MEŽA KONSULTĀCIJU
PAKALPOJUMU CENTRS

TIPS FOR FOREST OWNERS

INTRODUCTION

In this informative booklet we have provided tips on how to help you manage your forest and find answers to the questions: Why do I do it exactly this way? Who/what benefits from what I do? What does the forest need as a natural habitat? What can I do as an owner to have a "living" forest?

The tips presented in this booklet will allow you to make your forest property richer. It does not require an additional investment, but as a result of such management, the forest will not only retain its characteristic properties, but will gradually acquire new qualities.

Before you start working in your own forest, read this carefully! A forest is a very diverse, beautiful and at the same time complex nature system. Your forest is also special and requires a special attitude.

And one more thing – observe a period of silence in your forest during the nesting of birds in spring and early summer – do not perform thinning of young stands and limit harvesting activities!

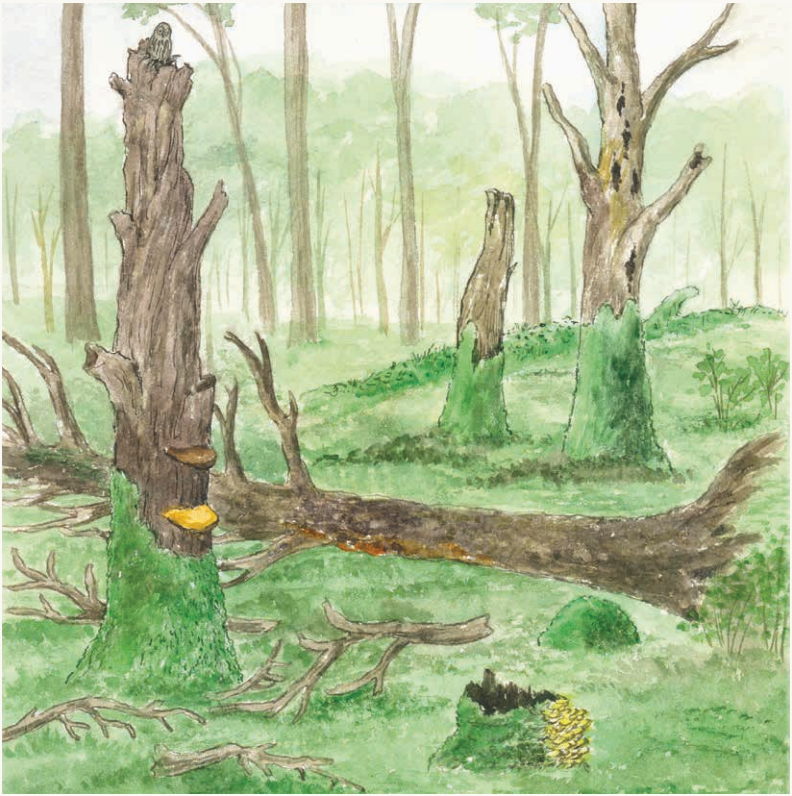
SNAGS AND FALLEN DEADWOOD

Deadwood is often removed from the forest due to people's inclination for order and tidiness believing that deadwood is the source and cause of insect propagation that threatens thriving green trees, not knowing that it is deadwood which is home to the natural enemies of such insects.

Quite often dry or decaying wood is unduly considered to be useless and unnecessary, which should be removed from the forest as soon as possible. However, such wood plays an indispensable role in ensuring the diversity of life in the forest. Almost one in four species living in forest is associated with deadwood. Countless fungi, lichens, mosses, snails, insects, birds and mammals use deadwood both as a hiding place or shelter and as a place for finding food or raising their young. Each inhabitant has its own special needs, so it is important that the deadwood in the forest is available in different places and as diverse as possible. Mosses or snails will prefer fallen deadwood lying in a humid environment and shade, while different insect species will settle down directly on sunlit sections of standing deadwood. Large sections of standing deadwood are used by birds of prey as "hunting towers" and, for example, the Ural owls, are those who will be the first to make their nests in such places. Fungi and insects gradually contribute to the decomposition of standing and fallen deadwood. Decaying wood gradually becomes involved in the circulation of substances in the forest, helping young trees take root and become established, therefore this wood plays an indispensable role in maintaining the stability and productivity of the forest.

Tips for forest work:

- *Deadwood should be conserved as much as possible. The thickest dead trees should be given priority regarding conservation since the snags and fallen deadwood decompose more slowly. There are more stable conditions inside the trunk, which allows such deadwood to be inhabited by a larger number of living organisms.*
- *These dead trees left for conservation should not be sawn and should not be driven over by logging or soil preparation equipment and machines.*
- *If possible, deadwood should be concentrated in groups, thus ensuring it is preserved more successfully and avoiding the movement of forest machinery over it.*
- *It is important to have trees in the forest that have died at different times – completely decayed and fallen deadwood almost merging with the ground, as well as recently fallen trees.*
- *Particular attention should be paid to ensuring the volume of deadwood when removing logging residues at the felling site.*



Deadwood is the home of many more living organisms than a living, thriving tree.

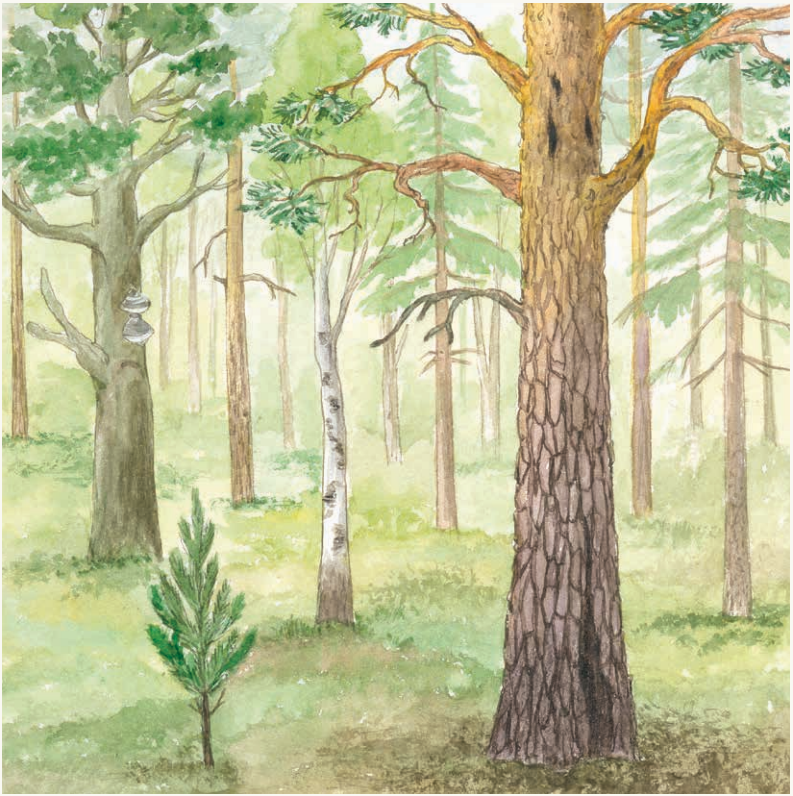
LARGE AND OLD TREES

Nowadays, trees are felled at a much earlier age than the actual age they would be able to reach if allowed to grow. Today, very old trees will often not be found in the forest, which makes us take special care for the preservation of such trees on our property. A large number of different plant and animal species are closely related to old trees and old forest stands. These trees become even more important if they have cavities and burn scars, as well as large dry branches. Not only oaks, as we might assume, ashes, lime trees, black alders, birches and pines, but also aspens, goat willows and even grey alders are valuable. Aspen and goat willow are tree species that can serve as very important habitats for bird, insect, polypore, lichen and moss species.

One of the reasons for the extinction or decline of various species is the lack of old, large trees in the forest.

Tips for forest work:

- *When felling trees, it is important to preserve part of them as retention trees or ecological trees to achieve biological age in the future. First and foremost, viable highly potential trees of the previous generation must be preserved.*
- *When performing forest work, care must be taken in the vicinity of these trees to avoid damaging their roots and trunks.*
- *If any of the retained trees withers or is broken by the wind, it must be preserved, as it will turn into deadwood in the forest.*



The survival of many plant and animal species depends on old and hollow trees.

TREES WITH CAVITIES

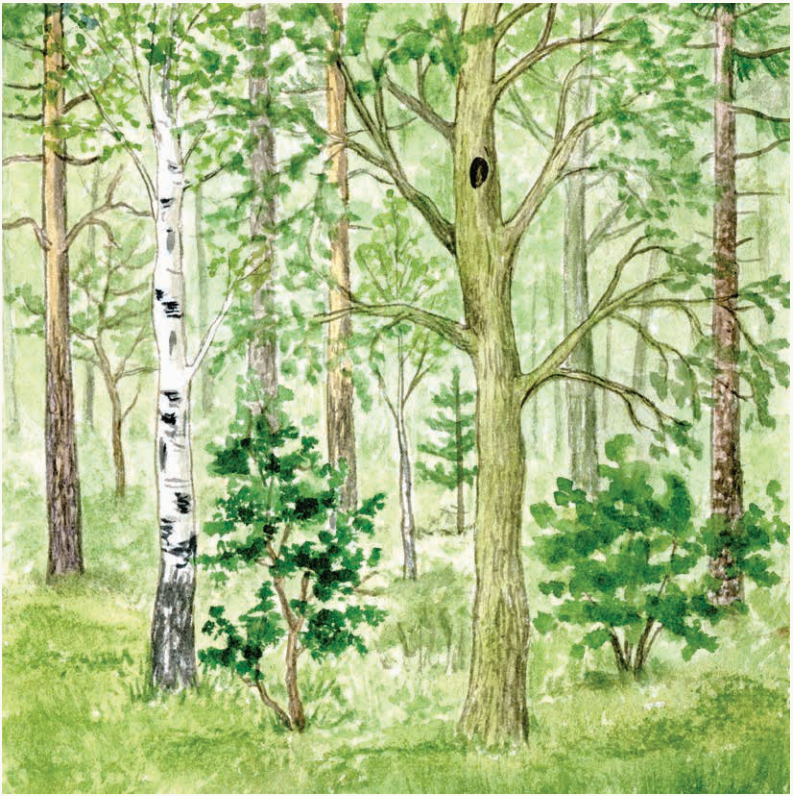
Many bird species incubate their eggs in tree cavities, so they are cavity-nesting birds. Tree cavities are also used by martens, squirrels, bats and various species of insects. Woodpeckers excavate their cavities themselves if suitable trees are found in the forest, but most birds that incubate their eggs in cavities depend on the woodpeckers' chiselled out cavities of natural origin (in the places of rotten branches etc.). Moreover, it is the naturally occurring cavities that are relatively more valuable because they are less prone to damage. Several specially protected bird species like the Eurasian Pygmy Owl, Boreal Owl, Stock Dove and European Roller belong to this group of birds that nest in cavities.

Forest management regulations and standards require the preservation of trees with cavities if the diameter is more than 10 centimetres. Of the woodpecker species, only Black Woodpeckers' largest excavated cavities will be of that size, while the cavities made by other birds will be less than 10 centimeters in diameter. However, those small cavities are also important for a number of bird species, such as tits and flycatchers. Bird houses are traditionally put up in trees in forests to attract the cavity-nesting insect eating bird species, but cavities are generally safer and they last longer than bird houses.

By preserving trees with cavities, micro-habitats that are important for many species are preserved, and consequently so is the diversity of species in the forest.

Tips for forest work:

- *When felling trees, it is important to preserve trees with cavities. If, for some reason, it is not possible to preserve all of them, preference shall be given to the (decayed) cavities of natural origin.*



Tree holes or cavities in trees are significant habitat elements for a great number of bird and other animal species.

LARGE NESTS

By preserving the large nests and trees in which they are located, you provide a habitat for specially protected bird species, while simultaneously ensuring that trees suitable for nesting these species also remain available in the future.

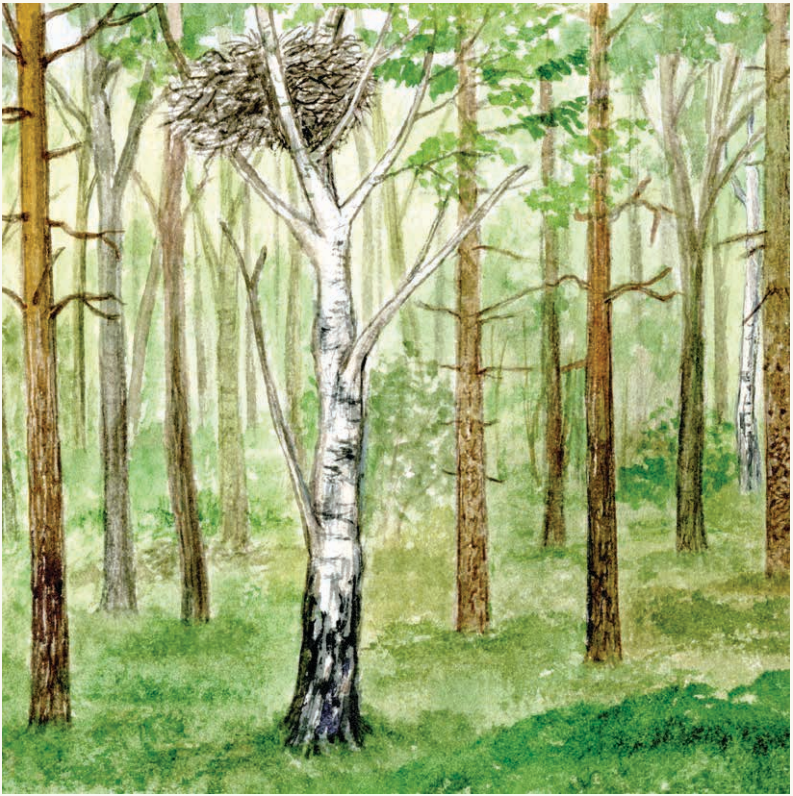
Large nests are built or used by several specially protected bird species, such as the Black Stork, Eurasian Eagle-Owl, Osprey, Short-Toed Snake Eagle, Lesser Spotted Eagle, Golden Eagle, Northern Goshawk, Red Kite and Black Kite. To protect them, various protected areas are formed. Large nests are often used for many years, repairing and improving them. Not only bird pairs of a given species can alternate in using them, but over time the changes can also be observed in the species inhabiting these nests.

Quite often there is a shortage of trees of appropriate dimensions for the construction of large nests in Latvian forests, but the presence of a nest in a tree is the best proof of the suitability of a particular tree for the construction of the nest. Therefore, it is important to preserve trees that have large nests, even if the nest itself has fallen down.

According to Forest management regulations, there is a requirement to protect trees with large (more than 50 cm in diameter) bird nests, if such are found, as well as a row of trees and undergrowth around them. However, it is often not enough for the protection of the nesting site – due to habitat changes, the nest is abandoned and it is exposed to a higher risk of predation and wind.

Tips for forest work:

- *When locating a large nest, contact a specialist in ornithology to find out which bird species live there and what conservation measures are needed.*
- *If the nest is not used by a specially protected bird species, it is advisable to keep a group of trees within a radius of at least 30 meters around the nest tree.*
- *Even if the large nest has fallen down, it is advisable to preserve at least the tree in which it was located.*



Large nests are built and used by a number of specially protected and endangered bird species.

UNDERGROWTH

Undergrowth can be defined as those species of trees and shrubs that grow under the crowns of large trees and are unable to reach the height of the tree stand in the growing conditions of a particular site. Undergrowth serves not only as a food source and a safe haven for mammals, birds and insects, but also as a generator of the micro-climate typical of forests. The undergrowth trees and shrubs often improve soil fertility and reduce the negative effects of climate change. Part of the undergrowth trees and shrubs, such as hazels and rowans, can reach old age and provide a habitat for rare lichens and polypores. Bird species associated with the undergrowth are the forest owner's assistants in the fight against insect species that cause economic damage to forests.

A forest stand with a composition of trees and shrubs of different diameters and heights will maintain a more diverse animal and plant kingdom.

Tips for forest work:

- *Part of the undergrowth trees and shrubs need to be left uncut. Before cutting undergrowth trees and shrubs, an assessment should be made of how much should be done and whether their preservation will interfere with management activities or, on the contrary, will help in the management process.*
- *Preservation of the undergrowth trees and shrubs can be successfully implemented together with the retention of ecological trees or their groups and dead wood.*
- *Junipers, crab apples, rowans and old hazels should be preserved as much as possible.*
- *It is especially important to protect the undergrowth on the banks of watercourses and water bodies, on the edges of forests, in wet depressions and near spring discharges (seeping springs) which will contribute to the preservation of the unique characteristics of these places.*
- *Undergrowth should also be preserved around fox and badger burrows.*

A forest stand with a composition of different trees and shrubs maintains a more diverse community of animals and plants.

FOREST EDGES

The forest edge or the contact zone between the field and the forest is the rapidly changing outer border of the forest. The peculiarities of both natural systems are represented here. At the forest edge, special living conditions are formed not only for some of the species characteristic of the forest, but also for the inhabitants of the rural landscape. When agricultural land is left to lie fallow, the advancement of the forest edge continues with the species inhabiting it moving along. A great number of mammals, bird and insect species feed on the forest edge or use it as a hiding place. Birds of prey use the forest edge as a place to make observations for hunting. During the flowering period, the edges of the forest attract pollinating insects, because of the wide variety of shrubs and herbaceous plants found there.

A properly formed and preserved forest edge will ensure a wide variety of species, reduce the destructive effect of wind and stabilise the micro-climate in the forest.

Tips for forest work:

- *The forest edge zone should be formed at least 20–25 meters wide.*
- *The forest edge should be managed with varying intensity, preserving both non-thinned places and in some locations forming small felled areas, thus promoting the development of young trees, shrubs and herbaceous plants.*
- *Branchy and old trees, undergrowth trees, shrubs and snags should be preserved at the forest edge.*

The edge of the forest serves as a large food base or hiding place for various animal species, but for the forest owner it serves as a protection against the destructive effects of the wind in the forest.

RIPARIAN AREAS

When forest and aquatic natural systems interact, they help each other and their wide range of inhabitants, both on land and in water.

The main features of the riparian forests are shading, high and stable moisture regime and often a large proportion of deadwood. The riparian forests, sometimes even several times a year, are affected by seasonal fluctuations in the water level, enriching the soil and promoting the formation of specific plant and animal communities. The riparian forest zone also acts as a natural treatment plant, reducing the amount of organic pollution in the water, whereas fallen leaves, needles, branches and tree trunks decompose slowly in the water and serve as a food source, hiding place and living space for the inhabitants of the watercourse.

Forests and their water bodies and watercourses are often seen as two different natural systems, but collaboration between the two systems plays an essential role. The water maintains this special micro-climate and species diversity of the riparian forest, while the presence of the forest provides different requirements and needs for the life in the water. A watercourse is a movement corridor for different species.

Tips for forest work:

- *Tree felling should be done with very low intensity, creating small openings and achieving a shift of sunny and shaded places. It is important to preserve deadwood here as well.*
- *Part of the fallen deadwood should be preserved in the water and some trees overhanging over the watercourse – deciduous trees, larger diameter conifers and shrubs.*
- *By choosing a correct seasonality and appropriate technologies, efforts should be made to reduce soil damage during logging, and to avoid driving too close to the watercourse as much as possible.*
- *If it is necessary to cross a watercourse, temporary bridges or similar structures must be used. After the completion of logging work, the crossing points over watercourses must be organised, ensuring free flowing water.*
- *Stones should be put back if they were removed when crossing or cleaning the watercourse.*
- *Chemicals and petroleum products used in forest machinery and equipment, should be used with great care, minimizing their impact on the surrounding environment as much as possible, ensuring that they do not penetrate the ground or enter watercourses and bodies of water.*

The forest adjacent to a body of water prevents the overgrowth of the watercourse or water body and ensures the diversity of species in the forest and water.

EDGES OF BOGS

The formation of the forest and bog contact zone is determined by natural processes taking place in the bog, terrain conditions of the site and soil properties. In nature, there are both relatively abrupt edges of the bog, as well as contact zones with hardly any noticeable transition zone from the forest to the bog. In the contact zone of a bog and dry soils, fertile and spring discharge type of deciduous tree forest zones may form. The main feature of the transition zone is its high and stable humidity. As is typical of other transition zones, many forest- and bog-specific species can be found on the edges of the bog. The edge of the bog serves as a permanent place for living, wintering, nesting and feeding. One can find a lot of snags and fallen deadwood there, which provide a special habitat for various species of insects, as well as lichens, mosses and polypores.

When performing forest work on the edge of a bog, the transition zones and the peculiarities of the bog must be evaluated. If the bog is open and the edge is overgrown with reeds and wild berry bushes, the transition zone should be left wider.

Tips for forest work:

- *Tree felling on the edge of a bog should be done with low intensity processes. Old, branchy trees, trees with cavities, snags and fallen deadwood should be retained in the transition zone. It is necessary to preserve non-thinned groups of trees as well as, if possible, undergrowth trees and shrubs.*

The transition zone of the bog is a habitat for many plant and animal species that are rare in our conditions.

SPRINGS AND WETLANDS IN THE FOREST

Often dry places in the forest alternate with small moist depressions or spring discharge areas. Springs, in contrast to wet depressions, can also form on slopes or on the lower parts and are most often markedly wet and less often surrounded by trees. Characteristic features of spring discharges and wet depressions are high moisture content of soil, high air humidity and smaller temperature fluctuations. Spring seeping or discharge sites usually do not freeze in winter. A wide range of compositions of species have adapted to such site conditions.

Spring discharges are also characterized by hummocks, which provide a more specific habitat for fungi, lichens, mosses, slugs and snails and other plants and animals.

Tips for forest work:

- *In spring discharge sites and wet depressions, the felling of trees disrupts the whole composition of natural conditions of these areas. When carrying out logging work in the vicinity of these spring discharge sites and wet depressions, care must be taken to leave the areas intact. When planning access roads, crossing these areas should be avoided.*
- *Spring discharge areas or wet depressions are not subject to land reclamation, which would have a devastating effect on the existence of the species living there.*

Wet depressions and springs diversify the environment within the forest.

FOREST MEADOWS

Often, small forest meadows or glades have formed in the forest tracts, the size of which can vary from several tens to several thousands of square meters. The characteristics of the soil are those that ensure the long-term existence of forest meadows. In forest meadows, contrary to forests, there are greater fluctuations in temperature and humidity, so the community of inhabiting species is different. Often the specific characteristics of the soil here provide a special habitat for rare plant species. These open spaces also serve as food providing sites for forest animals.

The surrounding forest stands play an important role in the generation of environmental conditions in meadows and glades, therefore special attention should be paid to the formation of the transition zone between stands and open areas, which has already been described in the "Forest edges" section.

Tips for forest work:

- *While preserving the forest meadow and its specific features, soil fertilization, tillage, tree planting and land reclamation should not be allowed there.*
- *When creating temporary timber landings or logging residue piles, that area in the meadow should be thoroughly cleaned after removing the residues.*

A forest meadow is an “oasis” which provides a great variety of food and suitable living environment for the meadow and forest dwellers.

WOODLANDS FLOODED BY BEAVERS

Beavers transform watercourses and adjacent forest stands, the inundation created by them acts as sedimentation ponds, ensuring self-purification of waters and preventing their overgrowth. It enriches and preserves the diversity of nature in the adjacent ecosystems (forests, meadows, etc.). Beaver created water reservoirs serve as spawning grounds for fish, waterfowl nesting, feeding and resting areas. Many insect and bird species are attracted to the dead tree trunks lying in the water and their debris during the existence of the dam.

If the dam collapses and the water level returns to its previous bed, the trunks of dead trees – both fallen and standing – will create new habitats for different species. On the other hand, amphibians, reptiles, small rodents, as well as predators often use the abandoned beaver lodges as long-term shelters.

The number of beavers in Latvia is very high, and they often cause significant economic damage to forestry, agriculture, infrastructure facilities, especially in cases where a dam has been created on land reclamation systems.

Understanding the importance of beavers in nature, as well as assessing the economic losses caused by these animals and calculating the costs necessary for the eradication of sites inhabited by beavers, the forest owner must decide whether to keep the beaver habitats intact or to take measures to limit their number and habitats.

Tips for forest work:

- *If it is decided to take measures to limit the number of beavers and the territory they occupy on a property and if economic activity has been started to achieve this goal, then at least part of the long-existing beaver flooded woodland, which is characterized by standing dead trees or a plant community typical of drenched sites, should be preserved for natural development.*

Beavers are not only destroyers of material values, but they also are a complement to nature's diversity, providing fish spawning, bird nesting, feeding and resting sites.

RAVINES AND SLOPES

The forests of deep river valleys and ravines are characterized by specific micro-climatic conditions – constant shading and high air humidity. The springs and soil outcrops which are often found there diversify the slopes. The steep slopes are well-drained, but the plant roots come into contact with the most fertile soil horizons, which in such places are close to the topsoil. For these reasons, a rich diversity of species is formed in the forests of ravines and slopes.

The ravine and slope forests often protect the banks from collapsing and washing away. They act as a natural filter, holding back or stopping the flow of nutrients into the adjacent watercourse.

The ravines and slopes are often less modified due to difficult access to timber extraction, so sometimes one can still notice the features of a truly pristine forest.

The ravines and slopes still retain the characteristic elements of a natural forest, such as uneven age stands, biologically very old trees, shrubs or groups of such trees and shrubs, and large size fallen deadwood at different stages of decomposition. By significantly transforming such an important place for nature, various species adapted to the longevity of the forest will be subject to extinction.

Tips for forest work

- *Timber should not be harvested in deep valley and ravine forests. If, however, a decision has been made to do this and there is an economic justification for doing so, low intensity logging operations can be performed, selecting individual trees for felling and preserving the remaining trees, shrubs and ground cover from damage caused by the logging process.*

With its ravines and slopes, the forest protects the banks of the adjacent watercourse from collapsing and washing away. It also acts as a natural filter, holding back the inflow of nutrients.

ELEMENTS OF CULTURAL ENVIRONMENT

Forest can be considered not only as a nature system or a place where natural resources are extracted, but also as a repository of information about the activities of previous generations, which can also be called historical layers of the forest landscape. An integral part of forest history is the narratives related to it – the events, their interpretations and legends. In relative terms, the historical layers of the landscape in the forest are related to both the activities that had taken place there before the forest regained the territories once claimed by people, and the historical events in the history of mankind in a specific place in the forest. Burial and cult sites, religious elements, rock arrangements, sites of ancient settlements, trees planted around homes, trees or groups of trees with special significance, wartime sanctuaries, places, battle and memorial sites and old factories, etc. should be considered as elements of the cultural heritage environment in the forest.

By preserving the cultural and historical elements in the forest, its owner adds value and diversity to the property. By conserving such places, it is possible to preserve historical evidence in nature, which provides valuable materials for studying the past and at the same time to have respect for the people who have created this legacy.

Tips for forest work:

- *Evidence of forest history should be preserved as unaltered as possible.*
- *In places with elements of cultural environment, felling of trees and cutting bushes should be carefully considered individually in each case. Creating timber landings or logging residue piles in these sites and moving harvesting machines over these territories should not be permitted due to the degrading consequences.*
- *In cases where forest growth affects the elements that were once freely accessible in open places, it is advisable to clear them from shrubs and trees.*

Cultural environment or heritage values provide evidence of our nation's past.

CONCLUSION

The forest has various functions, only one of which is obtaining timber. Trees are just one element in the overall nature system, where even seemingly insignificant things matter. If we see the forest only as a place for obtaining timber, we forget the regularities typical of forest, as well as the many species that depend on the type of the forest, and, looking into the future, we do not count on ourselves.

The forest is also a depository of information about the ways people once managed their activities there and which values they cherished. And the forest is a place that is linked with other places by visible and perceivable links, creating a mosaic landscape.

Reading the tips provided, you may get the impression that one should not perform felling, because everything must be protected. However, as you work there, you will soon be able to realize that this is not the case, and implementing these tips is by no means an expensive or impossible task.

In order to fully manage it, we invite you to “read” your forest, because the forest, like a book, tells its very own story and explains the meaning and connections between small and big things.

Recommendations for removal of logging residues, shrubs and small trees of little value in thinnings and final fellings:

- *When deciding on the removal of logging residues, shrubs and small trees of little value, it is necessary to assess the terrain and soil characteristics of the felling area, prioritizing the use of logging residues, shrubs and small trees of little value for strengthening strip roads in harvesting in case of low soil bearing capacity.*
- *Natural structures in the felling area (fragmented plots of forest stand, ecological trees, deadwood, undergrowth trees and shrubs, trees of advanced growth, overgrowth around large nests, animal burrows, etc.) should be preserved with great care.*
- *Removal of bushes and small trees is not carried out on wet depressions in spring discharge sites, it should be carried out with caution in the riparian zones, at the edge of forests and bogs and in overflooded glades.*
- *In the felling area, piles of logging residues should not be formed in places where undergrowth and advanced growth is present, so that during the loading operation shrubs and small trees are not accidentally caught and pulled out.*
- *When planning the trees to be felled and removed in young stands, one should remember the usefulness of the admixture of tree species in the future forest stand and the need to preserve undergrowth trees and shrubs.*
- *Understanding the natural characteristics of different forests, the removal of logging residues should be also implemented in the forests on dry sites (Cladinoso-callunosa, Vacciniosa and Myrtillosa), thus maintaining the characteristic species composition there.*
- *Not all logging residues should be removed from the felling area, leaving at least 20% is advisable.*
- *Harvesting and delivering logging residues, shrubs and small trees of little value should not be carried out in spring and early summer during the bird nesting period.*

TIPS FOR THE FOREST OWNER
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