

POLAND'S FOREST RESOURCES

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In Poland's climate and geographical zone, forests are among the least transformed ecosystems. Forests once covered nearly the entire surface of present-day Poland, but due to human settlement and the development of agriculture, as well as the grow-

ing demand for wood, they have nowadays become significantly transformed. Forests perform a number of functions, which can be classified as natural (also called conservative or ecological), social, and productive (economic) functions.

Poland ranks 7th out of the 28 European Union countries in terms of its overall forested area. In 2017, Polish forests encompassed an area of 9.24 million ha. This forest cover increased from 20.8% in 1945 to 29.6% in 2017, although back in the eighteenth century it was around 40% (within the country's borders at that time). The Polish State Forests Service manages 76.9% of the total forest area, 19.3% are private forests and 3.8% are forests in national parks and those be-



Forests are a dynamic
creation of nature
(and also of man).
Responsibility for them lies
with society as a whole.

longing to local communes. Lowland forests cover 7.8 million ha (85% of the forested area in the country), highland forests 600,000 ha, and mountain forests 795,000 ha.

A total of 44.3 million m³ of timber is felled in Poland annually, including 40.6 million m³ classified as large timber (logs at least 7 cm in diameter-over-bark on the thinner end) from the Polish State Forests. Logging is distinctly on the rise. In 2010, for instance, 35.5 million m³ of wood was felled (including 31.9 million m³ of large timber from Polish State Forests). In recent years, the amount of commercially recovered deadwood (from dead trees) and post-hurricane timber has increased significantly (in 2017 the amount was

51% more than in 2010). In 1945, timber resources in Poland's forests amounted to 906 million m³, while currently the country has 2.59 billion m³ of large timber, including 2.03 billion m³ in Polish State Forests and 434 million m³ in private forests. According to calculations published by the Polish State Forests, overall tree biomass contains 822 million tons of carbon, while deadwood contains 32 million tons. Each year Polish forests absorb about 36.5 million tons of CO₂, which is about 10 million tons of pure carbon.

Forests grow mainly on the poorest soils, and the available habitats largely determine their species structure. The dominant species, the queen of Polish forests, is Scots pine. Pine stands cover 58.0% of all



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Artificial replenishment of the Norway spruce in the disaster area of the Jizera Mountains, Szklarska Poręba Forest District

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forest area, with spruce occupying 6.0%, fir 3.2%, oak 7.7%, birch 7.2%, beech 6.0% and alder 5.7%, while other species account for 6.2%. Coniferous species cover more than 68% of the forest area, and their total share is decreasing as a result of planned stand renewal efforts, which aim to ensure that the stand species composition is appropriate for the potential of the habitats. After World War II, forests changed significantly, with a great increase in deciduous species. This was not only the consequence of efforts by foresters but also due to natural changes taking place in ecological succession. For 40 years Poland has been observing an increasing rate of natural tree replenishments: for instance, they accounted for 3.4% of all replenished area in 1976–1980, 6.5% in 1991–1995, and 13.6% in 2011–2018. Viewing the figures for Polish forests against the backdrop of all of Europe shows that the current model of managing forest resources has significantly contributed to an increase in these resources (not only wood), placing our forests at the forefront of Europe in terms of resources (volume of wood in m³). The average productivity of stands in Poland's forests is 289 m³ of large timber per ha. In the years 1945–2017, 1.49 million ha of arable land not used for agricultural production and wasteland was afforested, while in the years 1995–2007, thanks to the “National Program for Expanding the Forest Cover” (KPZL), 280,300 ha of non-forest land was afforested. During this program, the most afforestation took place in 2003 (26,500 ha). The program's aim was to boost

the country's forest cover to 30% by 2020 and 33% by 2050. However, it seems that the achievement of these goals is far from certain.

Statistical data demonstrate a worrying downward trend in the area of afforestation carried out every year. This results from changes in the regulations on allocating private agricultural land for afforestation, as well as subsidies for agricultural production. According to the principles of multifunctional, sustainable forest management, every forest area where stands have been felled must be replenished. In addition to replenishment (planting trees in forested areas after stands are cut down) and afforestation (planting trees in non-forest areas to create new stands), new trees must be introduced. There were 2.09 million trees introduced in 2010, 1.51 million in 2016, and 1.17 million in 2017 (mainly on wastelands and private land). The very important, yet still underestimated, role of trees in shaping the environment is not reflected in their introduction to new areas (and restoring damaged trees).

Polish State Forests are responsible for managing the State Treasury's forest resources. The statutory duty of Polish State Forests is to ensure permanently sustainable forest management focused on protecting forests, maintaining their sustainability and multi-use function, as well as increasing forest resources. In 1945, Polish State Forests managed 5.41 million ha, while timber resources included 695 million m³ of large timber, which averaged 129 m³ per ha, and timber harvest



Once a forested area:
the vast open-pit
Bełchatów Lignite Mine,
Bełchatów Forest District

constituted 73.3% of the annual growth. In 2017, by contrast, Polish State Forests managed 7.11 million ha, with timber resources including 2.03 billion m³ of large timber, averaging 286 m³ per ha, and timber harvest constituting 73.5% of the annual growth. These data clearly show the positive effect of the work of many generations of foresters, who helped increase the forest area and timber resources in Poland.

In addition to producing timber, forests also provide vegetation resources. In 2010, mushroom vendors collected 4,500 tons of fresh mushrooms, while in 2017 this number was 7,300 tons (mainly chanterelles – 2,900 tons, bay bolete mushrooms – 3,400 tons, and porcini mushrooms – 864 tons).

Forest vegetation depends on a given biogeographical region. Compared to European countries, Poland has high biodiversity at every level (genetic, species and ecosystem). This is partially due to a relatively large forest area, as well as wetlands. Poland's most valuable natural resources are protected in 23 national parks with an area of approx. 315,100 ha (which is 1% of the country's entire area), of which forests constitute about 62%. On average, there is 82 m² of national park space per capita. Nearly 76,000 ha are under strict protection, of which approx. 62,000 ha are forest communities (approx. 82%). Among all national parks, the Magurski National Park has the most protected forests (95.5%), followed by the Roztoczański National Park (95.6%). Nature reserves, of which there were 1498 at the end of 2017, occupy approx.

169,200 ha, which is about 0.5% of the country's area (averaging 44 m² of reserves per capita). Among them, the most numerous are forest reserves (740), which occupy approx. 68,000 ha, about 40% of the area of all nature reserves. In 2017, there were 36,322 natural monuments registered in Poland, which were mainly single trees (29,347; 81%), groups of trees (4026; 11%) and tree avenues (795; 2%).

In 2017, 3.9 million ha (about 42%) of forests were protective forests, of which 98% were managed by Polish State Forests. Most of the protective forests managed by Polish State Forests are water-protective forests (40.5%), suburban forests (16.2%), nature-valued forests (15.0%), forests damaged by industry (12.2%) and soil-protective forests (8.5%).

The value of Poland's forest resources, however, is not just measured in terms of the total forest area or the abundance of stands. Forests are also home to numerous species of fungi, plants, animals and other organisms, many of which only inhabit forest ecosystems, and their interrelationships determine the stability of these systems. It is a shame to say that we do not have complete knowledge of the species richness in our forests. To date, about 60,000 species have been registered in Poland, of which forest species include 30% of vascular plants, about 60% of terrestrial vertebrates, as well as close to 80% of macro fungi, and 55% of invertebrate species. All told, forest ecosystems are home to 60–65% of all species occurring in our country. These species, together with the inanimate components of forest ecosystems, are bound together by a complex system of interdependencies, connections and mutual influences. These species and the communities they create (such as phytocoenoses, mycocoenoses or zoocoenoses, as well as biocoenoses and ecosystems), including their dependencies, connections and mutual influences, are what make Poland's forests so rich. With this richness comes an obligation for thorough scientific study and for sharing this knowledge with society, both with professionals and laymen who are interested in the topic.

Forests are a national treasure that benefits us all; we all also share a duty to care for them. Poland's foresters, who manage forests on an area representing nearly 1/3 of the country's territory that are home to 60–65% of species biodiversity, are responsible to current and future generations for protecting and managing them in the face of global environmental changes occurring at an unprecedented pace.

Does Polish society properly respect forests and the work of foresters? Well let's just say that every year foresters clean out 114,000 m³ of garbage from Polish forests. Before we go into the forest we should learn as much as possible about it, because, in this case, ignorance is no excuse.

PHOTOGRAPHY BY ANDRZEJ M. JAGODZIŃSKI

