# PROGRAMME 2020 OF LČR

## PROVISION OF PUBLIC-INTEREST AIMS

PROGRAM 2020
LESY ČR

## Contents



PEFC™

PROGRAM 2020
LESY ČR

MEZINÁRODNÍ ROK LESŮ • 2011

# PROGRAMME 2020

Published by Lesy České republiky, s. p., 2012

ISBN 978-80-86945-18-7

# PROGRAMME 2020 OF LČR – PROVISION OF PUBLIC-INTEREST AIMS

State enterprise Lesy České republiky, s. p. (LČR) considers both wood and non-wood (environmental and social) functions of the forest as of equal importance when achieving its objectives. For this reason, a strategic paper called "Programme 2000 of LČR – Provision of Public-Interest Aims" was drawn up by LČR experts in 1998-1999, in cooperation with other specialists from the sector of the environment, research, and education. Since the very beginning, this document has been conceived as open to any further amendments and additional topics arising from new knowledge, social needs, and recommendations or obligations to which the Czech Republic is committed under international agreements. At the turn of 2010, based on its substance and experience from implementation, Programme 2000 was amended and published as the present document Programme 2020. It shall serve as a guideline not only for LČR staff but also for other professional public, forest owners, and all forest visitors and nature lovers.

# 1. INTRODUCTION

According to the Basic Principles of State Forest Policy, a precondition for provision of the public interest in forests is the maintenance of the very existence of the forest as the bearer of these functions, by securing its stability and by influencing changes of the tree species composition in such a manner as to enable the forests to fulfil their functions, despite the existing anthropogenic loads, also in the third millennium.

Programme of Sustainable Forest Management - Forest Tending and Regeneration (Hradec Králové, 1997, 2000) is the main document implemented by LČR to secure the very existence of the forest and improvement of its condition. The high share of broadleaves and fir trees in forests and the proportion of natural regeneration prove that its principles are being implemented.

Within its activities, LČR has always been actively adapting forests to the justified needs and requirements of the public. The enterprise thus follows the activities of its predecessors, which are significant to all the society. The Forest Policy of LČR (Hradec Králové, 1996) already defined as the main target of the enterprise "to form optimal balance between the fulfilment of all forest functions and market economy and to secure sustained production of high quality timber while respecting and enhancing the environmental functions of the forest".

Programme 2000 of LČR – Provision of Public Interest Aims subsequently defined principles of respecting the public interest in the forest beyond the obligations established by the Forest Act and thus created conditions reflecting the modern European and global trends in the sector.

## 1.1. PUBLIC INTEREST IN THE FOREST AND ROLE OF LČR

The responsibility of the enterprise managing state forests is to maintain the balance between wood and non-wood forest functions, i.e. to ensure fulfilment of wood functions while respecting the public interests in the given sector.

The Basic Principles of State Forest Policy define the public interest in the forest as follows: "The interest of the state is to maintain sustainable and balanced use of forests as a renewable natural source and to make use of their publicly beneficial functions in the public interest. It is essential to maintain for all citizens the water management functions of forests, to preserve their genetic quality and their soil protection functions, and to conserve the uniqueness of nature. All these functions should be more or less supported through certain management. Healthy forests provide other functions mostly naturally through their very existence."

LČR supports the presumption that some other functions of the forest (such as recreational) have to be, at least partly, managed. There is no doubt that sustainable forest management is one of the public interests as it secures sustained production of environment friendly renewable raw material available for the present and future generations.

Individual measures under Programme 2020 are implemented exclusively in areas managed by LČR. The enterprise does so through its organisational units, i.e. Forest Districts (FD), Forest Enterprises (FE), and Watershed Administrations (WA), and in cooperation with local and regional partners, e.g. municipalities, microregions, nature conservation authorities, or NGOs. In case a measure contributes to business activities of other entities, these shall participate in financing with respect to the expected benefit. LČR may also support other activities, for example, by leasing suitable land or structures. Meeting the related legal provisions within the implementation of any measures is a matter of course.

The system of forest management and forest management plans (FMP) plays an essential role in securing the effects of individual forest functions.

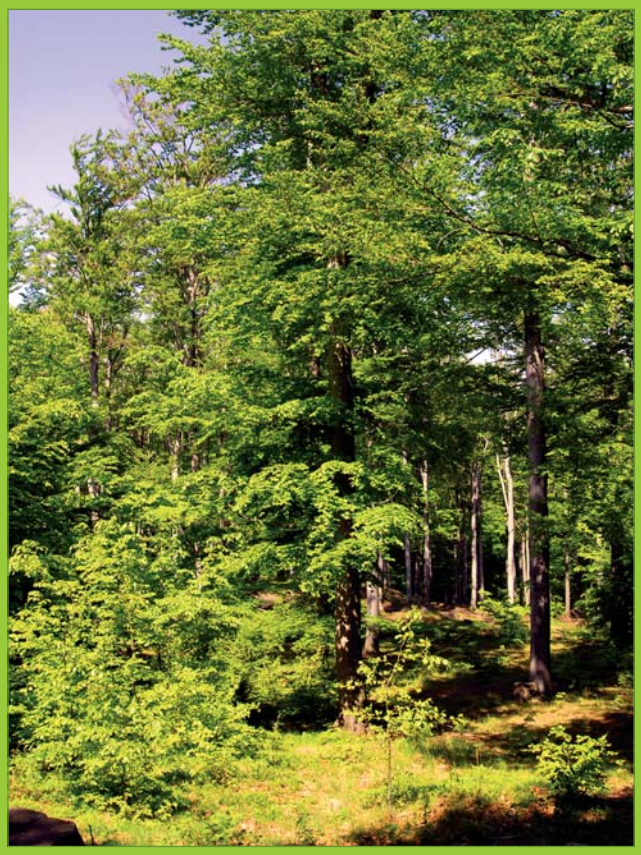
On yearly basis, LČR informs the public on the implementation of this Programme and its economic results.

## 1.2. FINANCING THE PUBLIC INTEREST

The total amount invested in individual measures implemented under Programme 2000 through the organisational units of LČR in 2000-2010 exceeded CZK 339 million. For more information, see Chapter 13.

LČR plans to further contribute with its own financial means to specific measures under Programme 2020 with a minimum amount of CZK 50 million each year. This allocation may always increase according to the economic result from the preceding year. In addition, the enterprise is ready to use other sources for financing. The already made investment raises the need to repair and maintain facilities constructed under Programme 2000. In this respect, more intense participation of partner entities is expected.

Considering the character of the property managed by the enterprise and its functions, the expenses related to the support of the public interest are inseparable part of costs related to regeneration, tending and protection of forest stands, conservation of the forest tree species gene pool, maintenance of forest roads (hundreds of million CZK each year), watercourses and reservoirs under LČR management (hundreds of million CZK each year), support of significant research projects, cooperation with NGOs, etc.



The enterprise finances a vast majority of its activities from its own sources, i.e. primarily from sales of timber as the main forest product.

The property managed by LČR is, to a large extent, subject to various limitations arising from other forest functions (nature conservation, protected zones of water resources, or mineral springs). No adequate compensation is provided for these limitations in the majority of cases.

To repair the damage caused by natural disasters, LČR will continue using state financial resources allocated in the public interest. This is predominantly the case of services not directly related to forest management but rather to management of small watersheds. As such activities are extensive and require large investments (in case of floods), LČR will also seek other sources for co-financing.

Regeneration and management of forest stands damaged by air pollution are other LČR activities, which may also be considered as repair of air pollution damage from the past, often of a cross-border character. If the funds coming from polluters or foreign aid do not cover the necessary expenses, LČR has to use its own resources.

LČR also welcomes opportunities to use state contributions and funds, or finances provided by other entities seeking to actively support various forest functions in the public interest. In case there is a potential to use external resources for the implementation of publicly beneficial measures (e.g. from EU funds), resources under Programme 2020 may be used for co-financing.

# 2. FOREST FUNCTIONS

Forests in the Czech Republic are an essential part of the national wealth (sec. 1 of Act No. 289/1995 Coll.) and of the entire continent. Forests with their functions have a crucial influence on all living organisms, including man, regardless whether we are able to distinguish, define, and financially evaluate these functions and whether we respect them or not.

Forest functions are understood as effects and tasks of forests relevant to the needs of man and other living organisms. It may be stated that all forest functions are of public interest.

Forest functions may be classified into various groups. Generally, we determine production (wood and other products) and non-production functions. From a different point of view, we distinguish "natural" functions (derived from the very existence of the forest) and "controlled" (maintained or formed intentionally by man). Any classification of forest functions is relative, though, as individual functions overlap, condition, and complement each other.

For the purposes of the present Programme, we differentiate natural forest functions with prevailing latent costs and controlled functions with obvious additional costs. This classification is only presented for the given purposes and is not that precise in theory. It serves to define forest functions subject to this Programme.

Natural functions involve, for example, climate regulation, water regulation (water regime balance, including determining rainfall), and aesthetic, sanitary, and hygienic functions. In climate regulation, forests have effects at all levels. Forest stands play an important role in the fight against global climate change. Thanks to their long life span, trees are capable of fixing $CO_2$, one of the main greenhouse gases, for tens or even hundreds of years. Carbon may be fixed in wood products for other tens or hundreds of years. At regional and local levels, forests help balance the differences in temperature, capture dust, reduce noise, etc. Within water regulation forests have effects on the quantity, quality, and balance of water runoff, mitigation of consequences of natural disasters, such as floods, drought, and soil erosion.

Controlled functions consist of production, water management, soil protection, recreational, and therapeutic functions (spa resorts, etc.). Moreover, they involve conservation, protection, and enhancement of biological diversity. Forests also fulfil a military function (protection), which is not, however, subject to this Programme.

Water management functions, with their effects achieved through specific forestry activities, rank among the most important environmental functions of forests in the cultural landscape, both as to the significance and the extent. The activities encompass protection of resources of potable water, protection of spring areas and riparian vegetation, torrent control, restoration of water reservoirs in forests, maintenance of watering and drainage systems, wells, and springs.

Soil protection functions with their effects protect the forest soil mainly against various types of erosion, landslides, and other damage. The related activities will thus include protection against erosion, landslides, and excessive soil compaction. Special attention will be paid to building transport infrastructure and to the use of new technologies and materials.

Recreational functions provide a group of refreshing and regenerating effects on forest visitors. These are mainly manifested as bioclimatic factors with somatic effects (radiation, temperature, humidity, air flow), aesthetic factors (colour combinations, habit, natural formations), and mental factors (scent, sounds, sense of fresh and clean air).

The above-mentioned effects evoke relaxation related to a slower heartbeat and overall tranquilisation. Besides these rather natural effects, the recreational functions of forests may be enhanced by implementing specific measures, i.e. mainly more intensive forest tending along walk trails and paths, care of cultural monuments and recreational facilities, construction of specific trails, information, public awareness, etc.

An uninformed visitor to the forest may sometimes feel negative about common forest management practices, forest regeneration, or even brushwood left in the forest.

This is why these activities also have to focus on public awareness related to forest management.

Maintenance of structures and facilities of LČR, particularly in recreation areas, and care devoted to their surroundings (also in case of rented facilities) are considered as a matter of course.

Among other activities, we should mention search and removal of undesired structures, removal of ammunition found in the forest, and/or security measures to protect visitors.

Therapeutic and spa functions of the forest with their somatic and mental effects contribute to a successful and comprehensive spa care. Such effects are enhanced by the presence of phytoncides and negative ions, and an increased environmental hygiene. We may actively support them by planting specific tree species with antimicrobial effects – increased release of phytoncides and secondary binding of dust particles. In specific cases, tree species with repellent effects come into consideration. In areas dedicated to treatment of air passages and asthma, the tree species composition may be designed to reduce the sources of natural allergens.

Conservation, protection, and adequate enhancement of biological diversity in forest ecosystems are part of the public interest. In its broadest sense, biological diversity is understood as diversity at the level of individual species of living organisms (ecotypes, local populations), species diversity of communities, and diversity of ecosystems.

Conservation of natural habitats is a primary measure to ensure conservation and existence of individual endangered species of living organisms. Implementation of the principles of sustainable forest management is a fundamental management measure. Other measures comprise specific operations aimed at conservation and support of the given species or habitats.

Special attention is paid to conservation of birds, and also ants, which contribute to biological control of pests in the forest. Transitional habitats, mainly near-natural forest covers and edges, equally require special care. Control of undesired invasive species is indispensable for the conservation of certain habitats.

Valuation of individual forest functions (i.e. determination of their monetary value) and the efforts to reach a social consensus with regard to the related compensations represent a separate category.

# 3. WATER MANAGEMENT FUNCTIONS

# 3.1. SECURING HIGH QUALITY POTABLE WATER AND PROTECTION OF SPRING AREAS

Water management functions are among the crucial environmental functions of forests in the cultural landscape as they encompass protection of sources of potable water and protection of spring areas. Nearly 60% of drinking water in the Czech Republic is acquired through treatment of surface water, i.e. from watercourses and reservoirs. Total 27.6% of all forests in the country are considered important from the point of view of water management function, which is, in this case, exclusive, primary, or equal to their productive function. Nearly 11% of the forest area in the country is designated as protection zones of water resources. Designation of protection zones is always the public interest.

## Forests in Watersheds and Protection Zones of Water Resources

The objective of securing the public interest in quality potable water is to preserve and accordingly enhance the water management functions of the forests:

- in watersheds of water supply reservoirs;
- in protection zones of water resources and around water inlets of watercourses.

The principal aim is to preserve the quality of potable water and protect the water regime of tributaries to reservoirs. It is desirable to implement special forestry measures where appropriate and when they bring significant water management effects. Forestry measures may affect individual parts of watersheds in various ways and to various extents. For this reason, the focal areas are divided into groups of forest stands, which are already considered in forest management plans and arranged into individual management groups.

Depending to the mentioned management groups, individual purposeful measures are determined and certain forest management practices may be limited. The principle of concurrence of production and water management functions is applied to the maximum extent.

In watersheds of water supply reservoirs, we distinguish:

- 1st protection zone of water resources;
- other area of watershed of a reservoir.

In ground water resources and inlets from watercourses, we distinguish:

- 1st protection zone of water resources;
- 2nd protection zone of water resources.

## Measures for 1st Protection Zones of Water Resources

When deciding on delimitation of 1st protection zones of water resources, the water management authority considers not only a sufficient discharge, quality, and hazard to health, but also the potential of forest management. Forest management practices to be applied are shelterwood system (or selection cutting), while strip cutting may be used at minimum 50m from the water source. Clear-cutting with successive artificial regeneration of mostly conifers shall be limited to forest stands with excessive forest weed and open forest stands.

Mechanical preparation of sites located within 50m from a water source will solely involve preparation of individual spots or holes. In areas more distant from a water source and with no significant danger of soil erosion, row preparation on the contour of the terrain is admitted.

Natural regeneration is the primary choice. Within individual operations of tending or harvest, it has to be secured that no organic matter gets in the reservoir or the watercourse.

Forest roads have to be constructed so as the bearing layer is not drifted away and the water from the road and from ditches does not flow into the 1st protection zones of water resources but is spread and infiltrated in the forest stands.

Rigorous measures apply in the first protection zones of water resources to avoid soil disturbance and pollution of the forest environment and water by undesired matter. Any activities jeopardising or deteriorating the discharge or quality of water, or representing hazard to health, are restricted. Cable and horse skidding are preferred systems of timber extraction. The forest should be regenerated in the direction from the water source up the slope. Individual operations are defined in more detail by the state administration body in its decision on designation of protection zones.

## Measures for Other Areas of Watersheds of Water Supply Reservoirs and for 2nd Protection Zones of Water Resources

To differentiate management measures, land is divided into the following functional groups:

**a) water protection** – strips along both sides of watercourses representing erosion risks, 30-150m wide.

Limitations are identical to those for the 1st protection zones of water resources. Regular checks of the watercourse flow capacity and the condition of river banks are indispensable, along with special checks after logging and natural disasters. Watershed Administrations of LČR manage the watercourses classed in this group with priority.

**b) erosion control** – delimited on slopes of 40% or steeper and on areas threatened by increased soil erosion.

Mechanical soil preparation all over the entire terrain is not allowed. Preference is given to cable yarding or skidding by horses. No later than following the skidding operations, the damaged surface of the terrain has to be treated to avoid an increased surface runoff. Unnecessary but hydrologically active transport ways of all kind are thoroughly secured against surface runoff and erosion. If their natural stabilisation is not presumable in the near future, they are afforested or grassed.

**c) infiltration, suction, and drainage** – creating conditions for maximum suction of soil water by forest stands.

Cable yarding is the most desired practice for extraction of timber from the forest. Horse skidding and use of machinery is possible only under dry conditions and on frozen land.

Before a decision is taken on drainage, the potential risks of excessive inflow of polluted water in water supply reservoirs should be considered. After timber harvest or natural disasters, the drainage system is cleaned.

In forested watersheds of water supply reservoirs, forest roads are never constructed where the gradient exceeds 10%. The density of hydrologically active transport ways should not be over 50m/ha of forest land. The existing roads on slopes should not accumulate surface water that would represent any risk of drifting. The surface water should spread from ditches and infiltrate in the forest stand. Roads on slopes are equipped with water bars.

## Forests in Mountain Spring Areas

The objective of securing the public interest in due protection of the cultural landscape against water erosion is to preserve and, as needed, enhance the water retention function of the forest, i.e. to maintain its purposeful retention and retardation capacity. For their specific and significant characteristics, such forests can be primarily found in Protected Areas of Natural Water Accumulation (PANWA).

The following groups of functions are distinguished:

**a)** water protection functions,
**b)** erosion control
**c)** water suction and drainage.

The measures and limitations that apply are equal to those applied for the analogical group of forests in watersheds of water supply reservoirs, apart from measures laid down for the purposes of water hygiene in watercourses.

Watercourses in mountain spring areas are managed by LČR Watershed Administrations with priority. The practice is linked to measures adopted within the entire watershed.

It should be mentioned that neither a forest with an ideal water management function can fully avoid and substantially mitigate floods if these are caused by extreme precipitations that exceed the retention capacity of the forest and hit large areas in a short period of time, causing more flood waves that flow from various inflows at a time. Nevertheless, these phenomena rarely occur. Purposefully

managed forests significantly contribute to the balance of runoff conditions and mitigate the possible consequences of regular and frequent rainstorms.

## 3.2. CLOSE-TO-NATURE MANAGEMENT OF WATERCOURSES

LČR is responsible for the management of small watercourses – torrents, including tangible investment property located in these areas (hydraulic structures). The hydrographic network and torrent watersheds can mainly be found in highly forested mountain and submountain spring areas. Within its comprehensive watershed management activities, LČR is also responsible for the management of watercourses running through the agricultural landscape and municipalities. As at 1 January 2011, the enterprise managed total 39 thousand km of watercourses.

From the water management point of view, torrents offer a minimum commercial value. The financial means invested in their management and maintenance (hundreds of millions of CZK) largely exceed the income they generate (millions of CZK).

The main objective of LČR water management activities is to reduce undesired erosion, balance the runoff and sediment regime in torrent watersheds, transform certain volumes of surface runoff (mainly accumulated) into underground runoff, and thus minimise the flood damage caused by extreme discharge rates. Preventive measures remain a priority and should be based on knowledge of all the influencing factors and their relations.

The fundamental strategy of LČR is sustainable forest management respecting a natural approach to creating stable and high quality mixed forest stands diverse in species, space, and age. Such forests can permanently fulfil all their non-production functions, including water management functions. The retention and retardation capacities of the forest and forest soil have substantial positive effects on the balance of runoff processes in torrents. The principal strategy of LČR also aims at conserving or regenerating the natural character of

watercourses as a basic environmental element of the landscape.

Management, planting, protection, and tending of riparian vegetation is an inseparable part of torrent control (with the tradition since 1884) as a complex of biological and technical measures closely related to forest management. Thanks to the multifunctional effects of riparian vegetation, these are the most economical and close-to-nature practices that secure stabilisation of banks of torrents and protection against erosion.

Where the capacities of forests and natural watercourses do not suffice to fully provide the desired water management functions, additional adjustments of watercourses have to be made. Such measures involve construction of transverse dykes and storage reservoirs, which regulate the gradient of a torrent, reduce the scour, and catch the transported sediment. Structures along the watercourses stabilise the river banks to prevent damage to any property of local inhabitants. The mentioned technical measures are proven to be necessary and justified, fulfilling their functions during high discharge rates in watersheds that cause threat to people living in the surroundings.

Services of watershed management are provided by LČR Watershed Administrations responsible for the respective watersheds. The enterprise is committed to watershed management by law. This obligation is not only to secure the forest functions, but also directly relates to the public interest in water as a natural resource.

The principal measures in watershed management involve:

- repair of flood damage caused to watercourses, primarily where representing threat to people or property;
- erosion control;
- due care of the entrusted property using resources allocated to secure the public interest;
- management of riparian vegetation of suitable species composition;
- leaving selected parts of watercourses to their natural development with no further regulation, restoring the natural character of watercourses previously regulated in an unsuitable way.

The concept of measures relating to watercourses prefers **close-to-nature solutions**. The basic principles are the following:

- preferably biological adjustments (e.g. use of herbal and woody vegetation), biotechnical measures (e.g. structures covered with vegetation);
- preferably natural character of adjustments (e.g. natural shape and diversity of the watercourse);
- use of natural (if possible, local) material, such as wood, stone, and wickers;
- use of additional natural elements in technical adjustments to enhance the diversity of the environment and to support life in the watercourse (hiding places for fish, installation of dead wood, etc.);
- enhancing the retention capacity and biodiversity of the landscape, i.e. construction of small water reservoirs, pools, and wetlands;
- restoration of watercourses with previous unsuitable regulation, with a possible overflow of water into the flood plain;
- support of endangered species of organisms – conservation and creation of favourable conditions for their existence, or reintroduction (European Crayfish, European Brook Lamprey, etc.);
- control of non-native invasive plant species in riparian vegetation.

# 3.3. CONSTRUCTION AND MAINTENANCE OF FOREST WELLS, SPRINGS, AND SPRING AREAS

Forests are home to wells, springs, and spring areas of potable and mineral waters. These places serve, above all, the visitors to the forest. Many of them also have other values (historical, cultural, recreational, biodiversity conservation, etc.). The following measures are successively applied for their conservation and restoration.


## Management of Springs and Spring Areas

In the close surroundings and infiltration areas above springs, enterprise LČR applies the following measures:

- no entrance of forest machinery on unfrozen land;
- no groundwork representing risk to the discharge or quality of water;
- no use of chemicals on roads;
- no chemicals in forest tending, fertilisation, no permanent or temporary storage of chemicals, no chemicals in timber treatment;
- no construction or operation of feeding facilities or salt licks, including feeding in open space;
- use of suitable material for road maintenance and repair.

## Management of Forest Wells

The measures adopted by LČR are the following:

- records of forest wells at Forest Districts, Forest Enterprises, and Watershed Administrations, their protection during any forest operations (informing contractors on protection measures);
- restoration and maintenance of wells using natural materials, providing access, management, and cleaning of the surroundings;
- provision of information for visitors at selected wells with analysed water, provision of drinking cups with a LČR logo, etc.

# 3.4. RESTORATION OF WATER RESERVOIRS IN FORESTS

LČR mostly puts emphasis on restoration of old and non-functional reservoirs, which do not serve their original purposes any more. Before their restoration and before construction of new reservoirs, experts should consider their placement in the terrain and assess all the positive and negative aspects relating to the surrounding environment, forest management, and nature conservation.

The measures mainly comprise:

- specifying sites suitable for restoration and creation of new small water reservoirs;
- securing impermeability of embankments using appropriate technical measures based on groundwater research;
- increasing safety of water reservoirs – mainly construction or reconstruction of outlets and emergency spillways to secure safe spill of water during 100-year floods;
- reinforcement of upstream slopes to avoid abrasion;
- stream regulation below outlet;
- silt removal and establishment of storage reservoirs while retaining necessary isles and wetlands on the sides;

- gradual slope of the littoral zone of a storage reservoir (i.e. between water and ground);
- creating conditions for forest visitors through aesthetic adjustments, planting suitable woody species in the surroundings of reservoirs, installation of resting facilities, sheds, etc.

Water reservoirs managed by LČR fulfil the following functions:

- basic functions of water accumulation and retention, enhancing water balance;
- flood control;
- formation of suitable habitats for fauna and flora (numbers and diversity of species);
- fire protection;
- diversity of the area;
- effects on the microclimate;
- recreational and aesthetic.

The practical measures aimed at conserving the species diversity in water reservoirs mainly focus:

- to conserve the actual reservoirs and maintain their favourable water regime, and not to disturb the water chemistry by management activities;
- to adapt any regulation of the water level to existence of certain species (e.g. domestic species of crayfish, shells);
- if needed, to secure translocation of endangered species.

# 4. SOIL PROTECTION FUNCTIONS

## 4.1. CONTROL OF EROSION AND LANDSLIDES

The forest is considered one of the most efficient stabilising natural elements that controls erosion and landslides. Despite this, the forests themselves can be affected by erosion and thus require certain protection.

The reason for the origin, transport, and consequent deposition of the products of erosion are natural, climatic, and hydrological conditions, primarily in the watersheds of source streams and headwaters of our hydrographic network.

**Protection of the soil horizon and mainly its surface humus layer is one of the crucial factors securing the existence of healthy and fully functioning forests.**

For the above mentioned reasons, LČR focuses on the following preventive measures in erosion control:

- appropriate species composition with an adequate share of soil improving and stabilising tree species;
- comprehensive solutions to runoff conditions within construction of forest road networks and other structures in forestry, including regular maintenance;
- use of suitable natural materials and environment friendly technologies for repairs and maintenance of tangible property of LČR;
- use of environment friendly technologies for timber harvest and transport;
- individual operations carried out during suitable seasons (frozen land, drought);
- timely repair of damage caused during construction of roads and other structures, timber harvest and transport.

The measures aimed at repairing erosion damage are generally differentiated as follows:

- biological – exclusive use of natural practices and materials;
- biotechnical – combination of natural processes and technical operations;
- technical – construction.

With respect to nature conservation and the financial aspects, LČR prefers the first two categories of measures. Nevertheless, if such measures do not provide sufficient solutions as to the statics and safety, technical measures are inevitable.

Manifestations of landslides and gully erosion represent a separate category. They constitute specific risks in determined and potentially threatened territories with an existing sliding stratum, which may occasionally be moistened or saturated by water. The danger of landslip manifestations is given by the degree of saturation of the sliding stratum together with the actual loading of the sliding soil.

If landslides occur inside forest complexes where they do not represent any threat to people and their property, they may be left to their natural development based on an agreement with the local state administration body. However, if this is not the case, technical measures are adopted. Such repairs require significant investment, which shall be decided upon based on due consideration of their purposes and efficiency.

The experience of foresters with soil and water protection infrastructure and erosion control may also be used outside the forest. The measures may involve regeneration, maintenance, and establishment of new windbreaks in areas with a high risk of erosion of farmland, establishment of biological centres and biological corridors, and other landscape elements with soil protection and/or flood control functions. Prior to the adoption of these measures, the property relations have to be settled and funds provided for the construction and further maintenance of the structures from sources outside LČR.

## 4.2. SOIL COMPACTION CONTROL

The following measures are taken to reduce the negative impacts of use of machinery on soil, mainly in timber extraction:

- minimising the size of clear-cuts with large volumes of concentrated timber (under forestry legislation in force, while respecting the specific characteristics of the given site, e.g. wet areas);
- where applicable from the point of view of forest management (in areas with a potential formation or existence of natural regeneration, etc.), selection cutting is applied as the primary harvesting practice to reduce the load on soil and to support its subsequent regeneration;
- access of cables to forest stands of all age categories and minimum use of skidders inside the stands;
- primary use of environment friendly harvesting and transport technologies, which cause minimum damage to the soil surface, mainly reduced skidding substituted by forwarders and cable systems, and creation of enabling conditions for such technologies;
- preference given to machinery with a minimum specific load on soil with respect to the geological, hydrological, and climatic conditions (namely tractors, harvesters, forwarders equipped with low pressure tyres, cables on slopes).

# 5. THERAPEUTIC AND SPA FUNCTIONS

The therapeutic functions of spa forests are determined by the statute of the respective spa resort, designated by the Ministry of Health of the Czech Republic. Spa territories are further divided according to the degree of their protection into inner and outer sections. Forests with their therapeutic functions may be directly part of a spa resort or be adjacent to it. They are predominantly designated as special purpose forests under sec. 8(2)(b) of the Forest Act No. 289/1995 Coll. Most of them are located in protection zones of natural healing resources and table mineral waters and thus classified as special purpose forests by the mentioned Forest Act No. 289/1995 Coll. as such.

The role of forests in spa resorts is:

- to protect the natural healing resources (healing springs and peloids);
- to protect the spa resort against excessive noise, dust, and wind;
- to maintain a favourable climate of the spa resort;
- to contribute to the positive aesthetic effects of the spa resort;
- to positively affect the mind of visitors to the spa resort;
- to provide space for outdoor therapy in form of walks or exercise in nature.

The role of these forests may be supported by:

- enhancing rainwater infiltration;
- landscaping and forming highly aesthetic quiet places;
- establishing and maintaining small glades for outdoor exercises;
- planting tree species of a high aesthetic value;
- establishing rest places;
- designing suitable walking trails;
- care of local old trees with respect to their condition;
- planting alleys along roads and paths;
- minimising or eliminating the use of chemicals;
- establishing lookouts.

The above-mentioned activities require cooperation with municipalities and local spa administration bodies.

The species composition also plays an important role as the number of allergic people has been constantly growing. The most significant natural allergens among forest tree species (based on patterns of pollen dispersal, its size, weight, allergenicity, and flowering frequency) are pollens of birch, hazel, and alder. On the other side, pollens of beech, spruce, fir, pine, and larch cause minimum allergies. This fact should be reflected in the management of spa forests and any forests serving mainly for recreation purposes.

# 6. RECREATIONAL FUNCTIONS

From the point of view of their preserved natural, landscape, and cultural values, forests are substantially more significant than arable land of equal size. The recreational function is currently one of the most frequently utilised functions of the forest. The key aspect is the historic tradition of free access to and certain utilisation of forests, which is not that natural to all European countries. The right of the public to this free use of forests may be limited in cases specified by law, e.g. to protect the forest against fires in certain risk periods or to ensure safety and health of the visitors after natural disasters, such as windthrow, or snow damage. The Forest Act further lays down the right of non-motorised access on forest roads. Along their basic function, i.e. for the purposes of forest management, forest roads serve for the integrated rescue system to protect life and property, and also for public recreation; under extreme conditions (floods, extreme snowfall, or windthrow), these roads often represent the only terrestrial connection to certain remote places. The recreational function of the forest has constantly been gaining on significance in the recent decades. Individual outdoor activities have also been undergoing dynamic changes.

Enterprise LČR mainly seeks to support the recreational functions of forests in most frequented forest complexes surrounding large cities and conurbations, i.e. areas with a traditional recreational background. Nevertheless, the recreational functions in other forests under LČR management are not neglected.

In addition to construction of parking places and rest areas along tourist trails, the enterprise communicates with the forest visitors through information boards, nature trails, etc., including through the use of new technologies and means of communication (geocaching, tagging, etc.).

The following activities are further needed to fully secure the recreational function of the forest:

- to constantly develop the recreational potential of forests managed by LČR;
- to use all opportunities to apply the current design manual of information material representing LČR throughout the country.

Adoption of measures to support the recreational functions of the forest counts with a significant cooperation with other partners, such as regional and local administrations, the Czech Tourist Club, Junák – Association of Scouts and Guides of the Czech Republic, Czech Orienteering Federation, Czech Mountain Bike Association, etc.

# 6.1. RECREATION IN THE FOREST ENVIRONMENT

The forest stand is the most visible and effective result of a forester's work. The actual forest management respects the aesthetics of the forest, for example, by maintaining a diverse tree species composition, retaining selected mature trees as orientation points, etc. Foresters use suitable technologies to reduce the period of harvest operations to their minimum.

However, the forest is not only composed of trees, but also of forest glades, views, vistas, forest roads, and other non-forest areas serving for forest management. The following measures are to be taken to enhance the forest environment.

## Increasing the Passability and Depth of Visibility of Forests

Practical measures mainly involve:

- enhancing the passability of forest roads and trails, and maintenance of their surroundings, especially around significant forest demonstration areas of LČR;
- maintenance of existing and creation of new vistas and alleys in recreational areas;
- maintenance of existing views of the landscape;
- creation of new views on suitable sites (with respect to historic data and presence of points of interest, such as castles, lookout towers, etc.).

## Creating Small Resting Areas in the Vicinity of Attractive Forest Stands

Practical measures mainly involve:

- determination of parts of forests attractive for tourists;
- reconstruction or construction of quiet places equipped with a bench (no rubbish bins) on suitable sites;
- installation of information boards on selected sites, providing information on LČR, forest management practices and local matters of interest;
- special signs should lead visitors to significant places that are more distant from the main road or trail.

## Creation and Maintenance of Aesthetic Glades and Quiet Places in Forests

Practical measures mainly involve:

- records and legalisation of existing glades and quiet places as non-forest areas and other land in forest management plans;
- enhancing these glades by planting suitable tree species, with respect to their habit, colour structure, etc.;

- regular maintenance of glades, mainly by mowing and control of invasive plants;
- design of new sites suitable for glades when drawing up forest management plans (sites exposed to sunshine, turning roads and trails, etc.);
- maintenance of existing forest arboreta.

### Reconstruction, Construction, and Maintenance of Lookout Towers in Forests

Practical measures are:

- evaluation of the condition of existing lookout towers owned by LČR;
- reconstruction and regular maintenance of selected structures;
- installation of boards providing information on LČR activities in the surroundings (tourists will find a LČR sign or a tourist mark directing them to lookout towers located out of the main road or trail).

The enterprise will support intentions of municipalities, the Czech Tourist Club, or other entities by leasing the respective land.

## 6.2. RECREATION AND FOREST ROADS AND TRAILS

The network of forest roads and trails offers the visitors opportunities to reach interesting places and structures inside the forests, and to pick up mushrooms in their favourite areas. Many roads and trails are regularly used for recreation. Their maintenance deserves more attention to provide the required recreational functions for forest visitors. The forest road network and selected trails, paths, and sidewalks will be made accessible to disabled people. Information on trails of LČR (including their suitability for individual groups of visitors) will be published on the web pages. Cooperation with the bodies of the integrated rescue system will continue to develop.

### Reconstruction and Maintenance of Hiking Trails, Paths, and Walkways

The practical measures mainly involve:

- cooperation with the Czech Tourist Club on installation of information boards on traditional tourist trails;
- preferential repair and maintenance of selected tourist trails;
- establishment of a systemic network of trekking trails (walking paths) in suitable areas to connect various places of interest, such as parking places, lookouts, cultural monuments, etc.;
- cooperation with the Czech Tourist Club, state administration bodies, and other forest owners on designing new or changing the existing tourist trails.

### Establishment of Cross-Country Skiing and Orienteering Trails

The following measures are substantial:

- to make maximum use of existing trails for cross-country skiing – these should start and end at parking places accessible in winter periods;
- to maintain selected trails in cooperation with other partners to prevent damage to forests;
- to design new trails in cooperation with the Czech Tourist Club and sport clubs which may operate and maintain selected trails as tenants;
- in areas with the tradition of orienteering, to allow sport clubs to lead their trails through forests and thus direct this type of recreation to areas where other functions of the forest will not be jeopardised.

### Reconstruction and Maintenance of Forest Biking Trails and Construction of Single Tracks

The measures comprise:

- use of the existing forest road network, which will be regularly repaired and maintained with due attention;
- biking trails will lead to areas of tourist and sport interest to minimise clash with machinery and transport in forestry operations;
- trails will be marked with a symbol bearing the LČR logo;
- in suitable areas, the enterprise will support construction of near natural biking single tracks in cooperation with the Czech Mountain Bike Association, local municipal offices, the Czech Tourist Club, and sport clubs;
- selected trails will be available for lease for the purposes of use and maintenance.

### Establishing Special Horse Trails

The measures involve:

- establishment of horse trails in areas of recreational horse breeding or racehorse farms, if these guarantee no ride in the forest outside the trails;
- trails will be marked with a symbol bearing the LČR logo;
- trails will lead to predetermined areas to avoid excessive damage to forest roads and forest stands.

### Other Outdoor Activities in the Forest

Any request for active support of other outdoor activities in forests (e.g. inline skating, via ferrata, paragliding, high ropes adventure centres, tree top walks) provided to self-governing bodies, sport clubs, or other entities shall be subject to individual considerations based on local conditions and characteristics of the activities. For example, the land may be leased in compliance with the legal regulations in force while transferring the responsibility for security to the tenant.

## 6.3. MANAGEMENT OF FUNCTIONAL BUILDINGS AND PROPERTIES

This category includes properties that are considered significant for a specific reason. Some are cultural or historical monuments, others remind us of significant persons or events in forestry, or they serve for the needs of water management, soil protection, or game management. All these properties may provide the visitor to the forest with interesting information on cultural or historical events, or on current forest management practices of LČR. Some of them are adapted to be accessible for people with disabilities.

### Protection and Care of Cultural Monuments in Forests

The measures involve:

- regard to the presence of cultural monuments and archaeological findings in forests within any forestry and investment activities of LČR;
- permanent cooperation with the National Institute for the Protection and Conservation of Monuments and Sites when managing these structures (notice of terrain work, removal of self-seeded vegetation, etc.);

- in selected cases, providing visitors with information on certain monuments or archaeological findings (according to their character and as agreed with the respective state administration bodies involved in care of historical monuments);
- making visible the silhouettes of selected cultural monuments and historical views of and from them;
- notices of hazard, no trespass, physical barriers, and similar measures to inhibit access to unsecured structures;
- participation of municipalities, civic associations, and other entities in maintenance or operation of these structures in form of lease or sale (structures listed as of special cultural or historical interest only when approved by the state body responsible for care of historical monuments).

## Management of Small Structures and Facilities of Regional Importance

### Maintenance and Renovation of Small Forestry Monuments, Memorial Plates, and Their Surroundings

The practical measures involve:

- cleaning, repair of inscriptions, and maintenance of the surroundings;
- completing information boards with additional data on historical circumstances, marking routes to these sites from tourist trails, parking places, and rest areas (based on local conditions and visit rates);
- maintenance and repair of specified memorials and memorial plaques commemorating important foresters even outside forests (at the enterprise expenses or in cooperation with other entities);
- building new memorials or memorial plaques in memory of those who significantly contributed to the good name of forestry or died at work and have not been commemorated this way until present.

### Fortifications (Historical Structures of Defensive Character and Property of LČR)

The measures (by their character and condition of the structure) involve, for example:

- facilitating public access to suitable structures and their marking with information boards provided with the LČR logo;
- use of selected buildings as information centres;
- possible participation of registered interest groups, civic associations, or municipalities in the maintenance or operation of these buildings in form of lease;
- security measures on structures not determined for public use to avoid access of unbidden persons.

### Maintenance or Reconstruction of Other Historical Technical Structures and Facilities

The practical measures mostly represent determination, reconstruction, and maintenance of selected preserved structures documenting history of forestry (water reservoirs and channels used for timber rafting, log slides, water sawmills, forest railways), and structures of forest amelioration.

## Establishment of Forest Campsites and Campfire Sites

The practical measures are as follows:

- more extensive rest areas or forest campsites with safe fire places may be established on suitable sites representing no risk of fire;

- a responsible manager will always be appointed for each forest campsite;
- resting areas and campsites will always be marked with an information board provided with the LČR logo and rules of use.

### Small Resting and Special Purpose Structures and Facilities

The principal practical measures are the following:

- building rest shelters (pavilions) or benches with tables on suitable sites (i.e. close to intersections of frequented tourist trails in the forest, landscape views, storage reservoirs); preference is given to natural construction materials, such as wood or stone;
- unused hunting lodges or shelters for forest workers may serve for special interests or as information centres;
- these buildings may be freely accessible throughout the year (equipped with information boards).

### Building Small Parking Lots and Lay-by Areas at Entries to Forests

The practical measures include:

- reconstruction of existing lay-bys by access roads to regular parking lots (also taking into account when building new roads);
- installation of boards showing maps of the surroundings and interesting local information on selected parking places.

### Aesthetic Modifications in Historical Game Preserves

Historical game preserves serving for the management of more valuable game species were usually designed to provide a high aesthetic value, which was formed by exceptional landscaping for game management purposes and to offer highly aesthetic experience. Artists inspired by the beauty of these game preserves produced a number of significant artworks (paintings and music). To retain the aesthetic value of these preserves, it is substantial to:

- duly manage solitary trees of exceptional value;
- substitute dying trees by new plants;
- complete new plantations and create new vistas based on landscape projects;
- regularly provide public access to these historical game preserves.


## 6.4. FIELD EDUCATION AND INFORMATION SYSTEM IN RECREATION

To provide visitors with tools for better orientation in areas managed by LČR organisational units and/or in forest complexes, the enterprise will establish a new or complete and further develop the existing information system. In compliance with the LČR design manual, a unified system of guideposts will be maintained.

The measures mainly comprise:

- installation of information boards on frequented sites where forestry operations are carried out, with the view to informing the public on individual operations and their purposes, and on certain safety measures and no access in case of natural disasters and timber harvest;
- installation of information boards on frequented sites (lookouts, places of natural or forestry values, rest places, nature trails, etc.) with the view to informing the public on forest management practices of LČR and on the organisational unit managing the given area, and possibly on any interesting local facts related to forestry;
- establishment and maintenance of nature trails of LČR;
- connectivity of information tools to tourist signs of the Czech Tourist Club;
- publishing on LČR web pages information on nature trails, facts of interest related to nature, rules on how to behave in nature, and other related information.

# 7. CONSERVATION OF BIOLOGICAL DIVERSITY

The richness of the Czech nature is given by the country's location and its vertical diversity, and by the historical settlement. The forest was the original climax stage in most of the Czech Republic. Human settlement throughout centuries brought its conversion to farmland and other land in suitable areas. Intensification of agriculture in the mid-20th century caused severe degradation and reduction in the number of valuable non-forest habitats. Forests also suffered the negative impacts (global air and water pollution load). Despite this, they still represent the most stable and preserved element of our nature.

Currently, the total forest area in the Czech Republic covers more than a third of the country. The forest is home to a number of species and refuge for others in case of danger. This chapter presents measures aimed at conserving and enhancing the forest biodiversity.

Conservation of any species in situ or ex situ is, to a certain level, comparable to game management. The secondary protection of rare and endangered organisms focuses on a much larger number of species, though. This means numerous limitations and sometimes conflicts as to which species should be given a priority.

**Implementation of the principles of sustainable forest management is the basic (primary) management measure.** This ensures that forest nature conservation not only relates to specially protected areas (i.e. areas protected under the Czech legal system) or the Territorial Systems of Ecological Stability (TSES), but also is integrated in forest management in general.

As edificators of forest ecosystems, forest tree species play the key role in forest biodiversity. Within its activities, LČR will continue in its efforts to form forests diverse in species, space, age, and groups, and will not reduce their species composition. For the purposes of conservation and reproduction of forest tree species gene resources, we have to maintain gene pools, providing resources for the conservation of regional populations of forest tree species, and forest stands or individual trees determined for harvest of reproductive material. The management practices applied in these forest stands should prefer conservation of the gene pool to, for example, the requirements of spontaneous development from the side of nature conservation. The Concept of Forest Tree Species Gene Conservation and Reproduction at LČR for 2010-2019 lays down regulations for the above-mentioned practices.

Comprehensive protection of the respective sites (ecosystems) and their differentiated management are crucial for the conservation of individual species of organisms. A special measure may be applied not to provide information to the public on the distribution of certain rare species to avoid undesired visit rates. Other (secondary) measures are as follows:

- cooperation with respective experts from the Academy of Sciences of the Czech Republic, the Agency for Nature Conservation and Landscape Protection of the Czech Republic, universities, museums, the Czech Union for Nature Conservation, and other institutions on inventories of selected species and groups of organisms (e.g. crayfish, shells, forest ants, bats);
- cooperation on specific measures relating to in situ conservation and support of populations of the mentioned organisms, with respect to the occurrence of other species;
- cooperation with respective experts on translocations, management under artificial conditions; in most cases, these measures may only be adopted by persons holding special permissions under the saving clause issued by the given authority of nature conservation under Act No. 114/1992 Coll., on the conservation of nature and landscape.

## 7.1. MANAGEMENT OF SPECIAL PROTECTED AREAS

Significant 30% of the area managed by LČR is part of protected landscape areas. The enterprise manages more than 40% of all small-scale special protected areas, i.e. national nature reserves (NNR), national nature monuments (NNM), nature reserves (NR), and nature monuments (NM). LČR thus manages the largest size of special protected areas in the country. Special protected areas are areas under a regime of protection in compliance with Act No. 114/1992 Coll., on the conservation of nature and landscape. LČR manages them exclusively at its own expense, with no link to the public budget or other resources.

The development of natural conditions in these areas is regulated based on approved care plans, which serve for elaboration of forest management plans and territorial planning. The individual conservation measures may vary substantially according to the subject of conservation,

current condition of the site, potential impact of external effects, etc.

Measures towards the conservation of small-scale special protected areas (NNR, NNM, NR, NM):

- to maintain or possibly complete with missing elements (e.g. fir, elm) the existing close-to-nature species composition;
- to successively convert the unsuitable species composition on sites within these areas;
- to incite elimination or reduction of game feeding;
- based on an agreement, to allow entitled persons to carry out measures aimed at supporting distribution of rare species of fauna and flora.

## 7.2. DELIMITATION OF NON-INTERVENTION AREAS

Since 2002, the enterprise has been cooperating with the Agency for Nature Conservation and Landscape Protection of the Czech Republic on delimiting non-intervention areas in forests and their monitoring. The acquired data will be used to develop nature-oriented forest management practices and to define management of protected areas.

The measures are:

- to continue in delimiting new non-intervention areas under the above-mentioned agreement;
- to publish on the Internet information related to individual non-intervention areas.

## 7.3. NATURA 2000

Natura 2000 is an ecological network of nature protection areas with a defined level of protection in individual Member States of the European Union. Its objective is to maintain and protect selected endangered species of fauna and flora and selected habitats in conditions favourable for their conservation, in compliance with the respective EU legislation. In the Czech Republic, Natura 2000 comprises 41 Special Protection Areas (on total 703 thousand ha, on 227 thousand ha of LČR forests) and 1 087 Special Areas of Conservation (on total 785 thousand ha, i.e. 263 thousand ha of LČR forests). The total area of Natura 2000 network on land under LČR management amounts to 388 thousand ha (some SPAs and SACs mutually overlap). Along with special protected areas designated under national legislation, they constitute nearly 45% of all forests managed by LČR.

The measures involve:

- management of these areas with the view to protecting the subjects of conservation, while minimising limitations to forest management;
- determination of areas demonstrating management of Natura 2000 sites for presentation at the national and international level.

## 7.4. OTHER SITES OF INTERNATIONAL SIGNIFICANCE

The Czech Republic is home to a number of sites of European or global significance under international conventions and other platforms. Many of these are located or partly overlap with the land managed by LČR. They include Ramsar wetlands, UNESCO Sites, UNESCO Biosphere Reserves, and UNESCO Geoparks.

Listing a site as one of the sites of international importance or awarding it the European Diploma of Protected Areas, we also recognise the work of past generations and the current generation who have contributed to the care of the given areas, including the indispensable forest owners and licensed forest managers.

## 7.5. CONSERVING HABITATS OF PROTECTED, ENDANGERED OR OTHERWISE VALUABLE PLANTS AND THEIR MANAGEMENT

Various species of vascular and non-vascular plants and fungi, including protected, endangered, or otherwise valuable species are natural part of forest ecosystems. In our

conditions, vascular plants (herbs) form mainly undergrowth of forest tree species. The diversity of undergrowth depends on a number of factors that change in time even in natural forests. The distribution of individual species may thus alter with no direct human impact.

Sustainable forest management and the use of environment friendly logging and transport technologies are the principal prerequisites to retain the diversity of flora in forest ecosystems.

The measures towards conservation of endangered or otherwise valuable species of flora mainly include:

- cooperation with the bodies and organisations of nature conservation on inventories of focal species;
- ensuring protection of these species in forestry operations (use of environment friendly practices embedded in business contracts and informing contractors on the location of sites requiring special protection);
- allowing special measures to maintain, support, or reintroduce populations of certain species.

With the view to reducing the negative impacts of investment activities in forests, the enterprise requires from its building contractors to use inert material or possibly material of the pH equal to the pH of the subsoil in the given area (of particular importance in mires), and to adhere to preventive measures to control distribution of invasive plants.

Use of non-native tree species in artificial regeneration should be considered with respect to a potential threat to the preserved original ecosystems. Such a threat, which implies no use of these species, is understood as:

- interbreeding with native tree species and production of offspring capable of dispersal (threat to the genetic integrity of local populations);
- expansive character towards existing plant communities (e.g. Robinia in forest steppe habitats);
- suppressing relict, endemic, or otherwise rare and threatened plant species.

# 7.6. CONSERVATION OF RARE AND ENDANGERED SPECIES OF FOREST TREES AND SCRUBS AND THEIR MANAGEMENT

These activities have been part of forestry for many years and are also listed as one of the measures in the Programme of Sustainable Forest Management - Forest Tending and Regeneration. Implementation of these measures contributes and will contribute to enhancing the distribution of rare and endangered species of trees and scrubs (yew, wild service tree, wild cherry, true service tree, etc.) and indirectly also of other organisms that depend on these woody species.

Forests are sometimes home to old regional varieties of fruit trees, which may be significant for their gene pool as they enhance the bearing capacity of the hunting ground or support certain endangered species of insect.

The practical measures principally involve:

- records of sites with distribution of focal species and old regional varieties, their conservation and in situ regeneration;
- securing reproductive material (primarily seed) and subsequent growing of “wild local populations”;
- acquiring grafts from old regional varieties and their use in specialised gardens;
- elaborating a list of scrub species recommended for introduction in the forest species composition and securing reproductive material for their further cultivation;
- planting on suitable sites (e.g. at forest edges);
- elaboration of rescue and reproduction programmes for individual species;
- leaving old dead and decaying trees on suitable sites in forest stands as niche habitats for endangered and protected species of organisms.

## 7.7. MEMORABLE AND SIGNIFICANT TREES OF LČR

In the territory managed by LČR, we can find both solitary trees and trees in groups or alleys that are designated as memorable under the Act on the Protection of Nature and Landscape. Their protection is predominantly ensured by elimination of any activities in their protection zones that may cause damage or threat to them. Active care of these trees (pruning, treatment of cavities, etc.) is provided under agreements with the respective body of nature conservation.

Between 2003 and 2004, LČR conducted a unique mapping survey of trees in the territory under its management that were significant for their age, appearance, relation to a historical event, etc., and that had not been under any legal protection until then. As a result, total 296 trees and groups of "significant trees of LČR" were recorded in the enterprise database and marked in the field by information boards of a uniform design.

The practical measures mainly involve:

- permanent care of significant trees of LČR;
- maintenance and amendments (recording new trees) to the database of significant trees of LČR;
- presentation of selected memorable and significant trees of LČR on the web pages.

## 7.8. CONSERVATION OF HABITATS OF PROTECTED, ENDANGERED, OR OTHERWISE VALUABLE SPECIES OF FAUNA AND THEIR MANAGEMENT

Nearly 99% of all 41 000 estimated species of fauna occurring in the territory of the Czech Republic are invertebrates. No invertebrate (apart from the domesticated European Honey Bee) is subject to long-term management. Among wild vertebrates, long-term managed are only populations of certain species of game and fish.

Due to the negative changes in the environment in the past 50 years, the populations of other many species of fauna, including those long time considered as beneficial, have been significantly reduced (mostly not affected by forestry activities). Conservation of most fauna species, particularly invertebrates, consists of maintenance and possible improvement in the diversity of habitats, their inner structure, and/or suitable management.

Some species depend on secondary habitats formed by human activities generally perceived as undesired (e.g. sand martins nesting in bare walls of sand pits, sundew on oligotrophic sands of sand pits, amphibians in small water bodies in quarries).

Suitable measures are:

- maximum implementation of biological forest protection, which simultaneously supports and increases biodiversity (protection and support of ants, etc.);
- in case of inevitable application of chemicals, use of the most selective products, optimum timing of intervention of the minimum extent, etc. (with maximum respect to non-target species on site);
- to protect against any impacts of timber harvest and, on suitable sites, to plant domestic melliferous and fructiferous trees and scrubs;
- to intentionally leave to natural development a certain proportion of pioneer and interspersed trees on suitable sites;

- to determine suitable sites (e.g. abandoned quarries, clay pits and sand pits exposed to the south, southeast, or southwest) and cooperate to create new (artificial) conditions to support nesting of pollinators (solitary bees and bumblebees);
- to respect and protect overwintering hideaways of amphibians and reptiles (e.g. spring areas, karst cavities, abandoned mine galleries, etc.);
- to respect and protect winter roosts of bats (caves, abandoned mine galleries, cellars and lofts of various buildings);
- to preserve certain secondary habitats or their parts that are home to threatened species of fauna and flora (e.g. wetlands formed by undermining, some quarries, sand pits). No reclamation and artificial regeneration is carried out based on an exemption granted by the respective forest state administration body;
- to permit establishment of artificial hatching places, and nesting areas and hideaways for specified species and groups of fauna on suitable sites.

## Support and Conservation of Birds

Support and conservation of birds, particularly insectivorous passerines, birds of prey, and owls, have been of a traditional interest to foresters, who have long time known and recognised their significance in forests, mainly as contributors to the biological control of insects and rodents. In case of scarce natural nesting cavities, for example, in younger forest stands, installation of appropriate types of bird boxes represents a very efficient tool to support populations of cavity nesters. Nest platforms for other bird species not nesting in cavities serve similarly.

The suitable measures to support birds are mainly as follows:

- to maintain a varied structure of forest stands locally open to allow more light and warmth to penetrate;
- to leave in the forest stands sufficient numbers of live and dead den trees;
- production and installation of nest boxes and nest platforms for passerines, birds of prey, owls, or other bird species, regular checking, cleaning, and maintenance;
- to conserve the gene pool and habitats of threatened species of birds of prey and owls, to support captive breeding of certain species and their release in nature;
- on sites with occurring exceptionally rare species, in particular on sites within the Natura 2000 network, to limit work in the forest during their nesting season.

LČR produces nest boxes, feeders, bat boxes, and bumblebee nest boxes at its own expense in the Seed Production Plant in Týniště nad Orlicí. These are installed and maintained under close cooperation with NGOs, mainly with the Czech Union for Nature Conservation.

## Support of Other Fauna Species

The conservation of species diversity should not forget those depending on human settlements (Barn Owl, swifts, bats, etc.). The buildings are checked before maintenance and reconstruction to verify occurrence of these species. Should they be present, any interventions are consulted with a respective expert (from a museum, AOPK ČR, etc.) and carried out with respect to the species.

Other possible activities related to forestry may involve support of breeding of cold blood horses, historically tied to forest management.

## 7.9. CONSERVATION AND MANAGEMENT OF SPECIAL HABITATS

From the perspective of their natural conditions, special habitats are understood as

- excessively waterlogged habitats inhibiting existence of the forest, e.g. covers of shrub willows and associations of reed and sedge, spring areas, often not recorded in maps due to their small size, associations of bogs and fens, dwarf-shrub heaths and peat bogs;
- extremely dry habitats, such as thermophilic steppe formations, forest-steppe associations on upland clearances and "bald patches", mapped as part of various thermophilic oak forests, pioneer herb associations on primitive sandy soils and rocks, mapped as part of non-forest areas, pine forests, and dwarf oak forests, i.e. forests with a soil protection function;
- extremely cold habitats (at subalpine fringes in mountain protection forests) of acidophilous formations of non-fertilised short grass meadows, pastures, heaths and decayed peat bogs; mountain to alpine tall grass alluvial meadows and grassland.

The measures include:

- delimitation of non-forest associations on forest land, in habitats extremely unfavourable for the growth of a closed forest (e.g. wetlands, small water bodies, mires, banks of water bodies, rocks, debris), and transfer of this land from "forest land" to "other land" by course of sec. 3(1)(b) of the Forest Act, within the renewal of forest management plans;
- to eliminate or substantially reduce burning of brushwood or other biomass on these sites.

Special measures potentially adopted by a forest manager in special habitats are:

- maintenance or recovery of succession stages of the formations (e.g. reestablishment of open water in a part of a mire);
- preservation or reintroduction of historical forest management practices important in conservation, such as coppice or coppice with standards in areas with a risk of landslide, pollard willows on pond banks, mowing of mire and fen meadows carried out by contractors.

Floodplain forests in inundation areas require specific care. They constitute approximately 4% of all forests in the Czech Republic. Their existence was threatened in the past by severe regulations of watercourses running through these areas.

The remedial measures partly conducted by LČR since its establishment in floodplain forests in the district of Břeclav (FE Židlochovice) involve:

- measures to preserve or re-establish the regime of natural inundation, or simulation of the original state by artificial inundations (renewal of the system of channels and dykes, transverse dykes regulating the water discharge, retention and release), drawing up operational rules;
- conservation, cleaning, restoration or creation of new water habitats – lakes, river side arms, seasonal or permanent wetlands;
- management of incorporated grassland, including planting solitary trees.

## 7.10. DEAD WOOD INTENTIONALLY LEFT IN THE FOREST

After soil, dead wood is the second richest niche in the forest ecosystem. It provides for the development of a number of saprophytic invertebrates and represents a permanent or temporary refuge for many other organisms. Thicker trunks offer more stable temperatures and moisture, i.e. more favourable conditions for the development of species more sensitive to these factors.

The practical measures include:

- to intentionally leave an appropriate proportion of trees to spontaneous development and decay while respecting the principles of forest protection and safety of visitors;
- to intentionally leave to spontaneous development fragments of over-mature forests on suitable sites in special protected areas or in special habitats in the extent agreed by LČR and the respective nature conservation authority;
- to leave on suitable sites certain amounts of biomass debris, including thicker branches and trunks, in order to support the development of insect, amphibians, and reptiles which do not cause damage to the forest, etc.

## 7.11. MANAGEMENT OF CLOSE-TO-NATURE FOREST MARGINS

Transitional zones between various formations, e.g. between a forest and a meadow, play an important part as to the biological diversity and the structure of the landscape as they provide more ecological niches than the adjacent communities. They are usually more diverse in species and have higher population densities, which is, for example, evident in passerines.

The principal practical measures are:

- within any forest management activities, including regeneration, to retain to the maximum extent the existing forest cover and shrubs causing no damage at forest edges;

- within regeneration, to retain autochthonous species, particularly broadleaves, including shrub undergrowth, in the forest edge vegetation;
- to plant on suitable sites missing tree and shrub species of local provenance.

## 7.12. CONTROL OF UNDESIRABLE NON-NATIVE INVASIVE SPECIES OF PLANTS

Spread of certain species of non-native plants has been a common problem to the Czech Republic and all Europe in the recent decades. In relation to the forest, the most significant representatives of this group of plants are the Giant Hogweed (*Heracleum mantegazzianum*), knotweed (*Reynoutria sp.*), the Small Balsam and the Himalayan Balsam (*Impatiens parviflora, I. glandulifera*), the Jerusalem Artichoke (*Helianthus tuberosus*), Heartleaf Oxeye (*Telekia speciosa*), etc.

Most of the mentioned species depend on the conditions of fluvial plains of watercourses. They frequently form continuous covers inhibiting growth of other herbs or seedlings of trees. They largely limit access to the affected areas, may contribute to erosion of river banks in winter periods, represent a risk of health to humans in direct contact (Giant Hogweed, Heartleaf Oxeye), etc. Apart from the Small Balsam, the species do not spread spontaneously to any significant extent outside floodplains or abandoned agricultural land. Successive transformation of spruce monocultures into mixed forests may represent an efficient and long-term measure to control the Small Balsam.

Application of adequate herbicides is the most efficient practice to control invasive plants. The entire elimination of these plants is typically a longer process as the seeds and living rhizomes remain in the ground.

The practical measures to be adopted are:

- mapping of invasive species of plants, mainly of the Giant Hogweed and knotweed on land and along small watercourses under LČR management;
- assessing the need for action and the expected results;
- ensure that the measures are taken in compliance with a verified methodology (primarily in places with initial occurrence, along watercourses in downstream direction, under cooperation with all owners and mangers of the land subject to the measures).

# 8. PRODUCTION FUNCTIONS

Part of the economic pillar of sustainable forest management, the production functions of forests will always be dominated by production of timber as a renewable source of raw material available for future generations. The fast pace of the development in the 21st century makes it very difficult to anticipate whether the species composition, size, and quality of the forest stands currently being established will fully comply with the consumption needs of the society in a long-term horizon. It is highly predictable that the future production will not only focus on the quality of the produced timber but also on maximum volumes of produced biomass as a source of energy and raw material for chemical industry.

At present, the economy of forestry is largely based on income from a single product – timber. Only timber can ensure the economic viability and long-term competitiveness of forest enterprises. Sustainable forest management and all functions of the forest mentioned in this Programme may only be secured through profitable forestry.

With respect to the above-mentioned facts, the sites with non-native suitable species will continue to gain more importance (in particular, the Douglas Fir, Grand Fir, or Black Walnut). These trees can increase production and represent a stabilising element in future forest ecosystems in relation to the potential climate change. The requirement to retain the most natural species composition in forest stands is thus fully justified only in national parks, first zones of protected landscape areas, small-scale special protected areas, and partly in protection areas of the Natura 2000 network.

The Programme of Sustainable Forest Management is the principal document of LČR regulating timber production. It determines long time valid and proven practices ensuring the genetic quality, regeneration, tending, and protection of the forest. A differentiated approach to management is implemented depending on various site conditions, including the respective costs and the functions the given forest is fulfilling.

## 8.1 TIMBER PRODUCTION

Considering the public interest in forests, we should primarily pay attention to timber production in areas where it has its historical significance but is currently jeopardised. This is mainly a problem of air polluted border areas.

The enterprise will continue to put special efforts in reestablishment of forest ecosystems disturbed by pollution, windstorms, snow damage, pest outbreaks, or floods. Significant financial means for such investments are acquired from LČR resources and EU funding programmes. Conversion of forest stands in long time air-polluted areas is a type of revitalisation after old environmental load, but in extensive areas.

Long-term deposition of pollutants from air resulted, among other effects, in high concentrations of toxic metals (aluminium, etc.) and washout of basic elements (calcium, magnesium) indispensable for the nutrition of forest trees. The extent of damage caused to forest stands and the potential of their recovery depends, inter alia, on the buffering capacity of soil, the rate of washout of pollutants, the species composition of the forest stands, and the supply of insufficient nutrients and other elements.

The principal measures to be taken in polluted areas are:

- to complete regeneration of polluted forest stands using a wide range of suitable tree species and applying supporting measures and methods to improve the soil condition and to enhance the growth, such as aerial liming and fertilising, or ground fertilising of seedlings after planting;
- to successively convert stands of substitution species to the target species composition while reflecting the given natural conditions, based on the conditions and trends in the development of these forest stands and with consideration to the actual success in the reduction of pollutants contained in soil;
- to tend the existing and newly established forest stands with the view to obtaining the target species composition.

## 8.2. FOREST CERTIFICATION

The objective of forest certification in general is sustainable forest management based on three equally important pillars – ecological, economic, and socio-cultural. LČR currently holds the prestigious certificate on the most widespread forest certification system PEFC for the entire area under its management. This certification serves as an independent external proof of audit of LČR forest management for the information of the professional and non-professional public. Apart from this, forest certification is one of the requirements on some timber markets.

To support forest certification at LČR, the enterprise will use, in compliance with the licence agreement, the PEFC logo on advertising materials and structures built within Programme 2020 or in cooperation with external entities (shelters, nature trails, etc.), or various wood products (minor forest production of LČR forest enterprises, nest boxes, etc.).

For the above reasons, LČR will demand, in relevant public tenders, e.g. purchase of stationery, wood and paper-based products provided with the PEFC logo.

## 8.3. OTHER FOREST PRODUCTS

The production functions of the forest also involve non-wood products, such as fruits, seed, medicinal herbs, or game as a product of game management. In non-wood production, LČR will also follow the principles of sustainability and make sure that such production does not affect the quality and condition of the forest resources.

Certain forest areas have a potential to provide significant volumes of the mentioned non-wood products. Only a balanced use and protection against excessive exploitation or damage can guarantee their sustainability. This shall be ensured in cooperation with state administration bodies or the Police of the Czech Republic. The experience implies, though, that the most efficient is when the public is aware of the risks the devastation of these resources brings. This can be promoted at schools with the help of forest pedagogues, within LČR events organised for the general public, or by publishing educationally focused material.

## 8.4. SUPPORT OF APICULTURE

Beekeeping is one of the oldest forms of animal husbandry. In the beginnings, honey was collected from wild hives in the trees. Beekeeping in our country dates back to approximately the 9th century. LČR supports apiculture both for the production of high quality domestic bee products (honey, propolis, wax, pollen, beebread, bee venom) and for the key role of bees as pollinators in agricultural and forest ecosystems. For these reasons, the enterprise:

- allows installation of bee hives in suitable places in forests (for non-commercial use free of charge);
- supports planting of native nectariferous and polliniferous tree species, particularly at forest edges.

# 9. GAME MANAGEMENT

LČR practices game management in compliance with the Act on Game Management as a set of activities carried out in nature and related to wildlife as part of an ecosystem. By retaining and developing game management and hunting traditions and customs, the enterprise contributes to conservation of our national cultural heritage.

The state understands game as renewable natural wealth and has an interest in conservation of all game species in nature. The Basic Principles of the State Forest Policy lay down the requirement to "conserve the gene pool of rare and threatened species of game, including their habitats".

Certain herein mentioned objectives cannot be reached without responsible management of hoofed game populations. Such objectives mainly are "to restore and preserve stable forest ecosystems" and "to increase the diversity of forest tree species".

As the basic activities influencing game populations, game management and hunting at LČR are oriented towards sustainable forest management. LČR considers as ideal in relation to the forest such populations of game that enable artificial and natural regeneration of principal soil improving and stabilising tree species that are protected against game damage under legal regulations in force.

To reach the objectives of the mentioned public interest, LČR will continue:

- to establish stable, high quality forests with a diverse species, spatial, and age structure. The sizes of game populations, above all hoofed game, have to correspond this. In this respect, LČR may take part in the establishment of game management areas;
- to support rare and threatened species of game primarily depending on the forest and water environment. LČR contributes to the rescue and support of populations of the capercaillie, the Black Grouse, Hazel Grouse, Peregrine Falcon, Saker Falcon, Imperial Eagle, owls, lynx, the European Wolf, the Common Brown Bear, etc. In rare game species, the enterprise will further preserve and improve the gene pool of the White Red Deer kept in game preserves;
- to provide hunting opportunities in leased hunting grounds to entities entitled to hunting and game management;
- to inform the non-professional public on game species of our hunting grounds and selected game preserves, including observation opportunities.

## 9.1. LČR ADMINISTERED HUNTING GROUNDS

LČR exercises the right to manage its hunting grounds (not leased) in accordance with the legal regulations in force. Hunting grounds administered by LČR mainly serve for demonstration of exemplary game management and the related research, for fee hunting, and for hunting activities of LČR staff.

## 9.2. LEASED HUNTING GROUNDS

Certain hunting grounds owned but not managed by LČR itself are leased. Tenants are chosen based on a selection procedure, which considers the rent and the professional intent, and are held responsible for game management and hunting activities which they are entitled to.

## 9.3. FALCONRY

Falconry is an approximately 4 000 years old hunting method involving training of raptors and protection of the gene pool of rare species, such as falcons or eagles. With respect to its cultural value, falconry was listed as a UNESCO intangible cultural element on 16 November 2010. LČR supports captive breeding of rare birds of prey and their release in nature, and protects their natural breeding grounds. The public awareness on the role of these birds in nature, as a significant element contributing to their protection, is promoted in form of public lectures and demonstrations.

## 9.4. HUNTING DOGS

LČR supports breeding of national breeds of hunting dogs and their training for hunt tests that verify their working abilities. The enterprise provides its hunting grounds for these purposes.

LČR is a traditional partner to organisers of top national dog tests in the Czech Republic.

## 9.5. TRADITION OF GAME MANAGEMENT AND HUNTING

Hunting traditions, as part of the national cultural heritage, are mainly promoted in LČR administered hunting grounds.

The enterprise supports national and international seminars on hunting and game management for the professional public by providing adequate facilities in its possession.

## 9.6. COOPERATION WITH HUNTING ORGANISATIONS

LČR mainly cooperates with the Czech-Moravian Hunting Association and other hunting organisations operating in the country.

The cooperation primarily encompasses support of activities of individual organisations by providing LČR staff, who participate in expert working groups, e.g. in game management councils, committees for game management and evaluation, or as members of panels of judges at various hunting competitions.

# 10. ENLIGHTENMENT OF THE PUBLIC

To ensure that the activities promoting public awareness are meaningful and efficient, it is indispensable to conduct regular marketing surveys focused on how various target groups perceive LČR. The most extensive survey of this type was carried out in 2007. Its objective was to identify methods of communication of the enterprise with the public through modern communication tools and to verify whether the currently utilised communication projects serve their purposes.


## 10.1. COMMUNICATION THROUGH MASS MEDIA

Public media, such as television, press, radio, and web, serve as the main communication means to provide the public with access to information on LČR. Efficient communication should clearly and adequately inform the public on services provided by the enterprise in the public interest, first of these being the methods of forest management itself that bring for the citizens benefits of values that not always can be expressed in financial terms. Some media publish distorted information on excessive exploitation and a bad condition of Czech forests and this should be set straight. We should improve awareness of the work of foresters and explain the cycle of forestry operations with a special focus on those not always perceived as positive, such as logging, reforestation of clear-cuts, or hunting.

It should be emphasised that timber is a domestic renewable source of material and its increased use is desired. The PEFC certification is used by most Czech forest owners and guarantees the public that the wood comes from sustainably managed local forests. The enterprise should aim at external communication and inform the public on its activities and on the fact that forestry and forest management can closely relate to the public interest in forests.

LČR should be clearly presented and promoted as a profitable, competitive and stable enterprise in all aspects of its interests, i.e. economy, the environment, and society.

## 10.2. COMMUNICATION WITH PRESS

Presentation of LČR's results of work, including the implementation of Programme 2020, is one of the principal objectives of daily communication of the enterprise with the media and the general public. The Press Department closely cooperates with the individual organisational units and provides for the publicity of conducted activities in regional or national media, and in magazines relating to lifestyle, tourism, sport, or free time. Such outputs enjoy a very positive feedback and produce adequate publicity of individual implementations, which increases the awareness of their existence among the general public.

## 10.3. DEMONSTRATION AREAS

Demonstration areas are predestined for representation of forestry. They mainly serve for special excursions focused on forestry or the environment. Regularly updated materials are published to provide information on historical and current facts relating to the most frequented areas. An English summary and details on excursion trails are included. The data on individual demonstration areas are also published on LČR web pages.

# 10.4. WORK WITH THE PUBLIC WITH SPECIAL EMPHASIS ON THE YOUNG GENERATION

LČR dedicates sufficient care to work with children and young people. Education and raising awareness relating to forests and the environment are undoubtedly good investment for future. The methodology of work with the youth at LČR is defined in the document called Forest Pedagogy as Integral Part of Environmental Education at LČR. Another document, the Concept of Forest Pedagogy at LČR (2009), further develops the issue. The motto of work with the youth says: "Learn about the forest in a forest".

Education of young people is implemented through several communication projects. The objective set by LČR is to get students in direct contact with the forest and the work of foresters, principally within its own awareness projects and partly by supporting educational projects of other organisations. It is crucial to pass authentic forest-related information through skilled and competent foresters.

## Forest Pedagogy

Forest pedagogy is one of the methods of raising awareness on forestry and the environment. It passes true information concerning forests and forest management through entertaining activities and under supervision of a trained forest pedagogue. Special emphasis is put on acquiring knowledge through experience. Participants learn about the forest using all their senses. This natural perception makes memorising easier.

Forest pedagogy is embodied in neither the Czech nor EU legislation, which gave rise to a working group established by the Ministry of Agriculture, LČR being one of its members. This group developed "Uniform Implementation of Forest Pedagogy at Forest Enterprises in the Czech Republic" (2010).

A forest pedagogue is an expert with education or work experience in forestry and a certified participant of a course of forest pedagogy, who is capable of presenting the forest in an interesting and entertaining form.

At the end of 2010, nearly 180 forest pedagogues, LČR employees, devote their time to forest pedagogy, mostly beyond their work responsibilities. Work with the youth is largely the matter of Regional Directorates (individual organisational units) of LČR. The total number of forest pedagogues increases each year.

LČR first took part in the project of forest pedagogy in 2002 and it remains one of the main pillars of raising public awareness of forests among children and the youth. Forest pedagogy gets young people to know the forest ecosystem and deepens their interest in nature, forests and conservation of the environment. It also improves their relation to and opinion on the forest as such and helps them understand the objectives and methods of forest management. For groups, forest pedagogues organise educational programmes all over the country, which mostly take part in the field.

The provided information forms the grounds for framework educational programmes of schools. Forest pedagogy can thus represent assistance or an alternative in project teaching, education across various subjects or educational areas.

The general public may take part in the activities of forest pedagogy by completing an application form on the Internet pages www.lesycr.cz, in a section devoted to forest pedagogy, or by emailing lesnipedagog@lesycr.cz.

## Day with LČR

The Day with LČR is a traditional, sports and educational event organised for children, their parents, and other public. This type of an event is held at various places all over the Czech Republic in the course of the entire year and the individual dates are published on web pages. The children are encouraged to compete, test their knowledge on nature, their physical abilities; they learn other new and interesting facts at demonstration trainings of raptors, hunting dogs, etc. Days with LČR offer an excellent opportunity to strengthen the relations between the enterprise and the public at the local level. Thanks to the positive public acceptance, the number of these events is growing each year and currently totals approximately 100 annually.

## Information and Education Centres

The main objective of information and education centres (IEC) is to acquaint the public with the work of foresters, including nature conservation, which is historically an integral part of forestry. There is a rich choice of specific programmes for people of any age. The IEC Křivoklát

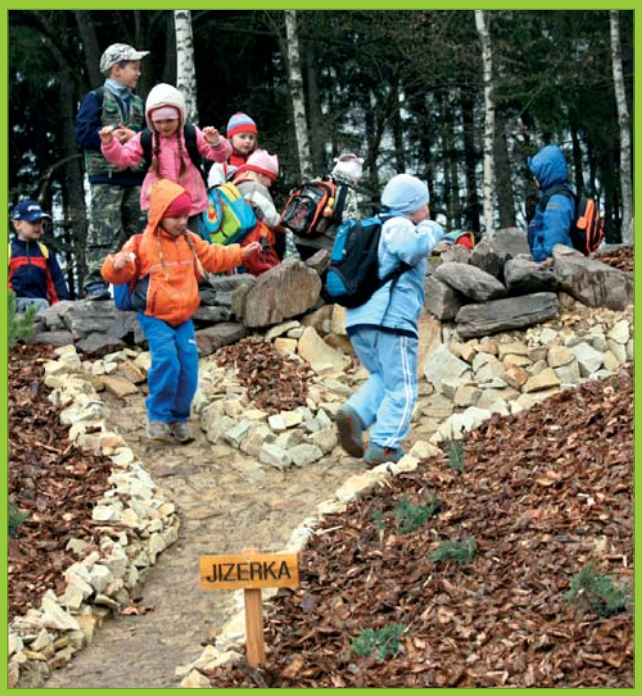
(2005) is subordinate to Forest District Křivoklát. It offers a permanent exposition suitable for visitors of all ages, including interactive elements attracting mainly children. The building of the IEC Křivoklát is surrounded by nature and trekking trails with educational and recreational elements. Other facilities of a similar kind are being established or designed.

## Educational Project "Forest at School – School in the Forest"

The national educational project "Forest at School – School in the Forest", first implemented by association Tereza in 1999, is a traditional and efficient tool of environmental education in the Czech Republic. LČR participates mainly by providing forest pedagogues, who help students do various subject-related tasks laid down by the didactic material. In 2010, over 2000 teachers and 35 000 children took part in the project. The participants learn about the forest ecosystem through unconventional methods and acquire much practical information. The individual tasks based on various didactic material often lead them to the forest, where they test their knowledge, mostly under the assistance of a forest pedagogue. This project is implemented at all levels of basic education.

The work with the youth sets the following current and future objectives:

- to support and develop own activities related to raising awareness and marketing at individual organisational units of LČR;
- to enhance cooperation with regional coordinating entities of environmental education;
- to elaborate working sheets for students and teachers;
- to organise seminars and workshops for forest pedagogues within the professional development of LČR staff;




- to spread forest pedagogy at all levels in the Czech Republic (kindergartens, primary, secondary, and university education, teachers) by organising walks in the forest, lectures, and similar types of meetings;
- to cooperate with centres of environmental education;
- to organise and contribute to competitions focused on forestry;
- to cooperate internationally on projects related to raising awareness (e.g. the European Forest Week);
- to cooperate on organisation of summer camps for children;
- to provide professional support at environmental Olympics for students of secondary schools;
- to provide support and professional consulting services in relation to new teaching material.

## 10.5. PRESENTATION OF LČR ON THE INTERNET

The Internet is one of the principal and most important tools used to widely present the enterprise and express its philosophy, the objectives of its work, and the measures adopted to reach them.

In future, LČR will make efforts to add the following information:

- a complete list of public events, invitations and announcements of individual actions – connection to social networks;
- a complete portfolio of LČR nature trails;
- ideas for trips with an option for a visitor to write a comment or evaluate;
- forestry demonstration areas;
- news regarding professional publishing and announcements of expert events organised by partner entities;
- a section called “Forest Pedagogy”;
- developing the potential of the Internet magazine and the blog;
- special topic photo and video galleries;
- interactive quizzes, competitions, questionnaires, edutainment comics, animation, and other opportunities for children and the youth (topics – nature, forest, foresters, nature conservation, timber and other forest products, etc.).

## 10.6. PRESENTATION OF LČR AT PROFESSIONAL FAIRS AND EXHIBITIONS

The LČR displays at exhibitions focused on forestry, game management, and nature conservation aim to present the aspects of sustainable development and public interest in the forest. Among other information, the enterprise presents its own success in the mentioned areas. Exhibitions and fairs provide opportunities for LČR to invite the public to nature and to the forest. Equally, it is the time to point at the production functions of the forest, which go hand in hand with its non-production functions.

The enterprise will further participate in traditional professional exhibitions in the Czech Republic, such as Silva Regina and Natura Viva. Development of more interactive displays should involve the visitors in various games and educational activities. Each exhibition is accompanied by the Day of LČR.

## 10.7. PUBLISHING AND VIDEO PRODUCTION

Presentation of LČR also involves educational DVD programmes and press material (leaflets, brochures, etc.) mainly designed for the general public. LČR will continue to distribute and promote such materials through its organisational units, information centres for tourists, environmental and educational organisations, schools, and other entities.

# 11. RESEARCH AND EDUCATION

# 11.1. LČR GRANT SERVICE

Since its establishment, LČR has been actively cooperating with the sector of research related to its activities or the managed property. For such purposes, the enterprise provides synergies to the respective research centres and, at the same time, finances or co-finances research projects and expert opinions useful also for other forest owners and bodies of state administration.

In 2002, the enterprise founded its own LČR Grant Service (GS). Its purpose is to secure the aims of the public interest in the sector of science and research of the enterprise and to regulate the forest-oriented applied research to reflect the practical requirements and needs. It also contributes to a fast transfer and application of knowledge.

Each year, the LČR Grant Service advertises tenders for specific research tasks. From its establishment in 2002 to 2010, the LČR GS opened 44 research projects with the total amount of CZK 55 million, excl. VAT.

The complete list of projects, including the results, can be found on the LČR Internet pages. In case of serious interest, a CD with the project outputs may be supplied (in Czech). The final reports are printed in limited numbers for the needs of the respective organisational units or other forest owners, and for the LČR library.

Total 11 ISBN publications (8 brochures and 3 books) were published to widely present the interesting results of research projects under the LČR GS among the professional and forest-oriented public. Apart from obligatory print, these publications are provided free of charge to other specified libraries, research centres, forestry secondary schools and universities, state authorities, forest owners, foresters colleagues abroad, etc.

# 11.2. SUPPORT OF FORESTRY EDUCATION

Since the time of its establishment, LČR has been (and will be in the future) actively cooperating with the sector of forestry education at the secondary and university level. It is in its interest to have professionally well-prepared graduates of forestry schools.

The cooperation mainly encompasses the following areas:

- professional assistance within elaboration of curricula and study programmes at individual types of forestry schools;
- professional lectures given by LČR experts and external teaching at individual types of forestry schools;
- guidance and support of forestry excursions provided by LČR staff, including abroad;

- work of LČR staff in the sector group of forestry at the Research Institute of Professional Education Prague, preparations to elaborate a new career system designed to establish standards of professional education in principal sectors.

Activities of LČR involving cooperation with forestry schools:

- membership in school committees and scientific boards at forestry faculties, with the view to influencing the career profile of graduates;
- announcing topics of graduate theses and dissertations, work of LČR staff as consultants and reviewers of such theses;
- access of pedagogues from forestry faculties and forestry schools to professional events of LČR;
- opportunities to use special and demonstration areas of LČR for excursions and teaching practice;
- providing practice opportunities for students of forestry schools.

# 12. SPECIAL PROJECTS

# 12.1. COOPERATION ON INTERNATIONAL PROJECTS

## EUSTAFOR

LČR is a member of EUSTAFOR, an association representing state-owned forest companies, enterprises and agencies in Europe. As a result of an increasing significance of social functions of forests and higher public demands to provide more state support, in 2010, EUSTAFOR established a working group for ecosystem services. Its target is to define social forest functions most demanded by the public and to propose mechanisms for their financing through EU resources. The outputs will be submitted to the European Commission to subsequently set the principles of financing the EU operational programmes under way, mainly the Rural Development Programme for 2014-2020.

## Special Projects Supported by the EU

LČR intensively participated in the programme of cross-border cooperation before and after the accession of the Czech Republic to the EU. One of the important events was foundation of the Agency for Forest Regeneration Projects in Teplice in 1998, which has implemented several projects contributing to regeneration of forest stands in air-polluted border areas.

In 2009, LČR entered the Cross-border Operational Programme 2007-2013 (Czech Republic and Poland, Saxony and Czech Republic). Within this programme, the Czech Republic and Poland are conducting a project of Czech-Polish Single Track for bikers near Nové Město pod Smrkem in the Jizerské hory Mts. This will contribute to the development of tourism in the area and to enhancing the social functions of the forest. Under the Operational Programme of Saxony and the Czech Republic, LČR is a partner to a research project dealing with pollutants in the potable water resources in the Krušné hory Mts.

The list of individual projects financed from the EU funds can be found on the LČR web pages, section for professional public, information on the EU financial support.

# 12.2. FORESTRY PARKS

The first forestry park named Křivoklátsko was founded on 13 May 2010 in the region of Křivoklát, followed by Forestry Park Bezděz on 11 May 2011.

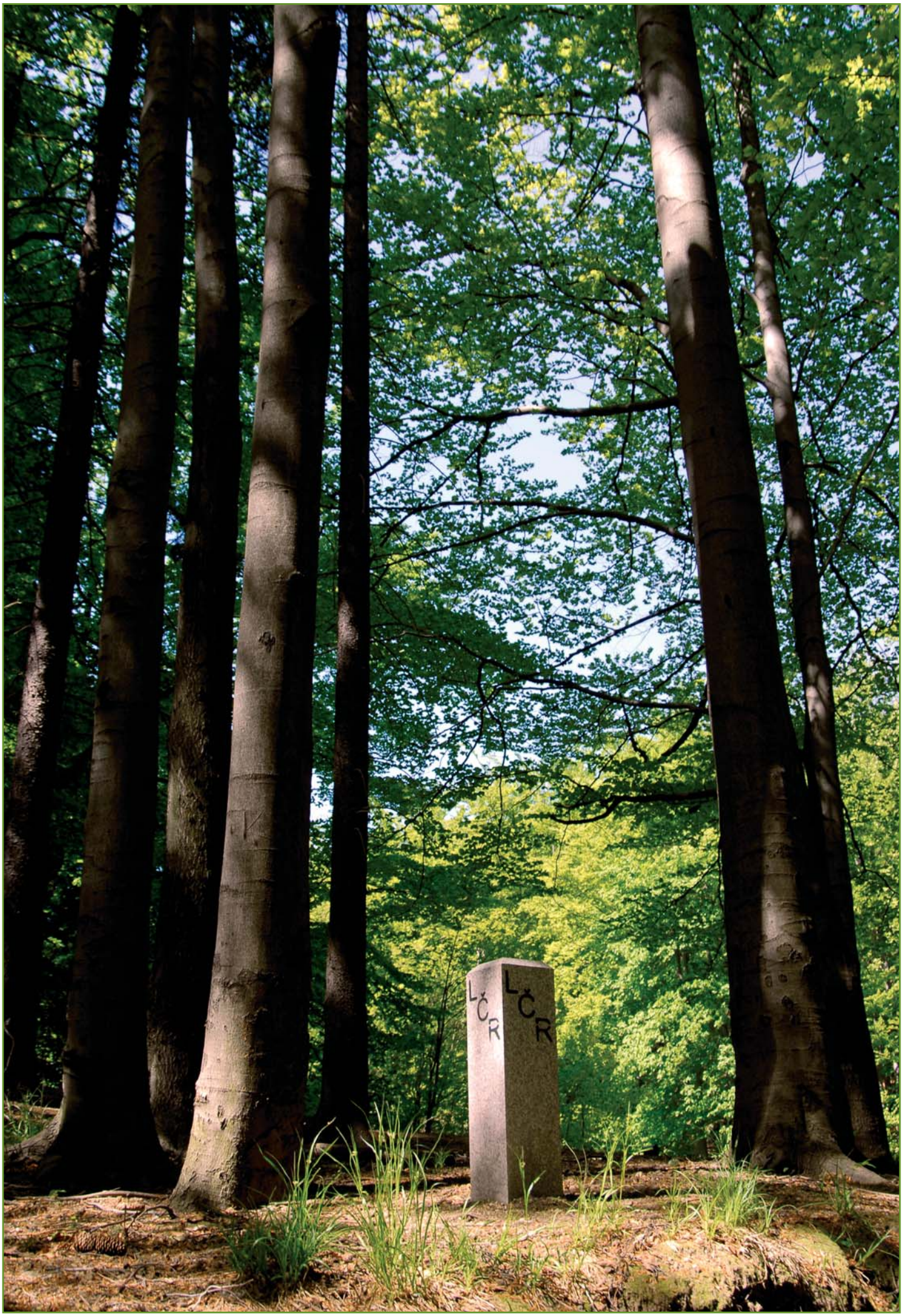
In conformity with the standard approved by the Ministry of Agriculture in January 2010, forestry parks will serve as model areas demonstrating sustainable management of forests and the landscape, while respecting the balance of its three pillars (ecological, economic, and socio-cultural), being free of any radical changes, and with a potential

emphasis on the specific characteristics of the given site. Equally, they will serve:

- as demonstration areas in terms of the National Forest Programme until 2013;
- for scientific research, monitoring, education of professional (within the school system) and non-professional (forest pedagogy) public;
- for presentation and comparison of sustainable forest management with close-to-nature management on selected sites;
- to support international projects aimed at sustainable management of the landscape, above all, within the International Model Forest Network (www.imfn.net);
- to promote sustainable tourism, game management, and other public interests.

# 12.3. SUPPORTING PROJECTS OF PUBLIC INTEREST

As corporate philanthropy, the enterprise donates to a number of non-profit projects. Between 2002 and 2010, an amount of nearly CZK 90 million was allocated to individual projects in the sectors of culture, education, health care, the environment, charities, humanitarian, and social matters.


LČR
LČR

Each year, the above mentioned financial resources are allocated by the LČR Head Office and all 13 Regional Directorates. This allows support of minor local projects as well.

### Assistance Related to Floods

As an enterprise managing forests nationwide, LČR makes efforts to help and assist citizens and municipalities affected by floods. This repeatedly involves sales of timber for reconstruction of damaged houses for CZK 1/$m^3$ if logged by other person or for a reduced price of timber produced by a LČR contractor. Construction of wooden houses is preferred. LČR is ready to provide such assistance any time in the future.

### Cooperation with NGOs

LČR has established long-term cooperation with significant NGOs in the Czech Republic dealing with forests and nature in general.

#### Czech Union for Nature Conservation

The cooperation between LČR and the Czech Union for Nature Conservation was launched in 1999. Each year, several tens of projects are implemented to conserve biodiversity in forests (measures to protect threatened species of forest trees and herbs, passerines, birds of prey and owls, bats, mapping of valuable forest wetlands and watercourses, etc.). The support goes to ecocentres and rescue stations, to reconstruction and maintenance of spring wells, organisation of science competitions for children and the youth called Green Path – Golden Leaf and Environmental Olympics, photo contest Views of Nature, and many other activities. Cooperation is mainly strengthened between foresters and voluntary conservationists and aims at solving specific local problems and finding solutions acceptable for both parties.

#### Biosphere Reserve Dolní Morava, Public Benefit Corporation

LČR is one of the founding members of the public benefit corporation Biosphere Reserve Dolní Morava. It continuously supports its activities to promote sustainable management and to present sustainable management of forests and the landscape within the international network of UNESCO Biosphere Reserves, the Lednice-Valtice Cultural Landscape included in World Heritage List of UNESCO, and the International Model Forest Network (www.imfn.net).

### Czech Tourist Club

The Czech Tourist Club is the largest tourist organisation in the Czech Republic. With the tradition since 1888, it associates citizens of all ages interested in active tourism. The Club creates and maintains an extensive network of marked tourist trails of various types (trekking, cycling, skiing, etc.) all over the country.

In 1998, LČR and the Czech Tourist Club signed an agreement regulating their relations and declaring cooperation on raising awareness of forest visitors as to the approach to nature, and cooperation on enhancing recreational functions of forests. LČR develops this cooperation predominantly by financing guideposts and boards provided with laminated maps.

## 12.4. LČR PROJECTS

### Project Arboretum

As the largest forest enterprise in the country, LČR established a forest arboretum in the vicinity of its Head Office, which is currently financed purely from the operational means of the enterprise. The skeleton of the arboretum is formed by common native tree species, which, according to the project, are further complemented by other species adaptable to the conditions of the Czech Republic. The objective is to construct an educational dendrological trail offering a collection of broadleaf and coniferous trees of the temperate zone. The individual trees are presented as solitary, in groups, or as comprehensive stands.

### Project Boundary Stone

LČR, as a manager of state property, has drawn up a proposal design of a boundary stone delimiting significant and publicly accessible boundaries of the managed property. The characteristic boundary stone of LČR contributes to better public awareness of who is managing “our” state forests.

### Projects Supporting Use of Wood and Wood Products

LČR permanently promotes use of wood and wood products and emphasises the advantages of this environmentally friendly renewable material. Nevertheless, further development of these activities requires support of the respective ministries and organisations, and common financing for the implementation of the Programme.

# 13. IMPLEMENTATION OF PROGRAMME 2000 IN 2000-2010

# PROGRAMME 2000 – REALITY IN 2000–2010

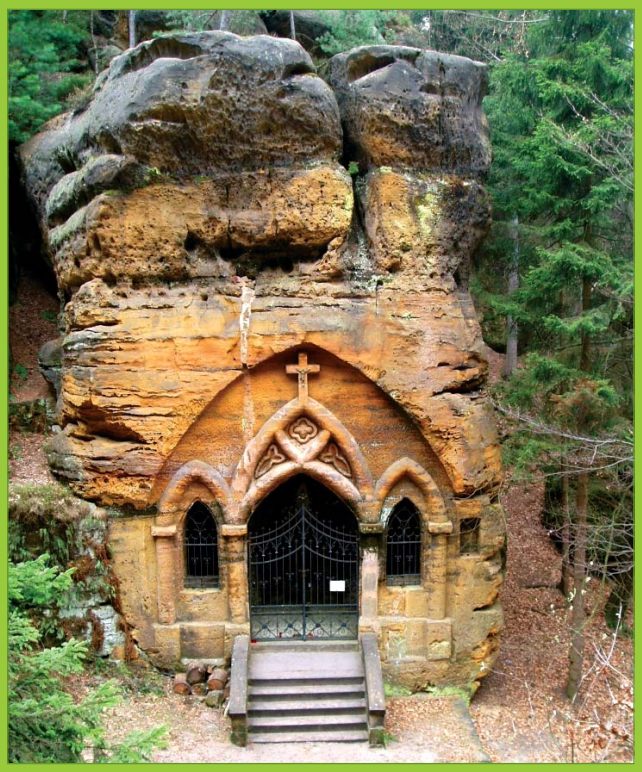
## Investment (CZK 1 000)

| Action | No. | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Paths, biking trails, public parking places | 601 | 1 027 | 374 | 726 | 1 851 | 884 | 171 | 1 350 | 1 424 | 8 154 | 13 282 | 6 337 | 35 580 |
| Regulation of watercourses and reservoirs | 602 | 143 | 14 | 148 | 140 | 13 | 478 | 0 | 0 | 2 046 | 2 612 | 1 529 | 7 123 |
| Public rest and view areas | 603 | 5 597 | 4 243 | 3 663 | 4 246 | 3 531 | 5 038 | 4 600 | 3 902 | 9 815 | 17 936 | 8 646 | 71 217 |
| Spring wells | 604 | 363 | 211 | 286 | 509 | 146 | 239 | 277 | 346 | 1 249 | 1 200 | 547 | 5 373 |
| Memorable places and structures | 605 | 27 | 804 | 77 | 241 | 7 | 163 | 377 | 405 | 2 224 | 2 534 | 1 151 | 8 010 |
| Ground shaping | 607 | 79 | 0 | 250 | 289 | 0 | 35 | 0 | 0 | 0 | 214 | 0 | 867 |
| Support of threatened species of organisms | 608 | 138 | 0 | 179 | 0 | 0 | 0 | 6 | 5 | 0 | 0 | 0 | 328 |
| Memorable and decorative trees | 609 | 0 | 0 | 0 | 0 | 24 | 8 | 0 | 0 | 316 | 139 | 0 | 487 |
| Other actions | 610 | 131 | 0 | 68 | 0 | 400 | 81 | 134 | 43 | 514 | 644 | 756 | 2 771 |
| Forest arboreta | 611 | 0 | 0 | 0 | 0 | 0 | 114 | 0 | 0 | 0 | 0 | 0 | 114 |
| Establishment of public information systems | 613 | 48 | 955 | 701 | 465 | 391 | 729 | 1 541 | 843 | 2 717 | 3 268 | 1 667 | 13 325 |
| Total investment | | 7 553 | 6 601 | 6 098 | 7 741 | 5 396 | 7 056 | 8 285 | 6 968 | 27 035 | 41 829 | 20 633 | 145 195 |

## Non-investment (CZK 1 000)

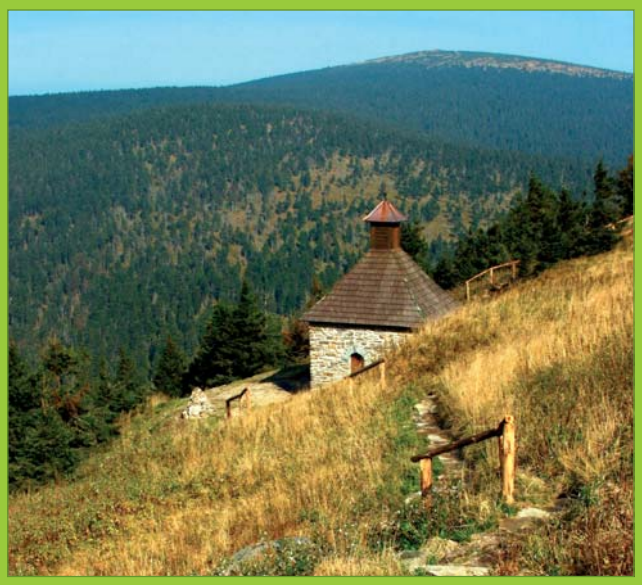
| Action | No. | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aesthetic landscaping | 551 | 1 972 | 1 580 | 1 813 | 2 230 | 2 204 | 1 775 | 2 056 | 2 659 | 4 182 | 2 076 | 2 180 | 24 727 |
| Maintenance of watercourses | 552 | 4 050 | 3 131 | 3 683 | 2 942 | 2 551 | 2 511 | 2 357 | 2 524 | 3 628 | 3 105 | 1 580 | 32 062 |
| Care of species diversity | 553 | 489 | 2 425 | 2 624 | 1 321 | 1 018 | 1 405 | 1 269 | 1 627 | 4 293 | 1 928 | 1 437 | 19 836 |
| Care of small historical and forest structures | 554 | 5 780 | 2 063 | 2 040 | 1 924 | 1 636 | 2 294 | 1 162 | 1 368 | 4 151 | 2 397 | 818 | 25 633 |
| Maintenance of structures in public rest areas | 555 | 1 682 | 2 836 | 2 777 | 3 404 | 3 163 | 3 188 | 3 020 | 2 916 | 5 314 | 2 953 | 2 440 | 33 693 |
| Control of invasive species | 556 | 444 | 642 | 1 376 | 1 708 | 1 363 | 1 527 | 1 119 | 1 468 | 1 703 | 1 900 | 790 | 14 040 |
| Maintenance of public information systems | 557 | 2 596 | 1 780 | 1 513 | 1 083 | 417 | 1 059 | 1 157 | 1 114 | 1 566 | 1 281 | 864 | 14 430 |
| Special programmes | 558 | | 383 | 136 | 220 | 116 | 506 | 131 | 574 | 740 | 972 | 782 | 4 560 |
| Public trails | 559 | | 1 422 | 1 861 | 3 230 | 717 | 2 920 | 2 291 | 2 415 | 5 304 | 1 781 | 1 203 | 23 144 |
| Other actions | 560 | | 0 | 0 | 39 | 10 | 240 | 258 | 205 | 614 | 635 | 286 | 2 287 |
| Total non-investment | | 17 013 | 16 262 | 17 823 | 18 101 | 13 195 | 17 425 | 14 820 | 16 870 | 31 495 | 19 028 | 12 380 | 194 412 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Programme 2000 | | 24 566 | 22 863 | 23 921 | 25 842 | 18 591 | 24 481 | 23 105 | 23 838 | 58 530 | 60 857 | 33 013 | 339 607 |



Rocky chapel, FD Česká Lípa

Playground, FD Ostravice



Vřesová studánka, FD Loučná

Gloriete, FD Náměšť

Ramzová, FD Javorník

Foot bridge, FD Třebíč

Lime kiln, FD Javorník

Model mini game preserve Žleby, FD Nasavrky

Woody Mushroom under Rejvíz, FD Jeseník

Chapel Černá Voda, FD Rychnov

Summer classroom of the primary school Raškovice, FD Frýdek-Místek


Lookout Na Divadle, FD Rožnov

Lookout tower Dymník, FD Rumburk

# 14. LITERATURE


- Culek M. (ed.) et al.: Biogeografické členění České republiky, ENIGMA, Praha, 1996.
- Havránek F.: Vzácné a ohrožené druhy zvěře, Ministry of Agriculture, Praha, 1995.
- Herynek J.: Půdoochranné funkce u LČR, návrh opatření pro zabezpečení půdoochranných funkcí lesa ve veřejném zájmu. Expert study. Brno,1999.
- Krečmer V.: Zajištění kvalitní pitné vody a ochrana pramenných oblastí, Praha 1998.
- Landa M.: Péče a údržba významných historických a technických děl u LČR. Expert study, 1998.
- Lesnická politika. LČR, Hradec Králové, 1996.
- Lesnický naučný slovník (I, II), Ministry of Agriculture, Praha 1994.
- Lišková Š. (ed.): Ochrana živočichů v ČR. Ministry of the Environment, 1992.
- Löw J. a kol.: Rukověť projektanta místního územního systému ekologické stability. Complement, Brno, 1995.
- Míchal I. a kol.: Obnova ekologické stability lesů, Academia, Praha, 1992.
- Míchal I. et. Petříček V.: Péče o chráněná území I., II. Lesní společenstva. AOPK ČR, 1999.
- Míchal I.: Ochrana rostlin a živočichů, manuscript (expert study), 1998.
- Morávek F. a kol.: Program 2000 – zajištění cílů veřejného zájmu u LČR, LČR, Hradec Králové, 1999.
- Peroutka M. a kol.: Hlavní problémy našeho včelařství. Sborník ze semináře, Czech Forestry Society, Praha, 2006.
- Poleno Z.: Trvale udržitelné obhospodařování lesů, Ministry of Agriculture, Praha, 1997.
- Stonawski J.: Základy ekologie. Karolinum, Praha, 1992, 1997.
- Svoboda J. a kol.: Koncepce zachování a reprodukce genových zdrojů lesních dřevin u Lesů České republiky, s. p., na období 2010–2019. LČR, Hradec Králové, 2010.
- Šach F. et Černohous V.: Metodické postupy ochrany lesních pozemků proti erozi. Lesnický průvodce 1/2009, Forestry and Game Management Research Institute, Strnady.
- Šach F. a kol.: Metodické postupy obhospodařování lesů s vodohospodářskými funkcemi. Lesnický průvodce 1/2007, Forestry and Game Management Research Institute, Strnady.
- Šišák L. a kol.: Oceňování společenské sociálně – ekonomické významnosti základních funkcí lesa, Ministry of Agriculture, Praha, 2002.
- Vančura K. (ed.).: Ministerské konference o ochraně lesů v Evropě. Forest Management Institute, Brandýs n. L., 2008.
- Vyskot I.: Rekreační funkce lesů u LČR – expert study, Brno 1998
- Vyskot I. a kol.: Kvantifikace a hodnocení funkcí lesů České republiky, Ministry of the Environment, Praha, 2003.
- Zásady a pravidla územního plánování, Research Institute of Building and Architecture – Office Brno, Urbion Bratislava, 1981.
- Zatloukal V.: Vzácné a ohrožené druhy lesních dřevin, Ministry of Agriculture, Praha, 1995.
- Zezula J.: Program trvale udržitelného hospodaření v lesích. Výchova a obnova lesa. LČR, Hradec Králové, 1997.


# 15. AUTHORS


Original authors: František Morávek – leading author, Jan Duha, Ivan Fráňa, Vladimír Krchov, Jaromír Sixta, Jiří Stonawski, Libor Šešulka, Ladislav Šimerda, Petra Ziegrosserová, Jaroslav Zezula.

Expert cooperation on the original text: J. Herynek, Vladimír Krečmer, Igor Míchal, Miroslav Landa, Ilja Vyskot.

Cooperation on text update in 2010: Jiří Stonawski – leading author, Zbyněk Boublík, Ivan Chalupa, Tomáš Dohnanský, Tomáš Frýba, Pavel Hes, Tomáš Hofmeister, Vladimír Krchov, Jiří Kubíček, František Morávek, Jana Němcová, Ladislav Půlpán, Václav Rybář, Josef Svoboda, Stanislava Šmídová, Josef Vlášek, Renata Vohradská, Petr Zvolánek.

Translation: David Pešek – COFEA.EU

Photography: Jaromír Mohelník (page 3), Libuše Fiedorová (page 6), Antonín Říha (page 9), Aleš Havlásek (page 10), Antonín Říha (waterfall, page 11), Petra Čermáková (tourist, page 11), Pavlína Suchá (crayfish, page 15), Petr Sikora (page 25), Miroslav Ganger (horse, page 37), Jaromír Mohelník (page 38), Karel Kajínek (page 41), Michal Tuška (page 42), David Mahovský (fallow deer, page 43), Olga Langrová (page 48), and photo archive of LČR.

PROGRAM 2020

LESY ČR

www.lesycr.cz

ISBN 978-80-86945-18-7