the bluebell to the large and prickly gorse bush. Britain contains sites which have lots of bluebells on them due to the wet Atlantic coast climate which occurs here. However, when you cross the English Channel –while there are some bluebell woods in France and Germany – these are far less prevalent. The result is that Britain has an international responsibility for the bluebell.

It's easy to think that a plant you don't often see is uncommon but that may only be true near your home or in your county. So how do we find out how rare a plant is?

The first step is for lots of people to go out and spot plants and then send their records into the Botanical Society of the British Isles. A map is drawn up for each species showing in which 10 km by 10 km squares the plant is found. Then we can assess its status. The World Conservation Union developed a set of criteria to assess the degree to which a species is threatened – see Table 1, which includes examples of British orchid species.'



The common spotted orchid (left) occurs across most of the British Isles; the lady orchid has a much more limited distribution.

'Monitoring plants – visiting them and making a note about their presence or absence – also provides important information. It helps to check up on whether the plant is still there, and whether the type of management being used is working or not. It can show, for example, whether water courses are becoming choked by pesky species because the water chemistry has changed and become polluted.

Changes in plant populations can also warn us of the effects of climate change. Many plants are rare because the environment has changed, leaving previously common species isolated in areas of suitable habitat. This means that the arctic-alpine plants, those specially adapted to growing in cold areas usually in upland areas which have been left over from the last Ice Age, face a challenge from climate change. These are the species which could well lose out and be forced off the list of plants which grow in these islands – plants like yellow marsh saxifrage. The converse is also true. Those plants like the ground pine, which prefer a Mediterranean climate of warmth and little rain, may flourish and expand.'

Employers of ecologists

Forestry, mining and energy companies

Water companies and civil engineers

Governmental bodies such as Natural England and Scottish Natural Heritage

Government-funded research institutes

Local authorities and National Parks

Museums and botanical gardens

Look here!

The British Ecological Society produces a booklet 'Rooting for a Career in Ecology and Environmental Management' which is available to download from the website, **www.britishecologicalsociety.org**