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BOOKLET

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Old-growth forests: the unknown treasures of Bulgaria





Long-horned beetle
Morimus funereus

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„Strong nations are those
which have preserved their forests,
the rest have lost their roots“

French proverb



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Royal Oak, Tulovo Grove, Stara Zagora area

Once upon a time

In the past Bulgarian lands were covered with dense and impenetrable forests. Many annalists and travelers from that time left interesting, though only occasional, references about the impressive woods of Thrace and Ludogorie regions, the Rhodope, Rila and Pirin Mountains. For example, the chroniclers of the First Crusade in 1096 described the „Great Bulgarian Forest“ (*Silva Bulgarorum*) as „enormous and vast“ (*ingentia et spatiosissima*), spread „far and wide“ (*longe lateque*). Over eight days were needed to cross the „immeasurable and unheard forests of the Bulgarian Kingdom“. The large forests of Ludogorie region (Deliorman) were called „ağaç denize“, or Sea of trees.

Today, single tree veterans such as the Granitski Oak, Baykusheva Pine and many others remind us of the majestic ancient forests that used to cover vast areas once upon a time.



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The idea

Old, hardly accessible forests used to be an integral part of our past; however it is rarely that one finds them nowadays. We often picture the Old Forest based on ancient myths and legends, fairy tales, works of art and literature, and more recently, on contemporary fiction and adventure films.

For thousands of years, people of different races and cultures have devoted special attention to The Tree and The Forest. Many stories and legends describe the forest as a mysterious area inhabited by inscrutable and mythical creatures, and the large and old trees as dwellings of fairies. The Tree and the Forest used to be inextricably bound to people's everyday life, their cultural and spiritual development.



<http://ru.wikipedia.org/>

Morning in a pine forest Ivan Shishkin

Old pristine forests have been a source of inspiration for artists and writers impressed by their beauty and uniqueness. The works of famous Russian artist Ivan Shishkin are notable for the realistic representation of the seasons in the forests, wildlife, animals and birds. The typical old-growth forest features could be seen in some of them. The famous painting *Morning in a pine forest* depicts the unique wilderness and its inhabitants „seen“ by the artist in one of the few remaining virgin forests in Europe, Bialowieza Forest.



© Stela Lazarova

The famous Bulgarian writer Anton Donchev left us a breathtaking description of an old forest in his novel *Time of Parting*:

“We were walking through a vast forest, each tree having a trunk as a belfry, and a top rising high into the sky, and each tree standing far from others, so that its strength and beauty could be seen. The weak trees had died, cast down and had already rotted. There remained only the strong trees which blocked even the path of the earth with their roots. We were walking amid them like lost children in an old tale.... I looked up, and followed the huge trees until the back of my head touched my back. They had drawn aside, and formed a circle, and the lake lay in their midst, as at the bottom of a well... All around, everything lives, dies and rots. The huge trunks of fallen trees, green with mould, mosses and grasses go down into its icy water and melt. Thick, juicy moss covers the rocks around it, so that no bare stone is seen and no step is heard. Damp, bearded lichens hang from the branches of the trees... A salamander emerged from under my feet – black, with yellow spots – and sank noiselessly into the water.”



© Tzvetan Zlatanov

The magic of old forests is also recreated in the movie *Lord of the Rings* based on the eponymous saga. Elves and ents inhabited the ancient forests of Lothlorien and mysterious Fangorn Forest, the last remnant of the great forests of Eriador. The adventures of Frodo, Sam, Pippin and Merry begin right as they pass through the Old Forest:

“...It was not called the Old Forest without reason, for it was indeed ancient, a survivor of vast forgotten woods; and in it there lived yet, ageing no quicker than the hills, the fathers of the fathers of trees, remembering times when they were lords. The countless years had filled them with pride and rooted wisdom”

John Tolkien



White-backed woodpecker
Dendrocopos leucotos



Pontic rhododendron
Rhododendron ponticum



Long-horn beetle
Rhaesus serricollis



Jelly fungus
Calocera cornea



© László Gáhlidy



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Source of life, knowledge and ...

Pristine old-growth forests preserve rich floral and faunal diversity and are sort of a „Noah’s Ark“ for many rare and threatened species. They are an incomparable living museum and research laboratory that allow us to glimpse into the past and become wiser and more conscious. These forests facilitate the studies on the biology and ecology of rare and previously unknown species in an environment close to that before the alteration of forests. The studies on their diversity, behavior and adaptive potential support future monitoring and evaluation of changes that occur as a result of the global climate change.

... and beauty

Perhaps the most visible but least evaluated attribute of the old-growth forests is their beauty. Many people travel hundreds of miles to visit these spectacular forests and to experience their unique world. Their pristine fascination inspires and introduces us to the unknown world of their inhabitants. The sense of harmony and perfection bears vitality and optimism and makes us more conscious and concerned about the future of these remarkable ecosystems.

The sense of eternity and timelessness elevates us to a higher spiritual level, just like our ancestors worshipped Mother Nature.



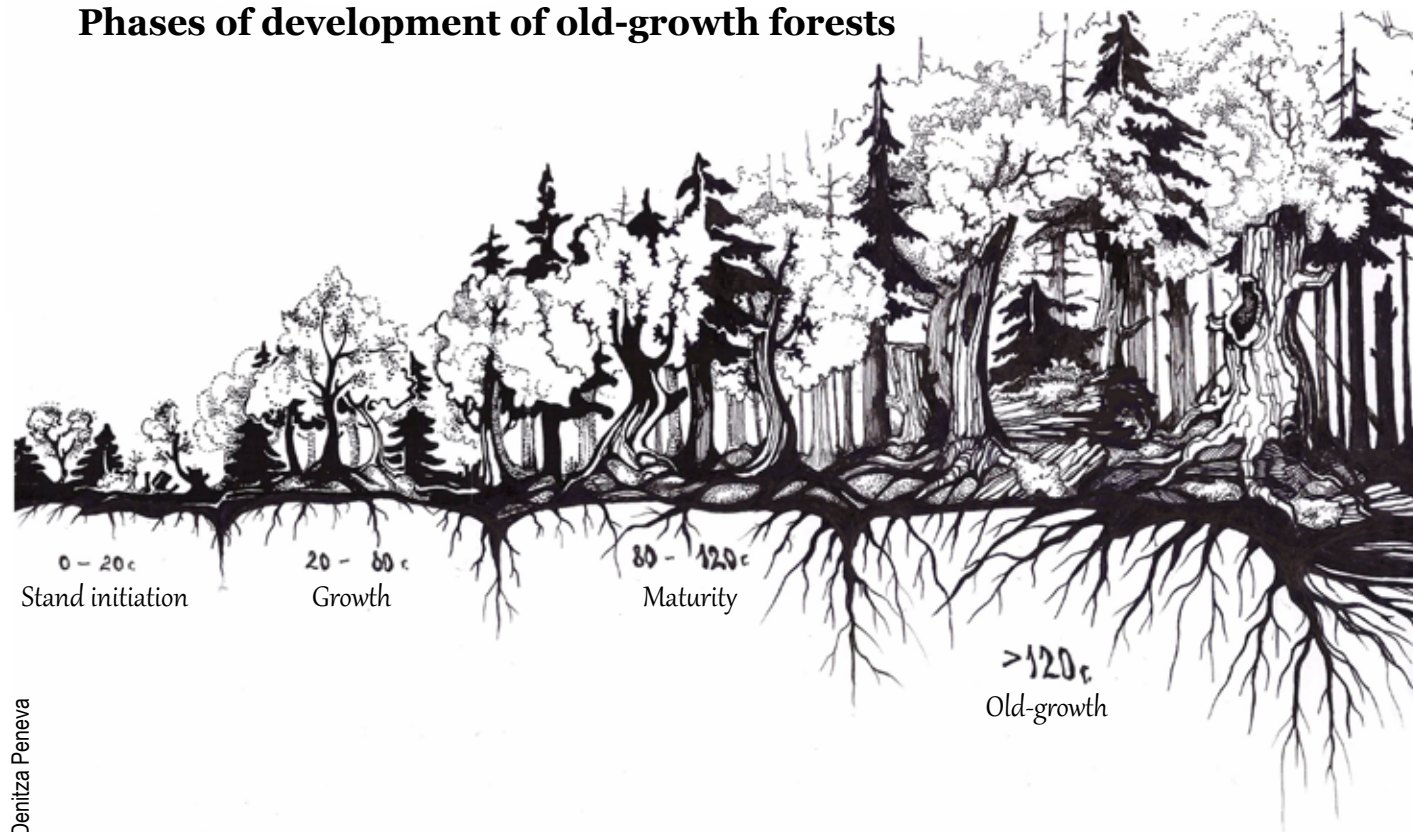
Which forest is old-growth?

For an old-growth forest to form, Nature should be allowed to run its natural course for centuries, without significant human interventions. Depending on the tree species and local conditions, this period could last at least 120 years. These forests are rich in structures, forms and life. Trees of all ages might coexist there, but what immediately attracts our attention, however, are the impressive veteran trees with a size close to the maximum for the species, and large standing or fallen dead trees in various stages of decay covered with mosses, lichens and fungi.



Trees with massive crowns and branches, with dead or broken tree-tops or branches, and stems with cavities or holes of different sizes made by woodpeckers add to the picture. The tree groups and single trees of various ages and sizes are unevenly distributed, creating a feeling of chaos rather than of order. Given this picture, it is not difficult to understand why old natural forests have become a charismatic symbol of a genuine forest.

Phases of development of old-growth forests



© Denitza Peneva

How do forests grow older?

Birth, development and dying are part of the cycle of life. Forests go through various stages of development that are similar for all living organisms and communities, but differ in length. In the first 20 years, a new community of trees is formed and developed. Over the next 60 years, in a competitive environment, the most vital and adaptive individuals grow in size, while the weakest drop out of the race. Between the 80th and 120th year, the trees culminate in their growth and then the growth rate slows down. Some large individuals gradually die creating free space for the new generation of trees.



© Stanislav Lazarov

Given the longevity of the main tree species in Bulgaria (over 300 years for beech, fir, spruce and over 500 years for oaks), an old-growth forest can last for centuries. In the past, to begin the life cycle all over again, the nature „used“ destructive forces such as hurricanes, wildfires, floods, avalanches and insect pests. However, in recent centuries man is the main factor influencing the forests development.

Nowdays, although forests are not destroyed out of hand, old-growth forests have no place in the modern forestry which is based on rational production principles. In quest of good quality wood the natural life cycle of forests is interrupted before the old-growth phase.



Natural versus managed forests

Each forest development stage has an important ecological role, providing habitats for various plant and animal species in accordance with their specific requirements. However, the old-growth forest stage is particularly important because of the unique and complex structure that has been formed and self-sustained for centuries. Due to the long period of development without human intervention, forests in the old-growth stage support a wide range of key elements of the natural forest ecosystem to which species have adapted for thousands of years of evolution. In these forests, the natural circulation of elements and energy flow are most preserved, as well as the complex relationships between organisms. Moreover, old-growth forests provide refuges for rare species, some of them have become completely extinct from the managed forests.



Forestry activities radically change the appearance and structure of forests. During the whole lifecycle of managed forests foresters try to control their development. They apply management systems aiming at production of timber with particular characteristics. Their attention is focused on creating conditions appropriate for development of good quality trees. Simultaneously, hollow trees or those with broken tops, as well as the old, dry or dying trees are considered low quality and dangerous in terms of forest health and are usually removed. These particular trees, however, are most valuable for the biodiversity conservation and maintenance of the natural self-regulation processes.



Old-growth forest inhabitants listed as *endangered* and *vulnerable* species in the Bulgarian Red Data Book:

1. Giant noctule (*Nyctalus lasiopterus*)
2. Hairy pine borer (*Tragosoma depsarium*)
3. Ural owl (*Strix uralensis*)
4. Grey-headed woodpecker (*Picus canus*)
5. Marten (*Martes martes*)

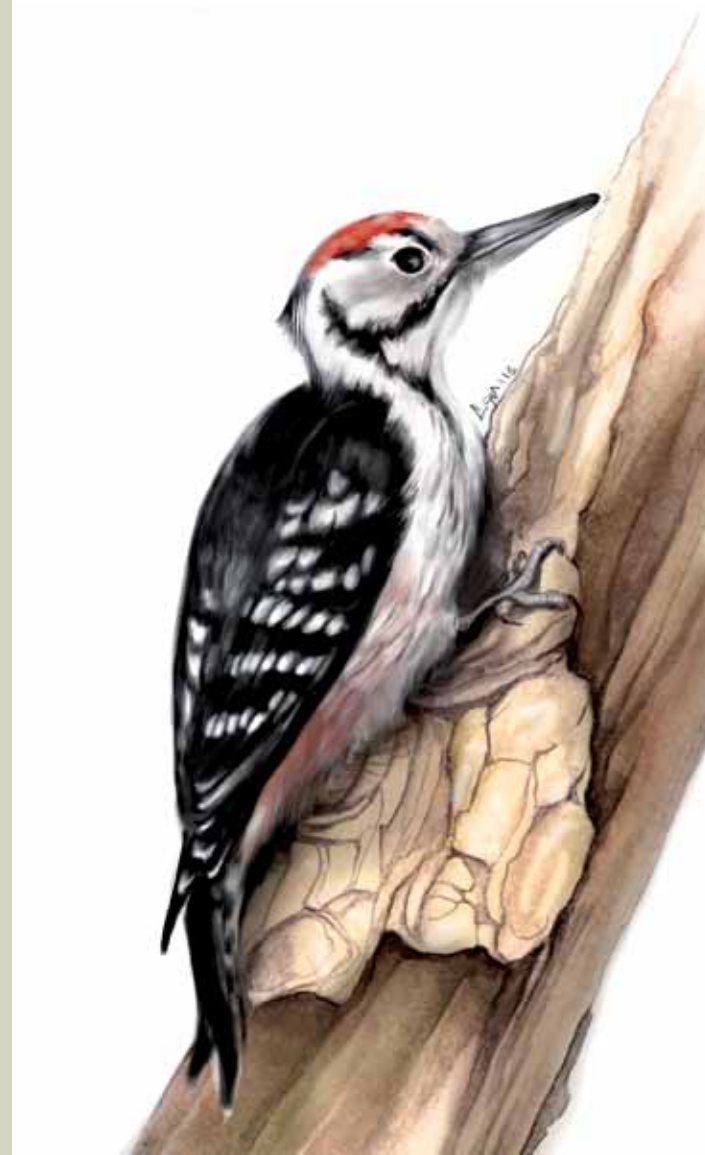
Biological diversity

The long period of stability, the diverse structure and the diversity of microhabitats in old-growth forests create favorable conditions for many species of plants, fungi, mosses and lichens. The abundance of insects inhabiting dead wood attracts many birds that feed on them and thus maintain the balance in forest ecosystems. Woodpeckers are particularly important because while searching for food they excavate holes in the wood, thus providing nesting sites and refuges for many other species such as owls, bats, rodents, martens, etc. Hundreds of species of invertebrates, fungi and bacteria, many of them still unknown to science, slowly decompose large fallen or standing dead trees, enhancing the soil fertility.

Certain old-growth forest inhabitants have adapted to the changes in managed forests, but other more sensitive species are threatened with extinction. These species are usually associated with older and larger living and dead trees or fallen and decaying trunks and branches. Some of them are included in the conventions and international lists of endangered species, Red Data Book of Bulgaria and Biological Diversity Act. Moreover, old-growth forests are also inhabited by many species that, being small and having a hidden way of living, have remained poorly studied or unknown.

A brief story

The white-backed woodpecker is a rare, endangered species listed in the Red Data Book of Bulgaria and red lists of the International Union for Conservation of Nature (IUCN). It occurs mainly in older deciduous forests with a significant amount of standing and fallen dead wood used for breeding and finding food. Of all European species of woodpeckers, this one is the most specialised in its nutrition. It uses mainly insect larvae of the order Coleoptera developing in decaying wood or under the bark of dead trees. Sixteen endangered and rare insect species, mainly beetles, have been found during a study on the insect fauna in woodlands inhabited by white-backed woodpecker in Russia and Finland. This means that these rare beetles and the woodpecker are closely related in terms of habitat and the resources they use. Thus, by protecting the habitat of this bird a number of invertebrate species will also be protected. Woodpeckers are crucial for the health and sustainability of forest ecosystems, as they control the insect populations/abundance (bark beetles and other pests), which, in the case of outbreaks, could lead to the death of large areas of forests.



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Dendrocopos leucotos lilfordi

In Bulgaria, the white-backed woodpecker is found in old oak, beech and beech-coniferous forests up to 1700 m in altitude. One pair needs an area of 100–150 ha of old-growth forest.



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■ Areas of old-growth forests in Bulgaria unaffected by human activities
(data from the Forest Research Institute, 2005)

Old-growth forests: the last pieces of wildlife

The value of old-growth forests immensely exceeds their importance as a source of wood. Their areas have been constantly decreasing ever since the settlement of The Old Continent. As a result, only a few percent of the forests in Europe could be characterised as old-growth and unaffected by human activities.

Currently, 3.795 million ha of Bulgaria's territory are covered by forests. Out of these, only 103 000 ha, or 2.7% , have preserved the structure and attributes typical of old-growth forests with no traces of human impact. The majority of these forests are located in protected areas, which ensures their protection.

However, according to WWF's preliminary study, c. 100 000 ha of natural forests over 100 years old in Bulgaria, which are old-growth or have the potential to become old-growth forests, are located in managed forest areas and are thus threatened with extinction or significant change of their natural characteristics and wildlife habitats. It is important to remember that logging can change an old-growth forest in just a few hours but its restoration will take centuries.



Oak forest of Eastern Balkan Mountains – Kodzha Balkan. Photo: Prof. Methodi Ruskov, 1929

Old-growth forests: the bridge between generations

Today we admire the preserved ancient forests of Dzhindzhiritsa Reserve located in the Pirin Mountains, the lovely and mysterious spruce forests of Parangalitsa Reserve in Rila Mountains; the unique pristine forests with an understory of pontic rhododendron in Silkosia Reserve in Strandja Mountain. But few people know that the conservation of these „pearls“ of our nature is a merit of foresters who, along with the art of managing forests, first realized the need to preserve „samples“ of natural forest ecosystems for future generations. Educated in prestigious forest academies and schools in Austria, France and Germany, they returned back to post-liberated Bulgaria bringing the idea to conserve the areas with a few remaining old-growth forests. With their dedicated work, these „representatives of the ages“ demonstrated concern for the legacy that they would leave behind.



Parangalitsa Reserve

The idea of preserving the nature of Bulgaria, including old-growth forests, was the underlying stimulus for the establishment of the first conservation organization „The Union for Nature Protection“ by foresters in 1928. In 1931, Dimitar Zagorov, a forest engineer who had studied in Vienna, described the forests of Parangalitsa area as: *„a rare example of pristine forest and ... an exceptionally interesting subject of forestry, one of a kind in Bulgaria, and perhaps in Europe... This forest is a perfect object – a similar one is hard to be found elsewhere in the country – appropriate for studies in plant ecology, phytogeography, phytosociology and floristry ... ”*. Two years later, with the establishment of the second oldest reserve Parangalitsa in Bulgaria, these unique forests have been preserved for posterity.

Lately, we have become more prone to questioning if today’s foresters will prove worthy successors of their pioneers and will continue to bear the professional and moral responsibility for preserving these unique forest ecosystems.

The forest as seen by children



The conservation of old-growth forests in Bulgaria as a natural heritage for future generations is one of the priorities of the World Wide Fund for Nature (WWF), which launched a campaign for their protection.

What does WWF Bulgaria do for old-growth forests?

1. Identification, mapping and promotion of the existing old-growth forests in Bulgaria;
2. Changes in forestry legislation to ensure the protection of old-growth forests; identification and adequate management of high conservation values forests and sustainable forest management;
3. Launch of innovative mechanisms to preserve old-growth forests by applying non intervention management and appropriate compensations to the owners for lost profits;
4. Information and education campaigns to raise public awareness and commitment about the importance, ecological significance and current status of old-growth forests.

More detailed information about the activities of WWF related to forests in Bulgaria is given on the organization's website: www.wwf.bg





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