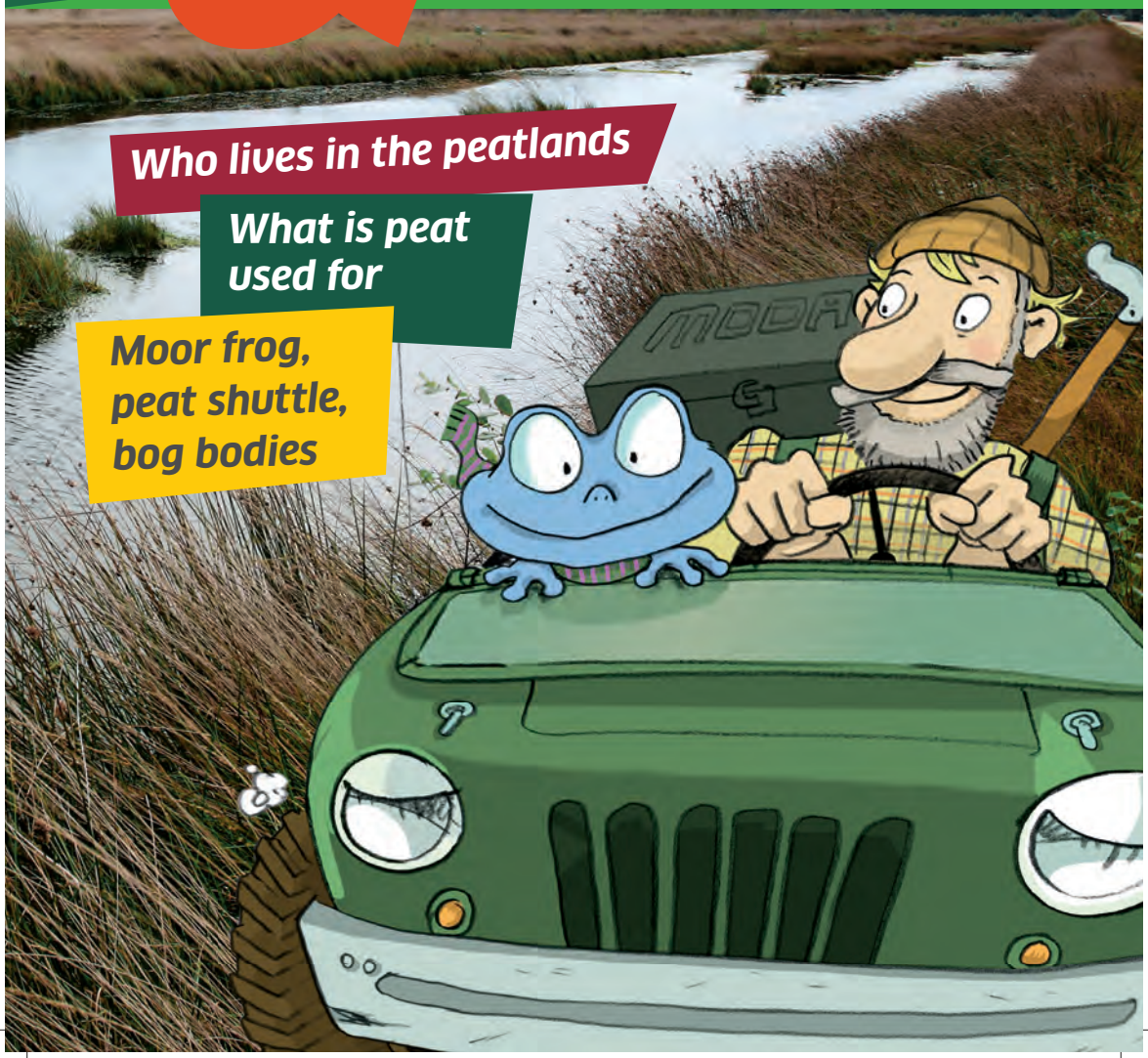
Squash & Manni

explore the peatlands



Who lives in the peatlands

What is peat used for

Moor frog, peat shuttle, bog bodies

can sometimes be a bit cheeky. He is forever coming up with funny ideas and is always ready to spring a few surprises – especially for Manni.

always keeps his cool. He loves nature and loves his varied and interesting job. He knows lots about the peat moor and about its peat.

is a real scientist who knows her stuff and can help explain it all to you.

CONTENTS

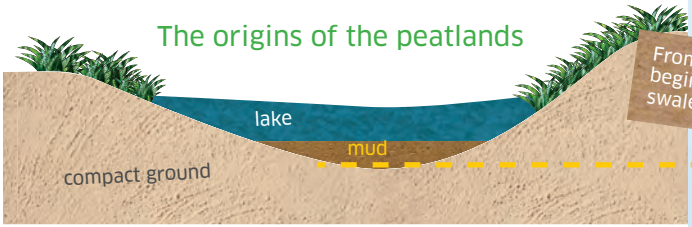
The peatlands ...

... is a barren and boggy landscape and down through the years people have always told eerie tales about the goings-on there. This may be because they find it a menacing and forbidding place.

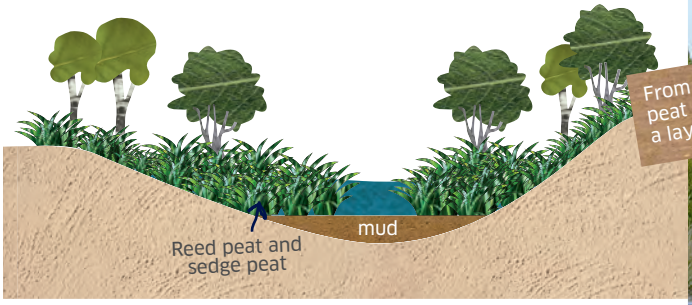
And in fact those who lived there had to work really hard to make it their home. We want to tell you something about this in our booklet.

Lots of plants and animals, on the other hand, have always found the peat moor a good place to live. They have become perfectly adapted to this habitat. And to keep things this way all our natural peatlands are now conservation areas. On the following pages you will learn more about the beauty of the peat moors and about the life that exists there. We will also show you how some of the old peatlands were used in years gone by: for agriculture, for peat cutting and naturally for living in.

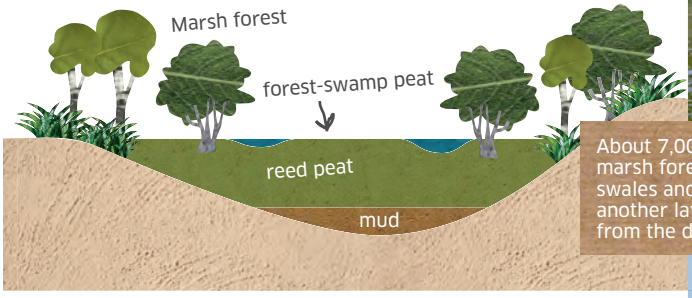
The origins of the peatlands



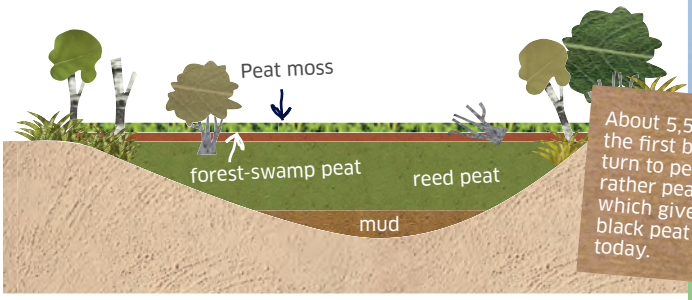
From 10,000 B.C. on: mud begins to form in shallow swales and hollows.



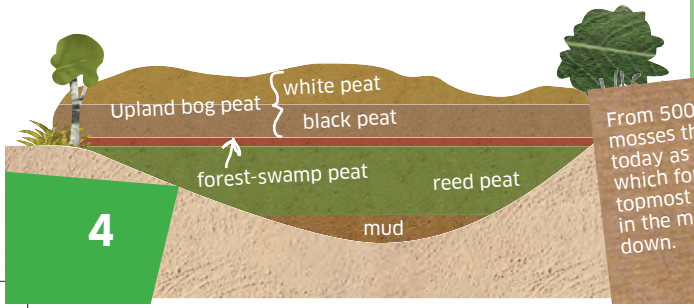
From 8,000 B.C. on: reed peat and sedge peat form a layer above the mud.



About 7,000 B.C.: the first marsh forests grow in the swales and hollows and another layer then forms from the dead wood.



About 5,500 B.C.: the first bog plants turn to peat, or rather peat moss, which gives us the black peat we know today.



From 500 B.C.: the mosses that we know today as white peat, which forms the topmost peat layer in the moor, are laid down.

Mud

This mud is sometimes known as ‘lake mud‘. This refers to the dead plant remains that have become deposited on lake beds and are slimy to the touch. These deposits are also known as ‚organic sedi-ments‘.

Lowland peatlands

As well as the upland peatlands we also have lowland peatlands. These areas are in contact with the groundwater. They are rarely formed from dead peat moss. More often they contain quite different types of plants that have turned to peat to create a lowland moor.

Peatlands in Germany

Germany's peatlands are between 10,000 and 12,000 years old. Their growth began as the last Ice Age came to an end and temperatures slowly became warmer again. We distinguish between "upland" and "lowland" peatlands.

HOW AN UPLAND MOOR IS CREATED

Many peat moors lie above swales, which are shallow valleys. The key to their formation was the presence of watertight ground that prevented any water from entering the zone from below. This meant that the rainwater could not flow away. This situation created small lakes where water-loving plants could become established, especially reeds, sedge and later peat moss. In some of these moorland areas peat moss was present right from the beginning. Dead and decayed peat moss sank into the water and because there was no oxygen in it, the dead moss only partly decomposed. This was eventually to create peat. Over time the peat layer grew from the bottom upwards until it was several metres thick. The lower layers of peat are the oldest and for this reason they are also the most decomposed and therefore very dark in colour. We call this "black peat". The uppermost layers of peat are also the youngest and they are lighter in colour, because they have not decomposed as much. We call this material "white peat". The peat we find in the upland moors is known as "upland bog peat".

DARK AND MYSTERIOUS:

Bog b

It was 8th May 1950 and a veil of mist hung over the Danish town of Silkeborg. The telephone rang in the police station. A local family had found the dead body of a man in the moor. Everyone assumed some kind of foul play. But a closer examination showed that this corpse had lain there for more than 2,300 years. It was in fact a bog body – and it was given the name "Elling Woman".

Caution! These peat moors are very dangerous places. It you slip in you may not be able to get out again by yourself. So be very careful:

1. Never go on to the moor by yourself.

2. When on the moor always stay on the pathways.

Photo: Robert Clark/INSTITUTE

odies

What are bog bodies?

Bog bodies are human corpses that lie buried deep in the moor. These bodies are usually so well preserved that you can recognise their facial features and even take their fingerprints. Bog bodies are protected from the sun and air by the layer of peat above them. The moss and water also produce special acids that prevent the bodies from decomposing. While the body itself remains well preserved the skin appears leathery and is dark brown in colour. The hair also changes to an orange-red colour. Most bog bodies have been named after their discovery site

Allow me to introduce myself, my name is “Peiting Woman”! At nearly one thousand years of age she is one of the oldest and best preserved of all of Germany’s bog bodies. She was named after the place of her discovery in Upper Bavaria.

Photo: caesar

Cool: Holographic cameras enable scientists to examine bog bodies and generate faithful reproductions of their faces as a 3D model.

Photo: ddpimages/dapd

Thousands of years later: forensic scientists can look at the bones of bog bodies and establish, for example, whether the person had been right or left handed or had walked with a limp.

The discovery was made in Emsland, just round the corner from our headquaters: Red Franz was found in the town of Meppen, not far from Klasmann-Deilmann. He is Lower Saxony’s best-known bog body and you can see him in the State Museum in Hanover.

for example “Osterby Man”. As these bog bodies are so well preserved they give scientists a unique opportunity to study people who lived in the Ice Age. They can determine what kind of diseases they suffered from and in some cases the contents of their stomachs can even be examined.

.

Leo Lightbulb knows something ...

In earlier times bog bodies or parts of them were crushed down to make a medicinal preparation known as “mummy powder” (or “mumia”), which was sold on to apothecaries. Mumia was supposed to help relieve 21 ailments, including coughing, sore throats, dizziness, gout, chest pains, tremors, kidney ailments and headache.

Why are the bodies there?

The bog bodies were often human sacrifices that were sunk into the moor. In those days moors were seen as gateways to another world. People were sacrificed in order to appease the gods. In the case of the Germanic tribes, for example, people were sacrificed to the earth goddess Nerthus. It wasn't just criminals who were sacrificed in this way but powerful people too, even kings. We can tell this from the jewellery and clothing they wore. But some of the bog bodies were almost certainly just victims of misfortune.

How old are the bog bodies?

Photo: Robert Clark/INSTITUTE

Most bog bodies date back to the Iron Age, in other words the centuries before and after the birth of Christ. More than a thousand such finds have already been made throughout Europe. Ireland alone has had more than one hundred. Bog bodies have also been discovered in Germany. One of the most recent finds is the "Girl of the Uchter Moor", which was unearthed in 2000. The world's oldest bog body, "Koelbjerg Woman", is thought to date back to the eighth millennium before the birth of Christ.

Leo Lightbulb knows something ...

Many families could not live on farming alone. The man of the house also had to do some other kind of work in order to earn enough money. Many men therefore worked as peat cutters. The small farms were only a "sideline" and so this occupation became known as "part-time farming".

The peatlands are cultivated

For many centuries people stayed as far away from the moorland as possible. The ground there was much too wet to live on. Arable farming and livestock rearing were simply not possible. Those who lived on the moors had to be aware of that fact that they would quickly become ill and would die at a very early age. In the nineteenth century a methodical programme of land drainage was started. Huge numbers of drainage ditches were dug so that the water could flow away. The moorlands were "drained". Over the next few years the drained peatlands were gradually "cultivated", in other words they were prepared so that people could build houses on them and live there, practise arable farming and keep livestock.

Peat cutting also commenced soon after and the state encouraged this by law, as the peat was urgently needed as a fuel for heating homes. It was also an ideal bedding material for stables and cowsheds.

Children gather peat sods for making a fire.

The cooking range is fired by peat.

A settlement in the early 20th century.

GREAT-GRANDFATHER TELLS THE STORY:

How people lived on the moors in the old days

We are talking about the year 1920. The Thien family lives on the edge of the drained moor. Their daily routine is strictly regulated and each task is clearly assigned. There is virtually no leisure time. The father, Josef Thien, works in the peat field. He digs peat and earns the money that the family needs to live on. Digging peat is very hard, physical work. The mother, Maria Thien, is responsible for the household. She also tends to the cottage garden and feeds the livestock. The Thien family have two cows, a few pigs and some small domestic animals. Fruit and vegetables from the garden, along with milk, eggs and meat from the animals – these are all crucial requirements. For money is scarce and what comes from the farm does not then have to be bought in. When Josef Thien returns home after a hard day's work he still has plenty to do. He too has to see to the livestock and till the small field that adjoins the house. The children, Heinrich and Hedwig, do their household chores after school. Then they have to help their mother do the housework and work alongside their father in the field. The Thien family do not have their own water supply and so the children have to carry water in buckets from the well. They bring cold water for washing and drinking, for household needs and for the animals. Maria Thien makes soup on her "range", which is heated by peat. In the winter the cooking range is the only source of heat in the house, as there is no heating system. Neither is there a bathroom or toilet. The Thien family use a basin for all their washing, while the unheated toilet is outside the house near the barn. This toilet is called the "privy".

Peat cutters at work.

Women carry the dried sods away.

Peat working in the old days.

Working tools:
peat cutter and spade.

Later, the first peat excavator was developed to do the work much faster. The laborious practice of cutting peat by hand finally came to an end.

So many peat sods!
And every one cut
by hand!

This power station burns peat to produce electricity.

Cutting peat
in the old days

How did people dig peat before the first mechanical excavators were built? The peat had to be dug out by hand. There were special tools to do this: peat spades were used for the laborious task of cutting sods from the moor one by one. The work of the peat cutter was physically very demanding and so was usually done by men. Each wet sod lying on the spade weighed 4 kilograms! Peat was often dug on the desolate edges of the moor. In order to earn enough money the peat cutters would work through the rain and the summer heat, when swarms of gnats would make life very difficult indeed. After the peat was dug the sods had to be dried. They would be piled one by one into a stack to be dried out naturally by the sun and wind. After a while the sods would have to be rearranged – in other words turned over – so that they would dry out on all sides. Drying causes the peat to lose a lot of water and so it becomes much lighter. Re-stacking and turning the sods was therefore usually done by women, and sometimes by children too. When they were completely dried out, the sods would be transported away by narrow-gauge railway to the peat factory for processing or for use as household fuel.

1 Peat cutter
The cutter was used to cut the peat up into small pieces (peat sods). It had a long handle and its sharp edge was as long and as high as one sod. This meant that the pieces where all roughly the same size when they were cut.

2 Peat spade
The peat spade was used to pick up one piece of peat. Its lifting surface was made of wood and its lower edge was made of metal. The spade could free each piece of cut peat and then pick it up.

3 Double spade
This spade could be used to pick up two sods at a time.

4 Peat fork
The peat fork had four short bent prongs and was used for placing the sods into the barrow.

5 Peat barrow
The peat barrow was made of wood and was mostly used by women and children to transfer the peat sods to the peatfield for drying.

6 Peat basket
The peat basket was made of wood. Two men were needed to carry the basket laden with sods to the narrow-gauge train.

Peat cutting today

A tractor fitted with a harrow loosens up the topmost layer of peat.

Even though the hard times of peat digging are now long gone – peat is still cut and used today. This operation is known in the trade as "peat harvesting". The work is now done using modern machinery and the peat is only extracted from areas that have been dried out long before. The few completely intact peat moors that are left are now protected sites and can no longer be used.

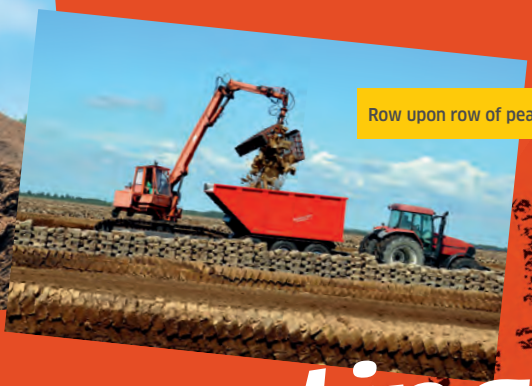
Fill in the boxes with the right kind of peat. Where would the white peat be?

Peat = peat? Think again!

There are different kinds of peat. The top layer of the peat moor consists of white peat. And right at the bottom we have the black peat. In between the two comes the brown or transitional peat – this is not as light in colour as white peat and not as dark as black peat.

You will find the right answer on page 15, top. If you hold a mirror up to the page you will be able to read it.

A vacuum harvester then piles the peat into large heaps.



Row upon row of peat sods.

Peat harvesting

Peat harvesting takes place in the spring and summer each year – when the weather is dry. This is when a series of strange-looking machines will start moving through the peatfields to harvest the peat. The first machine is a tractor with a harrow, which is a wide implement armed with lots of teeth. The harrow loosens the topmost layer of the moor and detaches the white peat from the surface. Then comes another tractor towing a really impressive piece of equipment that we call the “vacuum harvester”. This sucks up the white peat and stacks in into large heaps. The peat that has been extracted with the harrow and vacuum harvester is known as “milled peat”. Other machines are used to compress the white peat into small blocks, each about the size of a loaf of bread. This is known as “sod peat”. The sods are then placed in long rows along the peatfield and are left to dry out completely. Black peat is also extracted with a harrow but is left for a whole winter lying in the field before it is collected and stacked. Milled black peat must be properly frozen through before it can be processed further.

Answer: beat = beat? Think again!
Top: white beat · Middle: coloured beat · Bottom: black beat

The excavator fills up the peat shuttle.

The peat railway delivers the raw material straight into the factory.

The peat shuttle loads the peat into the railway wagons.

Leo Lightbulb knows something ...

The peat shuttle weighs 47 tonnes, has a 310 horse-power motor and can travel at a maximum speed of 8 km an hour. Its two containers can together hold 120 cubic metres of material. When the shuttle is fully laden its weight rises to 107 tonnes. The vehicle has very long and wide tracks (2 x 8 metres) with wooden pads that prevent it sinking into the soft ground. The driver's cab can rotate by 180 degrees. The shuttle can also be operated by remote control.

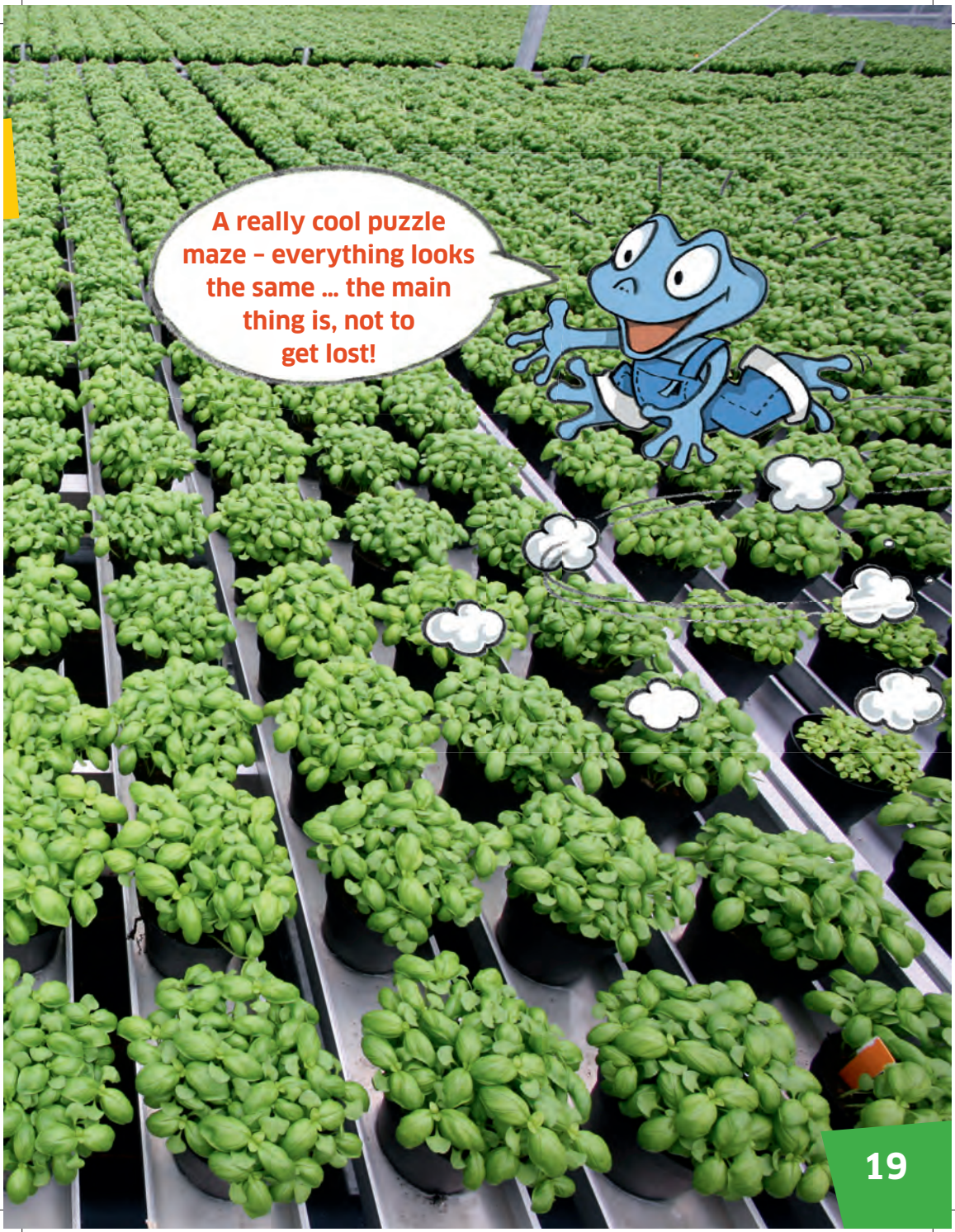

How did he hop up into the seat so fast?
Leo Lightbulb knows something ...
A tractor like this weighs 10 tonnes. It has 360 horse-power and can travel at 60 km an hour. Its fuel tank can hold 660 litres of diesel.
Fasten your seat belts – we're off!
FENDT
FENDT

Where do all these plants come from?

Have you ever noticed just how many different plants we can buy? Herbs and vegetables we get from the supermarket. Flowers and potted plants we find in flower shops and garden centres.
Most of these plants are no longer grown in ordinary soil – instead they are produced in large greenhouses and plant nurseries that use different methods to ensure strong and healthy growth.

How is peat used

In the old days peat was dug up for use as a fuel for domestic stoves or as bedding for stables and cowsheds. For several decades peat was also an important source of fuel for the power industry. It was burned in power stations to produce electricity. Nowadays other types of material are normally used for energy production. You have no doubt heard of oil, gas, coal and other types of fuel. But peat is still being harvested today, and since the 1960s it has been used in the gardening and horticultural industry. Peat is processed to make a special kind of soil that you perhaps know as “potting soil”.
Gardeners who keep greenhouses call this material “substrate” or “growing medium”. This substrate is used for growing all kinds of plants: vegetables, herbs, flowers, potted plants, shrubs and much else besides. Peat has therefore taken on a really interesting and important role: it is helping to grow things!

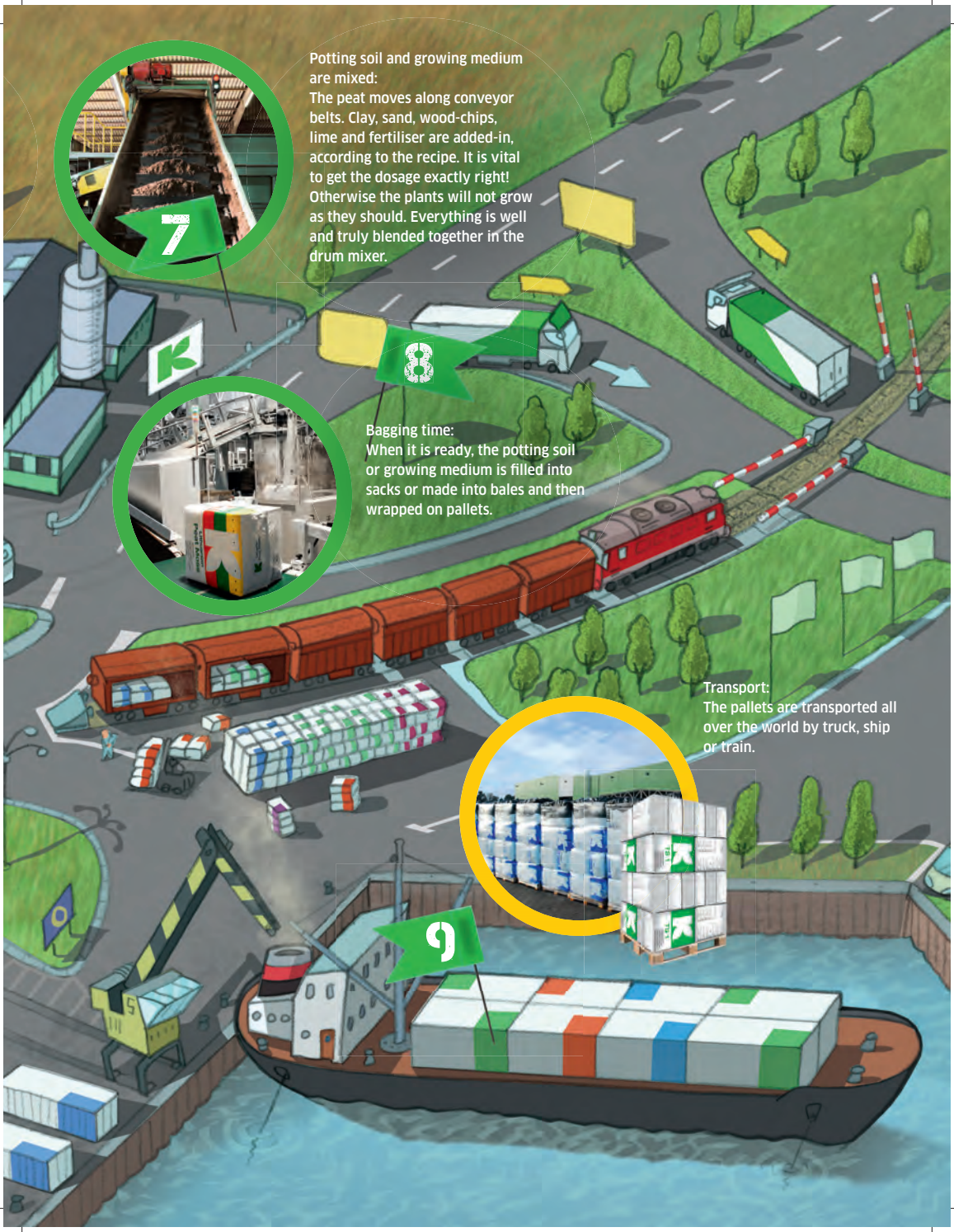

A really cool puzzle maze – everything looks the same ... the main thing is, not to get lost!


Who collects all the potting soil?
Who knows all the recipes?


How does a soil processing factory work?
Where does the peatfield railway go to?
Who actually needs the special types of potting soil?
How do all the different types of soil get into the bags?
What is potting soil made from?


2
Harvest of sod peat (1), milled peat (2) and black peat (3).
3
Transport:
The vacuum harvester strips peat from the field.
1
Peat harvesting area:
In Germany peat is harvested in accordance with strict rules. The nature conservation agencies make sure that these rules are obeyed. Harvesting can only take place in those areas that have been drained many years before. All intact peat moors have been protected in this way for a long time.
I will test you!
But we are not in peat school!


Peat processing:
White peat and black peat are sent to the factory. Here the material is processed so that it ends up with exactly the right composition that is needed for the recipe.
Sod peat, on the other hand, is broken down in the crusher and the differently sized pieces are then separated from each other.
In the star screen, for example, peat is sifted according to size.
6
K
The railway takes the peat to the factory.
5
4
The shuttle delivers the peat to the railway.

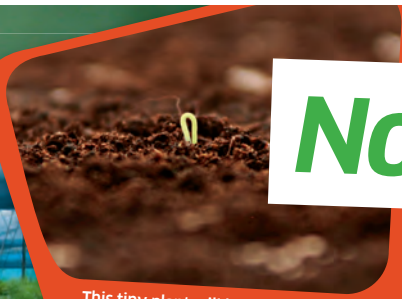

7
Potting soil and growing medium are mixed:
The peat moves along conveyor belts. Clay, sand, wood-chips, lime and fertiliser are added-in, according to the recipe. It is vital to get the dosage exactly right! Otherwise the plants will not grow as they should. Everything is well and truly blended together in the drum mixer.
8
Bagging time:
When it is ready, the potting soil or growing medium is filled into sacks or made into bales and then wrapped on pallets.
Transport:
The pallets are transported all over the world by truck, ship or train.
9

Growing medium:
Growing medium is delivered to horticultural companies, for example a greenhouse. Growers use it to grow young plants, such as vegetables, flowers, potted plants, shrubs and many other types.

Potting soil:
You can buy potting soil in flower shops, garden centres or DIY stores and use it at home for your plants.

Now thi

Palms from Central America. Perhaps you also have a plant like this at home?



This tiny plant will be a vegetable one day! The seedling needs a growing medium that can store up lots of water.

A greenhouse enables plants to grow under ideal conditions. The transparent roof increases the temperature of the air and protects the plants from rain and snow.

In the supermarket the herb pots stand all packed and ready.

Herbs are grown identically in small pots. They can be transported easily and safely in special carrier trays.

ings are really growing!

If all the different types of plants are to develop and grow really well they need a special type of soil. Greenhouse growers call this soil “growing medium”. When you buy soil in a flower shop or garden centre it is called “potting soil”. You will recognise this type of special soil if you look at a pot plant. This is the crumbly and humid mixture that the plant stands in. This soil ensures that the plant grows properly and stays healthy. It gives the plant everything that it needs; the roots take a firm hold in the soil. The soil stores the oxygen that the roots need. When the plant is watered the soil absorbs the water and retains it – and the roots take in as much water as they want. Each type of potting soil will usually contain a fertiliser that provides the plant with nutrients – and these as just as important as the vitamins in your food!

Lots of plants
Lots of potting soil!

Each type of plant is different. In order to grow healthily every plant needs a special growing medium or potting soil. That is why there are so many different types on the shelves. And in the greenhouses and nurseries more than a thousand different types of growing medium are used.

Compost

Unlike peat, compost is a product of decomposition that is made from organic waste. Organic residual material includes, for example, tree and shrub cuttings, leaves and fruit and vegetable waste. When sufficient air is available this waste material is broken down and decomposed by microorganisms. The final product is enriched with nutrients to produce compost, which is used as an additive in potting soils and growing media and as a soil conditioner in the gardening and agricultural sectors.

Recipe

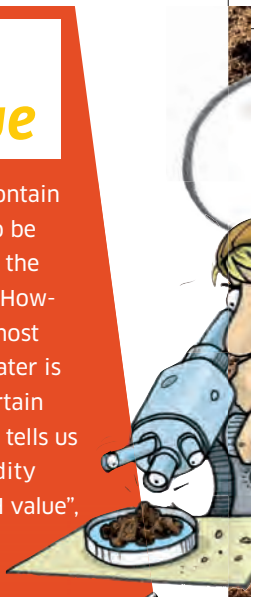
So that we don't get muddled up with all the different types of plants and their individual needs there is a dedicated recipe for each type of potting soil and for each growing medium – just like in a cookery book. This enables us to prepare the same potting soil and the same growing medium every time. Most potting soil and growing medium contains peat, which helps support the plants really well when they are growing. But other materials are used too – depending on what is in the recipe and what the plant needs. Growing medium for herbs, for example, often contains bio compost that is made from plant remains. Trees and shrubs growing in a tree nursery need a growing medium with wood fibres or bark as this gives the roots a firm hold. If a certain plant needs a lot of water we choose a growing medium with clay – as clay retains the water longer. And a suitable fertiliser is also added to the mix in order to promote healthy growth and development.

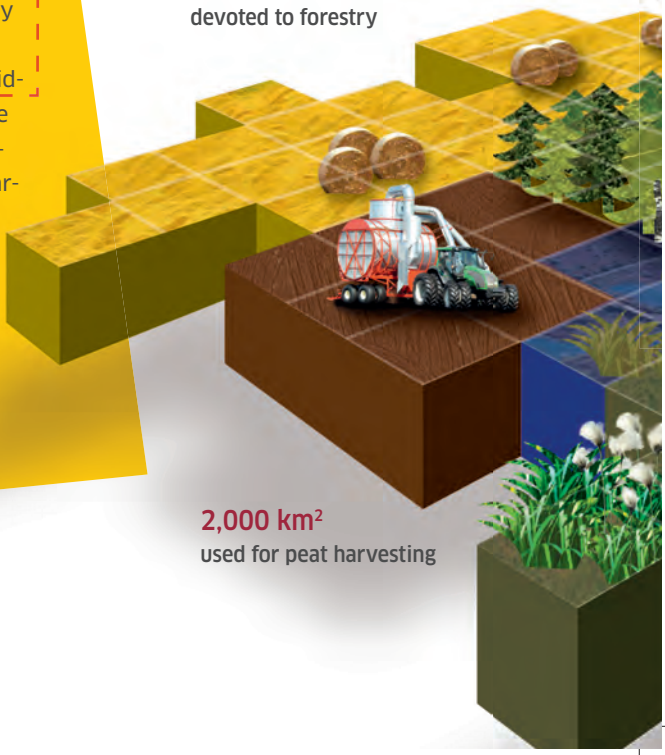
But why peat?

Huge quantities of growing medium are required for all the world's greenhouses and plant nurseries. Without peat we could never produce the amount of material needed. Peat is extremely versatile. There is fine peat and coarse peat, while some peat is formed from small lumps and some from fibres. Growers can rely on peat. The gardening and horticultural industry has not yet come up with a material that can replace peat. Other materials are not as versatile or are not available in sufficient quantities. And with some it is not possible to guarantee a uniformly high quality. What is more, peat has a low pH value, which means that it is acidic. This is a major advantage in that the pH value of the material can be increased by adding lime. The recipe for a particular type of potting soil will tell you what pH value a plant needs. And in producing the soil a specific amount of lime is added to it so that the pH value is just right for the plant.

Acidic pH value

When water does not contain much lime it is said to be "acidic". The water in the peat moors is acidic. However, for people and most animals it is better if water is not acidic but contains a certain amount of lime. The "acidity level" tells us how acidic the water is. This acidity level is defined in terms of the "pH value", which is measured on a scale of 1 to 14. The pH level of the peat moor and its peat is about 3.





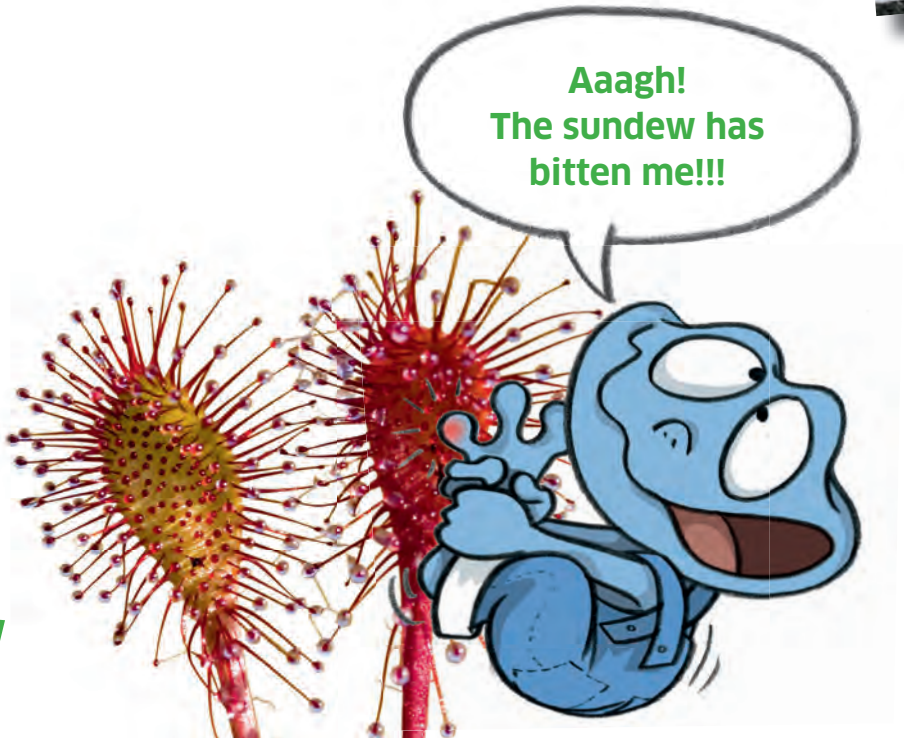
150,000 km²
devoted to forestry

2,000 km²
used for peat harvesting


Interesting to see what is all in there ... I will have to investigate further!
EUROPA
Leo Lightbulb knows something ...
Peat is mainly found in the northern hemisphere. It is estimated that there are about 400 million hectares of moorland in the world. Almost 90 percent of this moorland is in a natural state. Somewhere between 1 and 2 billion cubic metres of peat grow in these areas every year and about 100 million cubic metres of peat are harvested annually.
How we use the upland moors:
300,000 km²
is used for agriculture
120,000 km²
consists of bentgrass and woodland
3,500.000 km²
are intact upland moors
Source: Institute for Ecological Economy Research 186/08 Höper 2007, cited in: „Peat for the horticultural industry', IVG e. V., Ratingen 2010.

Preserving the peat moors!

When we harvest peat, we are taking a valuable raw material from nature and using it in a meaningful way. And when this operation is over, measures are taken to ensure that the moorland continues to survive. This is called “renaturation”. Nature is restored to its original state.



Peat moors like to be kept wet

When harvesting has concluded, a thick layer of black peat – at least half a metre thick – is left behind in the fields. This will provide the basis on which the natural moorland can grow back again all by itself. The experts know exactly how it is able to do this. But first it has to be really wet, for moorland plants love rainwater. And peat moss in particular needs lost of moisture. That is why this process is known as “re-wetting”.

The restoration team divides the harvested areas up into large basins where rainwater can collect. After a while the peat moss begins to grow again. Each year it grows between 5 and 25 cm in length and in doing so creates 1 mm of peat. If there is too much rain, the excess water simply runs off into the next basin – and when that too is full the overflow again runs into one next door. To make this system work, each basin is dug a bit deeper than its neighbour – like the steps of a staircase.

You can go and see for yourself how this works. Some of these re-wetted areas are open to the public. If you visit in springtime, you will see how beautiful the fluffy seedheads of the cotton grass are. And if you are lucky, you may also find a sundew – which is a carnivorous plant that grows on the moor.

New woods and fields

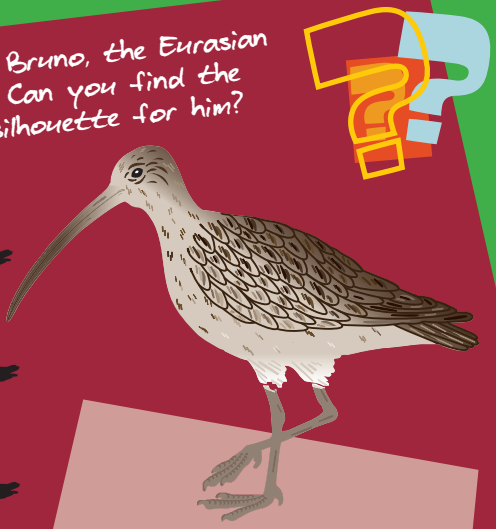
Some areas are reforested after the harvesting phase. This means that lots of young trees are planted there. But some parts are simply left to themselves so that nature can decide what grows. The plants and trees that begin to establish themselves soon afterwards are typical for host soil of this kind, with birch being one such example.

Some areas are also used for agricultural purposes, for example cereal growing. The Nature Conservation Agency determines what is to be done with former peat harvesting areas. The Agency staff understand the rules and know exactly what has to be done.

The Nature Conservation Agency

An Agency is a group of people who work on behalf of the State. The job of the Nature Conservation Agency is to ensure that nature conservation laws are obeyed. For people and companies must follow certain rules if, for example, they want to harvest peat or restore former peatfields to their natural state. The Nature Conservation Agency monitors and approves or rejects projects of this kind.

This is Bruno, the Eurasian curlew. Can you find the right silhouette for him?



The Eurasian curlew is smaller than a herring gull and larger than a crow: It measures 50 to 60 cm in length and it has a wingspan of 80 to 100 cm. It has a very long, narrow bill that curves downwards.

Answer: Bruno, the Eurasian curlew C

An experiment with peat moss

The most important plant on the moor is peat moss. Now find out for yourself why it is so special ...

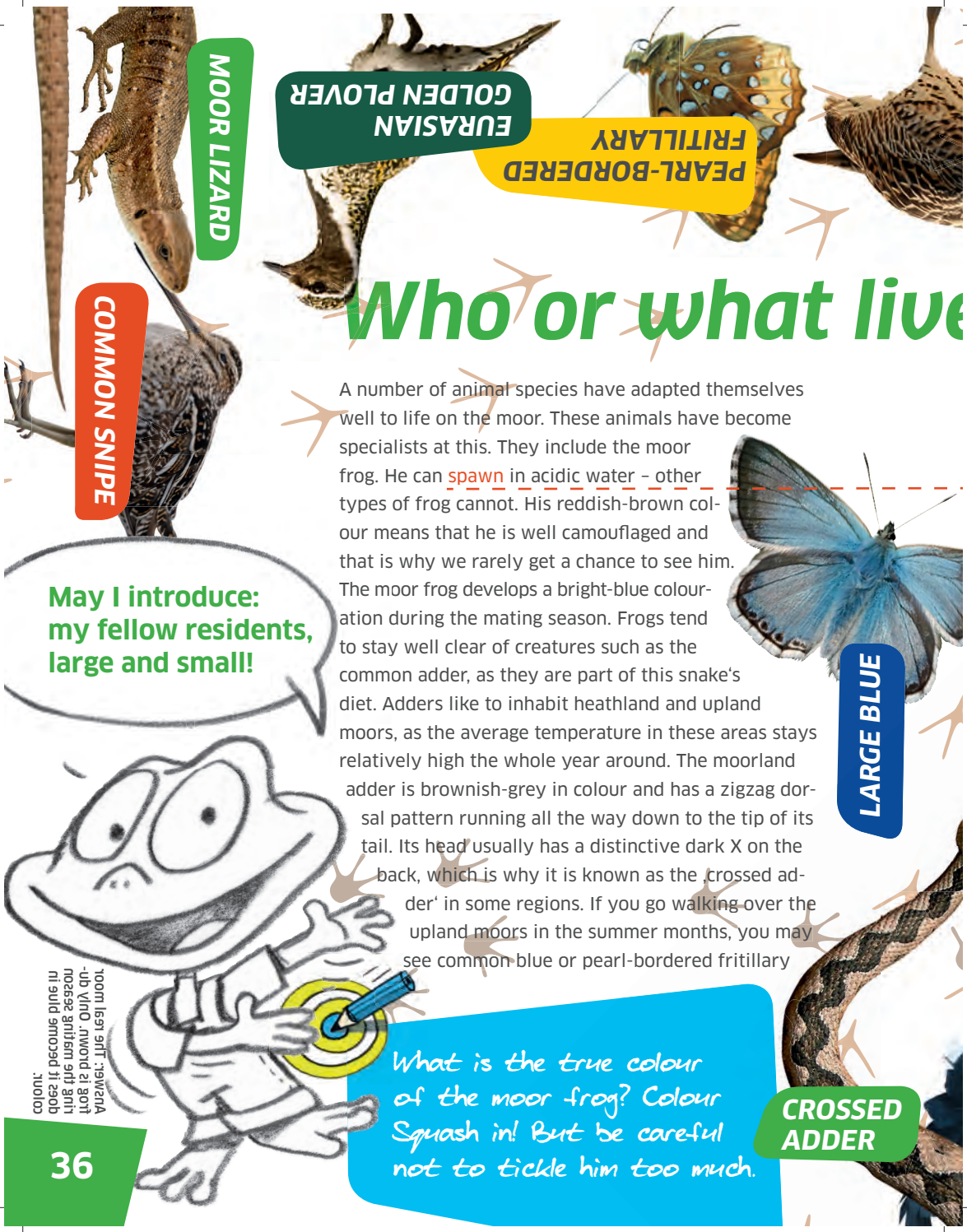
For this experiment you need a clump of wet moss (it does not have to be peat moss) and a set of kitchen scales.

1. Weigh a handful of wet moss. Weight: _____ grams
   Make a note of the results.
2. Stand by the scales and give the moss a good tight squeeze with your hands. Now weigh it again.
   Weight: _____ grams
3. What is the difference between the two weights?
   Weight: _____ grams

This represents the amount of water that your piece of moss can absorb and store up in its large cells.

Leo Lightbulb knows something ...

In the old days, the fluffy seedheads of cotton grass were used as a substitute for cotton wool as well as for filling cushions and even for making wicks for lamps.



Who or what live

A number of animal species have adapted themselves well to life on the moor. These animals have become specialists at this. They include the moor frog. He can spawn in acidic water – other types of frog cannot. His reddish-brown colour means that he is well camouflaged and that is why we rarely get a chance to see him. The moor frog develops a bright-blue colouration during the mating season. Frogs tend to stay well clear of creatures such as the common adder, as they are part of this snake's diet. Adders like to inhabit heathland and upland moors, as the average temperature in these areas stays relatively high the whole year around. The moorland adder is brownish-grey in colour and has a zigzag dorsal pattern running all the way down to the tip of its tail. Its head usually has a distinctive dark X on the back, which is why it is known as the ‚crossed adder' in some regions. If you go walking over the upland moors in the summer months, you may see common blue or pearl-bordered fritillary

May I introduce: my fellow residents, large and small!

What is the true colour of the moor frog? Colour Squash in! But be careful not to tickle him too much.

Answer: The real moor frog is brown. Only during the mating season does it become blue in colour.

ues on the moor

butterflies sucking the nectar from the flowers of the peatlands plants. Their caterpillars forage on cranberries and blueberries. The caterpillars of the Large Blue are reared by the peatlands ant. In return the ants feed on the sugar solution that the caterpillars excrete. The Moorland Hawker is a member of the dragonfly family. Its body can measure up to 80 mm in length and it can have a wingspan of up to 105 mm. Feathered visitors like the Eurasian curlew, the Common Redshank and the Common Snipe love the peatlands, especially because it provides them with a great field of vision. Their plumage is brownish in colour to help camouflage them from their enemies.

Spawning

When a frog lays lots of eggs in the water we say that the frog is “spawning”.

Answer: Yellow: curlew, red: moor frog
green: moor lizard, light green: crossed adder

Can you identify the tracks?
Write the correct owner in the arrow boxes.

Recipe

BUCKWHEAT PANCAKES

Recipe from the Emsland Moor Museum

Ingredients:
500 g buckwheat flour, 4 eggs, ¾ l milk (or buttermilk), salt, lard, bacon

Preparation:
Mix the buckwheat flour, eggs, milk and salt together to make a thick batter. Let the batter stand for at least five hours to swell. Heat the lard in a pan and fry the bacon in thin strips (you can also dice it into small cubes). Leave the bacon in the pan and add a ladle-full of batter. The buckwheat pancake is ready when both sides have been nicely browned. Buckwheat pancakes are traditionally eaten with cranberries or bilberries, applesauce and a slice of black bread with butter.

HEATHER

Heather is also known as “moorland herb”. It grows very slowly and can live for up to 40 years. Its pink and purple flowers are visited by countless insects. Heather prefers dry places.

SUNDEW

The sundew belongs to the family of carnivorous plants. Its leaves are round or oval and are covered with sticky glands, which it uses to entrap insects. This means that the sundew can live in nutrient-poor areas.

COTTON GRASS

The long stringy seedheads of the cotton grass plant look like wads of cotton. They form white or orange-coloured tufts, hence the name “cotton grass”.

PEAT MOSS

Peat moss is perfectly adapted to the special conditions found in peatlands areas. What makes it unusual is that it does not have any roots. The upper part of the moss continues to grow while the lower portion dies away as it does not get enough light or oxygen. However, the dead bits do not rot away but instead become “peatified”, in other words they turn into peat.

BUCKWHEAT

Buckwheat looks like a weed. When it blossoms it produces reddish-white leaflike bracts. The ovaries then develop into tiny nuts that can be shelled and eaten.

Tastes twice as good when you cook it yourself!

Have you ever prepared your own meal? Cooking is really fun. Probably best to ask your parents to help you the first time. Good luck and enjoy!

Recipe

Fill a large pan with water, add a little salt and bring the water to the boil. Then add the spaghetti and cook for about 8 to 10 minutes until the pasta is no longer hard but not too soft either. We call this “al dente”. Don't forget to give it a stir occasionally. When the spaghetti is ready pour it out into a sieve to drain. Heat up some olive oil in another pan and add some finely chopped onions. Cook these slowly over a low heat, we call this “letting them sweat”. Then add the tomatoes, the tomato paste and the crushed garlic cloves. Now all you have to do is season it all with salt and pepper and gently cook it for 5 minutes. Pour the sauce over the pasta, garnish with basil leaves and ... hey presto, it's ready!

Discover the hidden energy inside the pot!

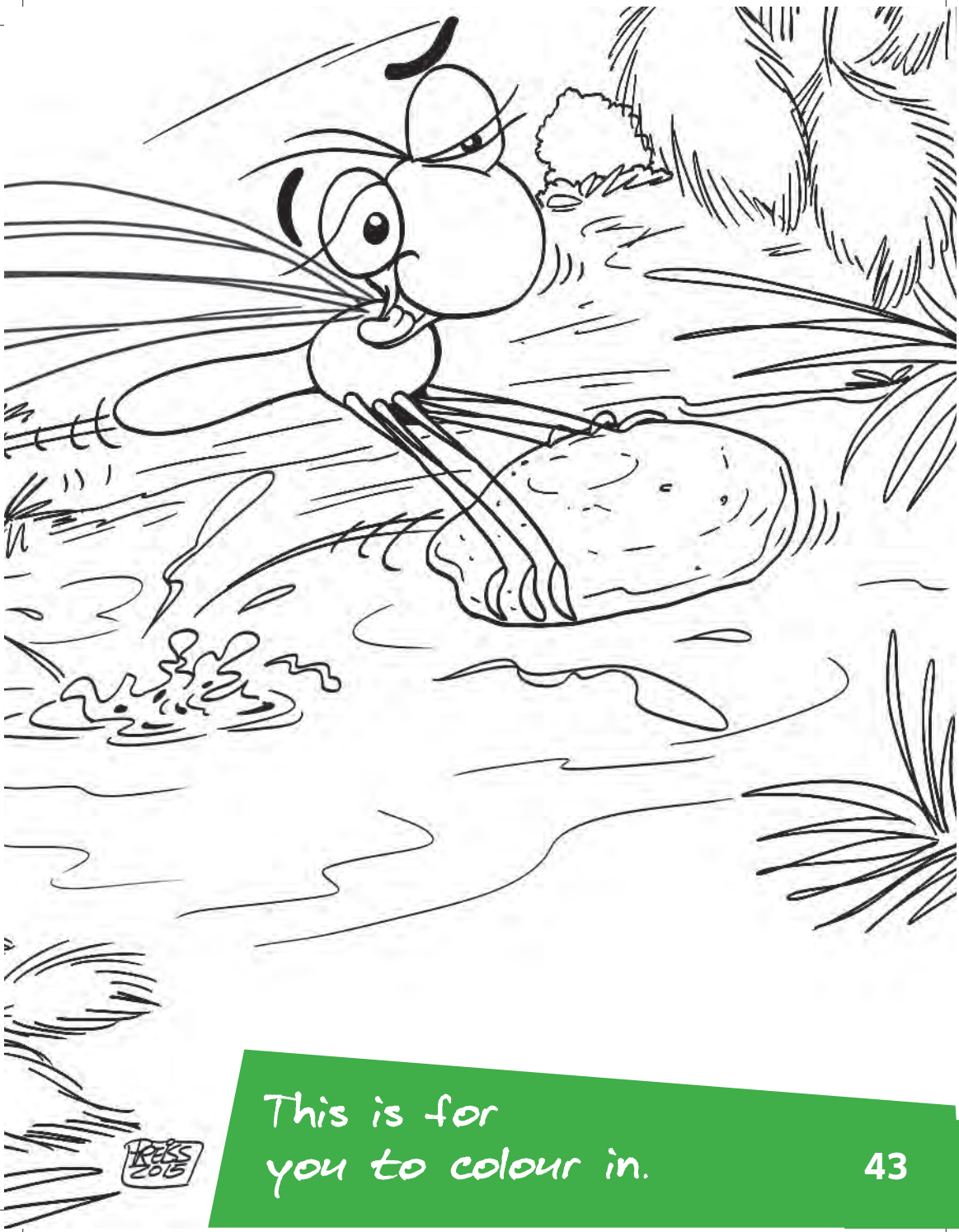
Want your dish to look appetising and taste delicious? Then you will need some fresh herbs! If you have a garden you can pick your own. If not, aromatic herbs can be bought in pots in every supermarket.

How do they get there? Basil, chives and parsley – they are all grown in huge quantities in greenhouses. Otherwise we could never satisfy the huge demand that exists for fresh herbs. And the soil in your pot, which the professionals call "growing medium", ensures that they grow healthily and are wonderfully aromatic when you buy them. This potting soil is composed to a special recipe that enables the seedlings to flourish under the best conditions. So the next time you visit a supermarket, when you see a pot of herbs you will know its secret!

Leo Lightbulb knows something ...

Hard to believe: in Germany people buy 27 million pots of basil every year.

Most moorland dragonflies are now on the endangered species list



This is for
you to colour in.

1913

we make it grow

Klasmann-Deilmann GmbH | Georg-Klasmann-Straße 2–10 | 49744 Geeste | Germany
+49 5937 310 | +49 5937 31279 | europe@klasmann-deilmann.com | www.klasmann-deilmann.com