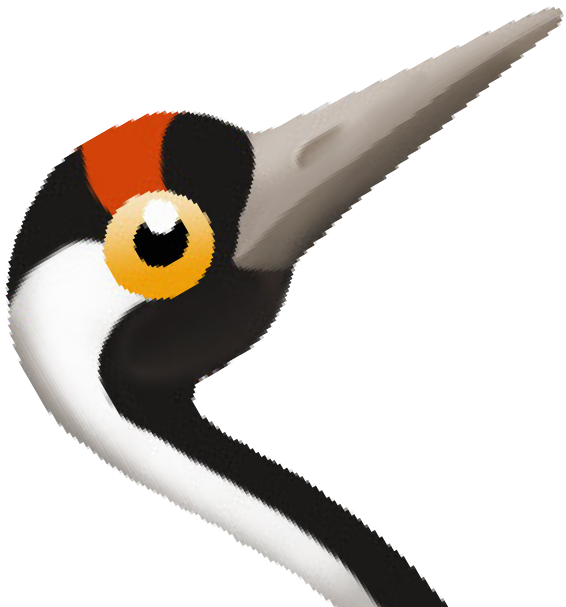
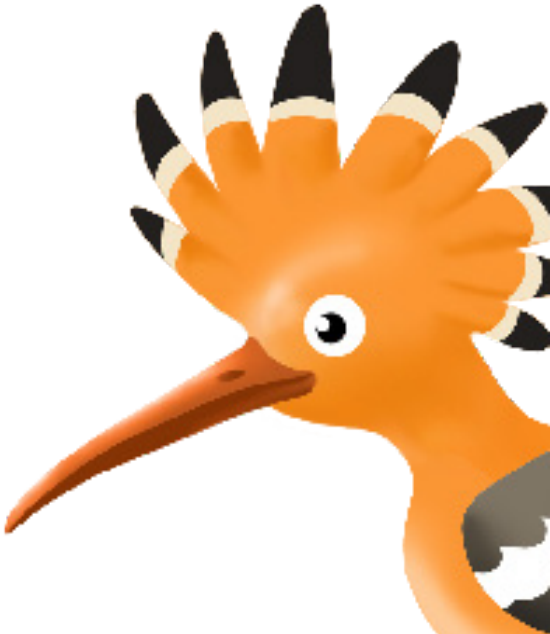
BLOCK 10

FOREST BIRDS





BLOK 10.
PTAKI LEŚNE

What does the forest look like? The answer for this question seems to be very clear. However, it could be defined in various ways. For a Biologist, the forest means a special complex of flora and fauna, characteristic for the actual climate zone. An Ecologist would say that the forest contains of many species of plants and animals connected with each other in a specific way, according to the place of they occur. In the terms of law, a forest is an at least 0.10 ha ground covered with trees and undergrowth or particularly without it, created for wood production, being Natural Reserve or a part of National Park or applied to a list of national monuments. The law definition of a forest states that it is a renewable natural resource which can be exploated mainly for the production of wood. Considering the natural point of view, trees are one of the most important characteristics of a forest. Trees form the structure and dynamic of a whole biological environment. A biological community of interacting organisms – biocenosis with the complex of abiotic factors (water, light, soil) are called the ecosystem.
The forest biocenosis includes both plants, among which the dominant role is played by trees and other organisms inhabiting forest soil (including mulch), moss fleece, herbaceous fleece, underwood and a layer of trees sometimes composed of several floors. All organisms in the forest biocenosis are related to a food dependence. In a simplified way, we can define these connections as food chains, in which the „transfer" of matter and energy contained in the food takes place between subsequent links in a specific order. A perfect example of this is the butterfly caterpillar, which eats a cetariac which eats a pine needle, and then moves to the soil to pupate, where it is eaten by a beetle from the family of grasshoppers. This, in return, falls victim to the throne of the singer, who in a short time eats the hawk. In fact, the food dependencies in the ecosystem are more similar to the web, because all the above-mentioned links can use different types of food and can be eaten by different animals.

In a well-functioning ecosystem there are groups of organisms (trophic levels) that perform specific functions related to energy flow and the circulation of matter, that is with the basic tasks that each ecosystem performs. These are producers - energy producing and storing organisms to which plants belong. Then there are primary consumers, i.e. herbivorous animals such as insects, rodents and ungulates, as well as consumers of higher degrees - predators and parasites (e.g. wolves, lynxes, owls, hawks, swallows). The ecosystem must also have destructors that break down dead organic matter reaching the bottom of the forest (droppings, dead bodies of plants and animals) into individual molecules and in the form of mineral salts, bring them into circulation allowing them to be reused by the vegetation of the forest. The destructors include various groups of organisms, including: bacteria, fungi, algae, protozoa, nematodes, mites, snails, vultures, spiders, beetles and their larvae, earthworms and vertebrates. Forest fungi, bacteria and earthworms have the largest share in the biomass of forest destructors (soil block with an area of 1 m2 and a thickness of 30 cm contains about forty earthworms, a billion fungi and a billion bacteria).

The structure of the forest has a clear layering system. The individual layers form (from highest to lowest):

• Tree crowns - there are different species of deciduous and coniferous trees. They are a great place for birds to nest. In hollows forged by woodpeckers or naturally formed in old trees, they nest among others tits, starlings, nuthatch, owls. Trees are the main area for acquiring food, insects, seeds and fruits for many birds. Small mammals, such as dormice and garden dormouse, inhabit hollows and squirrels that build their nests live in the treetops.

• Underwood - is created by bushes and young trees growing under a layer of trees. Typical species for this layer are hazel, wild lilac, no coral, buckthorn, viburnum or smaller shrubs, such as the daphne mexicanum. They range from one to over three meters in height. Many arachnids, insects and their larvae live on the bark of shrubs and young trees. There are also small birds looking for insects and fruits, such as robins, tits or wrens. Among the shrubs and young trees there is also a tree frog refuge, which, in search of insects, can climb to a height of one meter. In the undergrowth layer you can also find deer feeding on bark, green leaves, buds and forest fruits. The undergrowth protects the soil against erosion due to the strong bonding of the surface layers of the soil with a dense network of roots. Shading the soil lowers the evaporation of water from the surface and improves the climatic relations of the tree stand interior, inhibiting the penetration of wind into the interior of the forest.

• Forest undergrowth - the fleece consists of various herbaceous plants, small shrubs (blueberries, blueberries), mosses, ferns and fungi. In this layer there are also numerous insects, such as hymenoptera, diptera, beetles, butterflies, bugs, ants and arachnids. In addition to them, you can also find snails and small vertebrate animals such as: amphibians, reptiles (vipers, grass snake, lizard) and mammals (mice, hares, hedgehogs). Forest undergrowth is an important factor in distinguishing forest types. It also allows the assessment of soil properties and microclimate, as well as the degree of transformation of the natural community as a result of the human economy.

• Soil and litter (forest floor) - litter is a protective layer of soil formed by fallen leaves, trunks and bark pieces. Its function is to prevent excessive evaporation of water and protection against lowering the temperature of the soil. They live in destructors and small vertebrates such as mole, rodents and insectivorous shrews. You can also meet predatory insects - runners, snakes and snails, which break down the leaves on the ground. This enables the release of mineral salts from the rotting leaves and their return to the ground.

The stratified structure of the forest form a varied structure of resources and available places of residence for many species of animals. In deciduous forests with a very varied structure, 80 to 100 bird species live in an area of 1 ha. The forest is characterized by a wealth of niches, which is particularly evident in the example of food niches. The spruce for example may be a place of residence and foraging for various species of birds that have separate areas of action and sources of food. The crossbill Loxia is a bird specializing in picking seeds from cones, The Great Spotted woodpecker Dendrocopos major dwells beaks of wood goats, while the Nuthatch Sitta europaea uses its beak like tweezers and selects insects from cracks in the bark.

Short-toed treecreeper Certhia brachydactyla with its delicate, thin beak reaches to the smallest crevices in the bark and extracts small insects from them. The weight of the bird is also significant. Common Firecrest Regulus ignicapillas, weighing about 6 grams, can feed on the thinnest branches, and the much heavier Common Tit Parus major collects insects from thicker branches. For the flycatchers, the trees are an observation point and a place of rest, because it catches insects flying in the air. Common nightjar Caprimulgus europaeus is flying into a swarm of mosquitoes and a wide beak catching them like a butterfly net. Spruce is also a place of being for a Thrush Turdus watching snails and worms on the ground.

The maintenance of high biodiversity in the forest is also greatly affected by dead trees, whose presence is a natural phenomenon and much needed. The life of every tree has its natural end, which is why after reaching a certain, advanced age, these plants die down and their vitality and health condition decrease. Weakened are also defensive capabilities and reactions to various pathogens, and also the growth processes disappear. In trees, the process of dying occurs gradually. The first symptom is dying of shoots, then dying branches and limbs, formation of wounds on the trunk, bark dropping, decaying the trunk, branches and branches falling off, and finally overturning of the trunk as a result of decomposition of fungi, decay of the root system and strong winds. Lying trees become the habitat of many species of fungi, slime molds, bacteria, mites, insects, as well as birds, mammals, mosses and even new trees.
In the forest you can observe a very rich world of invertebrates, especially insects. Decaying wood is inhabited by countless beetles, both those feeding on wood and predatory species. The fauna feeding on rotten wood is particularly valuable. They are often very rare species, once inhabiting vast areas of primeval forests, in which there was no shortage of dead tree trunks. Currently, there are less and less such places, which is why many of these beetles have died out in our areas. Single old trees are sometimes the last refuge, once a very numerous, fauna of such environments.
Among other invertebrates, the specific fauna of mites or spiders deserves special attention. The overturned trees are covered with numerous lichens, mosses and fungi, which constitute a perfect living environment for various animals. Inside the hub you can meet a large variety of invertebrates associated with the appropriate fungi, on the hubs there are large amounts of beetles, dipterans and even butterflies.
Dead wood is also a place of refuge, foraging and breeding for mammals such as bats, shrews, rodents (squirrels, pilchas) and predators (marten, raccoon dog).
Lying tree trunks also perform other functions in the forest ecosystem: they take part in the circulation of elements, protect growing young trees between them, from damage by deer and other herbivorous mammals, and retain flowing surface waters in the forest during spring thaws. Numerous species of birds such as woodpeckers, owls, flycatchers and tits use dead and hollow trees as nesting, sheltering and foraging areas. Some of the birds are associated with uprooting, or trees uprooted with the roots by the wind. The survival of many protected species such as White-backed Woodpecker Dendrocopos leuctos and Eurasian Three-toed

Woodpecker Picoidus Tridactylus, Collared Flycatchers Ficedula albicollis and Red-breasted Flycatchers Ficedula Parva, Eurasian Pygmy Owl Glaucidium passerinum, Boreal Owl Aegolius funereus, European roller Coracias garrulous, Stock Dove Columba oenas is closely related to the occurrence of dead trees. Among the birds associated with dead wood, first of all primary hollows, that is birds, which themselves are forging hollows. These are mainly woodpeckers, for whom dead trees are a place of breeding, shelter, and foraging due to the presence of adult insects and their larvae. Eurasian Three-toed Picoidus Tridactylus eats 670,000 woodworms per year living in old, dying spruce trees. Woodpeckers, due to their skills, play an extremely important role in the forest ecosystem, because the hollows they leave are a safe place of shelter and reproduction for other animals. Forging a hollow is work done by both male and female, and the time devoted to this task varies and ranges from a dozen to over forty days. The height of placing this shelter on the tree can be from 0.5 to 25 meters above the ground. Eurasian Green Woodpecker Picus viridis, Syrian Woodpecker Dendrocopos syriacus and Great-headed Woodpecker Picus canus place their hollows at the lower heights. The highest places are chosen by the Black Woodpecker Dendrocopos martius. The size of a hollow size depends on the size of the woodpecker. The largest bulwark forges our greatest woodpecker - the Black Woodpecker Dendrocopos martius. Its oval hole is 11 cm x 8 cm and its depth is 37 to 60 cm. The smallest are the hollows forged by the smallest Polish woodpecker - Lesser Spotted Woodpecker Dendrocopos minor. The diameter of the hole is 3-3.5 cm, and the depth is 10-18 cm. In the other species, the size of the inlet opening is 3.5 to 6 cm, and the depth from 20 to 50 cm. The dimensions of the hollow have an impact on which inhabitants will settle after leaving the woodpecker.

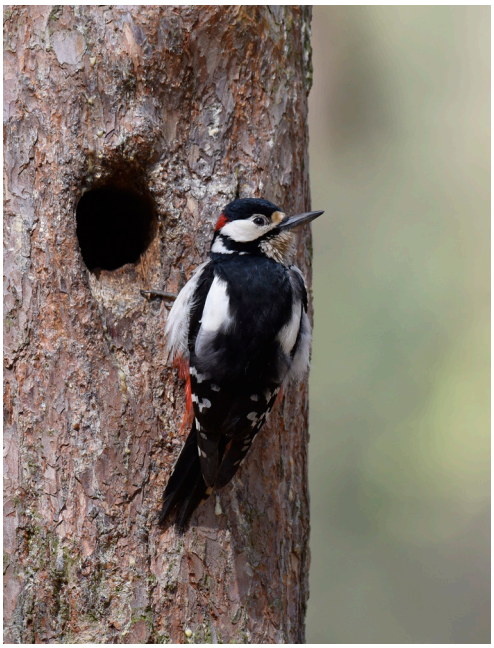


Photo 1. Great spotted woodpecker Dendrocopos major at a tree hollow. photo Cezary Korkosz

There are 10 species of woodpeckers in Poland, differing in size and color of feathers. The smallest of them - the Lesser Spotted Woodpecker Dendrocopos minor has a wingspan of about 26 cm and weighs from 17 to 25 grams. However, in the case of a black woodpecker with a size similar to a rook, the wingspan is about 75 cm with a body weight of 250 to 320 grams. The most frequently encountered woodpeckers include: the Great Spotted Woodpecker Dendrocopos major, Middle Spotted Woodpecker Dendrocopos medius and Lesser Spotted Woodpecker Dendrocopos minor. They have white - black plumage with an admixture of red color which is part of the characteristic hat on the head. In the plumage of the Eurasian Green Woodpecker Picus viridis and Great-headed Woodpecker Picus canus, as the name suggests, green and gray colors appear in different shades. The most unusual representative of woodpeckers is the gray-brown Eurasian Wryneck Jynx torquilla, which in the danger performs arched movements of the head and neck to the left and right, which is an imitation of the behavior of the viper.

FIG. 1 EURASIAN WRYNECK
Author: Juan Varela.

A characteristic feature of woodpeckers is the chisel, a very strong beak, the impact of which in a tree is absorbed by special cartilage and cranial muscles. The woodpeckers are equipped with a very long, sticky tongue with burps which makes it easier for them to extract insects and their larvae from the holes in the wood, as well as, as in the case of the green woodpecker, the favorite ants from the anthill. Very stiff and hard wheelhouses are also characteristic, which allow woodpeckers to lean against the bark of a tree while forging a beak. The woodpeckers also have four fingers, arranged oppositely two each and ending with very sharp claws, which allows them to attach themselves to the vertical surface of the tree. Numerous species in the breeding period search for the appropriate branch and hit it with a strong beak, making the sound of the so-called drumming, which is a very characteristic mating voice. Sometimes they can hit even tin roofs, tin covers of streetlights or satellite dishes.
Woodpeckers feed on varied food. In addition to insects, their larvae and pupae, woodpeckers may also provide ants, spiders, snails, tree seeds, nuts and berries. The big woodpecker feeds on even the chicks, eggs of other birds and carrion. Most woodpeckers gather food on tree trunks, with the exception of the woodpecker, which searches for it at the tops of trees, thicker

weeds or at the ends of thin twigs, sticking back down like the blueberries, which is possible due to its low body weight. The weaker beak forces this bird to look for food in softer wood. Large woodpeckers that feed on, among others the seeds of spruces and pines, to extract them from cones, use a very simple but clever way: they put the cone in the hollow of the bark of the tree, creating the so-called smithy. In such fixed cone it is easier to open the scales and extract the desired seeds.
Woodpeckers are found in forests with a lot of old trees with decaying trunks, in which it is easy to forge a hollow, city parks, gardens and old orchards.
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The second group of birds interested in dead trees are secondary hollows that use ready-made hollows carved by woodpeckers or created in a different way. These include flycatchers, nuthatch, tits, starlings, and stock doves. Nuthatch Sitta europaea and Willow Tit Poecile montanus can forge or correct hollows themselves, but only in soft wood. Owls also use the hollow, which nest in large hollows or in old corvid bird nests. There are nine species of breeding owls in Poland, six of which are species associated with forests: Tawny Owl Strix aluco, Ural Owl Strix uralensis, Northern Long-ear Owl Asio otus, Eurasian Eagle Owl Bubo bubo, Boreal Owl Aegolius funereus and Eurasian Pygmy Owl Glaucidium passerinum .

The most numerous species of owl in Poland is the Tawny Owl Strix aluco .This bird is the size of a crow, has a large head, short tail and stocky figure. There are two varieties of this species: gray and brown. The tawny owl builds nests mostly in large, decayed recesses and hollows, in rock crevasses, in attics and in the chimneys of abandoned houses. Sometimes it also takes in old magpies or crows. Breeding period of the primeval forest may start in January, but usually this time falls on March. The female then folds 3-4 eggs at intervals ranging from one to three days, which then incubates for 28 - 30 days. After this time, the chicks hatch in an asynchronous way, hence large differences in their appearance. With the larger abolition, the weakest of them most often die eaten by older siblings. Young birds, often still flightless, leave the nest at the age of about 30 days. They land on the ground then, but with the help of a beak and sharp claws, they climb trees, enter the surrounding branches and sit there, demanding food from

their parents. If the nesting place proves to be appropriate, the birds can use it even several dozen years. The tawny owl lead a settled way of life, that is, they do not undertake a trip to wintering grounds. Mostly they feed on small mammals (rodents) and small birds (passerines). Just as many birds of prey produce so-called pellets, or hard noodles containing undigested food leftovers (fur, feathers, chitin parts of insects, mammalian bones and birds). The size and shape of the pellets are species-specific features.

PHOTO 2. TAWNY OWL STRIX ALUCO

PHOTO CEZARY KORKOSZ

How should we behave in the forest?

LForest is not only a place that we visit on various occasions, but also a home for many species of animals. Just as we respect our own home, we should respect the animal house as well. What rules should be followed when visiting the forest?

We do not introduce dogs into the forest without a leash, for the safety of other animals and the dogs themselves. The wild boar with the young can be aggressive and attack the dog and its owner.

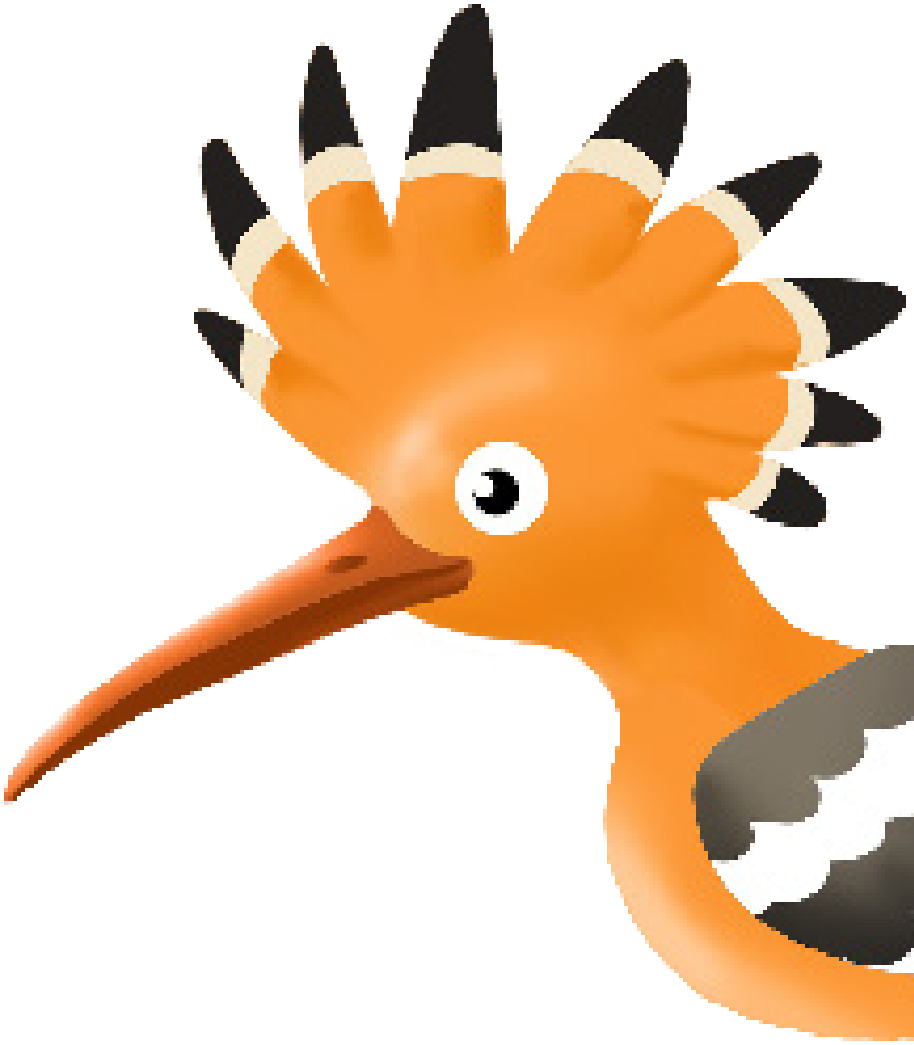
We do not litter the forest! We throw the rubbish into a trash bin or take it with us.

We only camp in allowed places.

WE DO NOT USE MOTOR VEHICLES INTO THE FOREST.

WE DO NOT USE FIRE IN THE FOREST, UNLESS THERE ARE DESIGNATED PLACES

Besides:
- we will not scare animals,
- we do not destroy plants and places where animals are kept (nests, burrows, rest areas and feeding),
- we keep silence.



This material was prepared as part of the project „We live in harmony with nature. The educational program for teachers of pre-school and primary education". The project involved selected non-governmental organizations involved in the protection of birds associated
as part of the international BirdLife International federation. In addition to the National Society for Bird Protection, which ran the project, the Spanish Ornithological Society (SEO), the Slovak Ornithological Society (SOS), the Macedonian Ecological Society (MES), the Czech Ornithological Society (CSO) and BirdWatch Ireland (BWI) were involved. The University of Gdańsk became the substantive partner of the project responsible for creating materials for teachers.
BirdWatch Ireland is a non-governmental organization with a public benefit status, dealing with the protection of wild birds and the places where they live. The aim of the Society is to preserve the natural heritage for the benefit of present and future generations. BirdWatch Ireland is the Irish partner of the global federation of bird protection societies - BirdLife International.

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