Nature Conservation

Diversity of Nature in Estonia

Estonian Nature Conservation in 2015

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Foreword

This overview is a follow-up to the publications that reflected Estonian nature conservation in 2007 and 2011. The aim of this publication is to give an overview of Estonian nature conservation in 2015 and of the changes which have occurred in the interim, as well as to evaluate the progress in relation to the objectives set on the national and international level. The overview also includes the efforts made in the reference period to protect biodiversity that achieved results at the beginning of 2016. We try to provide information to both officials and students alike, as well as to everyone else who wants an overview of changes that have taken place in our nature conservation over the past few years.

Happy reading!

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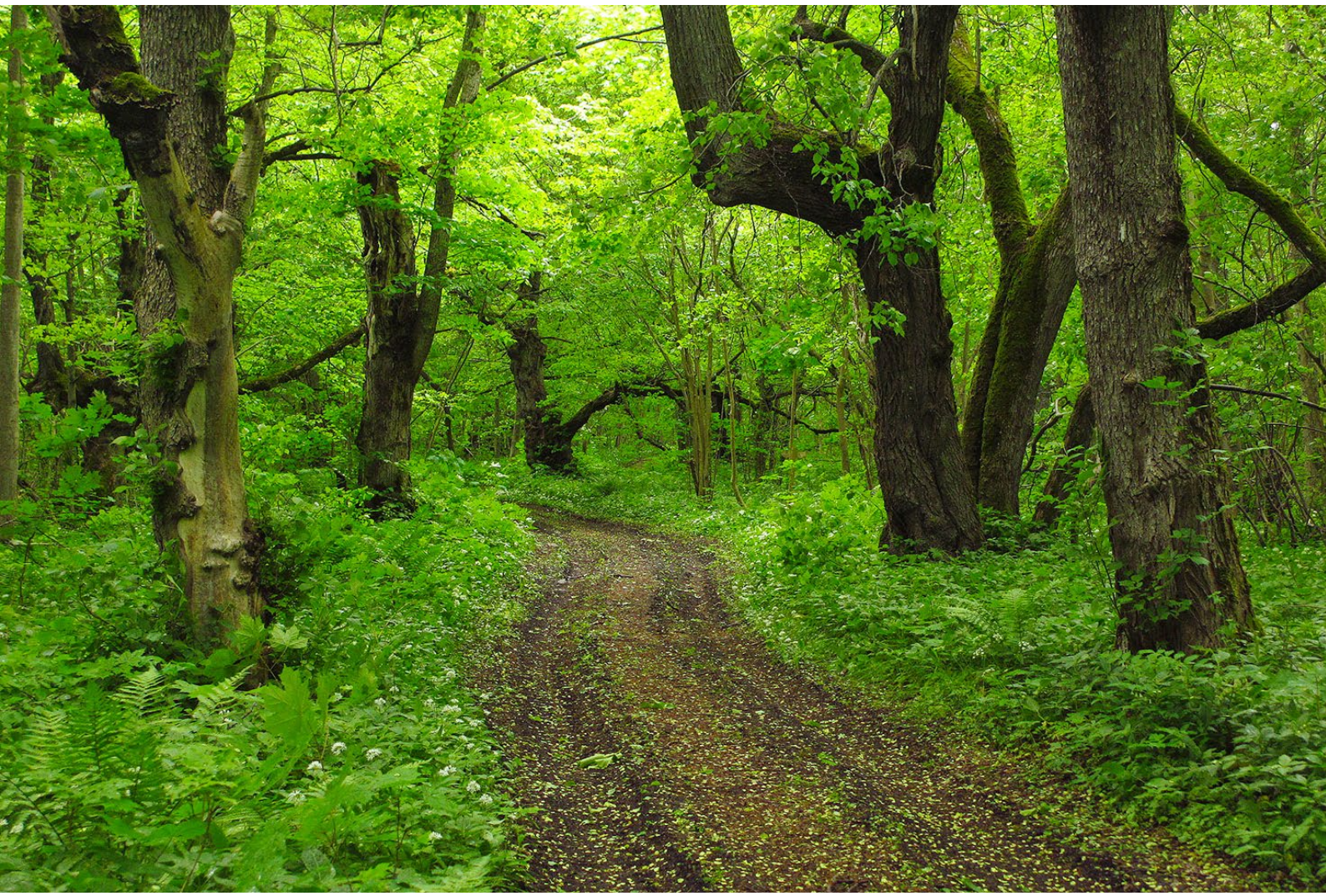


Photo 2. Broad-leaved nemoral forest at Abruka. Photographer: Marko Vainu

Introduction

While the previous nature conservation overview reflected the situation in 2011 introducing the strategic objectives for the protection of biodiversity, the first section of this publication presents the interim evaluations of the objectives set on the national and the international level. An overview about the changes in the administrative structure of nature conservation and the legislation related to the environment is also given. In addition, the state of Estonian nature conservation is evaluated on a European scale.

The second part of the publication mainly focuses on changes in the numbers related to protected natural objects, including both national and international objects. The third part describes conservation management, including the procedure for placing areas under protection and the distribution of protected areas into zones and between forms of ownership. This is followed by an overview of subsidies and compensations aimed at preserving biodiversity, and environmental violations and fines. An overview is also presented of action plans and conservation management activities intended for the management of conserving species and areas, and a description is given of the concept of ecosystem services and the green network, as well as the success story of environmental education. The fourth section covers the topic of conservation of species and the management of alien species on the national and international level. The fifth section gives an overview of habitats and their protection, while specifically focusing on the conservation of the habitat types of the EU Habitats Directive.

The numeric data used in the publication are generally presented as at 31 December 2015. Data, which are presented as at another date or which require a specific reference when used, have an additional notation. The borders of municipalities are represented as at 2015 in figures. The interim changes in the administrative division embrace 21 local governments joined into eight[1]. Due to the application of the new area calculating formula, the areas presented in the publication "Estonian Nature Conservation in 2011" cannot be directly compared to the areas included in this overview. The areal changes have been calculated with the same formula.

The compilers of this publication thank all contributors for their suggestions, advice and additional data!

[1] In 2013, Lavassaare municipality and Audru municipality were united into Audru municipality; Kõrgessaare municipality and Kärdla town into Hiiu municipality; Kose and Kõue municipality into Kose municipality; Oru, Risti and Taebla municipality into Lääne-Nigula municipality; Maidla municipality, Lüganuse municipality and Püssi town into Lüganuse municipality; Põlva municipality and town into Põlva municipality; Viiratsi, Saarepeedi, Paistu and Pärsti municipality into Viljandi municipality. In 2014, Lümanda, Kärla and Kaarma municipality were united into Lääne-Saare municipality.

1. Administrative and legal framework

Profound and long-term objectives have been set on the global, European, as well as on the Estonian level to conserve and protect biodiversity. The relevant objectives of the global and EU Biodiversity Strategy (sections 1.1.1 and 1.1.2) and the Estonian Nature Conservation Development Plan (section 1.1.4), which was adopted to implement these, have been set for the year 2020. The long-term development trends for maintaining the good status of the natural environment have been established in the Estonian Environmental Strategy 2030 (section 1.1.3). Section 1.1 gives an overview of how the current efforts in achieving the strategic objectives have produced results. The trends in the legal framework of environmental law and the administration of nature conservation have been towards increasing efficiency over the past years, which has brought about several large changes (section 1.2). On the European scale, the situation of Estonian nature conservation is average or above average (section 1.3) when considering various indicators (e.g. area under protection, assessments of the condition of habitats and species set out in the Habitats Directive, number of alien species, etc.).

1.1 Strategic objectives

In 1992, Estonia, among other countries, signed the **Convention on Biological Diversity** at the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, and ratified it in 1994. The convention has three general objectives: protection of biodiversity, sustainable use of its components, and the fair and unbiased distribution of profits retained from the use of genetic resources. At the tenth meeting of the parties of the convention (the meetings are held every two years) in 2010 in Nagoya, Japan, the **Strategic Plan for Biodiversity 2011–2020** was adopted. In 2011, the European Commission adopted the **EU Biodiversity Strategy to 2020** to implement the aforementioned strategy. Pursuant to the convention, each country must plan the conservation and sustainable use of biodiversity and adopt a national strategy and development plan for this. In Estonia, this document is the **Nature Conservation Development Plan until 2020**, which was approved in 2012 and which includes the objectives of both the global and the EU Biodiversity Strategy.

1.1.1 Strategic Plan for Biodiversity 2011–2020

In accordance with the strategy's mission, immediate and efficient action must be taken to preserve, by 2020, durable and service-providing ecosystems that ensure biodiversity, people's well-being, and a reduction in poverty. The parties of the biological diversity convention have agreed upon five strategic goals and twenty targets (the so-called Aichi Biodiversity Targets). A comprehensive comparison on the global and Estonian level has been presented in the following table (table 1).

Table 1. Targets of the Strategic Plan for Biodiversity 2011–2020 (the so-called Aichi Biodiversity Targets) and levels of achievement on the global[1] and Estonian[2] level

1 – on track to exceed target (the target is expected to be achieved before its deadline); **2** – on track to achieve target (if things continue on this course, the target is expected to be achieved by 2020); **3** – progress towards target but at an insufficient rate (unless the efforts are increased, the target will not be met by its deadline); **4** – no significant overall progress (no overall movement either towards or away from the target); **5** – moving away from target (things are getting worse rather than better)

Strategic goal A: address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.

Targets	Global	Estonia
1. By 2020, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	 Limited geographical coverage of indicators, great regional differences. There are signs of increase in awareness about actions available, but limited understanding of which of these have positive impacts.	 The awareness of the Estonian population about biodiversity is increasing. 89% of the Estonian population consider themselves as environmentally aware and assess the environmental condition of Estonia as good. The indicators of environmental awareness have been defined and are evaluated within the framework of the Nature Conservation Development Plan (see section 1.1.4). The popularity of citizen science is increasing, supported by mobile applications, such as the Nature Observations Database application, etc.
2. By 2020, biodiversity values have been integrated into national and local development plans and strategies, as well as planning processes, and are incorporated into national accounting, as appropriate, and reporting systems.	 Regional differences, main emphasis on poverty reduction strategies. It is often unclear whether biodiversity values have actually been considered in the planning processes. The number of initiatives, such as WAVES (Wealth Accounting and Valuation of Ecosystem Services), increases. Improved accounting, which considers the values of biodiversity, allows improvement in reporting.	 Nature conservation policy prioritizes ecosystem approach when using natural resources. In the course of the project ELME ("Establishment of tools for the assessment and prognosis of the biodiversity status integrated with social-economy and climate change as well as for better accessibility to relevant data") led by the Environment Agency, a national system for mapping and evaluating ecosystem services (benefits of nature), as well as for implementing the concept in spatial and strategic planning, and for evaluating and budgeting environmental influences is developed by the year 2020 (2023 at the latest).
3. By 2020, incentives, including subsidies, harmful to biodiversity, are eliminated, phased out or reformed in order to minimize or avoid negative impacts. Positive incentives for conservation and sustainable use of biodiversity are developed and applied, taking into account the national socio-economic condition.	 The progress is insufficient. There have been advances, but also backwards movement. Increasing recognition of harmful incentives, but not enough action is taken.  Incentive measures have been developed and implemented to promote sustainable use of natural resources. Better targeting is needed and false stimuli should be excluded.	 During 2016–2017, the Ministry of the Environment is leading a project that attempts to assign monetary value to the environmental impacts in Estonia and, based on that, evaluate the necessity to change environmental charges and regulations. At the same time, the harmfulness or usefulness of the valid incentives and subsidies on biodiversity has not been systematically and comprehensively evaluated in Estonia.

[1] Secretariat of the Convention on Biological Diversity (2014). *Global Biodiversity Outlook 4 — Summary and Conclusions*. Montréal (www.cbd.int/gbo4/).

[2] The poster presentation used was "Estonia. Progress in achieving targets on biodiversity." Presented at the XIII COP of biological diversity in Cancun, Mexico in December 2016.

Targets	Global	Estonia
4. By 2020, governments, businesses and stakeholders at all levels have taken steps to achieve, or have implemented, plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.	 Many plans have been developed for sustainable production and consumption, but they are still limited in scale.  Indicators show an increase in natural resource use.	 Estonia has a functioning package recycling system and measures are taken to reduce the use of plastic bags. Even though the ecosystem approach to using natural resources is being adopted in Estonia, the speed of implementing the measures is not yet such that would allow keeping the impact of using natural resources within ecologically safe limits by as early as 2020.

Strategic goal B: reduce the direct pressures on biodiversity and promote sustainable use.

Targets	Global	Estonia
5. By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero. Degradation and fragmentation of natural habitats are significantly reduced.	 Deforestation has significantly slowed in some tropical areas. However, regional differences are great.  Varies among habitat types. Information regarding some biomes is insufficient.  Habitats of all types, including forests, grasslands, wetlands and river systems are still fragmented and degrading.	 The Estonian green network concept was established as early as in 1999 and it has been integrated into the Planning Act, meaning that it must be considered in the process of nation-wide spatial planning. For today, the green network has been entered into comprehensive plans of all municipalities. The so-called green infrastructure includes core areas (e.g. protected areas) and their surroundings, as well as corridors which ensure territorial coherence (see also section 3.8). In the coming years, the functioning of green network as a maintainer of biodiversity and reducer of fragmentation of habitats will be analyzed and the ecosystem approach will begin to be integrated into the processes of strategic planning and evaluating environmental impacts.
6. By 2020, all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	 There are great regional differences in the use of natural resources of water ecosystems; some countries yield positive results, while the information regarding some developing countries is limited. Progress is made with recovery measures for depleted species in some regions, while the level varies elsewhere.  Some improvement in practices e.g. using long-lining in tuna fisheries, but the adverse impact of practices on threatened species and vulnerable ecosystems is still evident. Overexploitation remains a global issue, but with regional variation.	 Fishing pressure has decreased. Since 2012, economically important fish stocks in good status have increased from 41% to 46%.

Targets	Global		Estonia	
7. By 2020, areas under agriculture, aquaculture and forestry are managed sustainably, ensuring the conservation of biodiversity.		Increasing area under sustainable management, based on organic and environment-friendly management principles, including certification. Expansion of no-till techniques. Globally, the nutrient use is flattening. Sustainability standards are being introduced in aquaculture, but this is done in the context of rapid expansion of aquaculture. Questions about the sustainability of expansion of freshwater aquaculture. Increasing forest certification and criterion indicators, but mostly in northern countries. Slower progress in the tropical countries.		Biodiversity conservation in agriculture and forestry is supported by subsidies of the Estonian Rural Development Plan. Several agri-environmental support schemes are widely applied in arable land. In forest land, compensation is paid for letting the forest develop naturally or managing it in a way which considers natural values (see also section 3.4). The popularity of the so-called voluntary sustainable forestry is increasing on both private and state land (forest certification, suspension of forestry works for the sake of birds in the spring, woodland key habitats, sustainable management of the so-called corridors for flying squirrels, etc.). Even though sustainable economic organization is moving towards the ecosystem approach, the speed of implementing that concept is insufficient to ensure permanent preservation of biodiversity in all ecosystems which are affected by agriculture, aquaculture and forestry.
8. By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	No clear evaluation	Varies greatly by pollutant.		The garbage clean-up event “Let’s do it” held in Estonia in 2008 has expanded to an international level and is becoming the largest positive global civic initiatives. A worldwide action “World Cleanup Day”, involving 150 countries, is planned for 2018. However, trends that would specifically consider the functioning of ecosystems and need for preservation of biodiversity cannot yet be seen in Estonian regulations regarding nutrient cycle and consumption.
		Nutrient use is levelling off in some regions, e.g. in Europe and North America, but it is still at levels that are harmful to biodiversity. The level is continually rising in other regions and varies greatly by region.		
9. By 2020, invasive alien species and their pathways are identified and prioritized, priority species are controlled or eradicated. Measures are in place to manage pathways to prevent their introduction and establishment.		Lists of invasive alien species are being compiled / have been compiled in many countries. Major pathways are identified, but not efficiently controlled at a global scale. The most dangerous species are controlled and eradicated, but information regarding this is limited.		In Estonia, a list of alien species likely to disrupt natural balance has been established by a regulation of the Minister of the Environment. Projects are carried out to eradicate alien species, e.g. alien hogweed species are being eradicated since 2005 both on private and state land (see also section 4.2.5). An analysis of introduction pathways of alien species is planned to be carried through during the year 2017. Action plans which include specific activities regarding the main pathways are planned to be compiled in 2018.
		Some measures have been taken to prevent the introduction and establishment of invasive alien species, but these are not sufficient.		

Targets	Global		Estonia
10. By 2015, the multiple anthropogenic pressures on coral reefs and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.		Adverse pressures such as land-based pollution and uncontrolled tourism are still increasing, although new marine protected areas may ease overfishing in some regions.	Not applicable
	Not evaluated	Information is insufficient to assess the impact on other vulnerable ecosystems.	

Strategic goal C: improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.

Targets	Global		Estonia	
11. By 2020, at least 17% of terrestrial and inland water, and at least 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved. Conservation is ensured through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.		Progress is being made in the case of terrestrial and inland water areas and the target is reached if existing commitments on designating protected areas are implemented.		In Estonia, 18.5% of land territory and 27% of marine areas are under protection (see section 2.2.1.1), and 10% of forest is under stringent protection (see sections 1.1.4 and 5.2.1). In addition to conservation management plans for protected areas, ecosystem-based conservation management plans for mires and semi-natural habitats have been compiled in Estonia. The main criterion for establishing the present system of protected areas has not always been ecological representation and coherence, but rather primarily the presence of species and/or habitats under legal protection. Analyses on the functioning of protected areas as retainers of ecosystem services, as well as their ecological representativity and coherence have begun (e.g. applied nature conservation research project LOORA carried out in 2012–2015), but more thorough studies are yet to be conducted. A framework for integrating the protected areas with wider landscapes and seascapes is provided in the form of the green network in Estonia (see also section 3.8).
		Placing marine and coastal areas under protection is accelerating, but reaching the target does not follow the schedule. The target would be met for territorial waters, but not for all exclusive economic zone areas. Progress has been made regarding protected key biodiversity areas, but significant shortcomings still exist. There are no separate measures for ecosystem services. Progress can be seen in the case of ecologically representative areas. The target could be reached for terrestrial ecosystems if additional protected areas are representative. Progress is slower regarding marine and freshwater areas. Management of protected areas in an effective and equitable manner – progress and increasing trend towards community involvement in protection activities. However, the sample is small and progress varies greatly by region. Initiatives exist to develop corridors and transboundary parks, but the connections are still insufficient. Connections between freshwater protected areas remain very poor.		

Targets	Global		Estonia	
12. By 2020, extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.		It is likely that by 2020 further extinctions occur, e.g. for amphibians and fish. There is some evidence that measures have prevented extinctions of bird and mammal species.		Threatened species are under protection and action plans for species are prepared to improve their conservation status, and their habitats are taken under protection as protected areas or species protection sites. The abundance of some protected species is increasing, e.g. the number of the white-tailed eagle. Estonia is the only country that has managed to reintroduce the critically endangered European mink, the most endangered small carnivore in the world, into the wild. The Tallinn Zoo and foundation Lutreola are leading the international programme for breeding European minks in artificial conditions. Improving habitats and re-establishing European mink population in Hiiumaa island has been taking place since 2000. At the same time, there are endangered species whose numbers are still declining in Estonia, e.g. the flying squirrel who, according to scientists, may become extinct in the near future unless efficient measures for protection are put in place.
		The conservation status of those species most in decline has not improved. The Red List Index is still in decline and there are no signs of overall reduced extinction risk. Regional differences are great.		
13. By 2020, the genetic diversity of cultivated plants, farmed and domesticated animals and their wild relatives, as well as other socio-economically and culturally valuable species is maintained. Strategies have been developed and implemented for safeguarding genetic diversity.		*Ex situ* collections of plant genetic resources are improving, however, there are some shortcomings. There is limited support to ensure long-term conservation of local varieties of crops in light of the changes in agricultural practices and market preferences.		As of 2002, the national programme on collection and conservation of plant genetic resources for food and agriculture has been implemented in Estonia. The current programme has been drawn up for 2014–2020 (approved by the Minister of Agriculture at the end of 2013). Financial support schemes for local crop varieties and endangered breeds are included in the Estonian Rural Development Plan.
		There is an increase in activities aiming to conserve breeds in their production environment and in gene banks, including *in vitro* conservation. However, at present the measures taken are insufficient.		
		Gradual increase in the conservation of wild relatives of crop plants in *ex situ* facilities. However, their conservation in the wild remains largely insecure, with a few management plans of protected areas addressing wild relatives.		
	Not evaluated	Information is insufficient to evaluate the preservation of genetic diversity of species which are valuable from both the socio-economical and cultural point of view.		
		The FAO Global Plans of Action for plant and animal genetic resources provide a framework for national and international strategies and action plans.		

Strategic goal D: enhance the benefits to all from biodiversity and ecosystem services.

Targets	Global		Estonia	
14. By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.		High variation across ecosystems and services. The condition of particularly important ecosystems, such as wetlands and coral reefs, is still in decline.		Natural habitats are actively restored in Estonia aiming to preserve biodiversity, e.g. river habitats have been restored contributing also to flood protection. Over the past six years, 85 dams or other barriers have been removed to make the watercourses passable for fish. Fish spawning grounds have been restored, e.g. in the course of project HAPPYFISH, when oxbow lakes were reconnected with River Emajõgi. In addition, the condition of river habitats has been examined and improved to stop the deterioration of the status of the freshwater pearl mussel, a category I species (see also section 3.6.2). Restoration works are also under way to maintain several terrestrial ecosystems which provide important services, such as bogs, wooded meadows and coastal meadows (see also target 15).
		Women and poor communities are especially impacted by the loss of ecosystem services.	Not applicable	
15. By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced through conservation and restoration, including restoration of at least 15% of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.		Despite restoration and conservation efforts, there is still a net loss of forests, a major global carbon stock.		Habitats have been actively restored in the period of 2011–2015 (see also section 3.6.2): 1) the area of mire habitats with restored water regime has increased from 100 hectares to 1700 hectares; 2) the area of rehabilitated cut-over peatlands has increased from 0 to 177 hectares; 3) 25 000 hectares of semi-natural habitats have been maintained annually and over 1000 hectares a year have been restored; the objective for 2020 is to achieve an area of 45 000 hectares of maintained semi-natural habitats.
		Many restoration activities are under way, however, it is difficult to assess, whether 15% of the degraded areas will be restored.		
16. By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force, operational and consistent with national legislation.		The Nagoya Protocol entered into force on 12 October 2014, ahead of the deadline set.		Estonia is in the process of ratifying the Nagoya Protocol. Regulation (EU) No. 511/2014 of the European Parliament and of the Council of 16 April 2014 on compliance measures for users from the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization in the Union is directly applicable in all European Union Member States, including Estonia.
		It is likely that the Nagoya Protocol is operational by 2015 in countries that have ratified it (70 countries as at 2015).		

Strategic goal E: enhance implementation through participatory planning, knowledge management and capacity building.

Targets	Global	Estonia
17. By 2015, each party has developed and started to implement an effective, participatory and updated national biodiversity strategy and action plan that has been adopted as a policy instrument.	 As at the end of 2014, the national strategies were expected to be completed by 40% and by the end of 2015, by 90% of the parties.  The relevance (accordance with the agreed upon guidelines) and application is variable.	 In 2012, Estonia adopted the Nature Conservation Development Plan until 2020, a national biodiversity strategy and action plan, which takes into account the global as well as European Union's strategies on biodiversity.
18. By 2020, traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity are respected and subject to national legislation as well as relevant international obligations. Traditional knowledge, innovations and practices are fully integrated and reflected in implementation of the biodiversity convention with the full and effective participation of indigenous and local communities.	 Traditional knowledge and customary sustainable use, and recognition and promotion of these, as well as further including indigenous and local communities in achieving the objectives of the Convention on the local, national and international level require further actions. Limited funding and capacity remain obstacles.	Not applicable .
19. By 2020, the knowledge, science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss are improved, widely shared, transferred and applied.	 Considerable efforts have been made to communicate information and knowledge relevant to decision makers. Relevant processes and institutions are in place.  Progress has been made in analysis and interpretation of data gathered from disparate data collecting and monitoring systems. However, coordination needs to be improved in order to ensure the models and technologies that are able to integrate this knowledge into functional applied systems.	 Nature conservation policy prioritizes promoting scientific research in nature conservation. Several projects on habitat requirements of species and coherence of habitats have been executed. The major project NATARC is under way, in the course of which the data in museums of natural history are being digitized and made readily available. Applied research in the field of nature conservation provides valuable information on the status of species and conservation activity. For example, project LOORA from 2015 revealed that vast forest areas, including protected territories, are functionally suitable for large carnivores, such as brown bears and wolves. The current populations of brown bears and wolves are among the strongest in Europe. Other examples are the comprehensive studies conducted to ascertain the reasons of the long-term decline in the abundance of capercaillie.
20. By 2020, financial resources of all sources necessary for implementing the strategic plan have increased substantially from the current levels.	 Information regarding various funding sources (including those from the local or private sector) is limited. Increase in bilateral official development assistance (ODA).	 Continuous funding of nature conservation on the national and the European Union level. Environmental exploitation fees are transferred through the foundation Environmental Investments Centre also to biodiversity projects. Funding of projects contributing to international biodiversity conservation (including ODA projects) has increased.

1.1.2 EU Biodiversity Strategy to 2020

In 2011, the European Commission adopted the EU Biodiversity Strategy to 2020. The main objective of the strategy is halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss. Compared to the base level (2010), a decrease in biodiversity and degradation of ecosystem services has continued in the European Union, similarly to global trends, which is confirmed by the 2015 report on the state and outlook of the European environment[1]. Although the measures implemented in the Member States have yielded good results on the local level, the amount of these success stories needs to be increased to halt the general unfavourable trends.

Six major targets are set out in the EU Biodiversity Strategy. An overview of the progress towards these targets[2] is provided in table 2.

Table 2. Assessment of the progress towards the targets of the EU Biodiversity Strategy to 2020. The meanings of the arrows indicating trends are presented before table 1

Target 1: fully implement the Birds and Habitats Directives. To halt the deterioration in the status of all species and habitats and achieve a significant and measurable improvement in their status so that, by 2020, compared to current assessments, 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status, and 50% more species assessments under the Birds Directive show a secure or improved status.
The latest report on the state of nature in the EU[3] shows that the number of species and habitats in secure/favourable or improved conservation status has increased slightly since the 2010 baseline. However, many habitats and species that were already in an unfavourable status remain so, and the status of some of them is deteriorating further. While much has been achieved since 2011 in carrying out the actions under this target, the most important challenges remain completion of the Natura 2000 marine network, ensuring effective management of Natura 2000 sites, and securing necessary financing to support the Natura 2000 network. 
Target 2: maintain and restore ecosystems and their services. By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.
Progress has been made on policy and knowledge improvement actions under this target, and various ecosystem restoration activities have been carried out in Member States. However, this has not halted the trend of degradation of ecosystem services. National and regional frameworks to promote restoration and green infrastructure need to be developed and implemented. A lot remains to be done to halt the loss of biodiversity outside the Natura 2000 network. 

[1] The status and outlook of the European environment – SOER 2015 (www.eea.europa.eu/soer).

[2] The Mid-term Review of the EU Biodiversity Strategy to 2020. Report from the Commission to the European Parliament and the Council. COM(2015) 478 final. Brussels, 02.10.2015 (http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015SC0187&from=EN).

[3] The State of Nature in the European Union. Report from the Commission to the Council and the European Parliament. COM(2015) 219 final. Brussels, 20.05.2015.

Target 3: increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity. Improvement is to be measured against the quantified enhancement targets for the conservation status of species and habitats of EU interest in target 1 and the restoration of degraded ecosystems under target 2.

A) Agriculture: by 2020, maximize areas under agriculture across grasslands, arable land and permanent crops that are covered by biodiversity-related measures under the CAP so as to ensure the conservation of biodiversity and to bring about a measurable improvement in the conservation status of species and habitats that depend on or are affected by agriculture and in the provision of ecosystem services, thus contributing to enhance sustainable management.

B) Forests: by 2020, forest management plans or equivalent instruments, in line with the principles of sustainable forest management, are in place for all forests that are publicly owned and for forest holdings above a certain size that receive funding under the EU Rural Development Policy so as to bring about a measurable improvement in the conservation status of species and habitats that depend on or are affected by forestry and in the provision of related ecosystem services.

A) The conservation status of species and habitat types of EU interest associated with agricultural ecosystems (grasslands and cropland) is continuously deteriorating. The status has deteriorated in the case of 39% of habitat types, and the status is unfavourable or unknown in the case of 46% of habitat types. The populations of farmland birds and grassland butterflies are also continuously decreasing, pollination services are in steep decline due to multiple pressures[1] on bumblebees.

The common agricultural policy has an important role in this process in interaction with relevant agri-environmental measures. The common agricultural policy reform for 2014–2020 provides a range of instruments that can contribute to supporting biodiversity and reaching the targets set for 2020. These opportunities need to be taken up by Member States on a sufficient scale. There are states where local examples demonstrate successful sustainable agricultural practices.

B) The European Union forest area has increased as compared with the 2010 baseline, however, the conservation status of forest habitats and species shows no significant signs of improvement. The proportion of forest habitats of European Union importance, the conservation status of which has been assessed as favourable, decreased from nearly 17% to about 15%. The vast majority of assessments remain unfavourable (80%). Results vary considerably across Europe's biogeographical regions.

Forest management plans or equivalent instruments can play an important positive role in achieving the target, but their potential remains largely unused. For smaller forest holdings, Member States may provide additional incentives to encourage the adoption of forest management plans or equivalent instruments that are in line with sustainable forest management principles.

[1] Joint Research Centre (JRC) Report 2015, Mapping and Assessment of Ecosystems and their Services.

Target 4: ensure the sustainable use of fisheries resources and good environmental status. Achieve Maximum Sustainable Yield (MSY) by 2015. Achieve a population age and size distribution indicative of a healthy stock, through fisheries management with no significant adverse impacts on other stocks, species and ecosystems, in support of achieving Good Environmental Status by 2020, as required under the Marine Strategy Framework Directive (MSFD).

Policy framework has been set to implement the principles of sustainable fisheries of the EU common fisheries policy and to achieve good environmental status as required by the MSFD. However, policy implementation has been inconsistent across the EU and major challenges remain to ensure that the objectives are achieved according to the schedule. Just over 50% of MSY-assessed stocks were exploited sustainably in 2013. As a result of multiple pressures, the status of marine species and ecosystems continue declining in Europe.

Target 5: combat invasive alien species. By 2020, invasive alien species and their pathways are identified and prioritized, priority species are controlled or eradicated, and pathways are managed to prevent the introduction and establishment of new invasive alien species.

The EU can be considered to be on track with the actions envisaged under this target. The EU regulation on invasive alien species entered into force on 1 January 2015. The first list of invasive alien species of Union concern was approved by the European Commission in December 2015 and it entered into force on 3 August 2016. By January 2018, Member States must have prepared the analysis of pathways of alien species and by July 2019, Member States must have completed and implemented action plans for preventing the spread of species via the most important pathways.

The Ballast Water Management Convention associated to marine invasive alien species will enter into force in 2017.

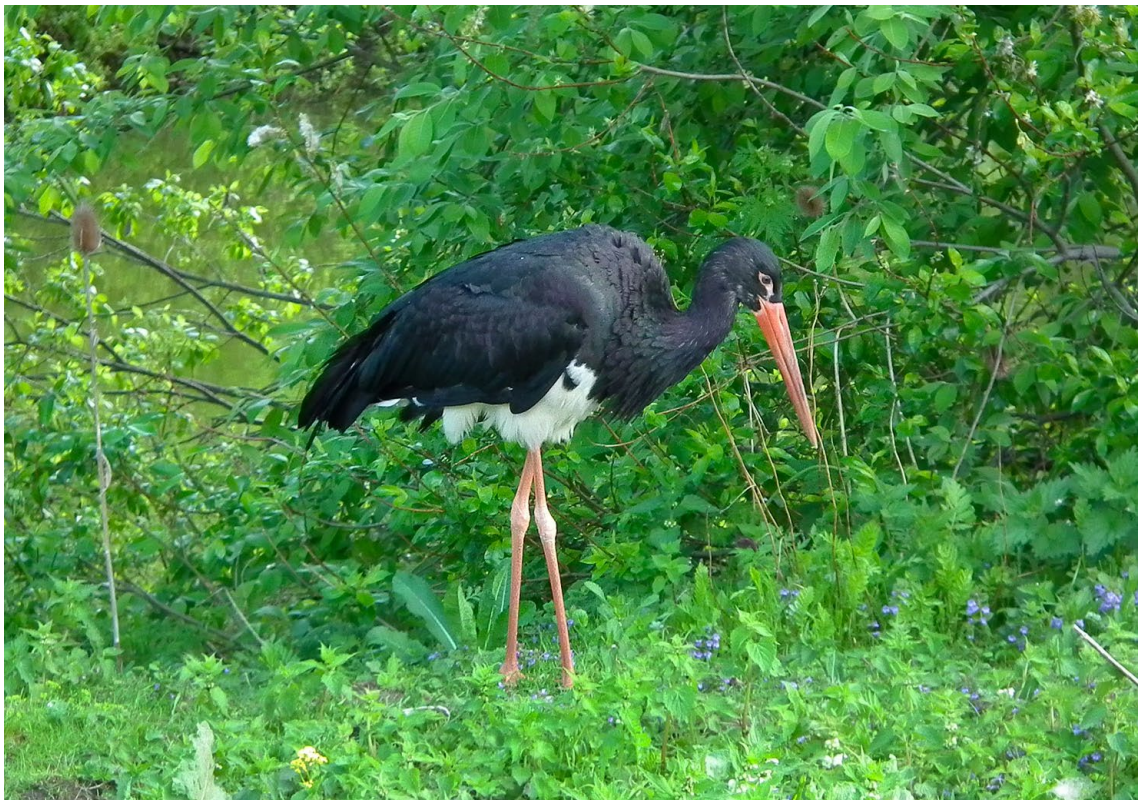
Target 6: help avert global biodiversity loss. By 2020, the EU has stepped up its contribution to averting global biodiversity loss.

The EU remains by far the largest financial donor, making progress in increasing resources for conserving global biodiversity. The EU has taken initial steps to reduce indirect causes of global biodiversity loss, including wildlife trade, and to integrate biodiversity issues into its trade agreements. However, progress is insufficient in reducing the impacts of EU consumption patterns on global biodiversity. On the current trajectory, existing efforts may not be sufficient to meet the Aichi Biodiversity Targets by the deadlines.

1.1.3 Estonian Environmental Strategy 2030

The Estonian Environmental Strategy 2030 is a strategy for developing the sphere of the environment which builds upon the principles of the National Strategy on Sustainable Development "Sustainable Estonia 21". The Environmental Strategy aims at defining long-term development trends for maintaining the good status of the natural environment, while keeping in mind the links between the sphere of environment and economic and social spheres, as well as their impact on the natural environment and people. The Parliament approved the Environmental Strategy on 14 February 2007. The current assessments of the chosen indicators for the landscapes and biodiversity parts of the Environmental Strategy are provided in tables 3 and 4.

In the case of **landscapes**, the main objective is the preservation of multifunctional and coherent landscapes. To preserve the coherence of different types of landscapes and the multifunctional nature of landscapes, the landscape policy must be integrated more into the policies of different areas of activity (nature conservation, heritage conservation, forestry, agriculture, construction, etc.). The coherence of landscapes is primarily ensured by an integrated approach to landscape types with different functions (cultivated landscapes, heritage biotic communities, disturbed landscapes, natural landscapes). Thanks to the preservation of coherent and multifunctional landscapes, the naturalness and diversity of habitats will presumably increase, natural and cultivated landscapes will function and will be used in a sustainable manner. The permanently favourable condition of valuable marine habitats, coastal areas (including small islands) and coastal communities, mires, inland waters and forests must be ensured.



Photographer: Aarne Tuule

Photo 3. The black stork, an endangered species with decreasing abundance, has been chosen as one of the indicators of the Estonian Environmental Strategy 2030

Table 3. Indicators of strategic objectives for the landscapes part of the Environmental Strategy, their known value and trend. Trends: ↔ slight increase or stable, ↑ increase

Indicator	Target	Base level (2005)	Previous summary level (2011)	Level of 2015	Trend
The total area of semi-natural habitats (ha) and relative share of Estonian territory (%)	↑	20 000 ha, 0.4%	25 000 ha, 0.6%	25 000 ha, 0.6%	↔
The area of protected areas (ha)	↑	1 389 677 ha	1 537 320 ha	1 564 550 ha	↑

In the case of **biodiversity**, the main objective is to ensure the existence of habitats and biotic communities necessary for the preservation of viable populations of species. Preservation and improvement in status of the populations of all naturally occurring species, including endangered species, must be ensured, and that the impact of hazards on them would not increase. In order to maintain suitable and good-quality habitats necessary for viable populations, the protection of both habitats and species should be dealt with simultaneously.

Table 4. Abundances of protection category I animal species provided as indicators of biodiversity in the Environmental Strategy. Trends: ↔ slight increase or stable, ↑ increase, ↓ decrease, ↓↔ lower than the base level, but rather stable, ↑↔ higher than the base level, but rather stable

Species	Target	Base level (2004)	Previous summary level	Known level	Trend
Black stork	↔	100–115 pairs	70–80 pairs (2010)	60–90 pairs (2013, 2016)	↓↔
White-tailed eagle	↔	140 pairs	200–220 pairs (2010)	220–250 pairs (2013), 240–270 (2016)	↑
Short-toed eagle	↔	5 pairs	No nests found (2010)	No nests found (2013, 2016)	↓↔
Osprey	↔	45 pairs	50–60 pairs (2011)	75–85 pairs (2013), 80–90 (2016)	↑
Golden eagle	↔	45 pairs	50–60 pairs (2010)	55–65 pairs (2013, 2016)	↑↔
Greater spotted eagle	↔	20–30 pairs	Less than 10 pairs (2010)	5–10 pairs (2013, 2016)	↓
Lesser spotted eagle	↔	500–600 pairs	500–600 pairs (2010)	600–700 pairs (2013, 2016)	↑↔
Willow grouse	↔	50–150 pairs	50–150 pairs (2009)	50–100 pairs* (2013)	↓↔
Siberian flying squirrel	↔	target level 60 inhabited habitats	31 inhabited habitats (2011), percentage of inhabitance 39%	45 inhabited habitats, percentage of inhabitance 39% (2016)	↓↔
Lesser white-fronted goose	↔	25–29 individuals	10–40 individuals (2011)	9–30 individuals (2011–2015), 3 (2016)**	↔

* numbers in the winter
** in the migration stopover sites in the spring

Changes in the numbers of category I species are various. The numbers of the black stork and the greater spotted eagle have decreased compared to the base level. The numbers of the white-tailed eagle, osprey and golden eagle have risen. The white-tailed eagle, whose population has nearly doubled over the past 12 years, is doing especially well. The numbers of the lesser spotted eagle remain stable. The same can be said about the rare short-toed eagle, who is not seen at all in Estonia in some years. However, two likely nesting territories of the short-toed eagle were registered in 2016.

The numbers of individuals of the lesser white-fronted goose staging in Estonia during migration have been decreasing, which is likely due to changes in the migration strategy of that species. The abundance of the willow grouse has also somewhat fallen.

In the case of the flying squirrel, the 60 habitats suggested in the Environmental Strategy reflect the target level, i.e. the number of inhabited habitats. Even though new habitats of the flying squirrel have been found as a result of large-scale purposeful searching, the percentage of inhabited habitats from all habitats registered over the past ten years has remained on the same level (39%, ↔). The inhabited places in which flying squirrels are found are now only located in the Alutaguse area in North-East Estonia.

Photographer: Uudo Timm

Photo 4. The Siberian flying squirrel, who belongs into the protection category I and is a priority species of the Habitats Directive, now only lives in aspen-mixed forests in Viru counties in North-East Estonia

1.1.4 Nature Conservation Development Plan until 2020

In 2012, the Government of the Republic approved the Estonian national strategy and action plan for biodiversity protection and sustainable use – the Nature Conservation Development Plan until 2020. The development plan specifies the most important development directions related to the conservation and use of nature, high-priority fields are environmental education, preservation of biodiversity and sustainable use of natural resources. Three major goals have been set out in the development plan, the mid-term levels of achieving these as at 2015 are provided in table 5. The base and target levels of the indicators correspond to those that were presented in the development plan document approved in 2012.

Table 5. Assessments of the fulfilment of the objectives of the Nature Conservation Development Plan until 2020. The meanings of the arrows indicating trends have been presented before table 1

Goal 1.
People are aware of and appreciate the values of nature, and are able to apply their knowledge in everyday life.

Indicator	Base level in 2012	Level achieved in 2015	Target level of 2020	Trend
Environmental awareness index*	37.9	42.0	47	
Number of nature education programmes used in schools and kindergartens	270	350	340	
Number of disciplines incorporated into the scientific research programme of nature conservation**	0	4	6	
Number of visits to nature trails	1.55 million	2.2 million	1.75 million	

* The initial indicator was specified by replacing the percentage of environmentally aware people with the environmental awareness index, which combines three parameters: assessment of respondents on their own environmental awareness, attitude towards certain aspects related to the environment, and specific behaviour of the respondent. The maximum value of the index is 100 points. Unlike other indicators, the achievement level has been presented as at 2016.

** More comprehensive scientific research has been launched in four major fields: restoration of mires, biota of semi-natural habitats, avifauna, and the Red List.

Goal 2.
The favourable conservation status of species and habitats and diversity of landscapes is ensured, and habitats function as a coherent ecological network.

Indicator	Base level in 2012	Level achieved in 2015	Target level of 2020	Trend
Number of species of the Habitats Directive with improved conservation status	Favourable status – 23, inadequate – 41, bad – 7, unknown status – 25	Favourable status – 53, inadequate – 27, bad – 8, unknown status – 11	The status of 28 species has improved, the status assessment of all species is known	
Percentage of species in a good conservation status among the species of the Birds Directive	65%	65%	80%	
Number of species with appropriate conservation guidelines	45	58	155	
Number of new invasive alien species introduced in Estonia per year	2–3	2–3	0–1	
Area of maintained semi-natural habitats	25 000 ha	25 000 ha	45 000 ha	
Percentage of strictly protected typologically representative forests in total forest land	8.7%	10%***	10%	
Area of mire habitats with a restored natural water regime	100 ha	1700 ha	10 000 ha	
Number of habitat types endangered at the European level with improved conservation status	Favourable status – 25, inadequate – 21, bad – 9, unknown status – 5	Favourable status – 31, inadequate – 27, bad – 2, unknown status – 0	The status of 14 habitat types has improved (including their ecological coherence), the status assessment of all habitat types is known	
Number of monitored species and habitat types	Monitored species of the Habitats Directive – 74, species of the Birds Directive – 120, habitat types – 26, category I species – 54	Monitored species of the Habitats Directive – 74, species of the Birds Directive – 166, habitat types – 38, category I species – 57	Monitored species of the Habitats Directive – 96, species of the Birds Directive – 221, habitat types – 60, all category I species	
Number of indicator species indicating the coherence of the green network	0	7	15	

*** In total, 10% of forests is under strict protection, but there is still a lack of typological representativeness among the strictly protected forests (see also section 5.2.1).

Goal 3.
Long-term sustainability of natural resources and the preconditions for this are ensured and the use of natural resources is based on the principles of the ecosystem approach.

Indicator	Base level in 2012	Level achieved in 2015	Target level of 2020	Trend
Number of habitat type groups (mires, forests, meadows, etc.) with assessed ecosystem services	0	0****	6	
Area of rehabilitated cut-over peatlands	0 ha	177 ha	1000 ha	
Size of selected game populations	Wolf 200, lynx 700 individuals	25 wolf packs (stable), 64 lynx litters (population is in decline)	15–25 wolf packs (150–250 individuals), 100–130 lynx litters (600–780 individuals)	
Share of fish stocks in a good status in the total stocks of economically important fish species	41%	46%	60%	
Number of functioning ecoducts	0	1	4	
Number of functioning small game tunnels	10	10	20	

**** The activities have been planned in the project "Establishment of tools for the assessment and prognosis of the biodiversity status integrated with social-economy and climate change as well as for better accessibility to relevant data" (ELME), which is carried out in 2016–2020 (2023).

1.2 Changes in legal acts and administration

The primary basic legislation in the field of nature conservation is the Nature Conservation Act adopted in 2004. The general rules of environmental law, including that which is related to nature conservation and the use thereof, is concentrated in the General Part of the Environmental Code Act which entered into force in 2014. The provisions of the General Part of the Environmental Code Act must be taken into account in the preparation, amendment and implementation of all special laws related to environment (including the Nature Conservation Act, Forest Act, etc.)

The Nature Conservation Act specifies five different types of spatially definable natural objects protected on the state level: national parks, nature conservation areas, protected landscapes, limited-conservation areas, species protection sites. Other natural objects protected under the Nature Conservation Act are protected species and fossils, protected nature monuments and natural objects protected at the municipal level. In addition to these, the woodland key habitats established under the Forest Act can be considered as being directly related to wildlife protection (table 6). Object types arising from legislation established for another purpose (water protection, shore protection, plans, etc.) but also indirectly contributing to wildlife protection are listed in table 7. The following sections deal with the types of objects directly aimed at nature conservation.

Table 6. Types of protected objects directly aimed at nature protection in Estonia

Type of protected object	Legislation
Protected area: – National park – Nature reserve – Protected landscape (including parks, arboretums and stands)	Nature Conservation Act
Limited-conservation area	Nature Conservation Act
Species protection site	Nature Conservation Act
Protected nature monument	Nature Conservation Act
Natural object protected at the municipal level	Nature Conservation Act
Protected species and fossils	Nature Conservation Act
Woodland key habitat	Forest Act

Table 7. Types of objects that are related to nature conservation in Estonia

Type of object	Legislation
Heritage conservation area	Heritage Conservation Act
Cultural monument	Heritage Conservation Act
Environmental monitoring station or site	Environmental Monitoring Act
Limited management zone of shore or bank	Nature Conservation Act
Building exclusion zone of shore or bank	Nature Conservation Act
Water protection zone of shore or bank	Water Act
Sanitary protection zone of water intake	Water Act
Shore path	Water Act
Nitrate sensitive area	Water Act
Area of green network thematic plan	Planning Act
Area of valuable terrain thematic plan	Planning Act

Each protected area, limited-conservation area, species protection site and protected nature monument is managed by a government authority of the Ministry of the Environment – the Environmental Board (figure 1). The manager of a natural object protected at the municipal level is the local government that placed the natural object under protection or a municipal body authorized thereby. The manager of the protected area takes part in discussions on plans and environmental impact assessments that impact the protected natural object, issues authorizations for use, and imposes terms and conditions on the use of the environment. The Environmental Board had six regions: Harju-Järva-Rapla, Viru, Jõgeva-Tartu, Põlva-Valga-Võru, Pärnu-Viljandi, Hiiu-Lääne-Saare. Starting from October 2016, the Environmental Board has three regions: Nordic, Western and Southern. The Northern region includes Harju, Järva, Lääne-Viru and Ida-Viru counties. The Western region embraces Hiiu, Lääne, Saare, Pärnu and Rapla counties. The Southern region comprises Jõgeva, Tartu, Viljandi, Põlva, Valga and Võru counties. In addition to the management obligations listed above, the Environmental Board organizes activities arising from the protection regime and conservation management plans of the protected natural objects, nature education activities and introducing the objects, as well as monitoring adherence to the requirements of the protection regime. Organizing practical nature protection actions has been delegated to the State Forest Management Centre.

Of the structural units of the Ministry of the Environment, the nature conservation department and the forest department organize the development and implementation of nature conservation and forestry policies, respectively (figure 1). Of the institutions in the area of government, the State Forest Management Centre manages state forests, is involved in some conservation management activities and has developed nature tourism in the form of hiking trails (the latter also in nature protection areas). The Estonian Environment Agency was established in 2013 by the merger of the previous Environment Information Centre and the Estonian Meteorological and Hydrological Institute. The functions of the Agency comprise, in addition to weather forecasting and weather observations, collecting, analyzing, processing and issuing information related to the environment, including nature conservation, as well as administering the Environmental Register (including the Forest Register). The Environmental Register's public service allows any person to access information on objects entered into the register.

The Environmental Inspectorate performs supervision in the field of the environment, including nature conservation. The Land Board administers the land cadastre and the related database on restrictions. The Estonian Museum of Natural History preserves the natural heritage and inspires people to notice, understand and preserve nature. The Information Technology Centre of the Ministry of the Environment created in 2013 is responsible for the IT field of the area of administration of the ministry, including the technical functioning of databases, websites and information systems.

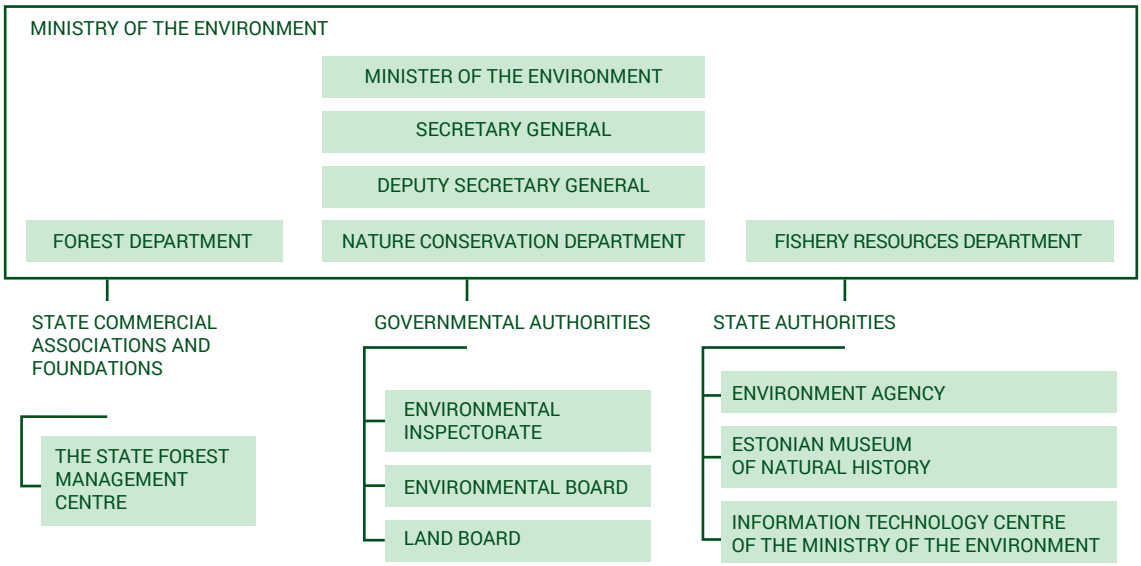


Figure 1. Simplified administrative structure of the organization of national nature conservation

Five institutions of the Ministry of the Environment are directly engaged in nature conservation: Ministry of the Environment, Environmental Board, Environmental Inspectorate, Environment Agency and the State Forest Management Centre. These institutions have special structural units related to the field of nature conservation.

The nature conservation department of the Ministry of the Environment organizes the development and implementation of Estonian nature conservation policy.

The nature conservation department of the Environmental Board organizes the implementation of the nature conservation policy and development plans, advises and directs the activities of the regions of the Environmental Board on the topics of nature conservation, as well as assesses the efficiency of legal acts on nature conservation. Authorizations and imposing terms and conditions on the use of the environment are generally issued by the regions of the Environmental Board.

The nature conservation department of the Environmental Inspectorate coordinates environmental supervision in the field of nature conservation, advises the county offices of the Environmental Inspectorate and assesses the efficiency and impact of legal acts.

The wildlife department of the Estonian Environment Agency organizes and carries out monitoring and applied research of wildlife and game; assesses the extent of game damages and prepares proposals for hunting quota of game; checks, processes and analyzes the monitoring data; manages and analyzes data related to nature conservation and manages the databases.

The nature conservation department of the State Forest Management Centre plans and coordinates nature conservation works in the state forest.

1.3 The position of Estonian nature conservation in Europe

Compared to the rest of Europe, Estonian nature is in a relatively good state. Half of the territory of Estonia is covered with forests, we have brown bears, wolves and lynx, there are large bogs and the trip to go and spend time in nature does not take long at all.

The state of the natural environment in different countries can be compared by using the Wilderness Quality Index (figure 2)[1]. This index considers population density, density of the road and railway network and natural areas (including mountains), but relying more on scenic rather than ecological diversity. According to the index, the state of the natural environment is better in the mountains (the Alps, the Pyrenees, the Carpathian Mountains), Scandinavia, the Baltic region, and the Balkans. The status is the worst in England, the Benelux countries, Germany, France and North Italy, where the population density is the highest, there are many cities and intensive agriculture. The index also correlates to the distribution of protection categories Ia and Ib of the International Union for Conservation of Nature (IUCN) (areas with the strictest protection regime; in Estonia, this means strict nature reserves and areas in conservation zones with stricter regimes; see also section 3.2).

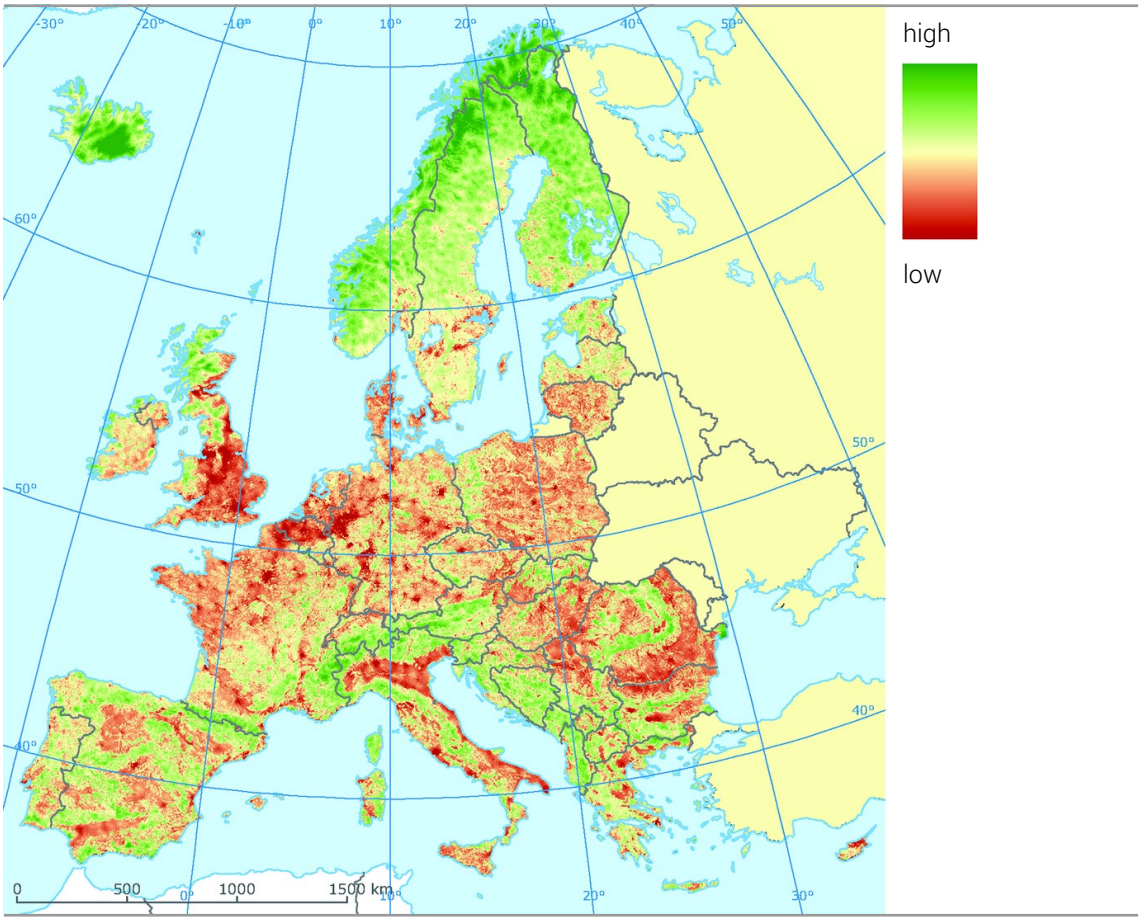


Figure 2. Wilderness Quality Index in the European countries. Source: Fisher et al (2010)[1]

[1] Fisher, M.; Carver, S.; Kun, Z.; McMorran, R.; Arrel, K. and Mitchell, G., 2010, *Review of Status and Conservation of Wild Land in Europe*, project commissioned by the Scottish Government, the Wildland Research Institute (www.scotland.gov.uk/Resource/Doc/1051/0109251.pdf).

The global targets set in the framework of the Convention on Biological Diversity (the so-called Aichi targets) in 2010 prescribe that by 2020, **at least 17% of terrestrial and inland water areas, as well as 10% of coastal and marine areas are under protection**. Estonia has already reached these targets. 19.5% of the land territory[1] and 27% of marine areas are protected in Estonia (see also section 2.2.1.1). As a comparison, 21% of the territory and 5.9% of marine areas are under protection in the whole European Union[2]. The largest area placed under protection in the European Union is in Slovenia and the smallest in Denmark (figure 3). Estonia holds the 20th place in this comparison. Our closest neighbours have less protected territory than us: Latvia ranks 21st, Lithuania 23rd, Finland 25th and Sweden 26th.

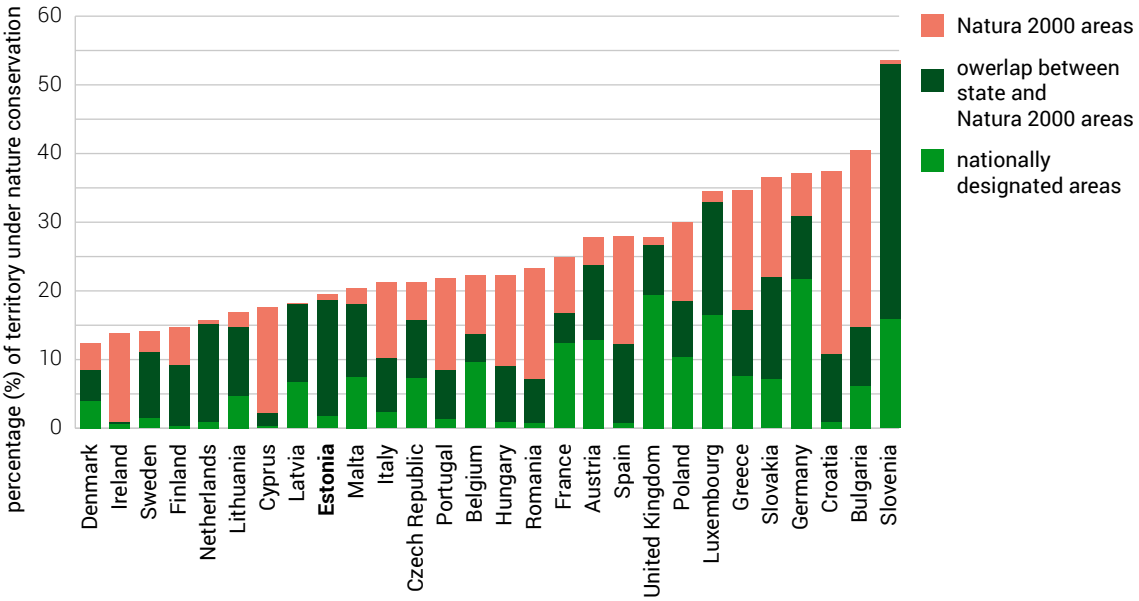


Figure 3. Percentage of territory under protection in the countries of the European Union. Source: SOER 2015[2]

When comparing Estonia to the other countries of the European Union based on the coverage of areas included in the **Natura 2000 network**, we hold the 12th place, i.e. a slightly higher position than based on protected total area. In Estonia., Natura 2000 areas cover a large part of all areas under protection and make up 17.8% of the territory (considering Lake Peipsi and Lake Võrtsjärv) and 26.9% of the marine area. In the European Union as a whole, the Natura 2000 areas cover 18% of the territory and 4% of the marine areas[2]. The largest part of the territory covered by the Natura 2000 areas is in Slovenia (37.9%) and the smallest part in the United Kingdom (8.5%). These large variations by countries result from the differences in the landscape, small amount of nature preserved in areas with a large human settlement density and intensive agricultural production, but also differences in the national nature conservation policies. As regards of the coverage of Natura 2000 areas, Estonia leaves its closest neighbours behind over again: Finland ranks 17th, Sweden 21st, Lithuania 24th and Latvia 25th.

[1] NB! Terrestrial area along with large lakes (Lake Peipsi and Lake Võrtsjärv) is considered. Likewise, large lakes are also taken into account in the case of other countries in this comparison. Without regarding Lake Peipsi and Lake Võrtsjärv, the percentage of protected terrestrial area in Estonia is 18.5%

[2] The status and outlook of the European environment – SOER 2015 (www.eea.europa.eu/soer).

In addition to the obligation to form the Natura 2000 network to protect habitats and species of European importance, the Habitats Directive of the European Union also obliges the Member States to **assess the status of these habitats and species** every six years. Although the status of the habitats and species of the Habitats Directive has improved in 2007–2012 in Estonia (see also section 5.3), their status in the European Union as a whole has worsened. In 2007, 65% of the habitat types and 52% of the species were in a bad or inadequate status in the European Union[1]. In Estonia, the respective percentages were 50 and 50. The 2013 assessment revealed that 77% of the habitat types and 60% of the species were in a bad or inadequate status in the European Union, in Estonia it was 48% of the habitats and 35% of the species (figure 4). At the same time, the number of habitat types and species with an unknown status has decreased. The amount of habitat types with an unknown status decreased in the European Union from 18% (2007 assessment) to 7% (2013 assessment) and in Estonia over the same time period from 8% to 0%. In the case of species, the unknown status has decreased from 31% to 17% in the European Union and from 26% to 11% in Estonia.

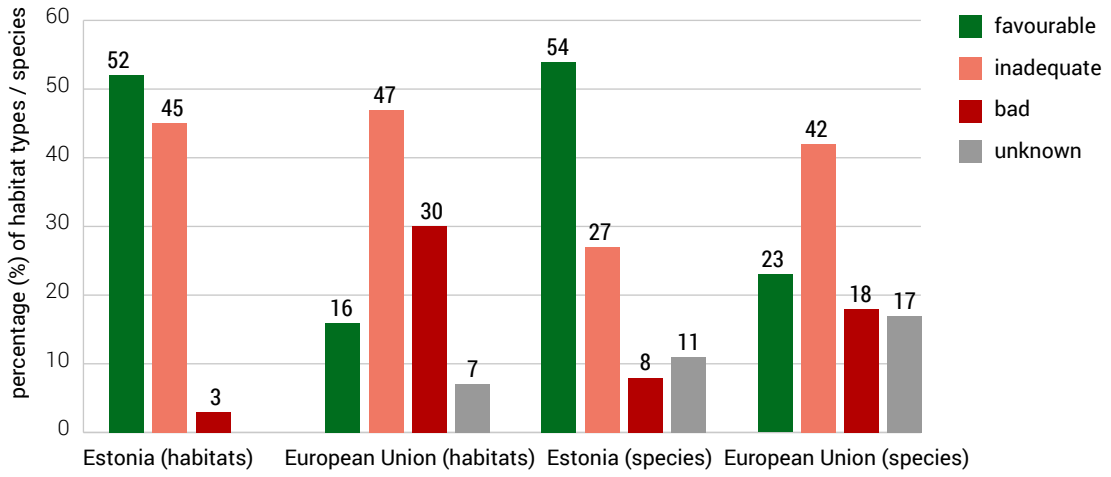


Figure 4. Status assessment of the habitat types and species of the Habitats Directive in Estonia and the European Union in 2013. The columns refer to the percentage of habitat types and species in the corresponding status from all occurring habitat types and species of the Habitats Directive

Invasive alien species pose an ever-increasing risk in the globalizing world. The damages caused by these species are estimated to be billions of dollars each year. Alien species are especially intensively occupying marine and coastal ecosystems, mainly due to shipping which is gaining increasingly more momentum. However, alien species pose the greatest risk to island ecosystems. Europe has prepared several lists of dangerous alien species. The EU list of invasive alien species is established by a regulation of the European Union on the legislative level (see section 4.2.5). 100 of the worst alien species were listed in the framework of the project DAISIE (Delivering Alien Invasive Species Inventories for Europe). Also, a list of invasive alien species with the worst consequences for Europe has been prepared[2]. The latter includes 163 species or groups of species. 43 of these have been registered in Estonia, which is average compared to other European countries. However, Estonia is in a worse state considering the occurrence of invasive alien species with the worst consequences per unit of area (figure 5).

[1] The status and outlook of the European environment – SOER 2015 (www.eea.europa.eu/soer)

[2] Biodiversity Information System for Europe (http://biodiversity.europa.eu/topics/invasive-species)

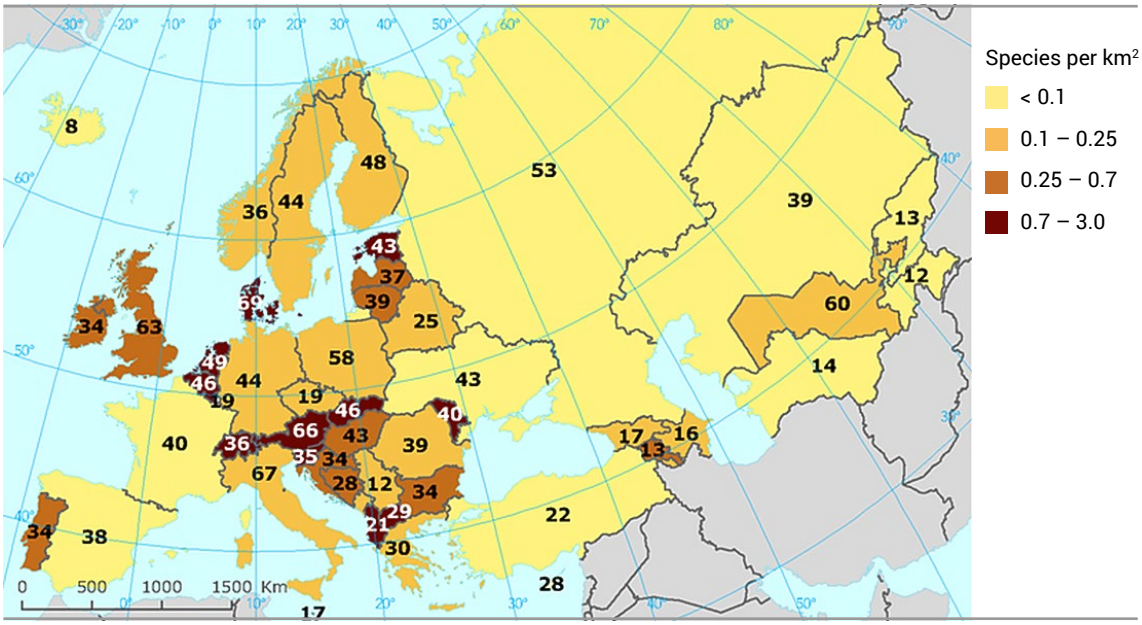


Figure 5. The number of invasive alien species with the worst consequences in terrestrial areas and freshwater bodies. Source: BISE[1]

Photographer: Merike Linnamägi

Photo 5. Signal crayfish is included in the list of EU invasive alien species, as well as in the list of alien species likely to disrupt natural balance in Estonia. Transactions with the signal crayfish, as well as raising, breeding and distributing them is forbidden

[1] Biodiversity Information System for Europe (http://biodiversity.europa.eu/topics/invasive-species).

2. Protected natural objects and natural objects with protection value

This section presents the state of protected natural objects and natural objects with protection value as a comparison of the years 2015 and 2011. There have not been great changes with regard to international objects in Estonia (Natura 2000, Ramsar and HELCOM areas, as well as the West Estonian Archipelago Biosphere Reserve) (section 2.1). The percentage of protected territory from the Estonian mainland territory has slightly increased in the case of nationally protected natural objects, but the total area (total terrestrial and marine area) has slightly decreased. The scope of the changes varies by the types of protected areas and on the local level (section 2.2).

2.1 Internationally protected natural objects

The international natural objects represented in Estonia are the Ramsar sites, Baltic Marine Environment Protection Commission areas (so-called HELCOM), and Natura 2000 areas, as well as the West Estonian Archipelago Biosphere Reserve.

Photographer: Remo Savisaar

Photo 6. Endla bog at night. The Endla Nature Reserve is one of the Ramsar sites in Estonia

By 2015, 169 countries had joined the **Ramsar Convention** signed in Ramsar, Iran, in 1971 (convention on wetlands of international importance, especially bird habitats). Estonia joined the convention in 1993. The number of the so-called Ramsar sites in the list of wetlands of international importance, which comply with the requirements of the convention, was 2240 by the year 2015, and their total area was nearly 2.15 million km^2. Nine countries, 242 sites, and nearly 0.15 million km^2 has been added compared to 2011. The aim of the convention is to protect and preserve wetlands having international importance due to their ecological or hydrological values.

The Convention on the Protection of the Marine Environment of the Baltic Sea Area was adopted in 1974 for the first time and in 1992 for the second time. Estonia joined it in 1995. Cooperation takes place between Denmark, Sweden, Finland, Germany, Estonia, Latvia, Lithuania, Poland, Russia and the European Union. The international Helsinki Commission, i.e. the Baltic Marine Environment Protection Commission (HELCOM) has been put in place to achieve the objectives of the convention. The main objective of HELCOM is to protect the marine environment of the Baltic Sea from all sources of pollution and restore and protect its ecological balance. A network of marine protected areas in the Baltic Sea has been established to ensure the achievement of these objectives.

The West Estonian Archipelago Biosphere Reserve comprises an area in Hiiu, Lääne and Saare counties, which has been considered part of the global network with the UNESCO programme MAB (Man and Biosphere). Pursuant to the Sustainable Development Act, Estonia has started using the name "*biosphere programme area*" instead of "*biosphere reserve*", as it better characterizes the objectives of the area: development of a sustainable economy and use of nature, preservation of biodiversity, preservation and exposition of the cultural heritage of islands, and carrying out a research, monitoring and training programme that supports green economy. The objectives of the programme area have been put into practice since 1990.

There have been no changes in Estonia since 2011 (when the Haapsalu-Noarootsi area was added into the network of Ramsar sites) with regard to the **Ramsar** sites and **HELCOM** areas. As at 2015, there were 17 Ramsar sites and seven HELCOM areas in Estonia.

The internationally protected natural objects in Estonia as at 31 December 2015 (excluding the Natura 2000 areas) are presented in table 8 and figure 6.

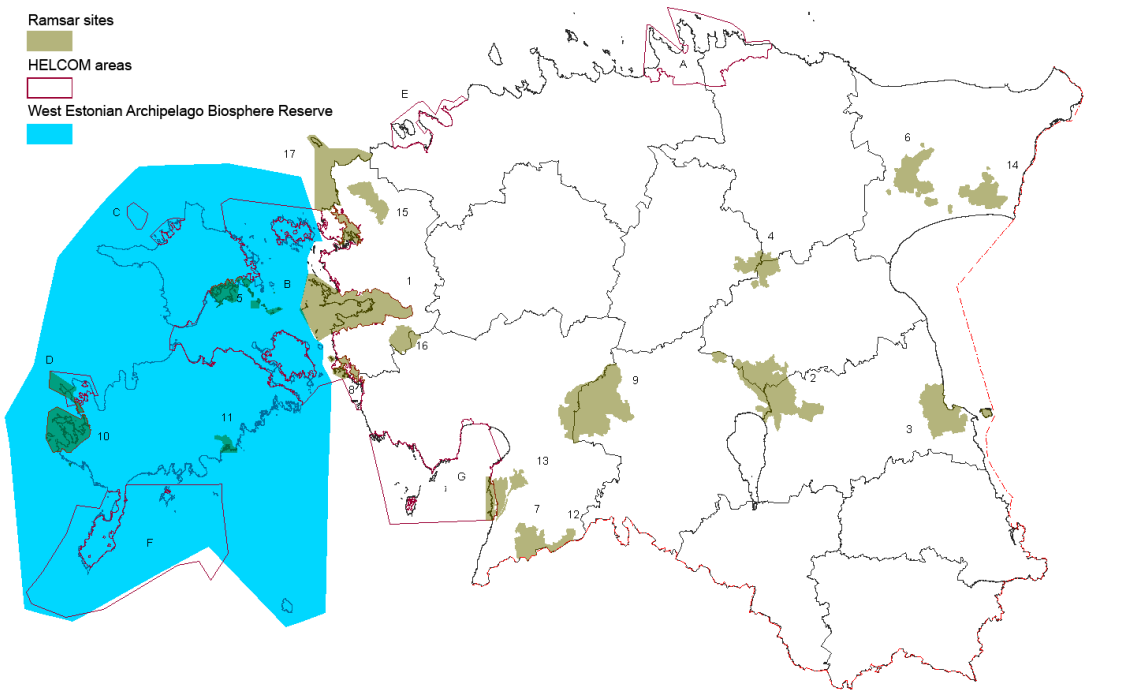


Figure 6. Ramsar sites and HELCOM areas in Estonia as at 2015 and the West Estonian Archipelago Biosphere Reserve

Table 8. Internationally protected natural objects in Estonia (excluding the Natura 2000 areas)

	International code	Label on the map (figure 6)	Name	Area (ha)
Ramsar sites	3EE001	1	Matsalu National Park	48 866.0
	3EE002	2	Alam-Pedja nature reserve	34 396.4
	3EE003	3	Emajõe-Suursoo and Piirissaar	18 983.3
	3EE004	4	Endla nature reserve	10 161.0
	3EE005	5	Hiiumaa islets and Käina Bay	8365.6
	3EE006	6	Muraka nature reserve	14 058.6
	3EE007	7	Nigula nature reserve	6430.9
	3EE008	8	Puhtu-Laelatu-Nehatu wetland	3789.5
	3EE009	9	Soomaa National Park	39 843.5
	3EE010	10	Vilsandi National Park	23 882.7
	3EE011	11	Laidevahe nature reserve	2454.6
	3EE012	12	Sookuninga nature reserve	5899.1
	3EE013	13	Luitemaa	11 301.3
	3EE016	14	Agusalu	11 061.9
	3EE015	15	Leidissoo	8221.4
	3EE014	16	Lihula	6653.9
	3EE017	17	Haapsalu-Noarootsi	27 589.3
Total				**281 959**
HELCOM areas	88	A	Lahemaa	74 840.6
	207	B	Väinameri	272 715.5
	90	C	Hiiu Madala	9340.0
	91	D	Vilsandi	31 880.2
	206	E	Pakri	20 574.8
	95	F	Kura Kurk	199 375.1
	94	G	Pärnu lahe	114 974.1
Total				**723 700.3**
West Estonian Archipelago Biosphere Reserve				**1 518 309.7**

At the end of 2015, the Estonian **Natura 2000 network** (figure 7) consisted of 66 special protection areas (SPAs) with a total area of 12 661 km^2 and 542 sites of community importance (SCIs) with a total area of 11 667 km^2. The number of sites has remained the same compared to 2011[1], but the area has increased: by 351 ha in the case of SPAs and by 11 807 ha in the case of SCIs. The reason behind the increase is the fact that in February 2015, in addition to changing the protection rules of nationally protected areas, the conservation objectives of the Natura 2000 areas that overlap with nationally protected areas, as well as the borders of 26 areas were changed. At the same time, the names of three areas were changed: Estuary of Emajõgi and Piirissaare Special Protection Area became Peipsiveere Special Protection Area, Emajõe-Suursoo Site of Community Importance became Peipsiveere Site of Community Importance, and Koonga oak forest Site of Community Importance became Lauaru Site of Community Importance.

[1] Includes the 11 new SCIs nominated for the list in 2010 and approved by the European Commission in 2012.

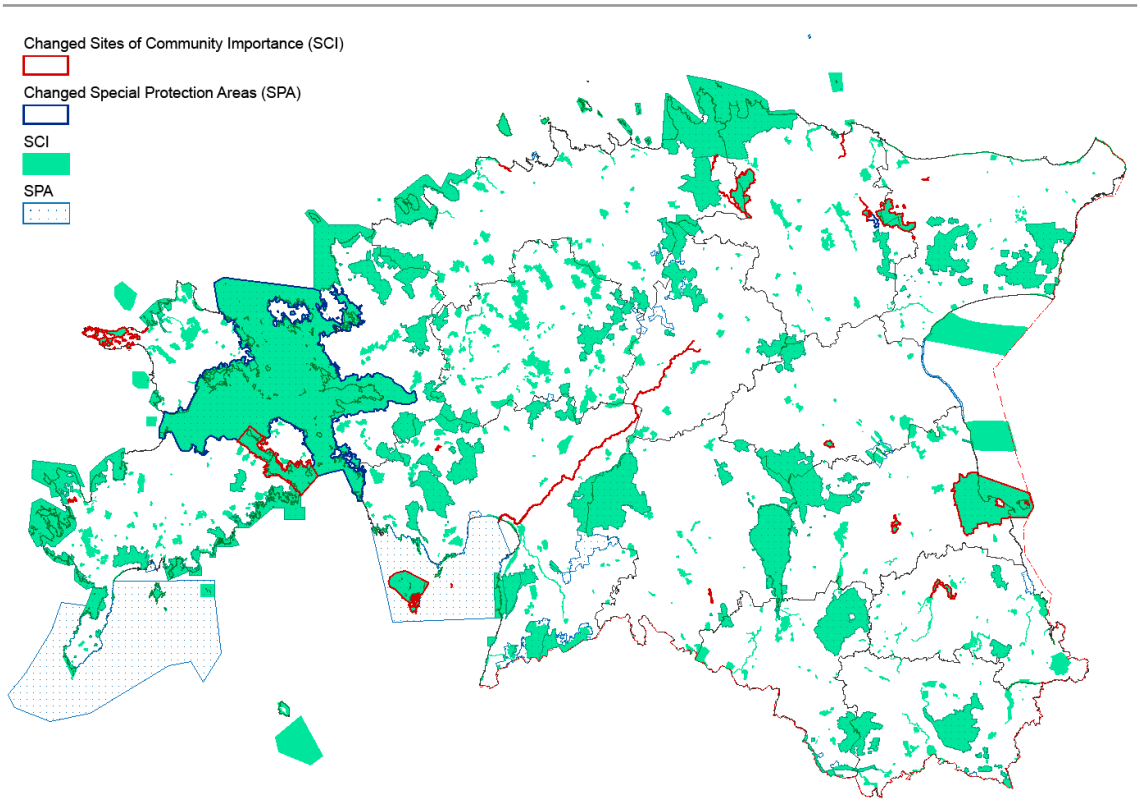


Figure 7. Natura 2000 network in Estonia

As the SPAs and SCIs overlap to a large extent, the total area of the Natura 2000 sites is 14 835 km^2 in Estonia, which is 418 ha more than in 2011. 7219 km^2 of it is in the terrestrial areas and 7616 km^2 in the marine areas. The change compared to 2011 is 740 ha↓ for the terrestrial area and 1159 ha↑ for the marine area[1].

In Estonia, Natura 2000 areas are protected pursuant to the Nature Conservation Act in the form of nationally protected areas: national parks, nature reserves, protected landscapes, limited-conservation areas, species protection sites or protected nature monuments. The changes in object types and protection regime of the Natura 2000 areas in recent years are shown in figure 8. Compared to 2011, there are 1% less Natura 2000 areas in species protection sites and 2% more Natura 2000 areas in protected areas. By zone, the area of conservation zones has increased by 2% and the area of limited management zone has decreased by 1%. The area of the Natura 2000 sites, where the protection regime has been determined (both the type and the zone have been specified), has increased – the surface area of undetermined areas has decreased from 1% to 0.03%.

[1] Hereinafter and unless noted otherwise, the increasing changes and trends are shown as upward arrows, the decreasing ones as downward arrows, and the stable ones as horizontal arrows.

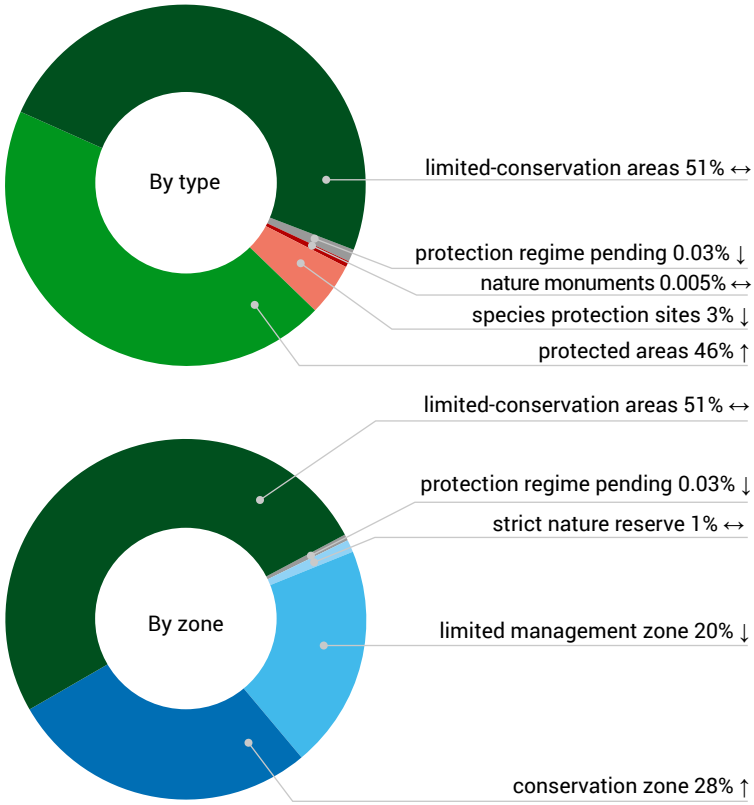


Figure 8. The distribution of Natura 2000 areas among protected natural object types, their distribution by zone, and the trends of the corresponding surface areas compared to 2011

2.2 Nationally protected natural objects

2.2.1 Areas under protection pursuant to the Nature Conservation Act

2.2.1.1 Protected territory and waters

To calculate the share of Estonia's territory and waters that are under protection, the natural objects with a surface area provided in section 4 of the Nature Conservation Act are taken into consideration: protected areas, limited-conservation areas, species protection sites, the protected zones of protected nature monuments and natural objects protected at the municipal level. As some of these sites may overlap, the digital spatial data were processed to exclude the overlapping areas. This way, we learned how much of the territory is protected in relation to the entire territory of Estonia, as well as at the national, county and municipal level. This represents the total area. Protected waters are expressed as a percentage of Estonian territorial waters, including Lake Võrtsjärv and Lake Peipsi. The data from the Environmental Register are as at 31 December 2015.

A total of 18.5% of the Estonian land territory,
27% of the territorial waters and 28% of the whole aquatory is under protection.

Considering both land and water areas, a total of 22.2% of Estonian territory is under protection.

A total of 18.5% of Estonia's land area (including inland waters, but excluding Lake Võrtsjärv and Lake Peipsi) **is under protection**[1]. Compared to 2011, **the area under protection has grown by 0.4% (↑)**. A total of **28% (3.1%, ↓) of Estonia's waters** (the sea and large lakes) is under protection. **Of Estonia's seashore** (the length of the shoreline of mainland Estonia and the islands totals about 4000 km according to Land Board data), **4/5 is under protection**, of which in turn about 70% is protected as limited management zones and limited-conservation area regimes and about 30% as conservation zones and strict nature reserve regimes. Considering both land and water areas, a **total of 22.2% (0.5%, ↓) of Estonia's surface area is under protection.**

The highest percentage of protected territory remains in Lääne County (32%), and the lowest percentage in Põlva County (9%). By county, the changes have not been large. An increase in Harju (total percentage in 2015 was 19.7%, 1.1%↑), Ida-Viru (17.9%, 0.6%↑), Tartu (18.4%, 1.4%↑), Saare (18.5%, 0.2%↑) and Järva (13.9%, 1%↑) counties can be noted. A decrease has occurred in Lääne-Viru County (15%, 0.3%↓), and a slight decrease also in Lääne County, considering the large total area of the its territory under protection (31.9%, 0.2%↓) (figures 9 and 10).

By adding up the protected areas, limited-conservation areas, protected nature monuments, species protection sites and natural objects protected at the municipal level, we get the numbers of protected objects (figures 10 and 11). The number of the protected objects is the highest in the city of Tallinn, 159 (↔)[2], where many of them are protected nature monuments, followed by Märjamaa municipality with 116 (14↑) objects, Lääne-Saare municipality with 100 (15↑ – the biggest change in numbers, considering the number of objects in 2011 in Lümanda, Kärla and Kaarma municipalities), Saarde municipality with 82 (8↑), Vändra municipality with 69 (7↑) and Viljandi municipality with 66 (7↑) objects.

On the basis of geoqueries, there are still no objects in Järvakandi and Tootsi municipalities, or in the towns of Jõgeva, Kiviõli, Mõisaküla, and Võhma (compared to 2011, the change is administrative-territorial – Püssi

[1] When considering the surface area of Lake Võrtsjärv and Lake Peipsi, the percentage is 19.5%.

[2] Hereinafter, the change in numbers of protected objects provided in brackets in this section refers to changes compared to 2011, unless noted otherwise.

city has joined Lüganuse municipality). The largest positive change in the number of objects has occurred in Lääne-Saare (15↑), Märjamaa (14↑), Tartu (13↑), Jõelähtme (11↑) and Hiiu municipalities (10↑).

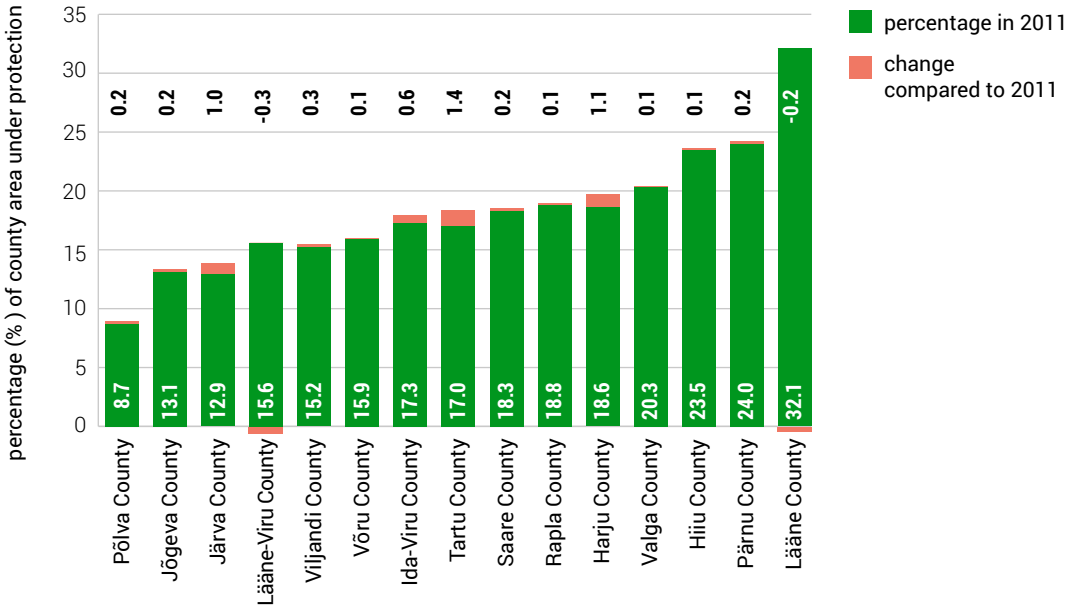


Figure 9. Percentage of county area under protection in 2015, including change compared to 2011

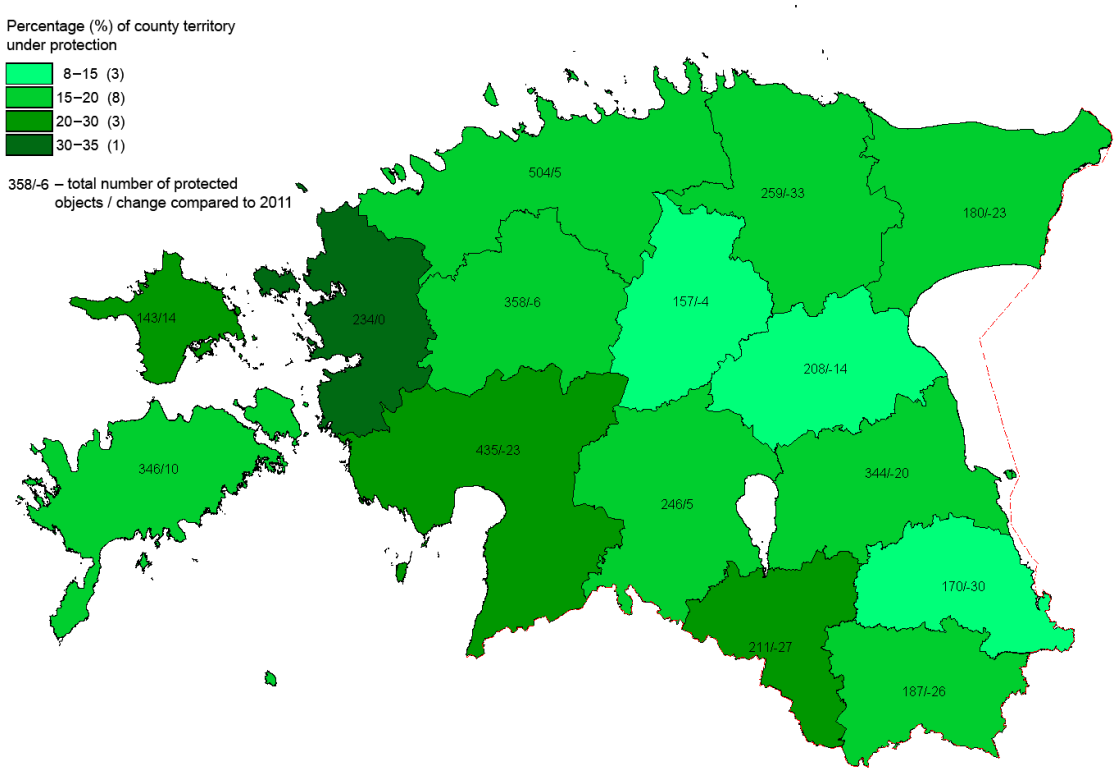


Figure 10. Percentage of county territory under protection, the number of protected natural objects in each county, and the changes in the latter compared to 2011 in that county. Sites across county or municipality boundaries are counted in all units

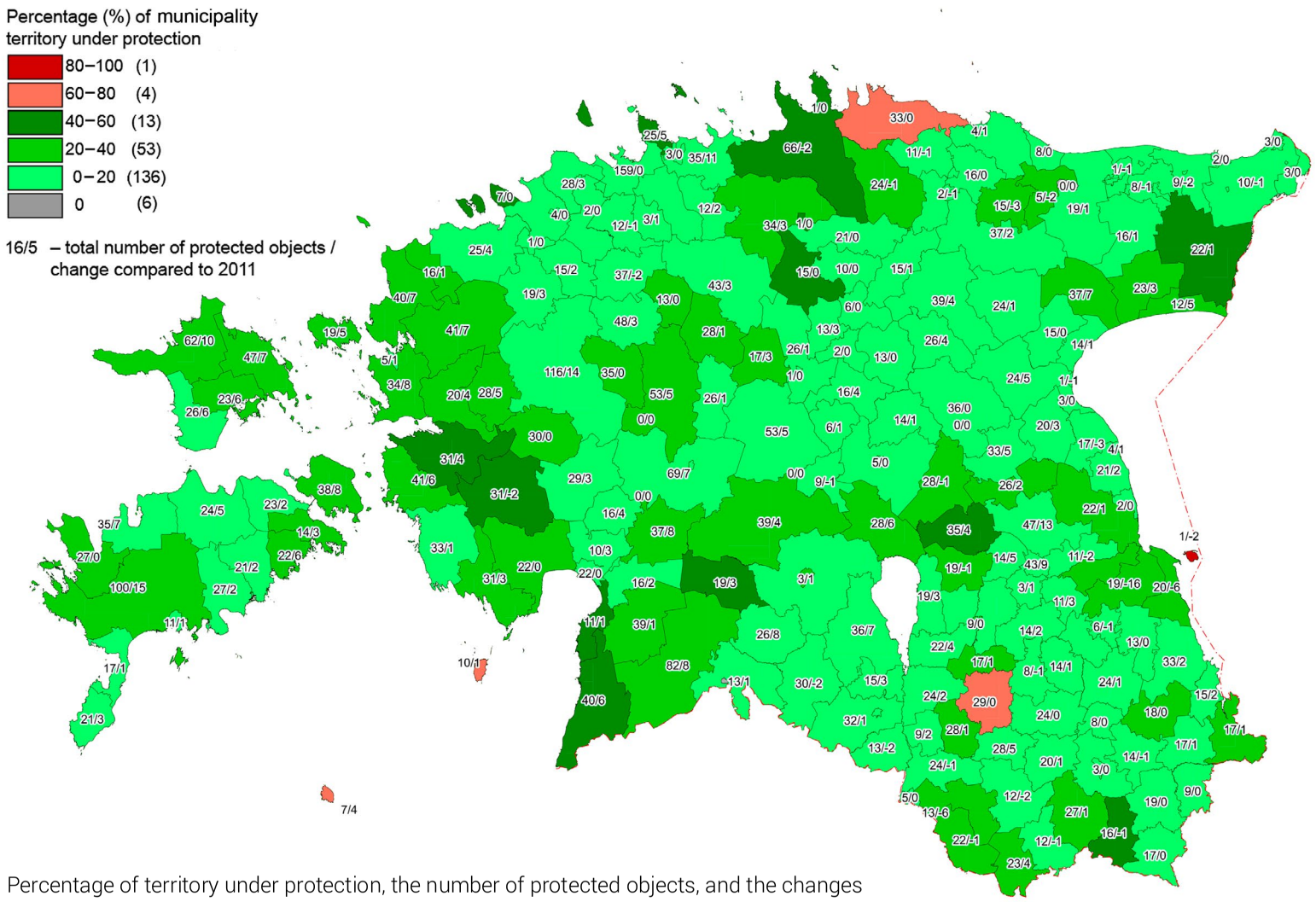


Figure 11. Percentage of territory under protection, the number of protected objects, and the changes in number of protected objects compared to 2011 by municipality. Sites across county or municipality boundaries are counted in all units. Municipality borders are given as at 2015. Changes in the administrative division compared to 2011 are given in the introduction

By area of protected territory, the greatest percentage of land under protection (figure 11) is located in Piirissaare municipality (96%, change of 4%↓ compared to 2011), followed by Otepää (~67%), Ruhnu (66%), Kihnu (~65%), Vihula (~61%, change 1%↑) and Haanja municipalities (~53%). Over a half of the territory is covered by protected objects in nine municipalities (change of 1%↓ compared to 2011). In addition to the aforementioned municipalities, the percentage of protected area exceeds 50% in Viimsi municipality (51%), Kuusalu municipality (52%) and Aegviidu municipality (52%). 49% of the town of Paldiski is under protection (change of 1%↓ compared to 2011).

Regarding protected natural object types, the greatest share of the Estonia's land territory is covered with protected areas (national parks, nature reserves, protected landscapes, areas with unrevised protection rules, as well as parks and stands) – a total of nearly 14 (2.29%, ↑) (figure 12).

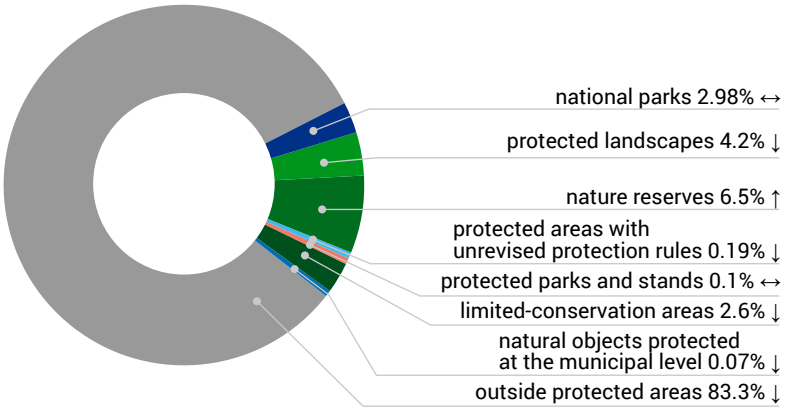


Figure 12. Percentage of Estonia's land territory by types of protected objects. Species protection sites and protected nature monuments are not considered, as some of them overlap with other protected objects

Photographer: Kaire Sirel

Photo 7. 96% of the surface area of Piirissaare island is comprised by Peipsiveere nature reserve, making it the municipality with the largest share of surface area under nature protection

Protection of inland waters

The Environmental Register lists **2309 watercourses** with a total length of **20 111 km** (table 9). 78 watercourses are located in their entirety on protected natural objects, and **19.7% (3955 km)** of the total length of watercourses passes through protected natural objects, while 34.6% (1369 km) of them are subject to more stringent protection rules[1], 38.8% (1534.5 km) have a less strict protection status, and 26.6% (1051.1 ha) lies within limited-conservation areas' territory.

With regard to protected object types, the largest share of watercourses are located on protected areas – 2618.3 km (13% of the total length of the watercourses, 66.2% of the watercourses within protected natural objects), while 1052.4 km of watercourses flow through limited-conservation areas (5.2%; 26.6%), 272.1 km through species protection sites (1.4%; 6.9%), 9.3 km (0.05%; 0.2%) through limited management zones of nature monuments, and 2.7 km (0.01%; 0.07%) through natural objects protected at the municipal level. By number, most watercourses (73) are in their entirety found within nature reserves, while four watercourses run in their entirety through limited-conservation areas. One watercourse runs partially through a limited-conservation area and partially through a protected area. The list of spawning areas and habitats of salmon, sea trout and grayling, established by regulation of Minister of the Environment, includes 112 rivers with a total length of 2391.2 km (11.9% of the total length of the watercourses).

Photographer: Anneli Palo

Photo 8. Large rivers run through the Soomaa National Park, causing large-scale floods known as the fifth season. Although this interferes with normal traffic, it attracts a large number of nature enthusiasts

Figure 13 shows the total length of watercourses and the percentage of protected watercourses by municipality. The run of the watercourses through protected natural objects is the longest in Kuusalu (193.4 km), Vihula (121.4 km) and Illuka municipalities (105.7 km). Pärnu river, which flows through the town of Sindi, is part of a limited-conservation area, and while it is the only watercourse in this town, the share of protected watercourses is a 100% in this municipality.

[1] Stricter protection is considered to be strict nature reserve and conservation zone regimes, and less strict protection is considered to be limited management zone regime. Limited-conservation areas that may have either one or another kind of regimes (see also sections 2.2.1.3 and 3.2) are given separately.

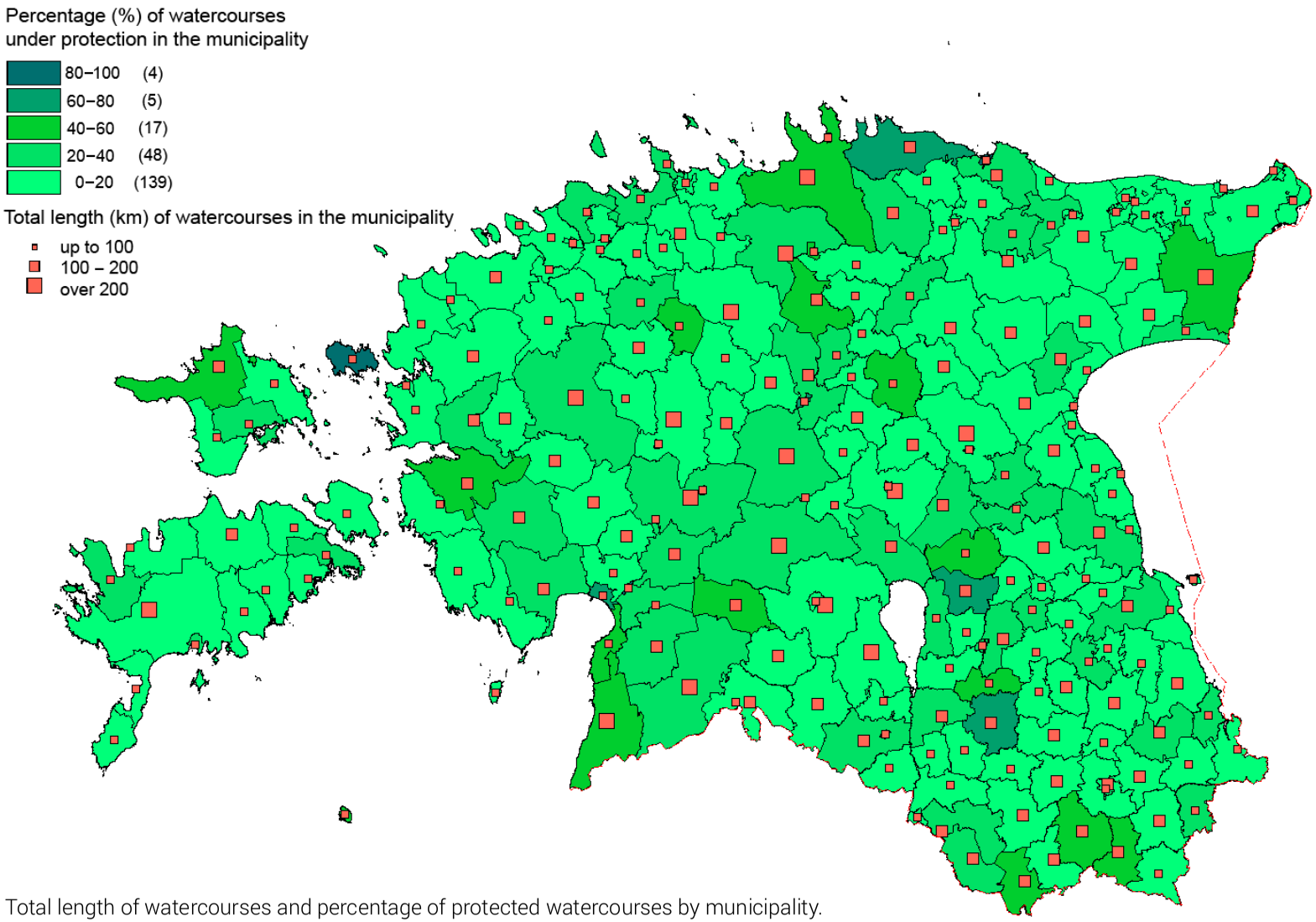


Figure 13. Total length of watercourses and percentage of protected watercourses by municipality. Municipality borders are given as at 2015. Changes in the administrative division compared to 2011 are given in the introduction

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Table 9. Total length and protected share of watercourses by county

County	Total length of watercourses (km)	Total length of water-courses within protected natural objects (km)	Percentage of water-courses within protected natural objects
Valga County	1089.9	306.9	28.2
Hiiu County	354.8	91.3	25.7
Tartu County	1405.5	338.4	24.1
Pärnu County	2262.9	531.4	23.5
Lääne-Viru County	1305.9	294.8	22.6
Järva County	1173.1	263.3	22.4
Lääne County	791.4	173.4	21.9
Harju County	2030.5	426.7	21.0
Võru County	1479.5	293.3	19.8
Ida-Viru County	1534.9	256.1	16.7
Rapla County	1343.9	217.1	16.2
Viljandi County	1919.9	297.5	15.5
Põlva County	1245.0	174.6	14.0
Jõgeva County	1347.2	185.4	13.8
Saare County	826.8	104.8	12.7

According to the Environmental Register data, there are **2537 lakes** on Estonian territory, with a total area of **210 052 ha**. In the interim period since 2011, more than 200 water bodies that were not considered to be typical stagnant water bodies (e.g. sedimentary basins, fishponds), have been removed from the register. 74.2% (155 775.3 ha) of the total area of lakes is comprised by the part of **Lake Peipsi** that lies within Estonia (along with Lake Pskov and Lämmijärv), 12.8% (26 901.3 ha) by **Võrtsjärv** and 0.8% by **Narva reservoir** (1754.9 ha).

Of Lake Peipsi, 35.6% (55 491.3 ha) is located within protected natural objects, 77.6% of which, in turn, is comprised by limited-conservation areas (43 044.4 ha) and 22.4% (12 445.4 ha) by the limited management zone of Peipsiveere nature reserve. Võrtsjärv is completely under protection, i.e. located within a limited-conservation area. Narva reservoir is not under protection.

The total area of Estonia's **small lakes** (all lakes excluding the above-mentioned large lakes) is **25 622 ha** (12 2% of the total area of Estonia's lakes). **66.2% (16 965 ha)** of these lakes are located within protected natural objects (table 10). With regard to protected object types, the largest share of the area of small lakes lies within protected areas – 10 755.3 ha (42% of the total area of small lakes and 63.4% of the area of lakes within protected natural objects). 6025.9 ha of lakes are on limited-conservation areas (23.5%, 35.5%), 177.7 ha on species protection sites (0.7%, 1%), 6.3 ha on limited management zones of protected nature monuments (0.02%, 0.04%), and 0.1 ha (0.0004%; 0.0006%) on objects protected at the municipal level. A total of 4317.6 ha (25.4%) is under stringent protection (strict nature reserves, conservation zones), while 6621.9 ha (39%) is comprised by limited management zones. The rest of the area of protected small lakes lies within limited-conservation areas.

A total of **965** small lakes are located in their entirety within protected natural objects. Most of the lakes (815) completely under protection are located in protected areas, 133 lakes are comprised by

limited-conservation areas, 12 by species protection sites, one by an object protected at the municipal level, and one lies within a limited management zone of a protected nature monument. Three of the completely protected small lakes concurrently lie within two different types of protected areas.

Table 10. Area and protected share of small lakes by county

County	Total area of lakes (ha)	Total area of lakes within protected natural objects (ha)	Percentage of the area of lakes within protected natural objects
Lääne County	1020.5	968.0	94.9
Saare County	3612.9	3348.7	92.7
Hiiu County	393.9	363.8	92.4
Rapla County	212.4	165.7	78.0
Pärnu County	1753.8	1358.4	77.5
Viljandi County	1683.6	1298.1	77.1
Valga County	1865.3	1375.5	73.7
Tartu County	2735.7	1961.6	71.7
Jõgeva County	1998.7	1423.8	71.2
Võru County	3418.5	2317.6	67.8
Lääne-Viru County	648.3	414.8	64.0
Ida-Viru County	708.9	369.5	52.1
Põlva County	1199.1	504.3	42.1
Harju County	4104.1	1030.3	25.1
Järva County	266.6	65.3	24.5

Figure 14 shows the total share of the area of the lakes and the share of the lakes within protected natural objects at the municipality level. The largest areas of lakes within protected natural objects are found in Lääne-Saare (1770.7 ha), Tõstamaa (774.4 ha) and Tabivere municipalities (687.9 ha). The lakes in the municipalities of Aegviidu, Hanila, Kihnu, Laekvere, Lihula, Martna, Muhu, Nõva, Pöide, Ridala, Ruhnu, Sonda, Tõstamaa, Vormsi and Õru and the towns of Kuressaare, Paldiski and Rakvere are located completely on protected natural objects.

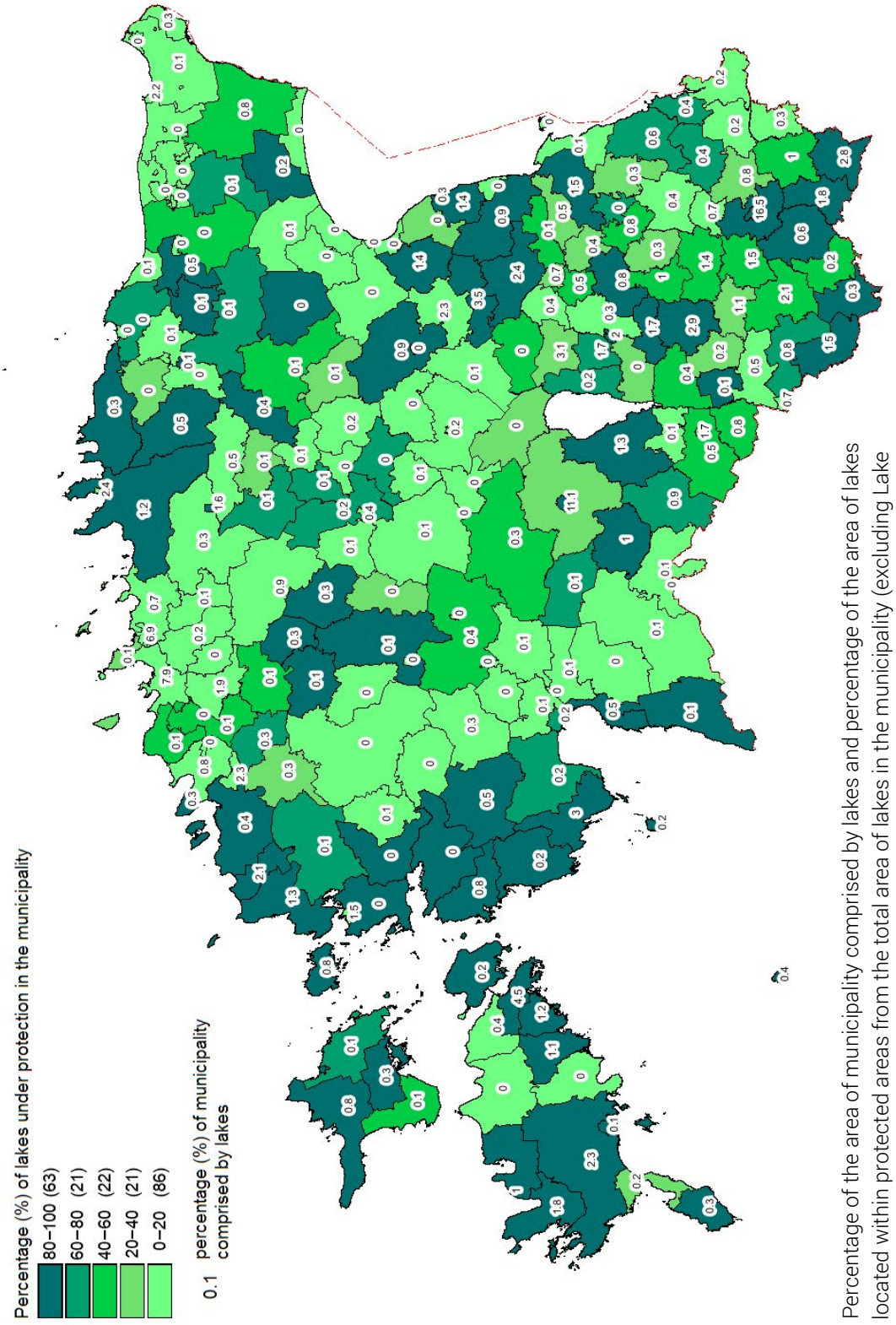


Figure 14. Percentage of the area of municipality comprised by lakes and percentage of the area of lakes located within protected areas from the total area of lakes in the municipality (excluding Lake Peipsi and Võrtsjärv and the Narva reservoir). Municipality borders are given as at 2015. Changes in the administrative division compared to 2011 are given in the introduction

2.2.1.2 Protected areas

A protected area is an area kept untouched of human activity or used according to special requirements where nature is preserved, protected, restored, studied or introduced. Protected areas are categorized into the following types: national parks, nature reserves and protected landscapes. The protection regime of a protected area proceeds from the protection rules drawn up for the specific area and the Nature Conservation Act.

As at 31 December 2015, there were 926 protected areas in Estonia:

- 5 national parks, ↔
- 152 nature reserves, 21↑
- 153 protected landscapes and nature parks, 3↑
- 84 protected areas with unrevised protection rules, 23↓
- 532 protected parks and stands, 7↓.

The total area of protected areas is 721 630 ha (increased by 35 667 ha, ↑), of which 608 416 ha (increased by 15 290 ha, ↑) is land territory and 113 215 ha marine area and large lakes (increased by 20 377 ha, ↑). The smallest protected area is still the Roheline turg (park) in Tallinn at 0.05 ha and the largest is the Lahemaa National Park at 74 584 ha (1861 ha, ↑). The average size of a protected area is 792 ha (increased by 42 ha, ↑). Of local governments, Piirissaare is the most protected one (96% of its area is under protection), but there are also local governments with no protected areas.

Likewise in 2011, the local governments with no protected areas are still the town of Jõgeva, Järvakandi municipality, town of Kiviõli, Kohtla-Nõmme municipality, towns of Maardu and Mõisaküla, Sauga municipality, Tootsi municipality, town of Võhma, Õru municipality, towns of Kallaste and Mustvee, and Ruhnu municipality. The number of the local governments with no protected areas has decreased because Lavassaare municipality merged with Audru municipality and the town of Püssi with Lüganuse municipality. Changes occurred in Kiili municipality, where part of its territory was included in the Nabala-Tuhala nature reserve.

Photographer: Margus Muts

Photo 9. Kuradisaar located in the Lahemaa National Park, for which the protection rules were confirmed in 2015

National parks

A national park is a protected area for preservation, protection, restoration, study and introduction of nature, landscapes, cultural heritage and balanced environmental use (section 26 of the Nature Conservation Act).

Statistics on national parks	Number	Land area (ha)	Water area (ha)	Total area (ha)
31 December 2015	5	129 265	70 469	199 734
Change compared to 2011	↔	797 ↓	2658 ↑	1861 ↑

Percentages of the protection zones of national parks are given in figure 15.

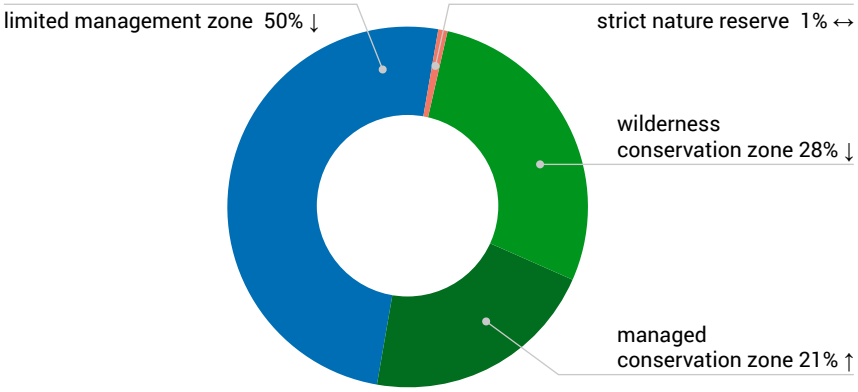


Figure 15. Distribution of national parks into protection zones and trends of changes in zone type areas compared to 2011

Changes 2011–2015: the new protection rules of Lahemaa National Park were approved in 2015. The area of the national park increased by 1861 ha.

Estonia has five national parks:

– Lahemaa – for the protection of northern Estonian coastal landscapes and cultural heritage;

– Karula – for the protection of the nature and cultural heritage of the rolling "dome" landscapes of southern Estonia;

– Soomaa – for the protection of the nature and cultural heritage of south-western Estonian mire and alluvial landscapes;

– Vilsandi – for the protection of the nature and cultural heritage of the western Estonian archipelago;

– Matsalu – for the protection of western Estonian biotic communities and the nature and cultural heritage of the Väinameri straits.

The smallest national park is Karula (12 364 ha) and the largest is Lahemaa (74 784 ha).

Nature reserves

A nature reserve is a protected area for preservation, protection, restoration, study and introduction of nature (section 27 of the Nature Conservation Act).

Statistics on nature reserves	Number	Land area (ha)	Water area (ha)	Total area (ha)
31 December 2015	152	283 779	31 050	314 829
Change compared to 2011	21 ↑	38 133 ↑	17 121 ↑	55 254 ↑

Percentages of the protection zones of nature reserves are given in figure 16.

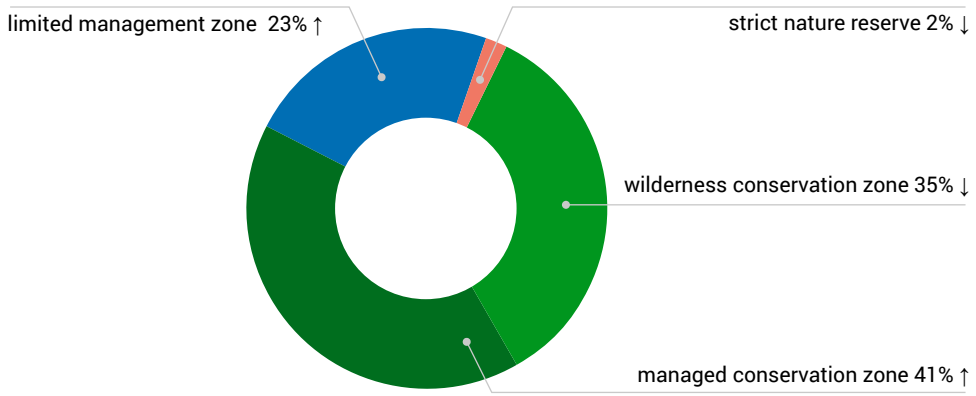


Figure 16. Distribution of nature reserves into protection zones and trends of changes in zone type areas compared to 2011

Changes 2011–2015: 7 nature reserves were added in 2013, 4 of which were completely new protected areas (Riidaja, Keisripalu, Koimla, Hüti) and 3 (Sopimetsa, Kirikuraba, Kivimurru) were formed on the basis of previously protected objects. The revised protection rules of two nature reserves – Luusika and Pähni – were approved in 2013. In 2014, 11 nature reserves were added (the number of nature reserves increased from 138 to 148), 2 of which were completely new protected areas (Kalana, Suure-Aru) and 9 (Haavassoo, Peipsiveere, Maalasti, Sorgu, Kihnu islets, Lauaru, Audru polder, Ropka-Ihaste, Nabala-Tuhala) were formed on the basis of previously protected objects. The protections rules and borders of one reserve were revoked in 2014. The revised protection rules of two nature reserves – Ohepalu and Sirtsi – were approved in 2014. By establishing the Nabala-Tuhala nature reserve, the Tammiku nature reserve was also merged with it. In 2015, four nature reserves were added, 2 of which were new protected areas (Selisoo, Raadi) and 2 (Altnurga and Meenikunno) were formed on the basis of previously protected objects.

In essence, 22 areas were added to the list of nature reserves (table 11), but as one area merged with another, the total increase in the number of nature reserves is 21.

The smallest one is the Sopimetsa nature reserve in Jõgeva County (3.5 ha) and the largest is the Peipsiveere nature reserve in Tartu County (34 610 ha).

Table 11. Nature reserves established in 2011–2015

Object which formed the basis for establishment	Nature reserve	Year
Limestone area; Luiga karst limestone area	Sopimetsa nature reserve	2013
new protection rules	Luusika nature reserve	2013
new area	Riidaja nature reserve	2013
new area	Keisripalu nature reserve	2013
Kirikuraba capercaillie species protection site	Kirikuraba nature reserve	2013
new area	Hüti nature reserve	2013
new protection rules	Pähni nature reserve	2013
new area	Koimla nature reserve	2013
Kivimurru pine forest	Kivimurru nature reserve	2013
new area	Kalana nature reserve	2013*
Haavassoo limited-conservation area	Haavassoo nature reserve	2013*
Maalasti greater spotted eagle species protection site	Maalasti nature reserve	2013*
Piirissaare, Emajõe-Suursoo wetland protection area, Emajõe estuary limited-conservation area	Peipsiveere nature reserve	2013*
Sorgu island	Sorgu nature reserve	2014
Sange islets	Kihnu islets nature reserve	2014
new protection rules	Ohepalu nature reserve	2014
Koonga oak forest	Lauaru nature reserve	2014
new protection rules	Sirtsi nature reserve	2014
Audru reeds, Audru polder limited-conservation area	Audru polder nature reserve	2014
Aardla lake botanical-ornithological protected area	Ropka-Ihaste nature reserve	2014
Rahaaugu limited-conservation area, Tammiku nature reserve, Tuhala protected landscape	Nabala-Tuhala nature reserve	2014
new area	Suure-Aru nature reserve	2014
new area	Selisoo nature reserve	2015
new area	Raadi nature reserve	2015
Altnurga black stork species protection site	Altnurga nature reserve	2015
Meenikunno protected landscape	Meenikunno nature reserve	2015

* protection rules were approved in 2013 and entered into force in the beginning of 2014

Protected landscapes

A protected landscape or nature park is a protected area for the preservation, protection, study, introduction and regulating use of the landscape (section 28 of the Nature Conservation Act). Specific protection rules for protected parks, arboretums and stands have been approved by the Government of the Republic for the protection of these special types of landscape protection areas.

Statistics on protected landscapes*	Number	Land area (ha)	Water area (ha)	Total area (ha)
Protected landscape and nature park	153/3 ↑	182 457/2633 ↓	11 537/832 ↑	193 994/1801 ↓
Park	445/6 ↓	4026/235 ↓	0/↔	4026/235 ↓
Stand	87/1 ↓	655/1 ↓	0/↔	655/1 ↓
Total **		186 913	11 537	186 913

* The numbers to the left of the slashes are as at 31 December 2015; and to the right of the slashes, the changes compared to 1 July 2011 are given. The arrows indicate the directions of changes.

** The total area of protected landscapes and special types of protected landscapes without overlap.

Percentages of the protection zones of protected landscapes are given in figure 17.

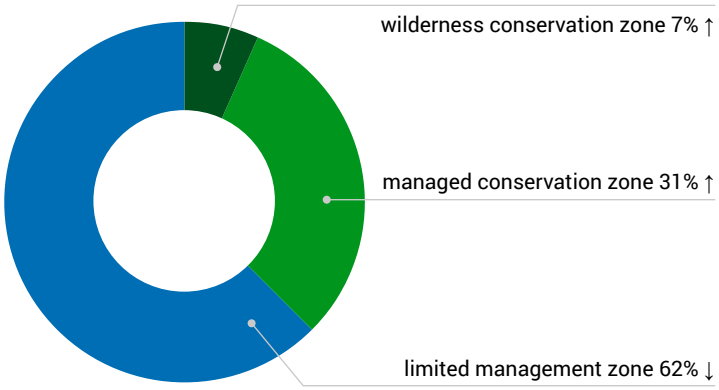


Figure 17. Distribution of protected landscapes into protection zones and trends of changes in zone type areas compared to 2011

Changes 2011–2015: in 2013, the revised protection rules and borders of Rannamõisa and Türisalu protected landscapes, as well as the protection rules for Uhaku protected landscape (based on a protected area with unrevised protection rules) were approved. In 2014, the protection rules of Tilleoru (based on a protected area with unrevised protection rules) and Siimusti-Kurista protected landscape (based on protected park and a protected area with unrevised protection rules), as well as the revised protection rules and borders of Muti, Ahja river primeval valley and Viitna protected landscapes were approved. Tuhala protected landscape was included in the Nabala-Tuhala nature reserve in 2014. In 2015, Kanahaua (based on a protected area with unrevised protection rules) and Erumäe protected landscapes (based on species protection sites and a protected area with unrevised protection rules) were established. In addition to the latter, the revised protection rules and borders of Haanja nature park, Verijärve protected landscape, Karula Pikkjärve protected landscape, Hiiumaa islets protected landscape, Sarve protected landscape and Kolga bay protected landscape were approved in 2015. The list of protected landscapes

established in 2011–2015 is presented in table 12. In essence, five protected landscapes were added, but as the Meenikunno protected landscape became a nature reserve and the Tuhala protected landscape was merged with the Nabala-Tuhala nature reserve, the total change is 3 (↑). In 2011, new borders of protected parks and stands in Lääne-Viru County were approved – one park was added (the Mädapea manor park) and the protection of two parks was revoked (Jõepere park, Rahkla park). In 2015, new borders of protected parks and stands in Tartu County were approved.

The smallest protected landscape is the Papioru protected landscape in Viljandi County (4 ha) and the largest one is the Otepää nature park (22 430 ha). Of protected parks and forest stands, the smallest is the Roheline turg in Tallinn at 0.05 ha and the largest is the Palmse park and park forest (278 ha) in Lahemaa National Park.

87 stands are included in the list of protected forest stands. There is one object less compared to 2011 – the protection of Kahala sacred forest located on the territory of the Lahemaa National Park as a separate protected natural object was revoked by the new protection rules of Lahemaa National Park.

The protection Kolga manor park, Palmse park and park forest, Sagadi park and Vihula park with a park forest as separate protected objects was also revoked by the new protection rules of Lahemaa National Park. The protection rules of Siimusti-Kurista protected landscape revoked the protection status of the Siimusti festival grounds and the Siimusti forest surrounding the festival grounds. Rõngu Hiugemäe forest park (Hiugemäe forest park) was renamed as Rõngu manor park.

Photographer: Margus Muts

Photo 10. View of Lake Vaskna and Suur Munamägi in the Haanja nature park, for which the protection rules were approved in 2015

Table 12. Protected landscapes established in 2011–2015

Object which formed the basis for establishment	Protected landscape	Year
Uhaku karst area	Uhaku protected landscape	2013
new protection rules	Türisalu protected landscape	2013
new protection rules	Rannamõisa protected landscape	2013
new protection rules	Muti protected landscape	2014
Tilleorg	Tilleoru protected landscape	2014
Kurista hill fort, Siimusti festival grounds and Siimusti forest surrounding the festival grounds	Siimusti-Kurista protected landscape	2014
new protection rules	Ahja river primeval valley protected landscape	2014
new protection rules	Viitna protected landscape	2014
Kanahaua kettle hole	Kanahaua protected landscape	2015
new protection rules	Haanja nature park	2015
new protection rules	Verijärve protected landscape	2015
new protection rules	Karula Pikkjärve protected landscape	2015
Maiorg, three species protection sites of the lesser spotted eagle	Erumäe protected landscape	2015
new protection rules	Hiiumaa islets protected landscape	2015
new protection rules	Sarve protected landscape	2015
new protection rules	Kolga bay protected landscape	2015

Protected areas with unrevised protection rules

Protected areas with unrevised protection rules are areas that were placed under protection between the years 1957–1994, but for which no new protection rules have been approved (under the Protected Natural Objects Act or the Nature Conservation Act). The authority that accorded protection for those areas at that time was the executive committee of the administrative region or later, the county government. In areas that were placed under protection before the Nature Conservation Act entered into force, activity in a limited management zone (subsection 31 (2) of the Nature Conservation Act) is permitted only with the administrator's permission unless set forth otherwise in the protection rules. The protection rules and boundaries of these areas are being revised. While in 2007, a clause in the Nature Conservation Act stipulated that the new protection rules should be approved by 1 May 2016, the deadline has now been extended to 1 May 2023.

Statistics on protected areas with unrevised protection rules	Number	Land area (ha)	Water area (ha)	Total area (ha)
31 December 2015	84*	8368	160	8528
Change compared to 2011	23 ↓	19 562 ↓	208 ↓	19 770 ↓

* This does not include five objects with an unclear status (overlaps with existing protected area or lacks location and spatial shape in register): Kabelimägi, i.e. Kalevipoja's seat in Tartu County, Uueveski protected landscape, Kiisa protected micro-area, Närska botanical protected micro-area in Viljandi County and Aruküla boulder field in Lääne County.

Changes 2011–2015: the number of objects has decreased by 23, as protection has been revoked for some objects (Anumägi, Maiorg, Niklusemägi, Pahnimägi, Prigentimägi, Rakvere Vallimägi) in the interim, some have received new protection rules (see table 13) and for some, the type of protected object has been redefined into protected nature monuments (Aula karst area, Kürema boulder field, Lepakõrve and Küdema sinkholes, Tuiu-Paka sinkhole).

The smallest is the natural habitat of yellow narcissus (0.3 ha) in Tartu County Sookalduse village, and the largest is the Kesu bog; Kesu wetland protection area (8527 ha).

Table 13. Protected areas with revised protection rules established in 2011–2015 on the basis of protected areas with unrevised protection rules

Protected area with unrevised protection rules	Protected area with revised protection rules
Aardla lake botanical-ornithological protected area	Ropka-Ihaste nature reserve
Audru reeds	Audru polder nature reserve
Emajõe-Suursoo wetland protection area / protected landscape	Peipsiveere nature reserve
Kanahaua kettle hole	Kanahaua protected landscape
Kivimurru pine forest	Kivimurru nature reserve
Koonga oak forest	Lauaru nature reserve
Kurista hill fort	Siimusti-Kurista protected landscape
Limestone area; Luiga karst limestone area	Sopimetsa nature reserve
Piirissaare	Peipsiveere nature reserve
Sange islets	Kihnu islets nature reserve
Sorgu island	Sorgu nature reserve
Tilleorg	Tilleoru protected landscape
Uhaku karst area	Uhaku protected landscape
Maiorg	Erumäe protected landscape

2.2.1.3 Limited-conservation areas

A limited-conservation area is an area designated for the conservation of habitats, for the preservation of which the impact of planned activities is estimated and activities liable to harm the favourable conservation status of the habitats are prohibited. A limited-conservation area is established with the aim to ensure the favourable conservation status of wild fauna, flora and fungi, if this is not ensured by other means. In a limited-conservation area, it is prohibited to destroy or damage the habitats for which the limited-conservation area was established. It is prohibited to significantly disturb the protected species, or to engage in an activity that poses a threat to the favourable status of the habitats and the favourable status of protected species (subsection 4 (3) and section 32 of the Nature Conservation Act). Limited-conservation areas are placed under protection by a regulation of the Government of the Republic, no separate protection rules are established for them and zones are not formed. The restrictions and permissible activities on limited-conservation areas stem from Chapter 5 of the Nature Conservation Act while conservation management actions are put in place by a conservation management plan.

Statistics on limited-conservation areas	Number	Land area (ha)	Water area (ha)	Total area (ha)
31 December 2015	343	113 325	638 228	751 553
Change compared to 2011	1 ↓	868 ↓	13 711 ↓	14 579 ↓

Changes 2011–2015: in total, the number of limited-conservation areas decreased by one, but in essence, the change was larger. Four limited-conservation areas (Emajõe estuary limited-conservation area, Rahaaugu limited-conservation area, Audru polder limited-conservation area, Haavassoo limited-conservation area) were merged with nature reserves and three new limited-conservation areas were established (Noonu, Vääna River and Kuivajõe limited-conservation area).

The smallest one is the Vanajõe limited-conservation area in Hiiu County (0.2 ha) and the largest is the Kura kurk limited-conservation area (189 792 ha) comprising mainly marine areas. The average area of a limited-conservation area is 2191 ha.

2.2.1.4 Species protection sites

A species protection site is a habitat permanently or periodically inhabited by a protected species. It is located outside of a protected area or in the limited management zone of a protected area, is delimited and can be used in accordance with special requirements (subsection 4 (5) of the Nature Conservation Act). The aim of a species protection site is to ensure the protection of species through preserving their habitats. Unless a species protection site has been determined by the regulation of the Minister of the Environment and in accordance with subsection 10 (2) of the Nature Conservation Act, circular species protection sites around nesting trees of eagles, black storks and flying squirrels are formed by default (subsection 50 (2) of the Nature Conservation Act).

Statistics on species protection sites*	Number of species protection sites	Land area (ha)	Water area (ha)	Total area (ha)
31 December 2015	1386	80 850	10 215	91 065
Change compared to 2011	228 ↑	143 ↑	2637 ↓	2494 ↓

* The areas are calculated excluding overlaps between species protection sites.

As of mid-2011, 362 species protection sites have been added and protection has been revoked for 134 sites. By type of protection regime (overlaps between species protection sites are not excluded), 51 810 ha of species protection sites are located within limited management zones (of which 7361 ha is water and 44 449 ha land area) and 39 462 ha is located within conservation zones (of which 2861 ha is water and 36 601 ha land area). The area of the water part has decreased due to including the Sangelaiu seals species protection site in the Kihnu islets nature reserve.

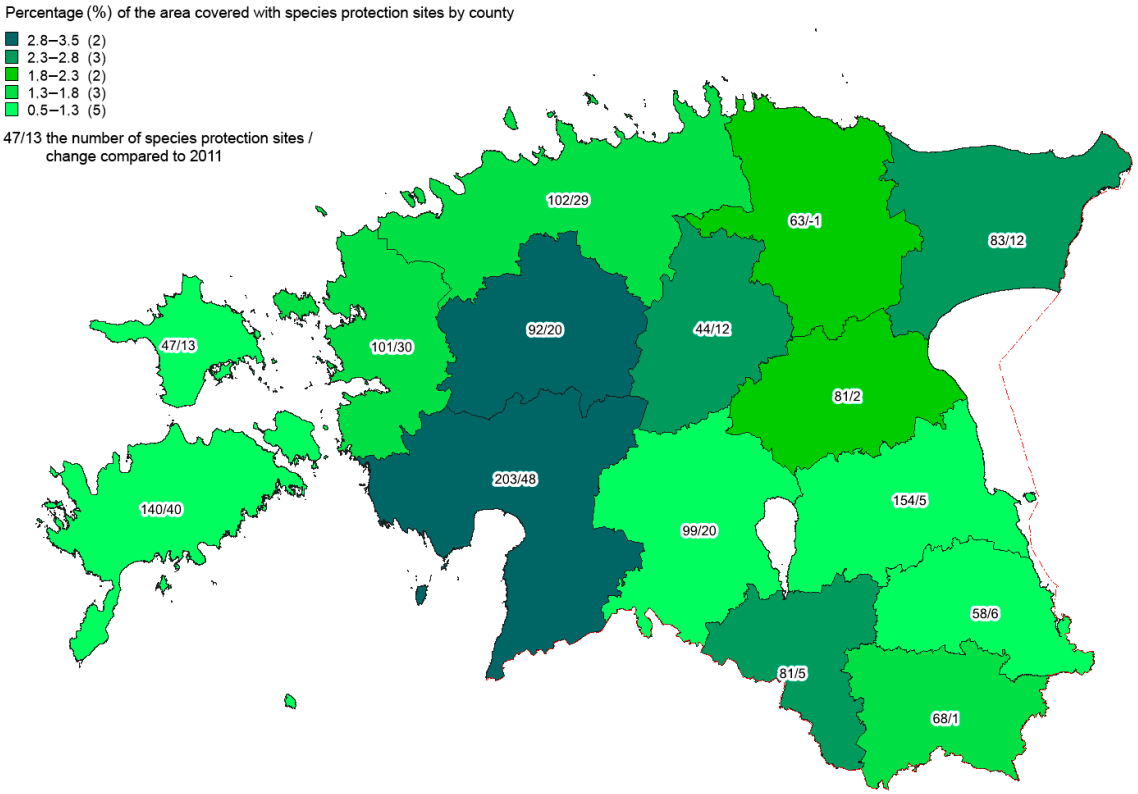


Figure 18. Percentage of the area covered with species protection sites by county (only the mainland portion is counted, excluding Lake Võrtsjärv and Peipsi). For each county, the total number of species protection sites and the change compared to 2011 (to the right of the slash) is given

By county, the number of species protection sites is the greatest in Pärnu (203) and Tartu counties (154). Pärnu County continues to have the greatest area of species protection sites – 16 602 ha. By percentage, Pärnu County and Rapla County have the highest percentage of land area covered by species protection sites (figure 18). The largest amount of species protection sites (540) aims at protecting the lesser spotted eagle. By area, capercaillie has the most species protection sites – 62 209 ha. The area of the species protection sites has decreased compared to 2011, because several capercaillie species protection sites are now part of nature reserves (mainly Sirtsi nature reserve).

By the end of 2015, 569 species protection sites had been approved by ministerial regulations, while the remaining are circular species protection sites formed around the nesting spots of eagles and black storks pursuant to the Nature Conservation Act. Since 2011, species protection sites have been established by ministerial regulations, among others, for the long-stalked cranesbill, white-tailed eagle, lesser spotted eagle and the northern goshawk. Nearly two thirds (376) of the species protection sites approved by a ministerial regulation have been established for the protection of birds, followed by vascular plants (76) and mammals (45) (figure 19).

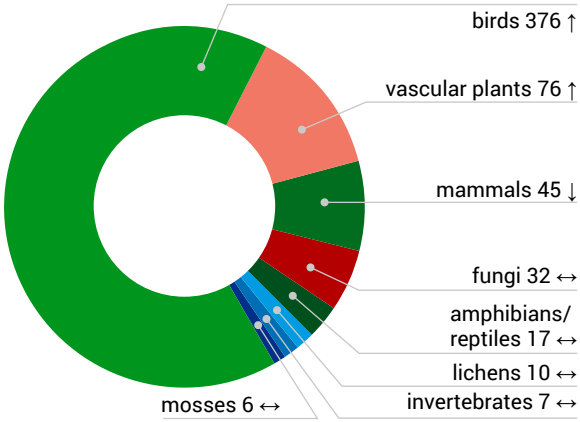


Figure 19. Number of species protection sites established by the regulations of the Minister of the Environment by species groups, and the trends of changes compared to 2011

Photographer: Aarne Tuule

Photo 11. Northern goshawk nest located in the city of Tallinn on a protected landscape. The nest was found in the 1970s and has been inhabited ever since. For the protection of the Northern goshawk, 13 new species protection sites were established in 2015

2.2.1.5 Protected nature monuments

A protected nature monument is a living or inanimate natural object with scientific, aesthetic or historical and cultural value, such as a tree, spring, erratic boulder, waterfall, rapids, bank, terrace, outcrop, cave, karst, or a group thereof, protected on the basis of the Nature Conservation Act (subsection 4 (6)). A protected nature monument is surrounded by a limited management zone 50 metres in radius unless a smaller perimeter has been determined in the decision on placing the protected nature monument under protection. If a protected nature monument is formed by a group of objects (such as a boulder field, group of trees), the boundary of the limited management zone is deemed to be the notional line

circumscribing the external points of the objects. The land underlying a group of objects is also included in the limited management zone. The Nature Conservation Act prohibits activity that could harm the status or appearance of a protected nature monument, more precise rules have been established by the Minister of the Environment in the protection rules of protected nature monuments.

Statistics on protected nature monuments	Number	Area including surrounding limited management zone (ha)
31 December 2015	1214 (of which trees and groups of trees make up 723, boulders and boulder fields 373, other objects 118)	1209
Change compared to 2011	17 ↑ (trees: 7 ↑; erratic boulders: 6 ↑; other objects: 4 ↑)	37 ↑

* The arrows indicate the directions of changes compared to 2011.

Changes in 2011–2015: protection has been revoked for 11 nature monuments in Valga County, 1 nature monument in Tartu County and 7 nature monuments in Ida-Viru County, which had lost their nature conservation value. Preliminary work for writing off objects, which have lost their value or are no longer extant, has been done in other counties as well and the corresponding draft regulations are pending in the area of administration of the Ministry of the Environment. Thus, the changes in the number of protected nature monuments in 2011–2015 are caused by continuous arrangements in the Environmental Register data (e.g. it has been discovered that the register lacks any record of an object placed under protection decades ago but has been later forgotten), rather than revoking objects no longer extant or having lost their nature conservation value.

Photographer: Reigo Roasto

Photo 12. Protected nature monument Turje cellar in Uuri village, Lahemaa National Park. According to a legend, this was the location of Devil's tavern where the vodka spring flowed

Harju County has the largest number of protected nature monuments (241), including the municipality with the most protected nature monuments, the city of Tallinn. There are 118 protected nature monuments in Tallinn. Ida-Viru County has the smallest number of protected nature monuments (30) (figure 20).

Trees under protection make up the largest share of protected nature monuments (60%). Of tree species, oaks are by far represented the most. They are followed by pines and lindens.

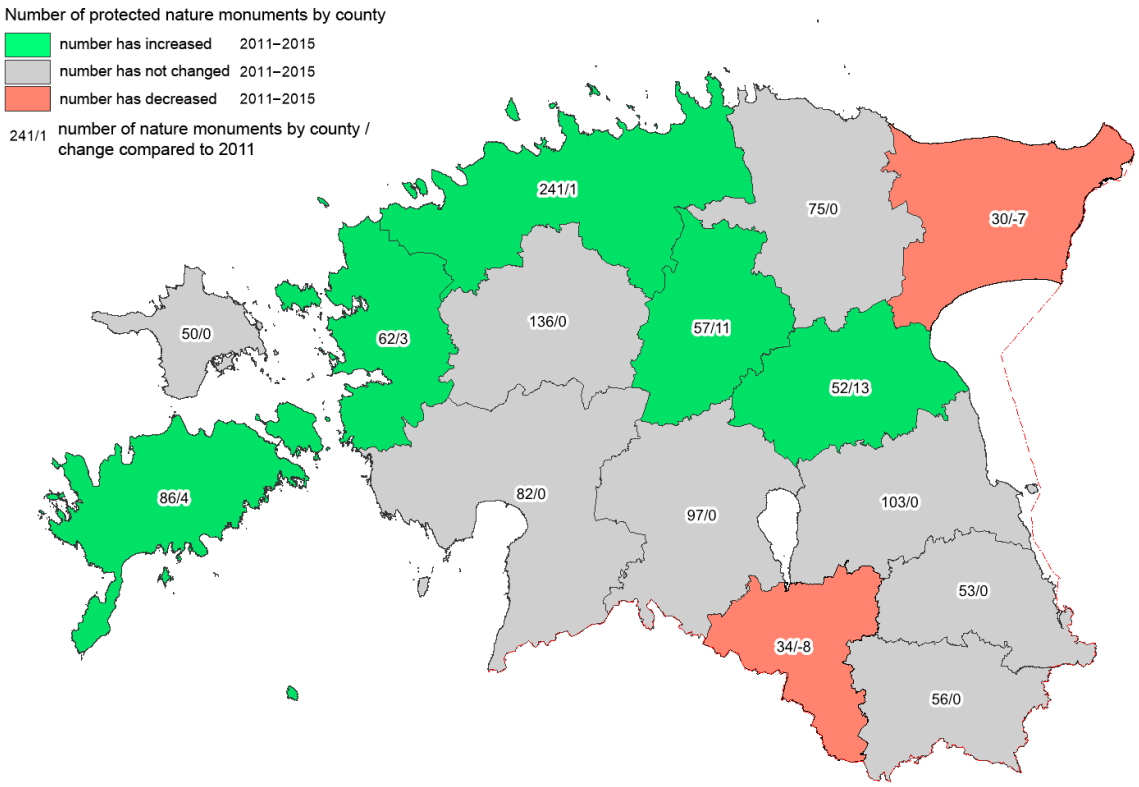


Figure 20. Number of protected nature monuments by county. The numbers of nature monuments and changes include the nature monuments that have been perished or the location of which is unknown, but which have not been removed from legal protection yet

2.2.1.6 Natural objects protected at the municipal level

A natural object protected at the municipal level may be a landscape, valuable cropland, valuable natural community, individual element of a landscape, park, green area or an individual element of landscaping, which has not been placed under protection as a protected nature monument and is not located within a protected area (subsection 4 (7) of the Nature Conservation Act). The objective of nature conservation at the municipal level is to protect valuable landscapes or the individual elements thereof that represent the special character, culture, settlement and land use, as well as determining the terms and conditions of their use by the local government (section 43 of the Nature Conservation Act). They may be placed under protection by plans or regulations of the municipality or city council.

Statistics on natural objects protected at the municipal level	Number	Land area (ha)	Water area (ha)	Total area (ha)
31 December 2015	20	3139	0	3139
Change compared to 2011	1 ↑	408 ↓	0	408 ↓

Changes in 2011–2015: at the end of 2011, the Taterma junipers located in Käina municipality, Hiiu County were entered into the register as a natural object protected at the municipal level. In 2013, the Tallinn city council placed the 274 ha Pääsküla bog located in the city of Tallinn under protection. In 2014, the 682 ha Pahkla protected landscape was removed from the register on the basis of a court judgment. Therefore, the area of the objects has decreased by a total of 408 ha. Natural objects protected at the municipal level are presented in figure 21.

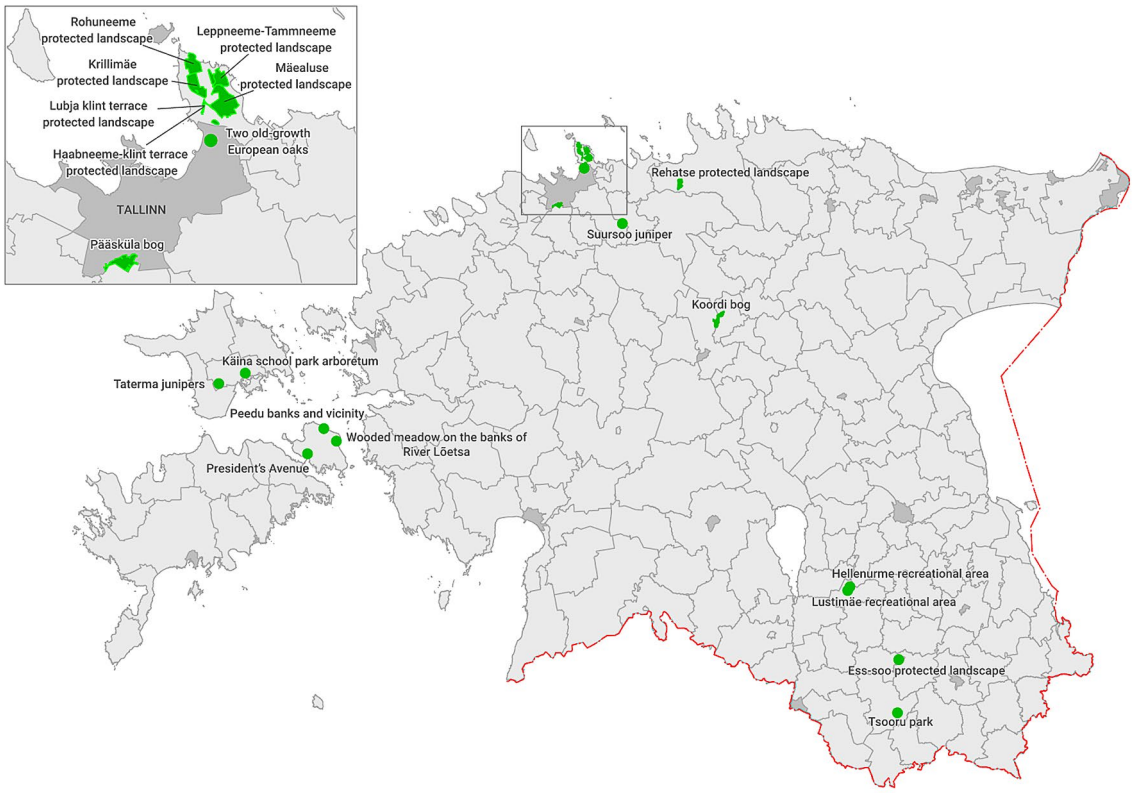


Figure 21. Natural objects protected at the municipal level. Municipality borders are given as at 2015. Changes in the administrative division compared to 2011 are given in the introduction

2.2.2 Woodland key habitats

A woodland key habitat is an area of up to seven hectares, which needs protection, is located outside a protected natural object and where the likelihood of narrowly adapted, endangered, vulnerable or rare species is high (section 23 of the Forest Act). The protection of woodland key habitats in state forests is organized by the State Forest Management Centre on the basis of a directive of the Minister of the Environment. To protect woodland key habitats in private forests, forest owners can enter into a contract with the Private Forest Centre whereby the owner undertakes to refrain from activities that may lead to the damage or destruction of the woodland key habitat. In return, the state compensates the owner for material revenue foregone.

In the following statistics and comparison only the data of woodland key habitats pursuant to the Forest Act is provided.

Statistics on woodland key habitats	Number	Area (ha)	Average size (ha)
31 December 2015	4830	9300	1.9
Change compared to 2011	142 ↓	1028 ↑	0.2 ↑

4830 woodland key habitats with a total area of 9300 ha conformed to the Forest Act as at 31 December 2015.

Changes in 2011–2015: compared to the status of 1 July 2011, the number of woodland key habitats has decreased, yet their total area has increased. As at 31 December 2015, 30% of the area of woodland key habitats is located on private land, 66% on state land, 2% on unregistered land and a total of 2% on municipal, mixed and public land (figure 22).

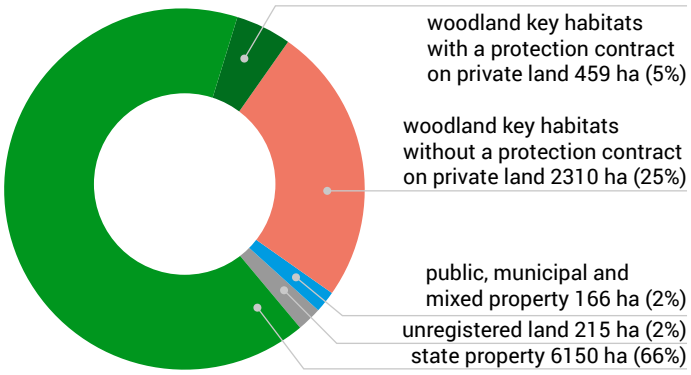


Figure 22. Distribution of woodland key habitats on the basis of protection status and form of ownership

Counties with the largest and smallest area of woodland key habitats have not changed compared to 2011 – the total area is the largest in Pärnu County (1434 ha, 15.4% of the total area) and the smallest in Põlva County (224 ha, 2.4% of the total area) (figure 23).

Similarly to 2011, Pärnu County has the largest number of woodland key habitats protected under a contract (89 woodland key habitats) and Järva County has the smallest number (2 woodland key habitats). In Pärnu County, the number of contracts has increased by 19 compared to the year 2011, in Järva County, the number has decreased by one.

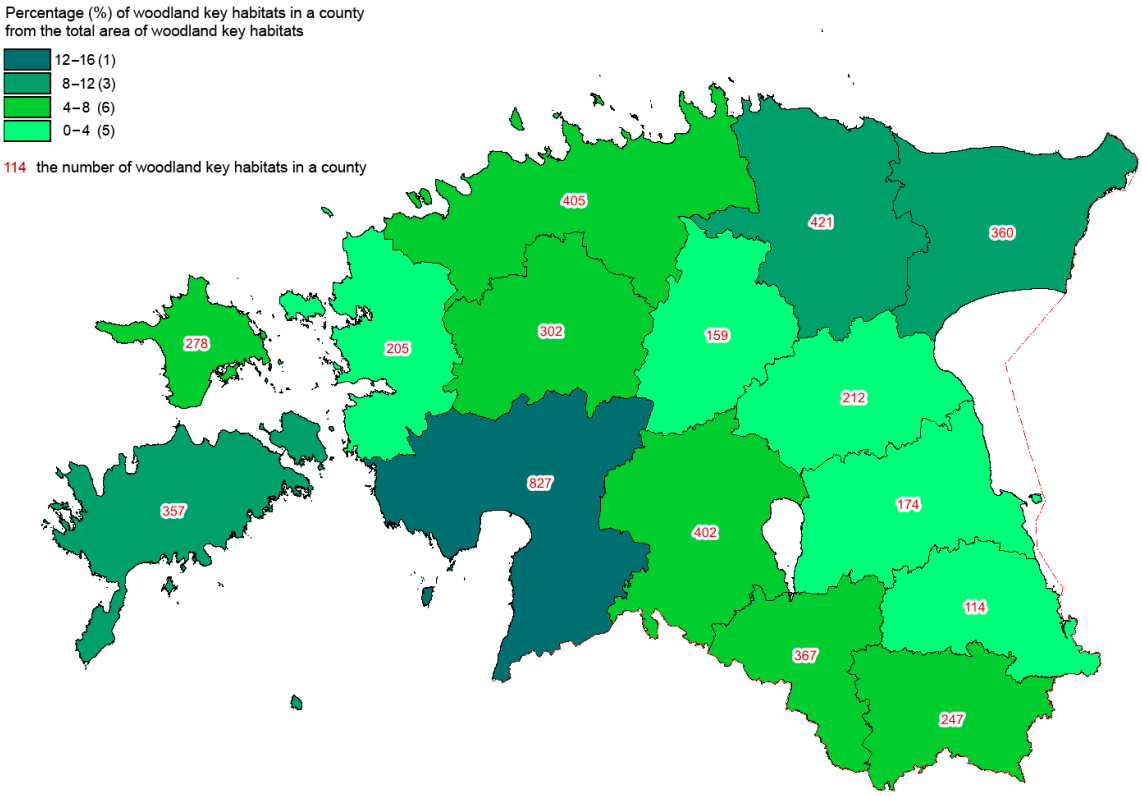


Figure 23. Distribution of woodland key habitats by county

3. Conservation management

This chapter gives an overview of the aspects related to the conservation management of natural objects, starting with the description of the procedure for placing them under protection and the number and scope of protected objects planned in the reference period (section 3.1). Sections 3.2 and 3.3 address the distribution of protected natural objects with a surface area into protection zones and on the basis of the form of ownership. This chapter also describes the subsidies allocated for the management and restoration of semi-natural habitats, compensations for nature conservation restrictions both in agricultural and forest land (section 3.4), as well as compensation for damages caused by animals important from the standpoint of nature conservation (section 3.5). Section 3.6 gives an overview of the action plans put in place for conservation management and their implementation, and chapter 3.7 covers violations committed in the field of the environment during the reference period. Section 3.8 deals with ecosystem services and the concept of the green network related to it. The high-priority area, which is the promotion of environmental awareness, is discussed in section 3.9.

3.1 Planned protected objects and the procedure for placing an object under protection[1]

Proposal to place an object under protection

Everyone has the right to submit a proposal to place a natural object under protection. The proposal to place an object under state protection must be submitted to the Ministry of the Environment. The proposal to place an object under protection at the municipal level must be submitted to the local government where the object is located. A proposal to place a natural object under protection must contain the justification and objective for placing the natural object under protection. A map indicating the location and borders of the natural object, as well as the natural values for the protection of which the proposal was made, a description of the restrictions planned for the protection of the natural values, and an estimation of the costs related to placing the object under protection and organizing the protection must be added to the proposal.

Then, the Ministry of the Environment (or the municipal government if the proposal is to place an object under protection at the municipal level) arranges for the expert assessment of the justification and purposefulness of placing the natural object under protection and the assessment of the purposefulness of the planned restrictions by involving persons who have relevant expertise in the field (i.e. the experts). It is evaluated in the course of the expert assessment whether the natural object has the prerequisites for being placed under protection pursuant to the Nature Conservation Act and whether placing the object under protection is purposeful. The prerequisites for placing a natural object under protection are

[1] The procedure for placing an object under protection described here and applied so far is being revised since the end of the year 2016.

that the object is at risk, rare or typical, has scientific, historic, cultural or aesthetic value or is subject to protection under an international agreement.

Proceedings to place an object under protection

If based on the expert opinion, it is clear that the natural object lacks the prerequisites required by the Nature Conservation Act for placing the object under protection or if placing the object under protection is not purposeful, the Ministry of the Environment / local government may refuse to proceed with the matter. The refusal will be communicated to the person who submitted the proposal. If based on the expert opinion, a natural object has the prerequisites for being placed under protection and if placing the object under protection is purposeful, the proceedings for placing the natural object under protection will be initiated. The Ministry of the Environment will initiate the proceedings for placing a natural object under state protection. The local government will initiate the proceedings for placing a natural object under protection at the municipal level.

Photographer: Toomas Hirse

Photo 13. The burnt orchid, a protection category II species, belongs to the Estonian Red List of endangered species. The Estonian Orchid Protection Club chose this species as orchid of the year in 2011

The authority conducting the proceedings for placing a natural object under protection, i.e. the Environmental Board on the state level, will publish a notice concerning the initiation of the proceedings (except in the case of species, species protection sites and fossils) in the official publication *Ametlikud Teadaanded*, at least one national daily newspaper, and a local newspaper. A notice concerning the initiation of the proceedings for placing a natural object under protection at the municipal level will be published in the local newspaper (except in the case of placing under protection with plans). The notice will provide information about the possibilities to examine the proposal and draft decision to place the natural object under protection, the place and time of a public discussion, the term for filing objections and propositions, as well as about the further steps in the proceedings and the estimated time of termination of the proceedings. In addition, the authority conducting the proceedings will forward the notice containing this information to the local authority where the natural object is located and to the owner of the immovable of the location of the natural object by registered mail or electronically. The draft decision for placing a natural object under protection together with documents obtained or prepared in the course of the proceedings will also be displayed for public examination at the facilities of the Environmental Board and the local authority of the location of the natural object. The public display of documents lasts for at least two weeks.

Everyone can submit justified proposals and objections for placing the natural object under protection during the public display of the document and by the determined term. The initiator of the proceedings will reply to all proposals and objections filed in the course of the public display within 30 days after the end of the display. After the proceedings regarding the proposals and objections, a public discussion will be organized about placing the natural object under protection, except when no proposals or objections were filed and a proposal to omit the public discussion of the matter had been made in the notice about the initiation of the proceedings to place the natural object under protection. If, as a result of the public display or public discussion, the main positions expressed by the resolution on placing the natural object under protection do not change, the proceedings will continue. If the main positions change, the initiator of the proceedings will publish a new notice and organize a new public display and discussion.

The proceedings end with placing the natural object under protection by the Government of the Republic or the Minister of the Environment. The Government of the Republic will place protected areas and limited-conservation areas under protection and establish the lists of category I and II species. The Minister of the Environment will place species protection sites and protected nature monuments under protection and establish the list of category III species. The municipal council will place a natural object under protection at the municipal level.

If in the course of the proceedings it becomes evident that it is not purposeful to protect the natural object with regard to which the proceedings were initiated, a decision to refuse to place the natural object under protection will be made. The Minister of the Environment will make the decision to refuse to place the natural object under protection at the state level. The local government will make the decision to refuse to place the natural object under protection at the local level.

The right to suspend the administrative decision

As of making the proposal to place a natural object under protection, the administrative authority (e.g. the Environmental Board or local government) will have the right to suspend the proceedings for adopting an another administrative decision (e.g. forest notification or building permit), if adopting it could affect the state of the natural object specified in the proposal. The proceedings for making the administrative decision will be suspended until a decision to place the natural object under protection or refusal to place the natural object under protection is made, but not for longer than 28 months. The relevant provision of the Nature Conservation Act (subsection 8 (6)) entered into force on 1 May 2013.

Number and area of planned objects

As at 31 December 2015, there were 502 planned protected objects with initiated proceedings in the Environmental Register with a total area of 326 180 ha. There were 333 natural objects (total area 428 543 ha) with a proposal to place these under protection. When excluding those planned protected areas which overlap with existing natural objects under protection (including areas where the protection rules are being revised), the area of the new planned protected areas was 90 441 ha. This is a little less than the area of Hiiu County. Land area constitutes 36 612 ha (40.5%) of this and water area (marine area, Lake Peipsi, and Lake Võrtsjärv) 53 829 ha (59.5%).

Statistics on planned objects	Number	Land area (ha)*	Water area (ha)*	Total area (ha)*
31 December 2015	835	36 612	53 829	90 441
1 July 2011	707	41 361	85 542	126 903

* Not the total area of planned areas, but the area which is planned to be placed under protection in addition to that which is included in the current protected natural objects.

3.2 Protection regime

Protection rules. The protection regime for protected areas, species protection sites and protected nature monuments is determined by the protection rules. To the extent allowed by law, protection rules provide an additional level of detail to the specifications of the Nature Conservation Act. The Government of the Republic establishes separate protection rules for each protected area. The protection rules for protected parks and nature monuments are common for the object type (protection rules for protected nature monuments, protection rules for protected parks, arboretums and stands). For species protection sites, a protection regime is generally established by protection rules approved by the Minister of the Environment separately for each species or group of species, considering the special needs for protection of one or more species. No protection rules are drawn up for limited-conservation areas. The restrictions and permissible activities on limited-conservation areas are determined directly by the Nature Conservation Act, and the conservation management activities are put in place in the conservation management plan.

The protection rules shall set out the extent of one or several protection zones with equivalent or different degrees of restrictions, and determine whether the restrictions provided by the Nature Conservation Act are applicable in part, in full, permanently or temporarily in each protection zone (section 12 of the Nature Conservation Act). Different protected natural objects with a surface area are sectioned into different zones (table 14).

Table 14. Distribution of protected objects into zones. *Other protection regime* means restrictions that do not stem from the provisions for strict nature reserves, conservation zones or limited management zones

Protected object	Strict nature reserve	Conservation zone	Limited management zone	Other protection regime
Nature reserve	x	x	x	
Protected landscape		x	x	
National park	x	x	x	
Protected area with unrevised protection rules			x*	
Limited-conservation area				x
Species protection site		x	x	
Protected nature monument			x	
Natural object protected at the municipal level			x	
Woodland key habitat				x

* Protected areas with unrevised protection rules are subject to a partial limited management zone protection regime, unless the protected area's protection regime sets forth otherwise (subsection 91 (4) of the Nature Conservation Act).

A strict nature reserve is a land or water area of a protected area whose natural status is unaffected by direct human activity and where the preservation and development of natural biotic communities is ensured only through natural processes. All types of human activities are prohibited within a strict nature reserve and persons are prohibited from staying in such reserves, except in exceptional cases. These cases are for the purposes of supervision, rescue work or administration and organization of the protection of the natural object, as well as for the purpose of scientific research, monitoring and assessing the status of the natural object only with the consent of the manager of the protected area (section 29 of the Nature Conservation Act).

Statistics on strict nature reserves	Number	Land area (ha)	Water area (ha)	Total area (ha)
31 December 2015	29	7097	944	8041
Change compared to 2011	↔	36 ↑	5 ↑	42 ↑

A conservation zone is a land or water area of a protected area prescribed for the preservation of natural and semi-natural biotic communities established or to be developed therein (section 30 of the Nature Conservation Act). Natural resources located in a conservation zone are not counted as commercial reserves. Restrictions on access at certain times may be established for conservation zones (such as during nesting). Based on whether the objective of protection is to keep the communities in natural or semi-natural status, conservation zones are distinguished as either wilderness or managed.

Statistics on conservation zones	Number of zones / change*	Land area (ha) / change	Water area (ha) / change	Total area (ha) / change
Managed conservation zone of a protected area	640/75 ↑	164 168/1868 ↓	13 741/72 ↓	177 909/1940 ↓
Wilderness conservation zone of a protected area	321/5 ↑	16 910/353 ↓	24 848/136 ↓	189 758/489 ↓
Conservation zone of a species protection site	1343/230 ↑	36 601/1253 ↑	2861/666 ↓	39 462/587 ↑

* The numbers to the left of the slash are as at 31 December 2015; and to the right of the slashes, the changes compared to 1 July 2011 are given. The arrows indicate the directions of changes.

A protected area's wilderness conservation zones conserve the natural development of natural processes (such as mires and natural forests). Managed conservation zones are areas where human intervention is often needed for preserving natural values (such as maintaining wooded meadows, mowing, grazing of coastal pasture land, brush cutting, etc.).

A limited management zone is a land or water area of a protected area where economic activity is permitted considering the restrictions set forth in the Nature Conservation Act (section 31 of the Nature Conservation Act).

Statistics on limited management zones	Number of zones / change*	Land area (ha) / change	Water area (ha) / change	Total area (ha) / change
Limited management zone of a protected area	395/48 ↑	222 645/206 ↑	70 247/17 538 ↑	292 893/17 745 ↑
Protected area with unrevised protection rules	84/23 ↓	8368/19 562 ↓	160/208 ↓	8528/19 770 ↓
Protected parks and stands	532/7 ↓	4681/236↓	0 ↔	4681/236 ↓
Limited management zone of a species protection site	289[1]/36 ↑	44 449/1047 ↓	7361/1972 ↓	51 810/3019 ↓
Limited management zone of a protected nature monument	1214/17 ↑	1209/37 ↑	0 ↔	1209/37 ↑
Limited management zone of a natural object protected at the municipal level	22/1 ↑	3139/408 ↓	0 ↔	3139/408 ↓

* The numbers to the left of the slashes are as at 31 December 2015; and to the right of the slashes, the changes compared to 1 July 2011 are given. The arrows indicate the directions of changes.

[1] There was an error in the publication "Estonian Nature Conservation in 2011" – there should have been 253 instead of 1113.

Total numbers of protection zones.[1] The zones with the strictest protection regime – strict nature reserves – account for 0.002% (↔) of Estonian territory (same as in 2011). Conservation zones make up the largest part – a total of 9% (1%, ↑), followed by limited management zones – 7% (1%, ↑) (figure 24). Compared to 2011, the areas of conservation zones and limited management zones have increased by one percent.

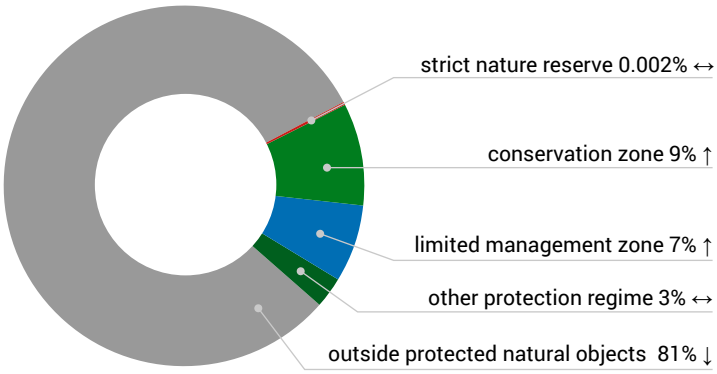


Figure 24. Percentage of protection zones from Estonian land territory

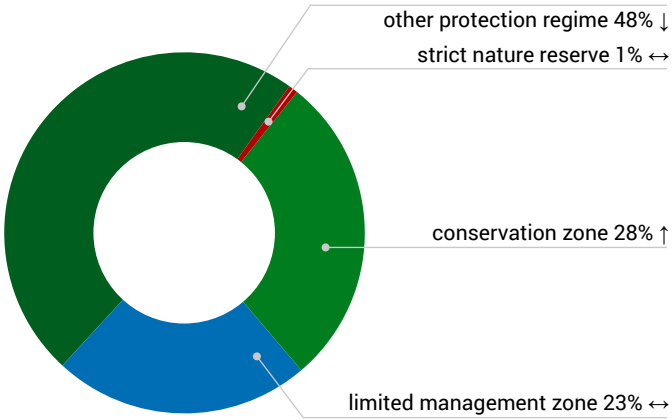


Figure 25. Distribution of protected areas into protection zones (including marine areas)

Pursuant to the Land Tax Act, the land of strict nature reserves and conservation zones of protected areas and the land of conservation zones of species protection sites are exempt from the land tax. The land of the limited management zones of protected areas, species protection sites, and protected nature monuments, as well as the land of limited-conservation areas are exempt from the land tax in the amount of 50% of the rate of the land tax.

Therefore, changes in the extent of protection zones also reflect changes in land tax liability.

Of the zones of the protected areas (figure 25), other protection regime (all other restrictions that do not stem from the provisions for strict nature reserves, conservation zones or limited management zones)

[1] As some objects may overlap spatially, the digital spatial data were processed to exclude the overlaps.

accounts for the highest percentage because it includes limited-conservation areas. The percentage of other protection regime has decreased by 3% (↓), because a part of limited-conservation areas has been included as part of protected areas. This includes both land and marine area. There are relatively equal percentages of conservation zone and limited management zone – 28% and 23%, respectively. In the case of conservation zones, an increase of 3% (↑) has taken place. The percentage of limited management zone has remained the same compared to 2011.

IUCN conservation management categories. As at 31 December 2015, Estonia's protected areas are distributed between the IUCN categories[1] as provided in figure 26. Similarly to 2011, as at 31 December 2015, the greatest share in Estonia is comprised by areas with a protection regime corresponding to IUCN category VI. By percentage between the categories, the category IV areas now comprise more area than category Ib, the percentages of other categories have remained the same.

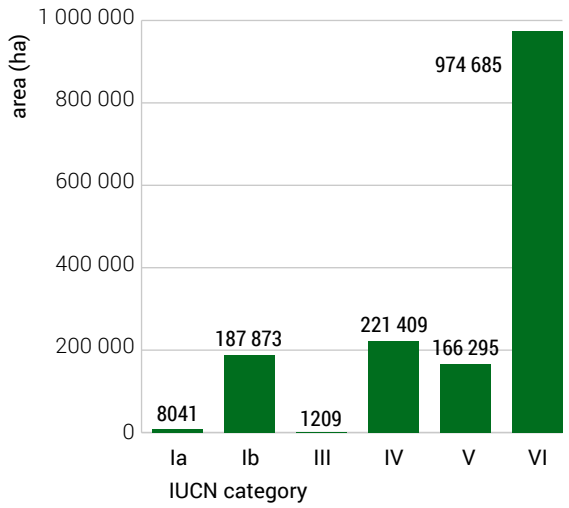


Figure 26. Distribution of Estonia's protected natural objects between IUCN categories by area (ha)

The distribution by protected areas and protection zones, and the changes that have taken place in 2011–2015 are as follows:

Ia – strict nature reserve; small increase in the area – 41 ha, ↑

Ib – wilderness part of a conservation zone, the most strictly protected part of a species protection site's conservation zone; the protection regime of zones has become less strict due to the revision of protection rules, which is why the total area of this category has decreased by 10 928 ha, ↓

III – protected nature monument; increase of 27 ha, ↑

IV – a managed part of a conservation zone, if it was established for species protection objectives, conservation zone of a species protection site; increase of 40 210 ha, ↑

V – a managed part of a conservation zone, established for other objectives, the limited management zone of a protected landscape, park, object protected at the municipal level; increase of 5767 ha, ↑

VI – a limited management zone within a nature reserve, national park or species protection site, limited-conservation area; increase of 2485 ha, ↑.

[1] The analysis is conducted on the basis of the Environmental Register data.

3.3 Land ownership

576 411 ha of protected areas are located on state land and 201 905 ha on private land. Compared to 2011, the percentage of state property has increased significantly and the percentage of unregistered land has noticeably decreased. In mid-2011, the percentage of state property was 60% and the percentage of unregistered land 13%. The percentages at the end of 2015 were 71.3% and 2.3%, respectively (figure 27). Thereat, the land area of protected areas has increased by 0.4% (from 18.1% to 18.5% of Estonian territory) only. Similarly to 2011, the share of private lands of protected areas is constantly 25%.

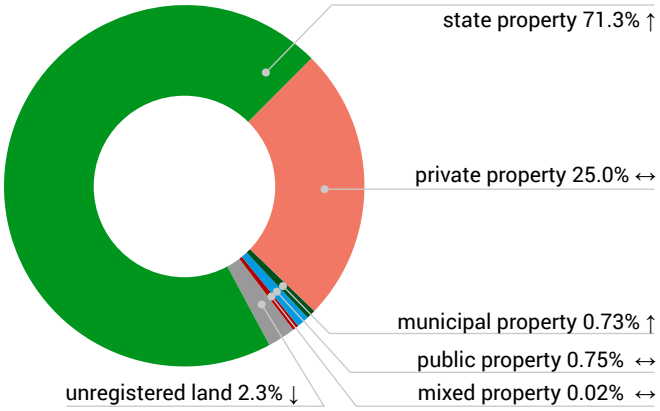


Figure 27. Distribution of land ownership and directions of changes compared to 2011 within protected areas

An increase in state property and a decrease in the percentage of unregistered land has taken place in all types of protected natural objects (figures 28–32). Objects protected at the municipal level are an exception; there, the percentage of unregistered land has slightly increased. In the case of objects protected at the municipal level, the overall changes in area have also been great (see section 2.2.1.6).

The percentage of private land has increased in limited-conservation areas, species protection sites and protected nature monuments, it has remained the same in protected areas and Natura 2000 areas and decreased in the case of objects protected at the municipal level. For limited-conservation areas and protected nature monuments, the percentage of private land is larger than the total share in all protected areas. 42% (47 145 ha) of limited-conservation areas and 65% (773 ha) of protected nature monuments are located on private land.

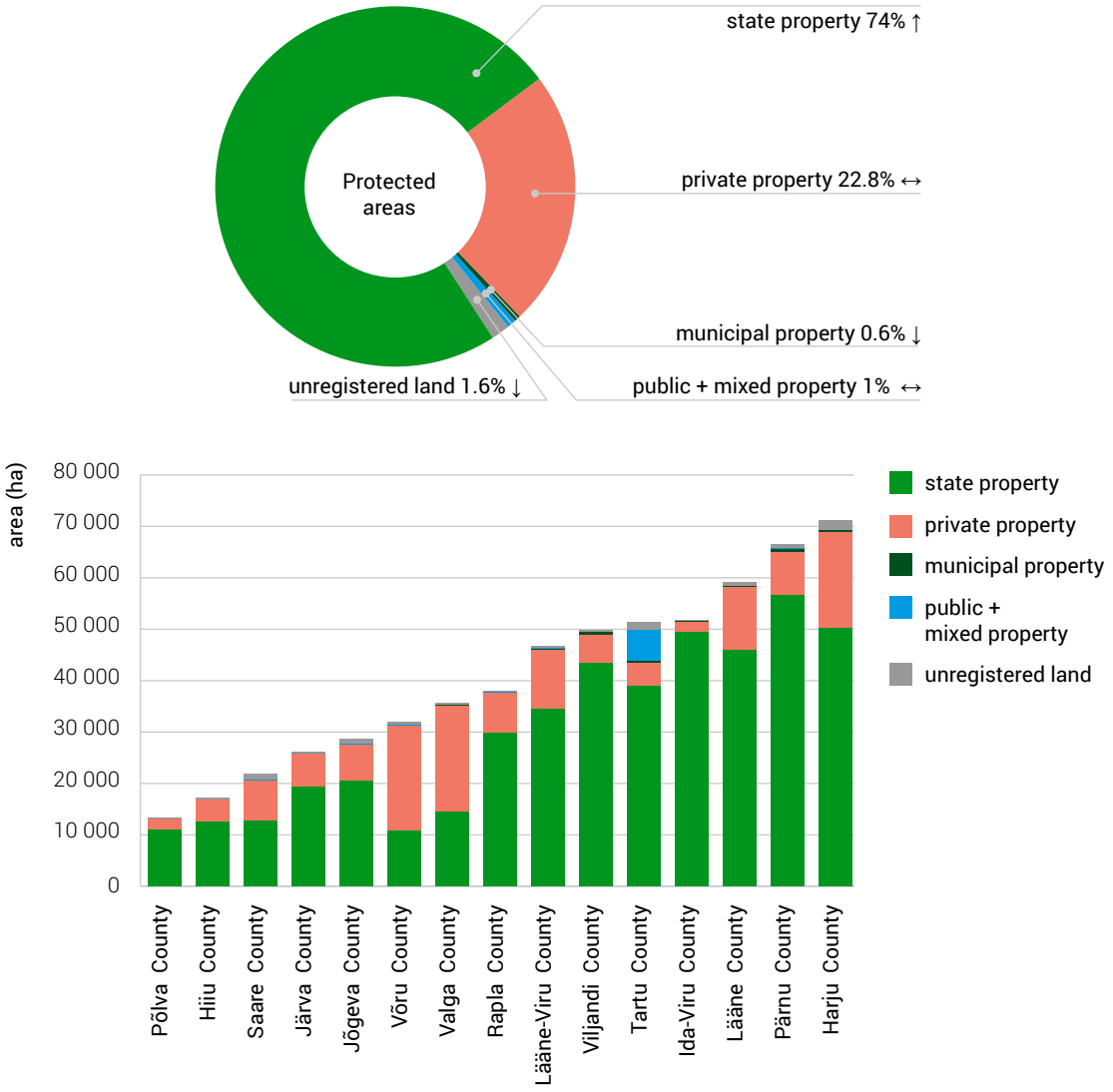


Figure 28. Distribution of land ownership and directions of changes compared to 2011 within protected areas

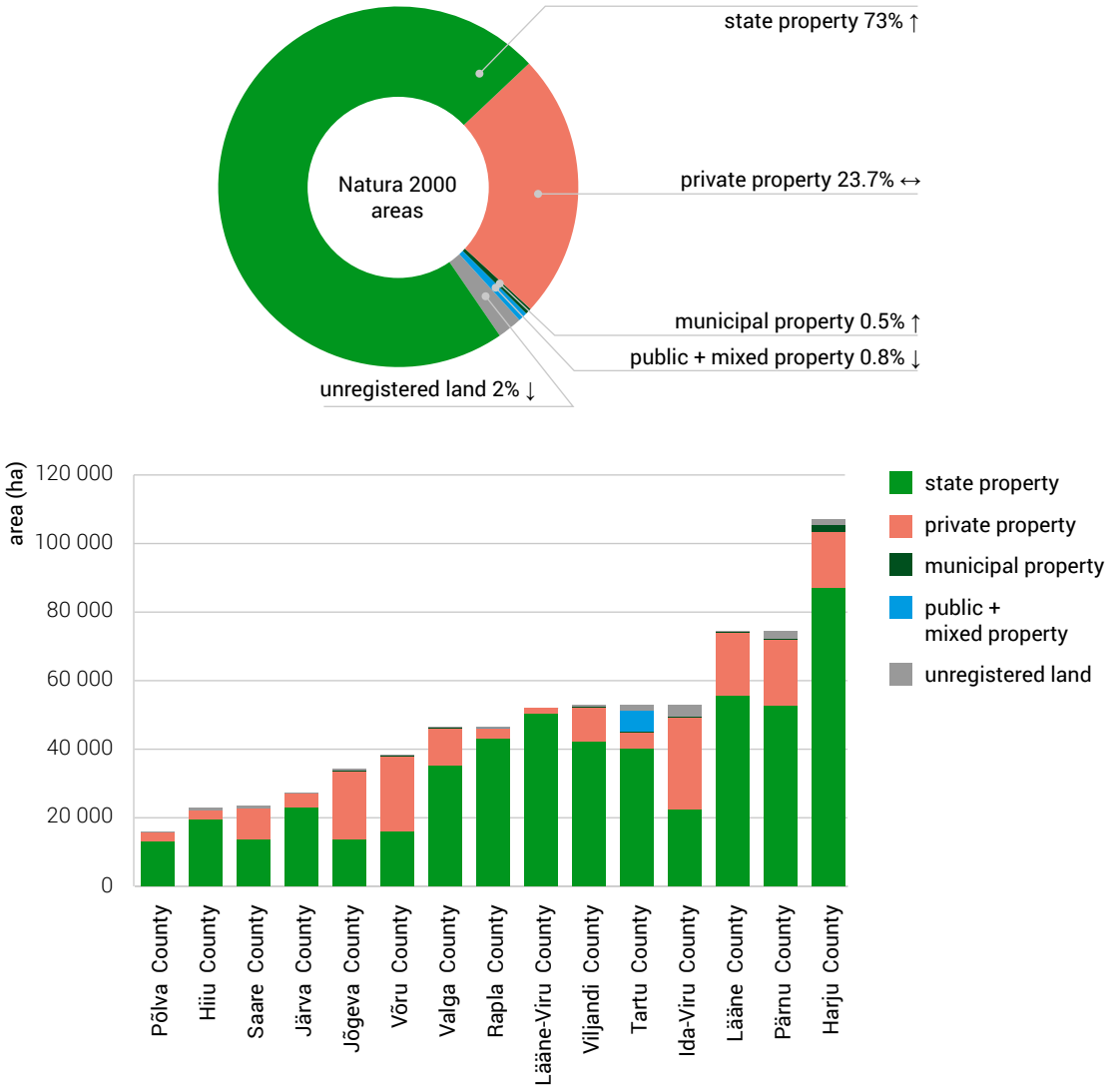


Figure 29. Distribution of land ownership and directions of changes compared to 2011 within Natura 2000 areas

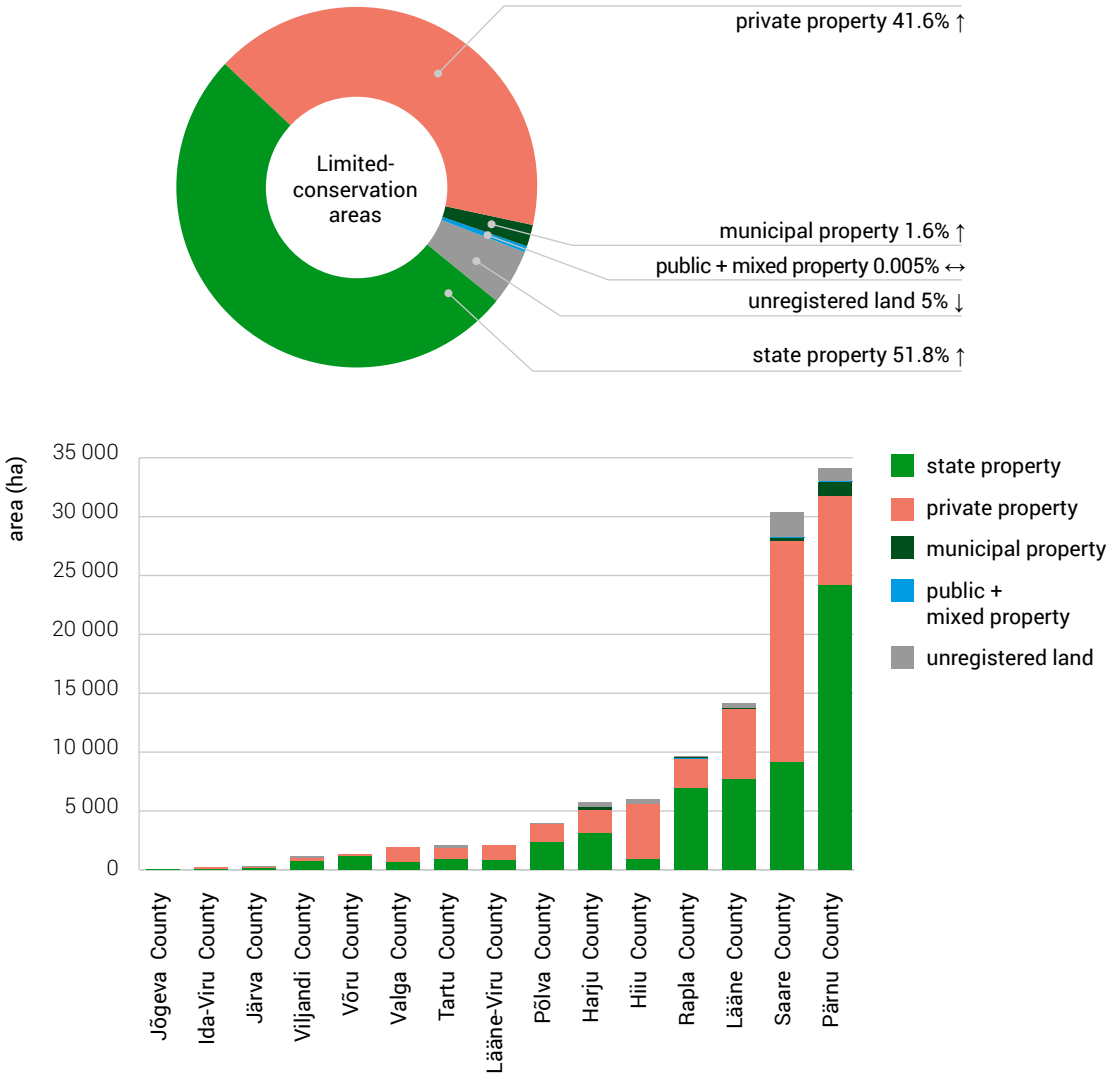


Figure 30. Distribution of land ownership and directions of changes compared to 2011 within limited-conservation areas

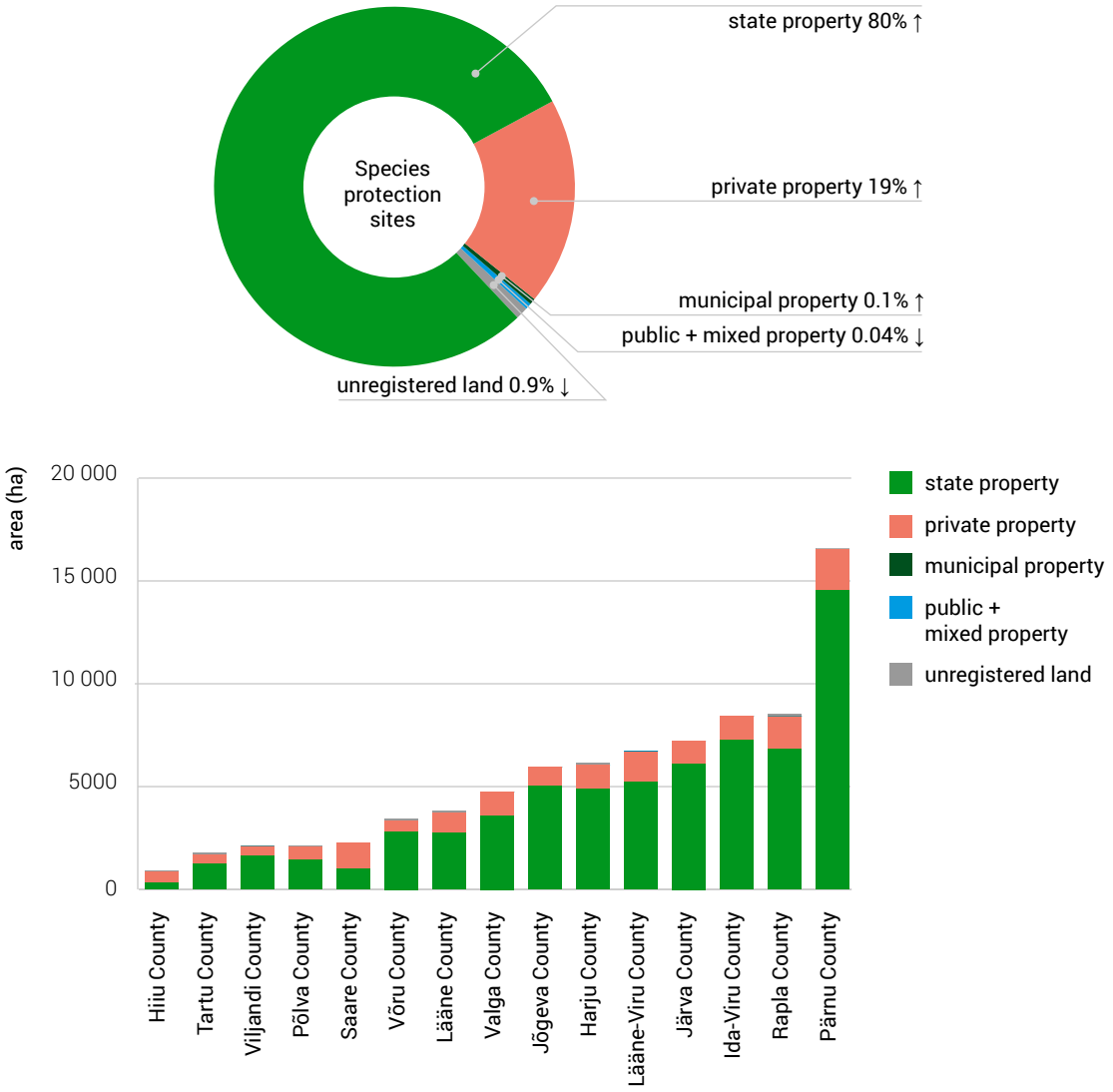


Figure 31. Distribution of land ownership and directions of changes compared to 2011 within species protection sites

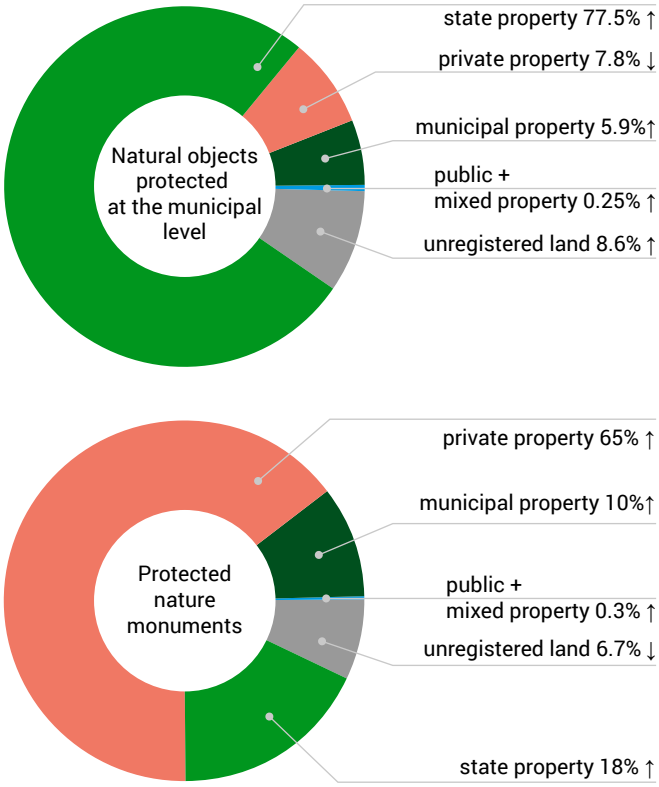


Figure 32. Distribution of land ownership and directions of changes compared to 2011 for protected nature monuments and natural objects protected at the municipal level

The trends by zones are the same as by types. By now, wilderness conservation zones are almost completely on state land. In 2011, the percentage of state land was 92% there, and by the end of 2015, 98%. Limited management zones of protected areas are the only zone type where the share of private land exceeds the percentage of state land. In the limited management zones of protected areas, private land makes up approximately 49% (116 386 ha) (figure 33).

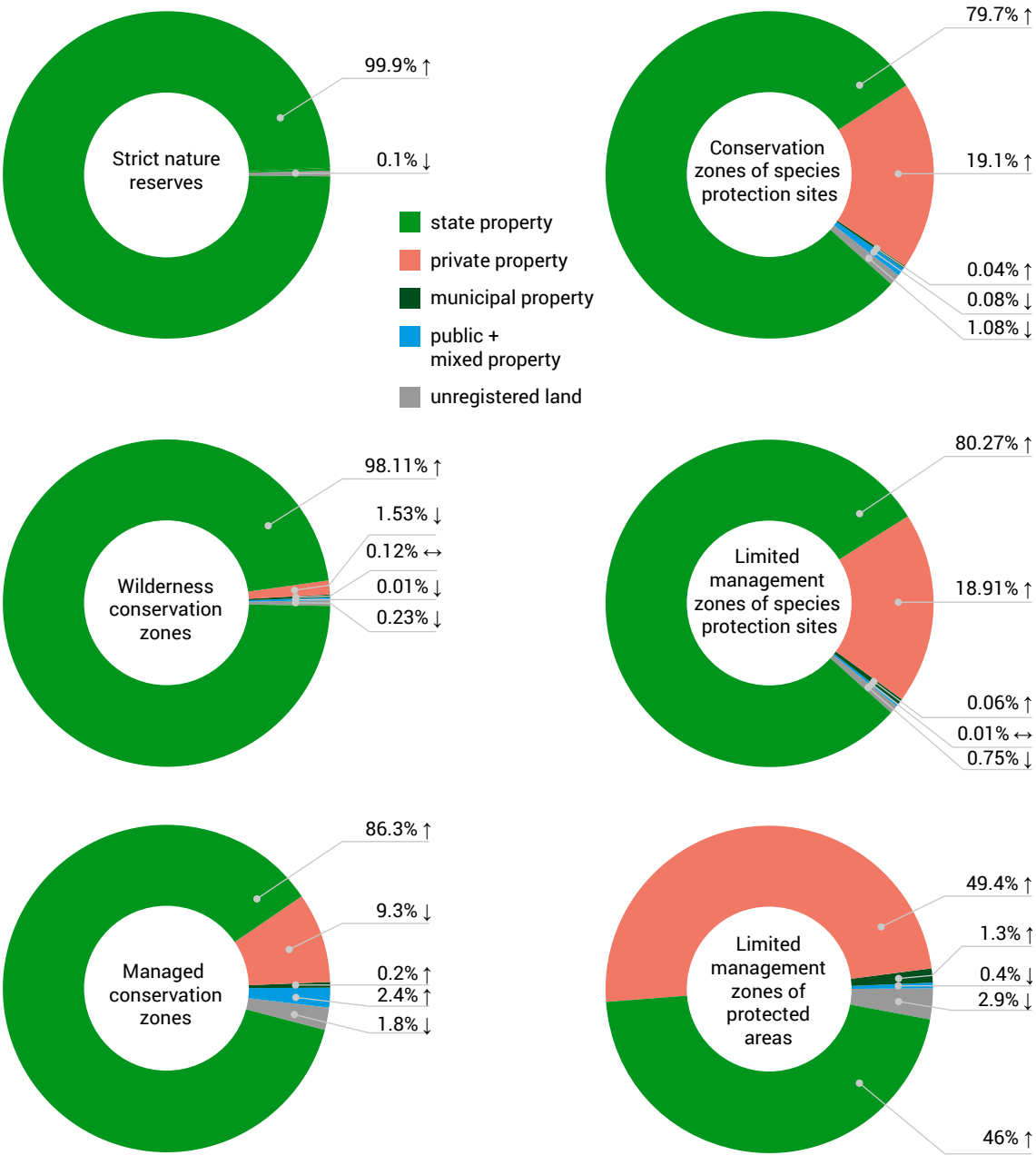


Figure 33. Distribution of land ownership and directions of changes compared to 2011within the protection zones of protected natural objects

3.4 Subsidies

Subsidies for restoration and maintenance of semi-natural habitats

Semi-natural habitats (see also section 5.2.3) are extremely rich in biodiversity and thus, it is essential that their favourable status is maintained in Estonia as well as throughout Europe. To restore and maintain these habitats, both European Union and state subsidies are paid. **Nature conservation subsidy** can be applied for to **restore** semi-natural habitats. The subsidy is paid pursuant to section 18 of the Nature Conservation Act and based on the terms and conditions established by a regulation of the Minister of the Environment to carry out restoration works of semi-natural habitats located in protected areas, limited-conservation areas or species protection sites. Activities eligible for the subsidy are the removal of brush and reed and reducing the canopy density of the tree layer; erecting cattle fences on the restored area is also supported. The rates of the subsidies vary, depending on brush density, habitat type and other factors. The Environmental Board is authorized to deal with the nature conservation subsidy.

Photographer: Bert Holm

Photo 14. Coastal meadow restored during the LIFE programme project URBANCOWS in the city of Pärnu

In 2006 and 2007, the paid amounts of the nature conservation subsidy were nearly one million euros, dropping nearly three times by 2008 and were between ca 450 000 to 470 000 euros in 2009–2010. The amounts also varied in the subsequent years (table 15).

Table 15. Nature conservation subsidy in 2011–2015

Year	Number of recipients	Approved area (ha)	Amount (in euros) paid
2011	165	1366	624 843
2012	144	1226	399 884
2013	152	1958	463 935
2014	193	2730	730 295
2015	225	2873	699 074

Subsidy for the maintenance of semi-natural habitats can be applied for mowing or grazing semi-natural habitats which are deemed to be suitable for maintenance, are located within a protected natural object, and have been entered into the Environmental Register. In 2007–2013, the subsidy was paid from the means of the European Agricultural Fund for Rural Development in the framework of the Estonian Rural Development Plan's measure 2.3 "Agri-environmental support" and from 2014, from measure 10.1 "Payment for agri-environment-climate commitments". The subsidy unit rate is 85–450 euros per hectare per year, depending on the type and characteristics of the meadow. Subsidy for the maintenance of semi-natural habitats cannot be applied for land for which other similar subsidies, including nature conservation subsidy, is applied. The Estonian Agricultural Registers and Information Board (ARIB) is authorized to deal with this subsidy.

Over the period of 2007–2011, the area of semi-natural habitats maintained with the support of maintenance subsidy increased from 15 000 hectares to more than 23 000 hectares (about 16 000 hectares to 25 000 hectares were applied for). In 2012–2015, the area which received the subsidy varied between ca 23 000 and 25 000 ha (about 25 000 to 27 000 ha were applied for) (table 16). Map analysis indicates at least one year during the period of 2007–2015 when maintained semi-natural habitats made up a total of nearly 35 000 hectares. This is about one third of all semi-natural habitats eligible for the subsidy and nearly one fifth of all meadows in Estonia (see also section 5.2.3).

Table 16. Subsidy for the maintenance of semi-natural habitats in 2011–2015

Year	Number of recipients	Approved area (ha)	Amount (in euros) paid
2011	916	23 448	4 412 683
2012	913	24 555	4 344 073
2013	934	23 400	4 355 694
2014	873	23 649	4 498 485
2015	817	24 933	3 799 514

In addition to the subsidies paid to restore and maintain semi-natural habitats, the Environmental Board orders various **nature conservation works** for the semi-natural habitats (see section 3.6).

Natura 2000 support for agricultural land

From 2006, users of agricultural land within Natura 2000 areas can apply for additional support intended to partially compensate the users of cropland for revenue forgone due to nature conservation restrictions. In 2006, the subsidy was paid under the name of subsidy for (Natura 2000) areas with environment-related restrictions and starting from 2007, from the means of the European Agricultural Fund for Rural Development in the framework of measure "Natura 2000 support for agricultural land" (measure 2.2 in 2007–2013; starting from 2014, measure 12.1) of the Estonian Rural Development Plan.

In 2007–2013, the rate of the compensation was 32.08 euros and starting from 2014, 27 euros per hectare per year. The compensation is additional to other area-based agricultural subsidies. To receive the compensation, the applicant must, in addition to the requirements for receiving the single agricultural assistance, also comply with requirements arising from the protection regime of the protected area, limited-conservation area or species protection site. Applicants for the compensation cannot apply for subsidies for the maintenance of semi-natural habitats of the same area. The Estonian Agricultural Registers and Information Board (ARIB) is authorized to deal with this compensation. Information about compensations paid in 2011–2015 is provided in table 17.

Table 17. Natura 2000 support for agricultural land in 2011–2015

Year of application	Number of applicants	Area applied for (ha)	Number of approved applications	Amount (in euros) paid
2011	1494	23 191	1458	717 222
2012	1623	23 937	1590	752 068
2013	1687	24 404	1659	770 240
2014	1716	24 841	1692	780 101
2015	1548	21 810	1528	576 021

Natura 2000 support for private forest land

Compensation for revenue forgone due to nature conservation restrictions can also be applied for private forest land located in the Natura 2000 network. From 2008, the compensation has been paid from the means of the European Agricultural Fund for Rural Development in the framework of measure "Natura 2000 support for private forest land" (measure 2.7 in 2007–2013; starting from 2014, measure 12.2) of the Estonian Rural Development Plan. The compensation rate is 60 euros per hectare per year in limited management zone, limited-conservation area and planned protected area (private forest land located within the Natura 2000 area, where establishing a protected area is in progress). In conservation zones, the rate of the compensation is 110 euros per hectare per year. Starting from 2015, the recipients must also pay income tax from the compensation.

The main requirements for receiving the compensation have remained the same. Owner of a private forest may apply for the compensation. In 2015, there were about 82 000 hectares of forest land in Estonia which would be eligible for the compensation. Eligible forest area must be at least 0.3 hectares large and entered as a forest into the Environmental Register. The boundary points of forest area which coincide with cadastral unit boundary line must be visually identifiable on site. Applicants for the compensation must not have violated the requirements of the Nature Conservation Act and Forest Act in the calendar year of application. The entire household must adhere to the obligatory household requirements and good agricultural and environmental conditions.

The number of recipients varies and has been between 4500 and 4700 in recent years. The approved area and amount of compensation has increased every year (with the exception of 2013), reaching nearly 58 000 hectares and 4 million euros (table 18). As from 2014, the budget of the measure is 4.012 million euros per year. Compared to the previous programme period (2007–2013), the annual budget has decreased by nearly 1.2 million euros.

If the budget does not cover the financing of all applications which meet the requirements, the smaller support rate is lowered, so the compensation rate for a limited management zone, limited-conservation area and planned area may become less than 60 euros per hectare per year. In 2015, the budget was sufficient to finance all applications which met the requirements.

Foundation Private Forest Centre is authorized to deal with this compensation.

Table 18. Natura 2000 support for private forest land in 2011–2016

Year	Number of recipients	Approved area (ha)	Amount (in euros) paid
2011	4738	54 266	3 723 409
2012	4698	55 019	3 776 038
2013	4502	54 960	3 762 806
2014	4699	56 098	3 866 285
2015	4651	57 742	3 985 913

3.5 Compensation for damages caused by animals

Damages caused by animals important from the nature conservation standpoint and expenses made to prevent these damages are compensated in Estonia. Species whose damages are compensated are the wolf, lynx, brown bear, grey seal, ringed seal, European mink, white-tailed eagle and osprey, and migrating common cranes, swans, geese and barnacle geese. In addition to the direct compensation for damages caused by the animal species listed, the objective of this nature conservation measure is to retain the balance of the relationship between humans and nature on a wider scale and to develop sustainable use of the environment. The Environmental Board is authorized to deal with the compensation for damages caused by animals.

Damages caused by animals have been compensated since 2009. The compensation is carried out pursuant to the procedure provided in the Nature Conservation Act and the regulation of the Minister of the Environment. Damages caused by large carnivores and the European mink (e.g. killed farm animal or pet, damaged beehive or silo bale) are compensated to the applicant to the extent of 100%, while subtracting the amount of ownership liability, which is 64–128 euros per year. Damages caused by migrating geese, barnacle geese, swans and common cranes are compensated in the amount of up to 3200 euros per applicant per year. The compensation for damages caused by seals through the destruction of fishing gears is based on the cost of restoring and purchasing the gears. The compensation for damages caused by white-tailed eagles or ospreys to a fish farm is based on the nesting success of the eagles nesting by the fish farm. Costs of direct measures applied to prevent the damage are compensated to the extent of 50%, the amount paid to one person is up to 3200 euros per year.

Photographer: Jan Siimson

Photo 15. A frightening dispersal device for preventing damages caused by migrating birds

The extent and amount of compensation for damages caused by an animal are dependent on various circumstances. On the one hand, natural factors play an important role (e.g. population sizes, range, breeding success, natural food base, migration phenology). On the other hand, the total amount of compensation paid is significantly affected by the behaviour and especially the awareness of people participating in the agriculture and fishing sector (e.g. implementation of the necessary prevention measures and considering the natural processes). In this area, cooperation between various parties plays an important role, from information exchange and high-quality assessment of damages to hunting the nuisance individuals.

Over the recent years, the state has contributed a total of more than 0.6 million euros to the compensation for damages caused by animals and the prevention of the damages (figure 34). The increase in the total amount of compensations paid can partially be explained by the improved awareness of the suffering parties and improvement in the skills for applying for compensations. A lot of attention has been turned to the importance of prevention works by means of various training and awareness raising activities, and the compensation for prevention measures has increased every year. On the other hand, the compensation amounts for damages caused by migrating birds have increased in Estonia, which is due to changes in the birds' migration behaviour, as well as significant changes in rural economic activities (agriculture has intensified, area of cultivated land has expanded, growing of expensive, but profitable oil crops and leguminous plants that birds like has expanded, etc.).

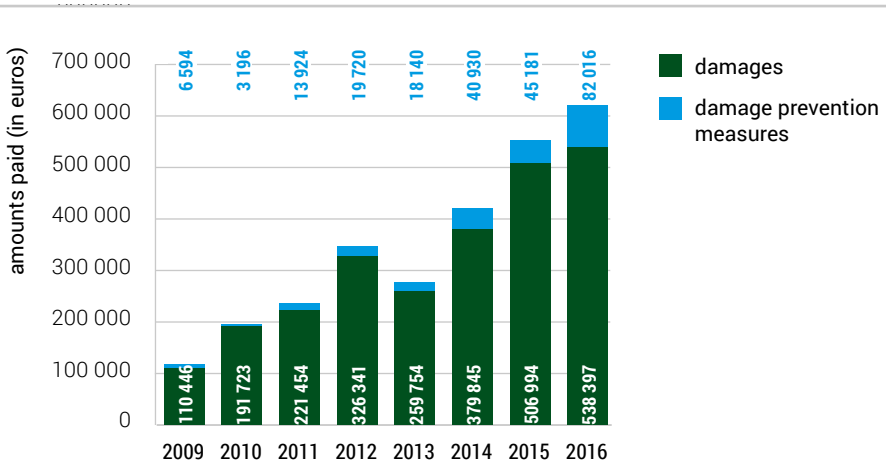


Figure 34. Total amounts of compensations paid for damages caused by animals and for prevention measures in 2009–2016 (in euros)

The largest share of compensations for damages caused by animals is paid for the depredations caused by the common cranes, swans, geese and barnacle geese. In 2015, this amounted to 60% of all compensations paid (figure 35). The number of applications for compensation of damages caused by birds increased in the first years of the measure, but has stabilized over the recent years (figure 36). Compensations paid for the damages caused by large carnivores (wolf, brown bear, lynx) make up nearly a third of all compensations paid for the damages caused by animals (figure 35).

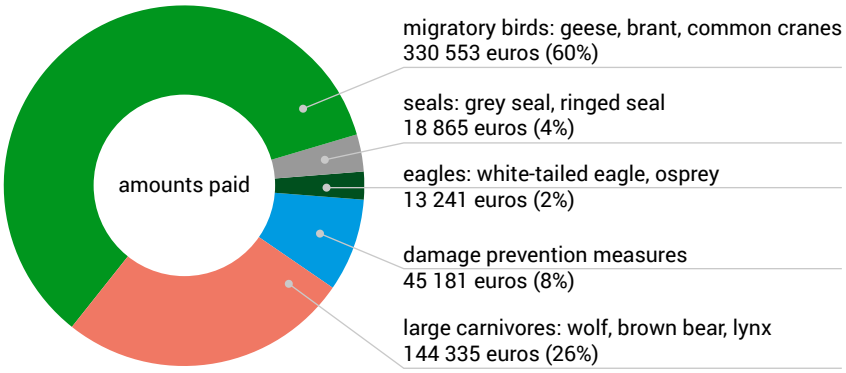


Figure 35. Percentages and amounts (in euros) of compensations paid for damages caused by different groups of animals and for prevention measures in 2015

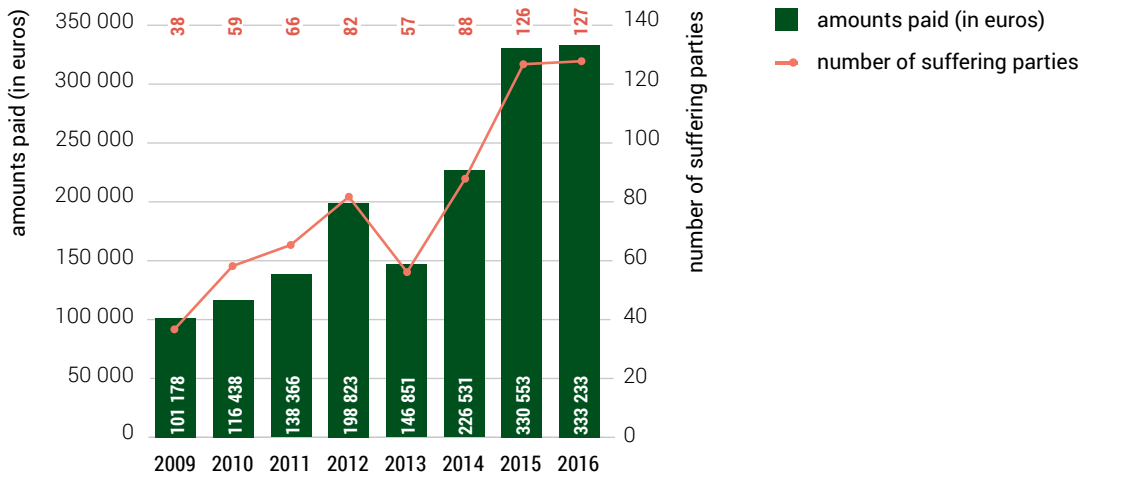


Figure 36. Compensation paid for damages caused by migrating birds (geese, barnacle geese, common cranes) and number of suffering parties in 2009–2016

In the large carnivores group, 62% of compensations were made up by damages caused by wolves, 35% of compensations for damages caused by brown bears, and 3% of compensations for damages caused by lynx in 2015. The proportions of compensations paid for damages caused by large carnivores were similar in the past years as well. The number and location of damages caused by large carnivores is dependent on very different circumstances. It is likely that the practice of implementing preventive measures in herds and apiaries, which have been attacked, plays an important role, as well as the behavioural peculiarities of the nuisance individuals. The relation between the number of damage incidents and number of cattle kept in the area is weaker (figures 37 and 38).

Photographer: Peep Männil

Photo 16. Sheep killed by a wolf in Kareda, Järva County

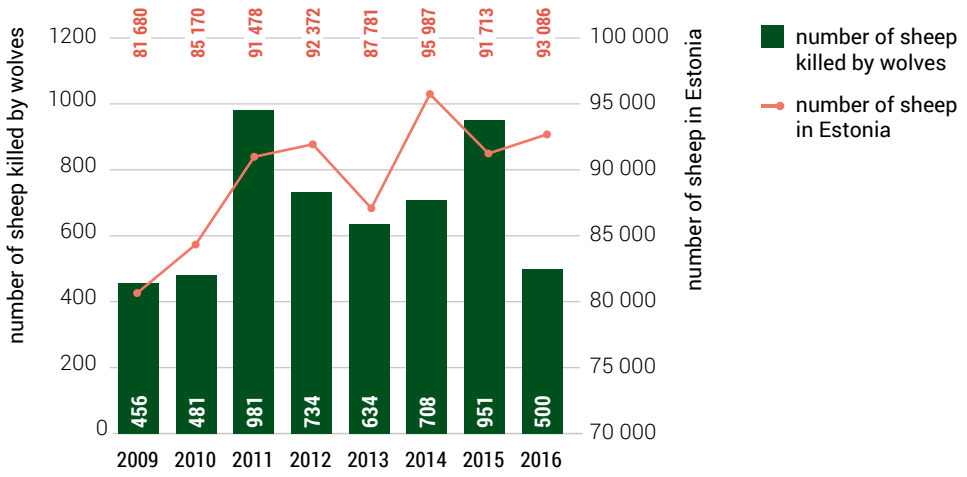


Figure 37. Number of sheep killed by wolves and total number of sheep in Estonia in 2009–2016. The number of sheep killed in 2016 is presented as at 1 November. Total number of sheep: Estonian Agricultural Registers and Information Board, 15.09.2016

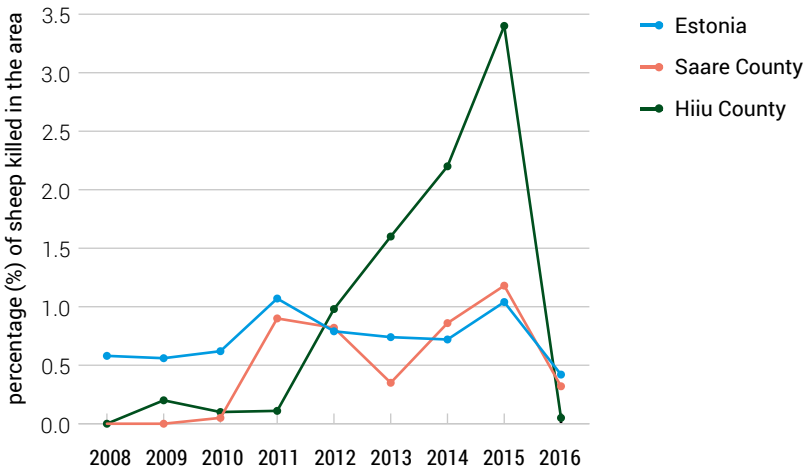


Figure 38. Percentage of sheep killed by wolves (percentage of the total number of sheep) in the most conflicting areas in 2008–2016. The number of sheep killed in 2016 is presented as at 1 November. Total number of sheep: Estonian Agricultural Registers and Information Board, 15.09.2016

Damages caused by seals to fishing gears and white-tailed eagles or ospreys to fish farms are relatively modest compared to damages caused by other animal groups in question (figure 35). In 2015, ten fishermen were compensated for damages caused by seals in a total amount of 18 865 euros, and nine fish farms for damages caused by eagles in a total amount of 13 241 euros. Up to now, one case of compensation for damages caused by the European mink has occurred – in 2015, three chickens killed by the European mink were compensated for in Hiiu County.

3.6 Conservation management plans of natural objects and the implementation of conservation

3.6.1 Action plans

Plans of two different levels are drawn up to meet the objectives presented in the Nature Conservation Development Plan, the Nature Conservation Act and its sub-acts. The general ones set out the strategic action plan at the state level, while others specify actions at the level of an individual protected natural object.

The strategic plans are **action plans for species** and **habitat action plans**. The area-based plans are **conservation management plans of protected areas**.

Action plans for species

Species action plans are divided into conservation action plans, management action plans or a combination of the two, depending on their objective. In essence, an action plan for species is a detailed plan for conservation or management that includes an overview of the biology of a species, its population and range, short and long-term objectives for species conservation or management, as well as description of the factors which may influence reaching the objectives. An action plan for species is approved by the Minister of the Environment or by an authority appointed[1] by the minister.

Pursuant to the Nature Conservation Act, **action plans for species conservation** are prepared for protection category I species or for those species which belong in other protection categories and/or are rare and endangered, if the results of the species inventory indicate that the current measures have failed to ensure the favourable conservation status of their populations. Action plans are also prepared for species which are not under national protection, but are listed in Annex II of the Habitats Directive (e.g. *Sympecma paedisca*, *Xylomoia strix*).

Over the recent years (2013–2015), **action plans for conservation** have been established for the protection of the following species: the osprey, golden eagle, white-tailed eagle, Saaremaa yellow rattle, tundra swan, freshwater pearl mussel, Eurasian eagle-owl, moor-king lousewort, grey seal, northern goshawk, northern birch mouse, sand lizard, capercaillie, ortolan bunting, greater spotted eagle, black grouse, ringed seal, bluntleaf sandwort, lady's-slipper orchid, common spadefoot, yellow-spotted whiteface. The action plan for the conservation of the flying squirrel was approved in the beginning of 2016. From the previously approved plans, the action plan for the conservation of the natterjack toad was valid until 2015, of the European mink until 2014, of the black stork, great snipe, common dunlin, common crane, ruff, lesser spotted eagle and lesser white-fronted goose until 2013, and the conservation plan of the great crested newt was valid until 2012. The latter were being revised as at the end of 2015.

Management plan is prepared for species with an increased population if there is a negative impact to the environment caused by the increase in the population of the species, or a danger to the health or property of persons. So far, a management plan has only been prepared for alien hogweed species (the latest

[1] Changes as from 5 April 2016.

was approved in 2011 and was valid until the end of 2015). Previously, preparation of a management plan for raccoon dogs was started.

An example of the **combination of conservation and management plan** is the valid one regarding large carnivores (wolf, lynx, brown bear) established for the years 2012–2021 to ensure control over their population, but also to protect their populations, as these species are included in Annex V of the Habitats Directive. Previously (in 2008), a conservation and management plan was also prepared for the cormorant.

Habitat action plans

Habitat action plans are nation-wide strategic plans drawn up for ensuring the favourable condition of the habitats if the results of a scientific inventory or other data indicate that the measures taken thus far do not ensure it or if it is required by an international obligation. During the reference period, the Minister of the Environment approved the action plan for semi-natural habitats for 2014–2020 (approved on 13 September 2013 and revised on 1 March 2016) and the action plan for protected mires for 2016–2023 was drawn up (approved on 18 January 2016).

Conservation management plans

Conservation management plans are drawn up for organizing the area-based conservation of areas under protection (protected areas, limited-conservation areas, species protection sites, nature monuments). The Environmental Board is responsible for the preparation of a conservation management plan and the plan is approved by the director general of the board. Preparing the plan is a public process and the local community and interest groups related to this field are included in the preparation. The main objective for preparing a conservation management plan is to create an action plan for the assurance of the favourable condition of the main values of the protected area; the plan must be well thought-out and discussed with interest groups. Similarly to strategic plans, its general part includes important background information. A conservation management plan provides the general characterization of the natural object and description of its values, as well as highlights the important environmental factors and their impact on the natural object, conservation objectives, works necessary for achieving these, their priority ranking, schedule and volume, and the budget necessary for implementing the plan. A plan is prepared for 3–10 years, depending on the nature of the area.

Pursuant to the Nature Conservation Development Plan, conservation management plans must be prepared for all protected and limited-conservation areas by 2020. As at 31 December 2015, there were 339 valid conservation management plans. Compared to 31 July 2011, the number of approved conservation management plans has increased by 269.

3.6.2 Implementation of conservation

During the period of 2011–2015, the implementation of protection has been largely project-based. Various institutions, including the Environmental Board and the State Forest Management Centre, as well as research institutions, local governments, the non-profit sector and companies implement conservation management plans and species action plans.

The works performed are very different and vary from ensuring the maintenance of locally significant objects to research with an international impact.

Each year, the Environmental Board performs small-scale practical nature conservation works from the **nature conservation works** project financed by the foundation Environmental Investments Centre. The following works are performed in the framework of this: maintenance of parks, maintenance of the surroundings of protected nature monuments, maintenance of species habitats, transporting animals to islets and small islands, clearing views to landscapes and other works based on plans (e.g. removing beaver dams). On state land, these works are performed by the State Forest Management Centre.

The large number of action plans for species conservation prepared in 2011–2015 have been put in practice with the support of the state budget, the projects funded by the foundation Environmental Investments Centre, and other projects. Examples of this are several protection category I species whose conservation management has been consistent in the reference period – e.g. the natterjack toad, European mink, flying squirrel, eagles. In some cases, success stories can be highlighted for these works, for example, a natural population has been emerged for the reintroduced European mink in Hiiu County, which can be evaluated as stable at the moment, even though its viability cannot be ensured yet. Also, the population decline of the natterjack toad has been halted and it has even started to rise in places where large-scale suitable habitats have been restored.

Photographer: Anneli Palo

Photo 17. Habitats have been restored for the natterjack toad in the Läänemaa-Suursoo protected landscape – pools with a low water level, which are suitable for spawning and are surrounded by sunny and sparsely vegetated sand areas

In addition to species whose conservation management has been consistent, there were several projects in that period for the protection of various other species, for example the project "Securing *Leucorrhinia pectoralis* and *Pelobates fuscus* in the northern distribution area in Estonia and Denmark" (abbreviation **DRAGONLIFE**) financed in 2010–2015 from the LIFE programme (total budget one million euros, 50% was contributed by the European Union). The project was coordinated by the Environmental Board and was carried out with partners from Denmark.

In 2014–2016, the project to **restore the habitats of the freshwater pearl mussel** in Pärlijõe, Lahemaa, which is currently the only place in Estonia with a population of that species, was carried out under the leadership of the Environmental Board and in cooperation with the State Forest Management Centre, the Estonian Fund for Nature, and international experts. Practical activities were carried out in the course of this project to restore the habitats of the freshwater pearl mussel, as well as the hosts of its larvae, the brown trout and its riverine form, and to improve the water quality (above all, to reduce the fine-grained sediment that occurs there). A positive discovery was made during the studies that the freshwater pearl mussel larvae, which parasitize on the gills of the trout, have spread wider in the river than previously thought. The project was funded from the EEA grants programme.

An interesting species conservation activity was the State Forest Management Centre funded **complex research on the habitat use of the capercaillie and the factors limiting it**, carried out in 2013–2016 in the cooperation of the University of Tartu, Estonian University of Life Sciences and Estonian Ornithological Society. In the course of this research, a telemetric study was carried out to determine the habitat use and size of the home area of the capercaillie. Also, the possible impact of natural enemies and the options of restoring the water regime and using formative cutting as ways to restore the habitats of the capercaillie were investigated.

An example about the implementation of species action plans can also be given from the field of management plans: in 2011–2015, **eradication of alien hogweed species** was funded from the means of the European Regional Development Fund and on the basis of the investment plan of the measure "Preservation of natural diversity" with a total amount of more than two million euros (see also section 4.2.5).

In the framework of the investment plan of the same measure, **options to visit protected areas** (reconstruction works of nature trails and observation platforms) and **access opportunities to semi-natural habitats for their maintenance** (e.g. the Kloostri bridge-regulator constructed in the Matsalu National Park) were improved in 2013–2015 on a large scale with the support of the European Regional Development Fund and under the leadership of the State Forest Management Centre. In addition, several **habitat restoration projects** have been carried out. For example, the project to restore the edge community of the Kuresoo bog located in the Soomaa National Park was completed in 2013. The drainage ditch system in the south-east part of the Kuresoo bog was closed in the cooperation of the Estonian Fund for Nature and the State Forest Management Centre, thus creating preconditions for restoring the bog habitat types. By now, the population of typical mire species has already increased in the area as a result of the restoration works – for example, the golden plover and wood sandpiper are once again nesting there, and species of dragon-fly typical of bodies of water in mires, many of whom are endangered in the European Union, can also be found. Restoration projects of mires have also been carried out elsewhere – Muraka, Viru and Endla are only a few examples of bogs where habitat restoration works have been carried out in 2011–2015.

In the reference period, habitat restoration projects have been also funded from the **LIFE programme**. Project "**LIFE to alvars**" carried out in 2014–2019 is the most extensive of them. The total cost of the project is 3.7 million euros, 75% of which is covered by the LIFE programme. The project is carried out

by the Environmental Board, University of Tartu, Estonian University of Life Sciences, the State Forest Management Centre and Estonian Seminatural Community Conservation Association. The objective of the project is to restore the existing alvars on a 2500 ha area in Saare County, Muhu island, Hiiu County, as well as in Lääne and Pärnu counties, create the necessary infrastructure in the areas for future grazing and introduce the natural values of alvars. By the end of 2015, 800 ha of alvars had been restored in the course of this project.

In addition to alvars, **river habitats** in the Alam-Pedja nature reserve (two projects in 2009–2012 and 2013–2017, carried out under the leadership of NGO Wildlife Estonia) and **coastal meadow** in the city of Pärnu (project carried out under the leadership of the Environmental Board in 2012–2016) have been restored, the restoration project of **petrifying spring habitats** (habitat type of the Habitats Directive, code 7220*) was carried out (duration 2013–2018, carried out by NGO Wildlife Estonia) and in 2015, the restoration project of **bog habitats** was started under the leadership of the Estonian Fund for Nature.

There are nearly 80 **cut-over peatlands** abandoned after peat extraction in Estonia. These residual mires have an area of 9800 ha, which is almost as large as the cities of Tartu and Narva. Vegetation grows very slowly in cut-over peatlands and they have a negative impact on the environment (emission of carbon dioxide, impact on the local water regime, fire hazard). Nearly 11 million euros have been allocated to Estonia for the EU 2014–2020 funding period from the means of the measure "Restoration of contaminated areas and bodies of water" for the reconditioning of residual mires, to which 15% of Estonia's own finances are added. The objective of the rehabilitation is to create and form conditions that would allow the restoration of the paludification process, afforestation of residual mires or restoration in some other way. Preliminary works were carried out in 2014 and 2015, including choosing the areas to be restored. The reconditioning activities are carried out by the State Forest Management Centre.

3.7 Violations and fines

The Environmental Inspectorate performs supervision over the lawful use of the natural environment and resources. Supervisory fields number in the double digits falling into three categories in the Inspectorate's work-related organization: nature conservation, fish protection and environmental protection.

Nature conservation supervision covers the following fields:

– coast and shoreline protection,
– protection of protected natural objects,
– forest laws,
– requirements of the Hunting Act,
– fauna and animal protection,
– flora and plant protection.

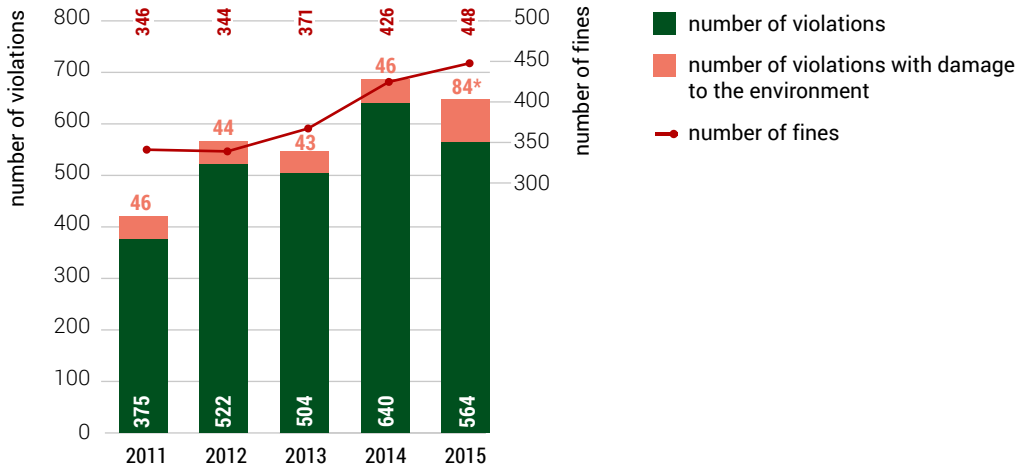
The discovered violations are quite evenly distributed between the protection of the environment, fish and nature. For more than five years in a row, the largest number of proceedings are initiated based on the Fishing Act and the Waste Act. Although the number of violations and fines related to nature conservation has been slightly rising in the recent years (figure 39), it is significantly below the level of the beginning of the century, which was characterized by illegal cutting. The total number of violations discovered each year in 2011–2015 has been lower than the total number of violations in 2007–2010, which was over 700 and came close to one thousand in 2008. As from 2014, cases of the Hunting Act violations have rapidly become more frequent; the reason for this may be proceedings initiated because hunting licences were not returned.

Photographer: Environmental Inspectorate

Photo 18. The Environmental Inspectorate has confiscated illegal bird calls

A new topic in the hunting supervision that could be highlighted is violations committed by foreign hunting tourists. Among others, foreign hunting tourists cause problems by using hunting gear forbidden in Estonia: lead shots and electronic game calls. In 2014–2015, 17 foreign citizens, mainly Finnish, Spanish and Italian, were fined in accordance with the Hunting Act.

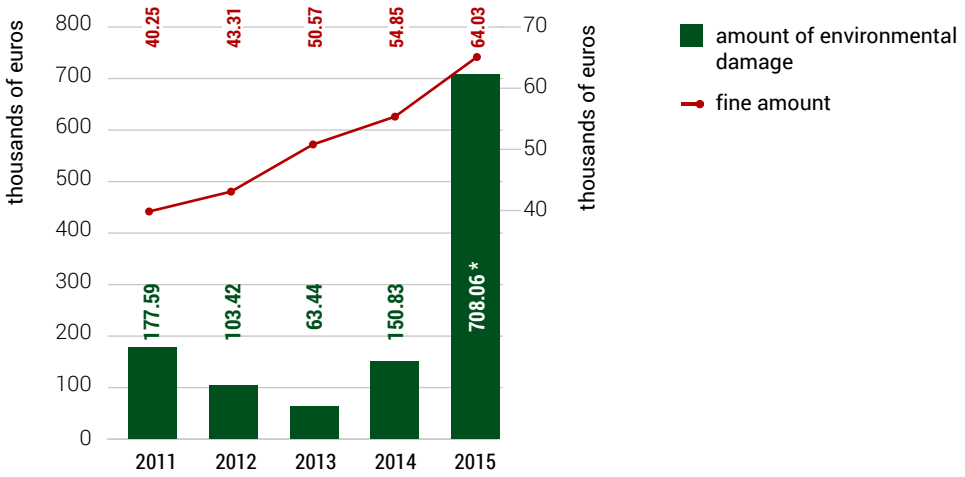
People on holiday mainly keep the inspectors busy in the field of supervision based on the Nature Conservation Act, by not adhering to the proper rules while spending time in nature, such as restrictions to make a fire or using a vehicle. There are not as many unlawful construction cases, but these proceedings tend to be more time-consuming and resource-intensive.



* As from 2015, shooting an animal with a hunting permit became a violation if the hunting right fee had not been paid.

Figure 39. Environmental violations in 2011–2015

Cases of environmental damage in the field of nature conservation are mainly unlawful hunting, unlawful cutting and forest fires. The latter is the reason why the amounts of environmental damage vary so much by years – a single fire can cause more damage than all other fields in a year combined. Thus, nearly 80% of the total amount of environmental damages of 2015 are made up of the fire that took place in the Puhatu nature reserve (figure 40). The cause of the fire is unknown.



* Including 558 264.12 euros for the forest and landscape fire in the Puhatu nature reserve.

Figure 40. Fine amounts and levels of environmental damage (in thousands of euros) in 2011–2015

The average fine imposed in the field of nature conservation was 130 euros in 2011–2015. However, the main objective is to avoid and prevent violations. Cooperation between various institutions related to nature conservation and local governments plays an important role here.

3.8 Ecosystem goods and the green network

The human society is dependent on goods provided by nature (the term "ecosystem services" is also used), such as food, materials (e.g. wood), clean water and air, climate regulation, flood control, pollination, various recreational opportunities, etc. However, we use many of these benefits as if their reserves were unlimited and take their existence for granted. They are used as free goods and their true value is not considered in economic accounts (figures 41 and 42). So it happens that artificial facilities are built instead of natural solutions, which do not fully serve their purpose in extreme and catastrophic situations (e.g. storms, floods, etc.), thus causing more problems, damages and additional expenses. For example, floodplains of rivers largely mitigate the effect of floods, while the water level rises rapidly between banks made of concrete, quickly flooding the surrounding areas as it rises above the banks.

Figure 41 depicts different components of natural capital. Natural capital is an ecological potential. Natural capital can be seen as natural resources, land, as well as ecosystem services, characteristics, and functions (e.g. the ability to stabilize changes caused by humans, i.e. the capability to buffer and self-regenerate[1].

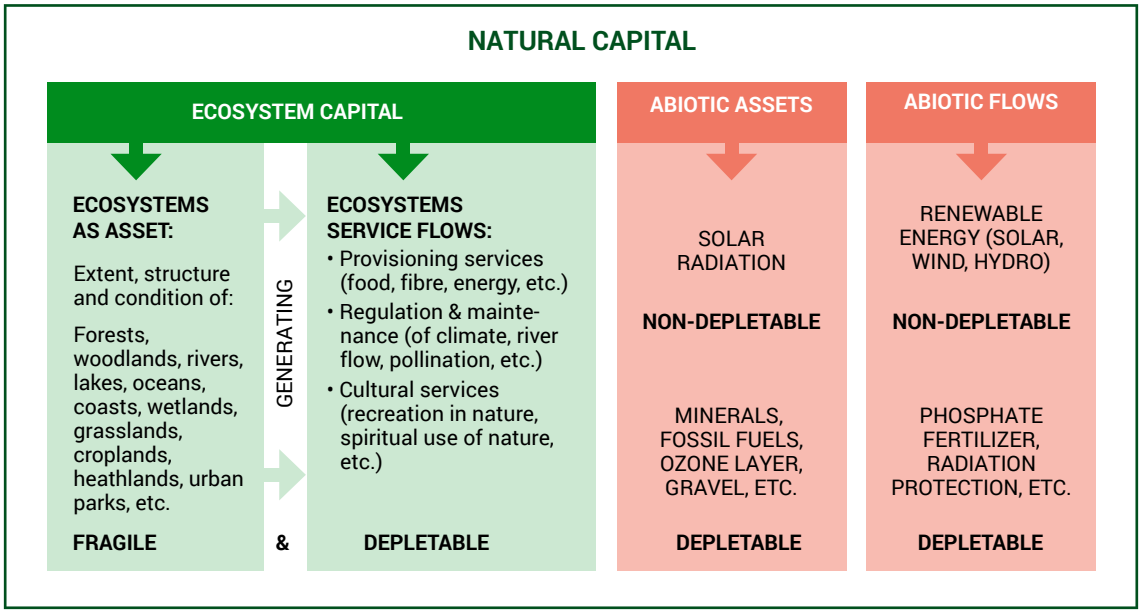


Figure 41. Different components of the natural capital, which include both ecosystems and their services. Source: 2015 publication of the European Commission No. 11[2]

Large areas in the world, especially Europe, have damaged their natural capital over the past century and more to an extent which endangers long-term sustainability and decreases the environment's resistance. By now, natural areas in Europe have largely become or are becoming isolated islands. This is why one of the objectives of the EU Biodiversity Strategy to 2020 is preserving and improving ecosystems and

[1] Glossary of sustainable development. The Stockholm Environment Institute, SEI Tallinn.

[2] Publication of the European Commission No. 11, May 2015: Science for Environment Policy. In-depth report. Ecosystem Services and Biodiversity (http://ec.europa.eu/environment/integration/research/newsalert/pdf/ecosystem_services_biodiversity_IR11_en.pdf).

their services. As one means of achieving that objective, the strategy mentions creating a green infrastructure (also known as "green network" in Estonia). For this, the European Commission developed the European Green Infrastructure Strategy in 2013.

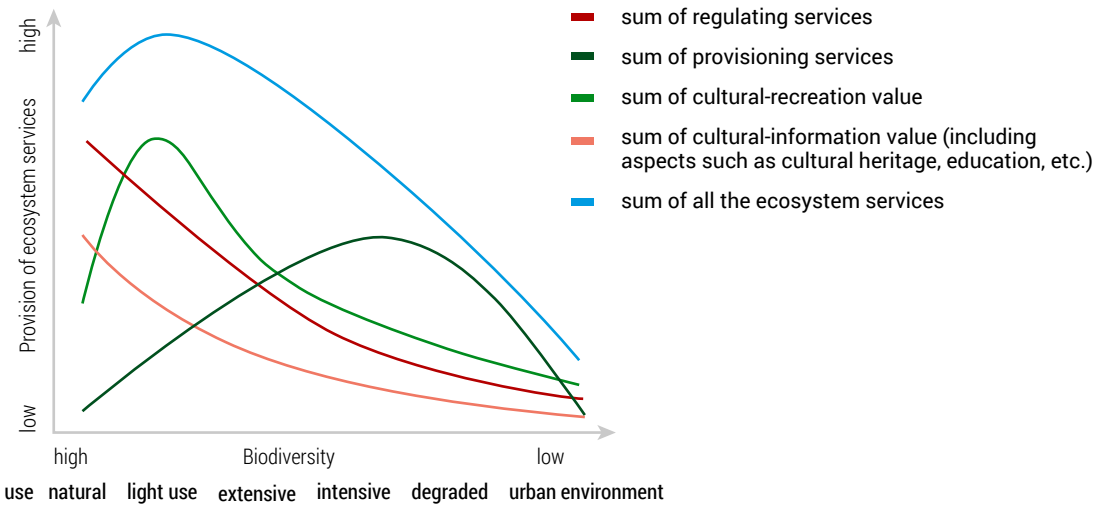


Figure 42. Connection between biodiversity and the amount of ecosystem goods. Source: 2015 publication of the European Commission No. 11[1]

Photographer: Eero Vabamägi/PM/Scanpix

Photo 19. Estonia's first and currently the only ecoduct (completed in 2014) in the Aruvalla-Kose section of the Tallinn-Tartu road

[1] Publication of the European Commission No. 11, May 2015: Science for Environment Policy. In-depth report. Ecosystem Services and Biodiversity (http://ec.europa.eu/environment/integration/research/newsalert/pdf/ecosystem_services_biodiversity_IR11_en.pdf).

Green infrastructure is a strategically planned network of natural and semi-natural areas, which together with other environmental features enables delivering a wide range of ecosystem services to people. Green infrastructure consists of larger preserved natural areas, the so-called core areas, which have usually been placed under protection, and the corridors, buffer zones and green facilities (the so-called mitigation means constructed by people to preserve and restore ecosystem goods, such as ecoducts, animal tunnels, fish ladders, etc.) that connect them, allowing plants and animals to spread and migrate, by ensuring one of the basic ecosystem goods – cycling of substances via food chains. This creates a network that joins natural areas into a single infrastructure. While a transportation infrastructure allows people to move between home, work and e.g. stores, the green infrastructure makes it possible for plants and animals to move between their habitats of different functions, such as places of breeding and feeding. This also preserves biodiversity, which is necessary for human existence.

Spatial planning of the green infrastructure must be carried out as a process which includes all areas of people's lives and considers ecosystem goods. In Estonia, the development of the green network was started as early as in 1999 as national plan and county thematic plans. The basic legislation for this network is the Planning Act and the most important legal act enacted thereunder is the 1999 order No. 763-k of the Government of the Republic, "Initiating thematic plan of county plans", which initiated the thematic plan "Environmental conditions for guiding settlement and land use" in all counties of Estonia. The latter, in turn, was divided into two parts – "Green network plan" and "Valuable landscapes plan". By now, the above-mentioned thematic plans have been established in all counties. Both thematic plans actually deal with the preservation of ecosystem goods, although the corresponding specific targets are not explicitly included in these. The green network is aimed more at ensuring the supporting and regulating services of ecosystems and the plan of valuable landscapes at cultural services.

As county thematic plans are significantly more general compared to the land cadastre and detailed spatial plans, they definitely need to be refined at the municipal level. At the county-level green network planning stage, studies were generally not conducted about who (which species), where and to what extent use the green corridors. The main objective was to actually integrate the existing protected natural objects into a landscape network, but it was not analyzed, for whom exactly this network was created and whether the corridors actually function in the nature in the current form. As a result, a lot of confusion and questions have arisen at the municipal level with relation to preserving the green network. As local governments are obligated to enter the green network plan into the comprehensive plan (and thus guide practical land use) and take it into account upon establishing detailed plans, it has mostly been done (figure 43); however, due to the lack of relevant guidelines, knowledge or means, several local governments have transferred the county network without further refinement, not to mention carrying out studies regarding users of the corridors.

Even though things are not yet going that smoothly at the municipal level with regard to the green network plan in Estonia and practical connections to natural values need to be investigated and analyzed further within the scope of this network, it must be said that this plan is an important and internationally pioneering administrative act. Especially because having this thematic plan gives Estonia a big head start compared to many other countries in ensuring the coherence between the areas in the Natura 2000 network, which is required by the Habitats Directive.

In the coming years, it is important to relate the planning of the green infrastructure in Estonia with the assurance of the volume and quality of the services provided by ecosystems. Mapping the Estonian ecosystems and determining their base levels has been initiated and the objective is to finish this in the next few years. When linking green network to the volume and quality of ecosystem services, one thing that definitely needs to be considered is the balance of total values of land use along with the values of

ecosystem services and alternative nature-based solutions, not to keep records of only individual parts with an actual market value (e.g. timber, peat) and submitting to the interest groups with the largest financial pressure. Therefore, the more purposes an area serves, the more high-quality goods it can offer to different user groups. This approach will help us achieve becoming a welfare state with a sustainable economy.

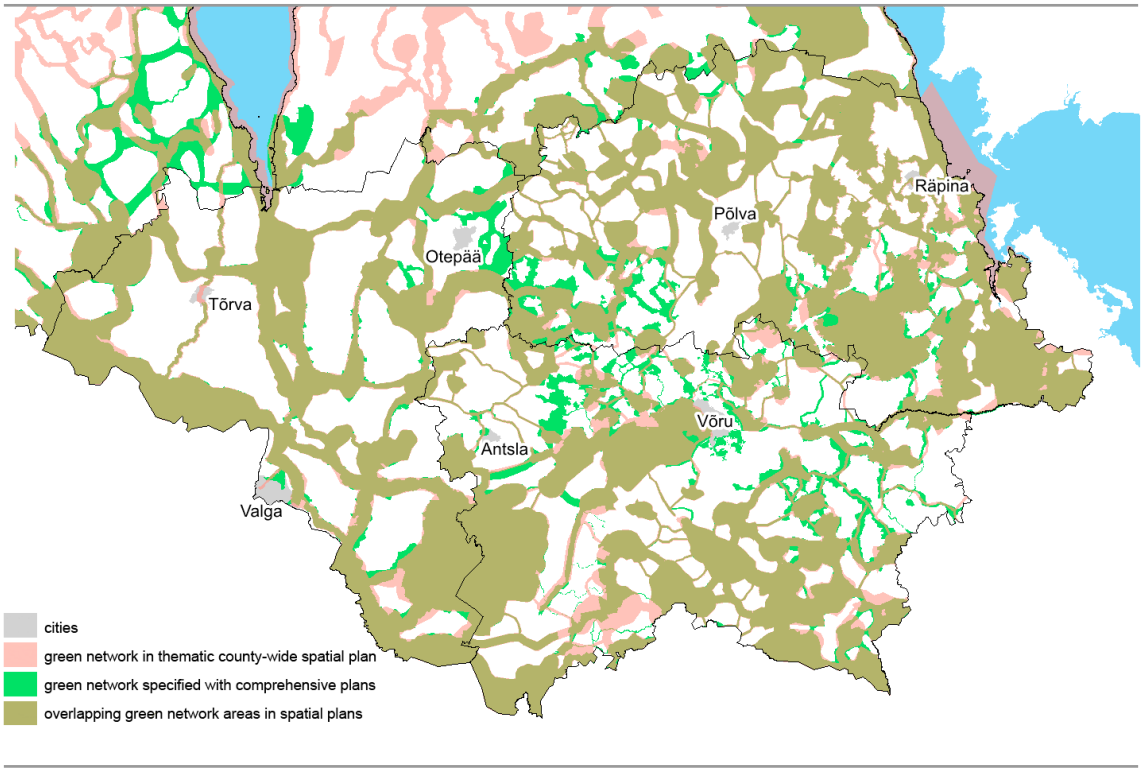


Figure 43. Green network specified with comprehensive plans in south-east Estonia

3.9 Promotion of environmental awareness and visitor management

The objective of promoting environmental awareness is to contribute to the sustainable development of the society, which is accompanied by improvement of people's living standard, safe and clean living environment and reasonable use of natural resources which also increases the competitiveness of the economy.

For an individual, this means environmentally friendly choices in their everyday life. On the organizational level, environmental awareness is being raised by means of several voluntary measures related to the use of the environment, such as environmentally friendly procurements, implementation of environment management systems, etc. Conscious environmentally friendly production and consumption is favored by ecolabels. Environmentally friendly actions are highlighted with environmental recognitions "Keskkonnakäpp", "Environmental Award of the Year" and "Environment-Friendly Enterprise of the Year".

Photographer: Ly Vetik

Photo 20. Young researchers of the Estonian Museum of Natural History looking for fossils from an outcrop

Environmental education forms a separate field of activity of environmental awareness. On basic school and upper secondary school level, the topic of the environment has been integrated into the national curricula established in 2011 as a recurring theme, "the environment and sustainable development". Non-formal environmental education also supports achieving the competences provided in the national curricula, but these studies take place in nature, in nature schools, environmental education centres, museums and enterprises related to the protection and use of the environment.

More than 90 organizations operate in the field of environmental awareness in Estonia. The portal of environmental education managed by the Environmental Board gives an overview of these. The portal includes information about centres with various affiliations and legal forms, including state authority units (institutions in the area of administration of the Ministry of the Environment), institutions managed by local governments (Pernova Education Centre, Palade Environmental Education Centre), foundations (e.g. Tartu Environmental Education Centre, Vapramäe-Vellavere-Vitipalu Foundation), non-profit organizations (e.g. Studio Viridis Nature Education, Saunja Environmental Education Centre), institutions of universities (e.g. University of Tartu Natural History Museum and botanical garden, Võrtsjärve Learning Centre of the Estonian University of Life Sciences, Särghaua Earth Sciences Education Centre of Tallinn University of Technology).

In the area of administration of the Ministry of the Environment, the institutions which are daily engaged in practical environmental education activities are **the environmental education department of the Environmental Board**, **visitor management department of the State Forest Management Centre** (before 2016, the nature conservation department), **the State Forest Management Centre Sagadi Nature School** and **the Estonian Museum of Natural History**.

The institutions in the area of administration of the Ministry of the Environment organize events promoting environmental awareness for both children and adults. In 2015, more than 146 000 people participated in various events announced by the State Forest Management Centre. In the same year, a total of more than 65 000 participants took part in environmental education-related activities of the Environmental Board and nearly 11 000 participants in the State Forest Management Centre Sagadi Nature School. More than 11 000 people participated in various educational activities of the Estonian Museum of Natural History in 2015.

Among environmental education-related events, the institutions in the field of administration offer active learning programmes aimed at students, which are in accordance with the standards of the national curricula. The number of students that participated in the active learning programmes has been rising over the past years, reaching 92 000 in 2015 in the field of administration of the Ministry of the Environment (figure 44).

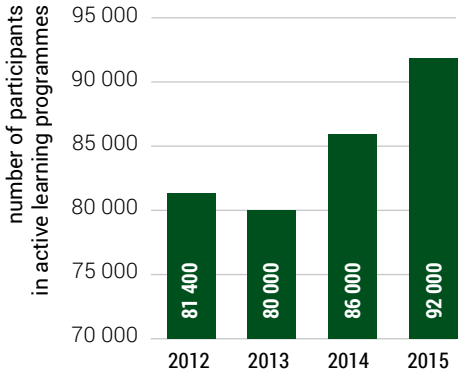


Figure 44. Number of students who participated in active learning programmes of the institutions in the field of administration of the Ministry of the Environment (Environmental Board, Estonian Museum of Natural History, State Forest Management Centre, including Sagadi Nature School) in 2011–2015

Infrastructure

The Environmental Board has 18 so-called environmental education bases which are located in the offices of the Environmental Board and visitor centres of protected areas, as well as an environmental education bus that drives around Estonia and is equipped with learning tools. The State Forest Management Centre provides environmental education and information in four nature houses, 14 nature centres (one of these is in the Elistvere Animal Park), nature school under the State Forest Management Centre Sagadi Forest Centre, and the Sagadi Forest Museum.

Promoting environmental awareness is also related to providing recreational possibilities in nature. The central elements of the national visitor management infrastructure (the so-called network of protection and recreation areas) administered by the State Forest Management Centre are the two branches of the State Forest Management Centre hiking route: the 375 km long Oandu-Aegviidu-Ikla and the 820 km long Peraküla-Aegviidu-Ähijärve hiking trail, and the 220 nature trails connected to these (hiking and study trails). The nature trails are equipped with information boards that introduce nature values and provide instructions on how to behave in nature. In addition to information points, nature houses and centres, people who spend time in nature can find opportunities to rest and stay at 309 campfire sites with a cover, 59 campsites, 28 forest huts and 19 rental forest huts, and, considering different user groups, also four off-road trails.

The State Forest Management Centre recreation and protection areas were visited a total of 2.2 million times in 2015. In 2015, the Sagadi Forest Museum was visited 28 500 times and the Elistvere Animal Park 59 000 times, other information points 83 000 times. The State Forest Management Centre website www.loodusegakoos.ee was visited over four million times in 2015.

The State Forest Management Centre used a total of six million euros in 2015 to administer the visitor management infrastructure, preserve its state and organize activities promoting environmental awareness; 1.5 million of it was received as target financing from the European structural funds and was used to reconstruct the visitor management infrastructure of the protected areas.

Satisfaction with visitor management

In 2015, a visitor survey based on the common methodology of the Nordic and Baltic countries was carried out in the State Forest Management Centre recreation and protection areas for the fifth time (the previous one was conducted in 2010). 6528 questionnaires were collected in the course of the study. Based on the survey results, the most important activity during a visit was nature observation, followed by walking, spending time in the forest, hiking and swimming. The most important reasons for visiting nature were beautiful landscapes, experiencing nature, getting away from noise and pollution, peace of mind, relieving stress and spending time with friends and family. 92% were satisfied with the number of services and facilities as a whole. 85% of the visitors felt that spending time in nature increased their social, mental and physical well-being, whereby mental well-being improved the most. The nation-wide visitor satisfaction index based on the visitor study was 4.40 on a five-point scale in 2015. Comparison: in 2010, the satisfaction index was 4.27.

At the moment, the extent of possibilities to move in protection and recreation areas and their visiting magnitude has been assessed as optimal – visitor satisfaction is high and the nature's load capacity has not been breached.

Many different financing possibilities were used in 2010–2015 to promote environmental awareness.

In 2010–2015, the measure "**Development of environmental education infrastructure**" was carried out in the framework of the operational programme "Development of Living Environment" of the European Regional Development Fund. The objective of the measure was to improve and unify the availability of environmental education in Estonia. The amount of the subsidy was 22.3 million euros, to which the recipient of the subsidy added 10% as own contribution. The Environmental Board, the State Forest Management Centre, the Estonian Museum of Natural History, local governments and universities used the subsidy. All over Estonia, a total of 33 objects were constructed or renovated (figure 45) and the Environmental Board equipped the environmental education bus.

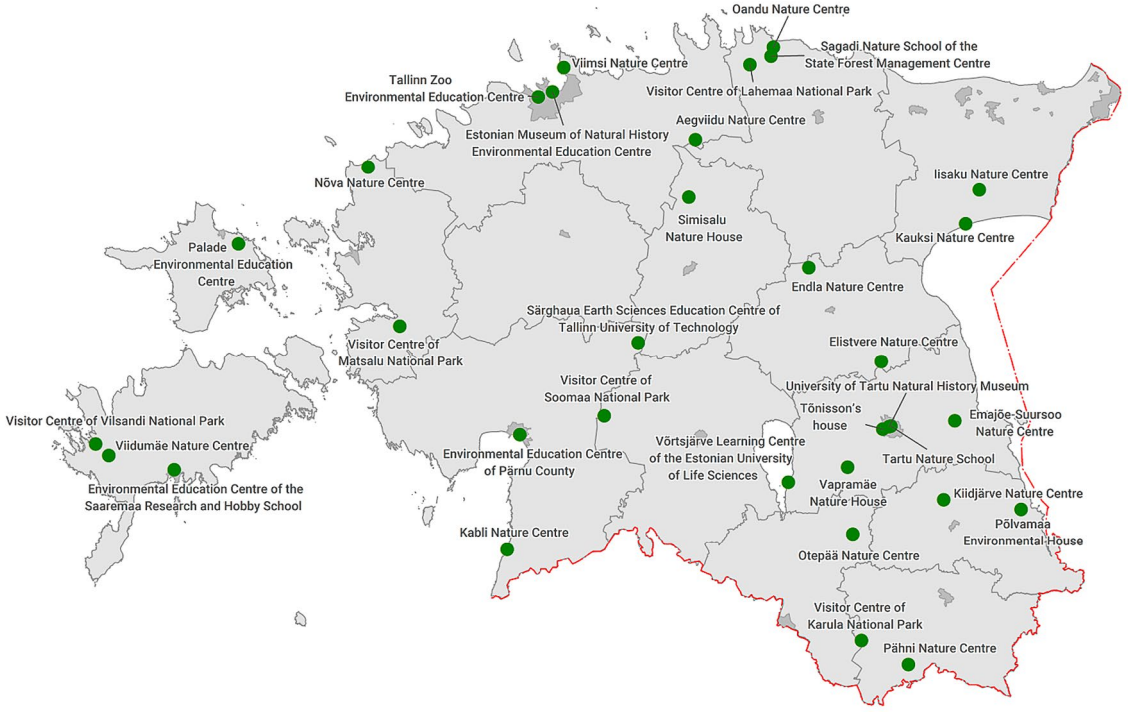


Figure 45. Centres developed with the support of the measure "Development of environmental education infrastructure"

In 2011–2015, also the measure "**Development of environmental education**" of the lifelong learning operational programme of the European Social Fund was put in practice. The total amount of the grant was 3.2 million euros, to which Estonia's public sector added 15% of own contribution. Two programmes were implemented in its framework.

As a result of the **programme** "**Development of environmental education**", put in practice by the Environmental Board:

– 485 teachers of general education and vocational school and kindergartens, and 145 specialists from other organizations received refresher training;

– study kits which support active learning were developed and distributed free of charge for the use of environmental education centres to demonstrate the topics of the environment and sustainable development, and three interactive learning tools were created: Discovery Trail, Environmental Compass, E.loodus.ee;

– the activity of environmental education round tables of counties was supported; regional conferences were organized; the web portal keskkonnaharidus.ee was developed; the "Environmental education paper" which addressed practical experiences, was published and distributed in schools and environmental education centres; 50 practical movie clips were ordered to help explain the topics of environment and sustainable development;

– the series "Mõistlik või mõttetu" ("Reasonable or unreasonable"), which introduced environmentally friendly consumption, ran on the national TV channel ETV for three seasons; the series "Ökoskoop" ("Ecoscope") started on the radio channel Vikerraadio, which is continued on the initiative of Estonian Public Broadcasting;

– the annual competition "Keskkonnakäpp" was launched, which introduces environmentally friendly behaviour in educational institutions.

Within the framework of the **programme** "**Promotion of environmental education on the basis of collections of Estonian Museum of Natural History**", 228 000 units from the archive collections of the Estonian Museum of Natural History were digitalized, including the photography collection. The digitalized collection was made available in the PlutoF platform. A mobile application "My nature sound" was developed for teachers, which allows studying species in nature and carry out nature observations with students. These observations are also transferred into the PlutoF database (see also section 4.2.4). The programme was put in practice by the Estonian Museum of Natural History together with the University of Tartu Natural History Museum and the botanical garden.

Aimed at raising environmental awareness, educational institutions and environmental education centres have been supported from the **environmental awareness sectoral programme under the Environmental programme of the foundation Environmental Investments Centre**. In 2011–2015, a total of 2299 projects were supported from the environmental awareness programme in the amount of 19 239 270 euros. In these years, active learning was supported in the amount of 9 220 902 euros in the framework of 1767 projects organized to promote environmental education. In 2014–2015, 6914 study trips for 117 940 children to nature schools, environmental education centres and undertakings related to the use of the environment were organized.

4. Species and species protection

The largest global association dealing with the issues related to species endangerment is the International Union for Conservation of Nature (IUCN), which compiles the relevant assessments into the Red List (section 4.1.1). An important international species-based nature conservation agreement is CITES, or the Convention on International Trade in Endangered Species of Wild Fauna and Flora, which was spearheaded by the IUCN to limit business transactions with endangered species (section 4.1.2). As a member of the EU, Estonia must comply with the EU directives, the most important of which from the nature conservation standpoint are the Habitats Directive and the Birds Directive (section 4.1.3).

Domestically, Estonian scholars assess the risk levels of species under the leadership of the nature conservation committee of the Estonian Academy of Sciences and consolidate the assessments of this nature in the national Red List (section 4.2.1). The Nature Conservation Act provides for the main principles for determining the protected categories of species (section 4.2.2). 336 protected species have been specified as conservation objectives of various protected areas, species protection sites or limited-conservation areas, meaning that the needs of these species have been taken into account in determining the protection regime for these areas (section 4.2.3). Section 4.2.4 gives an overview of the species data status in Estonia. Alien species pose an increasing risk to native species (section 4.2.5).

Photographer: Tiit Maran

Photo 21. A European mink born in the Tallinn zoo and then released into the wild in Hiiu County during the reintroduction project

4.1 Species of international importance

4.1.1 IUCN Red List species

The IUCN Red List categories and criteria for inclusion are used to classify, in a simple and understandable manner, specific species at global risk of extinction.

The species in the IUCN Red List fall into the following categories:

- extinct (EX),
- extinct in the wild (EW),
- critically endangered (CR),
- endangered (EN),
- vulnerable (VU),
- near threatened (NT),
- least concern (LC).

Of Estonia's species, 743 were on the IUCN Red List in 2015; 208 of these are plants, 530 animals and 5 fungi species (figure 46). The species are distributed by category as follows. Two species are critically endangered – the European eel and European mink. Previously, the European mink was among endangered species, but due to continuous decline in its population, it was re-assessed as critically endangered. Three species are considered endangered: the thick shelled river mussel, bluefin tuna and the beetle *Limoniscus violaceus*. 17 species are considered vulnerable and 27 species near threatened.

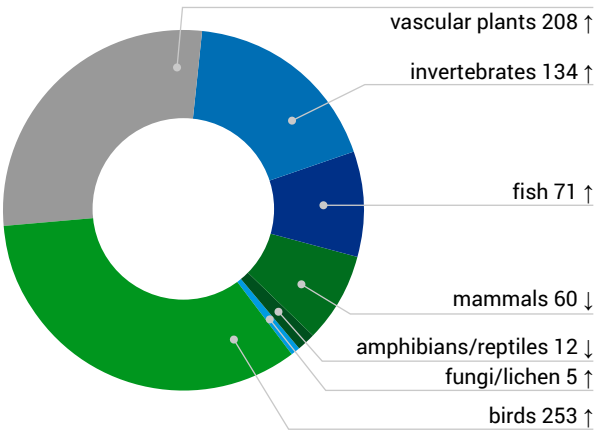


Figure 46. Number of the IUCN Red List species in Estonia by groups of species. The arrows indicate the directions of changes compared to 2011

Compared to 2011, the number of plant species assessed by the IUCN criteria has increased by nearly tenfold. The number of assessed invertebrates has also increased by more than twice. There were no

fungi in the 2011 list. Now, they are represented by five species, of which the citrine waxcap and *Tricholoma apium* are considered vulnerable (figure 47).

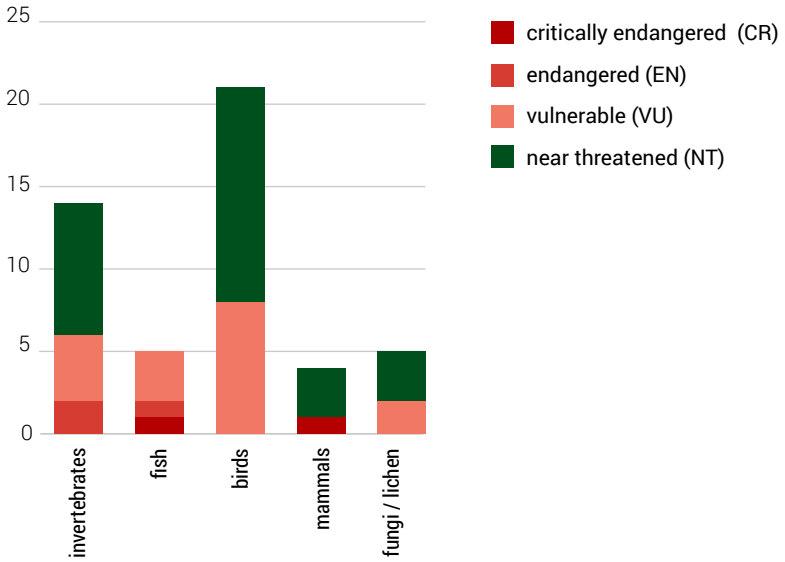


Figure 47. Number of the IUCN Red List species in Estonia by IUCN category (critically endangered – CR, endangered – EN, vulnerable – VU and near threatened – NT)

4.1.2 CITES – the Convention on International Trade in Endangered Species of Wild Fauna and Flora

CITES enforcement

Efficient enforcement is of utmost importance in the implementation of the CITES convention. More and more attention is turned to this across the globe. An action plan related to this was recently adopted in the European Union (*EU Action Plan against Wildlife Trafficking*). Over the past years, Estonia has also invested in making the enforcement more efficient. In 2013, the Nature Conservation Act was amended with a provision which allows the Environmental Inspectorate to apply confiscation towards the individual and item constituting the direct object of the misdemeanour if the misdemeanour is committed pursuant to the CITES convention. The Environmental Inspectorate has already implemented this in the proceedings of several cases of serious violations of CITES. In 2014, the Koidula railway and road border crossing point, which received the relevant international recognition, was added to the list of customs offices designated for importing and exporting CITES species. In addition, annual trainings are organized for supervision officials (environmental inspectors and customs officials) on topics related to CITES and by now, a special CITES supervision unit has also been established in the Environmental Inspectorate, the members of which are specialized in conducting proceedings of CITES cases. Also, monitoring of online trading was carried out to map the CITES products sold in Estonian e-commerce. The results showed that the amount of these products per day was over 50 000 euros, indicating that trading with endangered species is happening on a wide scale in Estonia.

Trends

Hunting tourism is still popular in Estonia. On the one hand, Estonia is a popular destination for hunting brown bears, wolves and lynx, on the other hand, our hunters like to go hunting in exotic countries where the trophy animals they shoot are mostly under protection of the CITES convention. However, there are but a few problems in this area because the awareness of Estonia's hunters and local hunting organizations is good.

One of the problem areas in western Europe – trade in pets – is not a major problem in Estonia. Estonians prefer to keep ordinary cats and dogs, not exotic snakes or monkeys. Nor do the relatively conservative fashions and behavioural trends of Estonians support a burgeoning market for luxury goods and clothing made from exotic animals. The high price of such products and pets also plays a role in this regard. Unfortunately, interest is apparently picking up. Sales advertisements for exotic animals are more frequently encountered and there are more and more people who keep and breed such animals. There is also a slight increase in trading luxury goods made from exotic animals.

A new and very popular area is various medicinal products, especially creams, food supplements and cosmetic products which contain parts of endangered species, such as bear bile, caviar or European medicinal leech extract, as well as extracts of endangered plant species, etc.

Photographer: Estonian Tax and Customs Board

Photo 22. One of the most curious cases from recent times occurred with a traveller carrying two boxes of figurines which were suspected to be made of ivory. Expert analysis revealed that they were actually made of tusk of an extinct mammoth and thus not under CITES protection. However, the case was made even more complicated by the fact that a bear's baculum (indicated with a red line on the photo) had been added to one figurine, and this required a special permit

CITES permits and certificates

After joining the European Union, the number of CITES permits issued annually has slightly increased in Estonia, especially with regard to import permits. Over the past years, export has remained more or less on the same level. Re-export has been relatively low over the years (figure 48).

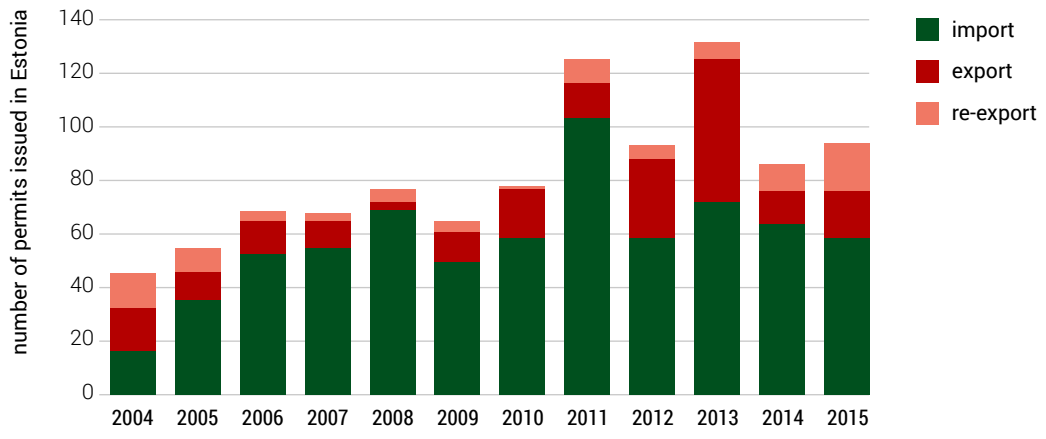


Figure 48. Number of CITES permits issued in Estonia in 2004–2015 by permit types

While in the early years, CITES permits were issued primarily for exporting hunting trophies and for live animals of the Tallinn Zoo, the scope has become broader over the years. Over the past years, import from African countries has increased with regard to hunting trophies. Live animals are still transported

primarily by the Tallinn Zoo. To a limited extent, the number of permits for pets has increased, but the number permits for circuses has decreased. In the past ten years, the most permits, nearly half, have been issued in the category of leather products, especially in terms of import (figure 49). Certificates issued for internal trade inside the European Union have remained on a stable level, 20–30 a year. The latter are mainly issued for Estonia's large carnivores (trophies and meat) and live zoo animals (figure 50).

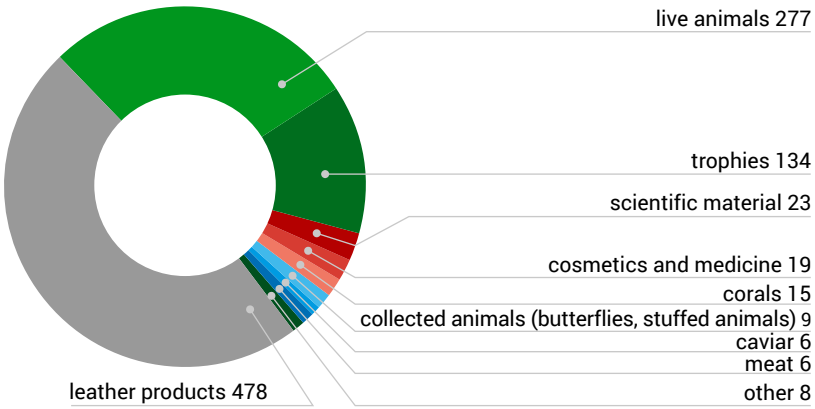


Figure 49. Number of CITES permits issued in Estonia in 2004–2015 by types of products

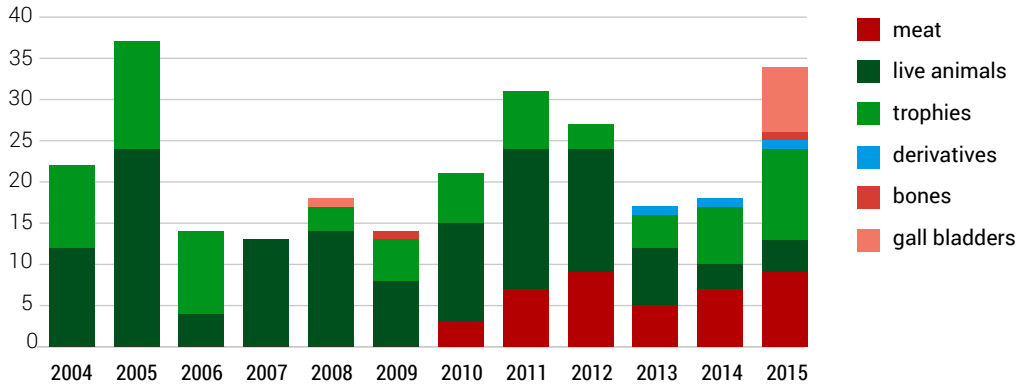


Figure 50. Number of certificates for internal trade inside the European Union issued in Estonia in 2004–2015

4.1.3 Species listed in the annexes of the Habitats Directive[1]

Under Article 17 of the Habitats Directive, every six years, all European Union Member States, including Estonia, must submit a report on the progress of implementation of the directive. The report is submitted on a form approved by the European Commission and it consists of three parts: a general part on implementation of the directive in a Member State, form for the assessment of the status of a species and a form for evaluating the status of the habitat type. Estonia has already submitted this report twice, first time in 2007 and the second time in 2013. The next report will be submitted in the first half of 2019.

Data for all species are presented regarding their range and population and trend of change, a list of the primary risk factors and influences and data on the species habitat: which habitats are important for the species, how large is the habitat area, what is the prevalent trend and future prognosis. As additional information, the estimated or computed favourable range, area and habitat size are provided.

The most comprehensive indicators of the report are assessments of the range, population size, species habitat and future prospects presented for each species. The assessment for each component may be favourable, inadequate, bad or unknown. In the case of an inadequate and bad assessment, the trend must be added as well – whether the situation is stable, getting better or worse or is unknown. On the basis of the preceding assessments, a summarized assessment regarding the status of the species with regard to the biogeographical region in the specific Member State is presented.

Photographer: Reigo Roasto

Photo 23. The grey seal is a species of Annexes II and V of the Habitats Directive

[1] The list of species can be found on http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31992L0043.

The lists of species, which form the basis for reports presented by the Member States, have been updated according to specifications of data on the distribution – while in 2007, Estonia reported on the status of 96 species in Annexes II, IV and V of the Habitats Directive, then in 2012, the report included 99 species. Estonia's 99 species include 31 invertebrates, 25 plant species, seven amphibians, one reptile, nine fish and 26 mammalian species, including two marine mammals (figure 51). In Estonia, more than half of the Habitats Directive species – 54% (53 species) are in a favourable status, 27% (27 species) have an inadequate status and the status of 8% (8 species) has been assessed as bad. In the opinion of experts, the status of several Habitats Directive species (11%, i.e. 11 species) is still unknown in Estonia.

Compared to other European Union countries, Estonia is in a relatively good state. In the European Union as a whole, 18% of species have a bad, 42% an inadequate and 23% a favourable status, and altogether 17% of the species are in an unknown status (see also section 1.3).

The results of the report are pretty much as expected, as the Habitats Directive annexes list species threatened in the European Union territory, and not all of them can be in a good condition. It is also no wonder that the condition of natural species in Estonia is better compared to the densely populated central and southern Europe.

For the next reporting period, it is presumed that thanks to the nature conservation measures applied in Member States, the status of endangered species chosen for the annexes of the Habitats Directive will have started to improve. In addition, the European Union seeks to fulfil an ambitious obligation which they took upon themselves in the biodiversity convention – 50% more species assessments under the Habitats Directive should indicate improved conservation status by 2020.

The summaries of both the Estonian and European reports are publicly available:

– summary of the Estonian report,
– summary of the European report.

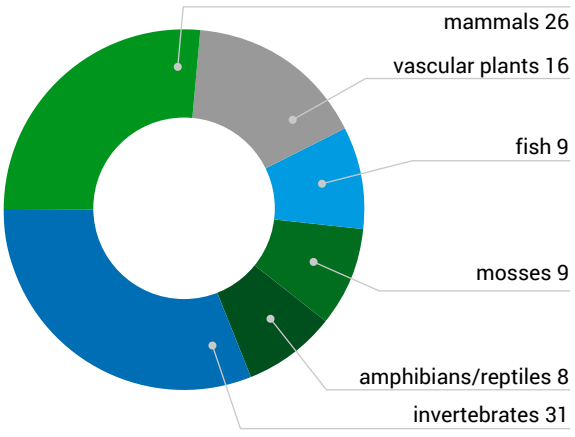


Figure 51. Number of species whose status is reported to the European Commission, listed by groups of species

4.2 Species of domestic importance

4.2.1 Red List species

One of the most important basis for species protection is assessing the risk of extinction, i.e. endangerment of the species/subspecies. The IUCN started publishing lists of internationally endangered species – the Red Data Books – in 1966. Nowadays, endangerment is also assessed on the regional (figure 52) and domestic level. The endangerment of species in Estonia is assessed more or less every ten years. While in the first two Red Data Books of Estonia (1977 and 1988), the endangerment of only certain species was assessed, the third assessment (1998) covered species by taxonomic groups. However, the system of international Red List categories of the IUCN was not used.

In the fourth assessment of the extinction risk of species (2008), Estonia used the IUCN Red List categories and criteria for the first time (see also section 4.1.1). In 2008, the endangerment of slightly fewer than 10 000 taxa was analyzed, curated by the Estonian Academy of Sciences nature conservation committee, and an endangered category was determined for slightly more than 4000 taxa. It appeared that for nearly a quarter of the taxa assessed, the data were deficient for assigning a category. In addition, in 2012 the endangerment of slightly fewer than 4000 insect species was analyzed in the framework of the so-called concealed biodiversity project. Thus, over the past decade, the endangerment of nearly half of the known species has been analyzed in Estonia, whereby an endangered category has been determined for nearly 8000 species.

Photographer: Marko Vainu

Photo 24. The alpine chickweed is included in Estonia's Red List and is a critically endangered, based on the 2008 assessment. There is only one place in Estonia where it is found. The species is included in protection category I

In the most up-to-date Estonian Red List (2008), there are 148 extinct species (RE) (2% of the assessed species), 963 endangered species (VU to CR) (12%) and 455 near threatened species (NT) (6%). In addition, nearly half of the assessed species are in a favourable status and the data are deficient for nearly a third.

Pursuant to the Nature Conservation Development Plan until 2020, the endangerment categories of species must be renewed periodically and the lists of protected species must be updated, considering their actual endangerment status. By the time this publication is published, preparations will have been made for the next assessment of species endangerment (a steering group has been put together, the IUCN instructional materials have been translated, procedures have been agreed upon, experts certified by the IUCN have received training, and a software update has been initiated). The new assessments of species endangerment will be finished by 2018.

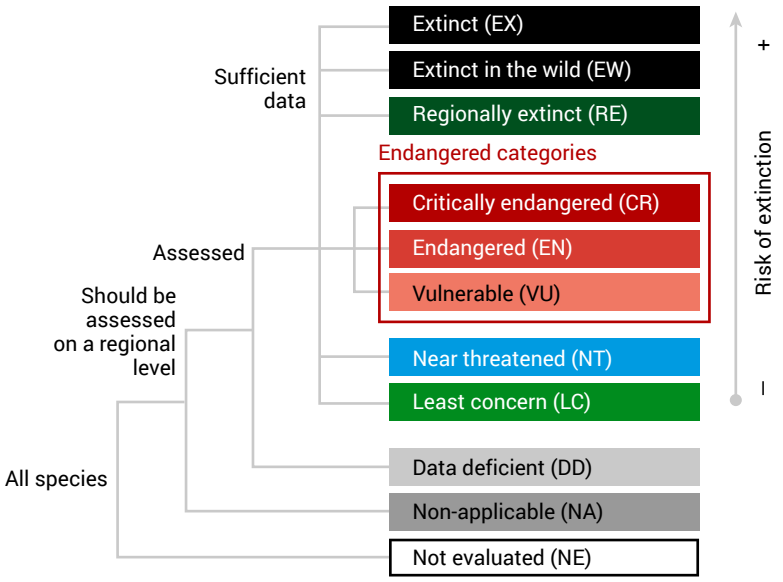


Figure 52. Scheme of endangerment categories used on the regional level

4.2.2 Protected species

Under the Nature Conservation Act, protected species are divided into three categories based on their endangerment level (figure 53). The most endangered species are included in protection category I and the least endangered ones in category III. The lists of species in categories I and II are established by the regulation of the Government of the Republic and the list of category III species with the regulation of the Minister of the Environment.

The list of protected species was amended in the spring of 2014. The *Dactylorhiza osiliensis*, moor rush and soprano pipistrelle were added. All these are now included in category II. Protection was revoked for five species: the hard rush, hairy bittercress, gibbous duckweed, *Petasites spurius* and *Rhynchostegium murale*. In addition, the protection category of several species was changed (table 19). Currently, there are 64 species in category I, 267 in category II and 237 in category III.

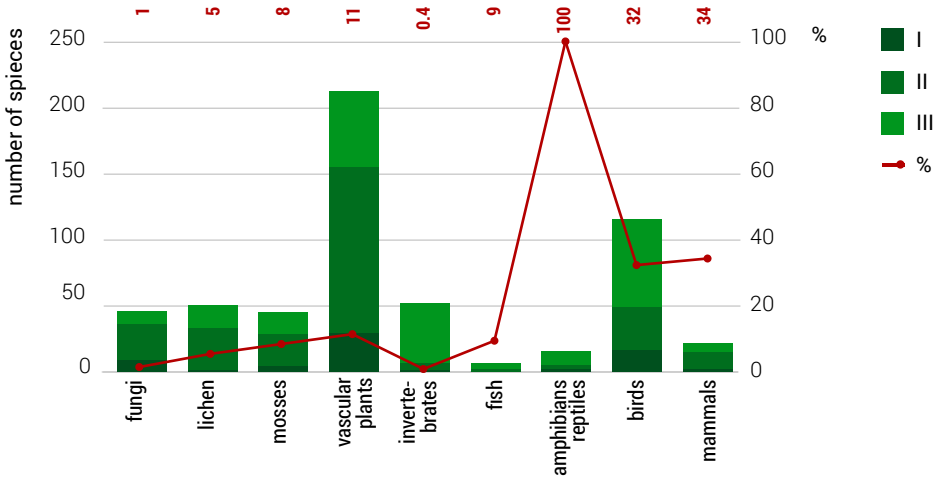


Figure 53. Distribution of protected species between protection categories and percentage of protected species from the total number of species by species groups

Table 19. Species whose protection category was amended in 2014

Species	Previous category	New category
Corda porella	II	III
Saussurea alpina subsp. esthonica	III	II
marsh angelica	III	II
hairy agrimony	III	II
Andreaea rupestris	II	III
moor-king lousewort	III	II
Sisymbrium supinum	III	II
Timmia megapolitana	III	II
sand pink	III	II
Northern Hawk's-beard	I	II
soft hornwort	II	III
wall scalewort	II	III
tundra warnstorfia moss	III	II

As at the end of 2015, 59 610 sites, in which protected species are found, had been entered into the Environmental Register. The number of such sites is the greatest in western Estonia and the islands, as well as in the Tartu area. There are just five municipalities where not a single protected species site is registered (figure 54); in 2007 and 2011, there were 15 and 10 of such municipalities, respectively.

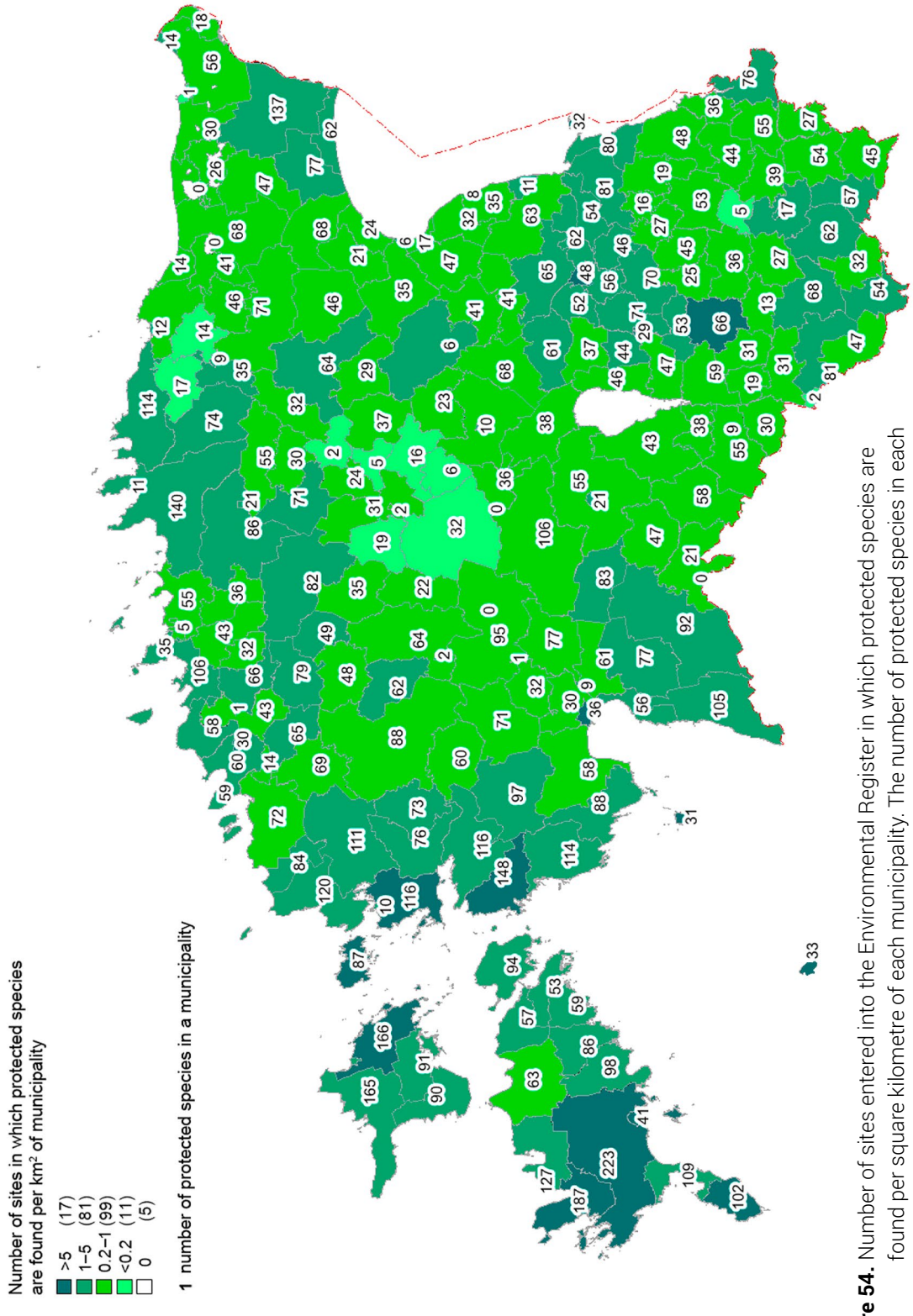


Figure 54. Number of sites entered into the Environmental Register in which protected species are found per square kilometre of each municipality. The number of protected species in each municipality is also presented on the map. Municipality borders are given as at 2015. Changes in administrative division compared to 2011 are given in the introduction

4.2.3 Protection of species

As at the end of 2015, Estonia had 1768 protected areas, limited-conservation areas and species protection sites that specified protection for one or more species (figure 55).

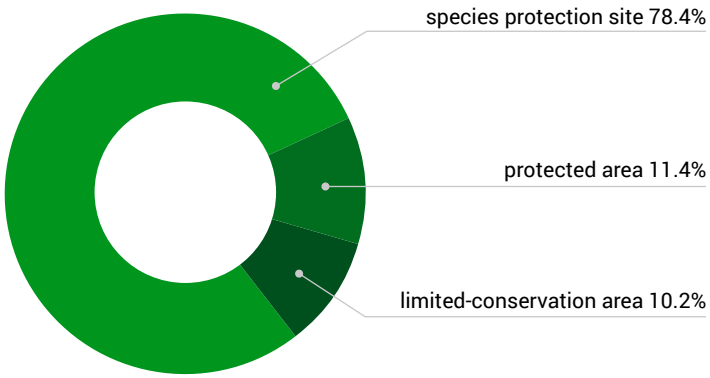
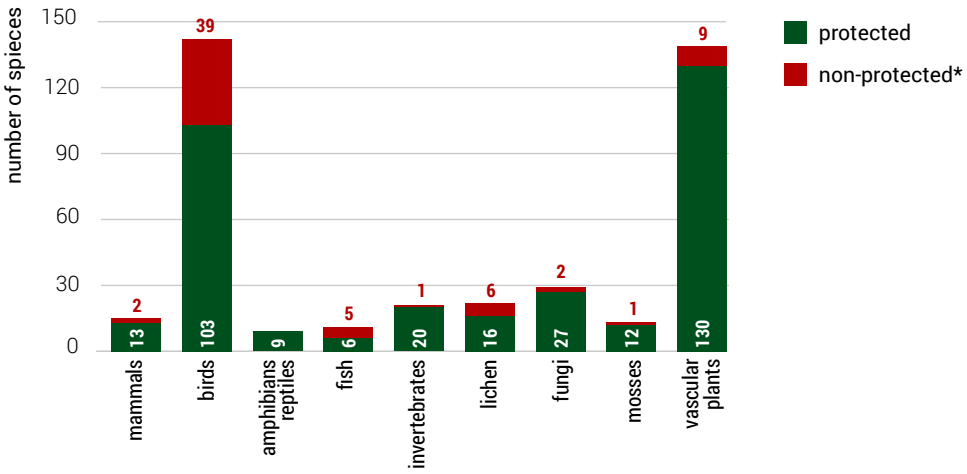


Figure 55. Different types of protected areas having protection of one or more species among their protection objectives

The largest number of species has been listed as conservation objectives in the case of the Väinamere limited-conservation area in Lääne County (106) and Lahemaa National Park (84). A total of 401 species (336 of them are protected species) are specified as the conservation objectives of protected natural objects. However, 232 protected species, including 21 category I species, have not been mentioned in a single set of protection rules. This does not necessarily mean that the sites in which the species are found are not located in protected areas, but it shows that the protection rules do not take that species into account and thus, it may not be certain that the protection regime ensures the conditions necessary for the survival of the population.



* Those not included in the protection categories given in section 46 of the Nature Conservation Act are considered "non-protected".

Figure 56. Number of species which constitute a protection objective of protected areas, listed by species groups

Of the species groups, birds and vascular plants are most often listed as a protection objectives, 142 and 139 species, respectively (figure 56). Of the species, the lesser spotted eagle is mentioned the most as a protection objective – in the case of 567 protected areas, 540 of which are species protection sites. It is followed by the white-tailed eagle with 280 areas. Lady's slipper orchid holds the first place among plants (75 areas). The top ten of species are given in figure 57.

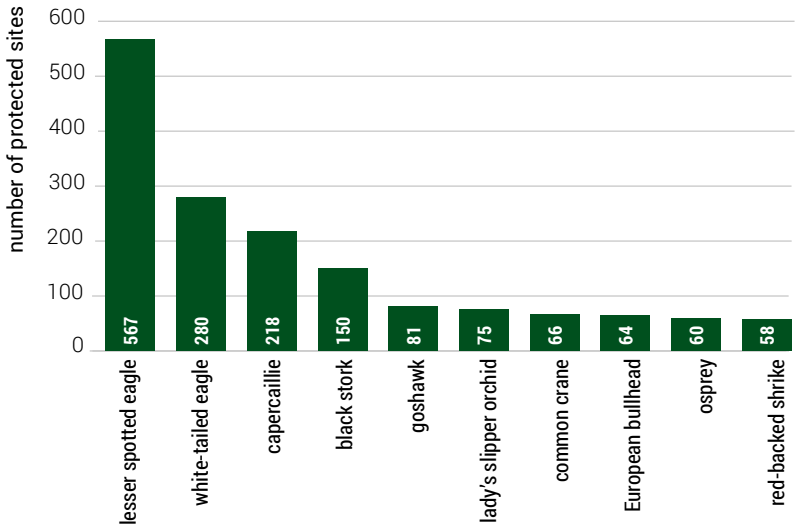
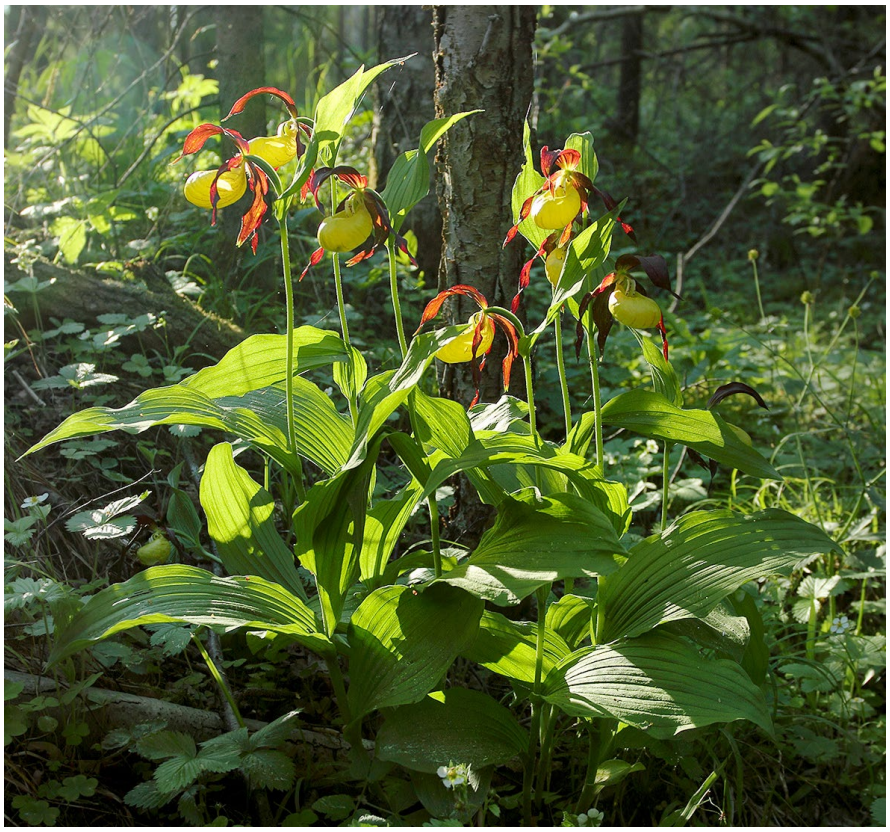


Figure 57. Species most often mentioned as conservation objectives of protected area



Photographer: Toomas Hirse

Photo 25. Lady's slipper orchid, a species listed in protection category II and in Annex II of the Habitats Directive, is a plant species mentioned most often as a conservation objective

4.2.4 Atlases and databases

A number of species atlases have been compiled in Estonia, for example, atlas of breeding birds, atlas of mammals, atlas of flora, etc., and there are also biodiversity databases. The Environmental Register keeps records of the places in which protected species and alien species are found. The register of species, data on collections of research institutions, professional observation data (data entered on the Internet) and data on research related to Estonia's nature are entered into the Estonian eBiodiversity database. The Nature Observations Database enables people to enter species observations directly over the Internet. The concealed biodiversity database compiles data on protected, endangered and indicator species of mosses, lichens and vascular plants. At the end of 2015, two mobile applications were released for nature enthusiasts (nature sounds application and nature observations application), which allow entering observations into the database at the observation site. The nature sounds application enables saving nature sounds and the observations related to these into the eBiodiversity database PlutoF. The nature observations application enables registering species observations in the Nature Observations Database.

As at the end of 2015, the Environmental Register contained more than 62 000 sites where species are found, 200 000 observations in the Nature Observations Database (including the 1980–1999 data from the atlas of mammals and 2003–2009 data from the atlas of breeding birds), more than 26 000 species and 756 000 observations in the eBiodiversity database, and digital information sheets of 246 species of moss, 226 species of lichen and 258 species of vascular plants in the concealed biodiversity database.

The map of the distribution of protected species (figure 58) prepared on the basis of species atlases and the mentioned databases (excluding the concealed biodiversity database) reveals that the largest number of protected species are found in western Estonia, Saare and Hiiu counties, as well as in the Tartu area. These areas have been studied more extensively, but Estonia's western parts are also known to be more biodiverse.

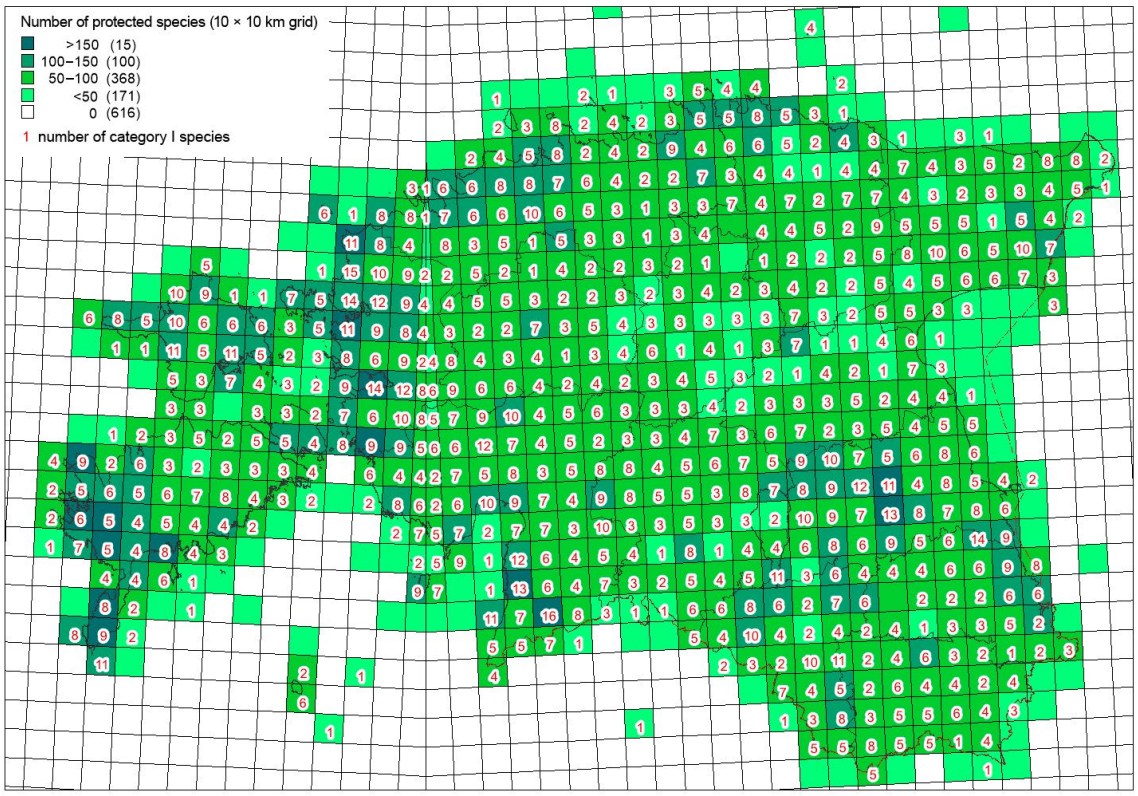


Figure 58. Distribution of protected species in Estonia on the basis of various databases and atlases. The number of category I species in each square (10 × 10 km grid) is also indicated

More and more, the species diversity map prepared on the basis of various databases and atlases starts to reflect actual species diversity, not only reflect the state of more extensively studied areas. This is fostered by various citizen science projects and databases where all nature enthusiasts can quickly and conveniently enter their species observations via the Internet, with the help of e.g. a mobile application. There are two large databases which include citizen science data in Estonia – the Nature Observations Database and eBiodiversity. For example, during September 2010 – December 2015, a period between the situation given in the previous publication and the situation described in this publication, a total of nearly 770 000 observations have been entered into the eBiodiversity and Nature Observations Database (figure 59). Birdwatching exceeds others by far (more than 90% of all observations).

A project to compile a new Estonian atlas of vascular plants was initiated in 2014, led by the Estonian Seminatural Community Conservation Association and botanists from the Institute of Agricultural and Environmental Sciences of the Estonian University of Life Sciences (the previous atlas had been completed in 2005). Fieldwork was carried out in 2015–2016 with the support of the foundation Environmental Investments Centre. A total of more than 370 000 observations were made and nearly 10 000 herbarium leaves were collected, which will be entered into PlutoF, the database of eBiodiversity. Distribution maps of 1477 taxa were prepared as a result of the fieldwork. An e-atlas of plants in Estonia will be finished in 2018 in the second stage of the project. A new atlas of breeding birds in Estonia is in preparation, which would reflect the period of 2013–2017 (the previous atlas was compiled more than ten years ago) and will most likely be finished in 2018.

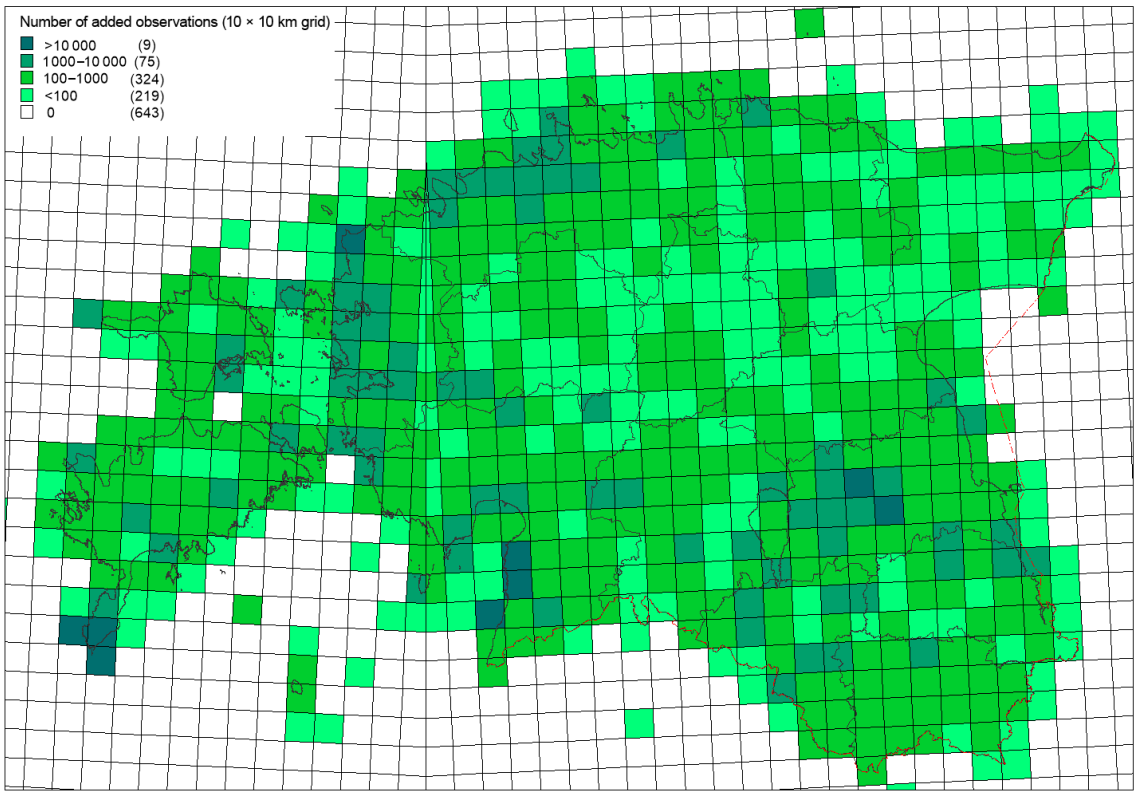


Figure 59. Number and spatial distribution of observations entered into the eBiodiversity and Nature Observations Database between September 2010 and December 2015 (10 × 10 km grid)

4.2.5 Alien species

Alien species are species that have spread outside their natural habitat due to human activity. Invasive alien species are the ones that have managed to survive in nature and endanger local biota and natural habitats with their abundance or activity. Often, the time period between when an alien species arrives at a new location and when it starts to become invasive is very long, sometimes even a hundred years. For example, the Himalayan balsam was first found in nature in Estonia in 1939, but signs of it becoming invasive did not appear until a decade ago.

A total of 987 alien species have been registered in Estonia, but because there has been no systematic monitoring and inventories, their real number might even exceed two thousand. Alien species are divided into four, based on how dangerous they are: invasive, potentially invasive, non-invasive and undetermined. Of the alien species known in Estonia, 63 species are considered invasive and 72 species potentially invasive, the invasiveness of the majority is undetermined (figure 60).

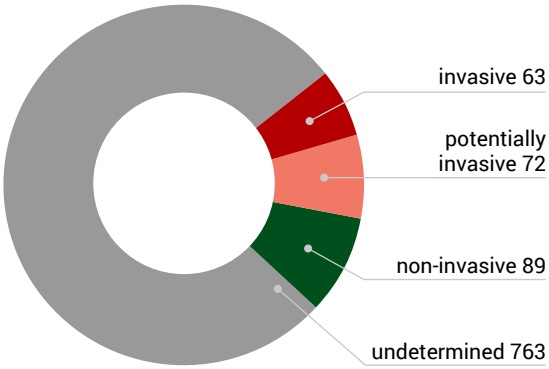


Figure 60. Alien species registered in Estonia by their invasiveness

Of species groups, plants (748 species, i.e. 75% of the species), including vascular plants (735 species) make up the greatest share of the alien species, followed by invertebrates (152 species). Vascular plants are also in the lead among invasive species, with 44 species (figure 61).

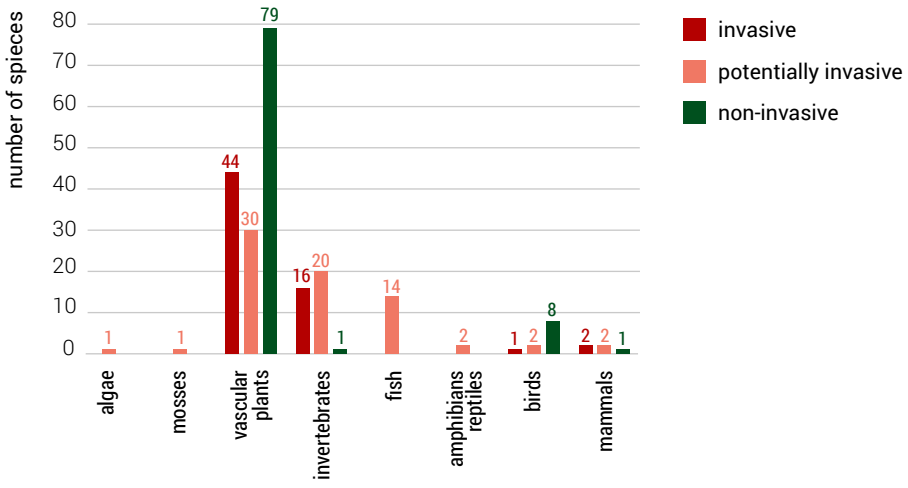


Figure 61. Distribution of alien species by species groups in Estonia

Photographer: Madli Linder

Photo 26. Himalayan balsam – an alien species endangering the natural balance in Estonia

Probably the best-known and most vexing alien species in Estonia are hogweeds. Five species of alien hogweeds have been found in Estonia: Sosnowsky's hogweed, *Heracleum lehmannianum*, Persian hogweed, *Heracleum pubescens* and giant hogweed. Sosnowsky's hogweed and giant hogweed are considered the most widely spread. Nation-wide hogweed eradication works have been conducted since 2005 all over Estonia. In 2011–2015, the eradication was based on a management plan which has been the first and only approved action plan for management of alien species so far (see also section 3.6). All known (mapped) hogweed colonies have been under eradication effort each year (figure 62). The constant increase in the area of known colonies of the hogweed alien species does not necessarily mean the further spread of the colonies irrespective of the eradication – as a result of long-term and consistent eradication efforts, many colonies have been weakened and are perishing – as at 2015, there were an estimated 600 colonies, i.e. nearly 300 ha.

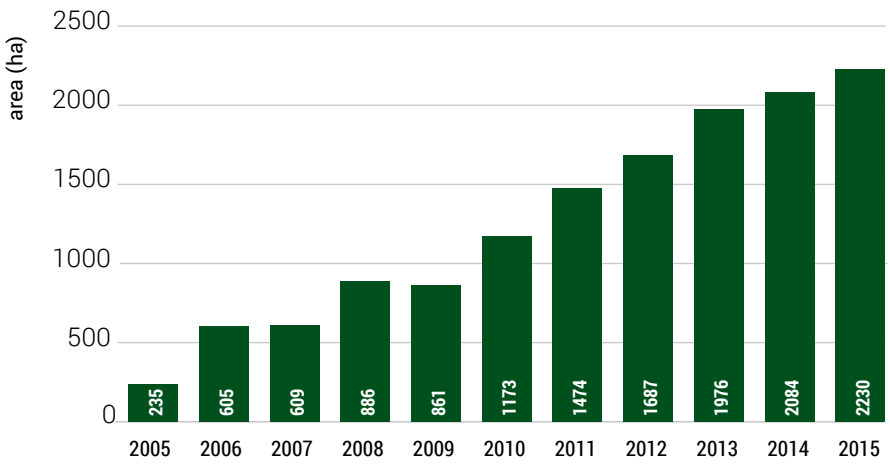


Figure 62. Area (ha) of colonies of the Sosnowsky's hogweed and giant hogweed under eradication in 2005–2015

According to the Environmental Register and the Nature Observation database, the places in which invasive and potentially invasive alien species are found occur most frequently in northern Estonia, in the Tartu area, Jõgeva and Viljandi counties, and central Saare County (figure 63).

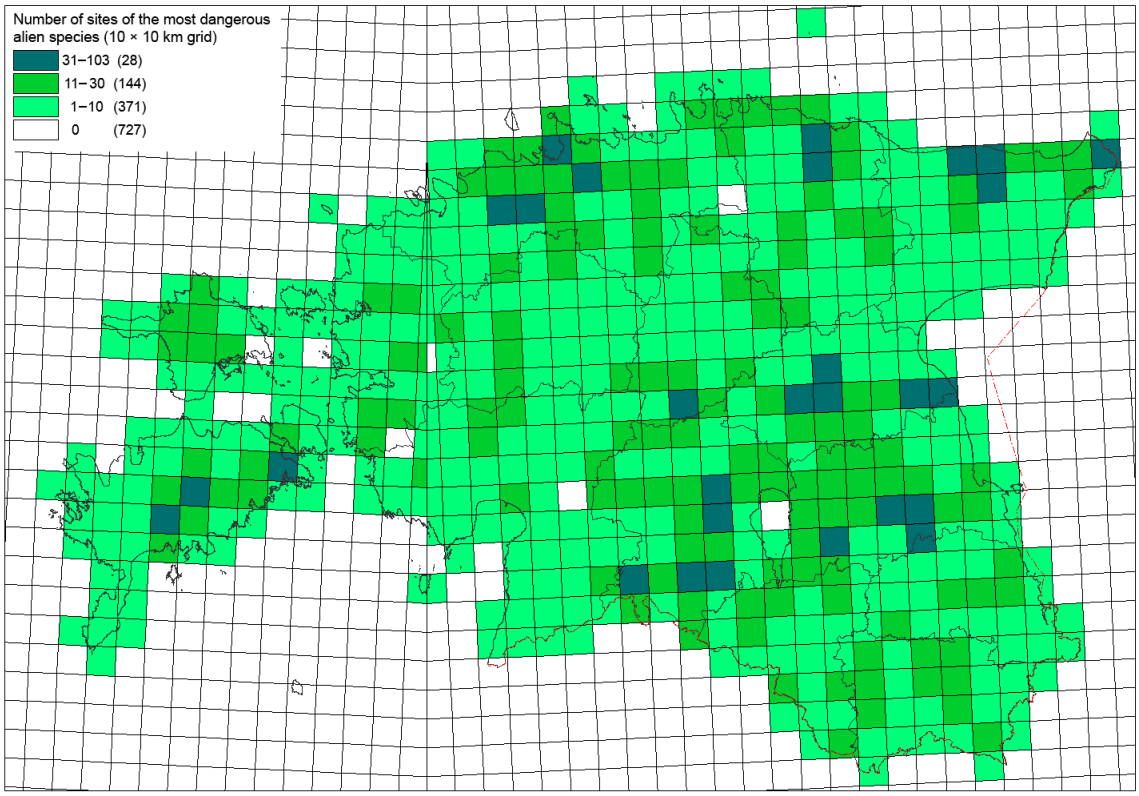


Figure 63. Places in which invasive and potentially invasive alien species are found according to the Environmental Register and the Nature Observation database (10 × 10 km grid)

The species which are considered most invasive are entered into the so-called list of alien species likely to disrupt natural balance to limit their current spread or prevent their arrival in Estonia. Currently, there are 43 species in that list whose live specimens are generally forbidden to import, rear, or perform transactions with. As an exception, permits can be applied for from the Environmental Board to keep the individuals of these species for scientific purposes; minks and raccoon dogs can also be kept for economic purposes in a farm.

The year 2015 brought a breakthrough with regard to alien species in the European Union, as the first regulation dedicated to alien species entered into force on 1 January. This is Regulation (EU) No. 1143/2014 of the European Parliament and of the Council on the prevention and management of the introduction and spread of invasive alien species. The regulation establishes common bases for combating alien species in the entire EU territory and so it formed the basis for the list of invasive alien species considered to be of Union concern which entered into force on 3 August 2016. The initial list includes 37 species, of which the most important ones for Estonia who are now under import ban due to the list coming into effect are the red-eared slider, raccoon, several alien crayfish species and from plants e.g. the western skunk cabbage. The list will be changing in time and it will include both alien species which have already arrived in Europe, as well as those whose arrival needs to be prevented. Figure 64 shows species in the list of invasive alien species of Union concern whose individuals have already been found in Estonian nature as at 2015, and the closest findings of the rest of the species in that list from the neighbouring countries. There have been incidents in Estonia where a raccoon or an eastern grey squirrel kept as a pet got loose, but the specimens were caught and these species have not been found to exist in the wild in Estonia.

Pursuant to the regulation, the most important pathways of alien species must be mapped and specific activities must be implemented to prevent and avoid the entry of alien species.

Figure 64. Species in the list of invasive alien species of Union concern in Estonia as at 2015, and the closest findings of the rest of these species in the wild in the neighbouring countries

5. Habitats and habitat protection

The following sections give an overview of the distribution of Estonian habitat groups and their protection in 2015. The overview is provided from two viewpoints. First, as an analysis of the distribution and protection of habitat groups formed on the basis of CORINE land use database types covering all of Estonia (section 5.1); and secondly, as an analysis of existing data for three major habitat groups (mires, meadows, forests) (section 5.2). In addition, an overview is provided regarding the latest status assessment of Natura 2000 Habitats Directive habitats (section 5.3) and their protection on protected areas (section 5.4). Due to the use of two different above-mentioned ways for analyzing habitat groups, the figures for the same objects may vary somewhat due to the different levels of precision.

Approximately 49% of Estonia is covered by forests,
7.6% by mires and 3% by meadows.

A total of 18% of forest land is under protection (including 8.5% in conservation zones and strict nature reserves), 65% of meadows and 69% of mires.

In terms of the distribution and protection of the three separately analyzed habitat groups – forests, mires and meadows – Lääne County is distinct, among the leaders in terms of distribution and protection of these habitat groups. Hiiu County stands out in terms of distribution and protection of forests. Saare County leads in distribution and protection of meadows. Pärnu County and Lääne County are notable in terms of distribution and protection of mires.

5.1 Changes in the distribution of CORINE land cover types

In the last years since the publication of "Estonian Nature Conservation in 2011", a new CORINE Land-Cover (CLC) digital database has been prepared regarding the distribution and occurrence of natural, semi-natural and anthropogenic areas. This spatial database of land cover types based on satellite photography from 2012 is Estonia's latest database on CORINE land cover types and their distribution, and thus this publication uses the database to give an overview of the spread of various habitat groups in Estonia in 2015. As the smallest land cover unit in the CLC database is 25 hectares, the data are generalized to this level. But in spite of this, an overview can be provided of land cover types and the distribution of habitat groups formed on their basis. An exception is water bodies, as all bodies of water smaller than the smallest mapping unit of 25 hectares would be omitted from the database. The CLC database is thus not used for bodies of water in this analysis, but rather, the Environmental Register and the Estonian Nature Information System (EELIS) map layers of water bodies are used. In the interests of comparability with "Estonian Nature Conservation in 2007" and "Estonian Nature Conservation in 2011", the methods used in the first publication (see "Estonian Nature Conservation in 2007", pp 72–74) were used as the basis for grouping the land cover types into habitat groups.

Photographer: Margus Muts

Photo 27. Viivikonna ghost town in the industrial landscape of Ida-Viru County

On the basis of the habitat groups formed based on the CLC 2012 database, agricultural land (31.5%) makes up the largest share of Estonian territory, followed by mixed forests (20.1%) and coniferous forests (18.1%). Compared to the previous CLC map form 2006, the area of all mixed forests (10%, ↑) and parks and gardens (8.3%, ↑) has increased significantly. At the same time, the area of natural grasslands (15.5%, ↓) and deciduous forests (13.9%, ↓) decreased significantly. Changes in other groups were not as extensive (table 20).

Table 20. Areas of habitat groups formed on the basis of the CLC land cover classes in Estonia in 2006 and 2012

Habitat group	Total area (km^2) in Estonia in 2006	Total area (km^2) in Estonia in 2012	Change, %	Percentage of Estonia's territory in 2006	Percentage of Estonia's territory in 2012
Agricultural land	14 740	14 494	1.7 ↓	32.2	31.5
Mixed forests	8387	9224	10.0 ↑	18.3	20.1
Coniferous forests	8021	8313	3.6 ↑	17.6	18.1
Deciduous forests	4463	3843	13.9 ↓	9.8	8.4
Mires	3059	3176	3.8 ↑	6.7	6.9
Shrubland	2937	2822	3.9 ↓	6.4	6.1
Inland waters*	2201	2208	0.3 ↑	4.8	4.8
Parks and gardens	600	650	8.3 ↑	1.3	1.4
Natural grasslands	562	475	15.5 ↓	1.2	1.0
Coastal habitats	391	393	0.5 ↑	0.9	0.9
Artificial surfaces	371	363	2.2 ↓	0.8	0.8
Marine habitats*	24 990	25 126	0.5 ↑	-	-
Total	70 722	71 087	0**	100	100

* Areas of water bodies are not based on CLC, but on map layers of water bodies of the Environmental Register and the EELIS. The analysis of inland water bodies also includes Lake Peipsi and Lake Võrtsjärv. In calculations, Lake Peipsi and Lake Võrtsjärv are included in the territory.

** The actual change is 0, but due to a small technical error, which occurred in calculations (approximation, etc.), the total areas of 2006 and 2012 are not an exact match.

When looking at changes in land cover classes based on the CLC 2006 and 2012 databases, the changes between forest and shrubland classes are by far the greatest: 419.3 km^2 of coniferous, deciduous and mixed forests have become shrubland and 606.1 km^2 of shrubland has become forests (table 21).

Table 21. Largest changes between habitats groups formed on the basis of the CLC land cover classes, based on the CLC 2012 database of land cover changes

Habitat group on the basis of CLC 2006	Habitat group on the basis of CLC 2012	Area of changes (km^2)
Shrubland	Mixed forests	362.3
Mixed forests	Shrubland	184.5
Coniferous forests	Shrubland	181.0
Shrubland	Coniferous forests	160.0
Shrubland	Deciduous forests	83.8
Deciduous forests	Shrubland	53.8
Agricultural land	Shrubland	45.7
Agricultural land	Artificial surfaces	13.8
Shrubland	Artificial surfaces	10.9
Artificial surfaces	Parks and gardens	6.4

The changes in the ratio of forests to shrubland reflect timber cuts. In recent cutting areas (created after 2006), forests have been classified as shrubland. In cutting areas created earlier, the land cover category classified as shrubland in 2006 has now been reassigned as a forest. When looking at changes which occurred in 2006–2012 along with the changes which occurred in 2000–2006, it is clear that CLC has reassigned the nearly 600 km^2 of forest, which became shrubland by 2006 due to timber cuts, as forest in the 2012 database (figure 65).

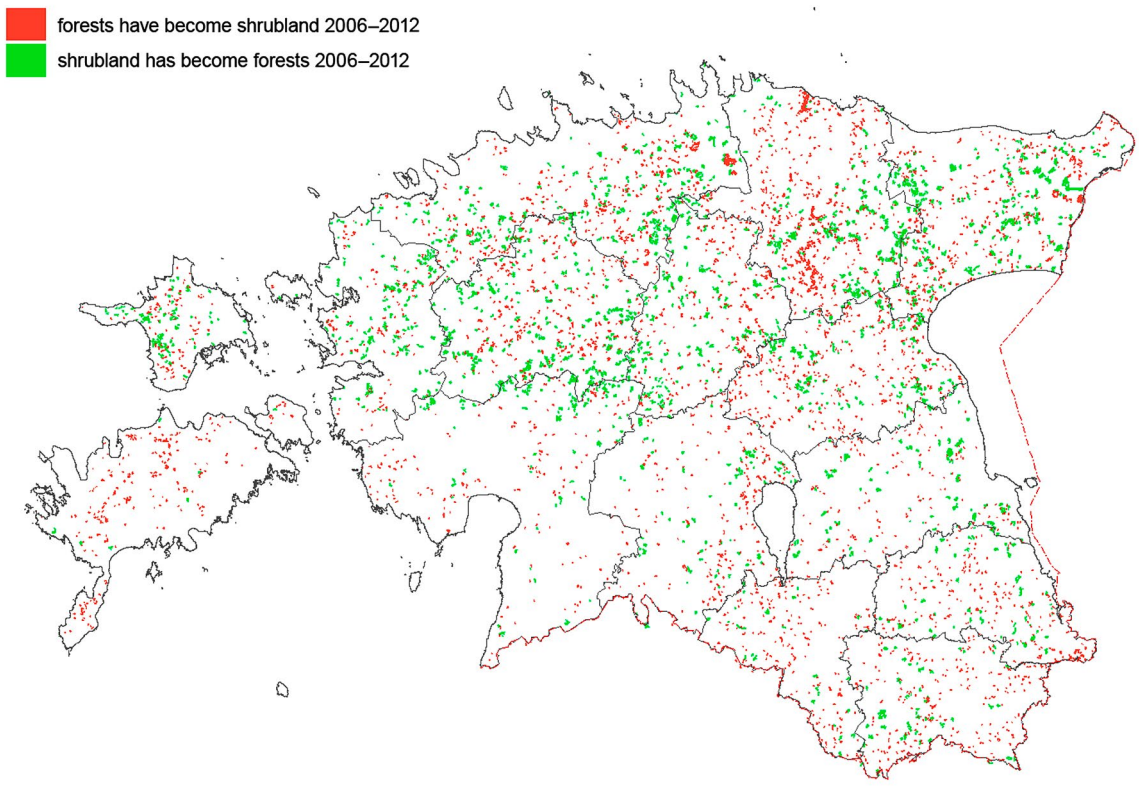


Figure 65. Changes between forest and shrubland habitat groups formed on the basis of CLC 2006 and 2012 databases

It should be taken into account that the CLC methodology recognizes only changes of over 5 ha. This is also the reason why the decrease in the area of natural grasslands (meadows) is not reflected. Estonia's natural grasslands tend to have small areas, which is why the changes do not generally exceed the limit set in the methodology. However, a small decrease (becoming overgrown in the edges) of each small meadow comes to quite a large total percentage (table 20).

In addition, changes in the land cover classes clearly reveal the continuous process of fields becoming overgrown, earlier agricultural land becoming artificial surfaces (mainly industrial and commercial territories, construction sites and quarries) and areas, which were mapped as construction sites in 2006, becoming gardens (see the last row of table 21). The latter reflects the process of urban sprawl, i.e. the establishment of new residential neighbourhoods on former agricultural land around larger cities, mainly Tallinn, Tartu and Pärnu. If areas, which were classified as agricultural land in 2006 but had been changed into construction sites based on the CLC 2012 database of changes, are added to this, the area of new houses built on fields and their gardens will increase further by about 3.5 km^2.

The following trends are revealed when analyzing the location of habitat groups formed on the basis of the CLC 2012 land cover classes in areas under nature conservation as at the end of 2015. In Estonia, the largest areas under protection are natural grasslands and coastal habitats (both 68.8% of the habitat group total area), followed by mires with 66.5% (table 22). The percentage of natural grasslands (meadows) under protection from the area of the habitat group has increased by nearly 10% in 2011–2015. At the same time, their total area in Estonia has decreased by 15% (it should be taken into account that only the larger meadow areas are reflected in the CORINE land cover database, as the smallest land cover unit is 25 hectares). This change shows that if the current circumstances continue, the only meadows we will have left in the long run are located on protected areas where subsidies are paid for restoring and maintaining them. Meadows will continue to become overgrown in other areas.

Another aspect revealed by the analysis is that the restrictions and bans on timber cuts in protected areas have considerably decreased the area of shrublands in areas under nature conservation. Their area has decreased by 22.6%. When the previous CLC database was compiled based on an interpretation of the 2006 satellite photography, only two years had passed since Estonia had joined the European Union and placed a large number of areas under protection to form the Natura 2000 network with relation to that, and therefore the protection measures had not had sufficient time to take effect in nature. By now, the former shrubland which was included in protected areas has been classified as forest and, due to restrictions and bans on timber cuts, new shrubland has not been created in this extent. This situation is well illustrated by a comparison between the change in the area of shrubland in areas under nature conservation and the rest of Estonia. While the shrubland area has decreased by nearly 100 km^2 over the past four years in areas under protection, it has decreased by only 10 km^2 outside of protected areas.

Table 22. Protection of habitat groups formed on the basis of the CLC land cover classes in Estonia in 2011 and 2015

Habitat group	Under protection in 2011 (km^2)	Percentage from the habitat group area, 2011	Under protection in 2015 (km^2)	Percentage from the habitat group area, 2015	Change (%) in the area under protection in 2011–2015
Natural grasslands	331.0	58.9	327.0	68.8	1.2 ↓
Coastal habitats	270.5	69.2	270.5	68.8	0.0
Mires	1977.0	64.6	2111.5	66.5	6.8 ↑
Inland waters*	1015.0	46.1	1035.0	46.9	2.0 ↑
Marine waters*	6705.0	26.8	6753.5	26.9	0.7 ↑
Coniferous forests	2005.0	25.0	2136.0	25.7	6.5 ↑
Deciduous forests	668.5	15.4	605.5	15.8	9.4 ↓
Mixed forests	1205.0	14.4	1359.5	14.7	12.8 ↑
Shrubland	466.0	15.9	360.5	12.8	22.6 ↓
Parks and gardens	35.0	5.8	34.5	5.3	1.4 ↓
Agricultural land	732.5	5.0	735.5	5.1	0.4 ↑
Artificial surfaces	15.0	4.0	9.5	2.6	36.7 ↓
Total	15 445.5	21.8	15 738.5	22.1	1.9 ↑

* Areas of water bodies are not based on CLC, but on map layers of water bodies of the Environmental Register and the EELIS. The analysis of inland waters also includes Lake Peipsi and Lake Võrtsjärv. In calculations, Lake Peipsi and Lake Võrtsjärv are included in the territory.

In Estonia, zones under stringent protection (strict nature reserves and conservation zones of protected areas) pursuant to the Nature Conservation Act include mostly mires (51.4% of the total area of the habitat group), followed by natural grasslands (30.5%) and coastal habitats (26.2%). The area of mixed forests (18.7%, ↑), coniferous forests (13.6%, ↑) and mires (13.6%, ↑) included in the zones under stringent protection mentioned has increased significantly (table 23).

However, if stringent protection is defined pursuant to the IUCN, the situation is significantly different. The IUCN considers areas under stringent protection to be those that are included in categories Ia and Ib, which in Estonia would be strict nature reserves, wilderness parts of conservation zones and strictly protected parts of conservation zones of species conservation zones. Pursuant to that, the only areas that have increased are mixed forests under stringent protection and, to a small extent, the marine area. In the meaning of the IUCN, the areas of the rest of the habitat groups in zones under stringent protection have decreased. This makes sense in the case of certain habitat groups. For example, a protection regime, which forbids maintenance, is not suitable for the protection of meadows, not to mention anthropogenic habitat groups. The main reason behind the decrease in the stringent protection of the rest of the habitat groups is that the revision of protection rules has resulted in many former wilderness conservation zones becoming managed conservation zones, which means that the total area of areas corresponding to IUCN categories Ia and Ib decreased by 100 km^2 in 2011–2015 (table 23).

Table 23. Share of the strictly protected area of habitat groups formed on the basis of the CLC land cover classes in Estonia in 2011 and 2015

Habitat group	Under stringent protection in 2011 (km^2)**	IUCN Ia and Ib 2011 (km^2)	Share of the area under stringent protection from the habitat group area (%) 2011**	Under stringent protection in 2015 (km^2)**	IUCN Ia and Ib 2015 (km^2)	Share of the area under stringent protection from the habitat group area (%) 2015**	Change (%) in the area under stringent protection in 2011–2015**
Mires	1437	943.5	47.0	1633.0	895.7	51.4	13.6 ↑
Natural grasslands	139	14.0	24.7	145.0	10.0	30.5	4.3 ↑
Coastal habitats	96	35.0	24.6	103.0	31.5	26.2	7.3 ↑
Coniferous forests	997	399.5	12.4	1133.0	371.8	13.6	13.6 ↑
Deciduous forests	318	125.0	7.1	272.0	74.0	7.1	14.5 ↓
Mixed forests	488	202.0	5.8	600.0	240.4	6.5	18.7 ↑
Shrubland	162	36.0	5.5	123.0	30.4	4.4	24.7 ↓
Inland waters*	43	14.5	2.0	52.0	13.4	2.4	20.9 ↑
Marine waters*	430	286.0	1.7	443.0	287.9	1.8	3.0 ↑
Artificial surfaces	3	0.4	0.8	2.5	0.3	0.7	16.7 ↓
Agricultural land	35	5.5	0.2	43.0	5.5	0.3	22.9 ↑
Parks and gardens	2	0.3	0.3	1.5	0.3	0.2	25.0 ↓
Total	4150	2061.7	5.9	4551.0	1961.2	6.4	9.7 ↑

* Areas of water bodies are not based on CLC, but on map layers of water bodies of the Environmental Register and the EELIS. The analysis of inland water bodies also includes Lake Peipsi and Lake Võrtsjärv. In calculations, Lake Peipsi and Lake Võrtsjärv are included in the territory.

** Here, stringent protection refers to the protection regime of strict nature reserves and all conservation zones, not merely areas included in the IUCN categories Ia and Ib.

5.2 Changes in distribution and protection of habitats

5.2.1 Forests

According to an extract from the Estonian Topographic Database (ETD) from April 2016, Estonia has 2 334 203 ha of forest, which is 51% of Estonian terrestrial area (with Lake Peipsi and Lake Võrtsjärv) and 54% without the large lakes. A little over 424 000 ha, i.e. about 18% of forests are located in areas under protection (based on the ETD forest class). Nearly 199 000 ha of these, i.e. about 8.5% of all forests, are in zones under stringent protection established on the basis of the Nature Conservation Act, i.e. strict nature reserves and conservation zones of protected areas and species protection sites (table 24).

Table 24. Distribution of protected forest (based on the ETD forest class) between different protection zones

Protection zone	Forest area in 2011 (ha)	Forest area in 2015 (ha)
Strict nature reserve	3100	3200
Conservation zone	175 000	195 800
Limited management zone	182 600	178 700
Limited-conservation area	44 500	46 550
Total	405 200	424 250

Photographer: Anneli Palo

Photo 28. Western taiga in the Kõpu nature reserve in Hiiu County. Western taiga is a priority habitat type of the Habitats Directive (habitat type code 9010*). This type is the most widely-spread forest habitat types of the Habitats Directive in Estonia, however, its current status has been assessed as bad in Estonia

Percentage of forest area of counties and percentage of forests included in zones under stringent protection (strict nature reserves, conservation zones) by counties based on the ETD forest class are provided in figure 66. Hiiu County has the largest areas of forest land (percentage of forest area is nearly 70%) and Tartu County has the least forest land (42%). The largest forest areas under protection are in Lääne County, Valga County and Harju County – 23% of the total forest area in each. These are followed by Pärnu County and Lääne-Viru County (22% under protection in each). The most forests included in strict nature reserves and conservation zones are located in Hiiu County (14%), followed by Tartu County with 13%. Põlva County has the smallest area of forest under protection (9%). The largest changes compared to 2011 have taken place in Tartu County where the area included in zones under stringent protection has increased by 3%, mainly due to the establishment of the Peipsiveere nature reserve. Another large change has occurred in Lääne County where the percentage of forest under protection has decreased by 3%. The main reason for this is a general increase in forest area at the expense of overgrown grasslands and unused agricultural land, decreasing the percentage of protected forest area.

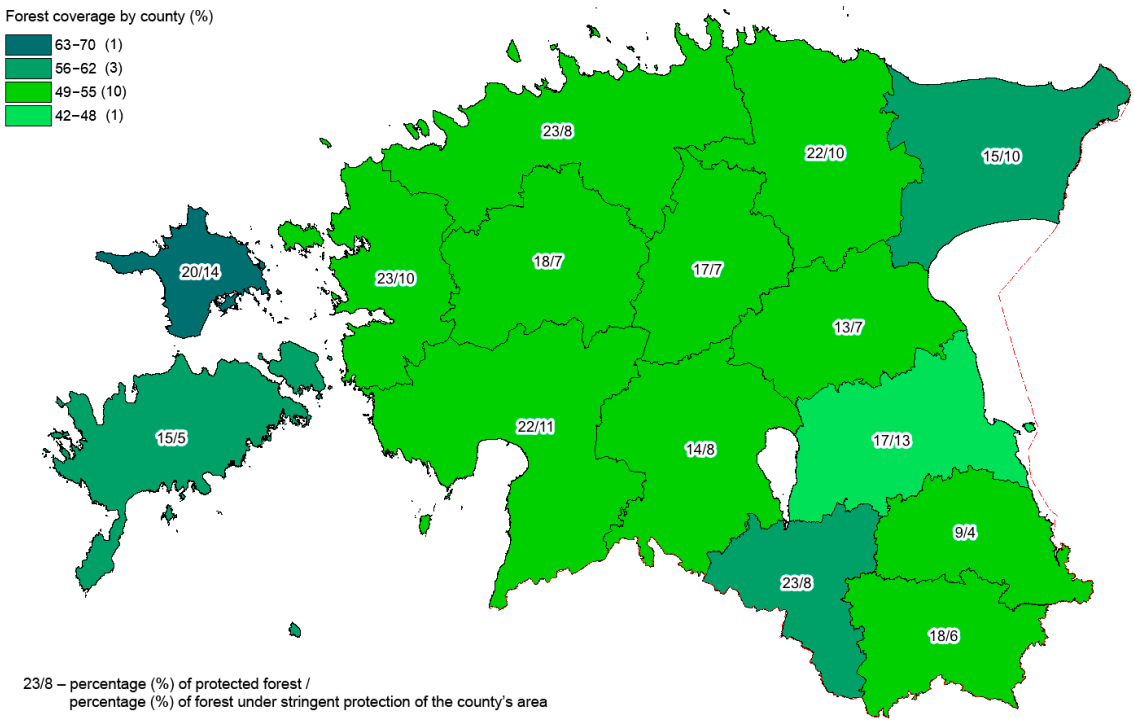


Figure 66. Percentage of forest area of counties and percentage of forests under protection and the share included in zones under stringent protection (strict nature reserves, conservation zones) from forests in the county based on the ETD forest class

According to the latest data on national forest inventory (NFI) available at the time this publication was issued (published in the yearbook "Forest 2014"), Estonia had 2 273 700 ha of forest land in 2014. This is 50% of Estonia's land territory (with Lake Peipsi and Lake Võrtsjärv) and 52% of Estonia's land territory without the large lakes. 2 142 100 ha of the forest land was covered with forest, i.e. 47% of Estonia's area with large lakes and 49% if large lakes are not considered. Compared to 2011, forest area had increased by 39 800 ha by 2014, and forested area of forest land by 34 700 ha according to the NFI.

According to the NFI 2015 data[1], the area of forest land was **2 309 400 ha** (51% of Estonia's total area[2] and **53%** of the area without the large lakes). The area of forest land covered with forest was **2 147 500 ha** in 2015 (47% of Estonia's area with large lakes and **49%** if large lakes are not considered).

[1] A refined methodology was used in 2015 which was different from the previous years.

[2] Estonia's 2015 area, which was specified in 2016, is used here and hereinafter in the case of NFI 2015 data.

By dominant tree species, the most common are the pine forests (32.5% of forests), followed by birch forests (30.3%) and spruce forests (17.6%). By typological distribution of forests, the most common groups of forest site types in Estonia according to the NFI 2014 are the mesoeutrophic forests (23.5% of forests), mesotrophic forests (22.5%) and herb-rich forests on gley soil (16.6%).

By age classes, 41–50-year old forests cover the largest area according to the NFI 2014. This accounts for 14% of all forests in Estonia. 51–60-year old and 61–70-year old forests account for 13% of forests each. Comparison of the distribution of forests by age classes to the 2004 forest inventory data reveals that the percentage of forest in the average and younger than average age groups, i.e. 21–60-year old forests has decreased significantly. In 2004, 55% of forests were in that age group; now, there are only 46% (the area has decreased by nearly 170 000 ha, which is an area more than half the size of Saare County). However, the percentage of the youngest and oldest forests has increased. According to the forest inventory of 2004, up to 20-year old forests accounted for 11% of all forests; based on the 2014 inventory, the percentage was 16 (the area increased by nearly 95 000 ha, which is an area almost as large as Hiiu County). In 2004, nearly 29% of forests were 60–100 years old, in 2014 the percentage was 33 (area increased by ca 85 000 ha). At that, the area covered with forest has increased by only ca 30 000 ha over the past decade. Estonia has a total 5.5% forests (4.6% in 2004) that are older than a century, but not all of those are classified in terms of structure and appearance of the community as biodiverse old natural forest where human-shy species lacking in managed forests may be found.

The objectives set out in the Nature Conservation Development Plan until 2020 (see also section 1.1.4) and the Estonian Forestry Development Plan until 2020 provide that by 2020, **the set of strictly protected forests is to be typologically representative and cover at least 10% of forest land.**

In addition to strict nature reserves and conservation zones, the methodology of the NFI also considers habitats of category I species, woodland key habitats and planned protected areas pursuant to the planned regime as forests under stringent protection (also known as *protected forest*). Based on this, 236 900 ha of forest is under stringent protection according to the NFI 2014 data, making up **10.4%** of the total area of forest land. Based on the 2015 data of the NFI, **238 800 ha** of forest, which makes up **10.3%** of the total area of forest land, is under stringent protection.

A working group of state authorities and non-governmental organizations has been put together to assess the percentage and meeting of objectives of typological representation of forests under stringent protection. The working group has agreed that both strict nature reserves and conservation zones, which have already been established, as well as the ones that are being planned, all woodland key habitats located on state land irrespective of their area, and woodland key habitats with a contract located on private land are considered as forests under stringent protection. Based on this definition, an analysis was carried out at the beginning of 2016 based on data from 30 November 2015. The results[1] reveal that the area of forest under stringent protection is 223 261 ha and 240 326 ha with the planned protected areas, meaning that the percentage of strictly protected forest land calculated on the basis of the NFI 2015 data is **9.7%** and **10.4%**, respectively. At the same time, the aforementioned analysis indicated that even though the objectives of the nature conservation and forestry development plans have been achieved in terms of the total forest area under stringent protection, the typological representation of forests under stringent protection must increase, mainly meaning that additional stringent protection must be ensured for mesoeutrophic and nemoral forests.

According to the NFI 2014 data, the most widespread forest habitat type of the Habitats Directive is Western taiga (habitat type code 9010*) covering 117 900 ha in Estonia. This is followed by bog woodland (91D0*) – 83 800 ha and Fennoscandian deciduous swamp woods (9080*) – 43 600 ha (table 25). Their distribution according to the Estonian Nature Information System's (EELIS) Natura 2000 habitats data is presented in figure 67.

[1] Available at: www.envir.ee/sites/default/files/metsade_range_kaitse_2016_alohmus.pdf.

Table 25. Distribution of Habitats Directive forest habitat types in Estonia according to the NFI 2014. The four-digit numbers in the habitat type column are the habitat type codes as given in the Habitats Directive and asterisks denote priority habitats

Habitats Directive habitat type	Area in Estonia (ha)	Percentage of habitat type from the total area of forests
9010* – Western taiga	117 900	5.3
9020* – Fennoscandian hemiboreal natural old broad-leaved deciduous forests	1700	0.1
9050 – Fennoscandian herb-rich forests with *Picea abies*	6200	0.3
9060 – Coniferous forests on, or connected to, glaciofluvial eskers	6700	0.3
9070 – Fennoscandian wooded pastures	3300	0.1
9080* – Fennoscandian deciduous swamp woods	43 600	2.0
9180* – *Tilio-Acerion* forests of slopes, screes and ravines	200	<0.1
91D0* – Bog woodland	83 800	3.8
91E0* – Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*	1400	0.1
91F0 – Riparian mixed forests of *Quercus robur*, *Ulmus laevis* and *Ulmus minor*, *Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers	200	<0.1
2180 – Wooded dunes	20 200	0.9

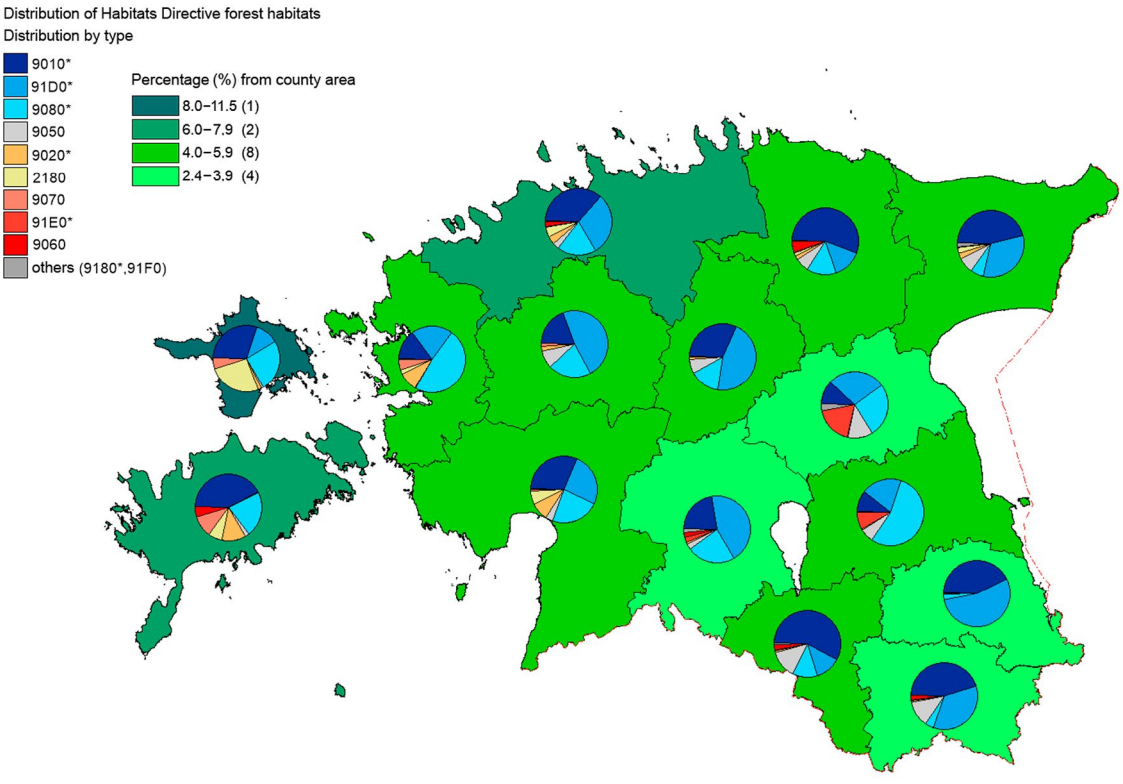


Figure 67. Distribution of Habitats Directive forest habitat types in Estonia according to the EELIS Natura 2000 habitats data. The four-digit numbers are the habitat type codes as given in the Habitats Directive and asterisks denote priority habitats

5.2.2 Mires

The inventory of Estonia's wetlands coordinated by the Estonian Fund for Nature in 2008–2011, along with its later amendments, includes nearly 240 000 ha of Estonia's mires, or 5.3% of Estonia's territory (the percentage was calculated based on land area with Lake Peipsi and Lake Võrtsjärv). By adding the natural wetlands from the 2012 CORINE land cover database to this, Estonia's mire area comes to nearly **331 500 ha**. This is **7.6%** of Estonia's territory (land territory without large lakes; if large lakes are considered, the share is 7.3%), which is significantly less than the wide-spread knowledge that mires make up 22% of Estonia's territory. The difference is caused by the fact that paludified forests and grasslands, as well as degraded mires, i.e. all areas which include peat, are counted into the 22%, no matter how thick the peat layer is and whether peat settling is ongoing or decreasing. When considering the aforementioned 331 500 ha, the county with the largest area of mires is Pärnu County (12.7% of the county is covered by mires) and the smallest areas are in Valga and Võru counties (2.7%) (figure 68).

According to the wetlands inventory coordinated by the Estonian Fund for Nature and data on mire areas added to this from the 2012 CORINE land cover database, nearly 229 000 ha, i.e. 69% of Estonia's mires are under protection.

By county, the percentage of protected mires is the largest in Lääne County – 85.6% of the county's mires are under nature conservation there. This is followed by Rapla County (81.9%) and Tartu County (81.2%). The smallest share of mires under nature conservation is in Võru County (40.4%) (figure 68). Compared to 2011, the percentage of mires under protection has slightly increased in nearly all counties, except in Hiiu and Saare counties.

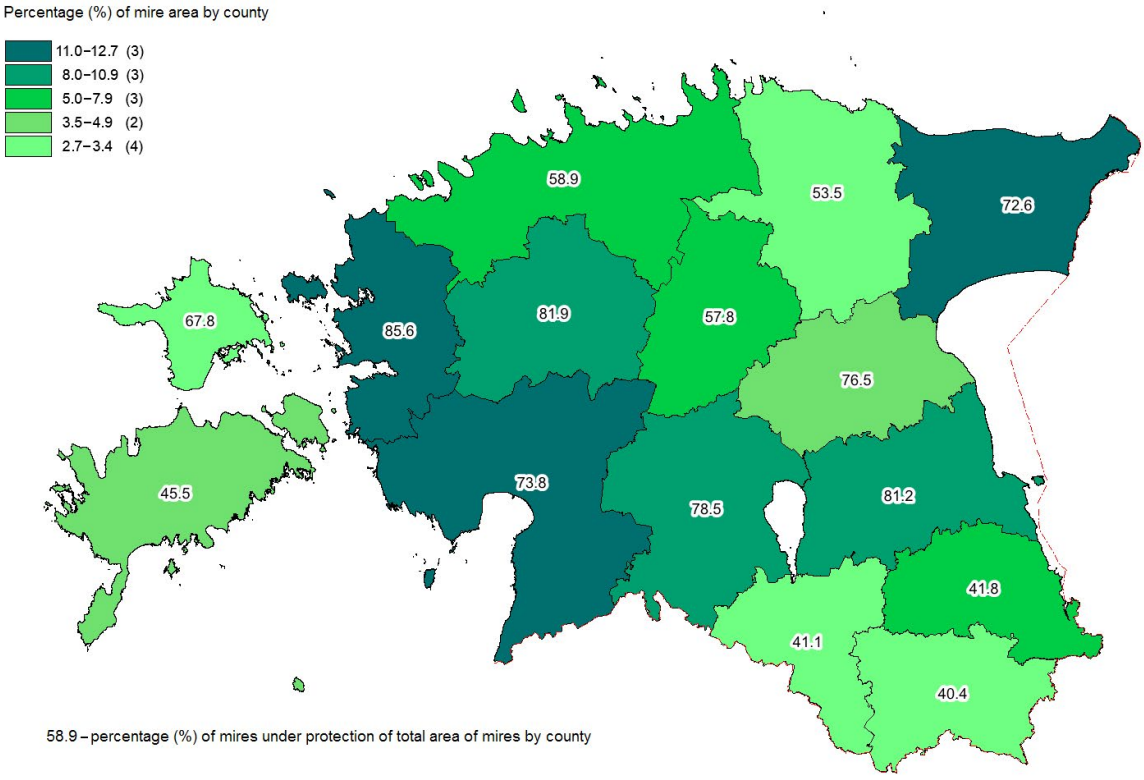


Figure 68. Percentage of mires in county area and the share of mires under protection in each county

On the basis of the wetlands inventory coordinated by the Estonian Fund for Nature, the most widespread wetland habitat type of the Habitats Directive is the type active raised bogs (habitat type code 7110*) covering nearly 135 000 ha in Estonia (figure 69). By area, most of the wetland habitats under protection in Natura 2000 areas are also active raised bogs – 108 139 ha. A total of 75% of all Habitats Directive wetland habitats are located in Natura 2000 sites of community importance (table 26).

Table 26. Area of Habitats Directive mire habitat types and percentage of the habitat type within Natura 2000 sites of community importance based on the wetlands inventory coordinated by the Estonian Fund for Nature. The four-digit numbers in the habitat type column are the habitat type codes as given in the Habitats Directive and asterisks denote priority habitats

Habitats Directive habitat type	Area (ha) within Natura 2000 sites of community importance	Percentage of habitat type in Estonia
7110* – active raised bogs	108 139	80
7120 – degraded raised bogs still capable of natural regeneration	1011	13
7140 – transition mires and quaking bogs	30 118	80
7150 – depressions on peat substrates of the *Rhynchosporion*	468	99**
7160 – Fennoscandian mineral-rich springs and spring fens	409	48
7210* – calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*	1075	64
7230 – alkaline fens	19 626	65
Total	160 846	75

** This number characterizes the spread of depressions on peat substrates of the *Rhynchosporion* in Natura 2000 areas. In bogs, which are old enough, these communities have also spread outside of Natura 2000 areas.

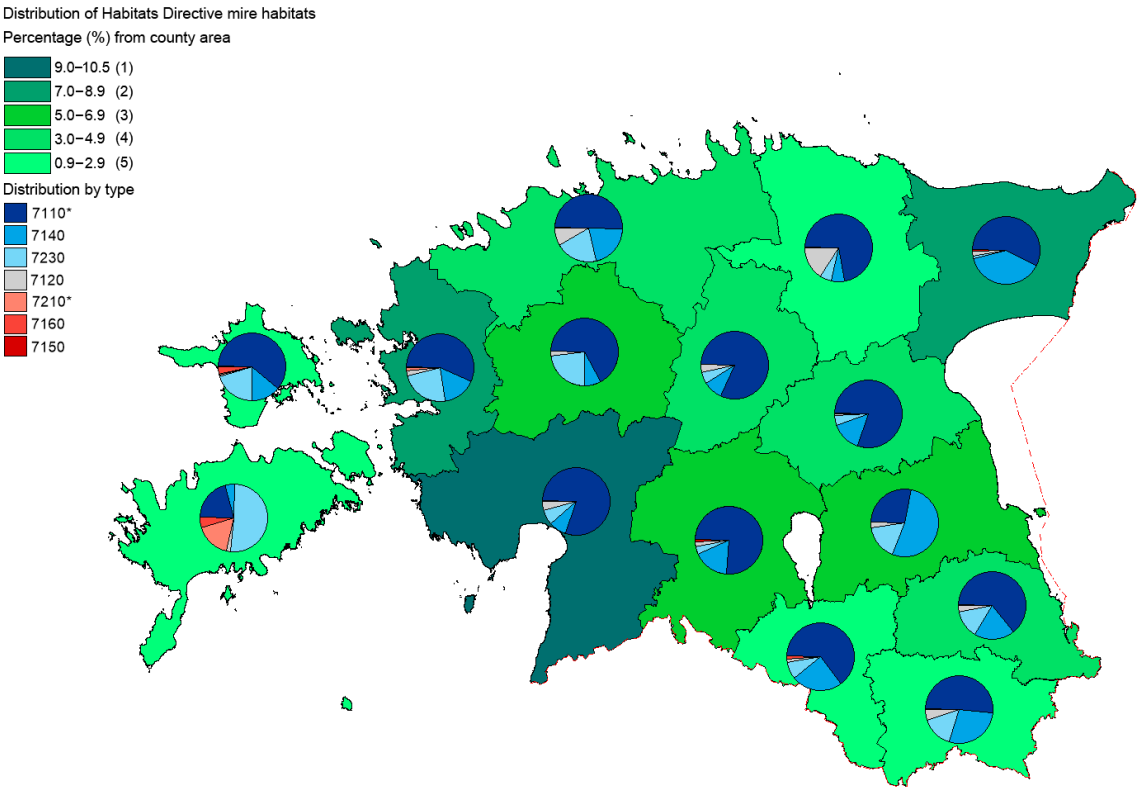


Figure 69. Distribution of Habitats Directive mire habitat types in Estonia based on data from the wetlands inventory coordinated by the Estonian Fund for Nature. The four-digit numbers are the habitat type codes as given in the Habitats Directive and asterisks denote priority habitats

The wide-spread network of drainage ditches established in the 20th century in Estonia had a negative impact on Estonia's wetlands and a large part of former wetland habitats have now been destroyed. Therefore, restoration of damaged water regime and naturalness of mires is now on the agenda. Restoration works have commenced in Soomaa, Nigula, Endla and Lahemaa protected areas, which means, among other things, removing drainage ditches and opening the wetland landscape, if necessary (see also section 3.6.2). Restoring fens, transitional mires and mire margins of bogs are top-priority. Pursuant to the Nature Conservation Development Plan, by 2020, an estimated 10 000 ha of fen and transition mire habitats and mire margins of bogs will have been restored in protected areas. Another objective set out in the Nature Conservation Development plan is rehabilitating 1000 ha of cut-over peatlands, i.e. abandoned peat extraction fields, and these activities are already under way (see also sections 1.1.4 and 3.6.2).

5.2.3 Meadows

The area of semi-natural habitats which was very widely spread only a century ago started decreasing rapidly after the Second World War. Manual labour was replaced by large-scale production and intensive agriculture, and difficult to manage grasslands of low fertility were not suitable for this, which resulted in the latter becoming overgrown and eventually, turning into forests.

Photographer: Annely Esko

Photo 29. An alvar in Koguva, Muhu island, which was included in the LIFE programme with the project "LIFE to alvars"

Based on the official (i.e. the Environmental Register's) database of semi-natural areas eligible or potentially eligible for maintenance subsidies, data from the Estonian Seminatural Community Conservation Association meadows database and 2012 data from the CORINE land cover database on natural grasslands, meadows made up nearly **136 364 ha**, i.e. **3.1%** of Estonia's area in 2015 (land territory without Lake Peipsi and Lake Võrtsjärv; if large lakes are considered, the share is 3%). From this, it may be concluded that a large share of meadows is not shown in the CORINE land cover database due to the smallest mapping area being 25 ha (see section 5.1). The percentage of the meadows is higher in the western counties. The largest share of the county's area is present in Saare County (12.3%), followed by Lääne County (10.9%) and Hiiu County (7.9%). Järva County has the lowest share of meadows (0.8%) (figure 70).

Based on data from the database of semi-natural areas eligible or potentially eligible for maintenance subsidies, the Estonian Seminatural Community Conservation Association meadows database and the 2012 CORINE land cover database on natural grasslands, 88 322 ha, i.e. nearly 65% of Estonia's meadows are under protection. By county, the largest share of protected meadows is located in Hiiu County – 86.1% of the county's meadows are under nature conservation. This is followed by Tartu County (79.2%), Lääne County (77.8%) and Saare County (71.1%). The smallest area of meadows under nature conservation is in Järva County (28.9%). A little more area of meadows is protected in Ida-Viru County (29.3%) (figure 70). Compared to 2011, the percentage of meadows under protection has significantly increased in nearly all counties, except for Valga County. Although the area of protected areas also slightly increased in 2011–2015 (see section 2.2.1.1), the 5–12% increase in the percentage of meadows in protected areas mainly reflects the restoration and maintenance of semi-natural habitats in areas under protection, and meadows becoming overgrown and disappearing outside of the protected areas.

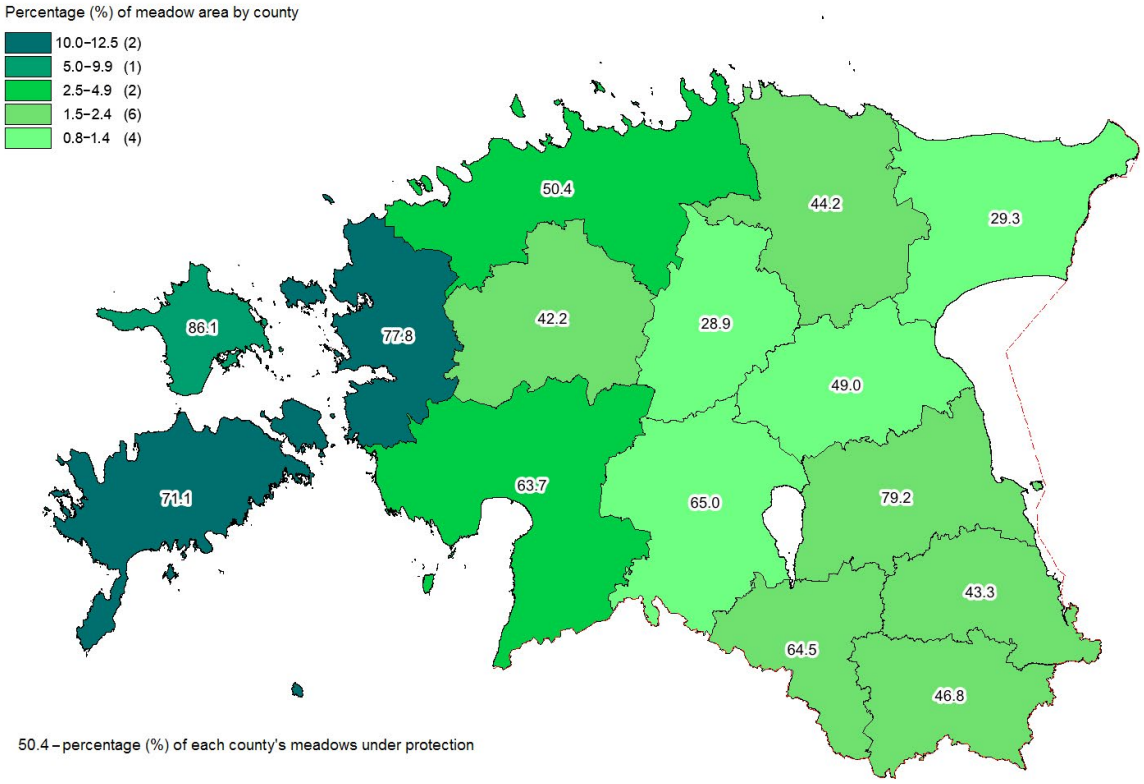


Figure 70. Percentage of meadows in county area and the share of each county's meadows under protection

A little over 117 000 ha of habitats have been registered in the database of semi-natural areas eligible or potentially eligible for maintenance subsidies and the Estonian Seminatural Community Conservation Association meadows database. 107 690 ha of these have been classified as Habitats Directive meadow habitat types (table 27). The latter does not include semi-natural habitats of paludified meadows and alkaline fens (habitat type code 7230) that are transitional of meadows and mires in nature.

Northern boreal alluvial meadows (6450) is the most common meadow habitat type of the Habitats Directive in Estonia covering 24 600 ha, followed by boreal Baltic coastal meadows (1630*) – 20 800 ha and nordic alvar and precambrian calcareous flatrocks (6280*) – 17 100 ha (table 27, figure 71). 66% of the Habitats Directive meadow habitats are under protection in Estonia. By percentage, limestone pavements (8240*), *Molinia* meadows (6410) and dry heaths (4030) are most protected.

In 2015, about 25 000 ha of semi-natural habitats were maintained in Estonia with the support of subsidies (see also section 3.4). The database of semi-natural areas eligible for maintenance subsidies reveals that 23 315 ha of the Habitats Directive meadow habitats were maintained (table 27). Coastal meadows were maintained the most – nearly 40% of their total area. The Nature Conservation Development Plan until 2020 and the action plan for semi-natural habitats for 2014–2020 have set the target that by 2020, the area of restored and maintained semi-natural habitats is 45 000 ha. If paludified meadows / alkaline fens (habitat type code 7230) are not counted, the target level is nearly 43 000 ha. Therefore, a significant leap in the maintenance of semi-natural habitats needs to be taken in the upcoming years to reach this objective.

Table 27. Range, protection and maintenance of Habitats Directive meadow habitat types in Estonia. The four-digit numbers in the habitat type column are the habitat type codes as given in the Habitats Directive and asterisks denote priority habitats. The table does not include paludified meadows and alkaline fens transitional in nature (habitat type with a code 7230)

Habitats Directive habitat type	Total in Estonia (ha)	On protected natural objects (ha)	Under protection (%)	Maintained in 2015 (ha)	Maintained in 2015 (%)	Objective set in the action plan of semi-natural habitats to 2020 (ha)
6450 – Northern boreal alluvial meadows	24 600	17 500	71	6820	27.7	12 200
1630* – Boreal Baltic coastal meadows	20 800	16 700	80	8300	39.9	10 800
6280* – Nordic alvar and precambrian calcareous flatrocks	17 100	9500	56	2375	13.9	7700
6270* – Fennoscandian lowland species-rich dry to mesic grasslands	8700	3450		1040	12.0	1880
6510 – Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	7400	3900	53	970	13.1	1340
6530* – Fennoscandian wooded meadows	7100	4000	56	625	8.8	3300
6210/6210* – Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites)	6200	3550	57	1530	24.7	2420
9070 – Fennoscandian wooded pastures	4900	3550	72	850	17.3	1650
6430 – Hydrophilous tall herb fringe communities	4200	2600	62	400	9.5	370
5130 – *Juniperus communis* formations on heaths or calcareous grasslands	3800	3250	86	300	7.9	500**
6410 – *Molinia* meadows	1900	1750	92	105	5.5	650
4030 – Dry heaths	900	800	89	0	0.0	290
2320 – Dry sand heaths with *Calluna* and *Empetrum nigrum*	60	15	25	0	0.0	–
8240* – Limestone pavements	30	30	100	0	0.0	–
Total	107 690	70 595	66	23 315	21.7	43 100

** *Juniperus communis* formations on heaths or calcareous grasslands are restored as alvars and grasslands on mineral soil.

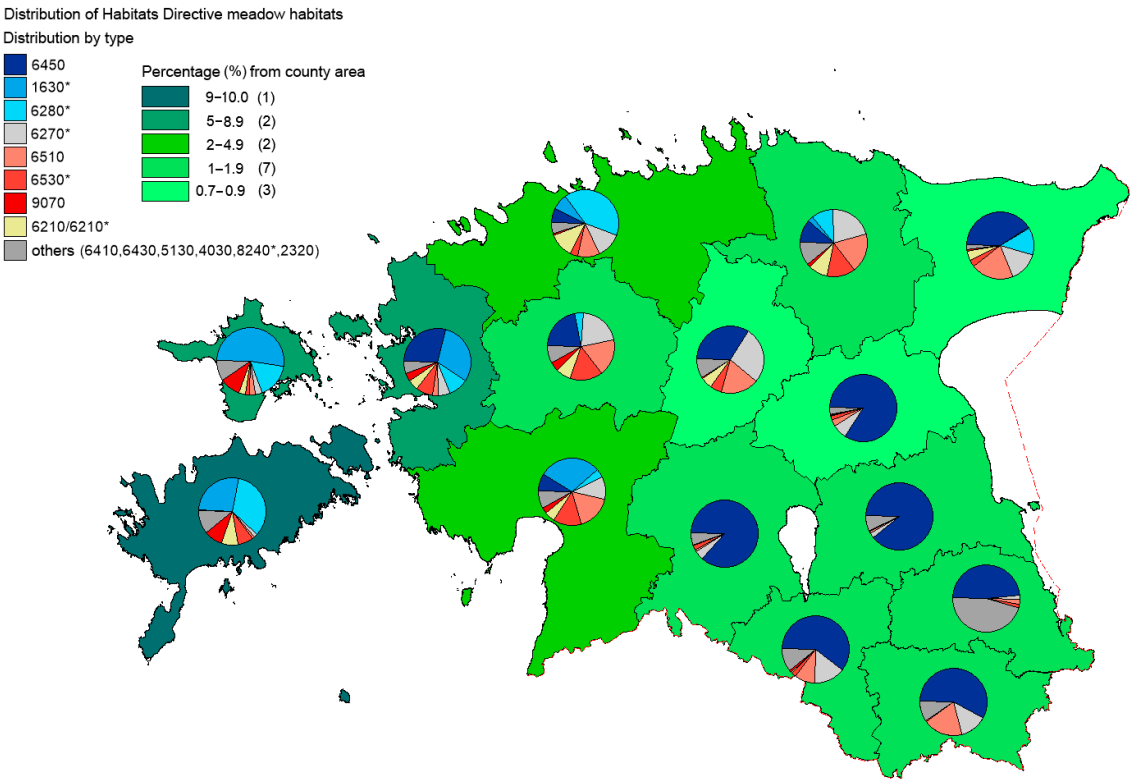


Figure 71. Distribution of Habitats Directive meadow habitat types in Estonia based on the database of semi-natural areas eligible or potentially eligible for maintenance subsidies and the Estonian Seminatural Community Conservation Association meadows database. The four-digit numbers are the habitat type codes as given in the Habitats Directive and asterisks denote priority habitats

5.3 Habitats of the Annex I of the Habitats Directive

Estonia has 60 habitat types listed in Annex I of the Habitats Directive as being endangered in Europe, and whose conservation and preservation Estonia is required to ensure. They include more coastal, forest and meadow habitats and somewhat fewer mire, freshwater, outcrop and marine habitats. Under Article 17 of the Habitats Directive, every six years, all European Union Member States, including Estonia, must submit a report on the progress of implementation of the directive with regard to the status of all habitat types. For the first time, Estonia submitted this report in 2007, the second time in 2013 and the next report must be submitted in April 2019.

The report to be submitted to Europe consists of three parts: a general part on implementation of the directive, form for the assessment of the status of a species and a form for evaluating the status of a habitat. Data for all habitat types listed in Annex I are presented regarding their distribution and area covered by the habitat type, as well as the trend of change. In addition, a list of the main threats and influences is presented along with information on the estimated or calculated favourable distribution and area covered by the habitat, and a list of the typical species in the habitat type. Finally, summarized assessments of the preservation and future prospects of the habitat's distribution, habitat area, structure and functions are to be presented as well.

Photographer: Marko Vainu

Photo 30. Minerotrophic mobile water swamp forest on Aegna island. The status of Estonia's Fennoscandian deciduous swamp woods (priority habitat type of the Habitats Directive, code 9080*) has been assessed as bad

The assessment of the habitat type may be favourable, inadequate, bad or unknown. In the case of an inadequate and bad assessment, the trend must be added as well – whether the situation is stable, getting better or worse or is unknown. On the basis of the preceding assessments, a summarized general assessment regarding the status of the habitat type with regard to the biogeographical region in the specific Member State is to be presented.

More than half of Estonia's habitat types of the Habitats Directive are in a favourable status – 52% (31 habitat types). 45% (27) habitat types are in an inadequate status and 3% (2) in a bad status (figure 72). The information is sufficient to give assessments to all habitat types, which is why the status of none of Estonia's habitat types is marked as unknown in the report. The report states that the greatest share of habitats in a favourable status are in the marine and coastal habitats categories, while the situation is the worst in the case of forests, especially forests in swamps and spruce forests (table 28). The status of the Habitats Directive habitats has improved in Estonia compared to the previous 2007 assessment. Back then, the status of 42% of habitats was assessed as favourable, 35% had an inadequate status, 15% bad status and information was deficient regarding 8% habitats. Compared to other European Union countries, Estonia's is in a relatively good state. In the European Union as a whole, 30% of habitats are in a bad, 47% in an inadequate and only 16% in a favourable status; and the status of several habitat types is still unknown (7%) (see also section 1.3).

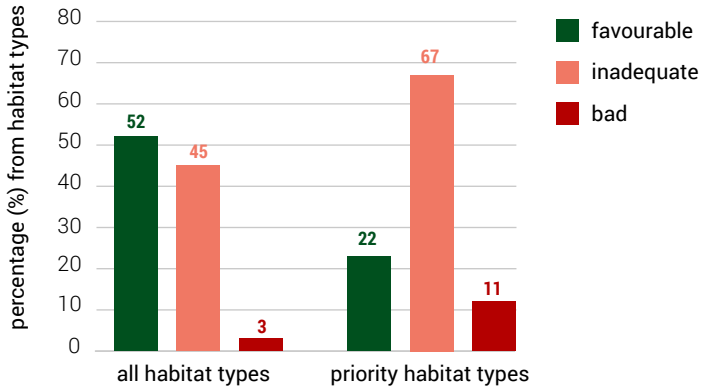


Figure 72. Summarized assessment of habitat types listed in Annex I of the Habitats Directive in Estonia in 2013, bringing separately forward the status of priority habitat types

Photographer: Toomas Kukk

Photo 31. Broad-leaved nemoral forest in Puhtu. The status of Estonia's Fennoscandian hemiboreal natural old broad-leaved deciduous forests (priority habitat type of the Habitats Directive, code 9020*) has been assessed as inadequate, but improving

Table 28. Assessment of the status of habitat types listed in Annex I of the Habitats Directive in Estonia in 2013. Asterisks denote priority habitats of the Habitats Directive

Habitat type code	Habitat type	Status assessment
1110	Sandbanks which are slightly covered by sea water all the time	favourable
1130	Estuaries	favourable
1140	Mudflats and sandflats not covered by seawater at low tide	favourable
1150*	Coastal lagoons	favourable
1160	Large shallow inlets and bays	favourable
1170	Reefs	favourable
1210	Annual vegetation of drift lines	favourable
1220	Perennial vegetation of stony banks	favourable
1230	Vegetated sea cliffs	favourable
1310	*Salicornia* and other annuals colonizing mud and sand	favourable
1620	Boreal Baltic islets and small islands	favourable
1630*	Boreal Baltic coastal meadows	inadequate
1640	Boreal Baltic sandy beaches with perennial vegetation	favourable
2110	Embryonic shifting dunes	favourable
2120	"White dunes"	favourable
2130*	"Grey dunes"	favourable
2140*	Decalcified fixed dunes with *Empetrum nigrum*	favourable
2180	Wooded dunes	favourable
2190	Humid dune slacks	favourable
2320	Dry sand heaths with *Calluna* and *Empetrum nigrum*	favourable
2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	inadequate and unknown
3110	Oligotrophic waters of sandy plains	inadequate and unknown
3130	Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*	inadequate and worsening
3140	Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp	favourable
3150	Natural eutrophic lakes	favourable
3160	Natural dystrophic lakes and ponds	favourable
3180*	Turloughs	inadequate
3260	Water courses	inadequate, but improving
4030	Dry heaths	inadequate
5130	*Juniperus communis* formations on heaths or calcareous grasslands	favourable
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	inadequate

Habitat type code	Habitat type	Status assessment
6270*	Fennoscandian lowland species-rich dry to mesic grasslands	inadequate
6280*	Nordic alvar and precambrian calcareous flatrocks	inadequate and worsening
6410	*Molinia* meadows	favourable
6430	Hydrophilous tall herb fringe communities	favourable
6450	Northern boreal alluvial meadows	inadequate
6510	Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)	favourable
6530*	Fennoscandian wooded meadows	inadequate
7110*	Active raised bogs	inadequate, but improving
7120	Degraded raised bogs still capable of natural regeneration	inadequate, but improving
7140	Transition mires and quaking bogs	inadequate, but improving
7150	Depressions on peat substrates of the *Rhynchosporion*	favourable
7160	Fennoscandian mineral-rich springs and spring fens	inadequate
7210*	Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*	inadequate
7220*	Petrifying springs with tufa formation (*Cratoneurion*)	inadequate and unknown
7230	Alkaline fens	inadequate and worsening
8210	Calcareous rocky slopes with chasmophytic vegetation	favourable
8220	Siliceous rocky slopes with chasmophytic vegetation	favourable
8240*	Limestone pavements	inadequate and worsening
8310	Caves	favourable
9010*	Western Taiga	bad, but improving
9020*	Fennoscandian hemiboreal natural old broad-leaved deciduous forests	inadequate, but improving
9050	Fennoscandian herb-rich forests with *Picea abies*	inadequate and worsening
9060	Coniferous forests on, or connected to, glaciofluvial eskers	inadequate
9070	Fennoscandian wooded pastures	inadequate
9080*	Fennoscandian deciduous swamp woods	bad
9180*	*Tilio-Acerion* forests of slopes, screes and ravines	favourable
91D0*	Bog woodland	inadequate and worsening
91E0*	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*	inadequate, but improving
91F0	Riparian mixed forests of *Quercus robur*, *Ulmus laevis* and *Ulmus minor*, *Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers	inadequate, but improving

When considering only Europe's priority habitat types mentioned in Annex I of the Habitats Directive, the distribution of which has significantly decreased and for the preservation of which the EU has assumed special responsibility, their status is considerably worse. Only 22% (four habitat types) of priority habitat types found in Estonia are in a favourable status, while 67% (12) are in an inadequate status and 11% (2) in a bad status (figure 72).

In Estonia, the most frequent risk factors and influences that impact the status of Habitats Directive habitats are agriculture and changing of natural communities. These are followed by natural development of communities (one habitat type becomes another due to natural development of communities), use of natural resources, human settlement and forestry.

The results of the report on the status of habitat types listed in Annex I of the Habitats Directive are not surprising, as the annexes of the Directive include the habitat types threatened in the European Union territory, and they were selected in the first place due to their rarity and endangered condition. However, as the next report is submitted right before an important deadline of the biodiversity convention – 2020 – it is presumed that thanks to the nature conservation measures applied in Member States, the status of habitat types will have improved significantly. By adopting the biodiversity strategy, the European Union has also assumed an ambitious responsibility – by 2020, 100% more habitat assessments under the Habitats Directive should show an improved conservation status compared to when the strategy was adopted in 2011.

5.4 Distribution of habitats in protected areas

Under the protection rules for protected areas approved after the Nature Conservation Act was adopted (i.e. May 2004), regulations placing limited-conservation areas under protection and one thematic plan placing one object under protection at the municipal level, habitat types listed in Annex I of the EU Habitats Directive are protected within total of 538 protected natural objects in Estonia as at the end of 2015. As at the end of 2015, in 84 protected areas (195 844 ha) protection rules established according to the Protected Natural Objects Act (i.e. 1994–2004) were valid and in 93 protected areas (8589 ha), an even older protection regime was in place, and thus the conservation of Habitats Directive habitat types has not been specified in the protection rules for these areas as a conservation objective. This does not however mean that there are no Habitats Directive habitat types in these areas. Their protection regime has not simply been revised yet. Such areas also include several extensive protected areas, such as the Matsalu and Vilsandi National Park, which comprise many habitat types of European importance.

Of the aforementioned 538 limited-conservation areas, protected areas and municipal level areas (1 144 545 ha or 73.2% of the area of protected natural objects) having Habitats Directive habitat types as conservation objectives in their protection rules, 206 areas have protection rules containing Western taiga (9010*)[1] as a conservation objective. Fennoscandian deciduous swamp woods (9080*) has been mentioned as a conservation objective in the protection rules of 183 areas and alkaline fens (7230) in the case of 128 areas (figures 73 and 74).

The most infrequent types are estuaries (1130). This type is protected on just one protected natural object. Inland dunes with open Corynephorus and agrostis grasslands (2330) are the conservation objective of two areas, and decalcified fixed dunes with Empetrum nigrum (2140*) and limestone pavements (8240*) of three areas.

Lahemaa National Park has the greatest number of habitat types specified as a conservation objective – 48, making up 80% of the Annex I habitat types found in Estonia. Conservation objectives of Luitemaa nature reserve comprise 28 habitat types, and in Haanja nature park, Vormsi protected landscape and Tagamõisa limited-conservation area, 24 habitat types are protected.

[1] The four-digit numbers after the habitat type name are the habitat type codes as given in the Habitats Directive and asterisks denote priority habitats.

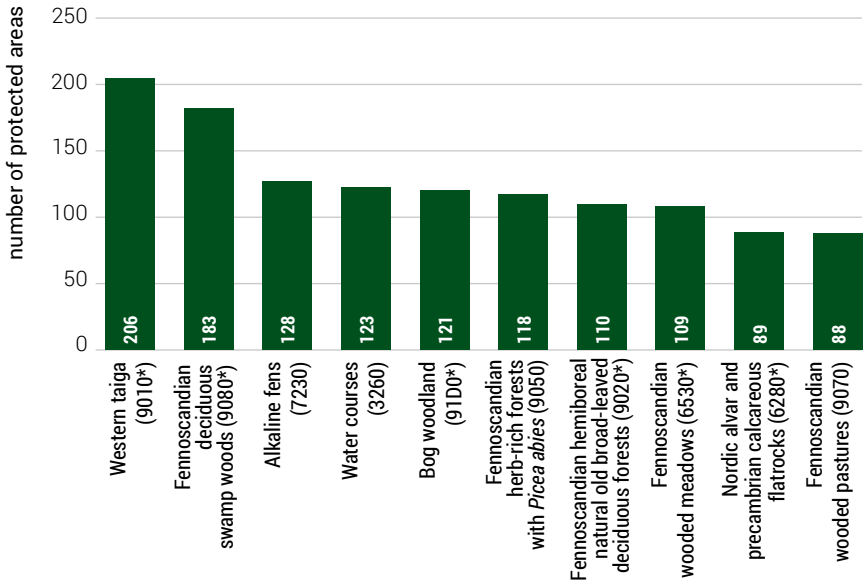


Figure 73. Habitat types listed in the Habitats Directive[1] whose conservation and preservation is a conservation objective in the greatest number of Estonia's protected areas and limited-conservation areas and one object protected at the municipal level

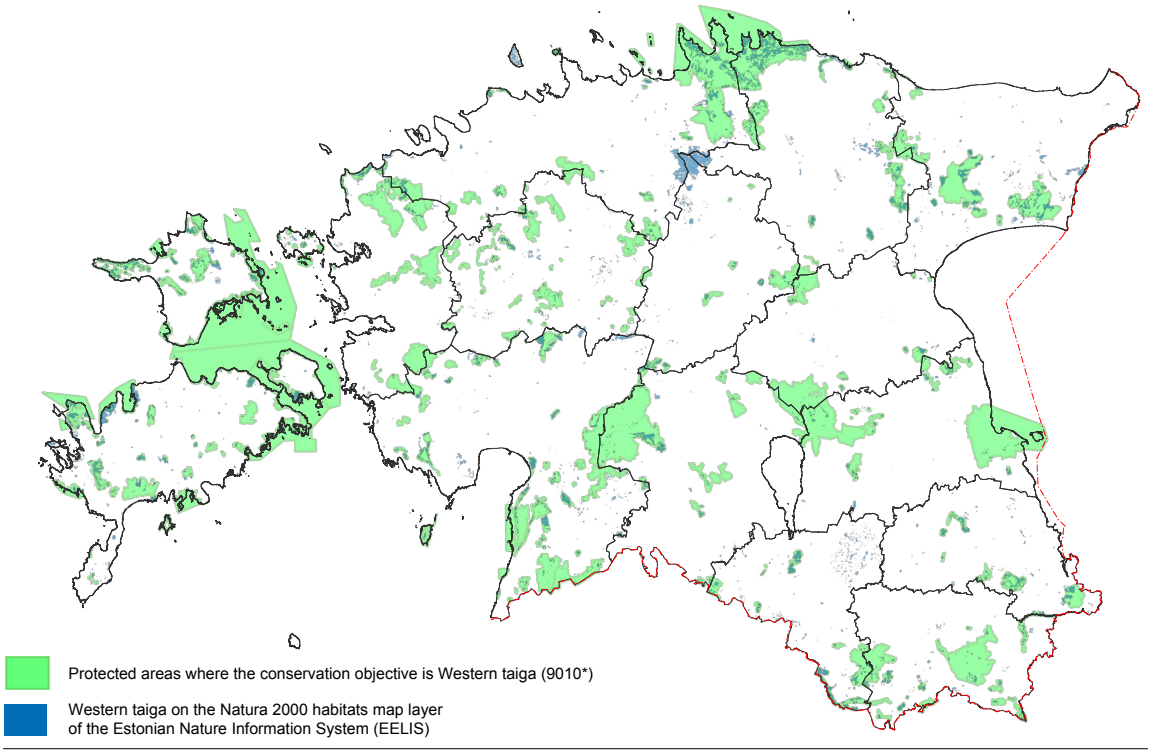


Figure 74. Protected areas where conservation objectives also include a priority habitat type of the Habitats Directive, the Western taiga (habitat type code 9010*)

[1] The four-digit numbers after the habitat type name are the habitat type codes as given in the Habitats Directive and asterisks denote priority habitats.

Of the habitat groups formed on the basis of the CORINE LandCover 2012 categories, marine waters (42.9%) make up the greatest share of protected natural objects (including protected areas and limited-conservation areas, species protection sites, protected nature monuments and natural objects protected at the municipal level) followed by coniferous forests (13.6%), mires (13.4%) and mixed forests (8.6%). Compared to 2011, the percentage of coniferous forests, mires and mixed forests has increased and the percentage of marine waters, deciduous forests, shrubland and coastal habitats has decreased. The percentage of mixed forests has increased the most – 7.8% in 2011, 8.6% in 2015. The percentage of deciduous forests has decreased the most – 4.5% in 2011, 3.8% in 2015 (figure 75).

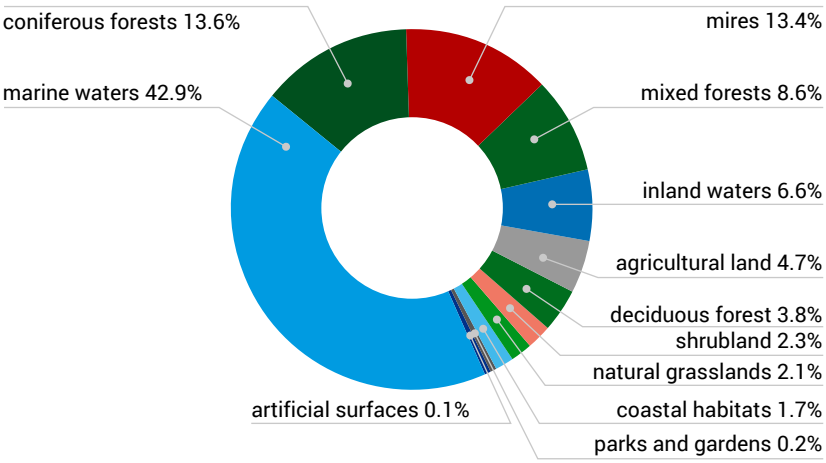


Figure 75. Distribution of protected areas (in percentages) by habitat groups formed on the basis of the CORINE LandCover 2012 categories

Conclusion

As at 31 December 2015, 18.5% of land territory, 27% of marine territory, 28% of the country's whole aquatory and 22.2% of Estonia, overall with land and water area, is protected in Estonia. Compared to 2011, the share of protected areas has increased by 0.4% with regard to land territory, however, the percentage of total protected area has decreased by 0.5%, and the area of protected waters has decreased by 3.1%.

In the European Union, Estonia ranks 20th by area of protected territory. By areas included in the Natura 2000 network (17.8% of the territory including Lake Peipsi and Lake Võrtsjärv), Estonia ranks 12th. Compared to the 2013 status assessments of the Habitats Directive habitat types and species, Estonia's status is better than the European Union average – 77% of habitat types and 60% of species were in a bad or inadequate status in the EU, while the percentages in Estonia were 48% for habitat types and 35% for species. The number of habitat types and species with an unknown status has decreased in both the EU and Estonia, to 7% of habitat types in the EU and zero in Estonia, the corresponding percentages for species are 17% and 11%. Of habitat types, Western taiga and deciduous swamp woods are still in a bad status in Estonia.

Not enough progress has been made in working towards the objectives set out in the biodiversity convention to 2020 neither on the global level nor in the European Union, where the EU Biodiversity Strategy to 2020 was adopted in 2011. However, the indicators provided in the implementation plan of the Estonian Nature Conservation Development Plan approved in 2012 show that the trends in Estonia are generally positive.

A number of protection rules were approved in Estonia in the reference period, including for large areas with a high level of outreach, such as Lahemaa National Park and Haanja nature park. In addition, action plans were drawn up for key species in nature conservation, including for eagles, and an action plan for the protection of the flying squirrel was completed (approved at the beginning of 2016). The first habitats action plan was also confirmed for semi-natural habitats, and an action plan for protected mires was completed (approved at the beginning of 2016).

Restoration works gained momentum in 2011–2015 with considerable help from foreign funding. A large number of projects was carried out or initiated for the restoration of semi-natural, mire and river habitats during that period. A project for reconditioning cut-over peatlands was initiated. Projects carried out to halt the extinction of endangered species have led to results – e.g. Estonia is the only country that has been able to reintroduce the European mink, who is critically endangered on the global level, into the wild. In addition, it was found that the population of the freshwater pearl mussel, another globally endangered species, can be rescued in Estonia. The population of several protected species is on the rise, e.g. the white-tailed eagle has been doing well in recent years.

Alien species pose an ever increasing risk on biodiversity. A large step has been taken with regard to this – the first EU regulation on invasive species was adopted in 2015 and a list of invasive alien species of Union concern was put together (entered into force in 2016), which provides specific obligations for Member States to stop the spread and entry of these species. Estonia has long-term nation-wide experience since 2005 in eradicating Sosnowsky's hogweed which is in the list.

Among other matters, the administration of conservation management has been influenced by the austerity policy of the public sector, which gained momentum in the reference period (this is also reflected in changes to the administrative structure of the organization of nature conservation), other societal changes, such as the administrative reform and the almost completed land reform, have also had an indirect impact. Efforts have been made for collecting legal provisions related to the environment into one, i.e. under the General Part of the Environmental Code Act (entered into force in 2014). The civil society's desire to participate in decisions related to the field of the environment has increased significantly. The latter is a sign of increase in environmental awareness, which has been greatly supported by a notable number and range of providers of activities related to environmental education. The reference period was remarkable in the field of promoting environmental education both due to the extent and the use of finances, especially foreign funding.

Documentation page

Publisher	Estonian Environment Agency
Date	June 2017
Editor	Madli Linder
Title of publication	Estonian Nature Conservation in 2015
Theme of publication	Overview of nature conservation in Estonia at 2015
Abstract	As at 31 December 2015, 18.5% of land territory, 27% of marine territory, 28% of the country's whole aquatory and 22.2% of Estonia, overall with land and water area, is protected in Estonia. Compared to 2011, the share of protected areas has increased by 0.4% with regard to land territory, however, the percentage of total protected area has decreased by 0.5%, and the area of protected waters has decreased by 3.1%. The last (2013) assessments indicate that 77% of habitat types and 60% of species are in a bad or inadequate status in the EU, while the percentages in Estonia are 48% for habitat types and 35% for species. The number of habitat types in an unknown status has decreased to zero in Estonia and to 7% in the EU. The share of species with an unknown status is 17% in the EU and 11% in Estonia.
Keywords	Nature conservation, protected area, nature reserve, limited-conservation area, species protection site, protected species, threatened species, endangered species, habitat, habitat type, biodiversity, biological diversity, biodiversity strategy, nature conservation development plan, action plan for species, conservation management plan, habitat action plan
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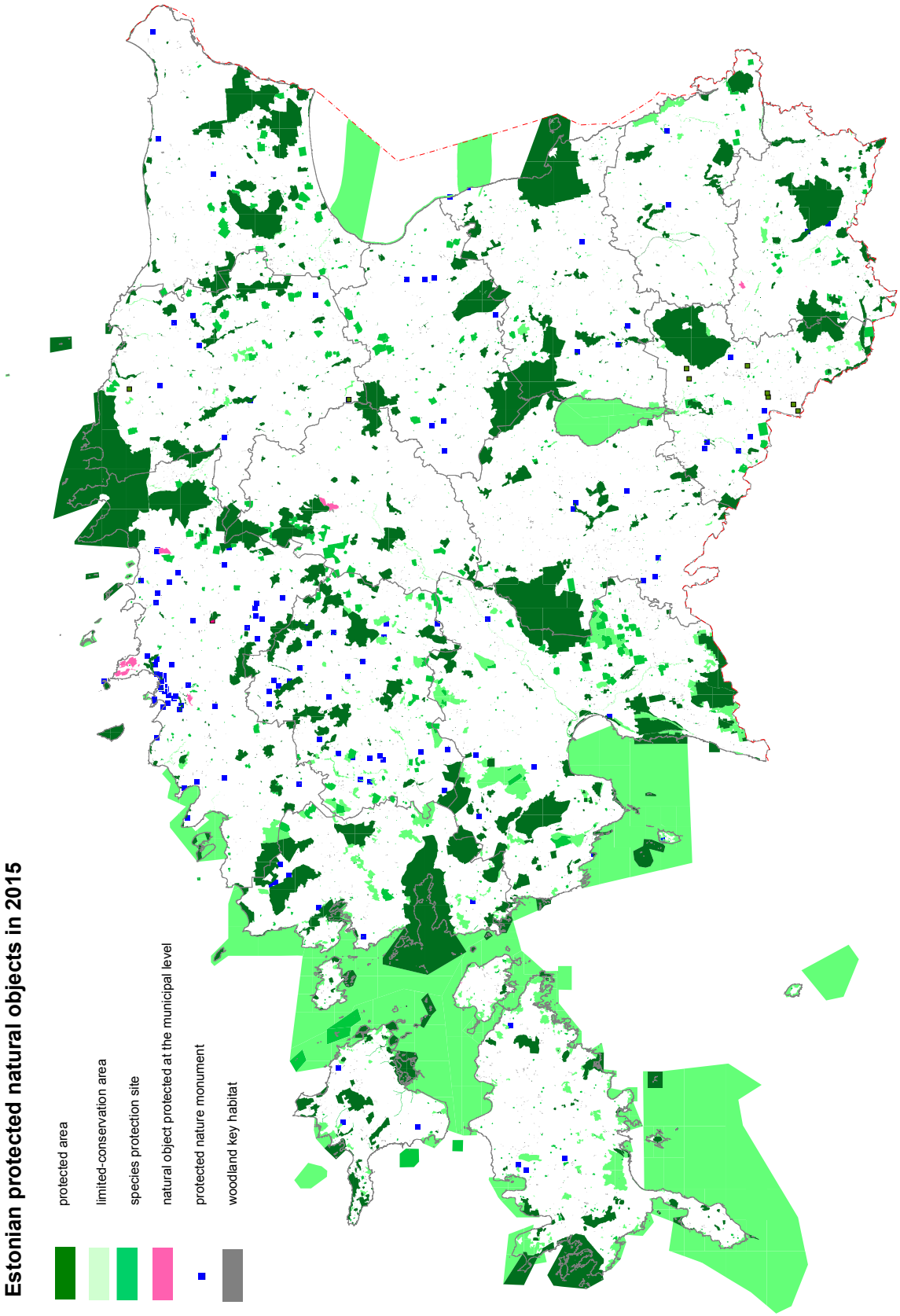
Estonian protected natural objects in 2015
protected area
limited-conservation area
species protection site
natural object protected at the municipal level
protected nature monument
woodland key habitat