



GUIDEBOOK

# THE LOOSTHAL TRAIL

## SPECIES IDENTIFICATION

- A** Chestnut
- B** Wild cherry
- C** Hornbeam
- D** Sessile oak
- E** Common ash
- F** Norway spruce
- G** Pussy willow
- H** Aspen
- I** Common alder
- J** Beech
- K** European larch
- L** Douglas pine
- M** Scots pine
- N** Large-leaved lime
- O** Sycamore maple
- P** Common whitebeam
- Q** Warty birch
- R** Silver fir

## DISCOVER THE NATURAL TREASURES OF THE PAYS DE LA PETITE PIERRE THANKS TO OUR INTERPRETATION TRAIL




Distance : 4 km    Elevation difference: 50 m  
 Time: 2 hrs        Difficulty: easy

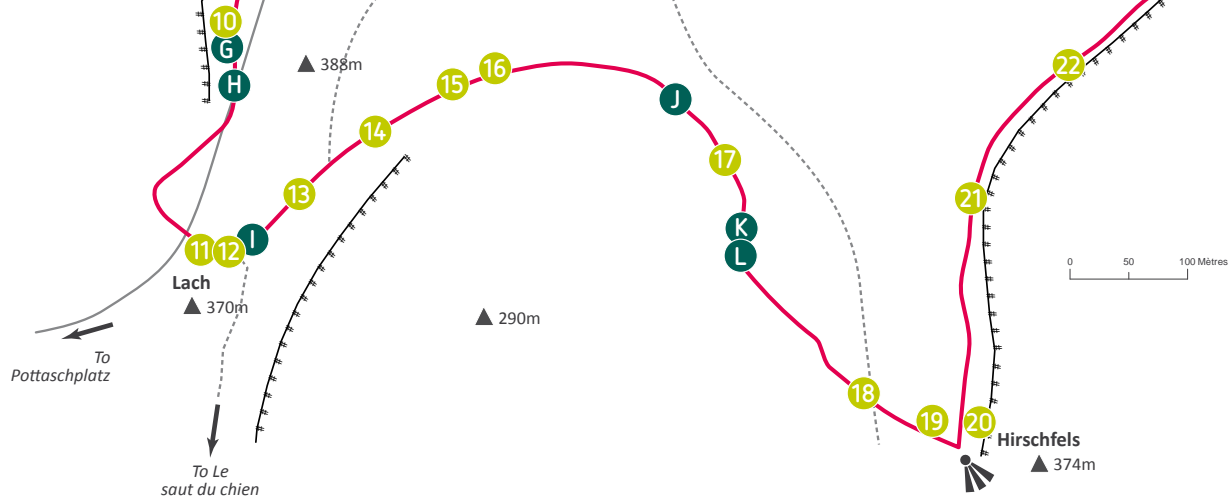
Waymarked 



**Loosthal trail**

**Points of interest**

-  Species identification
-  Information board
-  Viewpoint



## INFORMATION BOARDS

- |  |  |  |
|--|--|--|
| 1 Preamble: A fragile beauty               | 10 The Hazel Grouse  | 19 There's nothing more alive than a dead tree!                            |
| 2 Did you say pteridophyte?                | 11 Ponds   | 20 Natura 2000: management methods more conducive to biodiversity*         |
| 3 Once upon a time there was... sandstone  | 12 Alder marsh forest  | 21 Oh deer! Don't eat the trees ....                                       |
| 4 A natural forest?                        | 13 Maturity stage  | 22 Friendly rivals   |
| 5 The red beret                            | 14 Forests progressively fashioned by Man                        | 23 Life in the trees   |
| 6 There is nothing permanent...            | 15 Multifunctionality and developments in silvicultural practice | 24 Neutrophilous beech forests with woodruff                               |
| 7 Acidophilous beech forest with wood-rush | 16 The Black Prince  | 25 The case for ivy  |
| 8 Springs                                  | 17 Forest management methods                                     | 26 The lord of the cliffs: the European Eagle Owl and the Peregrine Falcon |
| 9 Amazing ants!                            | 18 Senescence*   |  |

# CONTENTS

- 1 Preamble: A fragile beauty → p.4
  - 2 Did you say pteridophyte? → p.28
  - 3 Once upon a time there was... sandstone → p.6
  - 4 A natural forest? → p.7
  - 5 The red beret: the sentry of the tree crowns\* → p.23
  - 6 There is nothing permanent except change... pioneer stage → p.8
  - 7 Acidophilous beech forest with wood-rush → p.29
  - 8 Springs → p.32
  - 9 Amazing ants! → p.24
  - 10 The Hazel Grouse → p.25
  - 11 Ponds → p.33
  - 12 Alder marsh forests → p.30
  - 13 Maturity stage → p.9
  - 14 Forests progressively fashioned by Man → p.14
  - 15 Multifunctionality and developments in silvicultural practice → p.16
  - 16 The Black Prince → p.20
  - 17 Forest management methods → p.16
  - 18 Senescence\* → p.9
  - 19 There's nothing more alive than a dead tree! → p.11
  - 20 Natura 2000: management methods more conducive to biodiversity\* → p.17
  - 21 Oh deer! Don't eat the trees .... → p.13
  - 22 Friendly rivals → p.18
  - 23 Life in the trees → p.10
  - 24 Neutrophilous beech forests with woodruff → p.29
  - 25 The case for ivy → p.34
  - 26 The lord of the cliffs: the European Eagle Owl and the Peregrine Falcon → p.26
- .....
- Glossary → p.35
- Games → p.36



Western Barbastelle



1

# THE SITE

## Preamble: A fragile beauty

Here you are at the entrance to the Northern Vosges Natura 2000 site and the La Petite-Pierre National Game and Wildlife Reserve. This is a rare and protected natural environment. Please respect it. To get the most out of your visit, try to soak up the forest atmosphere...

## What is a Natura 2000 site and what is it for?

### TO PRESERVE THE DIVERSITY OF NATURE

The Earth is populated by millions of living beings, but over the last two centuries the extinction of the species has accelerated. It no longer concerns only rare species of animals and plants, but also the most common. This is due to human activities, which modify and destroy natural environments.

### A EUROPEAN ECOLOGICAL NETWORK...

The flight of migratory birds reminds us that nature and its preservation know no borders. This is why Europe made a strong commitment to protect biological diversity by founding the Natura 2000 network. Each Member State is required to designate in its territory natural sites where preservation measures will be taken.

These include:

- spaces essential to the reproduction, feeding, wintering or migration of rare or threatened birds in Europe. These are named Special Protection Areas (SPA\*) in application of the European Birds Directive of 1979 (79/409/EEC);
- spaces dedicated to the conservation of natural habitats, plants or animal species of Community interest (other than birds). These are known as Special Areas of Conservation (SAC\*) in application of the European Habitats Directive (wild fauna and flora) of 1992 (92/43/EEC).

### CONCRETE ACTION

On the site you are about to discover, particular measures are in place to manage the forest, the watercourses and the grasslands, and numerous scientific studies (studies of deadwood, insects, birds ...) are conducted here.



It is the Parc Naturel Regional des Vosges du Nord that coordinates all these different measures and projects.

### KEY FIGURES ON THE NATURA PROGRAMME

#### In Europe

27,000 Natura 2000 sites  
 96 million hectares  
 18% of the European Union's territory covered by Natura 2000 sites\*

#### In France

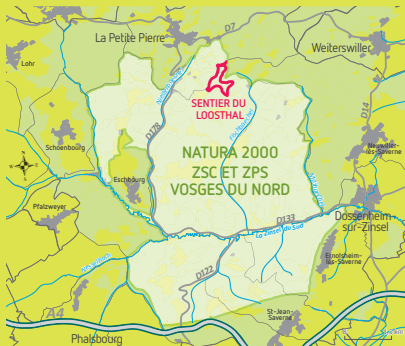
1,753 Natura 2000 sites  
 12.55% of French territory, namely  
 6.9 million hectares  
 4,500 indigenous species identified  
 9,000 communes concerned, with a population of 15 million

Source: French Ministry of Ecology, Sustainable Development, Transport and Housing, December 2004

# The Northern Vosges Natura 2000 site

## IDENTITY CARD

|                 |   |
|-----------------|---|
| Name:           | Vosges du Nord (Northern Vosges)  |
| Surface area:   | 4,996 ha  |
| Type:           | Special Protection Area (SPA*) / Birds Directive and Special Areas of Conservation (SAC*) / Habitats Directive  |
| Geology:        | "Grès à Voltzia" sandstone (West) and "Grès Vosgien" sandstone (East)   |
| Altitude:       | 185 m (Zinsel du sud) à 417 m (Hunebourg)   |
| Description:    | This Natura 2000 site mainly consists of forest (95% of its surface area); the open spaces are concentrated in the southern Zinsel valley, which runs from east to west across the site. The general relief is that of a plateau dissected by steep-sided valleys. The streams, most of them transformed to some extent by human intervention (ponds, tracks...) are characterised by their oligotrophic nature*. The Northern Vosges Natura 2000 site does not contain any villages, just a few scattered homes. |
| Land / forests: | State-owned forest: 66.8%<br>Communal forest: 28.8%<br>Private forest: 4.4%   |



## The National Game and Wildlife Reserve

Created in 1952, the La Petite Pierre National Game and Wildlife Reserve (RNCFS) is situated in the heart of the Northern Vosges Natura 2000 site.

Initially intended to develop the deer population for restocking purposes, this site has become an international reference territory for the study of wild plain ungulates: red deer, roe deer and wild boar.

Ongoing research programmes concern the ecology of these species, and in particular their interactions with the vegetation. The transfer of the knowledge acquired to tools and methods for managing these game populations has led to the creation of a renowned hunting school. The RNCFS is jointly managed by the ONCFS, the national hunting and wildlife commission, and the ONF, the national forest commission.



3

## Once upon a time there was... sandstone

The subsoil of the Northern Vosges consists mainly of sandstone. This rock, made up of sand, was formed in the era when the dinosaurs roamed the earth, 250 million years ago.

At that time innumerable rivers hurtled down the old Hercynian massif, which was situated on what is now the Paris Basin, and flowed into a vast plain bordering on the Mare Germanicum, or German Ocean, which covered a large part of continental Europe. The East of France resembled a giant delta through which the particles eroded from the mountains were carried. These sediments were successively deposited in the form of sandbanks, and gradually the grains of sand were bound together to form a solid mineral: sandstone.

At La Petite Pierre, the sandstone can be up to 330 m thick. From top to bottom, in other words from the most recent times to the longest ago, it is possible to see different strata, containing differing amounts of clay and sand.

Sandstone degrades in the same way as it is formed: grain by grain. It is the water that runs through it, whether rainwater or rivers, that has chiselled the rock from time immemorial to form



*In the blocks of rock scattered below the sandstone cliffs, you may be lucky enough to spot the furtive smooth snake. A harmless snake that likes to lie in the sun.*

the steep-sided valleys, the rocky outcrops and depressions of the Northern Vosges.

One of the layers of sandstone that you will be able to observe in several places in the park contains numerous pebbles; this is called principal conglomerate or Sainte-Odile pudding stone.

Sandstone is not a very “generous” substrate: it is composed mainly of silica and contains little calcium, potassium, magnesium, etc. Sandstone soils are nutrient-poor, rather acid and not very suitable for agriculture. On the other hand beeches, sessile oaks and Scots pines have adapted well to them and have been growing here for thousands of years. In the Northern Vosges, even in the Middle Ages, a period when large expanses of forest were cleared, the forest has always dominated the landscape.



*The rowan tree likes the acidic soils of the Northern Vosges, and can often be found alongside the rocks or clinging onto the cliff face*

### Purple rivers!

The characteristic pink colour of Vosgian sandstone is due to a high concentration of iron oxides in the rock. The rainwater that runs over and infiltrates the sandstone becomes charged with acidity and mobilises the iron ... The sandstone gradually loses its colour whilst the streams and rivers take on a rust colour. The name “Rothbach” is a direct reference to the reddish colour of the water in this river!

# THE FOREST AND HOW IT WORKS



4

## A natural forest?

The term “primeval forest” or “virgin forest” refers to an original forest, unaffected by human intervention. In the Northern Vosges, there are no such wooded areas, and there haven’t been for a long time.

And yet the primeval forest covered more than 90% of France after the last glacial periods (10,000 years ago). It is thought that these vast swathes of woodland were still partially preserved until Roman times. Today, the primeval forest is limited to a few strips, mainly in Romania, Poland and the Ukraine.

In France, there are some forests, relatively untouched by human activities, that resemble primeval forests. These are “highly natural” forests, which will tend to feature:

- presence of very old trees (in general monumental trees in the Northern Vosges);
- phases of natural decline of the oldest and most fragile trees;
- large quantities of deadwood, both standing and on the ground (between 50 and 130 cubic metres/hectare);
- diversity in the age classes and local species;
- a wealth of fauna and flora, and very complex food chains.



*Pied Flycatcher*: it lives in old deciduous forests and nests in the cavities in the trees ... this little passerine is not easy to spot!



*Lobaria pulmonaria*: a lichen, very rare in the Northern Vosges, it survives only in very old forests which have never been totally cleared.

### An incredible diversity

Did you know that 25% of the forest biodiversity\* is linked to old (and therefore highly natural) forests? At Białowieża, in Poland, the so-called “primeval” forest contains 8,500 insect species. In France, the forest of Fontainebleau (the oldest complete forest nature reserve, classified since

the end of the 19th century) is home to:  
– 1,500 species of plants, 440 lichens, 480 mosses, 1,700 fungi, 200 birds, 54 mammals, 12 amphibians, 11 reptiles, 98 molluscs and thousands of insects, including 3,500 beetles and 2,010 Lepidoptera.





# 6

## There is nothing permanent except change... Heraclitus (500 BC)

Forests are complex ecosystems that are renewed by regular natural disturbances (frost, snow, wind storms, insects or fires). At our latitudes, in a system undisturbed by man, the gaps created by one or more falling trees are gradually filled up by a new generation of pioneer species of plants: and so the forest's healing process begins. This is called forest regeneration. Let's look now at the different stages of this phenomenon in a natural forest, with no forestry activities and an acidic soil...



.....*Birch trees grow fast in the light and soon form a dense clump in the midst of the beech trees*



*Pussy willow*

### PIIONEER STAGE:

An old beech tree has just fallen, under the weight of the centuries. An old injury to its trunk has allowed wood-decaying fungi to take up residence. These are fungi that eat the lignin - or fibres - in the wood, and they have made the bole\* of the great tree fragile. All it took was a winter wind flurry to finish the job: the venerable tree broke five metres above the ground... As it fell the enormous

crown\* dragged several other neighbouring trees with it, even though they were much younger. On the ground, they will decompose slowly, providing food for numerous insects and saproxylophagous\* fungi and enriching the forest floor. The light is no longer blocked by the dense foliage of the colossal tree and now reaches the ground: seeds, carried here by the wind or birds, will

be able to germinate... Warty birches, aspens, sycamore maples, Scots pines or pussy willows will develop in small patches; there will also be a few oaks. What they need now is to avoid coming into contact with roe and other deer. They will ruthlessly graze on the young plants as they slowly develop. Fortunately, the young trees are numerous and the brambles that have also developed in the light, will offer some protection to the species most favoured by wild animals (the oaks, for example). After about fifteen years, many birches and a few other trees will have managed to grow tall enough to be no longer bothered by the herbivorous animals. The clearing has disappeared: it has given way to dense undergrowth ten to fifteen metres tall.

Within the stand, competition between the young trees is harsh... They all need to make a place for themselves in the sun as soon as possible, other wise they find themselves in the shade of a more dynamic tree and deprived of photosynthesis\*. Many young trees will die this way, to enrich the humus\* over the coming decades.



With its hairy-edged leaves and smooth, grey bark, the beech is the most vigorous tree in our forests



A sessile oak can survive for a thousand years, and it will shelter many an insect and bird among its branches



The male stag beetle has enormous mandibles that look like a stag's horns... that's why it's sometimes called "cerf-volant" in French (the kite, more literally the "flying deer"). The less impressive female looks for deadwood in contact with the ground to lay her eggs.



13

### MATURITY STAGE:

The beech demands less light than the birch, pine or oak; it develops slowly, but surely in the understorey. Almost a hundred years have gone by: the pioneer species like the birch or the trembling aspen gradually disappear from the stand. One after the other, they die off to leave more room for the Scots pines, which now dominate. They are accompanied by a few vigorous oaks. The beeches are now catching up and their broad crowns\* are beginning to compete with those of the pines and oaks. Particularly adapted to the relatively poor soils and the climate of the Northern Vosges (high rainfall), the beech is a very dynamic tree and here can reach heights of over forty metres. A few decades more and the beech will be all-powerful: its wide branches will hamper the other species, limiting their access to the light.

It is now a hundred years since the old beech tree fell. The forest is mature. The undergrowth is poor and constantly immersed in semi-darkness during the growing period. Over 80% of the trees are beeches; a few oaks are struggling, but managing to survive on the edge of the plateau, in contact with the bedrock, in the spots where the soil is shallowest.

### SENESCENCE\*:

The oldest beeches are now three hundred years old; their crowns\* are beginning to thin and many of the trees have fallen (this is known as "wind-fall") over the course of the last few decades. Most of the descendants of the large beech tree are now hollow, with loose bark, and they have lost several large branches. The biological diversity is

phenomenal: woodpeckers, owls, bats, dormice, pine martens, and beetles everywhere... There is an explosion of life, whereas the beeches are gradually running out of steam. The most vigorous will hold out for another fifty years, maybe a little longer... or a little less! But on the edge of the plateau, the oak is still there. It is now huge and still appears to be in fine form... It is the only survivor of its species. Alone but solid, it will remain there for several more centuries, if it is spared by wind storms and fires. And when the neighbouring beech trees have all fallen, it will majestically overhang new clearings, which it will be able to inundate with its thousands of acorns. And so, a few young oaks will be able to keep going among the innumerable beech and birch seedlings which are already popping up here and there... and so it all begins again!

18





23

## Life in the trees

A single tree can host a multitude of living organisms...

### IN THE CAVITIES

As soon as the fine days begin in February, drum rolls resonate through the forests of the Northern Vosges. Methodical explorers of tree trunks and foliage, woodpeckers, coloured-feathered forest birds, chuckle and chase each other and beat the time!

The nine species of woodpeckers that live in France are specialists when it comes to tree climbing. Using their beaks, they dig nest holes in the boles\* or in large branches, as sheltered places to lay and hatch their eggs.

By preference, woodpeckers attack weakened trees, and the smaller species will even dig out deadwood. In the Northern Vosges, we can see six species of woodpeckers: from the smallest to the largest, the Lesser Spotted Woodpecker, the Middle Spotted Woodpecker, the Great Spotted Woodpecker, the Grey-headed Woodpecker, the Green Woodpecker and the Black Woodpecker. The Grey-headed Woodpecker and the Green Woodpecker usually dig out soft woods (willow, ash...) or worm-eaten wood; only the Black Woodpecker chooses healthy trees. Certain nest



Groups of female *Bechstein's bats* roost together in old woodpecker holes to give birth to their young. In a cavity in an oak tree in the Northern Vosges, specialists counted up to 70 individuals.



Isn't it cute, this little animal with its big eyes and pretty moustache? In the daytime the *hazel dormouse* hides in a cosy nest of moss that it has built in a cavity in a tree. At night, it plays the acrobat to go and fetch seeds and fruit from the branches.

holes are occupied for several years; some are never used for nesting. Whatever the case, woodpeckers dig numerous cavities in the course of their lives, which they always end up abandoning sooner or later.

These microhabitats\* then make happy homes for many other species of animals, which use them in their turn for their reproductive cycle, to hibernate or simply as protection against the weather and predators. The list is a long one: wasps, hornets, Bombyx moths, hoverflies,

Pied Flycatchers, tits, owls, Hoopoes, Nuthatches, Stock Doves, Wrynecks, bats (about ten different species), pine martens, hazel dormice, dormice, garden dormice... All these species depend on the holes dug out by woodpeckers. Depending on the species that dug the cavity, it will vary in size and its opening will be of a specific diameter. Each woodpecker therefore favours a specific set of species according to the size of its nest hole.



The rare *Tengmalm's Owl* lays its eggs in nest holes abandoned by *Black Woodpeckers*. The forestry workers preserve beech trees with holes in order to protect this species, and many others.

### A TRIANGLE TO PRESERVE TREES WITH A HIGH ECOLOGICAL VALUE-

Dead or ageing trees provide places to live for a multitude of animals and fungi. To maintain this wealth of biological diversity, foresters identify and mark the trees that are most interesting ecologically so as to ensure they are not felled when tracts of the forest are cut down for wood. The distinctive sign used to identify these so-called “bio” trees is a triangle painted or carved into the bark. .



19

### THERE'S NOTHING MORE ALIVE THAN A DEAD TREE!

In a “natural” forest (that is to say one that has been developing freely for a long time), we find large quantities of deadwood (over 20% of the total volume of wood). This constitutes food and a habitat for numerous species of animals, plants and fungi. In Europe, we consider that almost a quarter of forest species depend directly or indirectly on deadwood and declining trees (i.e. trees that are dying).

These species are known as saproxylic (from the Greek “sapos” meaning “decay” and “xylos” meaning “wood”), and at the present time, over 40% of them are threatened in Europe. They play an essential role, as, by feeding on the different components of wood, some of these species help to recycle organic material and produce a fertile soil conducive to tree growth. To preserve forest diversity and maintain good, fertile soils, it is therefore necessary to keep large quantities of deadwood and the greatest diversity possible.

For these reasons, in a forest management approach that seeks to achieve a balance between economic needs and the necessity of preserving biodiversity\*, it is recommended that:

- Islands of old wood be preserved, where the trees live and die at their own pace
- A maximum of deadwood be maintained on the ground and standing

Since the Lothar windstorm in 1999, the Vosgian forest has seen its average volume of deadwood increase. It is now between 20 and 30 m<sup>3</sup> per hectare (bearing in mind that in a natural forest, it can exceed 150 m<sup>3</sup> per hectare!).



Beech trees with cavities provide homes for pine martens and Tawny Owls, while the dead wood feeds numerous beetles  
(from top to bottom: *Anaglyptus mysticus*, *Diaperis boleti* and *Ampedus cinnabarinus*)



21

## Oh deer! Don't eat the trees...

It's not always easy to conserve diversified forests when the densities of herbivores are so high locally. Deer consume large quantities of buds and small branches, preventing plants and young trees from growing. A look back at the growth of the deer population in the Vosges...

In the 19th century in the Vosges, there were just 300 individuals left, in the Donon area. This small population would be preserved, and it would enable deer to re-colonise the south of the massif and then the Northern Vosges. The increase in the area covered by forest due to agricultural abandonment and the absence of natural predators facilitated their return. An examination of hunting tallies in the Vosges mountains shows that between 1973 and 2011, the number of deer bagged doubled. This situation poses a problem because on our weak, sandstone soils, high densities of deer reduce plant diversity... the forest environment is therefore gradually being depleted. This phenomenon is also amplified by the considerable pressure exerted on the flora by wild

*The deer feasts on the buds of young trees; it limits their growth by regularly cutting them back. Maple, oak, ash are the species it likes best.*



boar which are reproducing in large numbers. Measures are currently being discussed with hunting organisations in order to find an optimum model for controlling large fauna.

# FOREST MANAGEMENT



## 14 Forests progressively fashioned by Man...

The forests of the Northern Vosges underwent great transformations from the Middle Ages onwards. The first great forest clearances accompanied the emergence of the feudal seigneuries and the construction of the first castles, as well as the rise of the monasteries. Clearing forests was considered to be working for "the real faith": everyone had to have their daily bread, the lords, the poor and the serfs!

In a region where the soil was not very fertile, it was thanks to the forest that the populations could establish themselves and subsist: at this time, virtually all the economic activities were connected with the forest. The demographic boom, particularly in the 16th and 18th centuries, led to an increase in building as well as the consumption of more and more wood for heating.

### A VITAL NEED FOR WOOD

For building structures as well as for the interior joinery in their houses, local inhabitants had rights to gather wood in the forest for construction purposes ("bois de marnage" in French, "Bauholtz" in German). Until the 17th century, plentiful supplies of wood did not encourage people to use it sparingly, and the forests were exploited intensely. The preferred species for building was undeniably oak.

In the Middle Ages, local inhabitants had access to the forest and were free to pick up wood for fuel ("affouage" or "Brennholtz"), for cooking their food and heating their homes.

From the 17th century, the supply of firewood was controlled and a seigniorial officer, known as the "garde-marteau" (keeper of the hammer), carried out the "martelage" (marking) of the trees that were to be felled. All the species were used, but there was a marked preference for beechwood.

### A LANDSCAPE SHAPED BY AGRICULTURE

Until the French Revolution, demographic growth was largely detrimental to the forests, with the extension of "finages"\* (the land farmed around a rural community) and the development of animal husbandry. Peasants looking for new land would cut down the forest. Very often, such forest clearance was temporary. In fact, the sandy nature of the soil did not allow for durable, profitable farming of the land.

To compensate for the low yield of the agricultural land, the peasants devoted a lot of their time to animal husbandry. This essentially took place in the forest: the peasants had common grazing rights.



*The fields gained by cutting down the forest would be cultivated for two or three years, then left fallow for long periods, ten to thirty years, during which the pioneer species such as the birch or here the **trembling aspen** would regain ground.*

*Nicolas de Ferrière - 1603*

Unfortunately, herbivorous animals do not content themselves with eating the herbaceous plants in the undergrowth: they also graze on young trees... and so the forest is damaged and depleted!

## THE IMPACT OF INDUSTRIAL ACTIVITIES ON THE FOREST.....

### GLASSMAKING

The Northern Vosges contain all the raw materials needed to make glass: sand, potash (contained in the ferns) to lower the melting point, and wood to heat the kilns. It was to meet the needs of the glassmaking industry that huge areas were cleared from the 16th century onwards. Originally a nomadic activity, permanent glassworks were set up and obtained forestry concessions from the local lords.

### FORGES

Forges appeared between the 16th and 17th century in Zinswiller, Mouterhouse and Jaegerthal. The presence of iron ore, the possibility of using the water in the rivers for power and the abundance of wood were the reasons that metalworking developed. Like glassmaking, this industry consumed huge quantities of wood, in the form of charcoal. In 1789, the different De Dietrich establishments needed 20,000 cords\* of wood a year to operate; half the company's employees at the time worked in the forest as woodcutters and charcoal burners or were occupied transporting the wood and charcoal.



*The Scots pine was the species favoured by foresters in the 17th century, to meet the demands of industry.*

### DUTCH SHIPOWNERS

In the 17th and 18th centuries, Europe's navies were in their heyday. Dutch shipowners signed contracts with the Duke of Lorraine and the Alsatian lords for supplies of timber from the forest. Thousands of oaks and pines were felled

and floated to the arsenals, where they were re-worked by carpenters ready to build ship's hulls and masts. This extremely lucrative trade continued until the Revolution.



... until today



17

## FOREST MANAGEMENT METHODS... A THOUSAND AND ONE WAYS OF PRODUCING AND GATHERING WOOD!

Silvicultural traditions vary from region to region, from period to period and according to the use made of the wood. These are the main types of management that you may encounter

...

**Sucker stands (or coppice forests):** these are obtained by regularly cutting the trunks of young trees off at ground level, thereby producing clumps of coppice shoots, bouquets of shoots sprouting from the same stump. Oak, sweet chestnut and hornbeam lend themselves well to this type of treatment.

**Coppice under timber tree\*:** this consists of two stands. A coppice at the lower level covering most of the surface, and a high or seedling forest\* at the higher level made up of trees of varying ages whose crowns\* are irregularly arranged above the sucker stand.

**Irregular forest\*:** the forest consists of trees of all ages and various species on the same plot. The trees are felled very progressively



The *dormouse* is an attractive resident in the regular high forests of beech trees in the Northern Vosges

15



## MULTIFUNCTIONALITY AND DEVELOPMENTS IN SILVICULTURAL PRACTICE

Most of the forest in the Northern Vosges site is publicly owned (70%) and managed by the ONF, the national forestry commission. For over a century, the dominant management method has been the regular high forest\*. Initially this was to produce wood and ensure the plots remained wooded.

Today, public forests have other aims, for example to receive the public, to protect plant and animal species, to preserve the soil and water resources, as well as to maintain forest landscapes. These days we talk of multifunctional forest management!



*The common whitebeam does not have much economic value, but it is still an interesting species as it shelters and feeds many animals.*

In Alsace, silvicultural changes made in all the public forests by the ONF, the national forestry commission, have allowed a permanent forest atmosphere to be maintained and a better adaptation of the stands to local conditions. The main principles are the following:

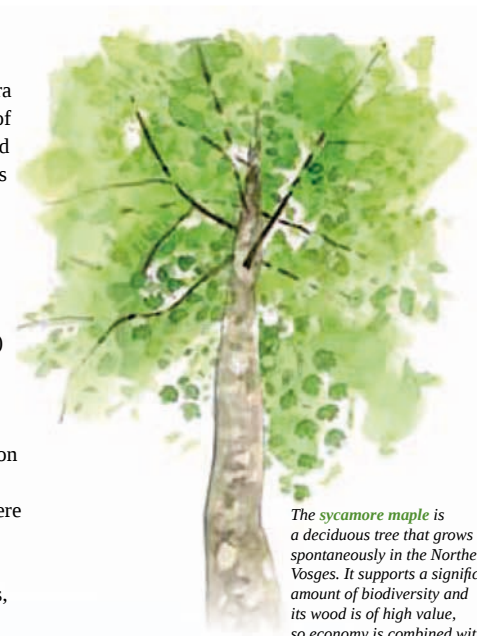
- to change practices gradually so as not to unbalance the stands;
- to give preference to natural regeneration and extend harvest times (for example, cut the wood in a plot in six passages in 40 years instead of three in 15 years);
- to maintain large-diameter trees as long as possible (reserves) for economic, ecological or landscape purposes;
- to intensify thinning in the young stands in order to encourage mixing of species and make the trees more vigorous.



## NATURA 2000 : TOWARDS MANAGEMENT METHODS MORE CONDUCTIVE TO BIODIVERSITY\*

Certain specific protection or management methods are implemented as part of the Natura 2000 programme to increase the naturalness of the forests (that is to say their wild nature) and to improve the living conditions of the species of Community interest. The main measures taken are:

- to plant only local species (no more spruces or Douglas fir...);
- to keep a few disseminated islands of old growth (known as “islands of senescence\*”) which will be kept in reserve until they die;
- to aim to develop large beech and oak trees in the plots;
- to reduce the densities of deer and roe deer on the site and in the entire massif (due to the difficulty in regenerating the forest when there are too many herbivorous animals);
- to designate and preserve up to four trees favourable to the fauna (presence of cavities, loose bark...) per hectare (in our forestry jargon we call these “bio” trees) and to maintain most of the dead trees that are far away from forest paths.



*The sycamore maple is a deciduous tree that grows spontaneously in the Northern Vosges. It supports a significant amount of biodiversity and its wood is of high value, so economy is combined with ecology. Certain ravine maple forests are now very rare environments.*

# THE FAUNA



## 22 Friendly rivals

Long hunted down, most of the large, formerly common predators such as the wolf or lynx disappeared from many French regions between the 18th and 20th centuries. In the Northern Vosges, two cats have, however, managed to survive in our vast forests. What are they?



The territory of an adult male lynx covers over 20,000 ha.



Larger and heftier than the domestic cat (males weigh 5 kg on average and females 3.5 kg), the **wildcat** (or forest cat) can be distinguished by its thick, ringed tail, which always ends with a black tip, and by the presence of a black dorsal band.

## THE EUROPEAN WILDCAT, A TIMID CREATURE

The European wildcat, or forest cat, lives in the great forests. A solitary creature, it is active mainly at night. With a great deal of luck, you might be able to observe one in the daytime, during the mating season\* (from January to mid-March) or in the spring (when it comes out to sun itself on the edge of the forest). It feeds mainly on voles and field mice.

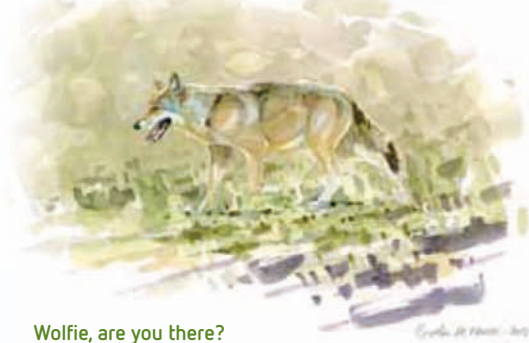
The wildcat is present throughout the Northern Vosges massif. The La Petite Pierre sector is home to wildcats in densities, never matched elsewhere, of 0.46 individuals per sq. km (twelve adults in an area of 26 sq. km). Here the forests are particularly favourable to the wildcat! For example, the very large number of trees that fell down after the Lothar windstorm in 1999 provided it with shelters aplenty. It also hides in the rocks, in piles of branches, hollow trees and the bramble bushes. Locally, a study has shown that the average size of the cat's home range is 171 ha for females and 763 ha for males.

## THE EURASIAN LYNX: A WORRYING SITUATION

The Lynx cuts a fine figure, with its long ruff and tufts of hair 2 to 3 cm long that extend its ears! Of a size comparable to that of a roe deer, the lynx is France's biggest cat, weighing in at between 17 and 30 kg for a fully grown adult. The lynx feeds mainly on wild ungulates (roe deer essentially), which it hunts by ambush and by stalking. Towards the end of May, after a gestation period of ten weeks, the female gives birth to her young (a maximum of 4) in a den sheltered from the weather; they will stay with their mother until they are ten months old.

In France, the lynx is mainly confined to the Vosges, Jura and Alps – it was re-introduced into the Upper Vosges in 1983 and has been roaming the Northern Vosges since 1989. However, sightings of the animal have become rarer and rarer since 2007, and it is feared it will disappear if no measures are taken. The situation is similar in the Palatinate, where the Germans are planning to release more animals to reinforce the population. In the Middle Ages, people held all sorts of absurd beliefs about the lynx: for instance, it was believed that its eyes shone so bright that they could light up the road; if by chance you do spot one, see it rather as a good omen!

*The re-appearance of the wolf in 2014 in the south of the Department of Moselle and reported sightings in the north of the Rhineland-Palatinate should facilitate its natural return to the Northern Vosges.*



Wolfie, are you there?

The presence of the wolf is frequently mentioned in documents in the archives in Alsace and Lorraine. The last native wolves in Alsace were killed at Durlinsdorf (Haut-Rhin) in 1887 and at Bonne-Fontaine, in Alsace Bossue, in February 1893.

For the Northern Vosges, historian Philippe Jehin quotes several administrative documents and seigniorial accounts that prove the presence of the predator by bonuses paid for killing wolves. 262 wolves were killed this way in Saverne between 1521 and 1592. In the 1760s, the gamekeeper of Breitschloss, near La Petite Pierre, killed 19 wolf cubs. As a result of all these killings, the population fell dramatically in the second half of the 18th century. And yet, in spring 1880, Jean-Jacques Kieffer came face to face with a wolf in the woods at Bitche.



## 16 The Black Prince

An ebony shadow weaves its way through the beech forest and disappears on the ground. A powerful horn blast rings out, followed by a salvo of “croo-croo-croos”... No doubt about it: the Black Woodpecker, the largest in Europe is not far away!

### SO BIG AND YET SO DIFFICULT TO CATCH SIGHT OF!

How does it manage to be so elusive, when it is 45 cm tall with a wingspan of 65 cm and a red beret on its head? Well, first of all, its range is huge: 250 to 300 ha on average in the Northern Vosges; then, its hearing and sight are excellent... In other words, if you hope to catch one out, you'd best approach on tiptoe! To see it under good conditions, you will need to find its nest in the spring and watch out from a good distance, staying well hidden... and then wait and wait until it deigns to come out!

**In 2012, 18 Black Woodpecker territories were identified in the Natura 2000 site where you are now... So eyes and ears wide open!**



*Black Woodpecker in its nest: The Black Woodpecker lays 4 to 6 eggs, which it incubates for 12 to 14 days. The young are ready to fledge at 4 weeks.*

### A BIG TOM THUMB

If seeing a Black Woodpecker is a privilege not given to everyone, it is still relatively easy to see where it has been by carefully observing the undergrowth. The giant does not stint on the clues: it leaves behind it large holes in snags (broken trees), exploded stumps, worm-ridden logs ripped open and many chips of wood up to

ten centimetres long lying all over the ground... If you are not very observant, never mind: you can just as easily recognise it by its powerful cry, which can heard over two kilometres away, and the sniggering sound it makes or the machine gun-like drumming are just so many noisy ways it manifests its presence.

*Nicolas DE FINEY - 2014*

*The Stock Dove mainly uses Black Woodpeckers' nest holes to lay and incubate its eggs.*



### WORKING AWAY LIKE A CHISEL

No tree can resist the black prince's chisel-like blows. Every blow of its beak is ultra-violent. Fortunately, its whole anatomy is amazingly adapted to a life of woodworking in the trees: its skull is reinforced and its brain doubly protected. First by a shock absorber system, then by its tongue, which winds round the inside back of its skull. Similarly, its beak is permanently growing to make up for the wear caused by the thousands of impacts it inflicts on the trees (it can strike up to 170 blows a minute).

### A VERITABLE PALACE

In 95% of cases, the Black Woodpecker chooses the hard wood of the beech trees to dig its nest hole. It picks out a tree with a diameter of more than 50 cm (60 cm on average in the Northern Vosges) with a bole\* that is good and straight and free of branches to dig its hole, usually at a height of more ten metres. The fly-out hole is oval and about ten centimetres high. The nest hole is spacious and can be up to 50 or 60 cm deep.

### NUMEROUS SQUATTERS

The Black Woodpecker's nest holes are often re-used by other animals. Although it is not easy to demonstrate the presence of bats, dormice or hazel dormice, which only come out at night, it is, however, possible to observe diurnal species and particularly birds. In the Northern Vosges, a study carried out on 23 trees with Black Woodpecker nest holes of varying sizes revealed their use by these species: Stock Dove (107 nests), Wood Nuthatch (86), Tawny Owl (8), Great Tit (4), Tengmalm's Owl (1 – it is very rare to come across this species!) and squirrel (6).

*The Black Woodpecker often splits open the dome of an anthill to eat the big black ants and their larvae.*



### DEADWOOD AND ANTHILLS

The Black Woodpecker feeds on insect larvae which develop in decomposing wood. It identifies the galleries and listens carefully to decide if there is a nice, plump larva digging through the wood. Once it has identified its prey, it strips away the branch or the senescent\* trunk in a flash with big blows of its beak, to finish up impaling its victim with its sharp tongue like a knight's spear. Our prince is not one to bother with niceties: it's a real warrior! And ants are its favourite indulgence. It is capable of spotting anthills in hollow tree trunks or under the snow.

*The Grey-headed Woodpecker is regressing in many regions of France, so the Northern Vosges are important for the preservation of the species.*



### Grey-headed Woodpecker

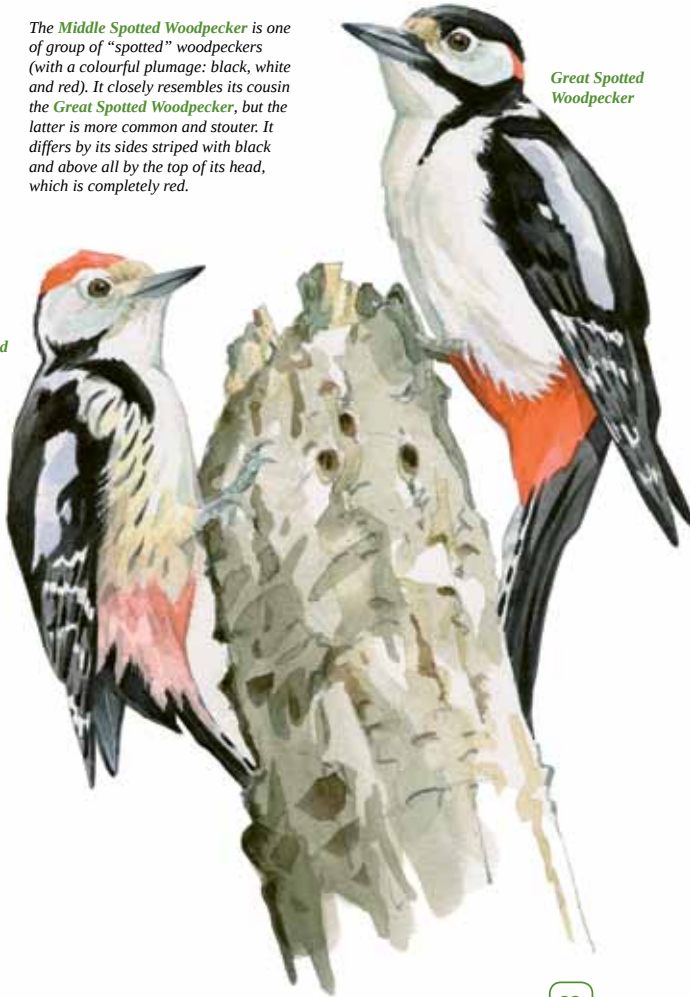
Although very similar to the Green Woodpecker, the Grey-headed Woodpecker is a lot less common. It is more of a forest dweller than its cousin

and prefers old deciduous forests with plenty of worm-eaten wood. Clearings and windfall\* plots also suit it, especially if they are home to plenty of ants (which it loves). In the Northern Vosges

site, the density of this species is one of the highest in Europe, with an average of 4 couples per 1,000 ha.

*The Middle Spotted Woodpecker is one of group of “spotted” woodpeckers (with a colourful plumage: black, white and red). It closely resembles its cousin the Great Spotted Woodpecker, but the latter is more common and stouter. It differs by its sides striped with black and above all by the top of its head, which is completely red.*

Middle Spotted Woodpecker



Great Spotted Woodpecker



## THE RED BERET: THE SENTRY OF THE TREE CROWNS\*

Observe the small stands of oaks on the rocky outcrops at the edge of the plateau. You will surely see the cavities dug out by the Middle Spotted Woodpecker in the dead or rotting wood on a large branch. It can be seen mainly at the beginning of the spring, when it emits strident squeals that sound almost like a pig. Our red-bereted friend is not very big – only about twenty centimetres and some 60 grammes – and its only tool is a small, fine beak, barely a little penknife! It is therefore obliged to choose weakened trees or ones with large, decaying branches to be able to dig out a nest hole (sometimes very low down). The Middle Spotted Woodpecker lays 4 to 7 eggs in April and incubates them for only 11 to 14 days! In barely a month, the eggs are laid and incubated and the fledglings are ready to fly ... They don't waste any time, the red berets!

The Middle Spotted Woodpecker is very demanding when it comes to the quality of its environment; it particularly favours old-growth forests, where large oaks dominate. Although it can nest in smaller trees, it needs at least twenty large trees (with a diameter greater than 50 cm at breast height) per hectare to nest regularly.



It feeds on a wide variety of insects that it finds in the deep cracks in the bark and the plentiful foliage of its favourite tree. Sometimes it varies its diet with a few berries, fruits or seeds... And sometimes in winter it can be found frequenting bird feeders at the edge of the forest. In the Northern Vosges Natura 2000 site, 56 Middle Spotted Woodpecker's territories were identified in 2011/2012 across an area of 5,000 ha; the density was 11.2 couples per 1,000 ha. In some of the forests in the Northern Vosges, where there are more old oak woods, the density can reach 20 couples per 1,000 ha!



## AMAZING ANTS!

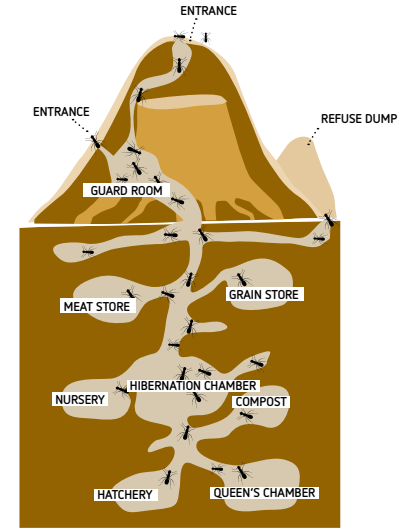
The champion of the Northern Vosges ants, the one that builds most impressive domes, is the red wood ant. In one anthill the colony can include up to 300,000 workers!

### THE DOME

This is a construction of impressive dimensions: 1 m high (or more) and a diameter of 2 m at the base. Built with needles, bark, pebbles and twigs, its role is to protect and isolate the underground nest, whose roof it forms. It keeps the temperature and humidity level inside stable.

### THE UNDERGROUND NEST

Ant mounds often start with an old tree stump and the nest can be a metre deep. The nest consists of a complex network of passages and cavities, populated by a bustling, but highly organised society. The eggs, pupae and larvae, deposited in separate chambers, benefit from the optimum temperature for their development. The queens are in very deep, cool chambers.



### WHY ARE ANTS SO IMPORTANT?

Red ants are essentially insectivorous and they actively participate in the regulation of populations of destructive forest insects. A colony of 300,000 workers can consume several million insects over the course of one summer's activity, and these will be captured within a radius of 100 m around the nest! This is why it is necessary to protect the nests against any interference, so as not to disrupt the balance of the forest.



## 10 THE HAZEL GROUSE

This is the smallest European member of the grouse family (the same family as the Capercaillie). Its plumage is the colour of “dead leaves” and it looks like a partridge. In France, it can still be found in mountain forests in the Vosges, the Jura and the Alps. The Hazel Grouse is specific to pioneer forest species.

In fact it prefers stands with a good layer of shrubs, featuring hazels, willows, birches or alders. The presence of fleshy fruit trees (sorbs, whitebeams, hawthorns...) is also necessary.

*The Hazel Grouse seems to have disappeared from the forests of the Northern Vosges... but its return is possible if we take good care of our forests.*





26

## THE LORD OF THE CLIFFS: THE EUROPEAN EAGLE OWL...

The European Eagle Owl is the largest nocturnal raptor on the continent. Mainly crepuscular and nocturnal, it sits immobile on a perch during the daytime, well camouflaged by its plumage which makes it almost invisible among the branches. The Eagle Owl prefers to nest in the rocks, but it can also incubate on the ground, under a fallen tree for example.

It is a super-predator: it may capture fox cubs or other raptors, such as the common buzzard, the Tawny Owl or Common Kestrel, and even the Peregrine Falcon. Its diet includes numerous prey, from brown rats to hedgehogs, and including pigeons and crows. It hunts in the forest, in damp valleys and open environments: the more varied the landscapes in a given area, the happier the Eagle Owl will be!

Be on your guard, the Eagle Owl is nesting nearby! At nightfall listen out and you may hear his majesty's grave and powerful call... hoo-hoooooo!



*Eagle Owl: its size (up to 67 cm tall), its wingspan of over 160 cm, its solid body, its "ear tufts", its large orangey eyes clearly set the European Eagle Owl apart from any other species.*



*You should avoid getting too close to the rocks where **Peregrine Falcons** nest from February to July inclusive, in order to enable them to raise their young in peace.*



*Falcon in flight: The **Peregrine Falcon** can swoop down on its prey at over 300 km/h*

### **,.. AND THE PEREGRINE FALCON**

His lordship the Peregrine Falcon also likes to nest in the rocks. He particularly favours sheer cliffs without too much vegetation in front of his eyrie. With a wingspan of 100 cm, this bird is smaller than the Eagle Owl, which is one of its main predators in our region (with the pine marten and the beech marten)... But beware, it is a true athlete, streamlined for speed. It is considered as the fastest bird on earth! During its courtship displays, which begin as soon as

winter ends, watch out, you could be surprised by a slate grey flash accompanied by a powerful whoosh. This is the Falcon making a high-speed dive! In a vertical dive it can reach velocities of over 300 km/h, and it catches its prey, mainly other birds, in full flight. Although today we have between 10 and 15 nesting couples in the Northern Vosges regional Park, between 1971 and 1983 there were no breeding Peregrine Falcons left here.

At that time, the species had virtually disappeared from Europe. This was mainly due to the use of DDT, an insecticide massively used by farmers after the Second World War, but banned in the 1970s. Today, the situation of this majestic raptor is much improved, but it remains sensitive to the disturbance caused by hikers and climbers in its nesting sites.

# THE FLORA AND THEIR HABITATS\*



## 2 Did you say pteridophytes?

Ferns are much more diverse than we might imagine, and the forest undergrowth is the ideal place to discover them. Several species can be identified in the surrounding area. Why not practise recognising them!



*The maidenhair fern grows on shady rocks*



*In the Northern Vosges, the Scolopendra develops because of the calcium contained in the lime mortar used to build sandstone walls.*

First appearing in the Palaeozoic era, some 400 million years ago, ferns (or pteridophytes) are archaic plants whose particularity is that they reproduce without flowers or seeds. In fact, they have underneath their leaves spores which will disperse and germinate to produce a small green blade, comparable to a tiny leaf, the prothallium. This contains the sexual organs that will enable the plant to reproduce,

as long as there is a minimum of humidity and shade in the environment. Ferns have an underground stem called a rhizome (like irises). This stores nutrients and enables the plant to subsist during the cold season. In the Northern Vosges, there are 21 different species of fern, including some that are protected as they have become rare (such as the royal fern, *Osmunda regalis*).

Until the 18th century, in the glassworks of the Northern Vosges, the ashes of eagle ferns (common bracken) provided the potash used as flux to melt the sand (the raw material of glass). Ferns also have many medicinal uses: the polypody has laxative properties; the Scolopendra is recommended for conditions of the liver and spleen; the male fern can be used as a remedy for worm infections.

## What types of forest will I see?

What is a natural habitat? A natural habitat\* is an environment where all the physical and biological conditions are met to allow the existence of a community of animal and plant species.

It is a place with a given type of soil, exposure, altitude or humidity level that enables the development of plants and animals that require specific living conditions. By carefully observing the species of plants that grow in a specific place, it is possible to work out the annual rainfall, the permeability of the land, how rich in nutrients the soil is, and even its chemical composition. The flora reflects local ecological conditions, it defines the habitat\* and testifies to its state of health (or "state of conservation").



7

### ACIDOPHILOUS BEECH FOREST WITH WOOD-RUSH

This is a forest habitat\* that is quite widespread in the north-east of France, with acidic soils that are poor in mineral elements.

Beech dominates in all the phases of the cycle. It may be accompanied by sessile oaks, Scots pines or warty birches, which do well in dry stony soils. There may be some silver firs here and there, preferably in shady, confined spots (north-facing slopes or narrow valleys).

Acidophilous beech forests with wood-rush do not enjoy an optimum state of conservation locally. Since 1950, these forest formations have been largely planted with conifer either by growing from seed or by planting seedlings.

These practices are now changing: today silviculture is more respectful of environments, landscapes and forest ecosystems.



24

### NEUTROPHILOUS BEECH FORESTS WITH WOODRUFF

This is a habitat\* that occurs on soils that are richer than most and in cool locations.

In the Northern Vosges, neutrophilous beech woods develop on clayey soils, on plateaus, on steep slopes or at the bottom of slopes on colluvial deposits\*. The typical habitat is dominated by the beech tree, which is accom-



*White wood-rush  
grows on cool and  
generally sandy soils*

*Nicolas de Ravenel - 2015*



*Sweet woodruff is used to flavour the brandy known locally as "waldmeister" (the German name for woodruff).*



*Belladonna is a large plant with toxic berries that grows in selection beech forests with woodruff.*



*The common alder prefers soils with a constant supply of water. It is always found along rivers and on marshland. In German it is called the "Erle" and in the Northern Vosges many place names contain a reference to this tree: Erlenmoos, Erlenkopf...*

panied by various deciduous trees: the sessile or pedunculate oak (also known as the French or English oak...), the sycamore maple, the common ash, the wild cherry, the small-leaved lime or the rowan.

Melic grass, wood millet, greater stitchwort, sweet woodruff, wood sedge, bear's garlic or wild arum occupy the undergrowth.



12

ALDER MARSH FORESTS

Before you, you have a small woodland marsh. This particular type of formation is called an alder swamp or alder marsh forest. The undergrowth is permanently flooded and the trees' roots have developed out of the water to avoid being asphyxiated. Like most wetland environments, alder marsh forests suffer from a poor image – they have long been viewed with repulsion, associated with stagnant water, toads, mosquitoes and all kinds of putrid fumes.

Generally speaking, marshes have always inspired fear: it was said that were home to supernatural creatures, from witches to dragons to will-o'-the-wisps... Today rare is the marsh that does not have its tally of legends and tall stories. This ancestral fear among local villagers is a materialisation of the fear of the unknown, of the uncontrollable, in a word, of the wild! The alder is innocent in all of this, but has unfortunately suffered the consequences.



*The ash is an impressive tree when it develops on the rich soil of the Rhine plain. It does less well on sandstone as the soils are acidic. Affected by a severe fungal disease called Chalara fraxinea, ashes are currently succumbing all over Europe.*

*Cutting down spruces planted along the stream banks to allow alders and ashes to return*



#### Alder-ash alluvial forests

Dominated by the common alder, these forests are limited in size and mainly develop along river banks. As we go from upstream\* (the source) to downstream\* (the Rhine plain), we can distinguish three types of riparian alder forest, one after the other:

- stream-accompanying alder forests, a small string of alders subsisting in the beech forest and following the accompanying aquifer of the watercourse, with its seepage and springs. The soil is rich with organic matter and waterlogged. The common alder is sometimes accompanied here by the white birch, and the undergrowth is rich in remote sedge and saxifrage;

- alder forests with tall grasses (especially reeds), in the main valleys on richer soils where the water level varies little;

- finally stitchwort alder forests, extremely diversified, found on drier land, but subject to flooding in winter. In this last type of forest, alongside the alders we find ash trees, maples or pedunculate oaks.

**In the Natura 2000 site, the alder-ash forests are subject to environmental management: many spruces have been felled to restore their original floristic composition.**



## Wetlands and rivers... Into the water with you!



### 8 Springs

The Northern Vosges are a veritable reservoir of water! Rainfall is regular (900 to 950 mm of precipitation a year) and it infiltrates quickly into the sandstone. This water gradually and regularly reappears on the surface thanks to the innumerable springs and seepage into the ground, both of which supply water to the many streams and regulate their flow.

Sandstone behaves a little like a sponge: the 300-metre thick, highly permeable rock quickly absorbs the run-off water after it rains or when the snows melt; this water then filters slowly through the pores in the stone and collects deep down in what are known as “aquifer pockets”. When the sandstone is saturated with water or when the water meets a bed of impermeable claying sandstone, the water gushes out on the surface: a spring is born!

Springs form very particular natural environments. They are inhabited by small animals that benefit from water whose temperature does not vary over the seasons (remaining at between 9 and 10 °C). Most of the time these are invertebrates\* such as the gammarus (a crustacean, like a shrimp) and the larvae of flying insects: stone flies, caddisflies, and sometimes even dragonflies. The discreet salamander comes here to lay its larvae in the shallow, running water. They are often hidden among the pebbles and the dead wood: so be careful not to crush them!



*To reproduce, the salamander releases 10 to 50 well-developed larvae directly in the water unlike other amphibians, which lay hundreds of eggs. It is said to be ovoviviparous (the egg breaks when it is laid)! The larva will live for several months in the water, breathing through its gills.*

Water that emerges from sandstone is very pure... almost too pure! Sandstone is not a “generous” rock – this sedimentary rock essentially made up of silica is acidic and contains few mineral salts. The small headwater streams are therefore poor in nutrients and are inhabited by a specialised fauna and flora, with

species that are sensitive and rare ... So, what at first sight looks like an extremely poor environment actually contains an unsuspected wealth of species of ecological interest! At some time or other, all the animals come to the spring. For a naturalist, this is the ideal place to be on the lookout or to identify the traces of their passage.

To get rid of external parasites, to cool off in summer, or during the mating season\*, deer and wild boar come and roll in the mud that the running water of the spring constantly maintains: they are wallowing!

### Natura 2000 and streams

Although relatively well preserved, these water-courses and their surrounding wetlands have nonetheless been used and shaped by Man for several centuries (agricultural, domestic and industrial uses). More than anything else it is the presence of numerous hydraulic structures (on average one every 400 to 500 metres: pond dykes, intake sills, water mills, pipes, etc.) that penalises the natural functioning of the rivers. These constructions interfere with the export of sediments and prevent aquatic animals from roaming freely.

As part of the Natura 2000 programme the PNRVN (the Northern Vosges nature park) and the ONF (the national forestry commission) have undertaken multiple actions to overcome these problems. The removal of hydraulic structures, the renaturing of rectified low-water channels, the restoration of riparian zones\* or the removal of dammed ponds are all actions that have become unavoidable if we wish to re-establish the quality of the aquatic environments.

The *golden-ringed dragonfly* is a very large dragonfly that lives in streams and sandy rivers. Its carnivorous larva is the nightmare of the small aquatic animals!

The *Alpine newt* does a courtship dance to seduce its female (rhythmic movements of its tail). After mating, the female lays 250 to 300 eggs.



## 11 PONDS

Ponds, small expanses of stagnant water, are rarely natural. Originally dug by Man for a variety of uses (extraction of rock or earth, creation of a water reserve or a watering place for livestock...), they are replenished by rain and run-off water.

Ponds attract and are inhabited by a multitude of animals, some of whom spend their entire lives there, whilst others are just passing through. To survive in a pond, animals must adapt to some particularly difficult conditions: as it is shallow,

a pond will often freeze in winter or dry up in summer. The pond's inhabitants therefore have to be able to withstand considerable variations in temperature and even long periods without water. Keep still and watch carefully! You will surely be lucky enough to see the courtship display of the amphibians in spring: the common frog, the Alpine newt and palmate newt are regulars here... or maybe even the ever-discreet salamander! Move in a little closer and you might be able to see the larva of the Aeshna (a dragonfly), immobile on a submerged branch... It is waiting to ambush a prey!



25

## THE CASE FOR IVY

Ivy is an extremely common liana that can reach over 30 metres high. It is part of the Araliaceae family and has a life span of several centuries. Its scientific name *Hedera helix* comes from the Latin *haedere*, “to attach oneself” and *helix*, “spiral”. Contrary to common belief, ivy is not a parasite of trees: it uses them for support, but it in no way affects their growth.

Ivy’s very dense foliage provides conditions that are favourable to the reproduction or wintering of many species of birds and mammals. Furthermore, thanks to its black berries which are already ripe in March, it provides food for the first migratory birds before they begin building their nests, as well as for garden dormice and foxes hungry after the winter. Finally, the only plant to supply pollen and nectar in autumn (October), ivy also feeds a lot of insect pollinators.

It also provides a home for tiny bugs that have the particularity of actively preying on aphids and psyllids, which devastate pear trees.

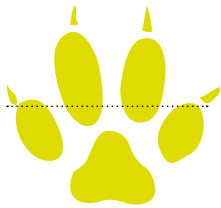


*Ivy is much appreciated by birds, which devour its fruit, here a magnificent Eurasian Blackcap. But beware: the fruit are toxic to humans.*

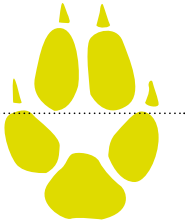
## GAME: NAME THE FOOTPRINT

During your walk, you may well see footprints left by some of the animals that live here. Here are some examples so that you can try to identify the animals that came along this path before you.

Dog:  
size: 4.5 cm



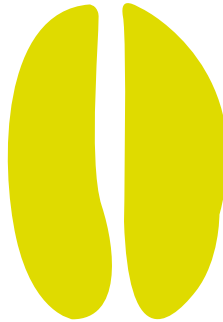
Fox:  
size: 4.5 cm



Badger:  
size: 5 cm



Wild boar:  
size: 10 cm



Stag:  
size: 8 cm



Roe deer:  
size: 4 to 5 cm



Wildcat:  
size: 3.5 cm



# GLOSSARY

**Biodiversity:** this is the natural diversity of living organisms. It is appreciated by considering the diversity of the ecosystems, species and genes in space and time, as well as the interactions within and between these levels of organisation.

**Bole:** the portion of a tree trunk situated between the ground and the first large branches.

**Colluvial deposition:** the positioning by gravity of unconsolidated deposits on a slope following erosion of the top of the relief. Colluvium, whose source is close by, is therefore different to alluvium, which is carried over long distances by water-courses and deposited far from its place of origin.

**Cord:** in agriculture, a cord is a unit of measurement for cut wood, equivalent to four steres (one stère corresponds to a cubic metre of wood).

**Crown:** all the branches of a tree, above the bole\* – the “head” of the tree, in short!

**Diurnal:** relating to the daytime – the opposite of “nocturnal”; relating to the night.

**Docob:** French abbreviation for the management plan specific to Natura 2000 sites and covering the ecological and socio-economic dimensions

**Downstream:** the part of a watercourse between a given point and its mouth; the direction the current goes towards.

**Drainage basin:** the area between drainage divides or watersheds, inside which all the water that falls flows towards a single point at a lower elevation: watercourse, lake, sea, ocean, etc. A drainage divide very often coincides with a ridge.

**Exogenous:** what originates from outside.

**Finage:** French term for all the land farmed around a rural community.

**Habitat:** a natural or semi-natural habitat is an environment where all the physical and biological conditions are met to allow the existence of a community of animal and plant species.

**Heliophilous:** is said of a plant that likes the light.

**High forest:** a high forest is one made up of large adult trees. It may be natural or managed; in the second case, there are different ways of managing this type of forest

**Humus:** black-brown earth formed from the decomposition of plant and/or animal debris in the soil, and which contributes to its fertility.

**IBA:** Important Bird Area

**Invertebrate:** animal with no internal skeleton.

**Mating season:** the mating season is the period of the year when certain species of mammals are sexually receptive and mate.

**Microhabitat:** this is a subunit within a given habitat\* that provides, even temporarily, certain conditions favourable to a given species.

**Oligotrophic:** is said of an environment that is particularly poor in nutrients.

**Photosynthesis:** the phenomenon that enables green plants to produce the organic matter they need from water and the carbon dioxide in the air. Two elements are particularly indispensable to photosynthesis: chlorophyll (the manufacturing “plant” for the molecules produced) and sunlight (as a source of energy).

**Resilience:** the ability of an organism, group or structure to adapt to a changing environment.

**Riparian Forest/zone:** all the wooded, shrubby and herbaceous areas along the banks of a watercourse.

**SAC:** Special Areas of Conservation – Natura 2000 Habitat site

**Senescence:** this refers to all non-pathological symptoms connected with ageing that can affect a living organism. When an individual presents one or more of these symptoms, it is said to be senescent.

**SPA:** Special Protection Area – Natura 2000 Bird site **Saproxylophagous:** is said of organisms (generally insects or fungi) that feed on deadwood.

**Upstream:** the part of a watercourse between a given point and its source; the direction the current comes from.

**ZNIEFF:** French abbreviation meaning “Natural areas of ecological, faunistic and floristic interest”

### Reading matter:

MULLER Y. (coord.), 2012.

La Biodiversité (faune, flore, fonge)

de la Réserve de la Biosphère des Vosges du Nord.

Etat des connaissances et évolution au cours

des dernières décennies Ciconia, 36 : 476 p.



### GUIDE PUBLISHED IN MAY 2015 BY SYCOPARC

Syndicat de coopération pour le Parc naturel régional des Vosges du Nord

Maison du Parc - Château

BP 24 / 67290 LA PETITE PIERRE

Tel 03 88 01 49 59

E-mail: [contact@parc-vosges-nord.fr](mailto:contact@parc-vosges-nord.fr)

[www.parc-vosges-nord.fr](http://www.parc-vosges-nord.fr)

[www.biosphere-vosges-pfaelzerwald.fr](http://www.biosphere-vosges-pfaelzerwald.fr)

Text: SYCPARC, Sébastien Morelle

Illustrations: Nicolas de Faveri, Castres

Map: ONF

Graphics: Grafiti.fr

Printer: Scheuer Drulingen

Price: €2



## GAME: BUZZARD'S HEAD

The two raptors below look very alike and their plumage varies considerably from one individual to another.

Can you identify them both, like the expert?

**A:** Compact in stature, with a rounded head, quite a short tail and wide wings. It is very common in the Northern Vosges and can be observed all year round. It feeds on small mammals.

**B:** A more slender stature, a small head and tail, long, narrow wings. The tail has three dark stripes. It is more difficult to observe. It is a migratory bird, which is present in France from May to August. It feeds on wasps and bees.

A2 : Common buzzard / B1 : European honey buzzard

### WITH THE FINANCIAL SUPPORT OF

