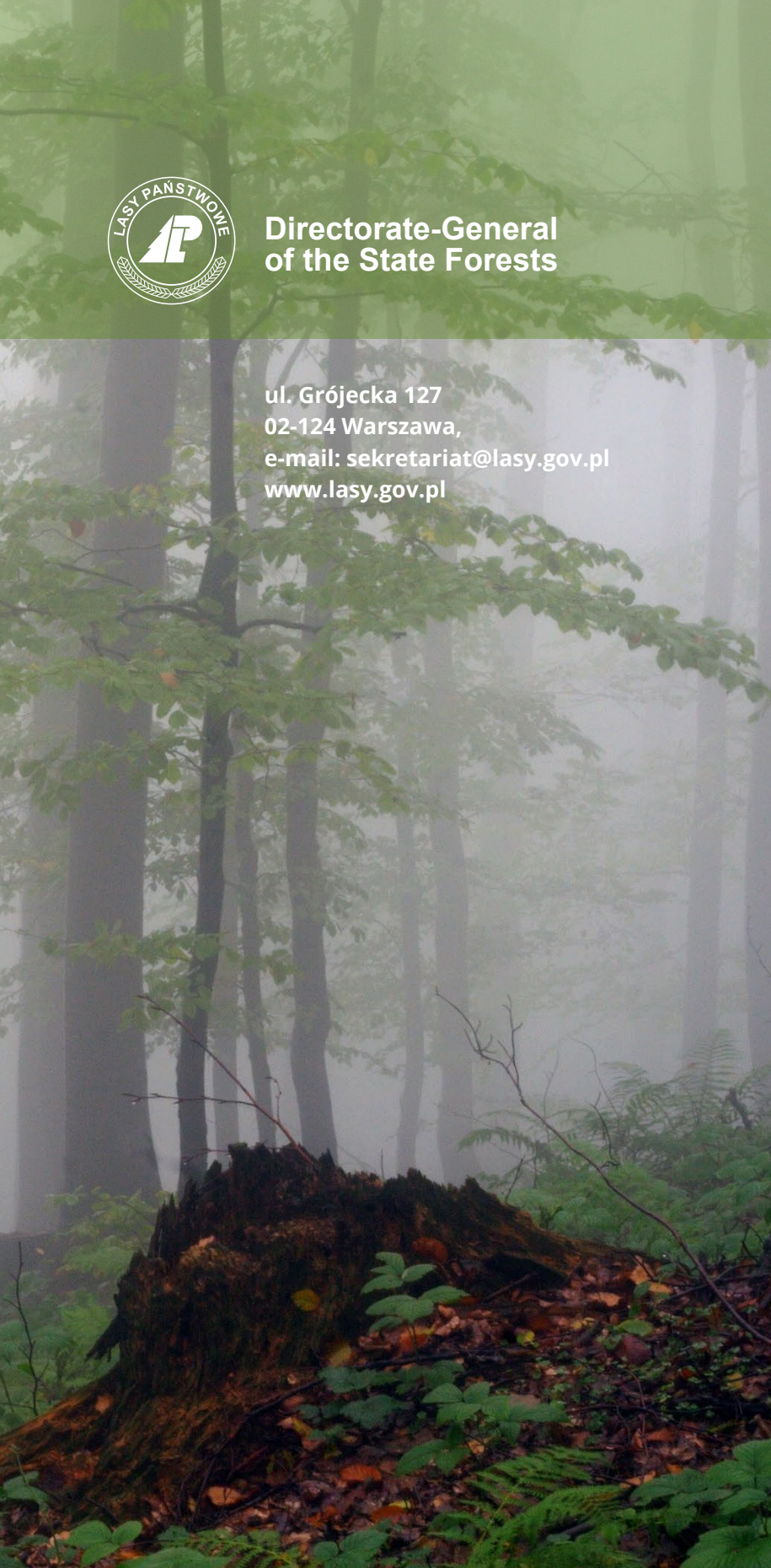
POLAND The State Forests

THE STATE FORESTS IN FIGURES

2014

State Forests



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Published by:
The State Forests
Information Centre
Warszawa 2015
ul. Grójecka 127
02-124 Warszawa

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www.lasy.gov.pl

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Cover and chapter title photographs:
Paweł Fabijański

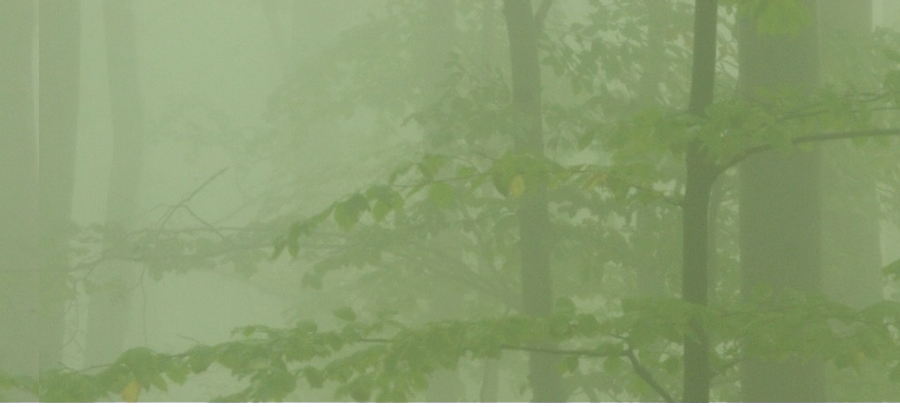
ISBN 978-83-63895-53-2

Graphic design
and prepared for printing by:
Fabryka Wyobraźni
www.fabrykawyobrazni.pl

Printed by:
ORWLP in Bedoń

Promotional forest complexes (PFCs) are functional entities established to provide educational programmes and to pursue and promote the principles of forest management which integrate goals such as nature protection, enhancing environmental functions of forests, sustainable utilisation of forest resources and participatory management of forests. They were established within the State Forests as part of the national policy on forests and the provisions of the Forest Act. PFCs also function as research centres where knowledge of the forest environment is used to facilitate interdisciplinary research which, in turn, informs the improvement of forest management methods and defines the boundaries of economic interference in the forest ecosystems. The PFCs provide an alternative to the overcrowded national parks where tourist traffic is regulated by strict rules. They create an opportunity for direct contact with nature, without many restrictions (even for the disabled), which is important in the education of children and young people.

The State Forests policy on promoting ecological forest management resulted in the creation of 25 promotional forest complexes distributed between the 17 regional directorates of the State Forests. Their total area is 1225 thousand hectares, of which almost 1200 thousand hectares are administered by the State Forests (nearly 17% of its territory).



The State Forests National Forest Holding (the State Forests) is an organisation which administers property on behalf of the Treasury and does not have legal personality. The State Forests is responsible for the management, on a self-financing basis, of all state-owned forests, with the exception of national parks, land under the administration of the Agricultural Property Agency and forests leased under perpetual lease agreements. Its aims are to manage forests according to the principles of universal protection of forests, sustainable and continuous use of all forest functions and the increase of forest resources. These aims are implemented in accordance with forest management plans drawn up for each forest district for a ten-year period.

The State Forests, whenever natural, social and economic conditions permit, fulfils the tenets of international agreements which include: the Forestry Principles and Agenda 21 adopted at the 1992 Earth Summit in Rio de Janeiro; the Declaration of European Forestry Ministers with regard to the protection of European forests (Strasbourg 1990, Helsinki 1993, Lisbon 1998, Vienna 2003, Warsaw 2007, Oslo 2011); and the Kyoto Protocol of 2005 concerning the role of forests in carbon sequestration. Since Poland's accession to the European Union on 1 May 2004, the State Forests has been implementing, within its remit, the programme Natura 2000.

The State Forests National Forest Holding operates in accordance with the legal provisions of the Forest Act of 28 September 1991 (as amended), the Ordinance of the Council of Ministers of 6 December 1994 which outlines the principles of financial management in the State Forests and other regulations resulting from the Forest Act.

This brochure is based on the "Annual report on the condition of forests in Poland 2013", which was commissioned by the Directorate-General of the State Forests and compiled by the Forest Research Institute, and on the "Annual financial and economic report of the State Forests 2013".

THE STATE FORESTS IN FIGURES

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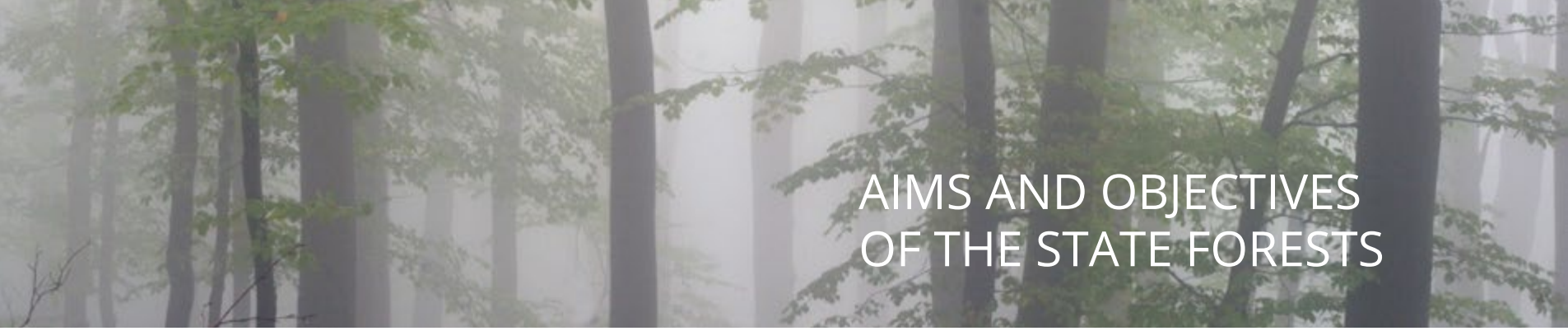
State Forests



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In accordance with the provisions of the Forest Act of 28 September 1991 (with later amendments) and the regulations and ordinances resulting from it, the main aims of the State Forests are to manage forests according to the principles of universal protection of forests, to maintain their permanence, to use all forest functions in a continuous and sustainable way and to augment forest resources. These aims are pursued through sustainable multifunctional forest management in accordance with forest management plans for each forest district for a ten-year period. Each plan sets out objectives of silvicultural management and protection for specified fragments of forests (stands) and methods of achieving them.

The State Forests administers all forests owned by the State Treasury, with the exception of national parks and the land administered by the Agricultural Property Agency or leased under perpetual lease agreements. This involves managing forests and other land and property, keeping an inventory of the property owned by the Treasury, monitoring forest condition, keeping and updating data on the size of forest area and timber resources, monitoring and forecasting the level of fire hazard and the occurrence of insect pests and diseases of trees.

The State Forests funds forest science research which contributes to the advancement of forestry and forest management methods.

The State Forests administers forests owned by the State Treasury

Whenever the natural, social and economic conditions allow, the State Forests implements the international agreements as laid down in:

- the Forestry Principles and Agenda 21 adopted at the 1992 Earth Summit in Rio de Janeiro;
- the Declaration of European Forestry Ministers concerning the Protection of European Forests (Strasbourg 1990, Helsinki 1993, Lisbon 1998, Vienna 2003, Warsaw 2007, Oslo 2011);
- the Kyoto Protocol (2005) concerning the role of forests in carbon sequestration.

Since Poland's accession to the European Union on 1 May 2004 the State Forests has been implementing, within its remit, the programme Natura 2000.

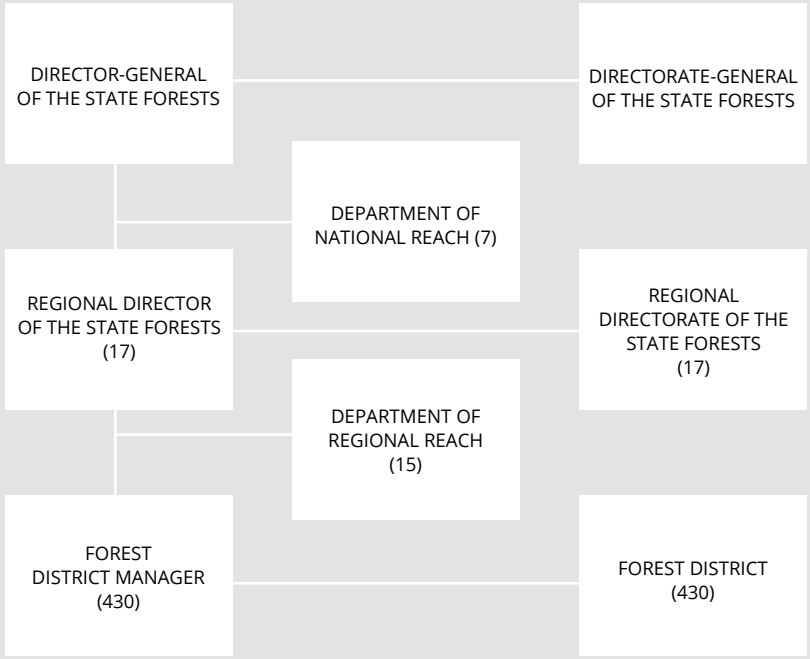
Other important objectives of the State Forests are to make forests accessible to society and to increase awareness of environmental issues by providing forest and nature education.

STRUCTURE, EMPLOYMENT AND RESEARCH

Organisational structure

The State Forests is a state organisational unit which administers property on behalf of the Treasury and does not have legal personality. It operates on a self-financing basis.

The State Forests is headed by the Director-General who is assisted by the Directorate-General and the directors of regional directorates.



THE THREE-TIER STRUCTURE OF THE STATE FORESTS
(status as of 31 December 2013)

As of 31 December 2013, the State Forests comprised the following organisational units:

- Directorate-General of the State Forests (DGSF);
- 17 regional directorates of the State Forests (RDSF);
- 430 forest districts;
- 15 organisational units (departments) with regional authority reporting to the regional directors of the State Forests (3 storage complexes, 2 fisheries, 2 transport and logistics, 3 service and production, 2 forest transport, 2 forestry services, 1 training and recreation centre);
- 7 organisational units (departments) with national authority, five of which report to the Director-General of the State Forests (the Centre for Research and Implementation in Bedoń, the State Forests Information Centre in Warsaw, the Forest Technology Centre in Jarocin, the State Forests IT Department in Bedoń and the Centre for Co-ordinating Environmental Projects in Warsaw). Two organisational units (the Kostrzyca Forest Gene Bank in Miłków and the Forest Culture Centre in Gołuchów) report to the directors of Wrocław and Poznań RDSF, respectively.

The remaining integral parts of the Directorate-General of the State Forests comprise 9 forest protection teams and 11 regional inspectorates.

The fundamental organisational units of the State Forests are forest districts. Each is led by a forest district manager who has the autonomy in managing forests according to the forest management plan and who is responsible for their condition. In 2013 there were 430 forest districts with an average area of 17.5 thousand hectares.

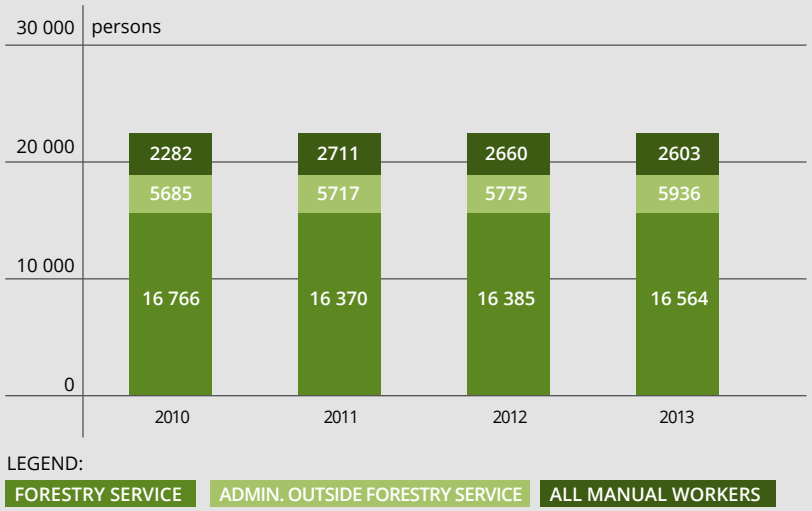
There are **430** forest districts within the State Forests

Employment

The average monthly employment in the State Forests in 2013 was 25 103 staff. The employment structure was as follows (in number of staff):

1. In forest districts	22 878
including:	
• forestry service	15 857
• non-manual posts outside forestry service	4 928
• manual posts	2 093
2. In departments	986
• including non-manual posts	532
3. In the Directorate-General and in regional directorates (including regional inspectorates and forest protection teams)	1 239
• including forestry service	696

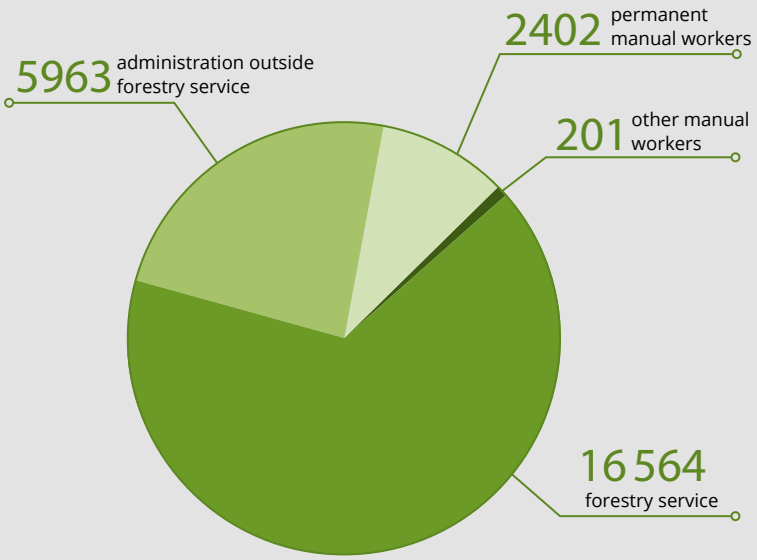
The number of non-manual posts in 2013 increased by 340 in comparison with 2012; this number includes 179 posts in the forestry service and 161 posts elsewhere. In contrast, the number of manual posts in 2013 decreased by 57 compared with the previous year.



EMPLOYMENT IN THE STATE FORESTS in 2010–2013

The average employment in the State Forests in the period 2010–2013 was higher than in 2011. In 2013 employment increased by 283 persons compared with the previous year.

As of 31 December 2013, a total of 25 385 people were employed in the State Forests, an increase of 454 compared with the last day of 2012.



EMPLOYMENT STRUCTURE in the State Forests in 2013

Research

Research commissioned by the Director-General of the State Forests in 2013 was significant for the development of all areas of forestry. A large proportion of research was carried out at the Forest Research Institute.

In total, 83 research projects were pursued in 2013, costing PLN 42 913.4 thousand. Of these, 46 projects were conducted at the Forest Research Institute, costing PLN 31 100.8 thousand, and 37 projects involved universities and other research institutions at a cost of PLN 11 812.6 thousand. The results of the research were communicated to the relevant units of the State Forests and to other organisations for implementation.

In 2013 the State Forests commissioned **83** research projects

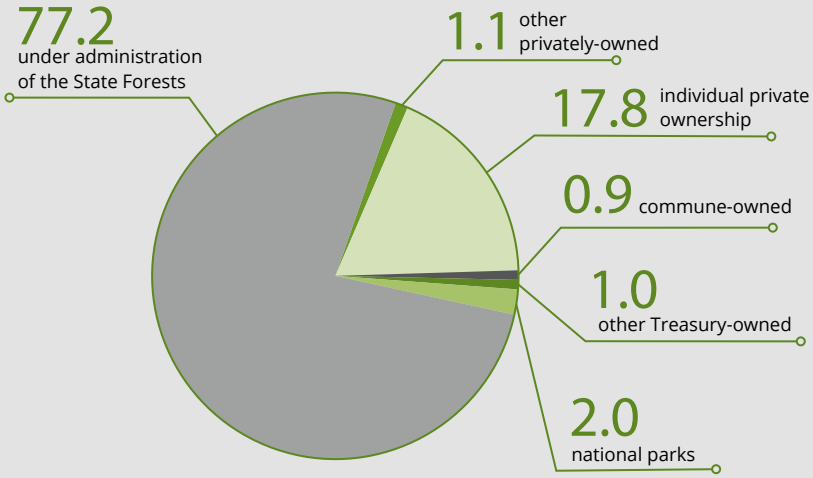
THE RESOURCES OF THE STATE FORESTS

The forest area in Poland amounts to 9177.2 thousand hectares (as of 31 December 2013, Central Statistical Office), which puts the forest cover at 29.4%. The majority of forests (81.2%) are publically-owned, including those administered by the State Forests (77.2%).

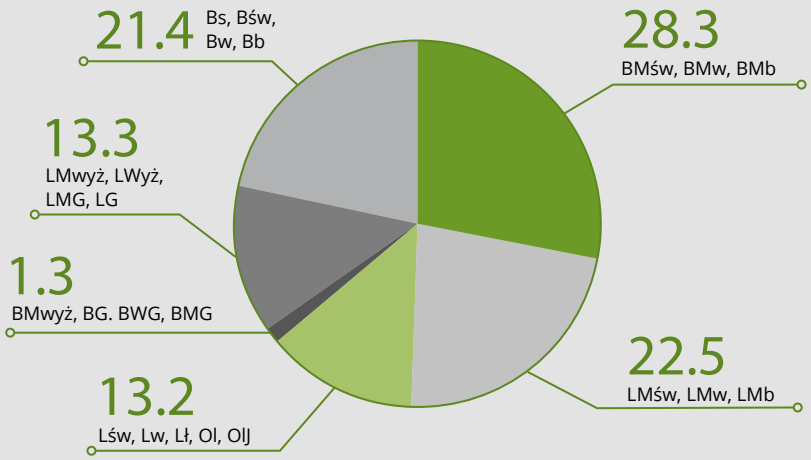
Areal structure of habitats and dominant tree species

Forests in Poland mainly occur on the poorest soils, which is reflected in the structure of forest habitat types. Coniferous forest habitats predominate, accounting for 51% of the total forest area, while broadleaved forest habitats account for 49%. In both groups upland habitats occupy 6.0% of the forest area and mountain habitats 8.6%.

The largest proportion of broadleaved forest habitats is found in two southern provinces: Malopolskie with 86% of broadleaved habitats and Podkarpackie with 74%. The largest proportion of coniferous forest habitats is found in the Lubuskie province.



OWNERSHIP STRUCTURE OF FORESTS IN POLAND (Central Statistical Office)



AREAL SHARE (in %) of forest habitat types in Poland (Large-Scale Forest Inventory 2009–2013)

Land use structure

As of 31 December 2013, the total area of land administered by the State Forests amounted to 7 597 698.34 hectares and it was structured as follows:

• forests, total	7 285 296.86 ha
including: afforested land	6 977 968.86 ha
non-afforested land	107 453.82 ha
• agricultural land	144 058.62 ha
• wasteland	100 383.22 ha
• waters	8 931.64 ha
• landscape tree and shrub planting	11 881.09 ha

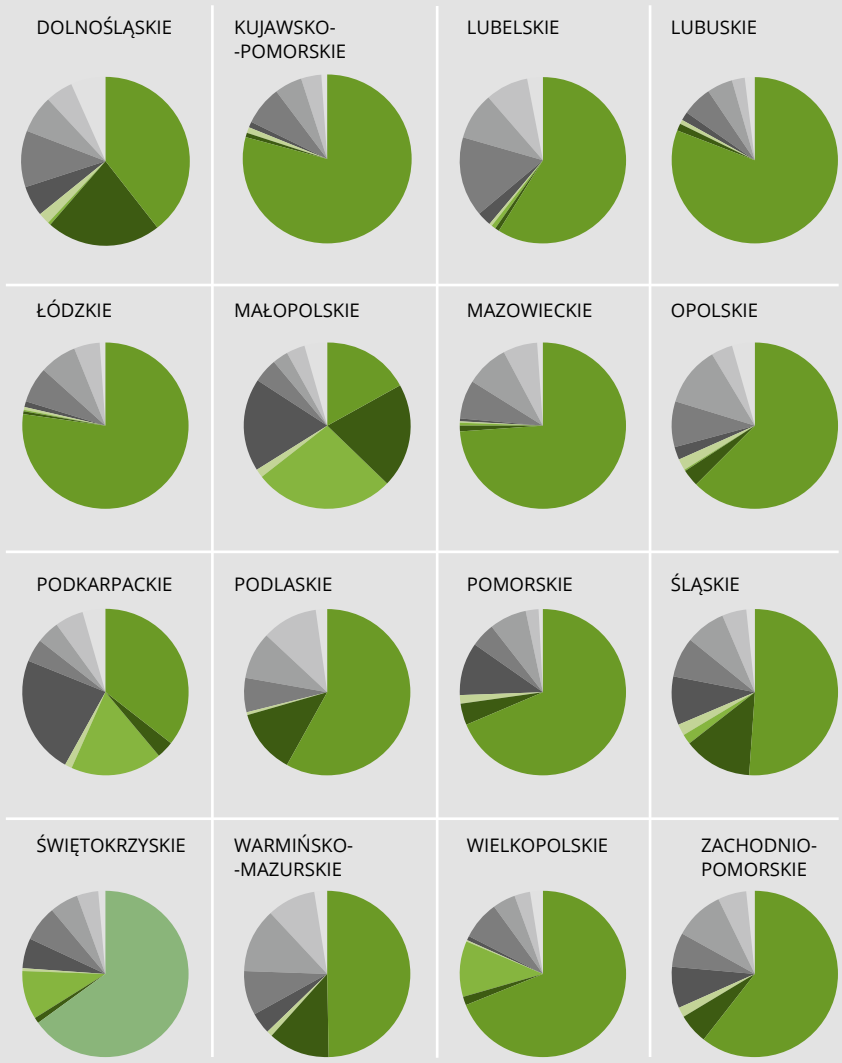
LEGEND:

Bb	– bog coniferous forest	Ll	– riparian forest
BG	– montane coniferous forest	LMb	– bog mixed broadleaved forest
BMb	– bog mixed coniferous forest	LMG	– montane mixed broadleaved forest
BMG	– montane mixed coniferous forest	LMśw	– fresh mixed broadleaved forest
BMśw	– fresh mixed coniferous forest	LMw	– moist mixed broadleaved forest
BMw	– moist mixed coniferous forest	LMwyż	– upland mixed broadleaved forest
BMwyż	– upland mixed coniferous forest	Lśw	– fresh broadleaved forest
Bs	– dry coniferous forest	Lw	– moist broadleaved forest
Bśw	– fresh coniferous forest	Lwyż	– upland broadleaved forest
Bw	– moist coniferous forest	Ol	– alder forest
BWG	– high-mountain coniferous forest	OlJ	– alder-ash forest
LG	– montane broadleaved forest		

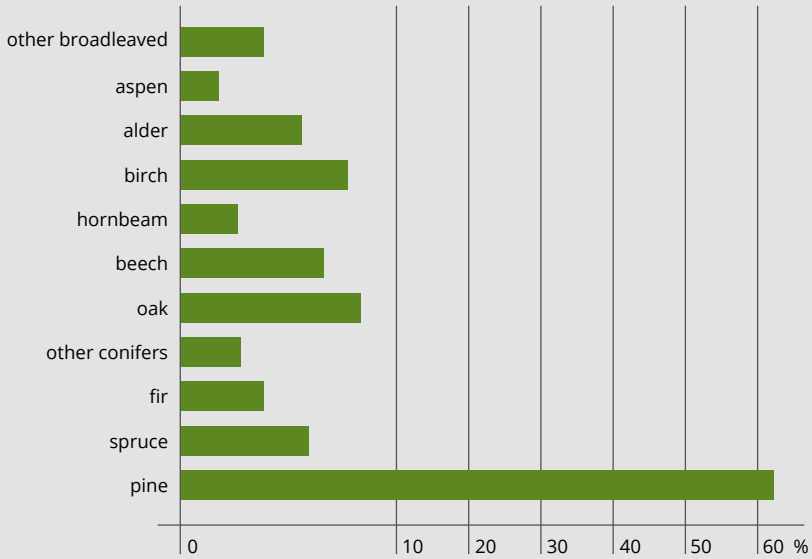
Coniferous forest habitats cover **51%** of the forest area in Poland

Geographical distribution of habitats is largely reflected in the spatial structure of dominant tree species. Apart from the mountain regions where spruce, fir and beech have a larger share in stand composition, in the rest of the country pine is a dominant species in the majority of stands.

Coniferous species dominate on 69.6% of the total forest area in Poland. Pine, which in Poland has optimal climatic and site conditions within its Euro-Asiatic natural range and has developed many important ecotypes (eg. taborska and augustowska pine), accounts for 60.9% of the area of the State Forests (Large-Scale Forest Inventory).



AREAL DISTRIBUTION OF STANDS showing the proportions of dominant species by province (Large-Scale Forest Inventory 2009–2013)



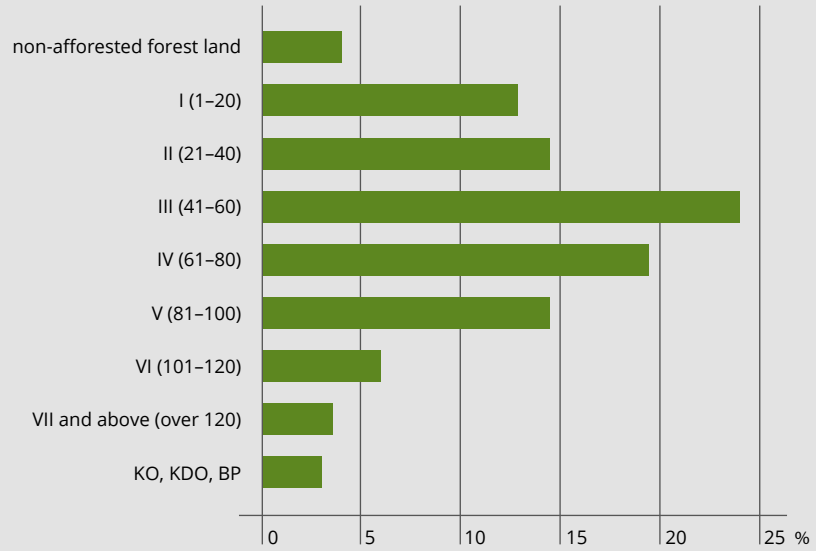
AREAL SHARE OF DOMINANT TREE SPECIES in the forests administered by the State Forests (Large-Scale Forest Inventory 2009–2013)

LEGEND:

BEECH	SPRUCE
OAK	PINE
BIRCH	FIR
ALDER	OTHER CONIFEROUS
OTHER BROADLEAVED	

Age structure

Stands aged 41–80 years, representing age classes III and IV, prevail in the age structure of forests and cover 26.0% and 18.9% of the forest area respectively. Stands older than 100 years, including stands in restocking class (KO), stands in class for restocking (KDO) and stands with selection structure (BP), account for 12.0% of the forest area managed by the State Forests. The share of non-afforested land accounts for 3.2 %.



AREAL SHARE OF STANDS by age class in the State Forests
(Large-Scale Forest Inventory 2009–2013)

Afforestation

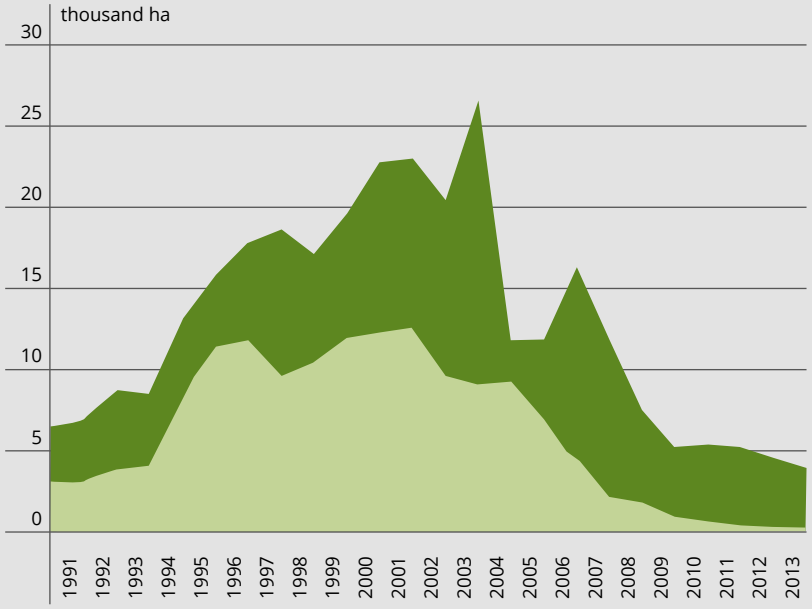
The increase in the forest area can be achieved by afforestation of non-forested land which is used for agriculture or is left as wasteland. Land which is already covered by woodland flora can also be re-classified as forest.

The basis for all afforestation in Poland is the "National programme for the augmentation of forest cover", which was commissioned by the Ministry of the Environment, Natural Resources and Forestry and prepared by the Forest Research Institute. The programme was adopted for implementation by the Council of Ministers on 23 June 1995. The main aims of the programme are to increase forest cover to 30% by 2020 and to 33% by 2050 and to ensure an optimal spatial and temporal distribution of afforestation.

Artificial afforestation carried out in 2013 covered 4078 hectares of land in all ownership categories. The total afforested area decreased by 801 hectares (16%) compared with 2012.

A decrease in the size of afforested areas was observed in the State Forests where in 2013 only 384 hectares were artificially afforested, as compared with 9.7 thousand hectares in 2004. This was a result of a sharp decline in the size of post-agricultural land and wasteland being designated for afforestation by the Agricultural Property Agency.

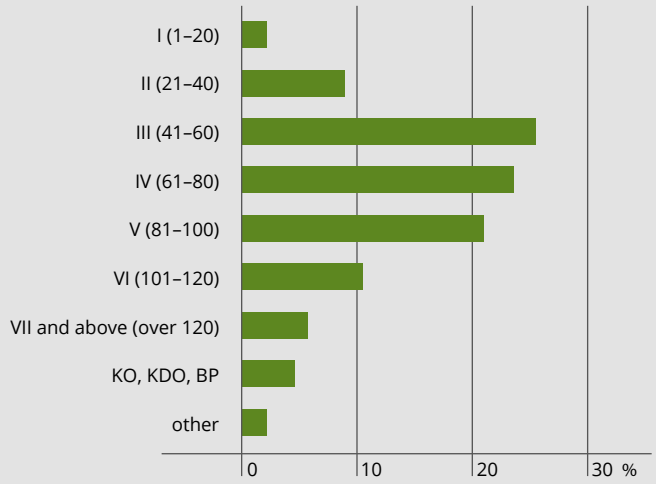
The aim is to increase Poland's forest cover to **33%** in 2050



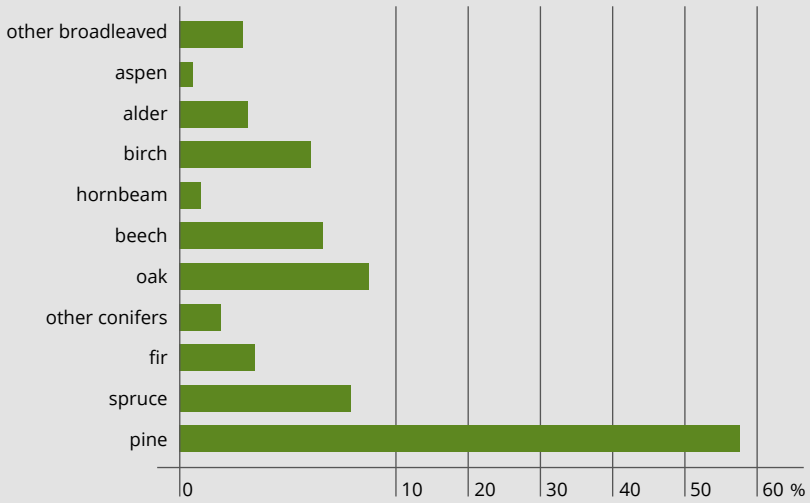
THE LEVEL OF ARTIFICIAL AFFORESTATION in Poland in the years 1991–2013 (Central Statistical Office)

Timber resources

The main source of information about the volume of timber resources in Poland is the Large-Scale Forest Inventory. According to the data collected in the years 2009–2013, and based on the forest area as it stood at the end of 2012, the timber resources in the State Forests amounted to 1929 million m³ of gross merchantable timber. Almost half (49.9%) of the timber resources are in stands in the age classes III and IV (41–80 years). The volume of timber resources in the stands over 100 years old, including classes KO, KDO and BP, stands at 18.4%.



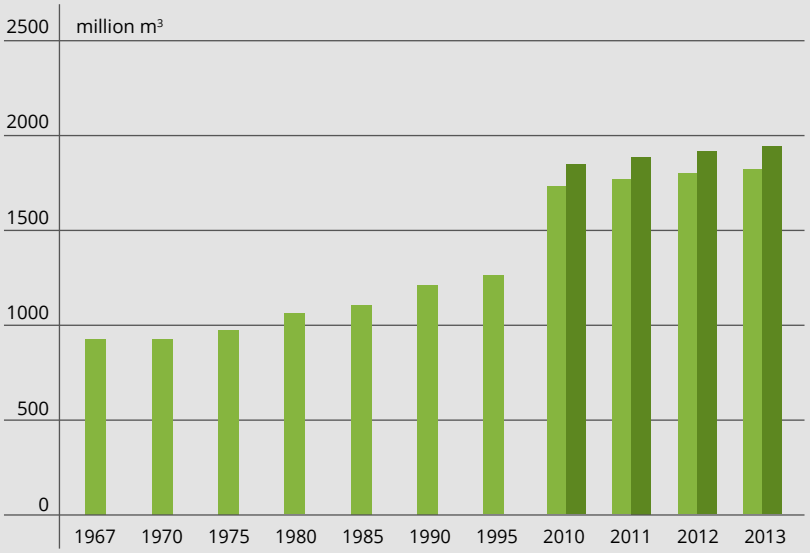
VOLUME (%) OF TIMBER RESOURCES by age class in the State Forests (Large-Scale Forest Inventory 2009–2013)



VOLUME (%) OF TIMBER RESOURCES by tree species in the State Forests (Large-Scale Forest Inventory)

According to the Large-Scale Forest Inventory 2009–2013, the average standing volume of stands in the State Forests was 272 m³/ha. Pine has the largest share in the volume of timber resources and accounts for 58.7%.

There has been a steady growth in timber resources since the first inventory in the State Forests took place in 1967. The statistics produced by the Large-Scale Forest Inventory give a higher figure (by 6%) for forest resources, as compared with the annual update on forest area and timber resources from the Forest Management and Geodesy Bureau.



LEGEND:

THE STATE FORESTS (LARGE-SCALE FOREST INVENTORY)*

THE STATE FORESTS (FOREST MANAGEMENT AND GEODESY BUREAU UPDATE)

* Large-Scale Forest Inventory data for periods 2006–2010, 2007–2011, 2008–2012 and 2009–2013

TIMBER RESOURCES IN THE STATE FORESTS in 1967–2013 (figures as on 1 January), in million m³ of gross merchantable timber (Forest Management and Geodesy Bureau, Large-Scale Forest Inventory)

In the 20 years between January 1993 and January 2013, in the forests managed by the State Forests, the gross merchantable timber increment amounted to 1167 million m³. During that period 645 million m³ of merchantable timber was harvested, which means that 522 million m³ of gross merchantable timber, representing 45% of the total increment, remained to augment the standing timber resources.

The steady increase in timber resources (standing volume per hectare) is evident in all age classes (except KO/KDO). It is achieved by harvesting in accordance with the principle of forest sustainability.

In the last 20 years the SF timber resources have increased by **522** million m³

FOREST FUNCTIONS

Forests fulfil diverse functions, either naturally or as a result of human activities:

ENVIRONMENTAL (PROTECTIVE) FUNCTIONS

favourable impact on shaping of the local and global climate, regulation of water cycle in nature, prevention of floods, avalanches and landslides, prevention of soil erosion and steppisation of landscape;

SOCIAL FUNCTIONS

providing health-enhancing and recreational conditions for society, contributing to the labour market and helping to develop the environmental education of society;

PRODUCTIVE (ECONOMIC) FUNCTIONS

primarily production of renewable biomass, including timber and non-timber products, and effective management of hunting.

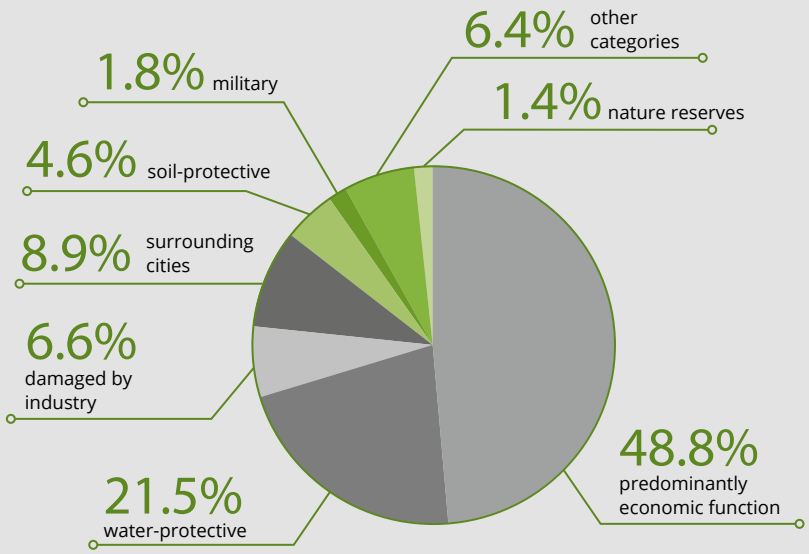
The statutory obligation of the State Forests is to pursue sustainable forest management in order to ensure sustainability of forests, increase of forest resources and their continuous multifunctional utilisation.

Sustainable forest management is based on the concept that forest ecosystems can fulfil a variety of functions. The State Forests has for a long time been shaping the multifunctional nature of forests. This is evident in a large proportion of protective forests in the total area of forests under the State Forests administration.

Environmental functions of forests

Protective forests

The environmental and social functions of forests, often referred to as non-productive, have long been recognised in forest management which began to distinguish a category of protective forests as early as in 1957. By 1975 a total of 1485 thousand hectares of forests were designated as protective, which amounted to 22.5% of the forest area administered by the State Forests at that time. At present, as of 1 January 2013, the total area of protective forests stands at 3527 thousand hectares, which represents 49.8% of the total forest area, or 51.2% including 101 thousand hectares of nature reserves. The majority of protective forests are located in the mountain regions (Kraków RDSF 90.3%, Krosno RDSF 84.1%) and in areas affected by industry (Katowice RDSF 83.7%).



SHARE OF PROTECTIVE FORESTS in the State Forests in 2013 (DGSF)

Protective forests are subject to different management practices, depending on their primary function. These may include limits on clear-cutting, raising the age of trees for cutting, adjusting the species composition according to the forest function or creating recreational facilities.

Carbon sequestration

Forests in Poland absorb nearly **40** million tonnes of carbon dioxide per year

Assessment of the amount of carbon absorbed by ecosystems (including forests) was, until recently, of primarily scientific interest. The growing threat of climate warming caused by the increased concentration of CO_2 in the atmosphere, and the social awareness of this threat, have brought about a more practical approach which was expressed in the Kyoto Protocol (2005). The Protocol identified and evaluated various forestry-related actions aimed at increasing carbon sequestration and included them in the total balance of greenhouse gas emission and absorption.

It is estimated that the forest biomass in Poland contains 1099 million tonnes of carbon, of which 26 million tonnes occur in deadwood, and that the amount of CO_2 absorbed every year by forests (including soil and taking into account utilisation) stands at 39.5 million tonnes, which roughly equals 10.8 million tonnes of carbon.

The State Forests' objectives resulting from the Forest Act are in line with the goals set out in the Kyoto Protocol. This is evident in the increase in the last decade of forest area by 92 thousand hectares and of resources by 406 million m^3. The average standing volume in the same period increased from 220 to 272 m^3/ha.

Social functions of forests

Forest education

Forests are a natural place for recreation and leisure, particularly for the inhabitants of large conurbations. Forests are a popular destination for excursions, mainly organised by schools, which give young people an opportunity for direct contact with nature. Recreation in forests is an excellent opportunity for delivering environmental and forest education.

Forest education in all parts of the State Forests is based on two documents introduced in Ordinance nº 57 of 9 May 2003, issued by the Director-General of the State Forests: "The directions of the development of forest education in the State Forests" and "Guidelines for creating forest education programmes in forest districts".

Various educational programmes organised by the State Forests attracted over 3 million participants in 2013. Among the events offered were outdoor lessons and guided tours, classes held in centres for forest education, meetings with foresters both in and outside schools, exhibitions, competitions, sporting events and many others.

These diverse educational activities are supported by an appropriate infrastructure which includes: forest education centres (58), classrooms (263), teaching shelters for use as "green classes" (532), educational trails (981), educational stops (1937), a "green school", other facilities (2504) and also overnight accommodation.

The educational activity of the State Forests is financed mainly from the forest districts' own resources and from the national and regional funds for environmental protection. In 2013, approximately 30 million PLN was spent on forest education, of which 82% came from forest districts' own resources and 3% from the forest fund, among other sources.

A leading role in forest education is unquestionably played by the promotional forest complexes (PFCs) which attract about 30% of participants in all educational programmes. The well-developed educational infrastructure includes: forest education centres (26), classrooms (58), teaching shelters known as "green classes" (104), educational trails (210) and educational stops (377).

Over **3 million** participate in the SF educational programmes

There are 25 promotional forest complexes distributed between all 17 regional directorates of the State Forests. Their total area is 1225 thousand hectares, of which almost 1200 thousand hectares are administered by the State Forests (nearly 17% of its territory). The PFCs have been established as part of the State Forests policy on promoting ecological forest management (see cover for a map and a list of PFCs).

Tourism

In addition to educational activities the State Forests offer a wide range of tourist attractions which are available to visitors of all ages and social groups. Overnight accommodation consisting of nearly 4.5 thousand beds is available in recreation and training centres and in hunting and forester lodges. There are over 20 thousand kilometres of walking routes, nearly 4 thousand kilometres of cycling routes and about 7 thousand kilometres of horse riding routes.

Nearly **4.5 thousands** beds are available to tourists in the SF

Visitors have access to over 600 bivouac sites, nearly 400 locations where camp fires are permitted and about 3200 car parking facilities. Accommodation includes rooms in 60 training and recreation centres and in 130 hunting lodges and 200 guest rooms. Additionally, there are 100 sporting facilities and 650 other outdoor venues. Information about the State Forests tourist facilities can be found at www.czaswlas.pl.

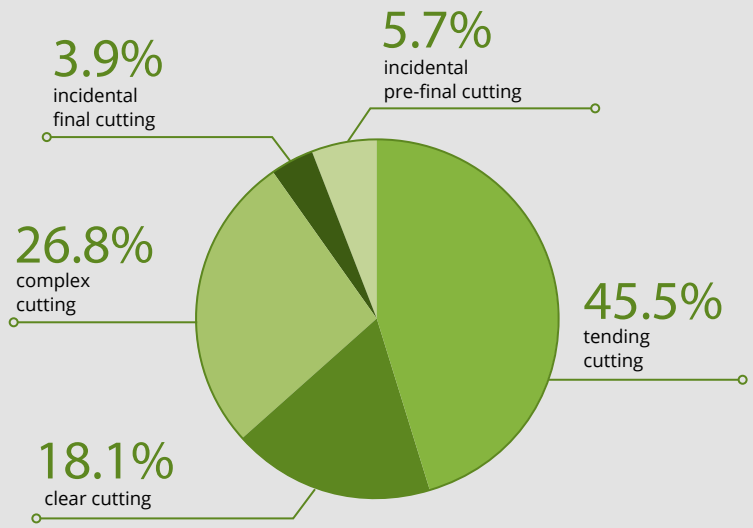
Productive functions of forests

Harvesting of timber

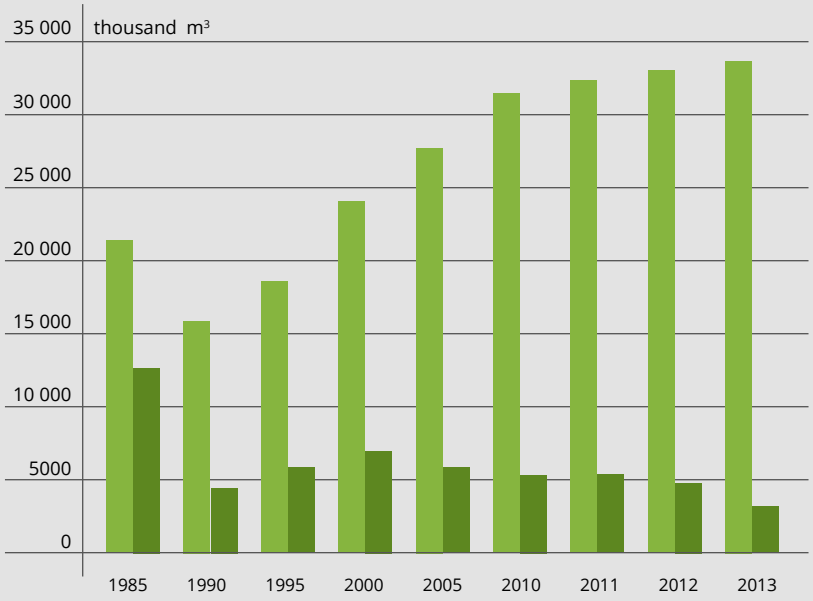
The level of utilisation of forests is determined by natural conditions, silvicultural and protective needs and, above all, by the principle of sustainability of forests and augmentation of their resources.

In 2013 the State Forests harvested 36 286 thousand m³ of raw timber, including 34 152 thousand m³ of net merchantable timber (nearly 100% of the approximate prescribed cut), of which 16 671 thousand m³ (93.7% of prescribed cut) was obtained from final felling and 17 478 thousand m³ (106.7% of prescribed cut) from intermediate felling.

The volume of timber harvested for sanitation reasons in 2013 amounted to 3804 thousand m³, or 11.1% of the total harvest of merchantable timber, and was the lowest in the last 30 years.



HARVEST OF MERCHANTABLE TIMBER by type of utilisation in the State Forests in 2013

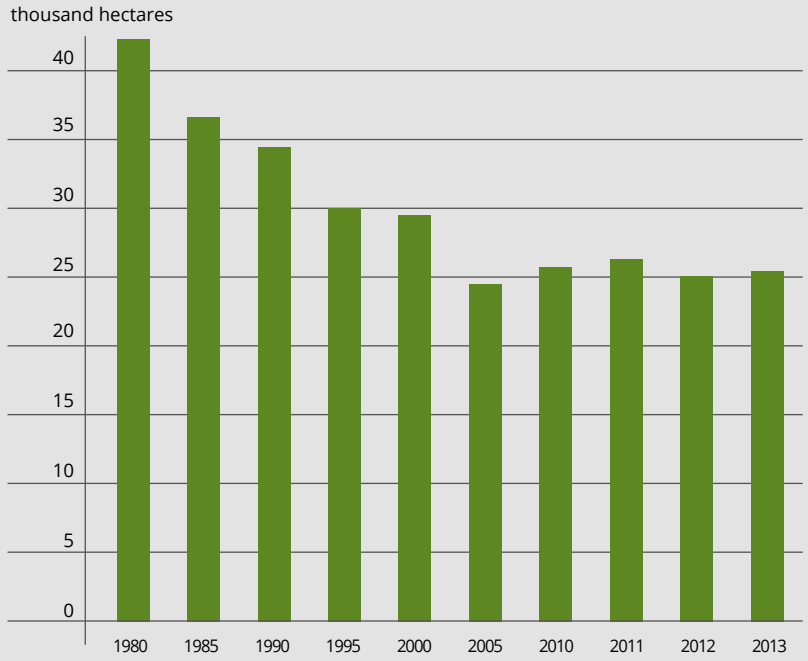


SHARE OF DEADWOOD IN THE TOTAL UTILISATION in the State Forests in 1985–2013, in thousand m³ of net merchantable timber (Directorate-General of the State Forests)

Only
18.1%
of merchantable timber was harvested in clear-cutting

In the last 20 years (1994–2013) the State Forests utilised 91.2% of prescribed cut in final cutting and 114% of prescribed cut in pre-final cutting which in forest management plans is defined as approximate.

In 2013, under the clear-cut system, 6166 thousand m³ of merchantable timber was harvested in the State Forests, which accounts for 18.1% of total harvest. The clear-cut area totalled 25.7 thousand hectares and was slightly larger than the average for the past decade at 25.2 thousand hectares. The gradual reduction in size of the clear-cut area is indicative of the progress in sustainability of forest management.



AREA OF CLEAR-CUTTING in the State Forests in 1980–2013, in thousand hectares (DGSF)

In the last five years the indicator of the size of timber harvest, expressed by the volume of net merchantable timber to one hectare of the forest area, has stabilised at 4.82 m³/ha; in 2012 this indicator was 4.53m³/ha. The size of harvest does not exceed the permitted level of utilisation and constitutes nearly 46% of current increment.

The ratio of the volume increment to the size of timber harvest is a commonly used indicator of sustainable development, especially among the specialists outside forestry.

SILVICULTURE

The aim of silviculture is to ensure the sustainability and continuity of forest ecosystems. This is achieved by using methods of stand regeneration and of profiling species and age structures, which are based on natural processes. These methods of renewal, tending and protection are used at all stages of stand development.

Particular attention is paid to environmental conditions which contribute to the development of trees and stands, for example maintaining ecosystems which are similar to those occurring naturally.

The most important forest management activities undertaken in the State Forests in 2013 were as follows (numbers in hectares):

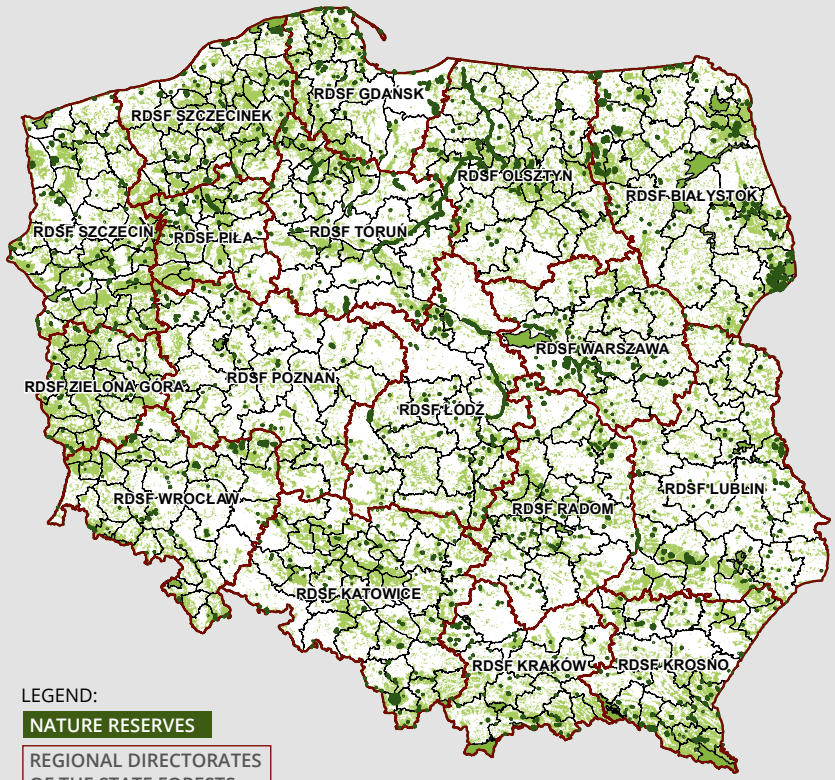
1. Nursery production (total productive area of forest nurseries)	2 188
2. Restocking and afforestation (including filling gaps and introduction of second story)	55 105
including: • natural regeneration	5 826
• afforestation, in total	555
including: • natural succession	171
3. Fill planting and supplementary planting	4 355
4. Forest tending, total	311 041
including: • underbrush	524
• soil preparation and weed control	166 641
• early cleaning	58 795
• late cleaning	82 626
• other tending	2 445
5. Thinning, total	456 368
including: • early thinning	108 753
6. Land drainage, in total	61 267
including: • mineral fertilising of forests	39
7. Stand conversion, total	9 068

NATURE CONSERVATION

The State Forests, in compliance with the Forest Act and the national policy on forests, has for many years been maintaining an inventory of all forms of nature protection, which is kept updated and includes the current data from all forest districts.

As of 31 December 2013, the State Forests inventory included:

- 1 271 nature reserves covering an area of 121.7 thousand hectares;
- Natura 2000 sites covering 2880 thousand hectares in total (38.1% of the State Forests territory). They include: 131 sites for protection of birds (SPAs) with a total area of 2205 thousand hectares (29.1%) and 726 sites of Community importance (SCIs) with a total area of 1640 thousand hectares (21.7%);
- 10 873 natural monuments, including: 8416 single trees, 1481 groups of trees, 126 tree avenues, 466 erratic boulders, 183 rocks and caves, 201 areas under monument protection (345 hectares);
- 8969 areas of ecological utility with a total area of 28 087 hectares;
- 135 documentation sites with a total area of 1068 hectares;
- 135 nature-and-landscape complexes with a total area of 47 501 hectares.



LEGEND:
NATURE RESERVES
REGIONAL DIRECTORATES OF THE STATE FORESTS
FOREST DISTRICTS
NATIONAL PARKS
FORESTS

NATURE RESERVES IN POLAND under the administration of the State Forests (DGSF)

Additionally, 3201 protective zones have been created within the State Forests in order to protect refuges of rare birds, mammals, reptiles, insects, plants and lichens. They cover an overall area of 141 403 hectares.

In the total area of forest stands under special protection over 204 279 hectares are designated as the seed base which supplies material for maintaining native ecotypes of forest-forming species in our forests.

The State Forests also initiate their own programmes aimed at maintaining biological diversity and protecting and restoring endangered species of flora and fauna. Among them are the "Programme for the preservation of forest genetic resources", the "Programme for the restitution of fir in Western Sudety", "Programme for the restitution of yew" and projects focusing on reintroduction of wood grouse, black grouse, peregrine falcon, lynx, edible dormouse and bison. Other projects entirely financed from their own resources relate to conservation in situ and ex situ of wild service tree, smooth snake, hermit beetle, great Capricorn beetle, stag beetle, hare, grey partridge and other species.

There are 9 animal rehabilitation centres run by forest districts, 6 botanical gardens and 5 arboreta.

The State Forests initiate various actions aimed at increasing the numbers of game animals, their restitution and widening of the gene pool (eg. fallow deer). In the last 10 years there was a 30% increase in the population of hare, which was previously in decline. Various restitution programmes concentrate on breeding animals and then introducing them in the open hunting areas. Increasingly more attention is paid to actions directed at maintaining biological diversity (creating animal refuge areas, breeding places and ecological corridors), which is one of the main factors of successful restitution programmes.

Natura 2000 areas cover
38.1%
of the total SF area

PROJECTS PARTLY FUNDED BY THE EUROPEAN UNION

The State Forests is the beneficiary of three infrastructure projects from the list of individual projects of the Operational Programme Infrastructure and Environment 2007–2013:

- "Increasing water storage capacity and counteracting floods and droughts in forest ecosystems in the lowlands".
- "Counteracting the effects of rainwater outflow in the mountain regions. Increasing the retention capacity and maintaining streams and related infrastructure in good condition".
- "Biological rehabilitation of degraded land, former military land and military training grounds administered by the State Forests".

The Centre for Co-ordinating Environmental Projects is leading a project under the title "Conservation of biological diversity in forests, including within the network Natura 2000: promoting best practice", which is financed partly from the EU LIFE+ Programme and partly from the National Fund for Environmental Protection and Water Management.

In 2013 the Directorate-General of the State Forests completed two projects concerning forest fire prevention, which were financed from the same EU and national funds mentioned above.

- "Protection of the lesser spotted eagle in selected areas of Natura 2000" (RDSF Białystok,
- "Active protection of lowland populations of wood grouse in Dolnośląskie forests and in Augustowska primeval forest" RDSF Wrocław and Białystok;

Other units of the State Forests also work on projects which are partially funded by the national or EU funds, eg. LIFE+ programme:

or by Priority Axis 5:

- Protection of refuges of Carpathian primeval forest fauna – migration corridors (RDSF Krosno in collaboration with the "Pro Carpathia" association.

FOREST PROTECTION

Forests in Poland are among the most threatened in Europe due to a constant and simultaneous impact of a number of factors which have detrimental effect on the health of forests. These negative phenomena, often called stress factors, can be classified with respect to their origin as abiotic, biotic and anthropogenic.

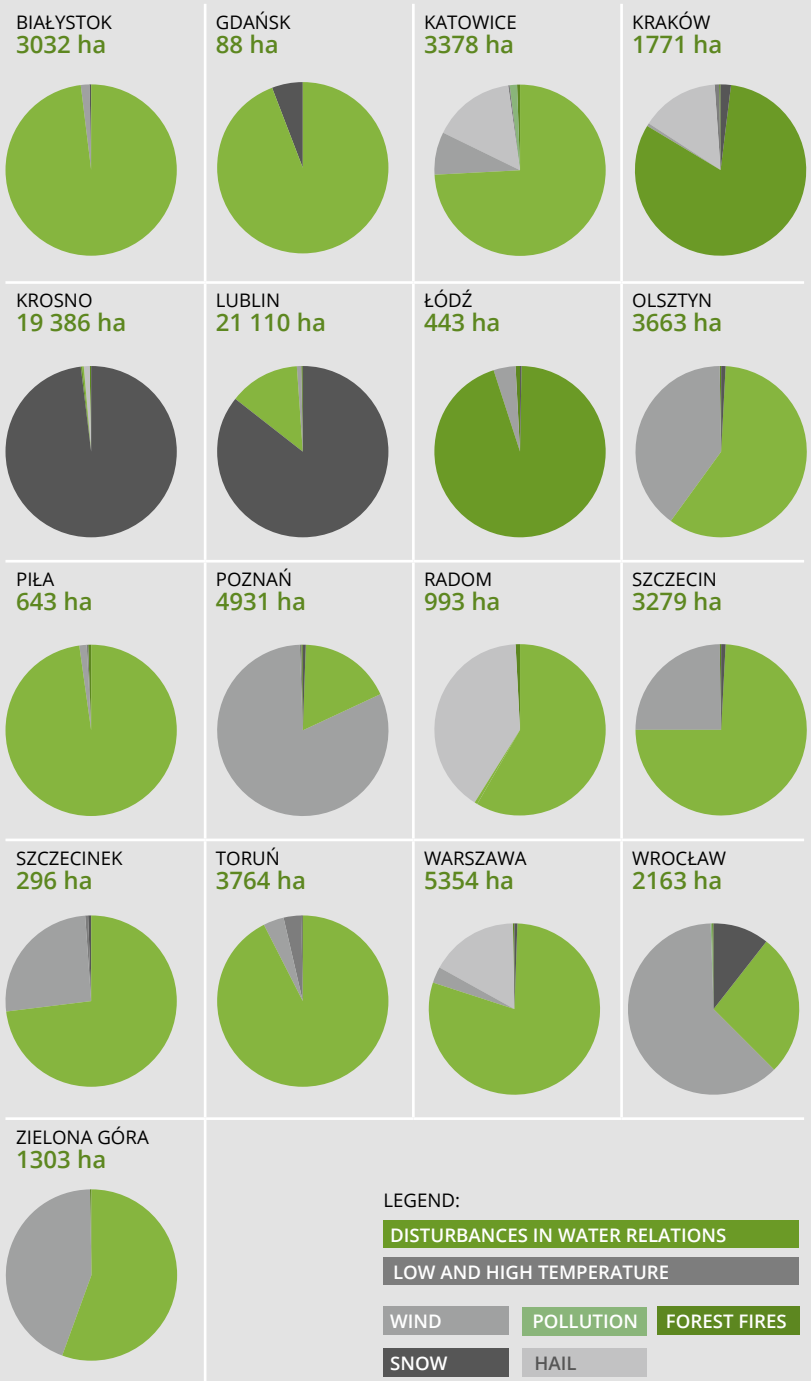
Threats from abiotic factors

Several abiotic factors had devastating effect on forests in 2013, with most damage caused by heavy snow fall and ice accretion, disturbances in water relations (both flooding and draught) and hurricane-force winds. In most cases these weather events were either local or regional and the level of damage measured by the amount of damaged raw timber was lower than in 2012.The amount of wood from fallen and broken trees which was harvested in 2013 reached 1 924 347 m^3 and was 41% less than in 2012.

22% of forest districts reported no damage caused by abiotic factors; the remaining 78%, however, suffered damage caused by one or more factors.

In 2013 damage from abiotic factors affected **78%** of forest districts

The overall area on which damage occurred in 2013 was 71 504 hectares. Snow and ice accretion caused damage to the largest area of 33 513 hectares, disturbances in water relations to 26 213 hectares, high winds to 9230 hectares and hail to 2255 hectares.



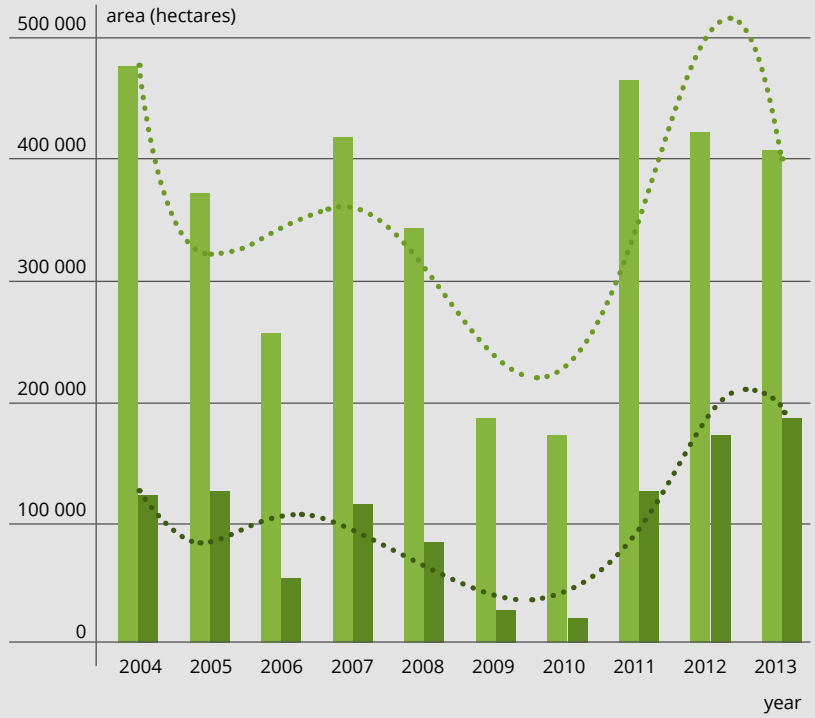
AREA OF DAMAGE TO STANDS aged above 20 years caused by selected abiotic and antropogenic factors in each RDSF in 2013

Threats from biotic factors

Threat from primary insect pests

Threat to forests from primary insect pests in 2013 was at a comparable level to the years 2011–2012. In the State Forests the total area on which these pests occurred was 421.5 thousand hectares and was smaller only by 1% than the area affected in 2012. It was necessary to apply control treatment aimed at reducing populations of 42 primary insect species and groups. In total, control treatment was used on an area of 193.5 thousand hectares, which was 7.2% larger than in the previous year.

The most active among primary insect pests within the State Forests were folivorous insects which attack pine stands and broadleaved (mainly oak) stands and also pests infesting nurseries, plantations and young pine stands.



AREA OF OCCURRENCE AND CONTROL TREATMENT of primary insect pests in 2004–2013, showing the trend in changes

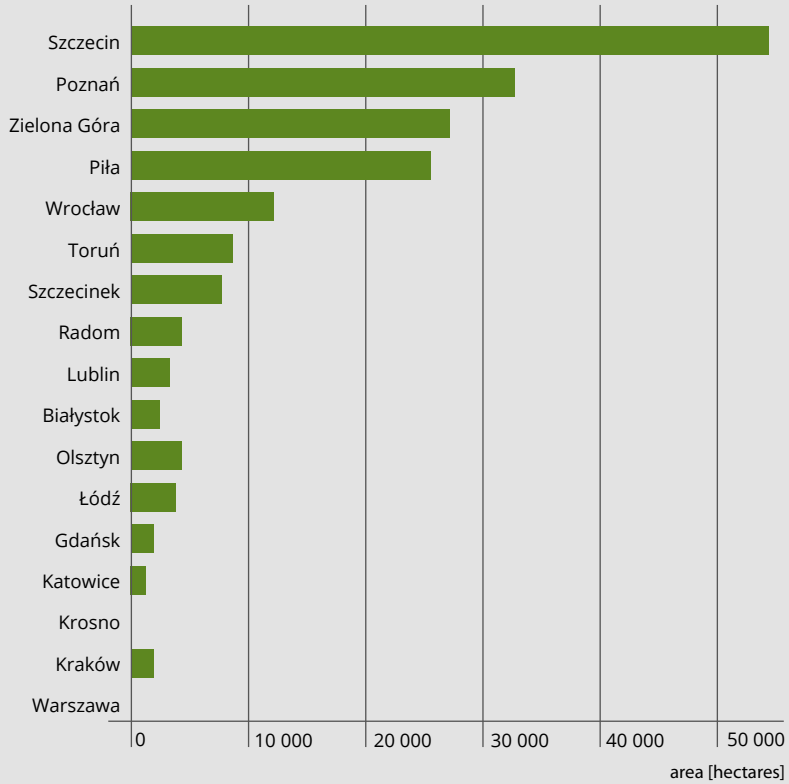
LEGEND: OCCURENCE, CONTROL TREATMENT, TREND IN OCCURENCE, TREND IN TREATMENT

Primary insect pests were treated on almost **195** thousand hectares of the SF

The largest areas of stands where protective measures were applied were in RDSF Szczecin (52.7 thousand hectares), Poznań (30.6 thousand hectares), Zielona Góra (28.4 thousand hectares) and Piła (27.0 thousand hectares).

The area of pine stands attacked by folivorous insects in 2013 was 320.5 thousand hectares, a 1% decrease on 2012. Control treatment against this category of pests covered 160.8 thousand hectares, a 1.5% increase on the previous year.

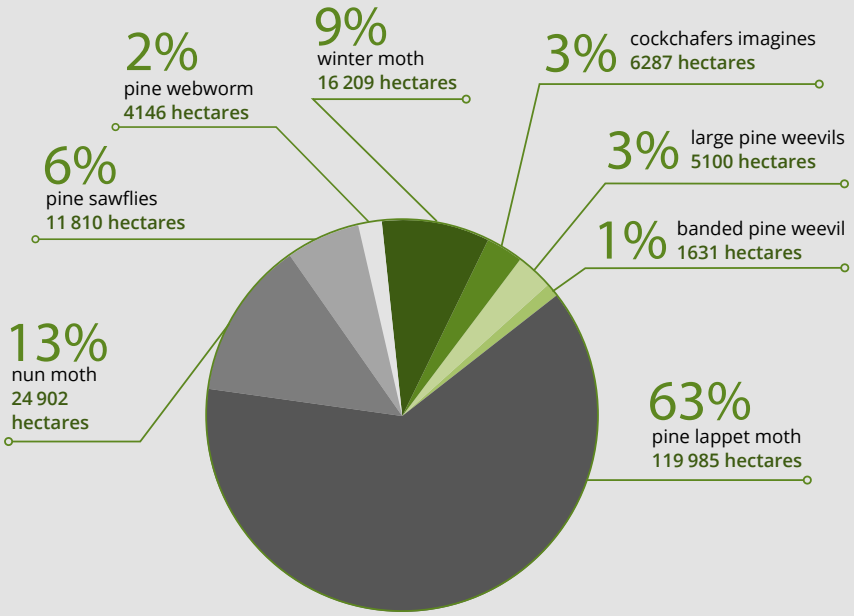
In 2013 a 13% decrease in a total area affected by folivorous insects attacking broadleaved stands (mainly oak) was noted, from 61.5 thousand hectares in 2012 to 53.3 thousand hectares. The total area where control treatment against folivorous insects was applied was 22.5 thousand hectares, an increase of 77% on the previous year.



AREA OF POPULATION CONTROL TREATMENT
against primary insect pests in each RDSF in 2013

Insect pests attacking plantations and young stands occurred on a total area of 12.6 thousand hectares in 2013, which was a decrease of 3.7 thousand hectares (23%), compared with the previous year. Control treatment was applied in an area of 8.8 thousand hectares, a small increase (of 42.5 hectares) on 2012.

In addition to the three groups of insect pests mentioned above, several other species and groups of species were active in 2013, among them insects attacking roots of forest trees and shrubs and insects attacking spruce, larch and fir.

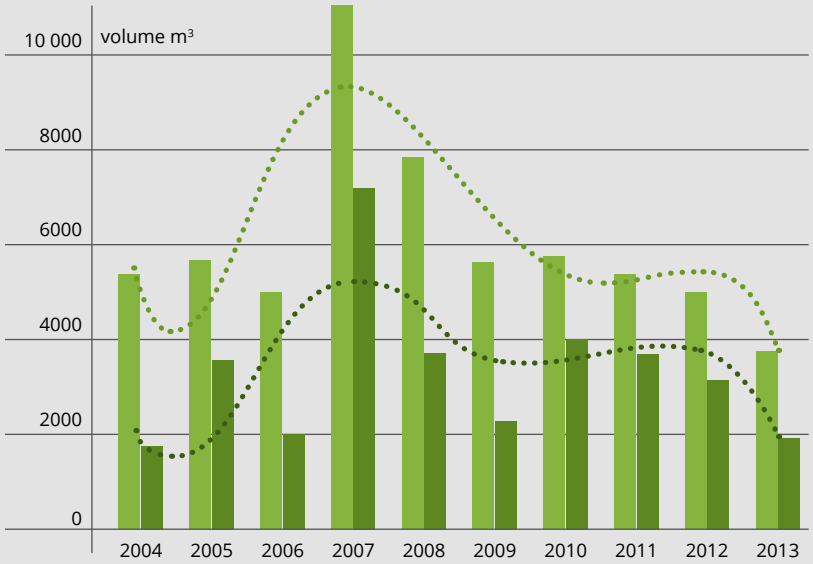


(pests occurring in pine stands are marked in grey, in broadleaved stands in dark green and in nurseries, plantations and young stands in light green)

AREAL SHARE OF POPULATION CONTROL TREATMENT
applied against major primary insect pests in 2013

Threat form secondary insect pests

The level of threat to forests from secondary insect pests in 2013, measured by the volume of wood removed in sanitation cutting, was 25.6% lower than in 2012. Sanitation cutting produced 3803 thousand m³ of timber, of which just over half was windthrow (50.6%). This was the lowest level of threat from secondary pests in the last ten years.



VOLUME OF TIMBER (m³) harvested in sanitation cutting, including windthrow, in 2004–2013, showing the trend in changes*

LEGEND:

SANITATION CUT — TREND IN SANITATION CUT

WINDTHROW — TREND IN WINDTHROW VOLUME

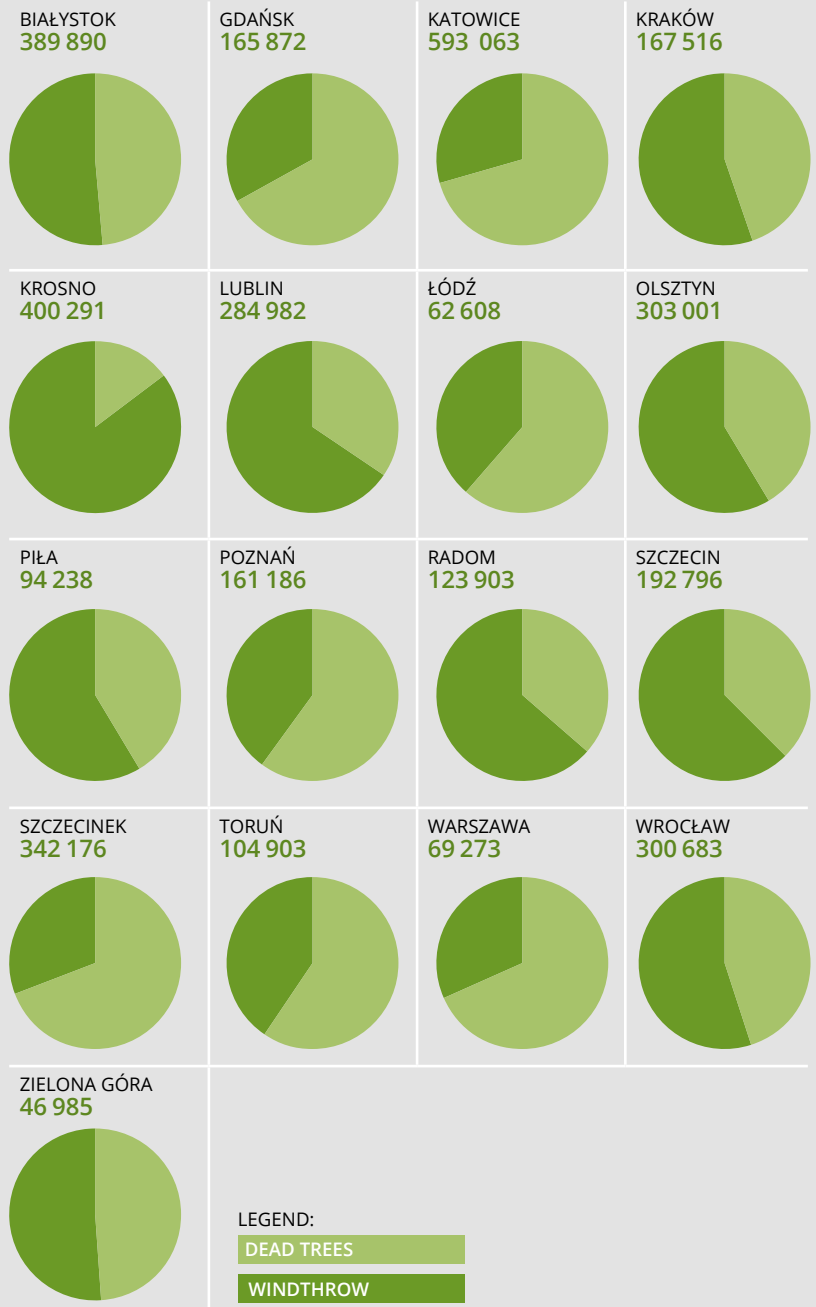
* In 2012 there was a change in the method of recording the volume of timber harvested in sanitation cutting. Data for the years 2004–2011 covers period October to September of the next year while data for the years 2012–2013 covers period January to December.

The largest volume of timber harvested in sanitation cutting was recorded in the following RDSFs: Katowice (593.1 thousand m³), Krosno (400.3 thousand m³), Białystok (389.1thousand m³), Szczecinek (342.2 thousand m³), Olsztyn (303.0 thousand m³), Wrocław (300.7 thousand m³) and Lublin (285.0 thousand m³). In the remaining RDSFs the level of sanitary cutting harvest did not exceed 200 thousand m³.

Most affected were coniferous stands, from which 2900 thousand m³ of timber was harvested, of which nearly half was windthrow and 35% of raw timber was infested by secondary pests.

There were a number of incidences of larch dieback reported in 2013. The disease occurred in several forest districts in Białystok and Olsztyn RDSF and mainly affected younger stands.

Significantly lower level of threat from secondary insect pests was observed in broadleaved stands in 2013. Sanitation cutting produced 903.4 thousand m³ of hardwood.

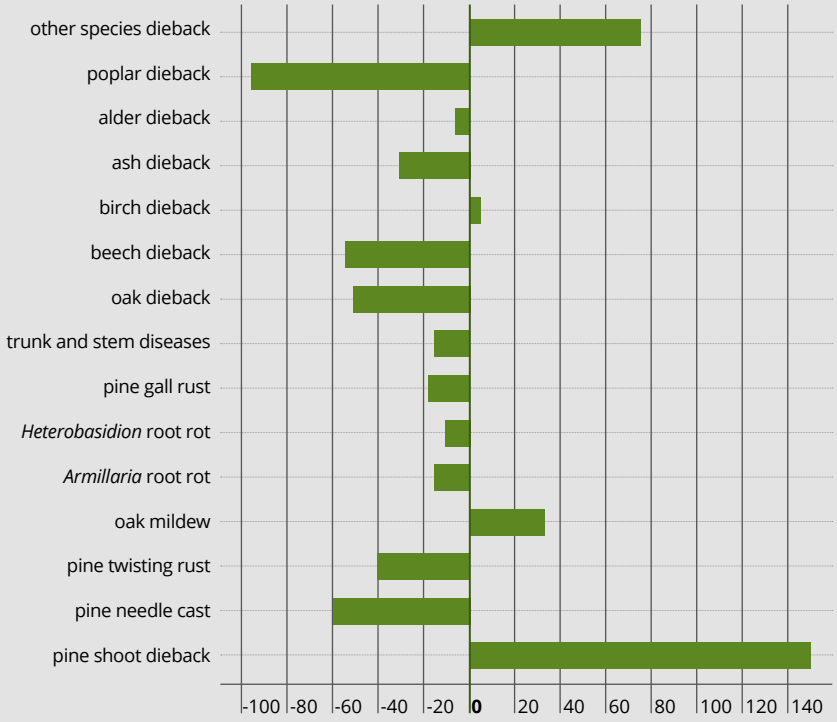


VOLUME OF DEAD TREES AND WINDTHROW HARVESTED in 2013 in sanitation cutting in each RDSF

Threats from infectious fungal diseases

In 2013 infectious diseases were reported over a total area of 286.6 thousand hectares of stands, a decrease by nearly 37.1 thousand hectares (or 11.5%) compared with 2012. The most important change in the level of threat concerns pine shoot dieback which was reported on a total area of 3.13 thousand hectares, which was 2.5 times larger than in 2012. Toruń RDSF still remains to be most affected where 82% of the total area of damage occurred.

Oak mildew was also on the increase, affecting an area of 14.2 thousand hectares, 3.5 thousand hectares more than in the previous year. Other diseases of assimilatory apparatus affected smaller areas than in 2012.



CHANGES IN AREAS AFFECTED by infectious diseases in 2013, in comparison with 2012 (%)

The improvement in health condition of broadleaved stands continued in 2013. Areas affected by dieback of oak, beech, ash, alder and poplar decreased by 55%, 56%, 29%, 6% and 94%, respectively. The area affected by birch dieback was only larger by 36 hectares. However, dieback of other species was on the increase and affected an area of almost 1 thousand hectares (566 hectares in 2012).

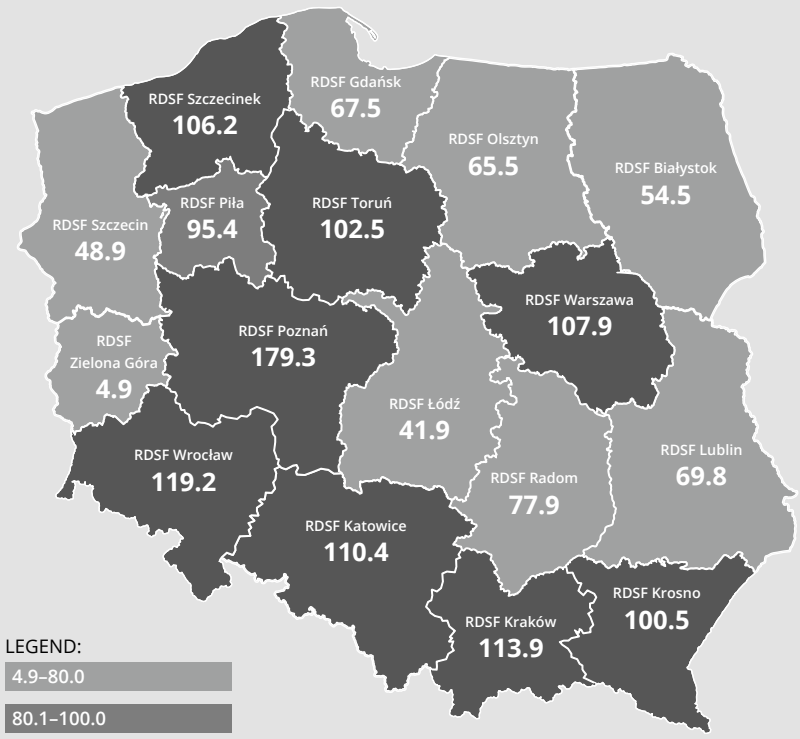
Areas affected by root diseases generally decreased by 25.6 thousand hectares and a decrease was noted in the spread of *Armillaria* root rot and *Heterobasidion* root rot by 16% and 7%, respectively.

There was a small increase (of 36 hectares) in the area of birch stands showing symptoms of dieback. However, dieback among other tree species not already mentioned above was on the increase and covered an area of almost 1 thousand hectares, compared with 566 hectares in 2012. This was mainly due to dieback of larch and to a smaller extent of sycamore and spruce.

A comparison of the health condition of forests between 2013 and 2012 shows improvement or stabilisation in most RDSFs.

In forestry protective measures aimed at controlling spread of infectious fungal diseases are used in nurseries (mainly using chemical methods) and occasionally, when necessary, in stands (using biological or mechanical methods). In 2013 the total area on which chemical method was used amounted to 58.3 hectares while biological and mechanical methods were used on 19 652 and 2866 hectares, respectively.

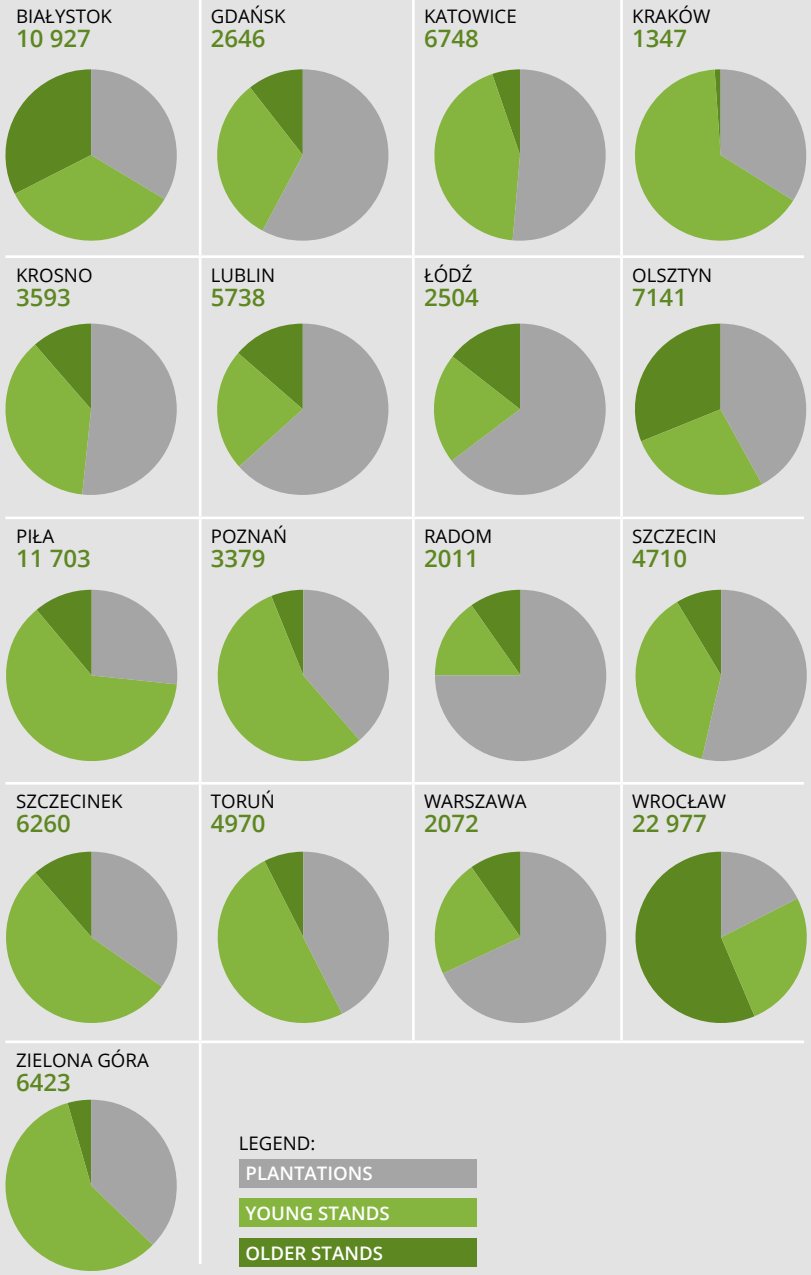
Infectious diseases occurred on **286.6** thousand hectares of the SF stands



CHANGES IN THE AREA AFFECTED BY INFECTIOUS DISEASES in 2013, expressed as a percentage of the area affected in the previous year

Damage to forests caused by animals

In 2013, compared with 2012, there was a small increase (by 8.4%) in damage to forests caused by animals. Damage occurred on 105.1 thousand hectares in total, including 39.9 thousand hectares of plantations, 40.7 thousand hectares of young stands and 24.5 thousand hectares of stands in older age classes.



AREA OF STANDS in which moderate (21–40%) and heavy (>40%) damage caused by herbivore mammals occurred in each RDSF, in 2013

In 2013 an area of 54 thousand hectares of forest was restocked and over 555 hectares of agricultural land were afforested. Various preventive measures were put in place on nearly 100 thousand hectares of plantations. The size of the area of renewed forests needing protection from animals has been increasing every year.

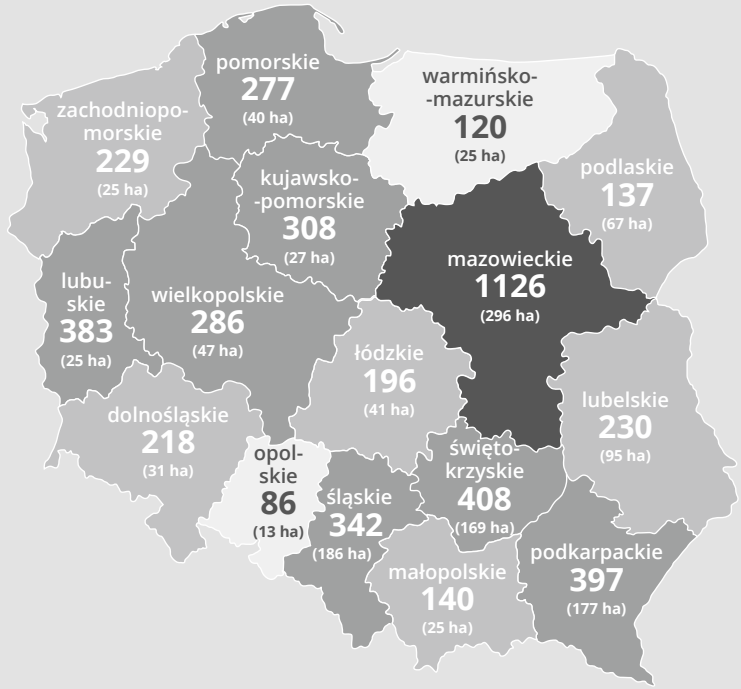
In addition to damage caused by game animals in 2013, the stands were also under pressure from species under various forms of protection, eg. elk, beaver and bison.

100 thousand hectares of plantations were protected from animals

Threats to forests from anthropogenic factors

Forest fires

There were 4883 forest fires in 2013 (compared to 9265 in 2012). The burnt area covered 1289 hectares of stands, which is almost 6 thousand hectares less than in the previous year. The largest number of fire events took place in the Mazowieckie province (23% of the total number), the lowest – in the Opolskie and Warmińsko-Mazurskie provinces.



NUMBER OF FOREST FIRES AND THE BURNT AREA by province in 2013

NUMBER OF FOREST FIRES:

1–125	251–500	751–1000
126–250	501–750	>1000

Arson caused
41%
of forest fires in the State Forests

In the State Forests there were 1682 forest fires in 2013 (34.4% of all forest fires in Poland), which covered an area of 261 hectares (20.2% of the total). These figures exclude the territories used by the military. The greatest number of fires was recorded in Szczecin RDSF (241), followed by Zielona Góra (199) and Katowice (192). The largest areas damaged by fires were in Katowice RDSF (62 hectares), Lublin (30 hectares) and Radom (21 hectares); combined they accounted for 43% of the total burnt area in the State Forests.

The average area of a single fire in forests in all categories of ownership decreased by 0.52 hectare, compared with 2012, and was 0.26 hectare. In the State Forests the average area of a single was fire 0.16 hectare.

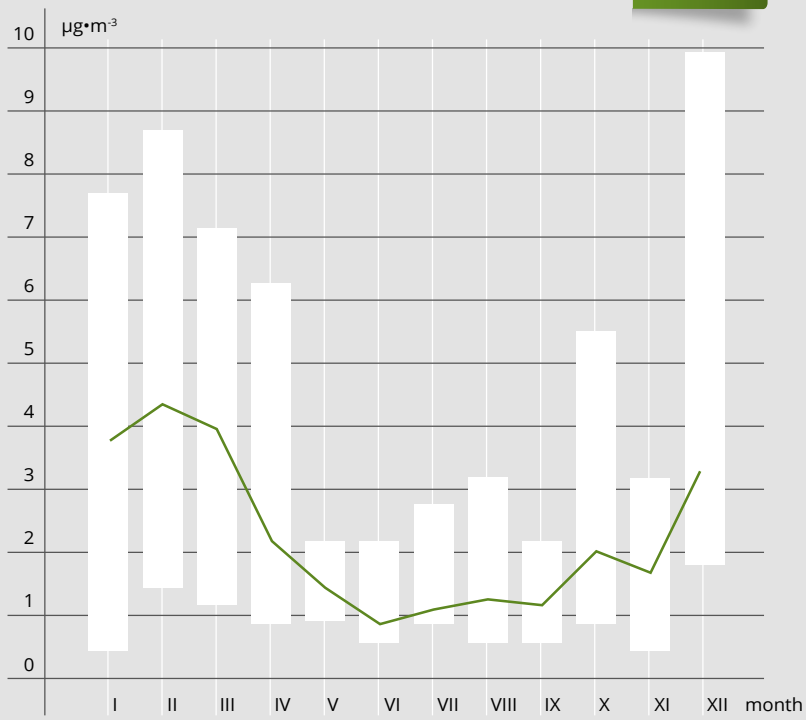
The most frequent causes of fires in the State Forests were arson (41%) and careless adults (25%). 4% of fires spread from areas other than forests. The number of fires of unknown origin (25% of all fires and 27.6% of burnt forest area) is still high.

The largest number of fires occurred in August (26.8% of all fires), July (19.2%), April (17.5%) and May (14.6%). The smallest number (of the risk period) occurred in June and September.

Air pollution

Information on major pollutants in forests in different regions of Poland is supplied by the forest monitoring network. The network consists of 12 permanent observation plots across the country, of which five are located in pine stands (Chojnów, Strzałowo Białowieża, Krucz and Zawadzkie forest districts); two in oak stands (Łąck and Krotoszyn forest districts); two in beech stands (Gdańsk and Bircza forest districts) and three in spruce stands (Suwałki, Szklarska Poręba and Piwniczna forest districts).

Average monthly concentration of sulphur dioxide and nitrogen dioxide in the air measured on the observation plots were within 0.4–9.8 $\mu g SO_2 \cdot m^{-3} \cdot m\text{-}c^{-1}$ and 0.3–18.8 $\mu g NO_2 \cdot m^{-3} \cdot m\text{-}c^{-1}$. The lowest concentration of sulphur dioxide was observed in the north-east regions of the country while the highest occurred in the south, particularly in the foothill and mountain regions and in Upper Silesia. In central Poland these values were in the mid-range.



CHANGES IN CONCENTRATION (average, minimal, and maximal values) of sulphur dioxide in the air, measured on intensive monitoring observation plots in 2013

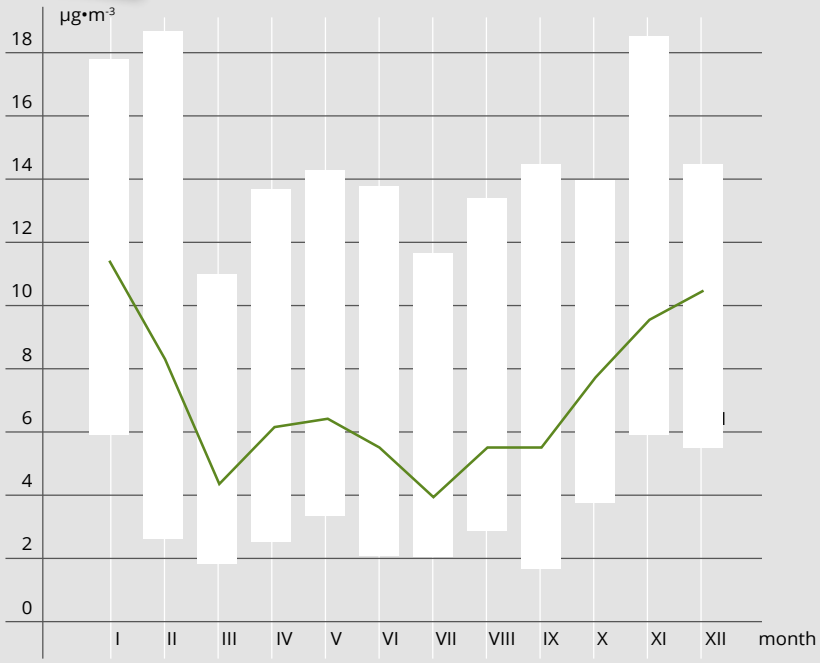
The level of concentration of nitrogen dioxide, as in previous years, was the highest in the central regions of Poland. Forests in the north-eastern regions and in the southern foothill and mountain areas had a significantly lower concentration of NO_2.

The forest monitoring network comprises **12** permanent plots

Chemical composition of the air pollution changed with the seasons: the highest concentration of SO_2 and NO_2 was observed in the six winter months, which coincided with the heating season and therefore increased emissions.

Pollution is cleared from the atmosphere by means of precipitation and deposition, such as rain, snow, drizzle, fog, etc. Acidic precipitation is defined as having a pH value below 5.6. More than half of the monthly precipitation recorded on permanent observation plots in 2013, as in the previous year, was acidic with the pH below 5.5.

NO_2



CHANGES IN CONCENTRATION (average, minimal and maximal values) of nitrogen dioxide in the air, measured on intensive monitoring observation plots in 2013

More acidic precipitation was recorded on observation plots in the winter months (January, February, March, November and December). Particularly low pH values were observed in the south of the country. In the southern, central and western regions precipitation had the annual average pH value of about 5.0 but was slightly higher in the north-eastern regions.

THREATS TO FOREST SUSTAINABILITY

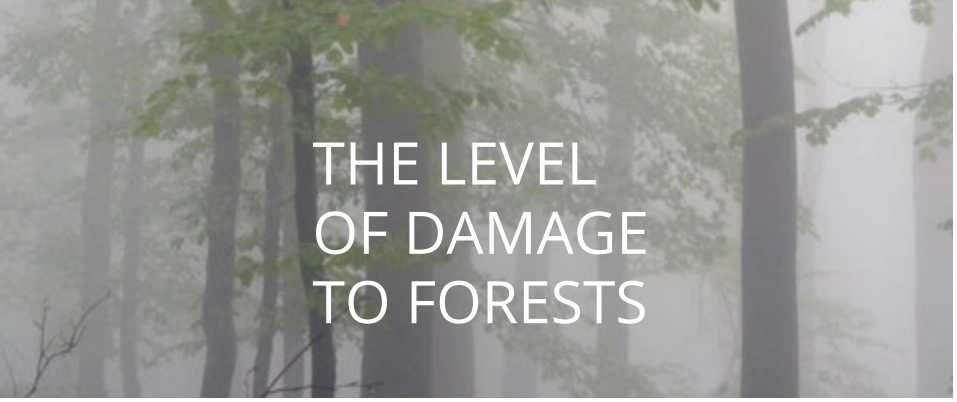
The work undertaken by foresters in order to increase sustainability of forests mainly concentrates on rebuilding stands to match the habitat conditions. In 2013 rebuilding of forest stands was carried out in an area of 9.1 thousand hectares, cleaning on 141.4 thousand hectares and thinning on 456.4 thousand hectares. Additionally, the stability of stands was being reinforced by the introduction of shrub layer (0.5 thousand hectares), a second story (4.5 thousand hectares), by filling gaps (1.4 thousand hectares) and by water drainage work (60.6 thousand hectares).

The work which is being done in order to enhance the sustainability of forests has only a limited effect, mainly because of negative influence of increasingly anomalous weather conditions. It was necessary, therefore, to find more long term solutions, including securing seed material from trees, shrubs and forest floor plants. As a result the Kostrzyca Forest Gene Bank was opened in December 1995. It is located in Miłków in the foothills of the Karkonosze mountains and was a collaborative project between the State Forests and the Institute of Dendrology of the Polish Academy of Sciences.

Rebuilding was carried out on **9.1** thousand hectares of stands

The Kostrzyca Forest Gene Bank has a stock of 5809 genetic resources relating to 90 species of forest flora, both whole populations and individual plants. Of these, 28 species are of trees and forest-forming shrubs and the remaining 62 species are of rare and protected plants which are listed in the Polish red book of plants. Resources of the Gene Bank constitute seed batches kept in liquid nitrogen for a long-term storage, which have been harvested from selected seed stands, conservation stands, from maternal trees and tree-monuments and from other single trees and plant parts.

The gene resources stored at the Kostrzyca Gene Bank are identified and analysed at the DNA Analysis Laboratory whose work includes genetic identification of maternal trees, evaluation and verification of genetic characteristics of Scots pine seed orchards, establishing the provenance of stolen timber and analysing fragments of DNA responsible for resistance to fungal disease which has been decimating ash stands across Europe.



THE LEVEL OF DAMAGE TO FORESTS

The level of damage to forests in Poland has been assessed every year since 1989 as part of the forest monitoring programme which is one of the elements of the National Environment Monitoring system. Observations are carried out in forests in all ownership categories and in those subject to various forms of protection. Monitored are areas of stands over 20 years old and samples include all species of trees.

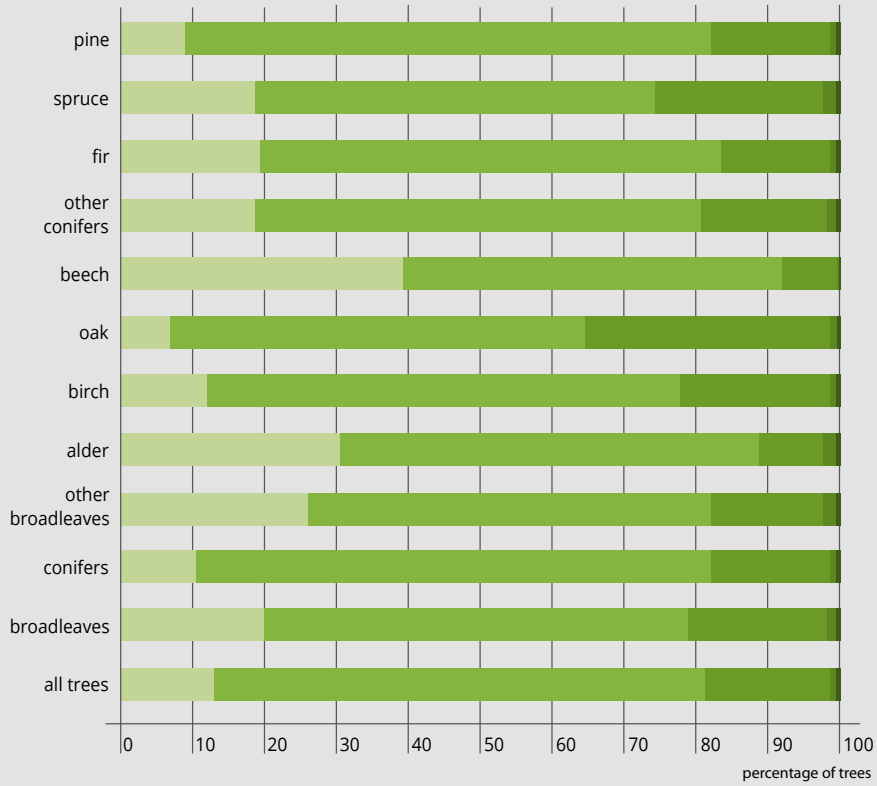
In Polish forests **13.7%** of trees are healthy

In 2013 assessment of defoliation covered 39 640 trees over the age of 20 years, which were located on 1982 Level I permanent observation plots (20 trees on each plot). In that sample, 13.7% of trees showed no defoliation (defoliation class 0 – healthy trees), including 10.4% of conifers and 20.0% of broadleaves. The largest share of coniferous trees without any defoliation was reported for fir (19.2%), and the smallest – for pine (9.2%). The largest share of healthy broadleaved trees was reported for beech (39.4%) and the smallest – for oak (6.4%).

The share of damaged trees with defoliation over 25% (defoliation classes 2–4) for all species was 18.8%; the share among conifers was 17.8% and among broadleaves 20.7%. The lowest share among the conifers had fir (15.9%) and the highest spruce (27.0%). Among the broadleaves beech had the lowest share (7.3%) and oak the highest (34.8%).

There is only small variation in the condition of forests across the country, depending on their ownership status. In the State Forests the share of healthy trees of all species (class 0) was 14.1% and damaged trees (classes 2–4) 18.1%.

In 2013 there was a small improvement in the health of forests in Poland.



SHARE OF MONITORED TREE SPECIES ON LEVEL I PERMANENT OBSERVATION PLOTS (Forest Monitoring) in defoliation classes in 2013

CLASS:
0 1 2 3 4

klasa 0 – class 0 (0%–10% defoliation),
klasa 1 – class 1 (11%–25% defoliation),
klasa 2 – class 2 (26%–60% defoliation),
klasa 3 – class 3 (above 60% defoliation),
klasa 4 – class 4 (dead trees)

PROMOTING SUSTAINABLE FORESTRY

The majority of promotional work in 2013 was associated with the campaign "The State Forests: an invitation", which was co-ordinated by the State Forests Information Centre (CILP). The campaign was based on a theme of four seasons and was delivered through the media and a variety of events, some of which are listed below.

- National forest festival under the patronage of the President of the Republic of Poland, with main celebrations taking place in Niepołomice forest district;
- Educational festival under the symbol of the Polish forget-me-not, organised at the Forest Education Centre in Jedlnia-Letnisko;
- Festival "Earth Day" in Pole Mokotowskie in Warsaw;
- Scientific picnic –organised by the Polish Radio and the Copernicus Science Centre; The State Forests were represented by the Sudety Zachodnie PFC;
- "Big mushroom-picking" – educational and promotional event in collaboration with the Polish Radio;
- Forest planting – event in Celestynów forest district promoting sustainable forest management.

In 2013 the State Forests contributed to the international campaigns aimed at promoting the role of forests and their products in the economy, such as the International Day of Forests (21 March) and the European Forest Week.

Promotional work is also carried out at international meetings and through co-operation with international and European agencies responsible for forestry. The most important meetings last year were: Fourth Session of the Intergovernmental Negotiating Committee for a Legally Binding Agreement on Forests in Europe (INC-Forests4), which included visits to Jabłonna forest district and Białowieża primeval forest, and The Global Landscape Forum (COP19) at the University of Warsaw.

One of the most effective methods of promotion is through the media and it is often used by the State Forests.

"The State Forests: an invitation" was the promotional campaign of 2013

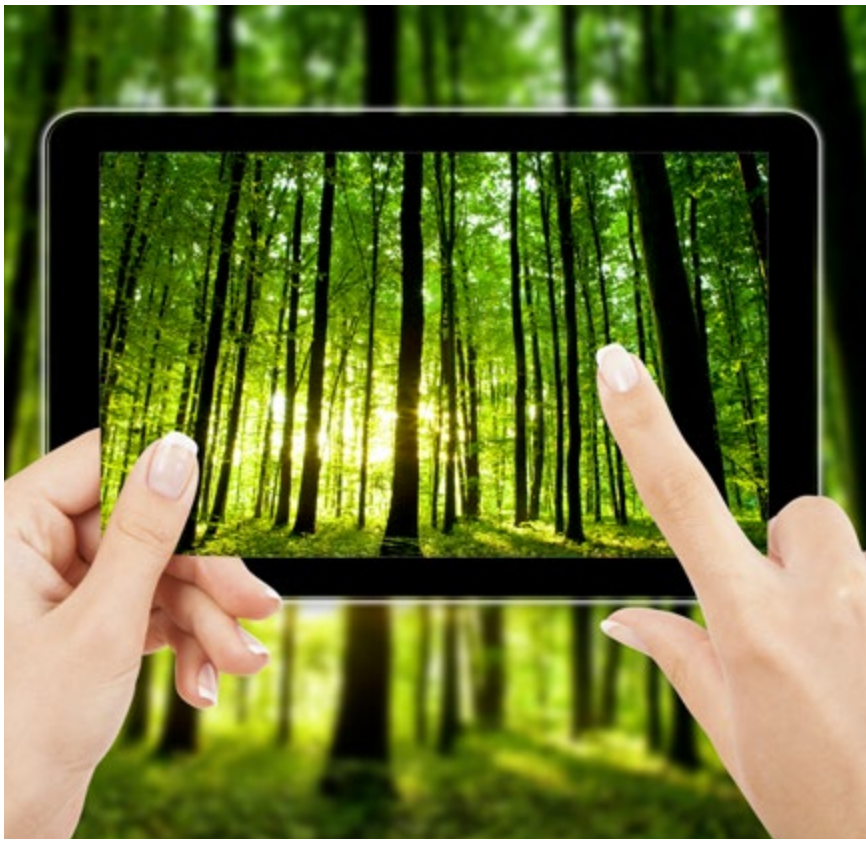
The State Forests' internet portal is the main source of information about the structure and history of the organisation, its commercial and social activities, management of forests, as well as about Polish forests in general and their protection. The portal was visited by 2.411 million unique users in 2013, which was almost twice as many as in the record year of 2012. The number of visits, at 10.285 million, was also more than twice the number in the previous year.

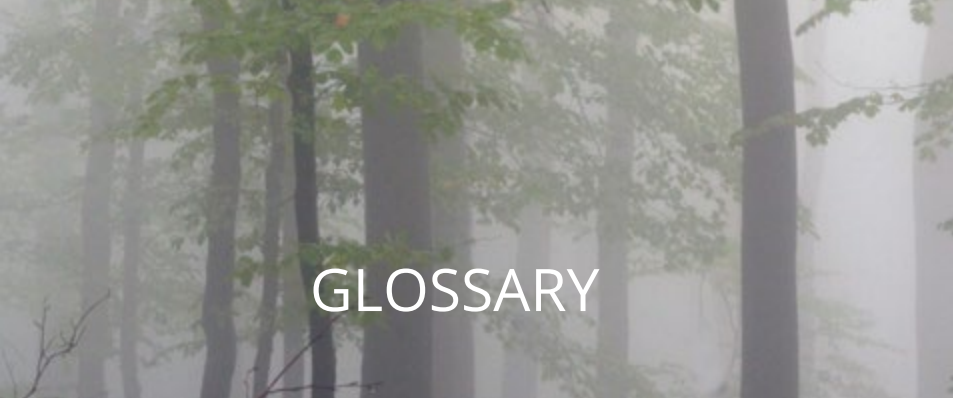
The page www.lasy.gov.pl was visited by **2.4** million users in 2013

The State Forests publish and distribute periodicals on forests and forestry, which target various audiences:

- "Głos Lasu" (circulation 16 thousand) – a monthly magazine for staff;
- "Echa Leśne" (circulation 21 thousand) – a quarterly magazine aimed at anybody who has an interest in Polish forests, mainly tourists, teachers, students and also commercial partners;
- "Biuletyn Informacyjny Lasów Państwowych" (circulation 1.5 thousand) – an official publication from the Director-General containing legal matters affecting forestry in Poland.

The State Forests published 28 non-periodical titles of educational and promotional literature in 2013. Printing varied from a few hundred to as many as 10 thousand copies (eg. leaflets).





GLOSSARY

A

Afforestation – the establishment of new forests on the land previously used for agriculture or on wasteland.

Age class – an agreed period, usually 20 years, which allows the grouping of stands by age; for example, stands aged up to 20 years form class I, stands ranging from 21 to 40 years form class II, and so on.

Amount of cut, yield – the amount (volume) of timber for harvesting derived from management objectives and financial plans.

Annual prescribed cut by volume in the State Forests – an annual measure of utilisation of forests, as set out in forest management plans. It is calculated as a sum of final and pre-final (intermediate) cuts for each forest district (approximately equalling 1/10 of the cut prescribed for a 10-year period). The annual quotas may vary depending on forest condition, but the overall harvest in each district must balance over a 10-year period during which the current forest management plan is in force.

annual prescribed cut in final cuts in the State Forests – an annually averaged sum of final cuts agreed for every forest district; the volume of harvest is set out in the forest management plan (usually established for a 10-year period) and should not be exceeded.

annual prescribed cut in pre-final (intermediate) cuts in the State Forests – an annually averaged sum of approximate pre-final cuts agreed for every forest district.

B

Biological diversity (or biodiversity) – the variety of life forms on Earth or in a given area, usually related to three levels of nature organisation:

- **species diversity** – a variety of species,
- **ecological diversity** – a variety of community types (biocoenoses, ecosystems),
- **diversity of genetic resources** – a variety of genes forming a gene pool of a population.

C

Class for restocking (KDO) – a type of vertical structure of stands in which there is simultaneous utilisation and regeneration under the canopy of the parent stand, and in which the level of regeneration does not yet meet the standard requirements.

Cleaning – a series of tending treatments aimed at adjusting the composition of species, the structure and density of stands and the quality of young trees;

Clear-cuts – an area from which all trees have been removed in one operation (final cut) and which is designated for reforestation within five years.

D

Deadwood – trees which are dead or dying as a result of excessive crowding in the stand, attacks by primary or secondary insect pests, the impact of industrial emissions, changes in water relations, etc.

Defoliation – loss of leaves or needles which intensifies with a worsening health condition of a tree.

Diameter at breast height – diameter (thickness) of a standing tree measured at the standard height of 1.3 m above ground level.

E

Economic seed stands – stands whose origin and quality indicate that seeds harvested from them will produce valuable progeny thus ensuring long-lasting production of timber of satisfactory quality and quantity.

Ecotype – race, ecological form – the entire population of one plant species found in a specific location; it develops as a result of long-term conditioning by specific (local) properties of the environment; ecotypes vary with regard to their physiological and, less frequently, morphological characteristics.

F

Final cutting (felling) – harvesting of wood associated with renewal of stands or deforestation as a result of a change in land-use; the wood obtained from final felling is known as the final cut timber.

Folivores (folivorous species) – leaf-eating animals.

Forest cover (or index thereof) – percentage of the area covered by forests in the country's total land area.

Forest habitat (site) type – a generalised concept of the group of stands on sites of similar suitability for forest production; the basic unit of the typological classification applied in Poland.

G

Gene conservation stands (in situ conservation stands) – stands selected for preservation of endangered populations of the indigenous tree species.

M

Managed forests – forests which are managed according to a plan and whose function is to produce wood and other forest products, while applying the principles of spatial and temporal order.

Merchantable timber (large timber) – (1) the volume of a tree above stump with a diameter at the thinner end of at least 7 cm with bark (refers to standing timber), (2) round wood with a diameter at the thinner end of at least 5 cm without bark (refers to harvested timber).

- **gross merchantable** – timber with bark,
- **net merchantable** – timber without bark and without losses during harvest.

O

Outbreak (gradation, infestation) – a mass occurrence of insect pests as a consequence of favourable environmental factors for a given species.

P

Pathogens – factors causing diseases; primary pathogens attack healthy organisms while secondary pathogens attack already damaged organisms (eg. trees).

Pre-final (intermediate) cutting (felling) – harvesting of wood associated with stand tending procedure.

Promotional forest complex (PFC) – a forest area of special ecological, educational and social value, established for the purpose of promoting sustainable forest management and protection of natural resources.

Protective forests – forests under special protection because of their functions or vulnerability to threats.

R

Regeneration (renewal, restocking, reforestation) – new forest stands established after the removal of previous stands by felling or as a result of damage by natural causes;

natural regeneration – stands established as a result of self-seeding or suckering;

artificial regeneration – stands established by man by planting or seeding.

R

Restocking class (KO) – a type of vertical structure of stands in which there is simultaneous utilisation and regeneration under the canopy of the parent stand, and in which the level of regeneration permits the subsequent stages of tending.

S

Selected seed stand – a stand of high quality trees whose main purpose is seed production; they are excluded from felling for a defined period of time (excluded from final felling).

Selection structure (BP) – a type of vertical structure of stands, representing groups and clumps of trees of uneven age and size.

Small-sized timber – round wood with a diameter at the thicker end (under bark) of up to 5 cm.

Standing volume – the volume of all live trees in a given area (stand, province, country, etc.), with a diameter (with bark) over 7 cm at breast height. Standing volume is often calculated per hectare.

T

Thinning – cuts made in immature stands after they have passed through the cleaning period, during which economically undesirable trees are removed. Thinning has a positive effect on the quality of stands as it allows the trees to increase their volume, height and crown size.

Timber resources – a total volume of trees in forest, usually equated with the estimated volume of merchantable timber in stands

Tree volume – the amount of wood expressed in cubic metres (m^3).

V

Volume increment – an increase in the volume of 1) a tree, 2) a stand (including harvested timber) over a period of time; current increment – an increase in volume over a specified period of time; depending on the length of that period it can be: current annual increment, periodic current increment (more than one year), current increment over the whole period (from origin to a specified age); mean annual increment – quotient of the current increment and the length of the period of time: mean annual increment over a specified period, mean annual increment over the whole period (from origin to a specified age).

W

Windthrows – trees broken or brought down by wind.

Abbreviations

BP – type of stand (selection structure)

DGSF – Directorate-General of the State Forests

KDO – type of stand (class for restocking)

KO – type of stand (restocking class)

PFC – Promotional Forest Complex

RDSF – Regional Directorate of the State Forests

SF – the State Forests

STATE FORESTS – CONTACTS

LEGEND:

- SF REGIONAL DIRECTORATES
- FOREST DISTRICTS
- NATIONAL PARKS
- FOREST COMPLEXES

TERRITORIES OF FOREST DISTRICTS and regional directorates of the State Forests

Regional Directorates of the State Forests

15-424 Białystok
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tel.: (85) 748-18-00,
faks: 652-23-73
e-mail: rdlp@bialystok.lasy.gov.pl

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faks: 302-11-25
e-mail: rdlp@gdansk.lasy.gov.pl

40-543 Katowice
ul. Huberta 43/45
tel.: (32) 251-72-51,
faks: 251-57-39
e-mail: rdlp@katowice.lasy.gov.pl

31-159 Kraków
al. J. Słowackiego 17a
tel.: (12) 630-52-00,
faks: 633-13-51
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faks: 437-39-02
e-mail: rdlp@krosno.lasy.gov.pl

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faks: 521-02-10
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faks: 212-64-78
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faks: 847-28-69
e-mail: rdlp@poznan.lasy.gov.pl

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faks: 658-43-66
e-mail: rdlp@torun.lasy.gov.pl

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ul. Grochowska 278
tel.: (22) 517-33-00,
faks: 517-33-61
e-mail: rdlp@warszawa.lasy.gov.pl

50-357 Wrocław
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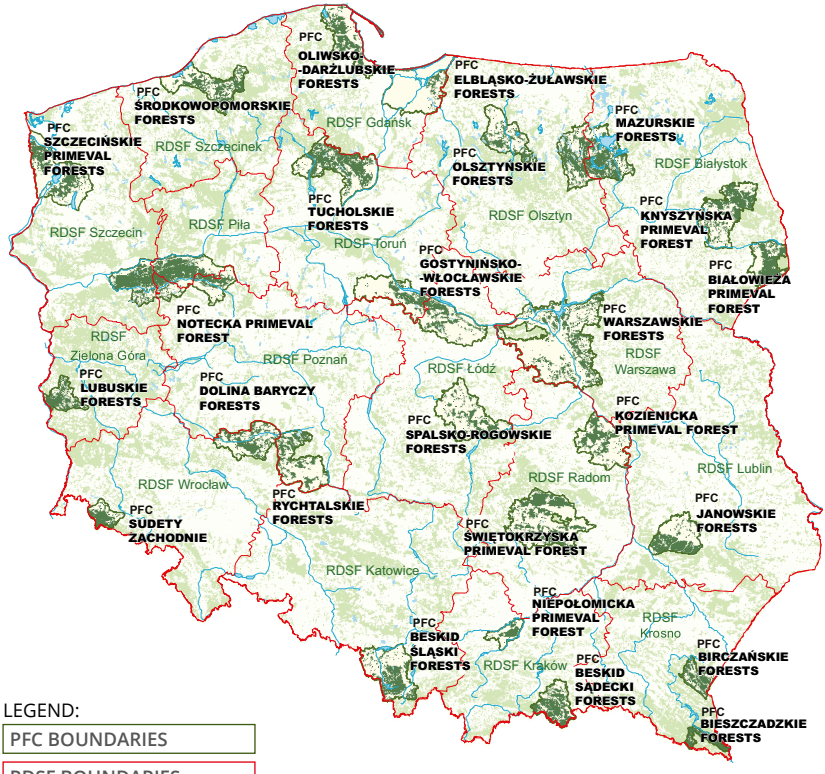
tel.: (71) 377-17-00,
faks: 328-24-01
e-mail: rdlp@wroclaw.lasy.gov.pl

65-950 Zielona Góra
ul. Kazimierza Wielkiego 24a
tel.: (68) 325-44-51,
faks: 325-36-30
e-mail: rdlp@zielonagora.lasy.gov.pl

PROMOTIONAL FOREST COMPLEXES



LEGEND:

- PFC BOUNDARIES
- RDSF BOUNDARIES
- RIVERS
- FORESTS OF PFCS
- OTHER FORESTS

PROMOTIONAL FOREST COMPLEXES

The total area of PFCs – 1 227 480 ha

BIAŁOWIEŻA PRIMEVAL FOREST
Area – 52 637 ha
Forest Districts: Białowieża, Browsk, Hajnówka

TUCHOLSKIE FORESTS
Area – 84 140 ha
Forest Districts: Tuchola, Osie, Dąbrowa, Woziwoda, Trzebciny

GOSTYNIŃSKO-WŁOCŁAWSKIE FORESTS
Area – 53 093 ha
Forest Districts: Gostynin, Łąck, Włocławek

KOZIENICKA PRIMEVAL FOREST
Area – 30 435 ha
Forest Districts: Kozienice, Zwoleń, Radom

ŚWIĘTOKRZYSKA PRIMEVAL FOREST
Area – 76 885 ha
Forest Districts: Kielce, Łagów, Suchedniów, Zagnańsk, Skarżysko, Daleszyce

JANOWSKIE FORESTS
Area – 31 620 ha
Forest District: Janów Lubelski

LUBUSKIE FORESTS
Area – 32 135 ha
Forest District: Lubsko

BESKID ŚLĄSKI FORESTS
Area – 39 883 ha
Forest Districts: Bielsko, Ustroń, Wisła, Węgierska Górka

OLIWSKO-DARŻLUBSKIE FORESTS
Area – 40 907 ha
Forest Districts: Gdańsk, Wejherowo

RYCHTALSKIE FORESTS
Area – 47 992 ha
Forest Districts: Antonin, Syców, Forest Experimental Station in Siemianice (University of Life Sciences in Poznań)

BIRCZAŃSKIE FORESTS
Area – 29 578 ha
Forest District: Bircza

MAZURSKIE FORESTS
Area – 118 216 ha
Forest Districts: Strzałowo, Spychowo, Mrągowo, Pisz, Maskulińskie, Research Station for Ecological Agriculture and Preservation of Native Breeds of the Polish Academy of Sciences in Popielno

SPALSKO-ROGOWSKIE FORESTS
Area – 34 950 ha
Forest Districts: Brzeziny, Spała, Forest Experimental Station in Rogów (University of Life Sciences in Warsaw)

BESKID SĄDECKI FORESTS
Area – 32 051 ha
Forest Districts: Piwniczna, Nawojowa Forest Experimental Station in Krynica (University of Agriculture in Cracow)

SUDETY ZACHODNIE
Area – 22 866 ha
Forest Districts: Szklarska Poręba, Świeradów

NOTECKA PRIMEVAL FOREST
Area – 137 273 ha
Forest Districts: Potrzebowice, Wronki, Krucz, Sieraków, Oborniki, Karwin, Międzychód

SZCZECIŃSKIE PRIMEVAL FORESTS
Area – 61 070 ha
Forest Districts: Kliniska, Gryfino, Trzebież,
Municipal Forests of the City of Szczecin,
Educational Centre “Świdwie”

WARSZAWSKIE FORESTS
Area – 48 572 ha
Forest Districts: Drewnica, Jabłonna,
Celestynów, Chojnów,
Municipal Forests of the City of Warsaw

DOLINA BARYCZY FORESTS
Area – 42 379 ha
Forest Districts: Milicz, Żmigród

ŚRODKOWOPOMORSKIE FORESTS
Area – 55 655 ha
Forest Districts: Warcino, Polanów,
Karnieszewice

KNYSZYŃSKA PRIMEVAL FOREST
Area – 62 319 ha
Forest Districts: Supraśl, Dojlidy,
Krynki, Czarna Białostocka

NIEPOŁOMICKA PRIMEVAL FOREST
Area – 11 000 ha
Forest District: Niepołomice

BIESZCZADZKIE FORESTS
Area – 24 234 ha
Forest Districts: Stuposiany,
Lutowiska, Cisna

ELBLĄSKO-ŻUŁAWSKIE FORESTS
Area – 18 827 ha
Forest District: Elbląg

OLSZTYŃSKIE FORESTS
Area – 33 894 ha
Forest Districts: Olsztyn, Kudypy

The State Forests
Information Centre

ISBN 978-83-63895-53-2