ESTONIAN NATURE CONSERVATION IN 2011

Diversity of Nature in Estonia

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Environmental information

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Photographer: Kaspar Mölder

Photo 1. Hawfinch and European greenfinch (An award winning photograph from the Estonian Nature 2010 contest).

Foreword

Dear reader,

This overview of Estonian nature conservation is the follow-up to the one from 2007. Much has changed in the interim, in both rapidly developing Estonia and in Europe. Estonia has gone though a boom period and an economic downturn. Both left a mark on nature conservation. The previous nature conservation overview was published at the height of the boom; the current one, in the aftermath of the recent recession. While Estonia's recent development and sprawl put increased pressure on nature, the recession eased the pressure. Both Estonia and Europe started thinking more about sustainable management and looking for suitable methods to do so. More effort is being made to integrate natural processes with the economic development of human society. There is talk of services offered by ecosystems and the need to value them.

The goal of this book is to give an overview of the current state of Estonian nature conservation and the changes in the last four years, as well as to define the situation in relation to the development plans and international goals. There is separate coverage of the domestic and international nature conservation situation, the latter in the context of Estonia in particular. The book tries to provide resources to officials and statisticians as well as to everyone interested in an overview of changes that have taken place in nature protection in the last four years.

Happy reading!

Contents

Photographer: Sven Zacek

Photo 2. "Mission invasion – accomplished!" Cormorants on islet, Saaremaa (An award winning photograph from the Estonian Nature 2010 contest).

Introduction

Having regained independence only 20 years ago, Estonia continues to experience continuous and relatively fast-paced administrative and economic change. These changes are also expressed in nature conservation and nature itself. The administrative system for nature conservation and many international aspects of nature conservation have undergone changes in the last four years. Significant changes have also occurred in domestic nature conservation, primarily in the direction of better organization of existing protected objects, species and habitats.

This publication does not repeat the historical overview of nature conservation that was published in 2007; rather the first part gives an overview of the administrative and legal changes, including the progress toward recently-set strategic objectives. The second part focuses on protected nature objects and those with conservation value. As in the rest of the publication, this part, too, focuses on changes in the last four years.

First, internationally protected objects are introduced, followed by ones that enjoy domestic protection. The third part features an overview of the current state of conservation management, which provides, for the first time, a summary of nature conservation subsidies, fines and violations. There is also an overview of the current state of nature education. The fourth part of the publication deals with species and their protection. In the fifth part an overview of the habitats and their protection is given. Particular attention is paid to distribution and protection of mires, grasslands as well as forests, incl. changes during last four years.

Quantitative data used in the survey generally reflects the status of 1 July 2011. Data that reflect a different status or require a special reference to be used have an asterisked notation.

The compilers of this publication would like to thank everyone who assisted them with suggestions, advice or additional data.

Photographer: Vivian Ainsalu

Photo 3. A black woodpecker has returned home after a long day at work (An award winning photograph from the Estonian Nature 2010 contest).

1. Administrative and legal framework

Compared to the last environmental survey four years ago, Estonia has a different Parliament and Minister of the Environment. Regardless of the crises in Europe, economic stabilization is nevertheless being sensed in Estonia and the trend is also spreading to nature conservation. For instance, not much has changed in the types of objects under protection or the protection categories.

At the international level, key changes have taken place in the interim in connection with 2010 having been the international year of biodiversity, and thus assessment of the goals set for the preceding 10-year period. Unfortunately the world has had to admit that the goal set – halting the loss of biodiversity – was not achieved and therefore much more rigorous goals were set for the next 10-year period. The period from 2010–2020 has been declared the international "Decade on Biodiversity." As a result, Estonia is facing more practical tasks than merely increasing the area under conservation. Conservation management measures must be used to ensure that the existing protection objects are maintained. Nature must be much better protected outside the network of protected objects.

2010–2020 has been declared the International Decade on Biodiversity, the goal of which is to halt the loss of biodiversity and damage to ecosystem services

Immediately after the first nature conservation overview went to press, the Parliament approved Estonian environmental strategy up to 2030. It sets forth a number of strategic goals for preserving biodiversity. It also lists criteria that are used to assess the current status below. The national nature conservation development plan up to 2020 is in the final phase of preparations. It likewise uses evaluation indicators. The strategic objectives of the biodiversity convention up to 2020 have been adopted along with, on its basis, strategic objectives of biodiversity protection in the European Union.

1.1 Strategic objectives

1.1.1 Global biodiversity strategy 2011–2020

The strategy was adopted in 2010 in Nagoya, Japan, at the tenth meeting of the parties to the biodiversity convention. In accordance with the strategy's mission, immediate and effective action must be taken to preserve, by 2020, enduring, service-providing ecosystems that ensure biodiversity, people's well-being and reduction in poverty. There are 193 partner countries to the convention (168 signatories), clear majority of countries in the World (194 in total). All these countries have agreed on five strategic goals and 20 targets that are listed below. Every second year all parties of the convention gather to global conference and evaluate the success on the way of reaching targets.

1. Address the underlying cause of biodiversity loss by mainstreaming biodiversity across government and society

By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic condition.

By 2020, at the latest, Governments, business 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.

2. Reduce the direct pressures on biodiversity and promote sustainable use

By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

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.

By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated and measures are in place to manage pathways to prevent their introduction and establishment.

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.

3. To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved 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.

By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

4. Enhance the benefits to all from biodiversity and ecosystem services

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.

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 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

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 and operational, consistent with national legislation.

5. Enhance implementation through participatory planning, knowledge management and capacity building

By 2015, each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

Photographer: Valeria Astahhova

Photo 4. Swans on wintry Bay of Tallinn.

1.1.2 EU biodiversity strategy to 2020

Headline goal: **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.**

TARGET 1

Fully implement the Birds and Habitats Directives. To halt the deterioration in the status of all species and habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status so that, by 2020, compared to current assessments, (i) 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status; and (ii) 50% more species assessments under the Birds Directive show a secure or improved status.

Action 1. **Complete the establishment of the Natura 2000 network and ensure good management:**

a) Member States and the European Commission (hereinafter: Commission) will ensure that the phase to establish Natura 2000, including in the marine environment, is largely complete by 2012;

b) Member States and the Commission will further integrate species and habitats protection and management requirements into key land and water use policies, both within and beyond Natura 2000 areas;

c) Member States will ensure that management plans or equivalent instruments which set out conservation and restoration measures are developed and implemented in a timely manner for all Natura 2000 sites;

d) The Commission, together with Member States, will establish by 2012 a process to promote the sharing of experience, good practice and cross-border collaboration on the management of Natura 2000, within the biogeographical frameworks set out in the Habitats Directive.

Action 2. Ensure adequate financing of Natura 2000 sites.

The Commission and Member States will provide the necessary funds and incentives for Natura 2000, including through EU funding instruments, under the next multiannual financial framework. The Commission will set out its views in 2011 on how Natura 2000 will be financed under the next multi-annual financial framework.

Action 3. Increase stakeholder awareness and involvement and improve enforcement:

a) The Commission, together with Member States, will develop and launch a major communication campaign on Natura 2000 by 2013.;

b) The Commission and Member states will improve cooperation with key sectors and continue to develop guidance documents to improve their understanding of the requirements of EU nature legislation and its value in promoting economic development;

c) The Commission and Member States will facilitate enforcement of the nature directives by providing specific training programmes on Natura 2000 for judges and public prosecutors, and by developing better compliance promotion capacities.

Action 4. Improve and streamline monitoring and reporting:

a) The Commission, together with Member States, will develop by 2012 a new EU bird reporting system, further develop the reporting system under Article 17 of the Habitats Directive and improve the flow, accessibility and relevance of Natura 2000 data;

b) The Commission will create a dedicated ICT tool as part of the Biodiversity Information System for Europe to improve the availability and use of data by 2012.

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.

Action 5. Improve knowledge of ecosystems and their services in the EU.

Member States, with the assistance of the Commission, will map and assess the state of ecosystems and their services in their national territory by 2014, assess the economic value of such services, and promote the integration of these values into accounting and reporting systems at EU and national level by 2020.

Action 6. Set priorities to restore and promote the use of green infrastructure:

a) By 2014, Member States, with the assistance of the Commission, will develop a strategic framework to set priorities for ecosystem restoration at sub-national, national and EU level;

b) The Commission will develop a Green Infrastructure Strategy by 2012 to promote the deployment of green infrastructure in the EU in urban and rural areas, including through incentives to encourage up-front investments in green infrastructure projects and the maintenance of ecosystem services, for example through better targeted use of EU funding streams and Public Private Partnerships.

Action 7. Ensure no net loss of biodiversity and ecosystem services:

a) In collaboration with the Member States, the Commission will develop a methodology for assessing the impact of EU funded projects, plans and programmes on biodiversity by 2014;

b) The Commission will carry out further work with a view to proposing by 2015 an initiative to ensure there is no net loss of ecosystems and their services (e.g. through compensation or offsetting schemes).

TARGET 3

Increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity

A) Agriculture: By 2020, maximise 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[1] in the conservation status of species and habitats that depend on or are affected by agriculture and in the provision of ecosystem services as compared to the EU2010 Baseline, thus contributing to enhance sustainable management.

B) Forests: By 2020, Forest Management Plans or equivalent instruments, in line with Sustainable Forest Management (SFM), are in place for all forests that are publicly owned and for forest holdings above a certain size[2] (to be defined by the Member States or regions and communicated in their Rural Development Programmes) that receive funding under the EU Rural Development Policy so as to bring about a measurable improvement[1] in the conservation status of species and habitats that depend on or are affected by forestry and in the provision of related ecosystem services as compared to the EU 2010 Baseline.

Action 8. Enhance direct payments for environmental public goods in the EU Common Agricultural Policy:

a) The Commission will propose that CAP direct payments will reward the delivery of environmental public goods that go beyond cross-compliance (e.g. permanent pasture, green cover, crop rotation, ecological set-aside, Natura 2000);

b) The Commission will propose to improve and simplify the GAEC (Good Agricultural and Environmental Conditions) cross-compliance standards. Consider including the Water Framework Directive within the scope of cross-compliance once the Directive has been implemented and the operational obligations for farmers have been identified in order to improve the state of aquatic ecosystems in rural areas.

Action 9. Better target Rural Development to biodiversity conservation:

a) The Commission and Member States will integrate quantified biodiversity targets into Rural Development strategies and programmes, tailoring action to regional and local needs;

b) The Commission and Member States will establish mechanisms to facilitate collaboration among farmers and foresters to achieve continuity of landscape features, protection of genetic resources and other cooperation mechanisms to protect biodiversity.

Action 10. Conserve Europe's agricultural genetic diversity.

The Commission and Member States will encourage the uptake of agri-environmental measures to support genetic diversity in agriculture and explore the scope for developing a strategy for the conservation of genetic diversity.

Action 11. Encourage forest holders to protect and enhance forest biodiversity:

a) Member States and the Commission will encourage the adoption of Management Plans, inter alia through use of rural development measures and the LIFE+ programme;

b) Member States and the Commission will foster innovative mechanisms (e.g. Payments for Ecosystem Services) to finance the maintenance and restoration of ecosystem services provided by multifunctional forests.

Action 12. Integrate biodiversity measures in forest management plans.

Member States will ensure that forest management plans or equivalent instruments include as many of the following measures as possible:

1) maintain optimal levels of deadwood, taking into account regional variations such as fire risk or potential insect outbreaks;

2) preserve wilderness areas;

3) ecosystem-based measures to increase the resilience of forests against fires as part of forest fire prevention schemes, in line with activities carried out in the European Forest Fire Information System (EFFIS);

4) specific measures developed for Natura 2000 forest sites;

5) ensuring that afforestation is carried out in accordance with the Pan-European Operational Level Guidelines for SFM, in particular as regards the diversity of species, and climate change adaptation needs.

[1] For both targets, 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.

[2] For smaller forest holdings, Member States may provide additional incentives to encourage the adoption of Management Plans or equivalent instruments that are in line with SFM.

TARGET 4

Ensure the sustainable use of fisheries resources. 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 diverse impacts on other stocks, species and ecosystems, in support of achieving Good Environmental Status by 2020, as required under the Marine Strategy Framework Directive.

Action 13. Improve the management of fished stocks:

a) The Commission and Member States will maintain and restore fish stocks to levels that can produce MSY in all areas in which EU fish fleets operate, including areas regulated by Regional Fisheries Management Organisations, and the waters of third countries with which the EU has concluded Fisheries Partnership Agreements;

b) The Commission and Member States will develop and implement under the CFP long-term management plans with harvest control rules based on the MSY approach. These plans should be designed to respond to specific time-related targets and be based on scientific advice and sustainability principles;

c) The Commission and Member States will significantly step up their work to collect data to support implementation of MSY. Once this objective is attained, scientific advice will be sought to incorporate ecological considerations in the definition of MSY by 2020.

Action 14. Eliminate adverse impacts on fish stocks, species, habitats and ecosystems:

a) The EU will design measures to gradually eliminate discards, to avoid the by-catch of unwanted species and to preserve vulnerable marine ecosystems in accordance with EU legislation and international obligations;

b) The Commission and Member States will support the implementation of the Marine Strategy Framework Directive, including through providing financial incentives through the future financial instruments for fisheries and maritime policy for marine protected areas (including Natura 2000 areas and those established by international or regional agreements). This could include restoring marine ecosystems, adapting fishing activities and promoting the involvement of the sector in alternative activities, such as eco-tourism, monitoring and managing marine biodiversity, and combating marine litter.

TARGET 5

Combat invasive alien species. By 2020, Invasive Alien Species (IAS) and their pathways are identified and prioritised, priority species are controlled or eradicated, and pathways are managed to prevent the introduction and establishment of new IAS.

Action 15. Strengthen the EU Plant and Animal Health Regimes.

The Commission will integrate additional biodiversity concerns into the Plant and Animal Health regimes by 2012.

Action 16. Establish a dedicated instrument on Invasive Alien Species.

The Commission will fill policy gaps in combating IAS by developing a dedicated legislative instrument by 2012.

TARGET 6

Help avert global biodiversity loss. By 2020, the EU has stepped up its contribution to averting global biodiversity loss.

Action 17. Reduce indirect drivers of biodiversity loss:

a) Under the EU flagship initiative on resource efficiency, the EU will take measures (which may include demand and/or supply side measures) to reduce the biodiversity impacts of EU consumption patterns, particularly for resources that have significant negative effects on biodiversity.

b) The Commission will enhance the contribution of trade policy to conserving biodiversity and address potential negative impacts by systematically including it as part of trade negotiations and dialogues with third countries. The Commission shall do this by identifying and evaluating potential impacts on biodiversity resulting from the liberalisation of trade and investment through ex-ante Trade Sustainability Impact Assessments and ex-post evaluations, and seek to include in all new trade agreements a chapter on sustainable development providing for substantial environmental provisions of importance in the trade context including on biodiversity goals.

c) The Commission will work with Member States and key stakeholders to provide the right market signals for biodiversity conservation, including work to reform, phase out and eliminate harmful subsidies at both EU and Member State level, and to provide positive incentives for biodiversity conservation and sustainable use.

Action 18. Mobilise additional resources for global biodiversity conservation:

a) The Commission and Member States will contribute their fair share to international efforts to significantly increase resources for global biodiversity as part of the international process aimed at estimating biodiversity funding needs and adopting resource mobilisation targets for biodiversity at CBD CoP11 in 2012.

b) The Commission will improve the effectiveness of EU funding for global biodiversity inter alia by supporting natural capital assessments in recipient countries and the development and/or updating of National Biodiversity Strategies and Action Plans, and by improving coordination within the EU and with key non-EU donors in implementing biodiversity assistance/projects.

Action 19. 'Biodiversity proof' EU development cooperation.

The Commission will continue to systematically screen its development cooperation action to minimise any negative impact on biodiversity, and undertake Strategic Environmental Assessments and/or Environmental Impact Assessments for actions likely to have significant effects on biodiversity.

Action 20. Regulate access to genetic resources and the fair and equitable sharing of benefits arising from their use.

The Commission will propose legislation to implement the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation in the European Union so that the EU can ratify the Protocol as soon as possible and by 2015 at the latest, as required by the global target.

Photographer: Peeter Sink

Photo 5. Sheep in a pasture in Hüpassaare, Soomaa National Park.

1.1.3 Estonian environmental strategy to 2030

The 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" and serves as the basis for the preparation and revision of all sector-specific development plans within the sphere of the environment which are required to proceed from the principles in the Environmental Strategy. A Nature Conservation Development Plan to 2020 has been prepared for the nature conservation subsector. It is discussed in detail below.

The Estonian Environmental Strategy 2030 aims at defining long- term development trends for maintaining a good status of the natural environment, while keeping in mind the links between the sphere of the environment and economic and social spheres and their impact on the natural environment and people. The Parlament approved the Environmental Strategy on 14 February 2007.

Trends in Europe and the rest of the world:

The need to arrange for the protection of areas included in the Natura 2000 network established on the basis of EU directives on nature conservation has contributed to the efficiency of protection of the diversity of both landscapes and biota in Estonia. Establishment of the Natura 2000 network has entailed a considerable increase of the area of protected areas.

Increasingly intense agriculture and its pressure on landscapes continue to cause the destruction of habitats and fragmentation of landscapes, resulting in decreasing diversity of species.

The introduction and spread of alien species is continuing; people's awareness of the possible consequences thereof is low.

Biotechnology is developing rapidly and potential risks arising from genetically modified organisms (GMO) are not well-known (opinions of possible risks are contradictory, many pseudo-problems are created).

Trends in Estonia

- Until now, nature conservation has mostly been focused on the protection of individual objects or territories. The modern approach deals more with the countrywide network of habitats and valuable landscapes as a whole.
- As a result of changes in social and economic conditions, non-productive agricultural land has been excluded from production, and intensive agricultural production activities have been concentrated in certain regions.
- The management of commercial forests which is becoming more intense on a growing basis renders it more difficult to accord consideration to the need of ensuring biological diversity in forests.
- Most members of society tend to appreciate imported consumption culture, which advances alienation from the traditional natural environment and conventional utilisation of nature.
- The recent trend of urbanisation has led to a situation where cities occupy increasing areas, seizing natural and agricultural landscapes.
- Increasing the relative share of energy based on renewable natural resources is worth supporting, yet this adds to the burden on the natural environment and biological diversity (extensive cultivation of monocultures such as energy forest or rape significantly affects biotic communities and the composition of landscapes).
- Areas of high recreational value (especially coastal areas) are being excluded from public use (private owners ignore the "everybody's right" and make such areas inaccessible).
- The need to preserve the richness of life is not being acknowledged sufficiently; society cannot appreciate biological diversity as a resource that creates preconditions for better quality of life.

Strategic objectives

Landscapes: **Preservation of multifunctional and coherent landscapes.** To preserve the coherence of landscapes of different types and the multifunctional nature of landscapes, the landscape policy must be more integrated into the policies of different areas of activity (nature conservation, heritage conservation, forestry, agriculture, construction, etc.). The coherence of landscapes is primarily ensured by 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 condition of the valuable marine habitats of the Baltic Sea, coastal areas (incl. small islands) and coastal communities, swamps, inland waters and forests will continue to be good (see table 1).

Table 1. Indicators of strategic objectives for the landscapes part of the Environment Strategy, their known value and trend[3]

Indicator	Target	Base level	Known level	Trend
The area and relative share of semi-natural biotic communities in the aggregate territory of Estonia (%)	↑	20 000 ha, 0.4% (2005)	25 000 ha, 0.6% (2011)	↑
The area of protected areas in hectares	↔	1 389 677 ha (2005)	1 537 320 ha (2011)	↑

[3] Hereinafter, unless noted otherwise, all increasing changes and trends are shown as a green up arrow, and decreasing ones as a red down arrow. Stable trends appear as a yellow horizontal arrow.

Biological diversity: To ensure the existence of habitats and biotic communities necessary for the preservation of viable populations of species.

The existence of habitats and biotic communities is necessary for ensuring the preservation of the populations of all naturally occurring species and for making sure that the number of endangered species and the impact of hazards on them does not increase and that the condition of endangered species improves. Measures designed to protect species and communities/areas coincide only partly. However, in order to maintain the conditions necessary for viable populations the protection of both habitats and species should be dealt with.

Table 2. Indicators of strategic objectives for the biodiversity part of the Environment Strategy, their known value and trend

Indicator		Target	Base level	Known level	Trend
Trends (changes in number) of populations of protected species of the first category	Black stork	↔ slight rise	100–115 pairs (2004)	70–80 pairs (2010)	↓
	White-tailed eagle	↔ slight rise	140 pairs (2004)	200–220 pairs (2010)	↑
	Short-toed eagle	↔ slight rise	5 pairs (2004)	No nests found (2010)	↓
	Osprey	↔ slight rise	45 pairs (2004)	50–60 pairs (2011)	↑
	Golden eagle	↔ slight rise	45 pairs (2004)	50–60 pairs (2010)	↑
	Greater spotted eagle	↔ slight rise	20–30 pairs (2004)	Under 10 pairs (2010)	↓
	Lesser spotted eagle	↔ slight rise	500–600 pairs (2004)	500–600 pairs (2010)	↔
	Grouse	↔ slight rise	50–150 pairs (2004)	50–150 pairs (2009)	↔
	Flying squirrel	↔ slight rise	60 habitats (2004)	64 habitats (2011)	↔
	Lesser white-fronted goose	↔ slight rise	25–29 individuals (2004)	10–40 individuals (2011)	↔
The relative shares of areas regarding which protective restrictions have been established in the territory of Estonia (%)		↔	18% (2005)	18.1% (2011)	↔
Changes in the number of protected plant and animal species (number)		↔	570 (2005)	570 (2011)	↔

1.1.4 Nature conservation development plan to 2020

The goal of nature conservation is to preserve biodiversity on all levels in which it is manifested. The more functioning, biodiverse ecosystems, the better we are supplied with food, clean water and air and the better we are able to combat pollution and climate change. If biodiversity is destroyed, nature will be less able to offer us various benefits, and thus it is important to use natural resources sustainably. To achieve nature conservation goals, the Nature Conservation development plan (NCDP) is being prepared.

The strategic objectives of the NCDP are in harmony with the Strategic Plan for Biodiversity 2011–2020 and the EU Biodiversity Strategy to 2020. The NCDP is a strategic source document for development of areas related to conservation and use of nature up to 2020. The strategic goals of the NCDP are the following.

- People are knowledgeable about nature, serve as good stewards, and are able to apply their knowledge in everyday life.
- Species and habitats will be in a favourable status and diversity of landscapes is ensured, and habitats will function as a single ecological network.
- Natural resources will suffice for the long term and their use take place based on an ecosystem approach.

Development plan indicators

Objective 1. People are knowledgeable about nature, serve as good stewards, and are able to apply their knowledge in everyday life.

Indicator	Base level 2010	Target level 2020
Percentage of people in Estonia who see their everyday behaviour as environmentally friendly	22%	35%
Number of nature education programmes used in schools and kindergardens	270	340
Number of people who have completed nature education programmes (State Forest Management Centre, Enviromental Board, Museum of Natural History)	133 000	2014 target level: 150 000 2020 target level: 200 000

Objective 2. Species and habitats will be in a favourable status and diversity of landscapes is ensured, and habitats will function as a single ecological network.

Indicator	Base level 2011	Target level 2020
Number of Habitats Directive species with improved status	Favourable status: 23, inadequate status: 41, bad status: 7, unknown: 24 species	28 species state improved
Percentage of Birds Directive species in favourable status	65%	80%
Number of species with appropriate protection instructions	45	220
Number of new alien species introduced in Estonia per year	2…3	0…1

Indicator	Base level 2011	Target level 2020
The area of maintained semi-natural biotic communities	25 000 ha	45 000 ha
Percentage of forested land that is strictly protected typologically representative forest	8.7%	10%
Area of restored mire communities with natural water regime	100 ha	10 000 ha
Number of salmon populations in favourable status	1	9
Number of habitat types endangered throughout Europe with improved status	Favourable status: 25, inadequate status: 21, bad status: 9, unknown 5 habitat types	14 habitat types status improved, all other habitat types status known
Number of monitored species and habitat types	Habitats Directive (HD) monitoring 74 Birds Directive (BD) monitoring 120 Habitat types in monitoring 26 Category I species in monitoring 54	HD species in monitoring 96 BD species in monitoring 221 Habitat types 60 All category I species
Number of indicator types that indicate coherence of green network in favourable status	0	15

Objective 3. The long-term existence of natural resources and the necessary conditions are ensured and their use takes place based on an ecosystemic approach.

Indicator	Base level 2011	Target level 2020
Number of habitat groups (mires, forests, meadows etc) with assessed natural benefits	0	6
Area of reconditioned residual mires	0 ha	1000 ha
Populations of large predators	Wolf 200, Lynx 700	Wolf 200, Lynx 700
Percentage of stocks of commercially significant fish species that are in good status	41%	60%
Number of functioning ecoducts (wildlife crossings) and tunnels for small animals	Ecoducts 0 Tunnels 10	Ecoducts 4 Tunnels 20

Photographer: Sven Zacek

Photo 6. "Nice nail polish!" Otter on the mirror-like surface of an ice floe.

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. As of 2011, this Act still sets forth six different spatially definable objects subject to legal protection (see table 3). In addition to these, the woodland key habitats established under the Forest Act can be considered to directly relate to protection of plants and animals. Object types arising from legislation that protect flora and fauna indirectly through restrictions established for another purpose (water protection, shore protection, plans etc) are listed in table 4.

The primary change in this table reflects amendments to the Forest Act that abolished protected forest and protection forest categories and the addition of green networks and valuable landscapes as well as measures arising from legislation that indirectly protect nature. The sections below deal with only the types listed in table 3.

Table 3. Types of protected objects in Estonia where the direct objective is nature protection

Type of protected object	Legislation
Protected area: • National park • Nature reserve • Protected landscape (incl. 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 objects protected at the municipal level	Nature Conservation Act
Protected species	Nature Conservation Act
Woodland key habitat	Forest Act

Table 4. Types of objects that indirectly protect nature 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
No-contsurction 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 has a Ministry of the Environment body, the Environmental Board, as its manager (see figure 1). The manager of a natural object protected on 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 authorization for use and imposes terms and conditions on use of the environment. The Environmental Board has six regions (Harju-Rapla-Järva, Viru, Jõgeva-Tartu, Põlva-Valga-Võru, Pärnu-Viljandi, Hiiu-Lääne-Saare). In addition to the management obligations listed above, the Environmental Board organizes activities arising from the protection regime for the protected natural objects, nature education and efforts to promote the objects, and monitors adherence to conservation management requirements. Some of the functions of organizing protection have been delegated on the State Forest Management Centre.

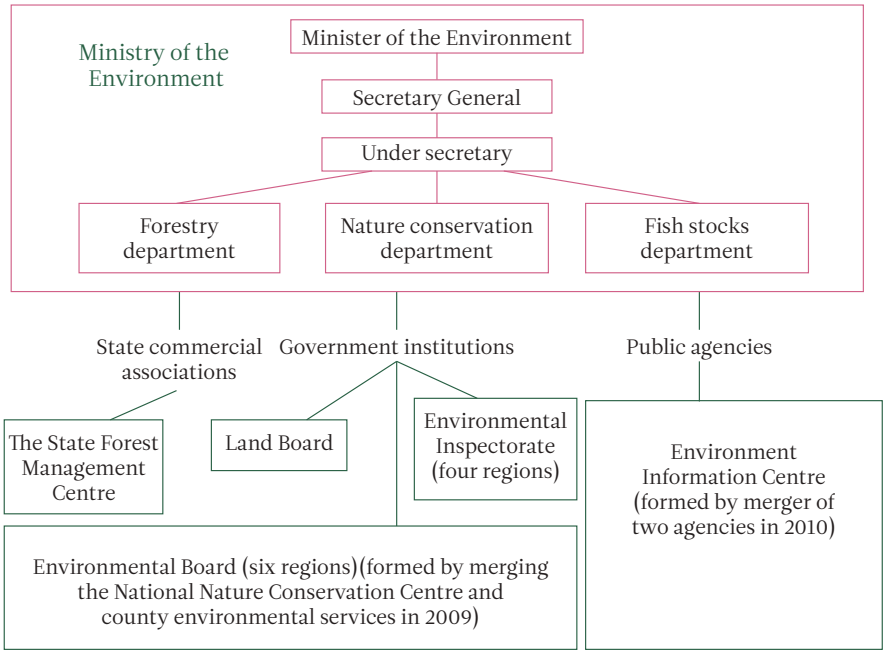


Figure 1. Administrative structure of organization of national nature protection

Of the Ministry of Environment's structural units, the nature conservation department organizes nature conservation policy and the forest department organizes development and implementation of forestry policy (see figure 1). Of the institutions in the area of government, the State Forest Management Centre manages state forests and is involved in some conservation management activities and has developed nature tourism in the form of hiking trails (the latter on nature protection areas). The Estonian Environment Information Centre (EEIC) – which was established in 2010 by way of merger of previous Estonian Environment Information Centre with the Centre of Forest Protection and Silviculture – collects, analyzes, processes and issues environment-related, including nature conservation related information and administers the environment register (including the Forest Register). The environmental register's public service[4] allows any person to access information on objects entered into the register. The environmental register performs supervision in the field of the environment, including nature conservation. The Land Board administers the land cadastre and database on restrictions.

[4] http://register.keskkonnainfo.ee/envreg/main

Photographer: Jaanus Piirimees

Photo 7. Least weasel in a jumble of rocks.

1.3 International cooperation

The period covered by this publication includes 2010 – the International Year on Biodiversity – when Estonia marked the 100th anniversary of the establishment of its first nature reserve. The same year, the 10th anniversary conference of the states party to the Convention on Biodiversity took place in Nagoya, Japan, where summaries of the achievements of the last ten years were drawn up and it was concluded that the main goal of halting the loss of biodiversity had not been achieved. The international community took a big step forward in nature conservation policy by starting to organize biodiversity protection with ecosystem-based integration of the national and international economy. New goals were set for the years ahead and the period from 2011–2020 was declared the International Decade on Biodiversity to devote more attention to the most important problem facing the increasing human population – the drastic decrease of biodiversity.

Administratively and legally, Estonia has acceded to a number of nature conservation agreements and associations. The primary ones are listed in table 5. Besides these, Estonia also takes part at the state level in the Europarc federation and the PAN parks network for the protection of extensive blocs of nature. The last two of these are dealt with thoroughly in the following section as they have received particular attention in the period since the last Estonian nature conservation overview was published.

Close interministerial cooperation has been pursued for years between Estonia and Finland. And the 20-year anniversary of this cooperation – marked by a number of joint conferences and overviews – also fell within the period covered by this publication.

Table 5. International treaties and associations related to nature conservation to which Estonia has acceded at the state level

Name in English	Name in Estonian	Established	Estonian membership
The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	Washingtoni konventsioon loodusliku loomastiku ja taimestiku ohustatud liikidega rahvusvahelise kaubanduse kohta (CITESi konventsioon)	1973	1992
Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)	Euroopa floora ja fauna ning nende elupaikade kaitse konventsioon (Berni konventsioon)	1979	1992
The Convention on Wetlands of International Importance (Ramsar Convention)	Rahvusvahelise tähtsusega märgalade konventsioon (Ramsari konventsioon)	1971	1993
The Convention on Biological Diversity (CBD)	Bioloogilise mitmekesisuse konventsioon	1992	1994
UNESCO World Heritage Convention	UNESCO ülemaailmse kultuuri- ja looduspärandi kaitse konventsioon	1972	1995
Convention on the Protection of the Marine Environment of the Baltic Sea Area	Läänemere piirkonna merekeskkonna kaitse konventsioon (Helsingi konventsioon)	1992	1995
The Cartagena Protocol on Biosafety to the CBD	Cartagena bioloogilise ohutuse protokoll	2000	2004
The Agreement on the Conservation of Populations of European Bats (EUROBATS)	Euroopa nahkhiirte kaitse leping (EUROBATS)	1991	2004
The Agreement on the Conser-vation of African-Eurasian Migratory Waterbirds (AEWA)	Aafrika-Euraasia rändveelindude kaitse kokkulepe (AEWA)	1995	2008
The Convention on the Conservation of Migratory Species of Wild Animals (CMS or Bonn Convention)	Metsloomade rändliikide kaitse konventsioon (Bonni konventsioon)	1979	2008
International Convention for Regulation of Whaling (IWC)	Vaalapüügi reguleerimise rahvusvaheline konventsioon	1946	2009
International Union for Conservation of Nature (IUCN)	Maailma Looduskaitse Liit (IUCN)	1948	2007
The Global Biodiversity Information Facility (GBIF)	Globaalne Elurikkuse Infokoda (GBIF)	2001	2003

Photographer: Arne Ader

Photo 8. Morning in Kuresoo. Soomaa National Park.

Conservation of wilderness and the PAN Parks network

Wilderness conservation – the protection of large natural areas – has recently had increased resonance worldwide. Preservation of nature free from human interference is a principle that has been utilized quite often since the earliest days of Estonia's nature conservation system; many countries are now making their first encounter with this idea.

2009 was an important year from the standpoint of wilderness conservation in Europe. European Parliament adopted a resolution on wilderness and at the initiative of the European Commission, working groups and conferences were organized on the future of protection for wilderness in Europe. The topics related to wilderness conservation have reached the political agenda in Europe, but countries vary widely in terms of their natural endowment. Wilderness – which generally means large tracts of natural area free from significant human influence where natural processes are ensured – should be distinguished from wildland, which can refer to smaller territories left in nature that previously suffered from significant human impact.

The conservation of large wilderness areas is organized in Europe by the PAN Parks network. It was established in 1997 by the World Wildlife Fund and the nature tourism company Molecanten. The network currently includes 11 areas in Estonia, Finland, Sweden, Russia, Romania, Bulgaria, Italy, Portugal and Georgia. Two areas are certified in both Bulgaria and Finland. Estonia is represented in the network since 2009 by Soomaa National Park.

Areas in the PAN Parks network are subject to a number of criteria. They govern representativeness of the nature areas, effectiveness of the protection regime, conservation management, tourism management and involvement of the region's companies. To make this truly a system of showcase European wilderness areas, the protected areas in the PAN Parks network must be large – at least 20 000 hectares and natural processes must be guaranteed in a core area of at least 10 000 hectares. It is just as important that the protected areas be prepared to engage in cooperation with ecotourism entrepreneurs in the region and contribute to sustainable development.

Photographer: Arne Ader

Photo 9. Kasispea beach in Lahemaa National Park.

Europarc Federation

The Europarc federation of national parks and nature reserves was established in 1973. More than 400 members have joined it so far (administrators of protected areas, nature conservation organizations etc) all over Europe. The goals of the federation are to promote planning and organization of protected areas in the best way possible, to contribute to the inception of new protected areas, raising the understanding and awareness of protected areas as necessary prudential measures in order to ensure that natural values survive and to influence EU policy as well as various structural funds.

Lahemaa National Park has been a member of Europarc as soon as it could officially enjoy that status (1990). As of 2009, the Environmental Board is also a member of the federation.

The representatives of the Nordic and Baltic countries formed an independent working group – the Nordic-Baltic section – in 2003. It includes representatives from Norway, Sweden, Finland, Denmark, Lithuania, Latvia, Estonia and Iceland. The section has a total of around 40 federation members. The home rules of the Nordic-Baltic section state that the president country is responsible for organizing the work of the section, and the president country is selected for three years. It has been proposed that Estonia serve as president country from 2012-2014.

Europarc has developed a set of ecotourism principles - (called the Charter for Sustainable Tourism), the goal of which is to ensure high-quality tourism services in protected areas. This requires partnership with the nature reserves' administrators, tourism businesses and local inhabitants. According to the definition of the charter, sustainable tourism is a type of tourism which includes all forms of developing and organizing tourism, ensuring the long-term protection and preservation of cultural and social resources and supporting the positive and fair functioning of local economies. They also must ensure the well-being of the people living, working or visiting the protected areas.

The Lahemaa National Park nature centre permanent exhibition was initiated in cooperation with Europarc, above all in terms of developing the concept. In addition to the initiatives of 2004, a junior rangers project has been launched. The young rangers have taken part in several international camps. Each year, 20 youths are trained, and there are already a total of about 140 of them. Lahemaa has taken part in the Europarc Expertise Exchange. The cooperation has been a boon to planning of the national park's general development areas.

Photographer: Arne Ader

Photo 10. White-tailed eagle. Matsalu bay.

2. Protected natural objects and natural objects with protection value

This section deals with changes that have taken place in the last four years in Natura 2000, Ramsar and Helcom areas as well as in the number and area of domestic sites.

The greatest changes in terms of international sites have taken place in the Natura 2000 network, as the list of sites has been updated twice in the interim. Compared to 2007, the number of **Special Protection Areas** has remained the same but the area has grown about 250 km², an additional 32 Sites of Community Importance **(SCIs)** have been added and the total area has grown about 730 km². The **Ramsar Convention network** has 17 areas in Estonia, additional 6 areas has been added. There are now three additional **Helcom** areas in Estonia: Kura kurk, Pakri and Pärnu Bay.

With regard to domestic objects, we will first offer an overview of the protected territory and the waters. In this publication, we will for the first time provide an overview of the protection accorded to the coastline and inland waters. **The share of protected territory** has increased 0.2%, a total of 18.1% is under protection, 31.1% of the waters and overall, 22.7%. Of **Estonia's seashore,** 4/5 is protected, of which, in turn, about 3/4 has low protection and 1/4 is under strict protection. By length, **19.4% (3742.2 km)** of water courses are within protected natural objects, and of these 33% are under stringent protection (1 235.2 km) while 67% (2 507 km) are under low protection. A total of **969 lakes** are located within protected natural objects, and this is a total of 16 796 ha or 62.3% of the area of all lakes. In addition, 34.9% (54 085.7 ha) of Lake Peipsi and 100% of Võrtsjärv are located within protected natural objects.

The greatest changes in connection with **protected objects** have taken place with regard to **species protection sites** and **objects protected on the municipal level**. Two nature reserves have been added (Suurupi ja Kõrgessaare), two protected landscapes (Türi and Aegna), one limited-conservation area (Gretagrundi), 289 species protection sites and three nature monuments. Four areas with unrevised protection rules received new protection regime and in this connection their type has changed and only 107 of them are left. Instead of the two sites, now 19 local government sites are in the register. The number of woodland key habitats has increased by 565, but their area has decreased by 447 ha. As of 1 July 2011, 4 972 key woodland habitats conformed to the Forest Act, representing a total area of 8 229 ha (36%).

2.1 Internationally protected natural objects

2.1.1 Natura 2000

Estonia's Natura 2000 areas were selected by the time of European Union accession in 2004. The European Commission analyzed the adequacy of the Sites of Community Impotance (SCIs) for the protection of all of the Natura 2000 habitat types and species listed in the Habitats Directive. The principle of the assessment at least 20–60% of the total area of every habitat as well as of the population of each species or of all places in which they are found in the country must be under protection. The analysis revealed that Estonia had need of defining additional SCIs for protection of certain habitat types and species. The boreal region seminar (2005) found that Estonia had enough areas already selected for protection of most habitats and species but we were expected to place additional areas under protection in order to protect **karstic lakes, alvars and riparian forests as well as pond bat, lady's slipper orchid, and seven other habitat types and five other species.** As the outcome of the Baltic Sea region seminar (2009), Estonia is expected to establish at least one area for protection of **sandbanks and reefs.**

Based on the above need, the original network of Natura 2000 areas was supplemented in both 2009 and 2010. **As of 2011, the Estonian Natura 2000 network consists of 66 Special Protection Areas (SPAs) under the Birds Directive with a total area of 12 592 km²** (the number of areas is the same as 2007, but the area has grown ↑ by about 250 km²) **and 542 SCIs with a total area of 11 490 km²** (compared to 2007, there are ↑ 32 additional areas and the total area has grown ↑ by about 730 km²). As the SPAs and SCIs largely coincide, the total area of Estonia's Natura 2000 network is 14 752 km² (see figure 2). Slightly under half of the Natura 2000 areas are at sea (7 551 km²) and Natura 2000 areas cover 16.6% (7 203 km²) of Estonia's land territory. The Gretagrundi limited-conservation area of 14 650 ha was established for additional protection of marine habitats. The coherence of the Natura 2000 network is supported by the green network thematic plan, which is discussed in greater detail in section 3.7.

In Estonia, Natura 2000 areas are protected on the basis of the Nature Conservation Act in the form of traditional protected areas (national parks, nature reserves, protected landscapes) or as limited-conservation areas, as species protection areas for protection of species habitats and protected nature monuments (see also section 2.2). The changes in protection typology of the Natura 2000 areas and protection regime in recent years are listed in figure 3.

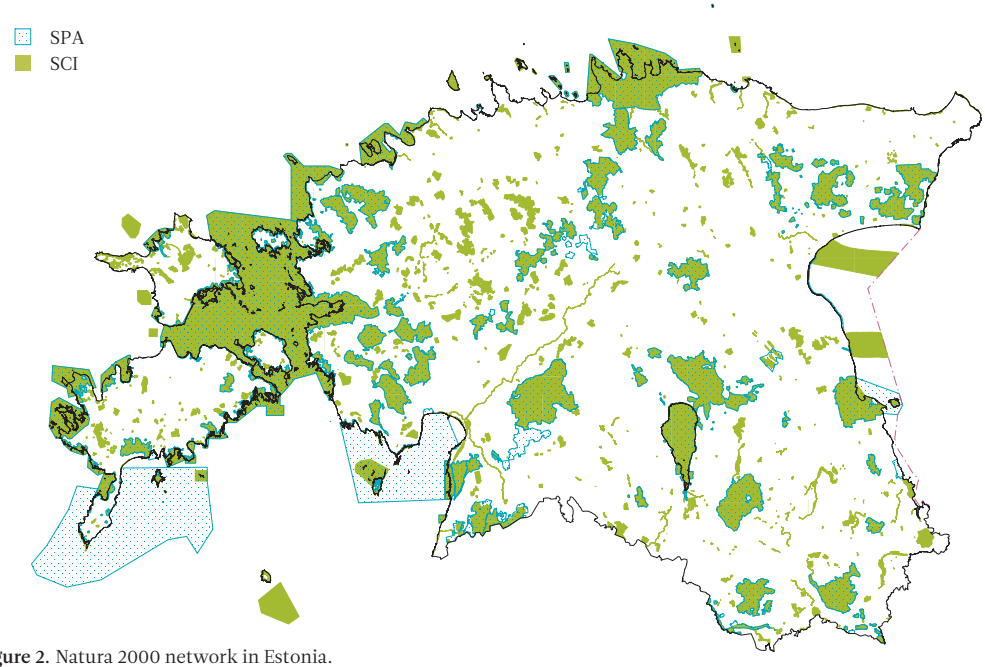


Figure 2. Natura 2000 network in Estonia.

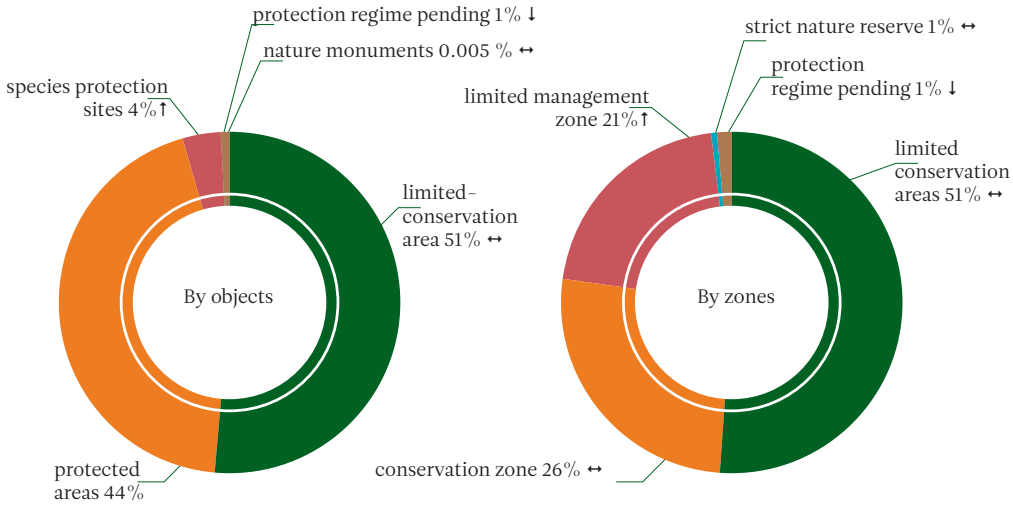


Figure 3. The distribution of Natura 2000 areas among protected natural objects and their distribution by zones.

The goal of the Natura 2000 network is to preserve or, if necessary, restore a favourable status for species and habitats that are endangered on a pan-European level. As a result of an analysis conducted in EU member states in 2007, it was found that only 17% of habitats and species of European importance were in a favourable status on a pan-European level. The status of the rest of the species and habitat types was assessed as inadequate or bad, or unknown because so little research had been devoted to them. **Of the 60 Habitats Directive habitat types and 96 Habitats Directive species found in Estonia,** 42% of the habitat types and 24% of the species were found to enjoy a favourable status. One-half of them were considered to have inadequate and bad status. This shows how much the Natura 2000 habitats need to be restored or be allowed to restore themselves. In restoring the areas, great attention must be paid among other things to semi-natural biotic communities, since as of 2011, only 25 000 ha of the 57 000 ha of semi-natural biotic communities n the Natura 2000 network is in maintenance by way of support – i.e. 44% of the total areas of semi-natural biotic communities.

To allow the status of all species and habitats to improve in the future, natural conservation activity must be better planned. A conservation management plan must be drawn up for each Natura 2000 area, listing the measurable conservation objectives and the activities necessary to do so. Management plans must be prepared for Natura 2000 SCIs by 2014 (see also section 3.5).

As the Natura 2000 network is a common asset for all of Europe – each member state has the responsibility for preservation of the natural assets therein for all of Europe, the Habitats Directive sets forth EU co-financing for the functioning of the Natura 2000 network. A total of 21.7 million euros has been allocated from the European Regional Development Fund for nature conservation work for the years 2007-2013; this amount will be used to compile conservation management plans for protected areas and limited-conservation areas as well as species action plans, as well as to restore habitats and the necessary infrastructure. A total of 66.9 million euros has been allocated from the European Agricultural Fund for Rural Development for nature conservation support in 2007-2013, which will be used to support maintenance of semi-natural biotic communities and compensate users of cropland and owners of private forests for revenue forgone due to Natura 2000 restrictions (see also section 3.4).

2.1.2 Ramsar Convention on international wetlands

Signed in Ramsar, Iran, in 1971, the convention, which marked its 40th anniversary 2011, has 160 party states (three joined in 2007–2011↑) and the list of international wetlands includes 1 994 areas (292 areas have been added↑) with a total area of approx. 2 000 000 km². The goal of the convention is to protect wetlands which play a key role worldwide from drainage, pollution and economic exploitation. As of 2011, Estonia has 17 Ramsar areas, with a total area of 277 328 hectares (figure 4):

1. Matsalu National Park, joined 29 March 1994, area: 48 610 ha;
2. Alam-Pedja nature reserve, joined 17 June 1997, area: 34 220 ha (expanded 2007 ↑);
3. Emajõe Suursoo and Piirissaar, joined 17 June 1997, area: 32 600 ha;
4. Endla nature reserve, joined 17 June 1997, area: 10 110 ha (expanded 2007↑);
5. Hiiumaa islets and Käina bay, joined 17 June 1997, area: 17 700 ha;
6. Muraka nature reserve, joined 17 June 1997, area: 13 980 ha (expanded 2007↑);
7. Nigula nature reserve, joined 17 June 1997, area: 6 398 ha (expanded 2007 ↑);
8. Puhtu-Laelatu-Nehatu wetland, joined 17 June 1997, area: 4 640 ha;
9. Soomaa National Park, joined 17 June 1997, area: 39 639 ha (expanded 2007↑);
10. Vilsandi National Park, joined 17 June 1997, area: 24 100 ha;
11. Laidevahe nature reserve, joined 31 March 2003, area: 2 424 ha;
12. Sookuninga nature reserve, joined 3 February 2006, area: 5 869 ha;
13. Luitemaa, joined 27 January 2010, area: 11 240 ha;
14. Agusalu, joined 27 January 2010, area: 11 000 ha;
15. Leidissoo, joined 27 January .2010, area: 8 178 ha;
16. Lihula, joined 27 January 2010, area: 6 620 ha.
17. Haapsalu-Noarootsi, joined 8 February 2011, area: 29 380 ha;

Changes 2007–2011: joined 6 and expanded 5 sites, total area has grown 82 495 ha

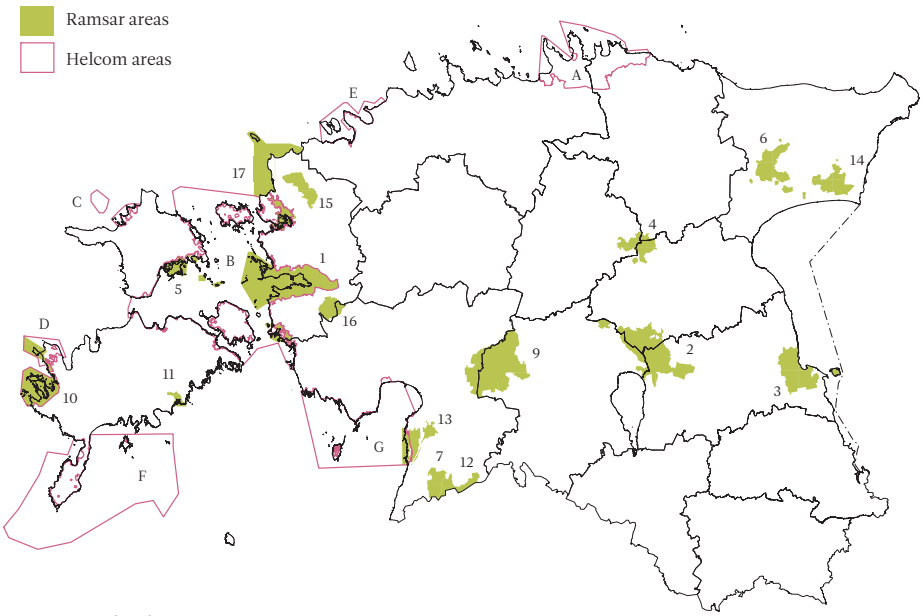


Figure 4. Ramsar and Helcom areas in Estonia

2.1.3 Helcom Convention

The implementation of the convention on the Protection of the Marine Environment of the Baltic Sea Area (Helcom Convention) is organized by Helcom – the Helsinki commission secretariat – through five different working groups that deal with the topic. An important task of the working group on biological diversity is to establish a network of Baltic Sea Protected Areas (BSPAs). Protection of these areas must be ensured by domestic measures. One possibility for EU member states to ensure protection can also be the EU Birds Directive or Habitats Directive. A conservation management plan must be prepared for each Baltic Sea Protected Area in order to ensure protection of nature and the sustainable use of natural resources. In the case of Natura 2000, the requirement of preparing a management plan also stems from the Habitats Directive.

In Estonia six areas have been named Baltic Sea Protected Areas – Lahemaa National Park, Matsalu National Park, Kõpu peninsula on Hiiumaa island, Vilsandi National Park, Hiiumaa's islets, and Harilaid islet. At the meeting of Helcom delegates in 2003, the boundaries of the BSPAs and the information regarding these areas were updated. In 2005, guidelines on organizing protection of the BSPAs were adopted.

The 2008 meeting of Helcom approved a report designed to create an ecological integrated network of marine areas by 2010. The secretariat drew attention to a clause in the Baltic Sea action plan in which the ministers had decided by 2009 to name the existing Natura 2000 and Emerald areas BSPAs where appropriate and to determine new areas in 2010, above all offshore areas.

Based on the above recommendations, the previously named BSPAs were reviewed and some changes were made to them. Above all, the principle is that the boundaries of the BSPAs (pursuant to the Baltic Sea action plan recommendations) should conform to the boundaries of the existing Natura 2000 network areas. Thus the boundaries and area of the BSPAs were modified significantly. The questionnaires about the areas were supplemented with new information on their natural assets (species and habitats). Three existing Natura 2000 network areas were named new BSPAs – Kura kurk, Pakri and Pärnu Bay↑. The selection of new areas proceeded above all from the Helcom recommendations and the boundaries of the Natura 2000 network areas. An overview of the changes is shown in table 6 by each area. Figure 4 at the page 29 shows the location of the areas.

Table 6. Baltic Sea Protected Areas in Estonia

Code at fig. 4	Name of new BSPA	Previous name of BSPA	Changes
A	Lahemaa	Lahemaa National Park	Questionnaire supplemented
B	Väinameri	Matsalu National Park, Hiiumaa Islets, Harilaid	Boundaries changed, area increased, data supplemented
C	Hiiu Madal	Kõpu Peninsula in Hiiumaa	Boundaries changed, area increased, data supplemented
D	Vilsandi	Vilsandi National Park	Boundaries changed, area increased, data supplemented
E	Pakri		New area
F	Kura kurk		New area
G	Pärnu Bay		New area

Photographer: Uudo Timm

Photo 11. Saunja Bay. Silma nature reserve.

2.2 Nationally protected natural objects

2.2.1 Protected territory and waters

To calculate the share of Estonia's territory and waters that are under protection, the protected areas, limited-conservation areas, species protection sites, the protected zones of protected nature monuments and natural objects protected at the municipal level were all taken into consideration. As some of these sites may overlap, the digital spatial data were processed to cancel out the overlapping areas. Thus we learned how much territory is protected, at the national, county and municipal level. This represents the total area. Protected waters are expressed as a percentage of the Estonian territorial waters, including Lake Võrtsjärv and Lake Peipsi. The data from the Environmental Register are as of 1 July 2011.

A total of 18.1% of Estonia's land area (including inland waters, but not including Võrtsjärv and Peipsi) is under protection. Compared to 2007, **the area under protection has grown 0.2% ↑**. The highest percentage of protected territory is in Lääne County (32%), and the lowest percentage is in Põlva County (9%). By county, the changes have not been major. A 1% increase can be noted in Harju County (19%↑), Hiiu County (24%↑) and Pärnu County (24%↑), and in other counties the change was less than a percentage point (figure 5).

A total of 18.1% of Estonian land territory is under protection; and 31.1% of Estonian waters. Overall, including both land and water, 22.7% of Estonia's area is under protection.

A total of 31.1% of Estonian waters is under protection. Of Estonia's seashore (the length of the shoreline of mainland Estonia and the islands totals about 4 000 km according to Land Board data) **4/5 is under protection**, of which in turn 3/4 is protected under limited management zone and limited-conservation area regimes and about 1/4 under conservation zone and strict nature reserve regimes. Considering both land and water areas, **a total of 22.7% of Estonian surface area is under protection**.

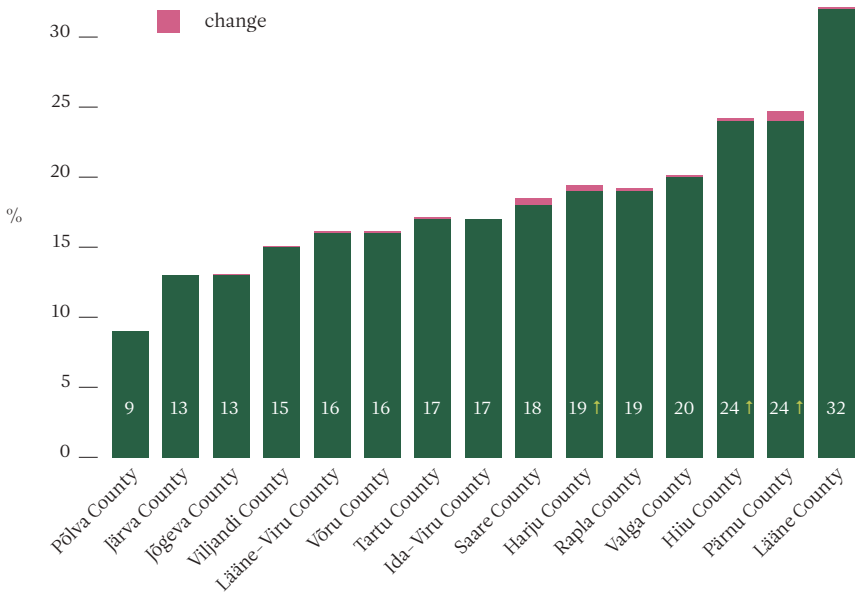


Figure 5. Percentage of county area that is protected

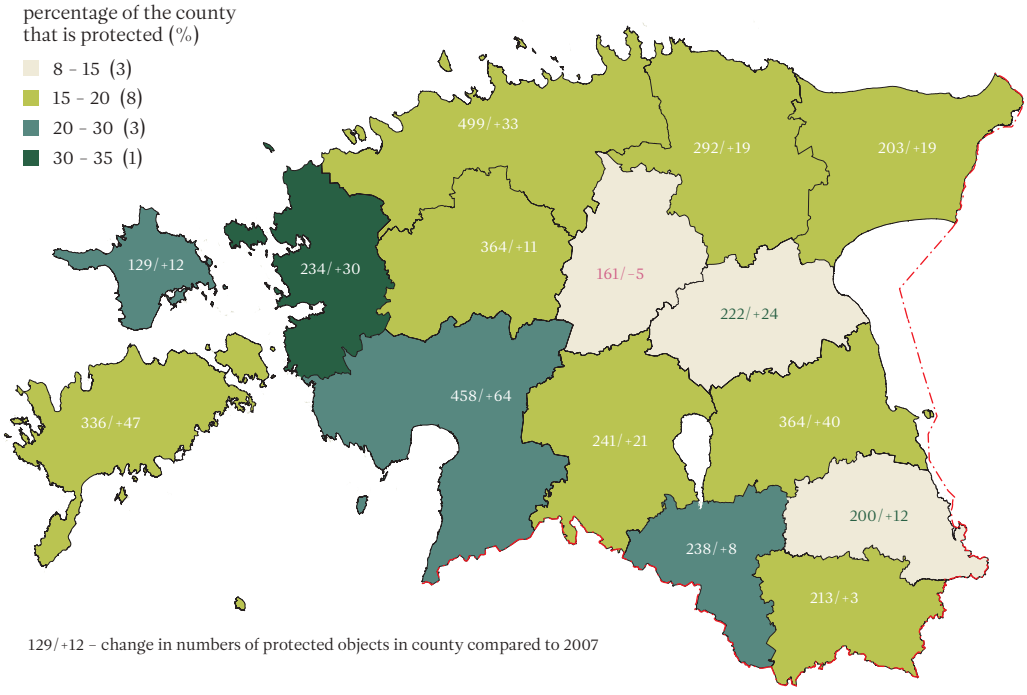


Figure 6. Number of protected objects in each county and percentage of county territory under protection (sites across county or municipality boundaries are counted in all units)

By adding up the protected areas, limited-conservation areas, protected nature monuments, species protection sites and natural objects protected at the municipal level, we obtain the numbers of protected objects (figure 6 and 8). The most protected objects (159) (6↑)[5] are in the city of Tallinn, where many of them are nature monuments, followed by Märjamaa municipality 102 (5↑) objects, Saarde municipality 74 (12↑ – the biggest change), Kuusalu municipality 68 (4↑) and Vändra municipality with 62 (11↑) (Vändra and Kaisma municipality have been merged in the interim), Türi municipality with 48 (1↓). On the basis of geoqueries, there are no objects in Järvakandi and Tootsi municipalities, or in Jõgeva, Kiviõli, Mõisaküla, Püssi and Võhma cities (no change since 2007). The largest positive change in number of objects was in Saarde municipality (12↑), Vändra (11↑) and Tartu as well as in Mustjala municipality (10↑).

By area of protected territory, the greatest percentage of land under protection is located in Piirisaare municipality (100%), followed by Otepää (~67%), Ruhnu (66%), Kihnu (~65%), Vihula (~60%) and Haanja municipality (~53%). Over one-half of municipal territory is covered by protected objects in a total of 10 municipalities (change of 2↑ compared to 2007) (figure 8). Besides the aforementioned municipalities, the percentage of protected land exceeds 50% in the city of Paldiski (50%), Viimsi municipality (51%), Kuusalu municipality (52%) and Aegviidu municipality (52%).

The greatest percentage of the protected objects by type is protected area (national parks, nature reserves, protected landscapes, areas with unrevised protection rules and parks and stands) – a total of 13.59% (figure 7).

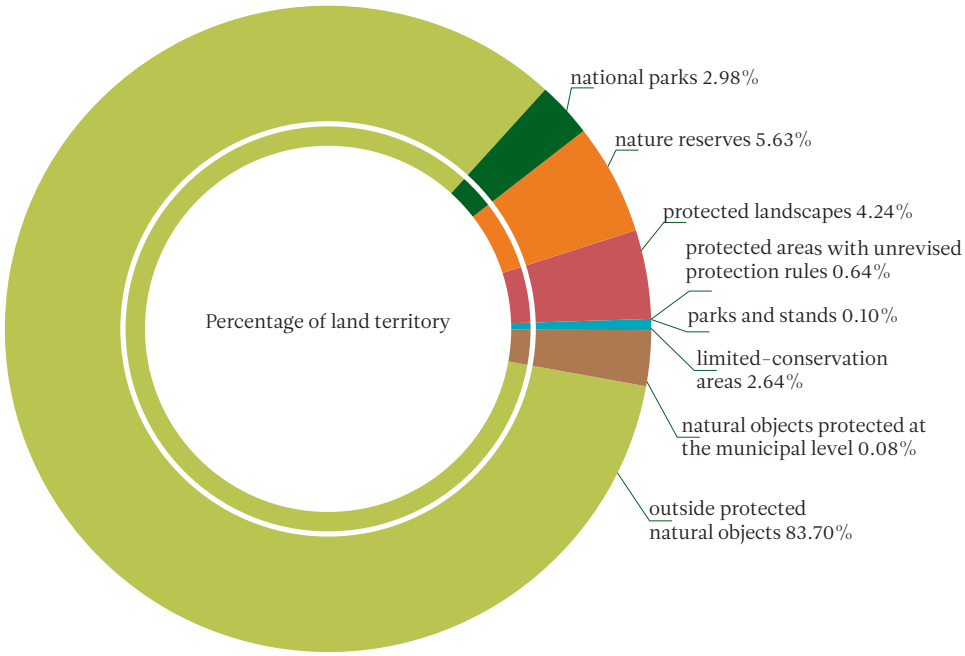


Figure 7. The percentage of Estonian land territory comprised by each type of protected object (species protection sites and protected nature monuments are not counted, as some of them overlap with other protected objects)

[5] Hereinafter the change in number in brackets is in comparison to 2007, unless noted otherwise.

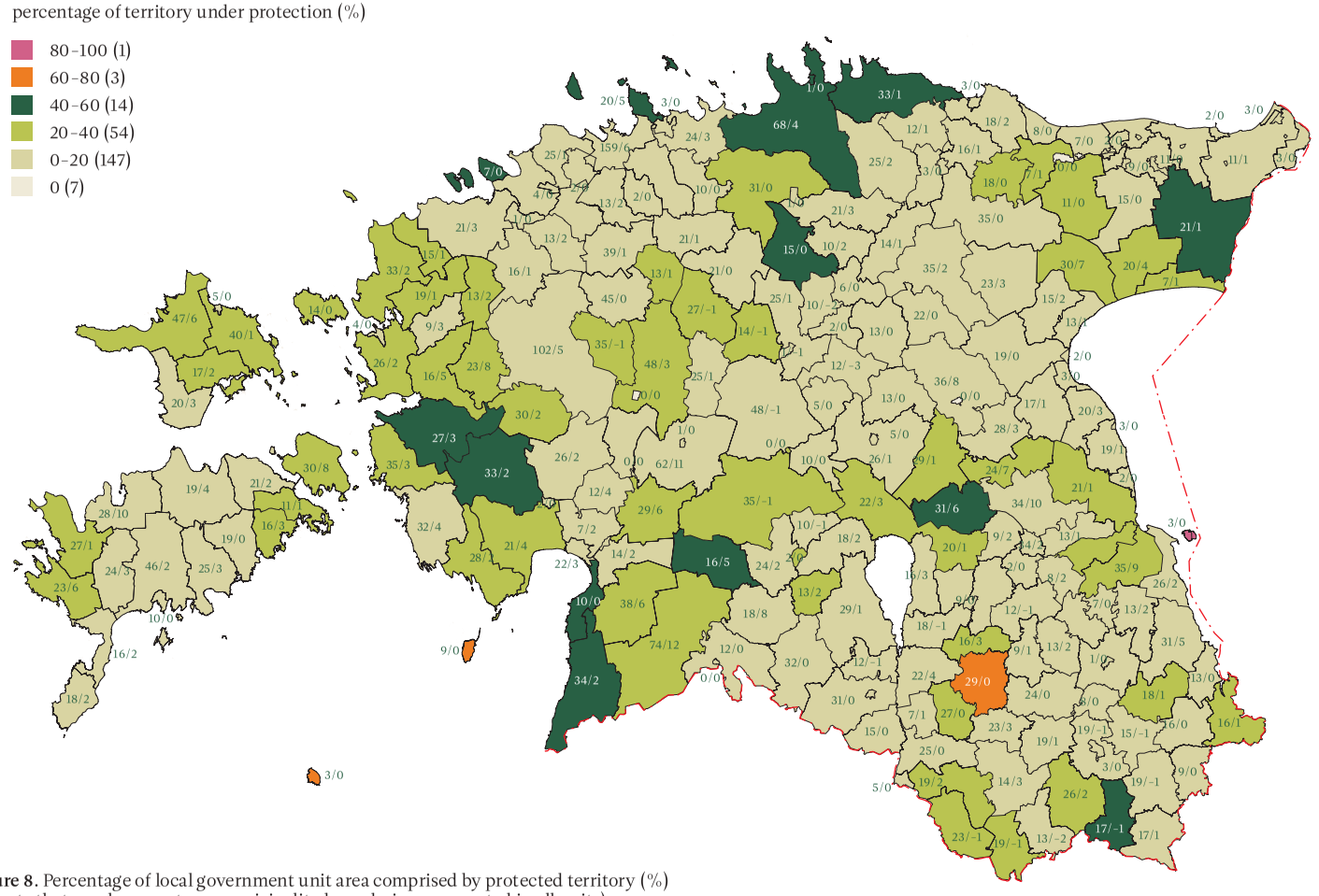


Figure 8. Percentage of local government unit area comprised by protected territory (%)
(objects that overlap county or municipality boundaries are counted in all units)

Protection of inland waters

The Environmental Register lists 2 059 **water courses** with a total length of **19 316.9 km**. Only 65 water courses are located in their entirety on protected natural objects, and **19.4% (3 742.2 km)** of the total length of water courses passes through protected natural objects, while 33% (1 235.2 km) of them are subject to more stringent protection rules[6], 40% (1 492.9 km) have less strict protection status, and 27% (1 014.1 km) lie within limited-conservation area territory.

Approximately one-fifth of the total length of Estonian water courses is located on protected natural objects.

By type of protected object, the most water courses are on protected areas – 2458.6 km (12.7% of the total length of the watercourses, 65.7% of the watercourses on spatially protected natural objects), while 1 014.1 km of water courses flow on limited-conservation areas (5.2%; 27.1%), 274.9 km on species protection sites (1.4%; 7.3%), 11.1 km (0.06%; 0.3%) on limited management zones of nature monuments, and 2.5 km (0.01%; 0.07%) on objects protected on the municipal level. By number, the most water courses (61) in their entirety are found on protected areas, while three water courses run in their entirety on limited-conservation areas. The "List of spawning areas and habitats of salmon, sea trout and grayling" includes 112 rivers with a total length of 2 302 km (11.9% of the total length of the water courses).

Figure 9 shows total length of water courses by municipalities and their length percentage by protected natural objects. In terms of total length, the most water courses on protected natural objects are found in Kuusalu municipality (169.7 km), Vihula (122.5 km) and Märjamaa municipality (89.5 km). Only the water courses of the city of Sindi are 100% located on protected natural objects.

Table 7. Length of water courses by county

County	Total length of water courses (km)	Total length of water courses on protected natural objects (km)	Percentage of water courses on protected natural objects
Valga County	1033.2	298.5	28.9
Hiiu County	349.4	90.1	25.8
Pärnu County	2125.2	522.1	24.6
Lääne-Viru County	1247	281.1	22.5
Tartu County	1348.6	299.9	22.2
Lääne County	774.4	169.6	21.9
Võru County	1383.8	288.9	20.9
Järva County	1150.4	216.9	18.9
Harju County	1915.6	338.5	17.7
Rapla County	1288.4	211.5	16.4
Ida-Viru County	1379.5	212.6	15.4
Viljandi County	1785.7	268.6	15.0
Põlva County	1210.2	175.6	14.5
Jõgeva County	1316.2	181.7	13.8
Saare County	783.8	101.6	13.0

[6] Stricter protection is considered to be strict nature reserve and conservation zone regime, and lower protection is considered to be limited management zone. Limited conservation areas, which may have either a low or a strict regime (see also sections 2.2.3 and 3.1) are listed separately.

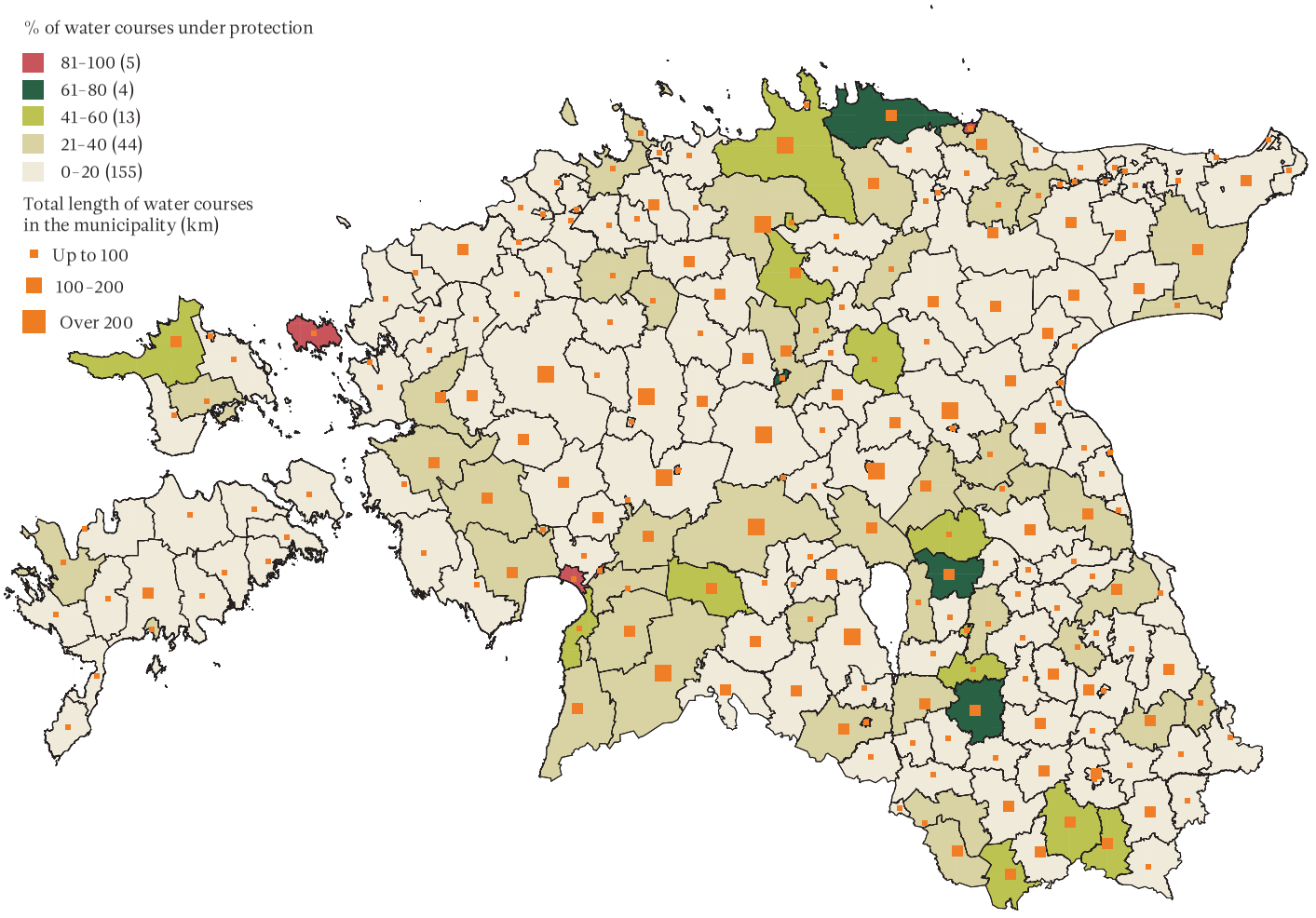


Figure 9. Total length of water courses and percentage of the length of the municipality's water courses that are located on spatially protected natural objects.

According to Environmental Register data, there are **2 763 lakes** on Estonian territory, with a total area of 210 427.3 ha, of which 73.7% (155 055.7 ha) comprises the part of Lake Peipsi that lies within Estonia (along with Lake Pskov and Lämmijärv), 6.5% (26 763.4 ha) Võrtsjärv and 0.8% Narva reservoir (1 745.4 ha). The total area of Estonia's lakes without the abovementioned lakes is **26 946.7 ha**, and this is the figure used in this publication, unless noted otherwise.

A total of **969** lakes are located in their entirety on protected natural objects, and by area, **62.3% (16 796.3 ha)** of lakes are located on the protected natural objects. A total of 22% (3 677.4 ha) is under stringent protection, while 42% (7 062.7 ha) is under low protection and 36% (6 056.2 ha) on limited-conservation areas. Of Lake Peipsi, 34.9% (54 085.7 ha) is located on protected natural objects, 100% of Võrtsjärv, and 0% of Narva reservoir. With regard to protection rules, both Lake Peipsi and Võrtsjärv are predominantly covered by limited-conservation areas (99.9%) while just 0.008% (4.3 ha) of Peipsi and 0.002% (0.6 ha) of Võrtsjärv is located within strict protection areas.

Approximately 3/5 of the area of Estonia's small lakes is located on protected natural objects.

By type of protected object, the most lakes are on protected areas – 10 584.1 ha (39.3% of the total area of lakes; 63% of lakes on protected natural objects), 6 056.2 ha of lakes are on limited-conservation areas (22.5%, 36.1%), 157.3 ha on species protection sites (0.6%, 0.9%), 8.8 ha on limited management zones of nature monuments (0.03%, 0.05%), 0.1 ha (0.0004%; 0.0006%) on objects protected on the municipal level. By number of lakes, protected areas have the most lakes completely within their territory – 808. With regard to the other types, 142 lakes are contained in their entirety in limited-conservation areas, 13 in species protection sites, and one lake in an object protected on the municipal level and one in a protection zone of a protected nature monument.

Figure 10 shows lakes and their location on protected natural objects at the municipality level. In terms of area, the most lakes on protected natural objects are found in Kaarma (851.9 ha), Tõstamaa (770.4 ha) and Tabivere municipality (685.3 ha). The lakes in the municipalities of Aegviidu, Hanila, Kihnu, Lihula, Martna, Muhu, Pöide, Ruhnu, Sonda, Vormsi and Õru and the cities of Kuressaare, Paldiski, Rakvere and Saue are 100% located on protected natural objects.

Table 8. Area of small lakes by county

County	Total area of lakes (ha)	Total area of lakes on protected natural objects (ha)	% of area of lakes on protected natural objects
Lääne County	1016.4	961.3	94.6
Hiiu County	389.6	359.6	92.3
Saare County	3632.3	3346.6	92.1
Pärnu County	1788.3	1351	75.5
Rapla County	219.4	164.3	74.9
Valga County	1854.8	1373.3	74.0
Viljandi County	1701.5	1234.4	72.5
Jõgeva County	2028.6	1415.2	69.8
Võru County	3421	2308.5	67.5
Tartu County	2918.9	1930.8	66.1
Lääne-Viru County	675.5	409.8	60.7
Põlva County	1197	501.6	41.9
Harju County	4105.7	1005.5	24.5
Järva County	278.8	64	23.0
Ida-Viru County	1632.7	364.1	22.3

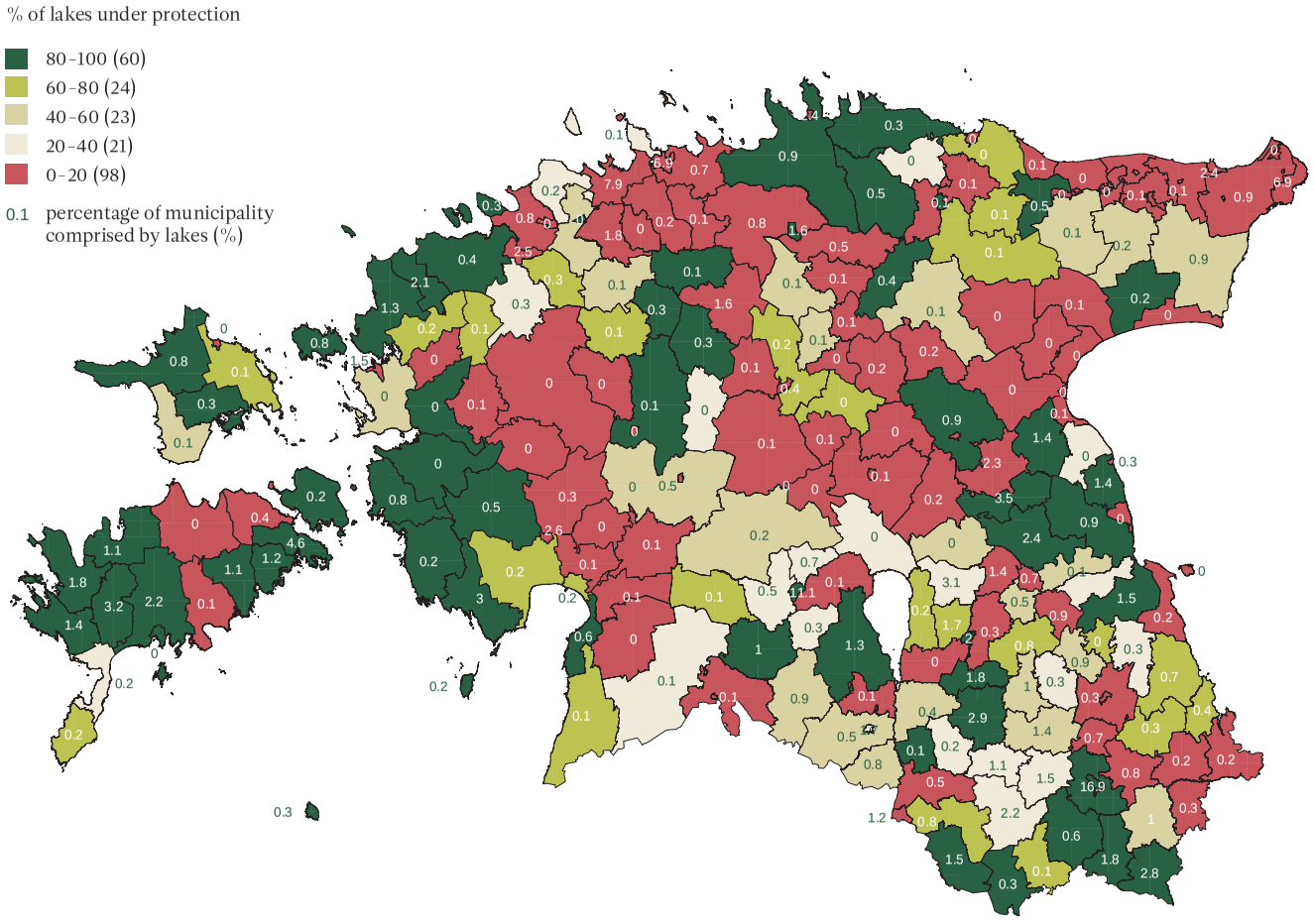


Figure 10. Percentage of municipal territory comprised by lakes and percentage of the area of a municipality's lakes that is located on spatially protected natural objects (not including Lakes Peipsi and Võrtsjärv and Narva reservoir)

Photographer: Arne Ader

Photo 12. Purekkari cape. Lahemaa.

2.2.2 Protected areas

A protected area is an area kept untouched by human activity or used according to special requirements where nature is preserved, restored, studied or introduced. Protected areas can be categorized as one of the following types: national parks, nature reserves and protected landscapes. The protection rules for protected areas proceed from the protection rules for the specific area and the Nature Conservation Act.

The total area of protected areas is 682 353 ha (down by 746 ha ↓), and of this 590 160 ha (down 864 ha ↓) is land territory. The smallest protected area is the Roheline turg (park) at 0.05 ha and the largest is the Lahemaa national park at 72 504 ha.

As of 1 July 2011, Estonia has 932 protected areas: 5 national parks, 131 nature reserves, 150 protected landscapes and nature parks, 107 protected areas with unrevised protection rules, 539 protected parks and stands.

The average size of a protected area is 756 ha (down by 3 ha ↓). Of the local governments, Piirissaare municipality is completely protected; there are also local governments with no protected areas.

As in 2007, the local governments where there are no protected areas are the city of Jõgeva, Järvakandi municipality, Kiili municipality, Kiviõli city, Kohtla-Nõmme municipality, Lavassaare municipality, Maardu city, Mõisaküla city, Püssi city, Sauga municipality, Tootsi municipality, Võhma city and Õru municipality and Kallaste city, Mustvee city and Ruhnu municipality. The city of Paide is a new addition to the list as protection was lifted from Paide castle park. Changes have taken place with regard to Narva-Jõesuu city, where the Udria protected landscape skirts its territory.

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

Statistics	Number	Land area (ha)	Water area (ha)	Total area (ha)
1 July 2011	5	129 474	67 345	196 819
change compared to 2007	↔	104↑	-104↓	↔

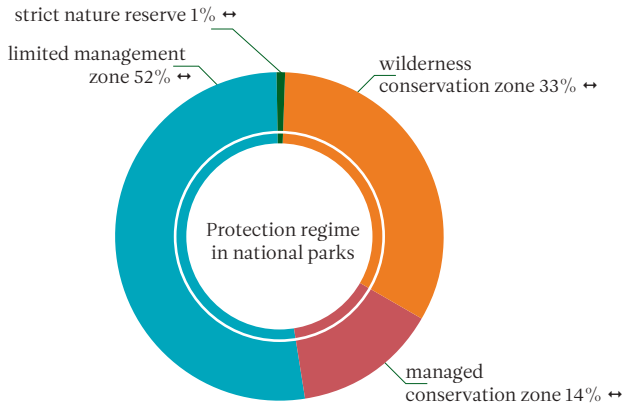


Figure 11. National parks and protection regime

Compared to 2007, there have been no changes with regard to national parks. The discrepancy between land and water area are due to refinements to the coastline.

Estonia has five national parks.

1)Lahemaa – for the protection of northern Estonian coastal landscapes and cultural heritage;
2) Karula – for the protection of the nature and cultural heritage of the rolling "dome" landscapes of southern Estonia;
3) Soomaa – for the protection of nature and cultural heritage of south-western Estonian mire and alluvial landscapes;
4) Vilsandi – for the protection of the nature and cultural heritage of the western Estonian archipelago;
5) 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 (12 300 ha) and the largest is Lahemaa (72 504 ha).

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

Statistics	Number	Land area (ha)	Water area (ha)	Total area (ha)
1 July 2011	131	244 367	13 847	258 214
change compared to 2007	2 ↑	262 ↑	23 ↑	285 ↑

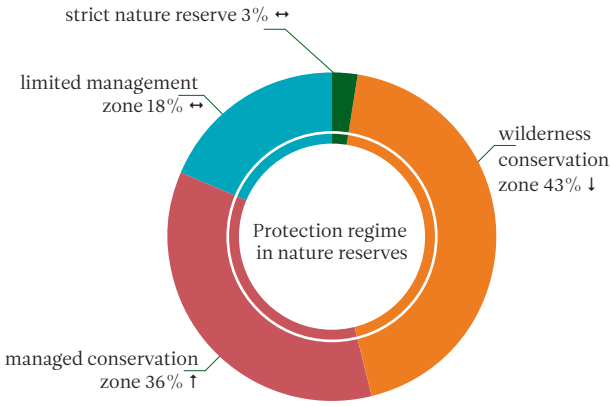


Figure 12. Nature reserves and protection regime

Changes in 2007–2011. In 2008, the map in the protection rules of Soo-otsa nature reserve was changed, but no change in area resulted from this. In 2009, the Kõrgessaare protected landscape was transformed into a nature reserve and the new protection rules for the Piusa caves were approved. In 2009, the Suurupi reserve was established as a completely new reserve. In 2010, the boundaries of Luitemaa nature reserve were changed and the protection rules of Akste nature reserve were revised.

The two areas added in the interim are Kõrgessaare nature reserve (the existing protected landscape became a nature reserve) in Kõrgessaare municipality on the island of Hiiumaa and Suurupi nature reserve (completely new) in Harku municipality in Harju County. Kõrgessaare reserve has been zoned into a managed conservation zone and Suurupi reserve has one limited management zone and two wilderness conservation zones.

The smallest one is Anne nature reserve in Tartu County (16 ha) and the largest is the Alam-Pedja nature reserve in Jõgeva, Viljandi and Tartu Counties (34 219 ha).

A **protected landscape** (PL) or nature park (NP) is a protected area for preservation, protection, study, popularization and regulating use of the landscape. Specific types of nature park include park, arboretum and stand. The protection rules for protected parks, arboretums and stands is in effect for the protection of these types of nature park (RT I 2006, 12, 89). (Section 28 of the Nature Conservation Act)

	Number	Land area (ha)	Water area (ha)	Total area (ha)
PL and NP	150/1* ↑	184 155/3776 ↑	10 611/41 ↓	194 766/3735 ↑
park	451/4 ↓	4 261/94 ↓	0/↔	4 261/94 ↓
stands	88/↔	707/↔	0/↔	707/↔
total**		188 947	10 611	199 558

* The number to the left of the slash in the tables are as of 1 July 2011; and to the right of the slash, the change compared to 1 July 2007. The arrow is the direction of the change.
** the total area of protected landscape and special types of protected landscape without overlap.

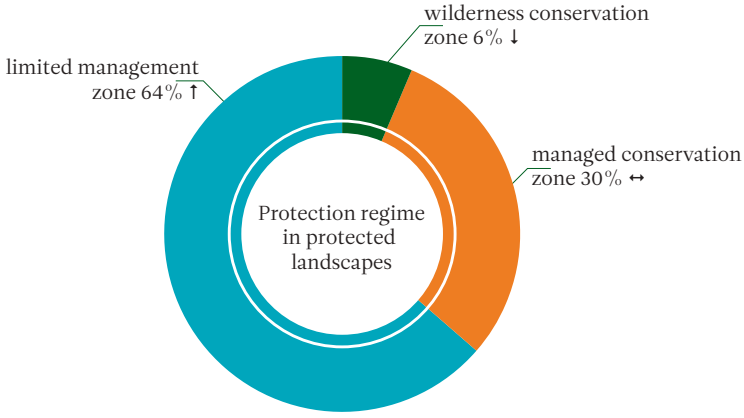


Figure 13. Protected landscapes and protection regime

Changes in 2007–2011. In 2009, the Pärnu protected landscape boundaries were changed, in 2010, the rules for Aegna and Türi protected landscape were approved (thus far unrevised) and the rules for Oru park protected landscape, Omussaare protected landscape and Luidja protected landscape were revised. In essence, two protected landscapes were added, but as the Kõrgessaare protected landscape was turned into a nature reserve, the net change was 1↑. In 2007, seven ↑ parks were placed under protection in the Nõmme district of Tallinn. In 2009, nine protected parks ↓ in Järva County and two ↓ in Harju County were withdrawn from protected status.

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

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). Among them are areas that vary widely in terms of name and protection objective. The authority that accorded protection to them at that time was the executive committee of the administrative region or, later, county government. An example is a botanical-zoological protected area, or a wetland protection area. Before the Nature Conservation Act entered into force, activity in a limited management zone (Subsection 31 (2) of the Nature Conservation Act) was permitted with the administrator's permission unless set forth otherwise in the protection rules. The protection rules and boundaries of these areas are under review and protection rules are being prepared. Protection rules should be approved by 1 May 2016, according to the Nature Conservation Act.

Statistics	Number	Land area (ha)	Water area (ha)	Total area (ha)
1 July 2011	107*	27 762	390	28 152
change compared to 2007	4↓	4 346↓	↔	4 106↓

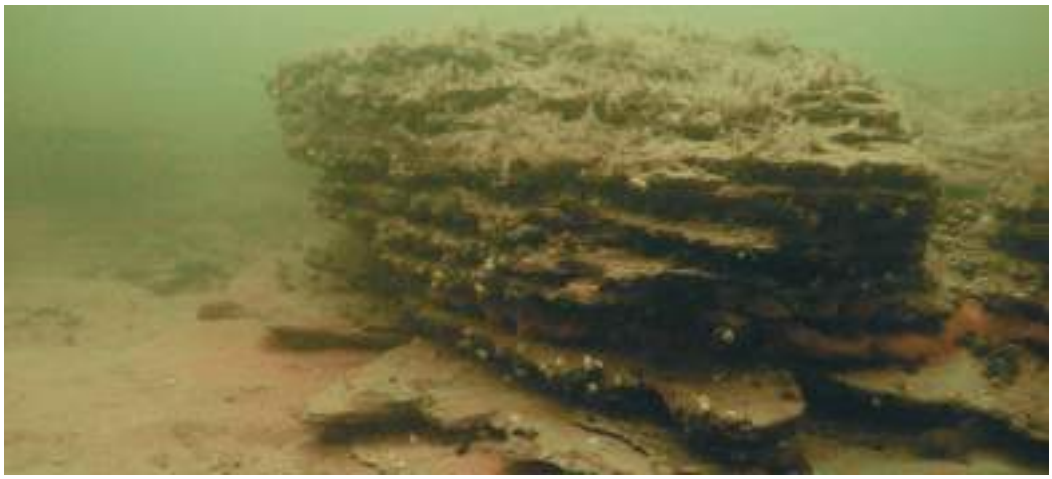
* This does not include areas with unclear status (overlaps with existing protected area or lacks location and spatial shape in register).

Changes in 2007–2011. There are now fewer objects – in 2010, Aegna island and Türi drumlin field protected areas received protection rules, in 2011, a orchid species protection site was established in Värska municipality in Põlva County, and the boundaries of the Vanamõisa pine stand were changed and the type of object became a stand. The 2007 publication contained a calculation error with regard to water area, and in fact no change has taken place. To achieve by 1 May 2016 the objective of revising the protection rules for all of these areas, the process must be accelerated markedly.

The smallest is the "Natural habitat of yellow narcissus" (0.3 ha) in Tartu County and the largest is the Emajõe-Suursoo protected landscape, also in Tartu County (18 131 ha).

Photographer: Arne Ader

Photo 13. Leego Lake. Emajõe Suursoo.



Photographer: Jonne Kotta

Photo 14. Gretagrundi. The edge of a terraced ledge under water.

2.2.3 Limited-conservation areas

A limited-conservation area is an area set aside for the protection of habitats where the impact of planned activities is evaluated in order to ensure preservation and activities that harm the favourable condition of the area are prohibited. A limited-conservation area is established to protect conditions favourable for the existence of natural flora, fauna and fungi, if this is not ensured by other means. It is prohibited in a limited-conservation area to destroy damage the habitats for which the limited-conservation area was established. It is prohibited to disrupt significantly the growing species, or to engage in activity that poses a threat to the favourable status of the habitats and favourable status of protected species (Section 4 and 32 of the Nature Conservation Act). Limited-conservation areas are placed under protection by 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 Section 5 of the Nature Conservation Act while conservation management actions are put in place by conservation management plan.

Statistics	Number	Land area (ha)	Water area (ha)	Total area (ha)
1 July 2011	344	114 457	647 735	762 192
change compared to 2007	1↑	674↑	13 858↑	14 532↑

Changes in 2007–2011. In 2010, the Gretagrundi limited-conservation area in Saare County was placed under protection. It is completely located in marine areas. The change in the land area is due to changes to the boundaries of the Ahja River limited-conservation area, the Piusa-Võmmorski limited-conservation area and the Pärnu River limited-conservation area due to legal acts. By court decision, the boundaries of the Võilaid limited-conservation area were changed in 2011.

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 (188 815 ha), which is mainly in marine areas. The average area of an limited-conservation area is 2 216 ha (increased by 36↑ ha).

Photographer: Toomas Ili

Photo 15. White-tailed eagle

2.2.4 Species protection sites

The aim of a **species protection site** is to ensure protection of species through preserving their habitats. A species protection site is an habitat permanently or periodically inhabited by a protected species, defined by regulation of the Minister of the Environment or on the basis of the Nature Conservation Act. A species protection site is determined outside protected areas or in a limited management zone of a protected area. Until a species protection site has been defined based on the local conditions and approved by regulation of the Minister of the Environment, there is by default a circular species protection site around the habitats of eagles, black storks and flying squirrels (subsection 50 (2) of the Nature Conservation Act).

Statistics	Number	Land area (ha)	Water area (ha)	Total area (ha)
1 July 2011	1158	80 283	12 785	93 068
change compared to 2007	289↑	5741↑	25↓	5715↑

Changes in 2007–2011. Since mid-2007, 243↑ species protection sites have been added and 90↓ revoked. By type of protection rules, 54 541 ha of species protection sites are located within limited management zones (of which 9 281 ha is water and 45 260 ha is on land) and 38 671 ha is located within conservation zones (of which 3 505 ha is water and 35 166 ha on land). The area of the water part has decreased due to the fact that many of the white-tailed eagle species protection sites were approved by ministerial regulation and the seaside species protection sites were defined by the shoreline, replacing the formerly circle-shaped species protection sites, which in places extended outward to sea.

By county, the greatest number of species protection sites are in Pärnu and Tartu County –155 and 149 (figure 14). Pärnu County continues to have the greatest area of species protection sites (18 908 ha). By percentage, Pärnu County and Rapla County have the highest percentage of land covered by species protection sites. The only county where the area of species protection sites decreased is Valga County. New species protection sites have been established in the last four years, but as a large part of the Purtsi and Koikküla capercaillie species protection sites is included as part of protected areas, the total area of species protection sites has decreased somewhat ↓.

By ministerial regulation, 527 species protection sites have been approved, while the remaining 631 are circle-shaped species protection sites formed around the nesting spots of eagles and black storks pursuant to the Nature Conservation Act. After 2007, species protection sites have also been established by minister regulation for the golden eagle, white-tailed eagle and lesser spotted eagle; and for orchids in category I and II. The lesser spotted eagle has the most species protection sites (415). The greatest part of the area of the sites is devoted to the capercaillie (64 292 ha). Of the species types, the most species protection sites are for protection of birds, but by percentage the greatest increase has been seen in the category of vascular plants (the number of species protection sites has more than doubled) (figure 15).

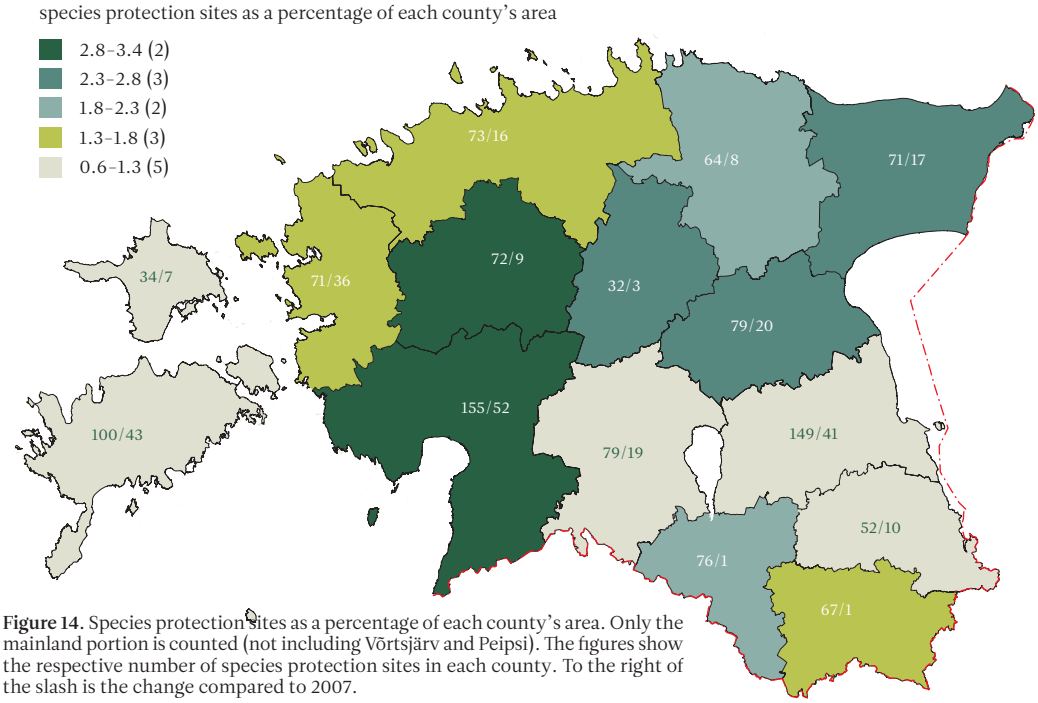


Figure 14. Species protection sites as a percentage of each county's area. Only the mainland portion is counted (not including Võrtsjärv and Peipsi). The figures show the respective number of species protection sites in each county. To the right of the slash is the change compared to 2007.

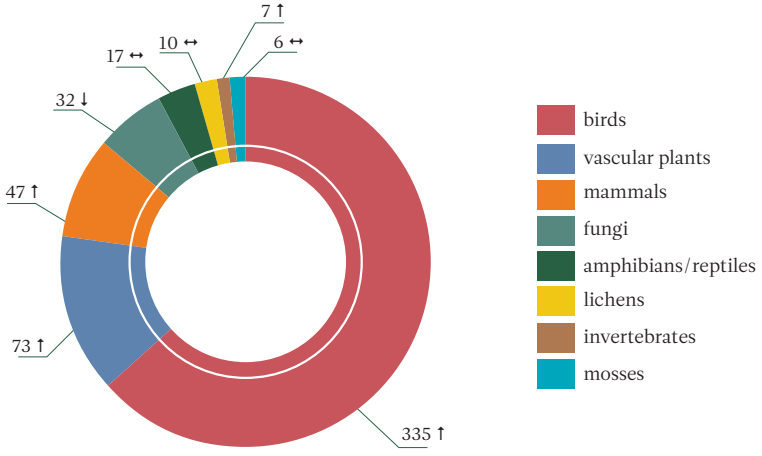


Figure 15. Number of species protection sites established by regulation of the Minister of the Environment.

Photographer: Reigo Roasto

Photo 16. The Tamme-Lauri oak.

2.2.5 Protected nature monuments

A protected nature monument is a living or non-living 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)). The protection regime valid for the limited management zone of a protected nature monument is set forth in the protection rules for that protected nature monument (RTL,2003,46,678). By default, a protected nature monument is surrounded by a limited management zone 50 metres in radius unless a smaller extent has been established 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 boulder field, group of trees), the boundary of the for calculating the limited management zone around it is considered 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.

Statistics	Number	Area including surrounding limited management zone (ha)
1 July 2011	1197 (of which trees and groups of trees make up 716, boulders and boulder fields 367, other objects 114)	1165 ha
change compared to 2007	3 ↑ (trees: 8↓; erratic boulders: 9↑; other objects: 2↑)	36↑

Changes in 2007–2011. Over four years, four new protected nature monuments have been placed under protection. These are the Maaritsa cucumber magnolia, the Rõsna juniper, the Tsõõrikmäe meteorite crater and the Himmaste springs in Põlva County. During the same period, none of the protected nature monuments have had their status revoked, although preliminary work for deleting some no-longer-extant objects has been done 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 the period 2007–2011 are mainly due to refinements in the data of the Environmental Register (e.g. it has been discovered that the object listed in the register and in some legal acts was never actually placed under protection or that the register lacks any record of an object placed under protection in the 1930s but later forgotten), not due to new objects being actually removed or excluded from protection due to having lost their natural conservation value.

The four protected nature monuments placed under protection in Põlva County are the only ones for which an updated extent of limited management zone as specified by regulation of Minister of the Environment was determined during the period 2008–2011. In total, the extent of the limited management zone has been specified by ministerial regulation for protected nature monuments in Harju County, Põlva County, Jõgeva County and Võru County; and in Jõgeva and Võru County, this was done with regard to placing new protected nature monuments under protection in 2006, not for all of the nature monuments in the county.

Harju County continues to have the most protected nature monuments (240), and Harju County includes 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 fewest (37) (figure 16).

Trees under protection make up the largest share of the protected nature monuments (60%). Of the tree species, oaks are by far most represented (214 nature monuments). They are followed by pines (123 monuments) and lindens (87).

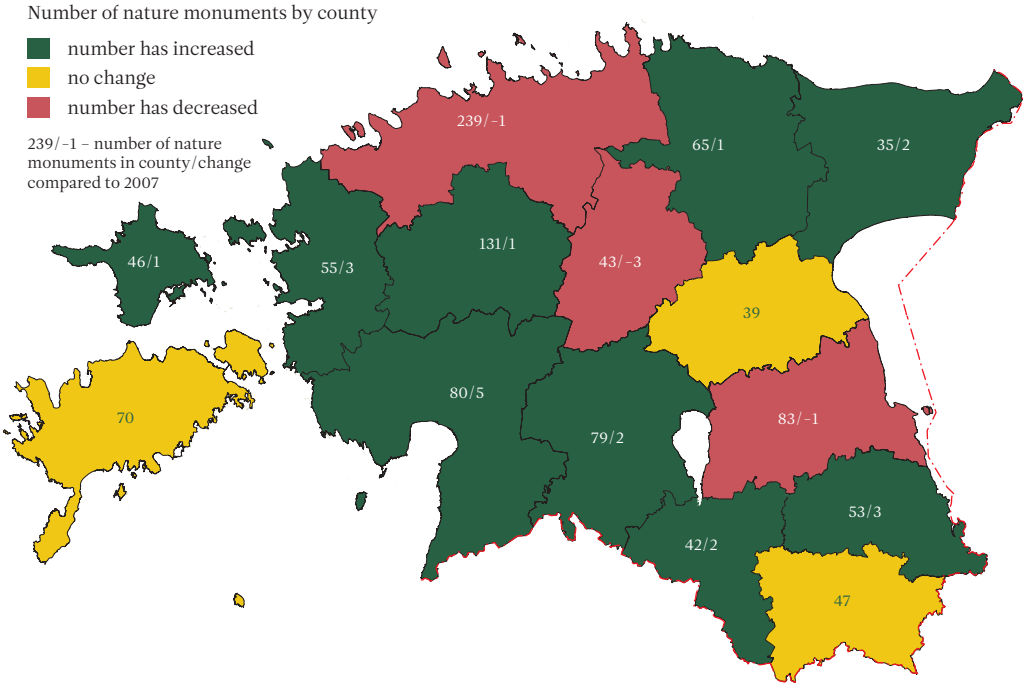


Figure 16. Number of protected nature monuments by county. The figure does not include nature monuments that have been destroyed or whose location is unknown and which have not yet been removed from legal protection.

Photographer: Toomas Trapido

Photo 17. Ess-soo mire.

2.2.6 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, greenspace or individual element of landscaping which has not been placed under protection as a protected nature monument and is not located on a protected area (Section 4 of the Nature Conservation Act). The goal of nature conservation at the municipal level is to protect valuable landscapes or 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 regulation and plans of the municipality or city council.

Statistics	Number	Land area (ha)	Water area (ha)	Total area (ha)
1 July 2011	19	3527	0	3527
change compared to 2007	17↑	2180↑	0	2180↑

Changes in 2007–2011. In 2008, the Rahkvälja protected landscape in Kose municipality and two old-growth oaks in the city of Tallinn were entered into the register; this was followed in 2009 by the addition of the Pahkla protected landscape in Kohila municipality and an area in Viimsi municipality placed under protection with plans (Haabneeme klint terrace, Lubja klint terrace, Rohuneeme, Leppneeme-Tammneeme and Krillimäe protected landscape); in 2010 three objects in Muhu municipality were added (wooded meadow along the Lõetsa river, the Peedu banks and their vicinity, Presidendi allee); and in the first half of 2011 two objects in Võru County (Ess-soo protected landscape, Urvaste and Tsooru park in Antsla municipality) and one object in Rae municipality (the Suursoo juniper) were added. In addition, the Lustimäe and Hellenurme recreational areas in Palupera municipality and the Käina school park arboretum in Käina municipality. Compared to 2007, 17↑ objects have been added and one instance has been repealed. Rahkvälja protected landscape was entered into the register in 2008 and removed in 2011 on the basis of court decision.

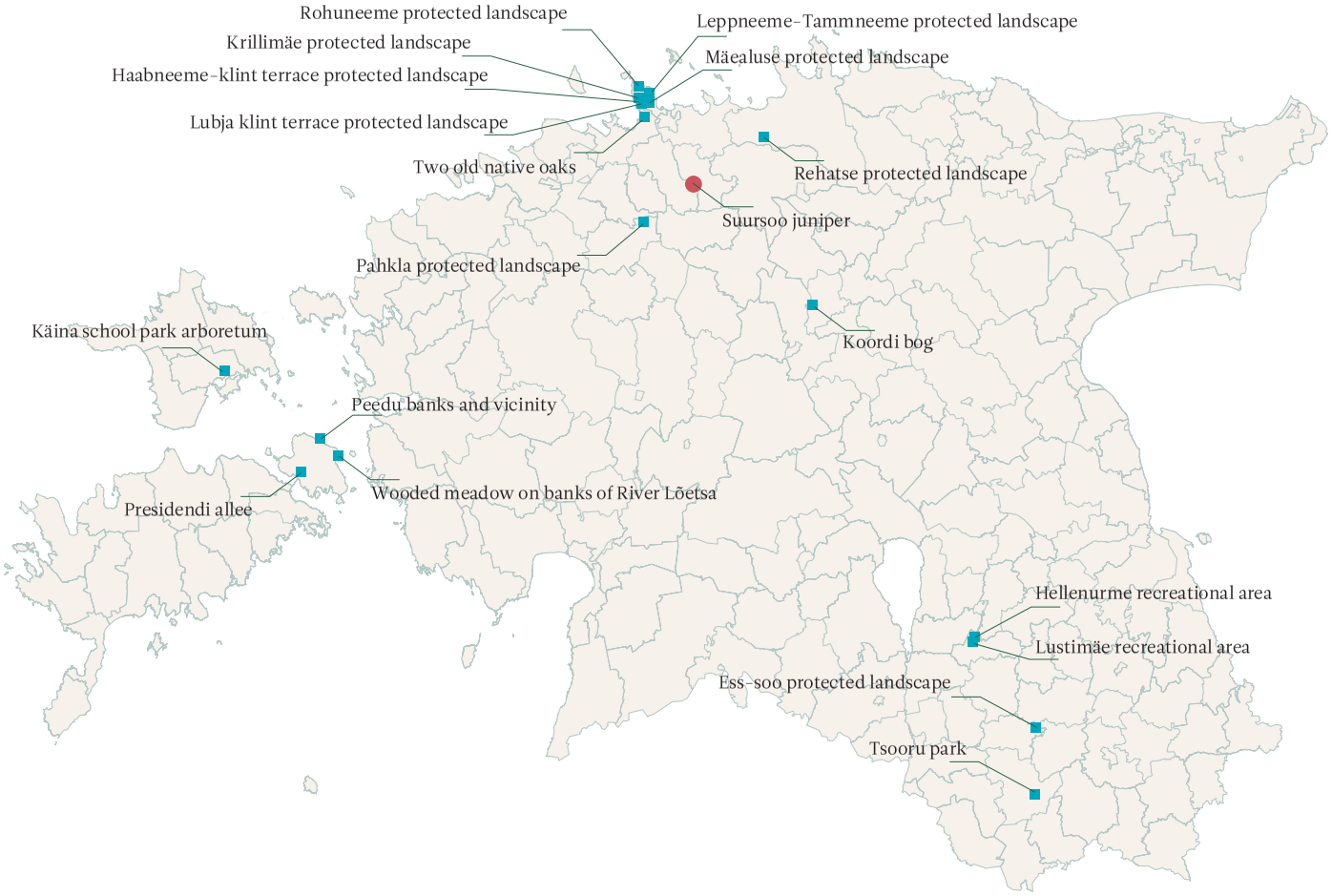


Figure 17. Locations of objects protected at the municipal level

Photographer: Arne Ader

Photo 18. Alvar forest. Vardi nature reserve in Rapla County.

2.2.7 Woodland key habitats

The Forest Act (§23) defines a **woodland key habitat (WKH)** as an area of at least seven hectares requiring protection and which is outside a protected nature object, where the likelihood of narrow adaptation, endangered, vulnerable or rare species is high. The protection of woodland key habitats in state forests is organized by the State Forest Management Centre (RMK) 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 an agreement 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 forgone.

Statistics	Number of WKHs	Area (ha)	Average size (ha)
1 July 2011	9 124	22 568	2.5
change compared to 2007	565 ↑	447 ↓	0.2 ↓

Changes 2007–2011. Compared to status of 1 July 2007, the number of woodland key habitats has increased, yet their total area has decreased by 2%. The increase in number stems from reorganization undertaken for bringing the woodland key habitats into conformity with the Forest Act. The total area listed above also includes woodland key habitats located on protected natural objects and more than seven hectares in area. The woodland key habitats on protected natural objects are excluded from protection as woodland key habitats. While it is planned to take woodland key habitats with size over seven hectares, located outside protected natural objects under protection as protected areas, limited-conservation areas or species protection sites.

As of 1 July 2011, 4 972 woodland key habitats, representing 8 229 ha and 36% of all WKHs, were in conformity to the Forest Act.

About one-quarter of woodland key habitats are located on private land, and the rest of the woodland key habitats are on state land, land subject to be reinstated to owners but still controlled by the state, municipal land or public land (figure 18).

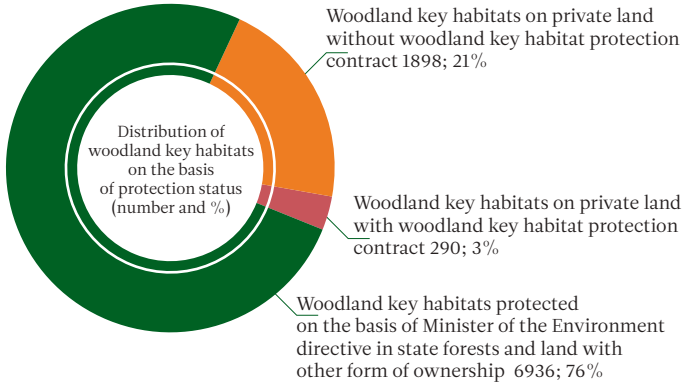


Figure 18. Distribution of woodland key habitats on the basis of protection status and form of ownership

Counties with the greatest and least area of woodland key habitats have not changed compared to 2007 – the most woodland key habitats are in Pärnu County (3 990 ha; 17.7% of the total) and the smallest amount is in Põlva County (407 ha; 1.8% of the total) (figure 19). The area of woodland key habitats by county has decreased in general, with the only increases seen in Pärnu and Võru County. Similarly to 2007, Pärnu County has the most woodland key habitats protected under contract (70) and Järva County has the fewest (3). In both cases the number of contracts signed has increased.

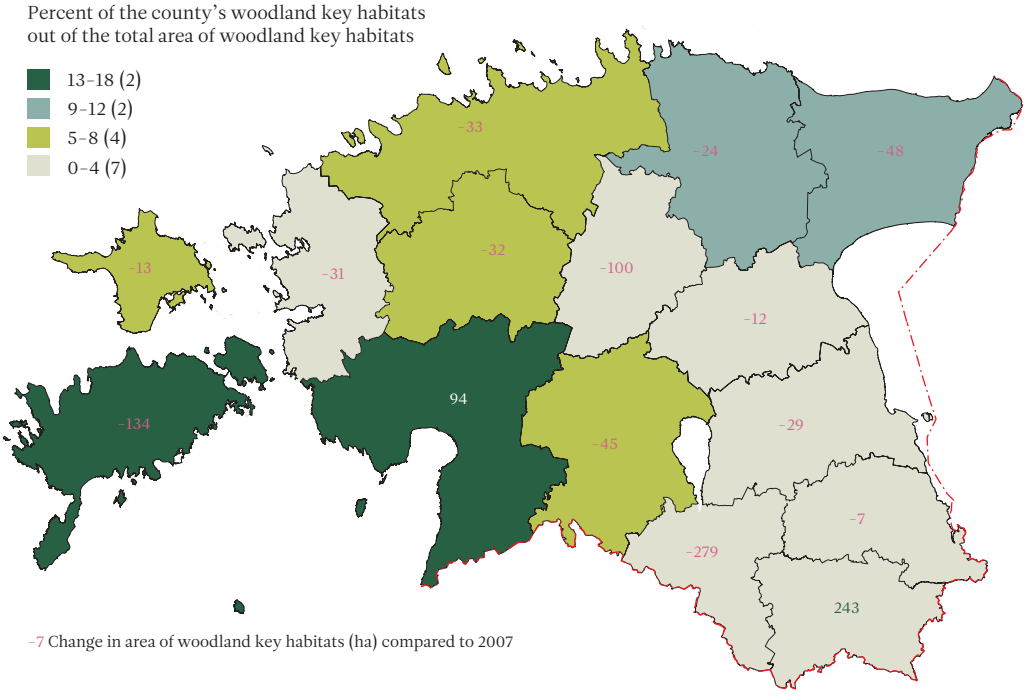


Figure 19. Distribution of woodland key habitats by county and change in area compared to 2007

Photographer: Arne Ader

Photo 19. Boundary of a bird sanctuary. Matsalu.

3.Conservation management

Conservation management for natural objects in Estonia begins with preparation of protection rules and a protection regime. A statistical overview of these topics are given in section 3.1. The most extensive changes in the last four years have taken in areas with limited-conservation area protection regimes.

It is extremely important to take land owners into consideration in ascertaining natural value, determining protection for natural objects and preparing protection rules, management plans etc. To do so, an accurate and detailed knowledge of the land ownership of nature objects is necessary. Section 3.2 provides an overview of the changes that have taken place in the last four years in form of land ownership according to type of natural object. As a general trend, a decrease in unregistered land and an increase in the percentage of state land can be seen in nearly all of the types of protected objects.

Sections 3.3 and 3.4 deal with the financial and economic measures intended for land owners, such as exemption from income tax and nature conservation subsidies and compensations. Even though only one-third of the necessary area is currently covered by maintenance semi-natural biotic community support, along with the Estonian Agricultural Registers and Inforamtion Board(ARIB) agricultural subsidies and Natura 2000 forestry compensation, the number of applicants and the amount payable have grown continuously. Nevertheless, more effort should be placed on increasing the share of subsidies for direct nature conservation activity, compared to subsidies of a compensatory nature.

A conservation management plan must be prepared for protected areas and limited-conservation areas. This topic is dealt with in section 3.5. According to the draft nature conservation development plan, the aim is to prepare conservation management plans for all protected areas and limited-conservation areas that are Natura areas by 2014, and for all other protection and limited-conservation areas by 2020. For the first time, this publication also provides statistics on the results of supervision and enforcement action. An overview of violations and fines is given in section 3.6.

One application of nature conservation outside protected natural objects in Estonia is restrictions defined by spatial planning, including green networks, which we deal with in section 3.7.

For the first time, we provide an overview of extracurricular nature education. Section 3.8 provides statistics on this area.

3.1 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 established separately for each species or group of species, considering need 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 legislation, 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 protective zones with equivalent or different degrees of strictness of restrictions, and determine whether the restrictions provided by this Act are applicable in part, in full, permanently or temporarily in each protective zone (Section 12 of the Nature Conservation Act).

Table 9. Distribution of protected objects into zones. "Other protection regimes" is construed as restrictions that do not stem from the provisions for strict nature reserves, conservation zones and 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 activity is prohibited within a strict nature reserve, and persons are prohibited from staying in such reserves, except in exceptional cases, such as for the purposes of supervision, rescue work or administration and organisation of the protection of the natural object. (Section 29 of the Nature Conservation Act)

Statistics	Number	Land area (ha)	Water area (ha)	Total area (ha)
1 July 2011	29	7024	934	7958
Change compared to 2007	↔	↔	↔	↔

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 a natural or semi-natural status, conservation zones are distinguished as either wilderness or managed.

Zone name	Number of zones / change*	Land area (ha)/ change	Water area (ha)/ change	Total area (ha)/ change
managed conservation zone of a protected area	565/5 ↑	165163/995 ↑	13746/5 ↑	178909/1000 ↑
wilderness conservation zone of a protected area	316/2 ↑	164397/513 ↓	24849/1 ↑	189246/512 ↓
conservation zone of a species protection site	1113/280 ↑	35166/5628 ↑	3505/24 ↓	38671/5604 ↑

*data to the left of the slash are as of 1 July 2011, and to the right of the slash changes as of 1 July 2007

A protected area's wilderness conservation zones protect 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)

Zone name	Number of zones / change*	Land area (ha)/ change	Water area (ha)/ change	Total area (ha)/ change
limited management zone of a protected area	347/5 ↑	221367/3615 ↑	52319/83 ↓	273686/3520 ↑
protected area with unrevised protection regime	107/4 ↓	27762/4346 ↓	390 ↔	28152/4346 ↓
protected parks and stands	539/4 ↓	4968/94 ↓	0 ↔	4968/94 ↓
limited management zone of a species protection site	1113/280 ↑	45260/48 ↑	9281/8 ↓	54541/40 ↑
limited management zone of a protected nature monument	1197/3 ↑	1165/36 ↑	0 ↔	1165/36 ↑
local government limited management zone	19/17 ↑	3527/2180 ↑	0 ↔	3527/2180 ↑
total limited management zones	3322	304 049	61 990	366 039

*data to the left of the slash are as of 1 July 2011, and to the right of the slash changes as of 1 July 2007

Protection regimes in figures. The zones with the strictest protection regime – strict nature reserves – account for 0.002% of Estonian territory. Conservation zones make up the largest part (8%). Compared to 2007, there have been no changes in this area.

The analysis was made according to the protection regime for protected objects pursuant to table 9. As some objects may coincide spatially, the digital spatial data was processed to cancel out the overlapping portions.

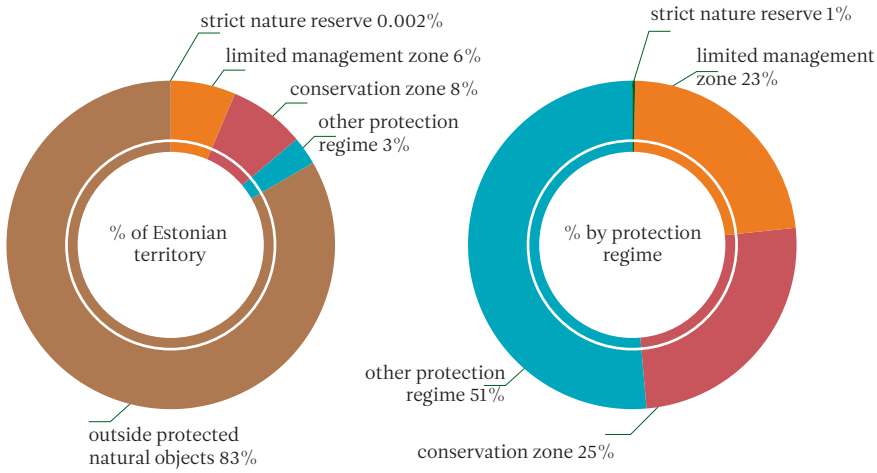


Figure 20. Areas under protection, according to protection regime and their distribution with respect to Estonian territory according to protection regime (including marine areas)

"Other protection regimes" account for the highest share as this includes limited-conservation areas. The share of this heading has risen 2% ↑ due to the addition of the large Gretagrundi limited-conservation area. This includes both land and marine area. There are relatively equal amounts of conservation zone and limited management zone – 25% and 33% respectively. In the case of each, a 1% ↓ drop has taken place in favour of "other".

IUCN conservation management categories.

Ia – strict nature reserve, no changes ↔

Ib – wilderness part of a conservation zone, the most strictly protected part of a species protection site conservation zone, increase of 7 964 ha ↑

III – protected nature monument, increase of 36 ha ↑

IV – managed part of conservation zone, if it was established for species protection objectives, conservation zone of a species protection site, increase of 4 401 ha ↑

V – a managed part of a conservation zone, established for other objectives, and the limited management zone of protected landscapes, including parks, nature monuments protected on the municipal level, increase of 6 798 ha ↑

VI – a limited management zone within a nature reserve, national park, limited-conservation area, or limited management zones of species protection sites, increase of 16 799 ha ↑

The greatest share in Estonia is comprised by areas with a protection regime corresponding to IUCN category VI (figure 21).

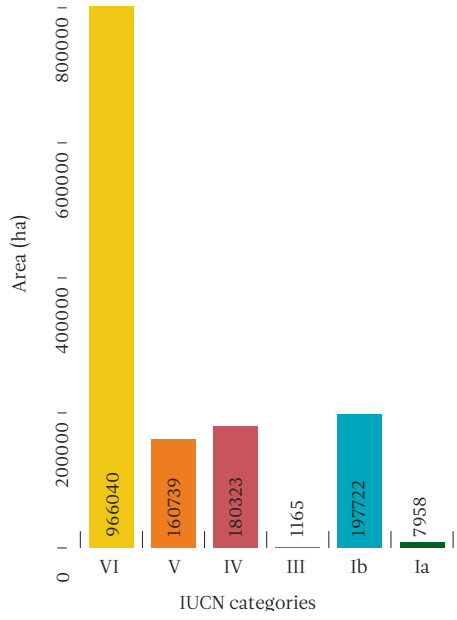


Figure 21. Areas in Estonia corresponding to IUCN categories

3.2 Land ownership

The first overview of ownership of the land underlying protected objects was given in the publication Estonian Nature Conservation in 2007. This time analysis was done at the Environment Information Centre on the basis of Land Board cadastral unit data and the Environmental Register data for protected nature objects (as of 1 July 2011).

The ownership categories dealt with are state property, public property, private property, mixed property (if a land unit has more than one owner, e.g. the state and private owner), in addition part of the land is unregistered (still in state hands).

The first major change compared to 2007 was the significant decrease of unregistered land. This is an fairly significant change in terms of all objects.

The changes compared to 2007 data also depend on increase and decrease in the number of objects – that is, the increase or decrease of the area.

With regard to **protected areas**, there were no special changes in objects (total change in area ~185 ha ↑). With regard to land ownership, the changes in percentage of ownership type stemmed primarily from the fact that unregistered land decreased in favour of other forms of ownership (unregistered land decreased by 7% ↓, while the share of state property rose 6% ↑).

By county, the area of protected areas changed most on unregistered land (Pärnu, Lääne and Harju County), and an equal amount of state-owned land accrued in these counties. With regard to private property, the greatest change took place in Rapla and Harju County (see figure 22, where the greatest changes are listed as a numerical value).

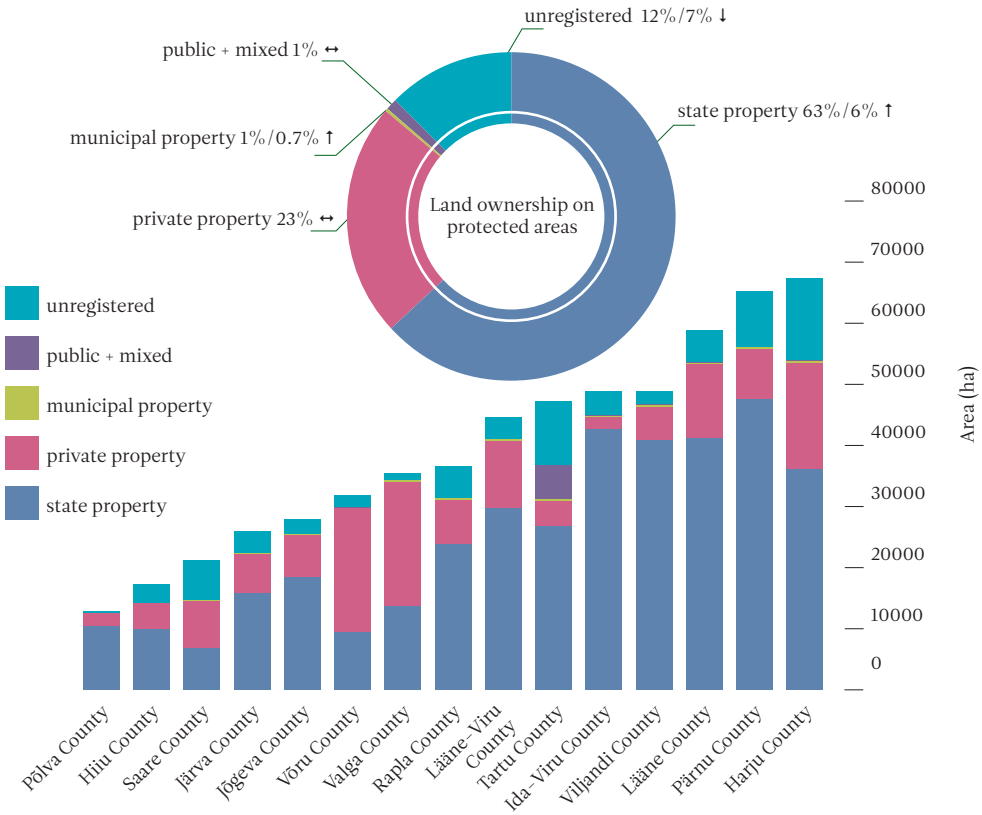


Figure 22. Distribution of land ownership and changes on protected areas

Natura 2000 areas. Change 2007–2011: The area of Natura 2000 areas has increased by 28 000 ha ↑. The greatest increase of state ownership took place in Pärnu and Rapla Counties. The greatest increase in state land took place in Hiiu County. Unregistered land decreased in all counties ↓. The area of unregistered land decreased the most in Pärnu and Rapla County.

For Natura 2000 areas, it is difficult to ascertain whether the changes involved a decrease in unregistered land in favour of state or private property, as Natura 2000 areas' boundaries have been changed twice in the interim, and thus some of the areas have been excluded (private property) or have been purchased by the state (see figure 23).

Figure 23. Distribution of land ownership on Natura 2000 areas

No major changes have taken place as regards the boundaries of **limited-conservation areas.** One limited-conservation area was added, but it is completely off-shore and thus, as in the case of protected areas, the changes are mainly due to hitherto unregistered land being registered in the land cadastre (see figure 24). Unregistered land decreased ↓ primarily in favour of state property, and to a lesser extent, private property. Small changes in area were also caused by changes in the marine and land boundary. State ownership was up the most in Lääne County (1 462 ha↑) and in Pärnu County (1 372 ha↑).

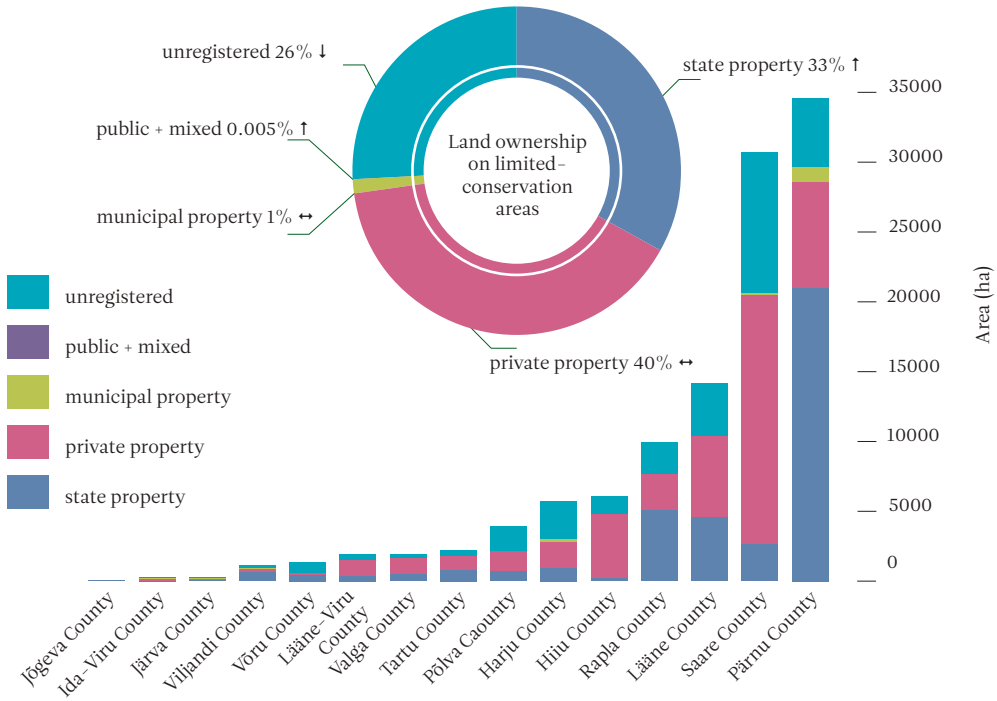


Figure 24. Distribution of land ownership in limited-conservation areas

Natural objects protected at the municipal level. The changes are first and foremost due to the addition of objects (2007 – 2; 2011 – 19 ↑). Area has increased by 2 180 ha↑. Most of the land is state-owned (2 402 ha), an increase of 1 967 ha↑. There was an increase of private property 555 ha↑ while unregistered land decreased by 494 ha↓ (see figure 25).

The area of **nature monuments** increased by 170 ha↑. The changes in land ownership were 134 ha↑ for state property, 398 ha↑ for private property, 45 ha↑ for municipal land, and 409 ha↓ for unregistered land (see figure 25).

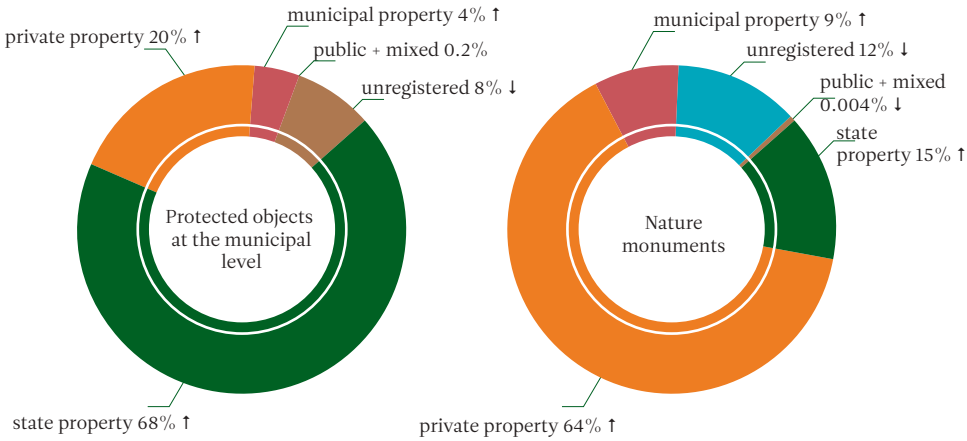


Figure 25. Distribution of land ownership on natural objects protected at the municipal level and on nature monuments

In 2007–2011, changes with regard to **species protection sites** also took place in the boundaries of the areas, and many objects have been added and a number of them have been changed. The area has grown by 5 738 ha↑, of which 3 494 ha↑ was in Pärnu County. With regard to ownership, state property accounted for the largest category, rising by 26 percentage points ↑ (from 47% to 73%). A 2% increase took place with regard to private property (2 144 ha↑). The greatest amount of private property underlying species protection sites was in Pärnu County (1 857 ha). Compared to 2007, unregistered land decreased by 29%↓ (21 166 ha↓), and its area is currently 6 747 ha, making up 8%. The greatest change in the respective areas of land ownership took place in Pärnu County – 7 649 ha↑ of state property was added (see figure 26).

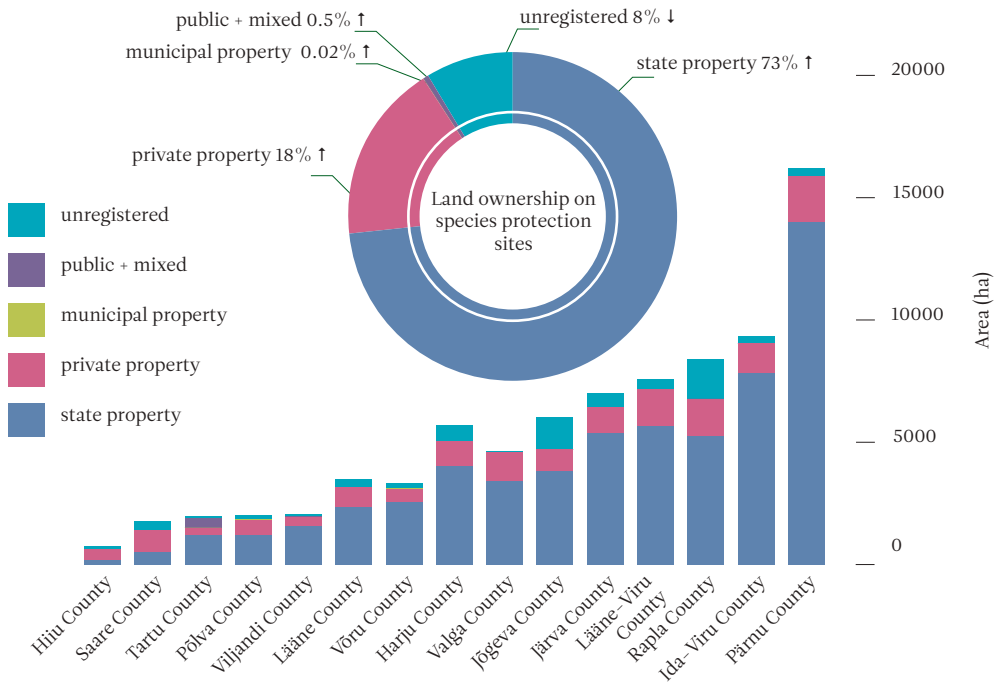


Figure 26. Distribution of land ownership on species protection sites

Changes in land ownership according to protection regime. The area of **strict nature reserves** did not change in the interim. A total of 339 ha↑ of unregistered land was registered as state property, and there was an additional 16 ha of unregistered land (0.2%) (see figure 27). Area belonging to **wilderness conservation zones** did not increase; the area decreased by 513 ha↓. The area of state property (9659 ha↑) and, to some extent, public law + mixed property (23 ha↑) increased (see figure 27). The area of **managed conservation zones** has grown by 97 ha↑. Unregistered land has decreased 17 996 ha↓ and the area of state property has grown apace (19 287 ha) ↑. With regard to other forms of ownership the changes have been minimal (see figure 27). The area of **limited management zones** has increased by 3 746 ha↑. With regard to limited management zones, the limited management zones of protected areas, areas with unrevised protection rules and protected parks and stands were totalled. A total of 9 942 ha↑ of state property was added, 2 066 ha↑ of private property; unregistered land decreased by 8 957 ha↓ (see figure 27). The area of **conservation zones of species protection sites** has grown by 5 629 ha↑. The share of state property has increased by 14 929 ha↑, that of private property by 1 944 ha↑, and unregistered land has decreased by 11 698 ha↓. There was no ownership under public law in 2007 and now 450 ha ↑ of it along with mixed ownership has now accrued. An additional 47 ha↑ of **limited management zones** of species protection sites has accrued. The changes took place in terms of the decrease in unregistered land (10 098 ha↓), while state property has increased by 9 736 ha↑, and private property by 396 ha↑.

Figure 27. Distribution of land ownership in different protection zones of protected natural objects

Photographer: Arne Ader

Photo 20. Bog landscape. Põltsamaa wetlands, Alam-Pedja.

3.3 Land tax

The largest change with regard to land tax in connection with protected natural objects is an amendment to a legal act. Pursuant to the Land Tax Act, the land in strict nature reserves and conservation zones of protected areas as well as in conservation zones of species protection sites became exempt of land tax as of 1 January 2009 – the land tax rate is 0%. The land in limited management zones of protected areas, species protection sites and protected nature monuments as well as in limited-conservation areas is 50% exempt of land tax (see figure 28).

Under the amendment, no separate legal acts must be adopted in order to reduce the land tax rate. The land tax rate on protected objects is either 0%, or there is a 50% discount.

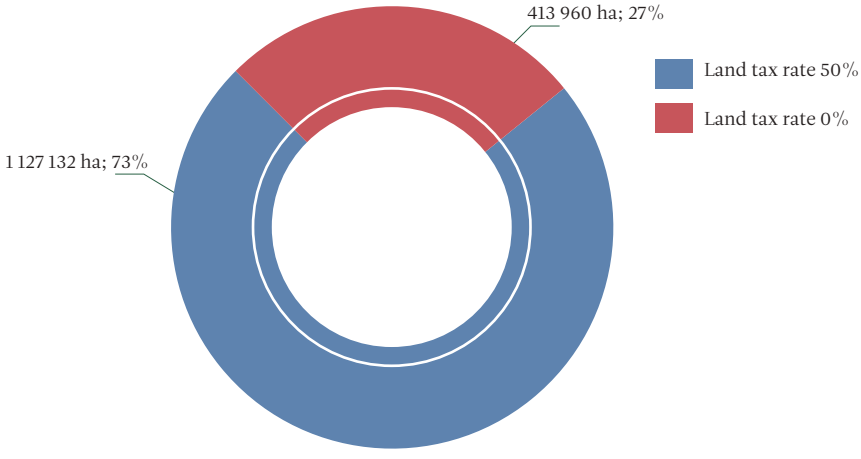


Figure 28. Land tax incentive on protected natural objects

Photographer: Aarne Tuule

Photo 21. Sheep on coastal meadow in Pivarootsi, Puhtu-Laelatu nature reserve.

3.4 Subsidies and compensations

Subsidies for restoration and maintenance of semi-natural biotic communities. Semi-natural biotic communities are extremely species-rich and thus it is essential that their favourable status shall be maintained, not only in Estonia but throughout Europe. To restore and maintain these communities, both European Union and state subsidies are paid. Disbursement started in 1996 on the Matsalu nature reserve. An Estonia-wide system of nature conservation subsidies was initiated in 2000. Starting in 2007, subsidies began to be paid for maintaining meadows on Natura 2000 areas also from the European Agricultural Fund for Rural Development in the framework of the Estonian rural development plan. This subsidy has quickly become the most popular measure in the rural development plan and the area of semi-natural biotic communities under maintenance has seen a strong increase. Thanks to this subsidy, about 25 000 ha was maintained in 2011. Assistance from a number of EU and state projects is still received for purchasing livestock and mowing equipment.

The maintenance subsidy paid in the framework of the rural development plan is paid to persons or organizations who use land on legal grounds. In exchange, they perform maintenance on the land. The subsidy is paid on the basis of a regulation of the Minister of Agriculture. To comply with the requirements for the subsidy, the semi-natural biotic community must be mowed, or animals grazed there; other requirements stemming from the regulation also apply. The number of applicants for the maintenance subsidy was 737 in 2007, 764 in 2008, 819 in 2009, 906 in 2010 and 928 in 2011. The area applied for grew from the 16 466 hectares applied for in 2007 to 25 450 hectares in 2011. The subsidy per hectare per year of wooded meadow is 238.07 euros, and in the case of other semi-natural biotic communities, 185.98 euros per hectare per year. Semi-natural communities amount to about 75 000 hectares (see figures 29 and 30), of which it is planned to cover 57 000 ha with subsidies in the long term.

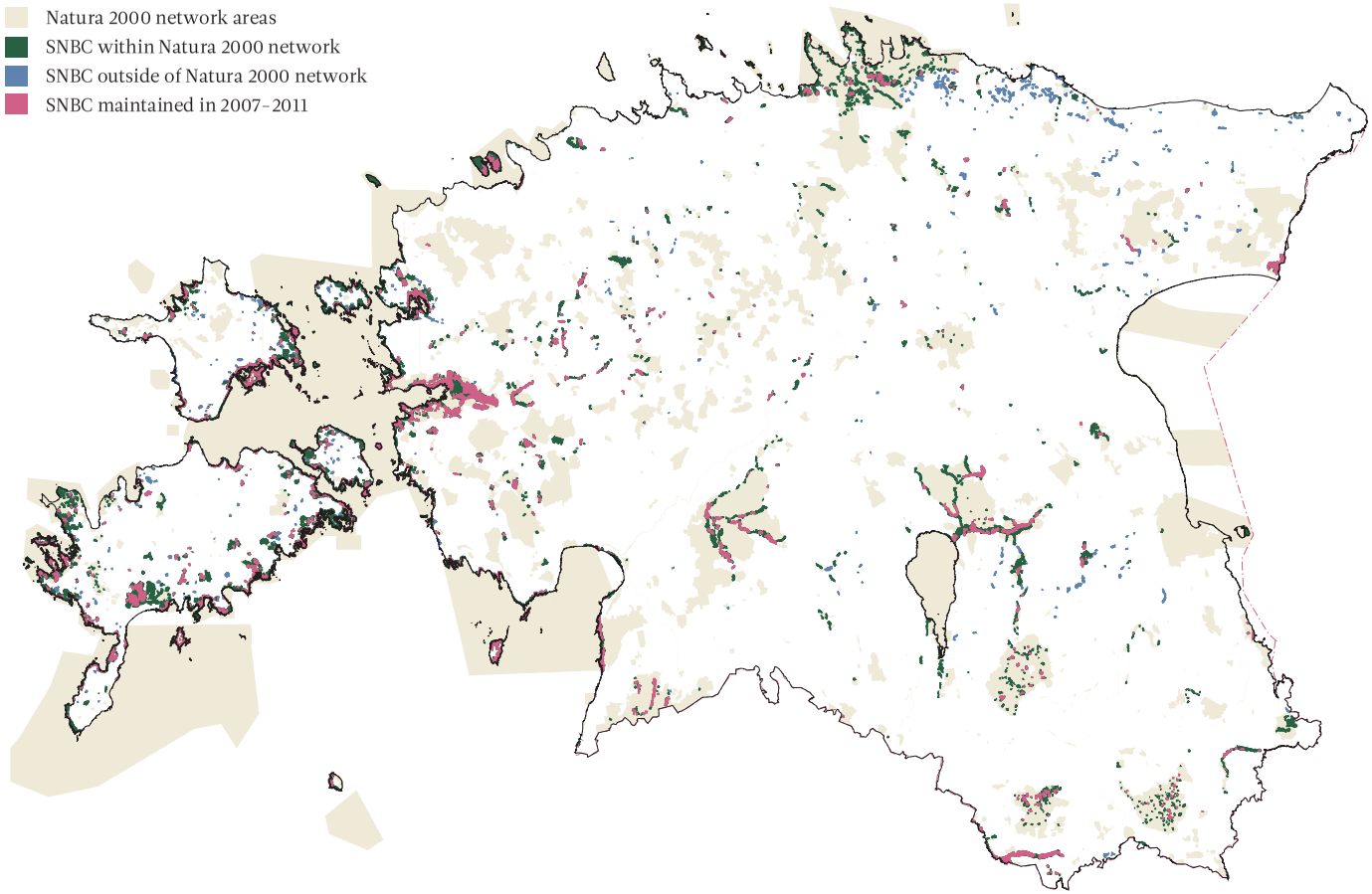


Figure 29. Semi-natural biotic communities (SNBC) entered into the Environmental Register (approximately 75 000 ha in Natura 2000 network areas (green) and approximately 5 000 ha on protected natural objects outside the Natura 2000 network (blue).) along with the semi-natural biotic communities maintained in 2007–2011 in the framework of the semi-natural biotic community maintenance subsidy– approximately 25 000 ha)

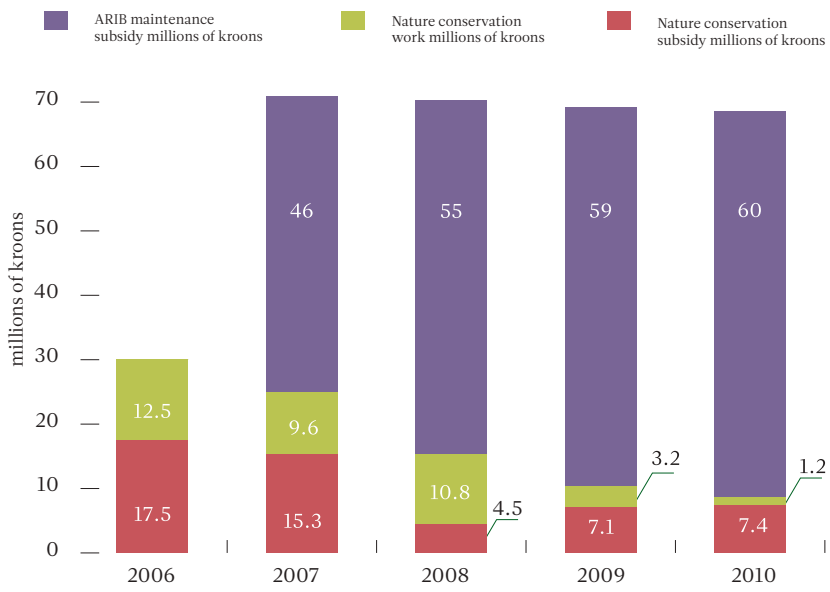


Figure 30. Payment of the semi-natural biotic community maintenance subsidy in 2007–2010

A major part of the semi-natural biotic communities must be restored beforehand – to remove old brush or reed growth. A nature conservation subsidy can be applied for from the Environmental Board for this purpose. This is primarily aimed at restoration of communities in protected areas, limited-conservation areas or species protection sites, and is intended for land owners. In the course of the restoration, the biotic community is cleared of brush, trees are thinned and cattle fences are erected. The restoration of an area lasts an average of 1–3 years, and when the area is suitable for maintenance, the maintenance subsidy can be applied for.

In addition to the nature conservation subsidy, the Environmental Board itself performs nature conservation work each year. Such work is ordered for preservation and maintenance of protected natural objects, such as mowing and clearing of brush (thinning or deforestation), installation of culverts etc.

Natura 2000 farmland compensation scheme. From 2006[7] users of cropland within Natura 2000 areas can apply for additional support intended to partially compensate the users of cropland for revenue forgone due to Natura conservation restrictions.

The amount of the compensation is 32.08 euros per hectare per year and this 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 may not apply for subsidies for maintenance of semi-natural biotic communities for the same area (table 10).

The assistance is paid from the European Agricultural Fund for Rural Development. The corresponding provision is measure 2.2 of the Estonian Rural Development Plan 2007–2013.

[7] In 2006 the same subsidy was paid under the name of subsidy for Natura 2000 environment-related restrictions

Table 10. Statistics on applicants for the Natura 2000 cropland subsidy and on the area

Year	Number of approved applicants	Assigned units (ha)
2006	1 330	26 953
2007	1 336	20 647
2008	1 389	21 040
2009	1 358	21 781
2010	1 401	22 188
2011	In 2011, 1 495 applications were submitted for 23 178 ha of cropland	

Natura 2000 compensations for private forests. From 2008, private forest owners are able to apply for compensation for forest land located in the Natura 2000 network. This is specified in measure 2.7 of the Estonian Rural Development Plan 2007–2013. To be eligible, private forest must be owned in limited management zones, conservation zones or limited-conservation areas in a Natura 2000 area. As a change effective since 2011, compensation can be applied for with regard to forest land which is located on Natura 2000 network land, but in the case of which the proposal for placing it under protection has only just been made or the proceedings are in progress (so-called planned areas).

The objective is to compensate forest owners partially for revenue forgone due to nature conservation. The amount of the compensation is 60.08 euros per hectare per year on limited management zones and planned areas and, in conservation zones, 109.93 euros per hectare per year. The compensation is paid from the European Agricultural Fund for Rural Development. To be eligible, forest land must be at least 0.3 ha in area and it must be entered as forest into the Environmental Register as well, the map data of which is compiled by the Land Board each year anew. The basic map data, cadastral unit boundaries and Natura 2000 area boundaries may change during the

Photographer: Arne Ader

Photo 22. Highland cattle.

year, and thus the area of the forest as given in the Environmental Register map may vary slightly from year to year. The 2008 application round included nearly 71 000 hectares of eligible land, and the 2009 and 2010 application rounds included nearly 85 000 hectares (see figure 31). As a change in 2011, the eligible forest area map no longer shows the areas where the semi-natural biotic community maintenance subsidy can be applied for. The area of the eligible forest land shown on the 2011 map is thus smaller – close to 82 000 hectares. The map can be viewed in the Land Board map application (Natura forest subsidies).

Applicants for the compensation may not have violated the Nature Conservation Act and Forest Act requirements in the year of application. They must make sure that their household is in good financial and environmental protection standing. The applicant also has an obligation to mark the boundaries of the forest area for which the compensation is being applied for. In 2011, the marking requirement became simpler. No longer must an irregular boundary be marked for its entire length; the property owner must merely be sure that the boundary posts of forest areas that coincide with the cadastral unit boundary line are visually identifiable on the spot.

The Natura 2000 private forest compensation could be applied for for the first time in 2008. A total of 1 902 applications were submitted. The next year the number of applicants grew by close to 500, and 2 384 applications were submitted. In 2010, a total of 3 484 applications were submitted (see figure 32).

The area for which compensation is sought has grown each year. In 2008, the area was close to 28 000 hectares, in 2009 it was close to 36 000 hectares, and in 2010, nearly 46 000 hectares. The disbursed amounts have grown each year. The applicants in 2008 were paid 1.64 million euros, the applicants in 2009 were paid 2.4 million euros and the applicants in 2010 were paid close to 3.1 million euros (see figure 33).

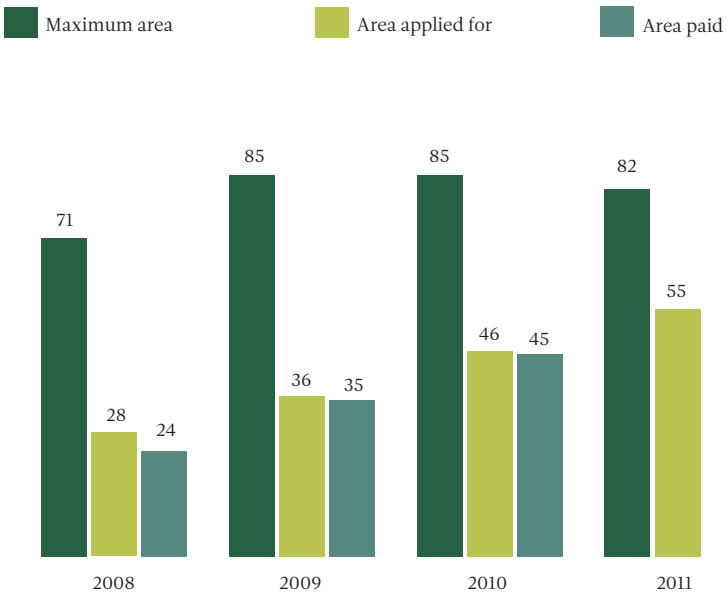


Figure 31. Eligible forest land, forest land for which compensation were sought, and forest land for which compensation were paid (in thousands of hectares) in 2008–2011.

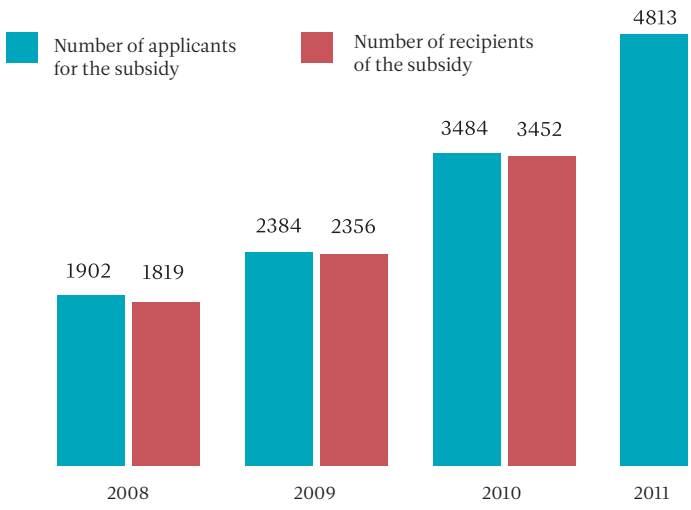


Figure 32. Number of applicants and recipients of Natura forestry compensation in 2008–2011

Figure 33. Number of applicants and recipients of Natura forestry compensation (in millions of euros) in 2008–2011

3.5 Conservation management plans, action plans for species conservation and management

Conservation management plans. The Environmental Board is responsible for organizing the preparation of a conservation management plan for protection of protected areas and limited-conservation areas. The notice regarding initiation of a conservation management plan is published on the Environmental Board website and its preparation is generally a public process where all participants can have input.

The primary part of the conservation management plan is a list of actions aimed at preservation, restoration and introduction of the basic values of the area under protection, which is the basis for the implementing authorities and persons in preparing working plans and budgeting. The conservation management plan sets out a general description of the natural object and its values; and lists key environmental factors and their impact on the natural object, the objectives of protection, the work necessary for achieving them, their order of priority, timetable and volume and the budget necessary for implementing them. Depending on the nature of the area under protection, the plan is drafted for 3–10 years.

In accordance with the draft nature conservation development plan, the aim is to prepare, by 2014, conservation management plans for all Natura areas (see also section 2.1.1) and by 2020 for all other protected areas and limited-conservation areas. Thus by 2020 a conservation management plan must be prepared for more than 1 000 areas with a total area of more than 14 000 km² (about one-third of Estonian territory).

As of 1 July 2011 there are 70 valid management plans. Of these, 57 were established for protected areas, 20 for limited-conservation areas and one for maintaining semi-natural biotic communities in 171 limited-conservation areas (see figures 34 and 35). The preparation of 258 management plans are in preparation or have been ordered. Conservation is organised with an approved plan on 324 247 hectares, which makes up 22% of the total area under protection. Protection must be organized with plans on yet another 77% of the area under protection; and management plans are in preparation in turn for 41% of this area. Compared to 2007, there are 47↑ more valid protection management plans, which cover a total 218 767 hectares ↑.

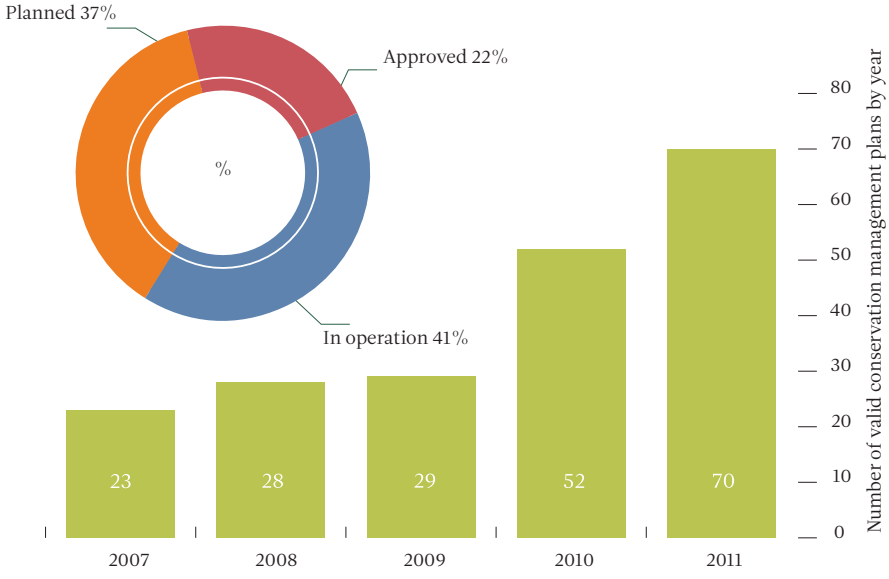


Figure 34. Percentage of protected areas and limited-conservation areas that have a valid management plan and number of valid conservation management plans by year

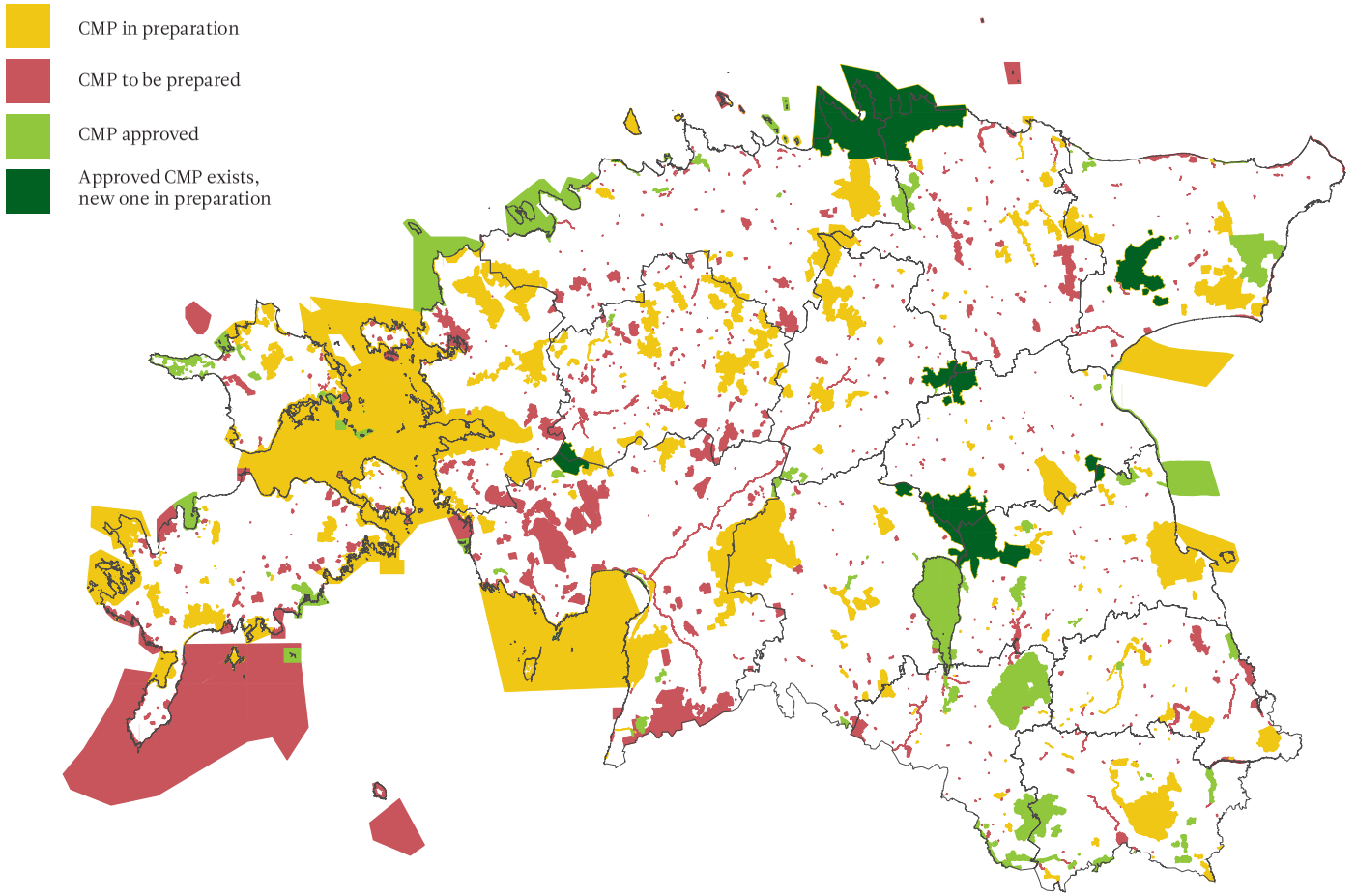


Figure 35. Status of preparation and approval of conservation management plans (CMP)

Action plans for species conservation and management. Action plans are prepared for organizing conservation of a first protection category species or for ensuring a favourable status, if the results of an inventory of the species shows that the measures implemented thus far for the species do not ensure protection or if an international obligation so requires. An action plan is prepared for management of a species if increased abundance are causing a negative impact on the environment or jeopardizing people's health or property.

An action plan for conservation or management of a species are established by the Minister of the Environment and contain data on the biology, abundance and distribution of the species, conditions for ensuring a favourable status of an endangered species, species risk factors, the objectives of protection or control, order of priority of the necessary measures and the timetable for performing them and a budget for organizing their conservation or management.

As of 2011, the following approved action plans are in force for protection and control of species.

Conservation plan:

- greater spotted eagle, for 2006–2010 (being revised)
- ringed seal, for 2006–2010 (being revised)
- capercaillie, for 2002–2011 (being revised)
- flying squirrel, for 2007–2011 (being revised, approved 5 March 2007)
- great crested newt, for 2007–2012 (being revised, approved 2 August 2007)
- Eurasian eagle-owl, for 2005–2014 (being revised)
- lesser white-fronted goose, for 2009–2013 (first time, approved 18 June 2009)
- black stork, for 2009–2013 (revised, approved 14 December 2009)
- lesser spotted eagle, for 2009–2013 (revised, approved 23 December 2009)
- common crane, for 2009–2013 (revised, approved 18 August 2009)
- natterjack toad, for 2010–2015 (revised, approved 22 October 2010)
- dunlin, for 2009–2013 (revised, approved 9 July 2010)
- ruff, for 2010–2013 (first time, approved 22 October 2010)
- European mink, 2010–2014 (revised, approved 30 November 2010)

Consrvation and management plan:

- cormorant (approved 17 July 2008)
- large predators, for 2002–2011 (being revised)

Alien species management plan:

- alien species of hogweed: Sosnowsky's hogweed and giant hogweed, for 2011–2015 (approved 2011)

Photographer: Karl Eik Rebane

Photo 23. Colony of cormorants in Vesitükimaa.

Photographer: Aarne Tuule

Photo 24. Unmaintained areas near farms may also become dumps.

3.6 Violations and fines

The Environmental Inspectorate performs oversight regarding the lawful use of the natural environment and resources. Supervisory fields number in the double digits and they fall into three categories in the inspectorate's work-related organization – nature conservation, fish protection and environmental protection.

Nature conservation supervision covers the following sub-fields:

- supervision of protection of protected natural objects,
- supervision of forest protection,
- hunting supervision,
- supervision of protection of fauna and animal protection,
- supervision of alien species,
- supervision of coast and shoreline protection.

Illegal cuts – and the environmental damage caused thereby – for years have been a serious problem in the field of nature conservation supervision, but since 2005, they have been continuously decreasing. The primary violations of forest law are now related to substantiating cutting rights, and transfer of cutting rights and sawn timber.

In protected areas, tenting and campfires in undesignated parts of protected areas have become the primary violation, along with operation of motor vehicles off designated roads and illegal construction in the limited management zones of protected areas. The last two are also the primary violations in coastal and shoreline areas. Some people build out of ignorance, but others do so deliberately, flouting requirements in protected areas and limited management zones. All too often, construction is begun while the required permit coordination process is still pending, in the hopes of getting the necessary permits in order later. As eliminating illegal buildings is a long and complicated process, with court battles taking years, the earlier that illegal buildings are found, the easier it is to eliminate them. Local governments have a very important role to play in this regard, as they are the authority in charge of conducting proceedings on detailed plans and performing direct construction supervision.

In general, the number of violations and the amounts of fines have decreased over the years (figure 36 and 37). This has been supported by refinements to legal acts, stronger enforcement and cooperation between law enforcement bodies as well as an increase in public awareness.

Figure 36. Total number of violations, number of violations resulting in environmental damage and number of fined persons in nature conservation supervision, 2007–2010

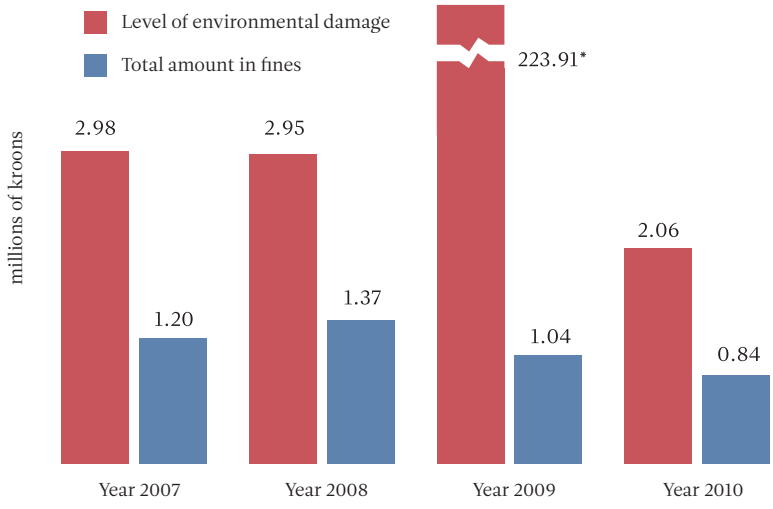


Figure 37. Fine amounts and levels of environmental damage in nature conservation supervision, 2007–2010.
*Note: An extensive fire took place in 2008 in Lääne County's Suursoo and the damage was computed according to the area of the burned area multiplied by an additional protected area coefficient, therefore the magnitude of environmental damage for 2009 appears extremely high compared to other years

The greatest number of violations over the year have occurred in the field of fish protection. One reason is the large number of amateur fishermen. The greatest problems are that tackle is set up illegally, without the required markings, and fishing takes place at prohibited times and in prohibited places. The number of violations in the field of fishing has been 1 500–2 000 per year over the last four years. In 2009, the total reached 2 405. About 650–700 people per year have been fined during the same interval; in 2009, a total of 947 persons.

Photographer: Aarne Tuule

Photo 25. Moose in a new residential development – Järveküla.

3.7 Planning and green network

Both the EU Habitats Directive and the EU's Biodiversity Strategy up to 2020 provide for the creation and implementation of a coherent green network such that biodiversity would be preserved on protected objects and outside their boundaries as well. In Estonia, the establishment of the green network was launched back in 1999 in the form of 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 Government of the Republic order no 763 of 1999, "Initiating thematic plans of county plans", which launched in all Estonian counties the thematic plan "Environmental conditions for guiding settlement and land use". This thematic plan is divided into two parts – "Green network plan" and "Valuable landscapes plan". Today these thematic plans have been established for all counties and work is under way at the municipal level. An overview of the municipalities that have established a comprehensive plan after establishing a county green network thematic plan is provided in figure 38.

As the county thematic plans are much more generalized than the land cadastre and detailed plans, they need to be refined at the municipal level. In the county-level green network planning stage, studies were generally not conducted as to which species used the green corridors the most, exactly where the use took place and to what extent. The primary goal was to integrate the existing protected objects into the landscape network, yet the beneficiaries of the network were not analyzed. As a result, there is a great amount of confusion and questions at the municipal level in connection with preservation of the green network. Municipalities have an obligation to enter green network plans into the comprehensive plan and to take the green network plans into consideration in establishing detailed plans – and for the most part they have done so – but due to lack of relevant guidelines, knowledge and means, some municipalities have transferred the county network over part and parcel without further refinement; to say nothing of studies regarding users of the corridors.

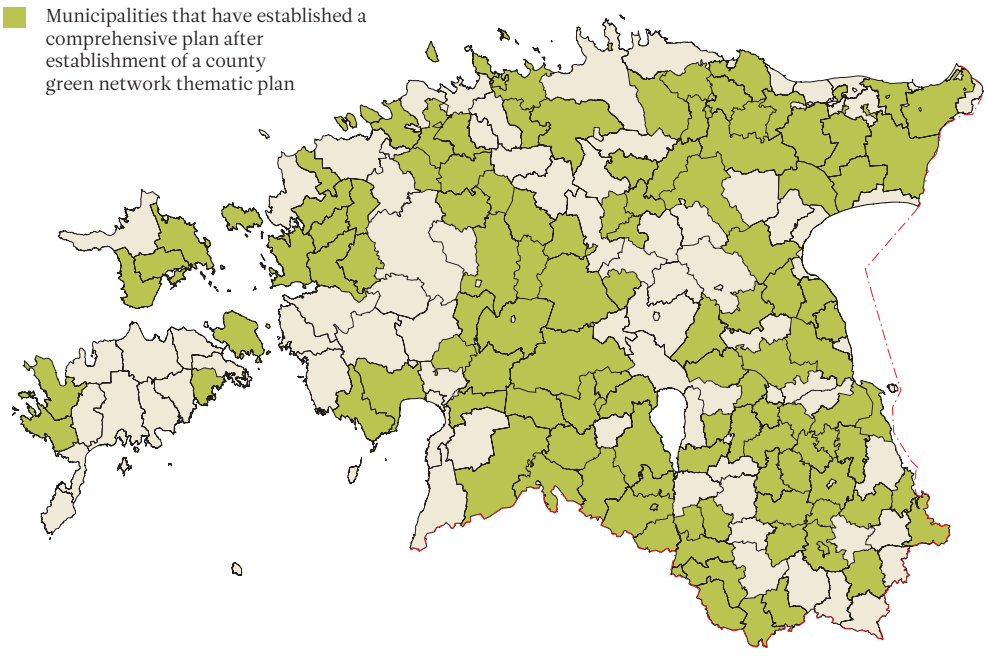


Figure 38. Municipalities that have established a comprehensive plan after establishment of a county green network thematic plan

Another significant shortcoming is the fact that preservation of coherence and adherence to the principle of low-density settlement are practically the only requirements for establishing detailed plans within the green network. But these considerations are far from sufficient to preserve coherence for the protection of biodiversity. Here are some positive and negative examples of municipalities action in addressing matters related to the green network.

A positive example: Audru, Kehtna and Kose municipality.

Audru municipality considered the green network important in its comprehensive plan and compared to the county plan the importance of the green network has even been increased. In increasing and further refining the network, the municipality's key natural communities and areas with landscape value were taken into consideration, in order to form a comprehensive network spanning areas important from the county and municipal standpoint. The network was entered onto the map so that the network would also cover necessary buffer zones. This was because the municipality wanted to limit construction activity to areas outside the development areas set forth in the comprehensive plan. The terms and conditions for preservation of the green network are set out in the comprehensive plan as follows:

Residential construction is allowed on the municipality's green network area only if the land unit is at least 3 ha. Such a restriction has been set based on the need to ensure functioning of the green network and the desire to ensure traditional low-density settlement also outside the development areas.

In green network areas, fences must be erected around a residential building's yard area. Rural units may be bounded by rail fences or barbed wire fences – that is, with barriers that allow smaller animals thoroughfare.

In areas of state mineral deposits lying within the green network, actions that block access to natural resources are not allowed. In natural resource deposits within green networks, extraction is only allowed on condition that the area is later recultivated and included in the green network. Audru municipality adheres to the comprehensive plan.

In **Kehtna municipality** the green network was refined in conjunction with the county government, the State Forest Management Centre and other key

target groups. The corridors were specified in greater detail and moved to places that animals actually use for transit. If the area of the network was reduced anywhere, then the area was increased in another place.

In **Kose municipality**, during the process of refining the green network, the known data on animals killed on the Tallinn–Tartu–Luhamaa road were analyzed and the points where the corridor intersected the road were brought into conformity with the data set.

Saue and Kiili municipality should be cited as **negative examples.**

In **Saue municipality**, the green network was entered into the municipality's comprehensive plan in unchanged form – in the same form as in the county's thematic plan. Thus on Pärnu maantee, there is unfortunately one green corridor crossing in the area between Tallinn and the ring road, which based on animal accident information and position of landscape elements should instead be located half a kilometre away. If the county corridor is adhered to, it might happen that animal access on highways is placed in the wrong area, it will not start functioning and the coherence will be lost.

In **Kiili municipality**, later detailed plans permitted structures in a number of green corridors (there are also such cases in other municipalities) and this makes it difficult or impossible for animals to move in these corridors. There was a failure to realize that movements of animals on a much broader area than just the municipality territory will become unpredictable and lead to a string of conflicts that the Rescue Board will have to resolve (forest animals on residential land, traffic accidents, conflicts with schools and kindergartens and encounters between joggers and forest animals etc). It will also interrupt the coherence between the protected natural objects.

Even though things are not yet going that smoothly at the municipal level with regard to the green network plan and practical links with natural values require additional study and analysis, it must be said that this plan is an important and internationally pioneering administrative act. All the more so considering that the existence of a thematic plan gives Estonia a major edge over other countries with regard to ensuring coherence of the network of Natura 2000 areas (see figure 39).

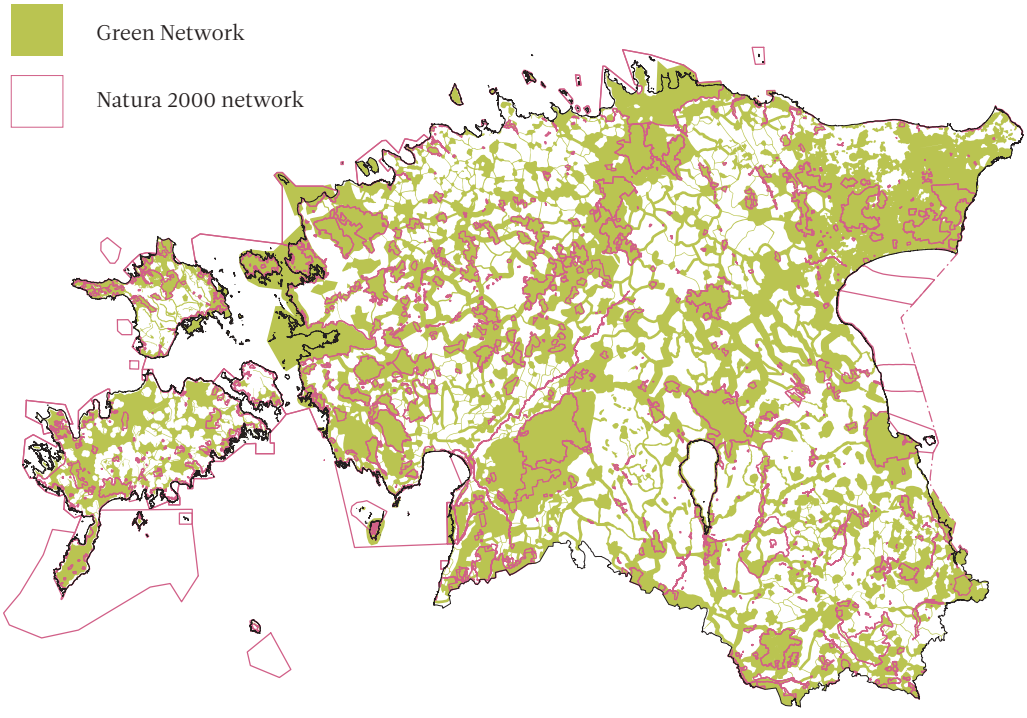


Figure 39. Thematic plan of the Estonian green network and network of Natura 2000 areas

Photographer: Arne Ader

Photo 26. Männikjärve bog. Endla nature reserve.

3.8 Nature education

Estonia lacks a national development plan on environmental education that sets out development areas and actions on all educational levels, yet provision of nature education has improved significantly in recent years. At the behest of the Ministry of Education and Research and in cooperation with the Ministry of the Environment, a draft national development plan for environmental education was prepared for 2008–2013, containing, among other things, the following general principles.

The state will create (including for municipalities) possibilities for establishing environmental education centres and activities in all counties and larger cities (Tallinn, Tartu, Pärnu, Narva). These centres prepare, offer and intermediate programmes that support national curricula, helping children, youths and adults to learn about nature and the principles of sustainable development. Curricula at all educational levels contain goals that educate citizens who are knowledgeable about and who value nature, the environment and culture. The curricula allow people to acquire the civic skills they need in a democratic society, in order to be aware of environmental problems, to propose possible solutions and to impact society in a positive direction.

Nature subjects are studied at all school levels. The volume of these courses in basic school allows not only natural phenomena and laws of nature to be studied (including biodiversity, nature conservation, ecology etc) but also instil an interest in naturalism, an integral sensibility for nature and contemporary attitudes and values.

The general part of the basic school and upper secondary school curriculum, and the plans for nature and other subjects allow knowledge and skills to be gained for further study of sciences and fields in which they are applied (such as genetics, forestry, medicine, environmental technology and other technology fields etc).

Estonia's Environmental Action Plan for 2007–2013 envisions the development of a system that would ensure for various target groups a high-quality and systematic nature education and in-service that would support practical nature conservation. In 2005, the Minister of the Environment and the Minister of Education and Research signed a memorandum that stipulates that promotion of education supporting sustainable development, raising the population's environmental awareness and shaping conservationist values are a national priority for Estonia.

Environmental education must proceed from the principles of sustainable development and be based on the national curriculum to shape a conscientious, environmentally conscious citizen who does his or her part to preserve the environment.

The environmental awareness and nature education activities in **the Ministry of Environment's** area of administration have evolved from bottom up – in the case of the Environmental Board (EB) and State Forest Management Centre (SFMC) it has sprung from the need to educate target and interest groups on sustainable use of the environment in the fields of nature conservation, forestry and environmental management. **The Estonian Nature Museum's** educational activity has developed in harmony with museums' growing educational role worldwide. The Ministry of the Environment development plan for 2011–2014 treats nature education briefly as follows: information on protected objects is available to the public, tourist sites are maintained and conform to safety and security requirements; nature conservation events take place periodically; and general nature awareness has risen. The State Forest Management Centre development plan for 2011–2014 states: the aim of the field of nature conservation is to offer possibilities for a nature education and to introduce protection values through a system founded on everyman's rights on recreational areas and protected natural objects. This contributes to an increase in the public's awareness of nature and reduces possible negative impacts that may stem from use of nature. Nature education programmes are developed so that they would be compatible with general educational school curricula and supply both the teachers and students taking part in the programme and ordinary citizens with the correct and relevant knowledge of the functioning of living nature and sustainable use of natural resources, including forests.

The main activity of **the Environmental Board's environmental education department** is to prepare and carry out environmental themed curricula for schools and kindergartens, organizing publicity events for target groups, introducing protection areas and preparation and dissemination of study materials. The department has 21 environmental education specialists whose workplaces are located in county centres (see figure 40), the so-called environmental education bases (Kärdla, Pärnu, Võru, Tartu, Türi, Tallinn) and the Authority's environmental education centres (Alam-Pedja nature reserve, Otepää nature park, Endla nature reserve, Räpina Environment House, Iisaku, Matsalu National Park, Soomaa National Park, Karula National Park, Viidumäe nature reserve, Lahemaa National Park, Vilsandi National Park). These centres and bases have information and study materials for educational activity. With regard to nature conservation, a priority is educating the public on natural values and conservation management. In 2011, 27 600 students and 7 500 adults took part in various information events in the Environmental Board's 1 334 environmental education programmes (of which about 800 were of nature education bent). In 2010, a travelling exhibition on nature conservation was completed for schools, and this is available on loan from the Environmental Board. The great interest and positive feedback from schools have led to a plan to prepare exhibition duplicates in both Estonian and Russian.

The nature conservation activity of **the State Forest Management Centre's nature conservation department** is coordinated by a chief nature conservation specialist. A total of 21 nature centre directors and other specialists deal with nature conservation. Activity that promotes nature and forestry awareness in 22 nature centres and houses takes place via nature education programmes, events, PR work and dissemination of relevant information. Nature centres have an information point, exhibit or exhibits and information collections for free public use. The State Forest Management Centre has set the goal of shaping values that support sustainable nature use and an environmentally friendly lifestyle. As of 2010, the State Forest Management Centre Statistics had 27 information points, 18 nature centres, four nature houses and one nature school. In addition, 13 recreational areas awaited – and found – active use. There were a total 1.57 million visitors to state forests and protected natural objects, 59 424 people visited information points, 47 833 people visited Elistvere animal park, and 23 600 people went to Sagadi forestry museum. A total of 42 231 people took part in the nature programmes and 30 000 people took part in the events of a campaign called Together with Nature. In 2010, the State Forest Management Centre invested a total of 63.6 million kroons (4.1 million euros) into nature holidays and education. On a five-point scale visitor satisfaction with the opportunities for an recreational opportunities in nature has risen from 4.1 in 2003 to 4.3 in 2010. The State Forest Management centre administers close to 2 000 km of hiking trails, 309 covered campfire areas, 44 tenting areas, 24 forest huts, 18 forest cabins and three ATV areas. The number of nature education programmes organized by the State Forest Management Centre has grown more than 1 200 (684 in 2006, 1 926 in 2010), while the number of participants has increased by more than 30 000 (15 014 to 42 231). The Sagadi forest museum was visited by 23 600 people.

Figure 40. Locations of nature centres and similar establishments that offer nature education in Estonia

Photographer: Margus Muts

Photo 27. Eastern pasqueflowers

4. Species and species protection

Chapter 4 is devoted to different species and measures for protection of species. The IUCN can be considered the largest international association that determines which species are endangered. The Red List published by the IUCN, covered in section 4.1.1, contains 450 species found in Estonia, 21 of them in the categories of critically endangered, endangered, vulnerable or near threatened. One key 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. This agreement is dealt with in section 4.1.2. According to the number of permits issued, the export of CITES species from Estonia appears not to have changed, but import volumes have grown. As an EU member, Estonia must comply with the EU directives, of which the most important from a nature conservation standpoint are the Habitats Directive and the Birds Directive. Of the species in Estonia, there are 147 in the annex to the Habitats Directive and 170 species in the annex to the Birds Directive. Every six years, Estonia submits a report to the European Commission on implementation on their directives. The report was submitted for the first time in 2007, at that time only regarding the Habitats Directive. There is more discussion of this in section 4.1.3. Domestically Estonian scholars define the risk level of species at the behest of the nature conservation committee and consolidate assessments of this nature in the Red List, dealt with in chapter 4.2.1. A total of 3 311 species were listed in the risk categories of this list. 174 of them are extinct in Estonia and 134 are critically endangered. The Estonian Nature Conservation Act also sets forth the categories of species protection. There are 66 species in protection category I, 259 in protection category II and 245 in category III. The total number of protected species remains the same but the Eurasian eagle-owl and dunlin were moved from category II to I and grey seal into category III (see section 4.2.2). Another 293 protected species have been specified as the conservation goal of various protected areas, species protection sites or limited-conservation areas, meaning that the needs of these species were taken into account in determining the protection regime for the said areas (see section 4.2.3). One growing threat to native species is alien species, which are dealt with in 4.2.4. Estonia had 956 species on the list of alien species as of March 2011, of which 63 were invasive. Section 4.2.5 provides an overview of the data on the status of these species in Estonia.

Photographer: Risto Hunt

Photo 28. Viviparous lizards.

4.1 Species of international importance

4.1.1 IUCN Red List species

The IUCN Red List[8] 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, 450 are on the IUCN Red List; of these 21 are plants and 429 animals. The distribution by groups of species is shown on figure 41. Compared to 2007, the number of bird species on the IUCN Red List registered in Estonia has decreased significantly. The number of reptiles assessed according to IUCN criteria has increased the most (4 times ↑), as has the number of vascular plants (7 times ↑)[9].

The species are distributed by category as follows: one species is critically endangered (the eel), two are endangered (the European mink and a beetle *Limoniscus violaceus*), six are vulnerable, 12 are near threatened and 429 are of least concern (figure 42). One species continues to be critically endangered, but in 2007 it was the Atlantic sturgeon and now it is the eel, which was previously undefined. A beetle species has been added to the endangered list– *Limoniscus violaceus*. The garden dormouse and pond bat have moved to the near threatened category, while the wolverine and harbour porpoise are now of least concern. The *Cucujus cinnaberinus* beetle and hermit beetle have been transferred to the near threatened category.

[8] IUCN 2011. IUCN Red List of Threatened Species. Version 2011.1. <www.iucnredlist.org>. Downloaded on 14 September 2011.
[9] In the case of number of threatened species, arrows that show a rising trend are red – indicating a negative development.

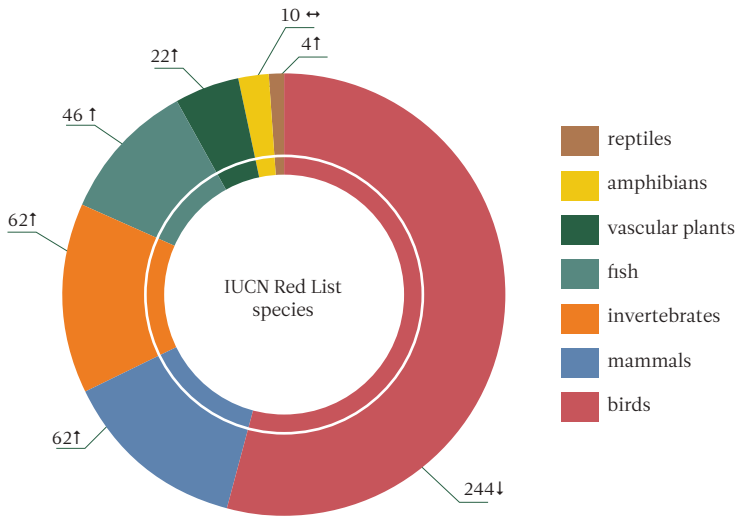


Figure 41. The number of species on the IUCN Red List that have been registered in Estonia by groups of species. The arrows in the figure show the direction of the change compared to 2007.

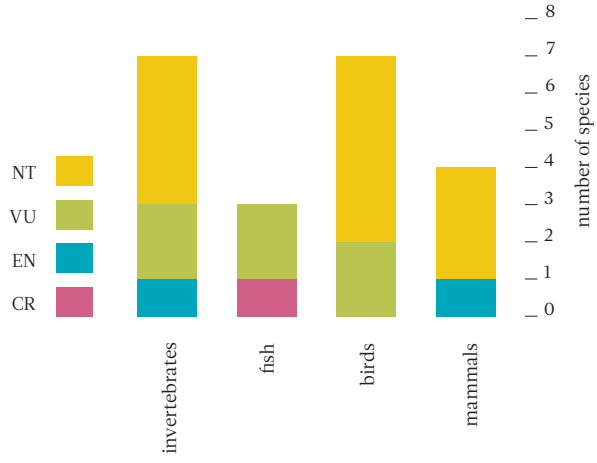


Figure 42.The number of species registered in Estonia on the IUCN Red List (critically endangered – CR, endangered – EN, vulnerable – VU and near threatened – NT).

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

Background. Today the need to protect elephants and tigers is considered self-evident. But in the middle of the last century, such concerns were still new. Problems that stemmed from international trade in flora and fauna and products made from them began to be addressed only in the 1960s, when it was realized that the trade was one of the most critical risks to the survival of plant and animal species alongside habitat destruction.

The extent of the illegal trade in rare species is catching up to arms and drugs trafficking. Billions of dollars are thought to be circulating in the field with hundreds of millions of plants and animals destroyed in the process. People are prepared to pay tens of thousands of euros for tiger hide or powdered rhinoceros horn. In Arab countries, a trained gyrfalcon can fetch over 100 000 euros. A purse made from a reptile skin costs many times more than chamois. The trade in threatened species is multifaceted, from living animals and plants to products made from them, such as food, leather items, musical instruments, wood, souvenirs, medicines etc.

In 1973, an international convention was signed in Washington at the behest of the IUCN for the protection of the threatened animals and plants: CITES, or the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Today 175 countries have acceded to the convention. The goal is to regulate the international import and export of animals and plants at risk due to international trade.

There are over 30 000 species under CITES protection. The species are classified in different annexes to the convention. Interstate transport of specimens of the species in Annex I, which are in danger of extinction, is only permitted in exceptional cases[10]. Transport for commercial purposes is completely prohibited. Most countries also accord stringent domestic protection to these species. Of the species in Estonia, Annex I includes, among mammals, the otter, among birds, the **white-tailed eagle** and **peregrine falcon** and, among fish, the **Atlantic sturgeon**.

As for Annex II, extinction is not yet a direct threat to these species, but if trade continues at the current pace, that risk could soon materialize. A system of permits has been established for the import and export of these species, allowing trade to be monitored, inspected and if necessary, restricted. Of the species found in Estonia, Annex II mammals are the **wolf, bear, lynx** and **harbour porpoise**, the birds are the **black stork, common crane,** and all **hawks** and **owls.** There is one segmented worm – the **European medicinal leech**. And as for plants, all **orchids**; fish, the **eel**, as of March 2009.

CITES in Estonia. After the restoration of independence there was the risk that Estonia would start to be used as a smuggling transit country between the former Soviet Union and Central and Western Europe. Estonia joined CITES back in 1992 to combat this potential threat.

As of the moment it joined the EU, Estonia became a full subject of EU regulations that set forth the rules for the international trade of animal and plant species. Estonian legislation already specifies solely the provisions that every EU member state must regulate in its national legal acts. CITES themes are primarily dealt with in Estonia by the Nature Conservation Act and acts enacted thereunder, as well as by the Animal Protection Act, Customs Act and the Penal Code.

In Estonia, the **Management Authority of CITES** is the Ministry of the Environment's nature conservation department, which coordinates implementation of the convention and issues permits and certificates. The **Management Authority** is advised by the **Estonian Scientific Committee of CITES.** CITES supervision on the state boundary is performed by the Tax and Customs Board and in inland areas by the Environmental Inspectorate.

A primary problem at the outset of re-independence was hunting tourism. Estonia has always been a very popular destination for foreigners looking to hunt bear, wolf and lynx. All these predators are CITES protected species and hunting tourists require CITES permits for transporting trophies home. The problem has since abated as there are no customs borders between European Union countries and the CITES document is necessary only for sales of hunting trophies. The awareness on the part of hunters and local hunting organizations has also risen significantly.

[10] The term "specimen" used in this text refers to a specimen from a plant or animal species under CITES protection either alive or dead, or a part or product made from it.

One of the problem areas in Western Europe – trade in pets – is not yet a major problem in Estonia. Estonians prefer to own ordinary cats and dogs, not exotic snakes or monkeys. Nor does the relatively conservative fashions and behavioural trends 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 as sales advertisements for exotic animals are more frequently encountered and there are more and more people who themselves keep and breed such animals for commercial purposes. There is also more interest being expressed in the possibilities of importing such luxury goods.

As Estonians travel relatively often and are sufficiently affluent, a new problem has come up: exotic souvenirs, which are brought back in good faith from travels without knowing that this is not allowed. The offences seen most frequently in recent years have been bottled snakes found in the baggage of tourists coming back from Asia.

CITES permits, import and export. Based on the number of permits issued, export of CITES species by year has stayed at around the same level. Import has grown continuously and especially rapidly in recent years (see figure 43), primarily due to import of leather products. Re-export has remained quite low each year. CITES permits were issued in the early years primarily for hunting trophies and Tallinn Zoo live animals. Over the years, the distribution of species and specimens has become much broader. Hunting trophies continue to be exported in great numbers from Estonia, but primarily to other European Union member states – and since this generally does not require a CITES document, it is not reflected in the statistics. The import of hunting trophies, primarily from Africa, has increased. Live animals are still transported primarily by Tallinn Zoo. To a limited extent, import and export permits for pets have increased. The decrease in the percentage of live animals is also due to the drop in the popularity of circuses in Estonia. The biggest increase in recent years has been in the category of leather products, especially in terms of import. In recent years, corals, plants and research material have become new additions to the CITES specimen types. Research material was also exchanged in past years, but the parties were likely simply not aware that a CITES permit was required. In addition, CITES documents have recently been issued for meat and fish, primarily for bear and sturgeon. Exotic butterflies have also been imported a number of times in recent years. A new type that should be mentioned are various creams, gels, food additives etc that contain parts or extracts of threatened species.

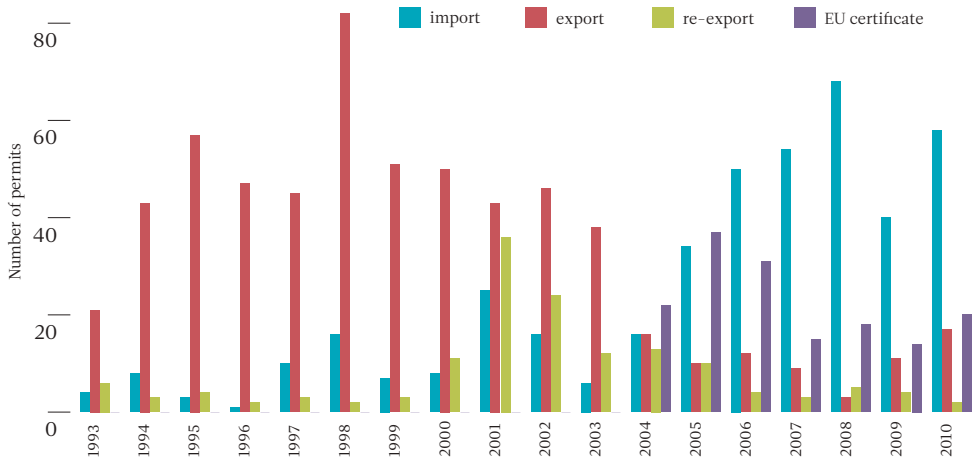


Figure 43. CITES permits issued in Estonia from 1993–2010.

Photographer: Kilvar Kessler

Photo 29. Red-backed shrike.

4.1.3 Species listed in the annexes to EU directives[11]

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. A corresponding form has been developed, approved by the Habitats Committee. The report consists of three parts: a general part on implementation of the directive in a member state, form for assessment of status of a species and a form for evaluating the status of habitat type. Estonia reports on 96 species of species groups in annexes II, IV and V of the Habitats Directive and the status of 60 habitat types in Annex I of the Habitats Directive. It reports on each species and habitat type at the biogeographical region level.

Approximately one-quarter of the Habitats Directive species have favourable status in Estonia and the status of one-quarter of them is unknown.

As Estonia is completely within the boreal biogeographical region, Estonia must fill in only one data form per species and habitat type.

Data for all species are presented regarding their range and population and direction 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 the habitat area is, what is the prevalent trend and future prognosis. As additional information, the estimated or computed favourable range, area and habitat size are provided. Summarized assessments of the range, population, species habitat and future prospects are presented as well. The assessment may be favourable, inadequate, bad or unknown. In the case of an inadequate and bad assessment, the trend can be added as well – whether the situation is getting better or worse.

[11] A list of species can be found on http://eur-lex.europa.eu/et/index.htm Council directive of 2 April 1979 on conservation of wild birds and Council directive 92/43/EEC, 21 May 1992, on conservation of natural habitats and wild flora and fauna

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.

Estonia presented such a report for the first time in 2007, and the next one must be submitted in 2013. At that point, the report will concern compliance with the Birds Directive – i.e. the entire natural avian fauna. Whereas the preparation of the report in 2007 was ordered from specialists in various species or species group, in the next reporting period, member states must organize their monitoring so it would feed information for completing reporting.

Estonia's 96 species (and species groups) include 25 plant species (including three groups), 29 invertebrates, seven amphibians, one reptile, nine fish and 25 mammalian species (including two marine mammals) (figure 44). Going by the report, mammals account for the greatest number of species in favourable status.

The greatest share – 43% (41 species) – have inadequate status, while 24% (23 species) have favourable status and only 7% (7) species have bad status. Unfortunately, more than one-quarter (26% or 25 species) of the species specified in the Habitats Directive is unknown, in the opinion of Estonian experts.

Compared to other European Union countries, Estonia is far from being in the worst shape. As a whole in the European Union, 22% of species have bad status and 17% are favourable, altogether 31% are unknown. The status of boreal region species is slightly better, with 31% in favourable status and 25% of species bad status.

The results of the report are pretty much as expected, the Habitats Directive annexes by definition list species threatened on European Union territory, and not all of them can be in good condition. For the next reporting period, it is presumed that, thanks to the nature conservation measures applied in member states, at least some of the species will have improved status.

The annexes to the Habitats Directive list 147 Estonian plant and animal species. In Estonia, 87 of these species were protected. The species list is the same as in 2007.

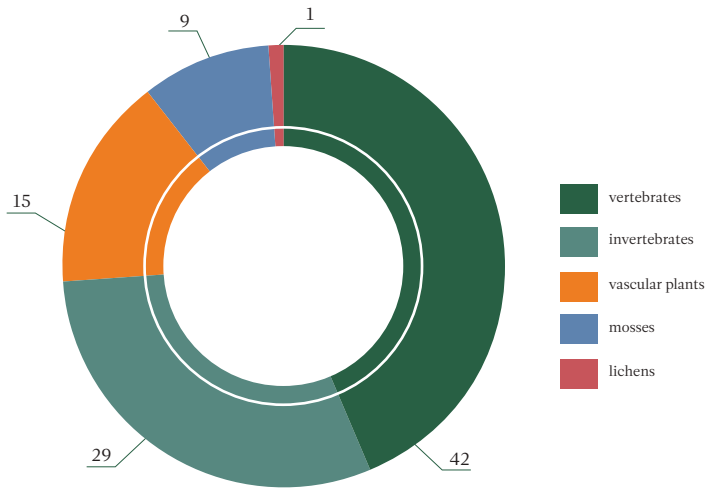


Figure 44. Number of species whose status is reported to the European Commission, listed by groups of species

Photographer: Vivian Ainsalu

Photo 30. Common kingfisher.

4.2 Species of domestic importance

4.2.1 Red List species

This publication relies on the 2008 Red List overseen by the Estonian Academy of Sciences nature conservation committee. Compared to 1998, the risk categories have been changed to conform to the categories in the IUCN Red List.

The other major change is the fact that previously the extinction risk for only certain species was assessed selectively; now there is an attempt to provide an assessment for all known species.

Table 11. The conformity of Estonia's 1998 Red Data Book risk categories to the IUCN Red List categories updated in 2008

1998	2008
0 Extinct	EW Extinct in the wild RE Extinct in Estonia
1 Endangered	CR Critically endangered EN Endangered
2 Vulnerable	VU Vulnerable
3 Rare	
4 Care demanding	NT Near threatened
	LC Least concern
5 Indeterminate	DD Deficient data NE Not evaluated
	NA Not assessable

An endangered category (RE to LC) was determined for 3 311 species, for the breakdown by species group, see figure 45. For 1008 species, data were deficient for assigning a category and 746 species were not assessed, as they were alien species or incidental visitors. Of all of the species assessed, 1 354 proved endangered or near threatened (figure 46). Compared to 2007 the number has increased in most species groups. At the same time, a nearly fourfold decrease has taken place in invertebrates. This is foremost due to the fact that most of them were not assessed.

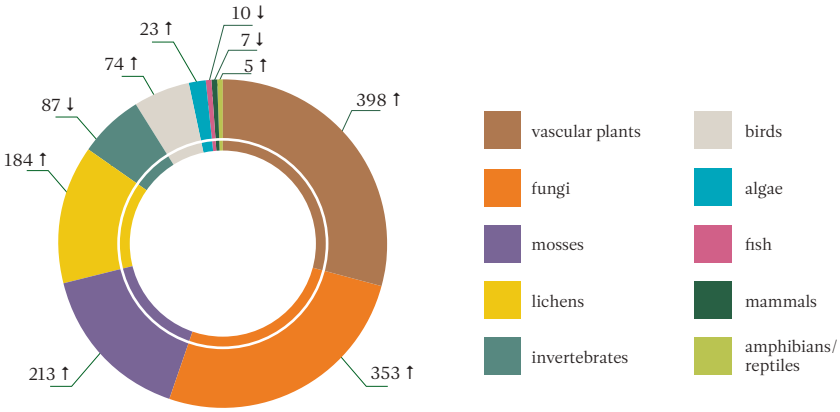


Figure 45. The number of species assessed as endangered or near threatened in the 2008 Red List by species group (arrows in the figure denote the direction of the change compared to previous assessments)

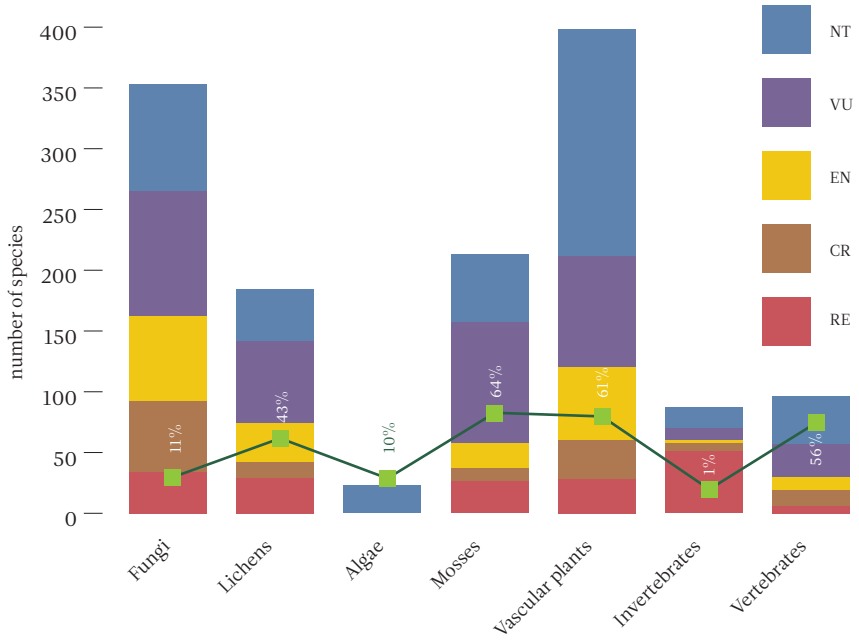


Figure 46. Distribution of species into various Red List risk categories by group and their percentage of the total number of species in Estonia

4.2.2 Protected species

Under the Nature Conservation Act, protected species are divided into three categories based on their threat level (figure 47). The species that are the most endangered fall into category I and the least endangered ones into category III. The lists of species in category I and II are established by Government of the Republic regulation and the list of category III species with a regulation of the Minister of the Environment.

Compared to the previous period, the total number of protected species has stayed the same, but changes have taken place in protection categories. The Eurasian eagle-owl and dunlin were moved to category I, as their abundance is significantly decreased.

On the other hand, the grey seal has fared better and it was thus possible to move it to the least stringent category – category III – which allows it to be hunted in certain conditions. Thus at the current moment, there are 66 species in category I, 259 in category II and 245 in category III.

As of 1 July 2011, 39 165 sites in which protected species are found were entered into the Environmental Register. Such sites are registered in greatest number in Western Estonia and the islands as well as in Tartu County. There were just 10 municipalities where not a single protected species site is located (see figure 48, where such small areas are marked), while there were 15 of them in 2007.

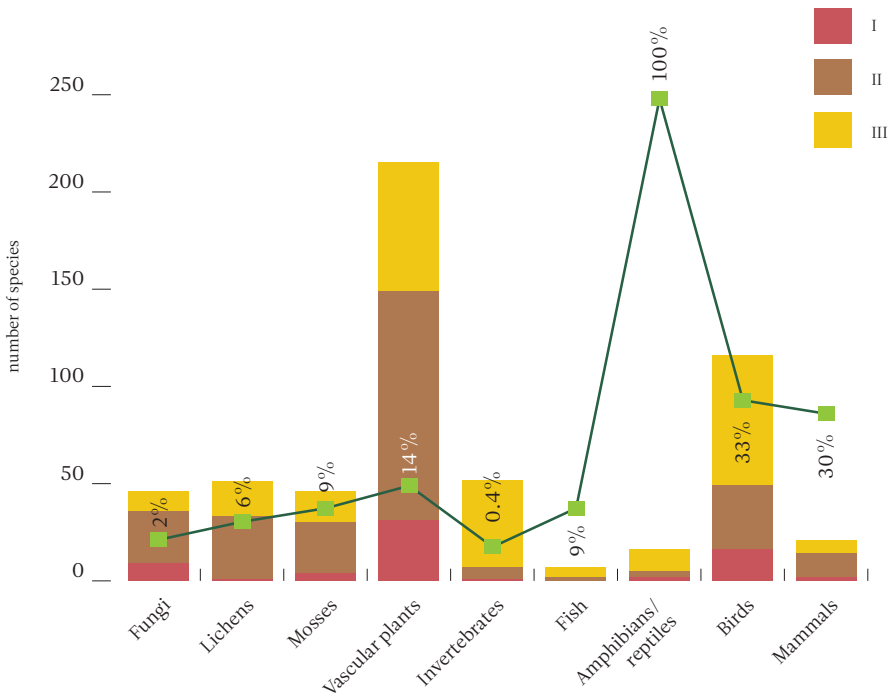


Figure 47. Distribution of species into various protection categories by group and percentage of all species in Estonia that are protected

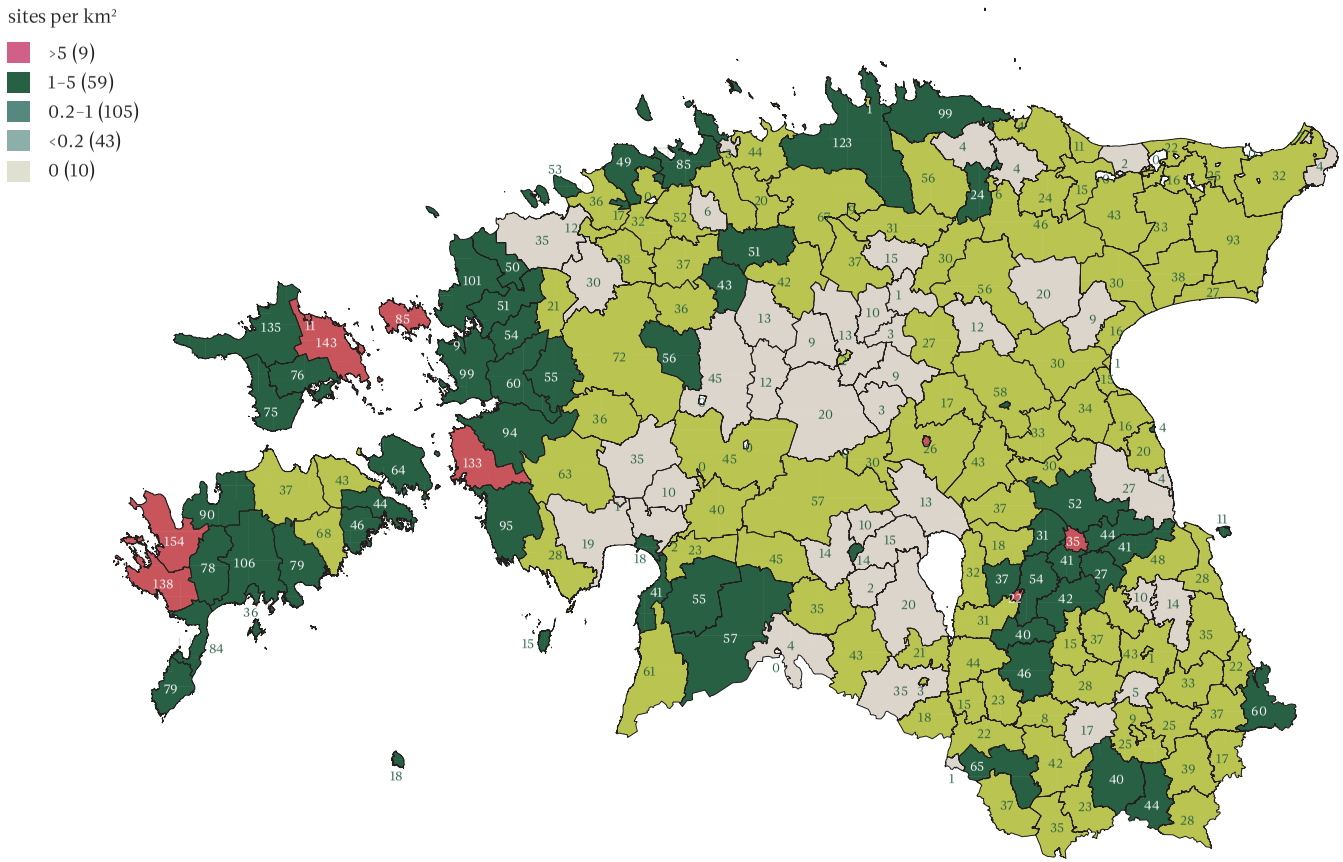


Figure 48. Number of sites in which protected species are found per square kilometre (the number denotes the number of protected species in the municipality)

4.2.3 Protection of species

As of mid-2011, Estonia had 1 505 protected areas, limited-conservation areas and species protection sites that specified protection for one or more species (figure 49)[12]. There were 354 species specified as the conservation objective of protected natural objects, and 293 of them were protected species. At the same time, 277 protected species, including 26 category I species, were not 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 necessarily 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.

Of the species groups, bird and vascular plants are most often listed as a protection goal (140 and 116 species, respectively) (figure 50). Of the various species, the lesser spotted eagle is mentioned most as a protection goal – in 436 protected natural objects, 415 of which are species protection sites.

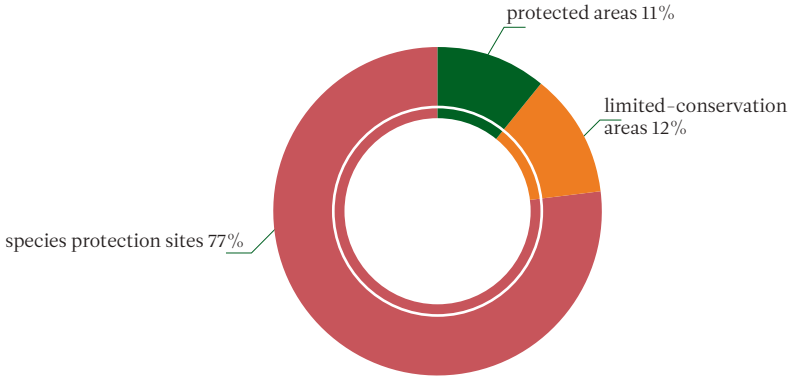


Figure 49. Different types of protected species, whose protection goal is protection of one or more species

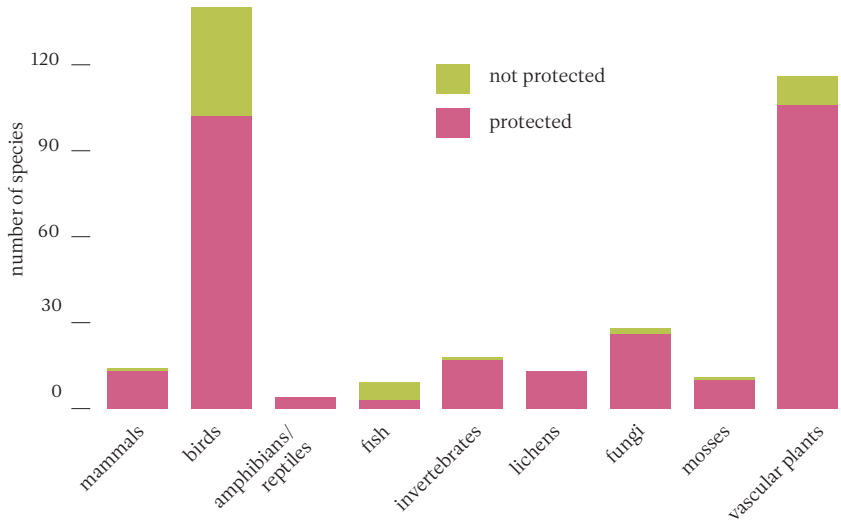


Figure 50. The number of species which constitute a protection objective, listed by species groups (those not protected on the basis of the Nature Conservation Act are considered "non-protected")

[12] Protection rules in which species are listed by name have been approved starting 2004, there are still many valid rules that were approved earlier.

4.2.4 Atlases and databases

A number of species atlases and biodiversity databases have been compiled in Estonia. The national Environmental Register keeps records of the places in which protected species are found. The register of species (including the Red List), data on collections of research institutions, professional observation data (data entered on the Internet) and data on research related to Estonian nature are entered into the Estonian eBiodiversity database. The Nature Observations Database allows people to enter species observations directly over the Internet.

On the basis of databases and atlases listed in tables 12 and 13, a map of the distribution of protected species has been prepared (figure 51). According to it, the greatest number of protected species are in Western Estonia, Hiiumaa and Saaremaa islands, as well in the Tartu area. These areas have received more extensive study, but at Estonia's western parts are also more species-rich. The map was prepared as of September 2010 and the only data not reflected by it are those from the atlas of Estonian flora, as unlike others the UTM grid is not used; nor are the data available with coordinates and thus they cannot be transposed on a UTM grid map.

Table 12. Estonia's largest databases on biodiversity

Databases	Link	What data does it contain?
eBiodiversity, administered by Natural History Museum of Tartu University	elurikkus.ut.ee	Registry of Estonian species. Data on collection copies and observation data. Research related to Estonian nature.
National Environmental Register, administered by Estonian Environment Information Centre	register.keskkonnainfo.ee	Places in which protected species are found.
The Estonian Nature Information System (EELIS) is administered by the Estonian Environment Information Centre	Ametkondlikuks kasutuseks	Places in which protected species are found (Environmental Register data) and places in which alien species are found, and some places in which non-protected species are found.
Nature Observation Database (LVA), administered by Estonian Environment Information Centre and Estonian Naturalists' Society (ELUS)	loodusvaatlused.eelis.ee	Public-entered observations. Data on atlases of mammals and breeding birds.

Table 13. Estonia's largest atlases

Atlases	Link	What data does it contain?
Atlas of Estonian breeding birds	www.eoy.ee/linnuatlas	Data on the distribution of breeding birds (2003–2009).
Atlas of Estonian mammals	loodusvaatlused.eelis.ee	Data on the distribution of mammals (1980–1999).
Atlas of Estonian flora	Kukk, Kull, 2005.	Data on the distribution of flora (1971–2005).
Atlas of Estonian fungi	Parmasto, 1993, 1999, 2004	Data on the distribution of protected and red list fungi and Polyporaceae(1950–2004).
Atlases on groups of Estonian invertebrates	Kesküla, 1992; Süda, Miländer, 1998; Voolma, Õunap, Süda, 2000; Martin, Luig, Ruusma, Heidemaa, 2008.	Data on the distribution of butterflies, Cerambycidae, Scolytidae and Odonata (1950–2008).

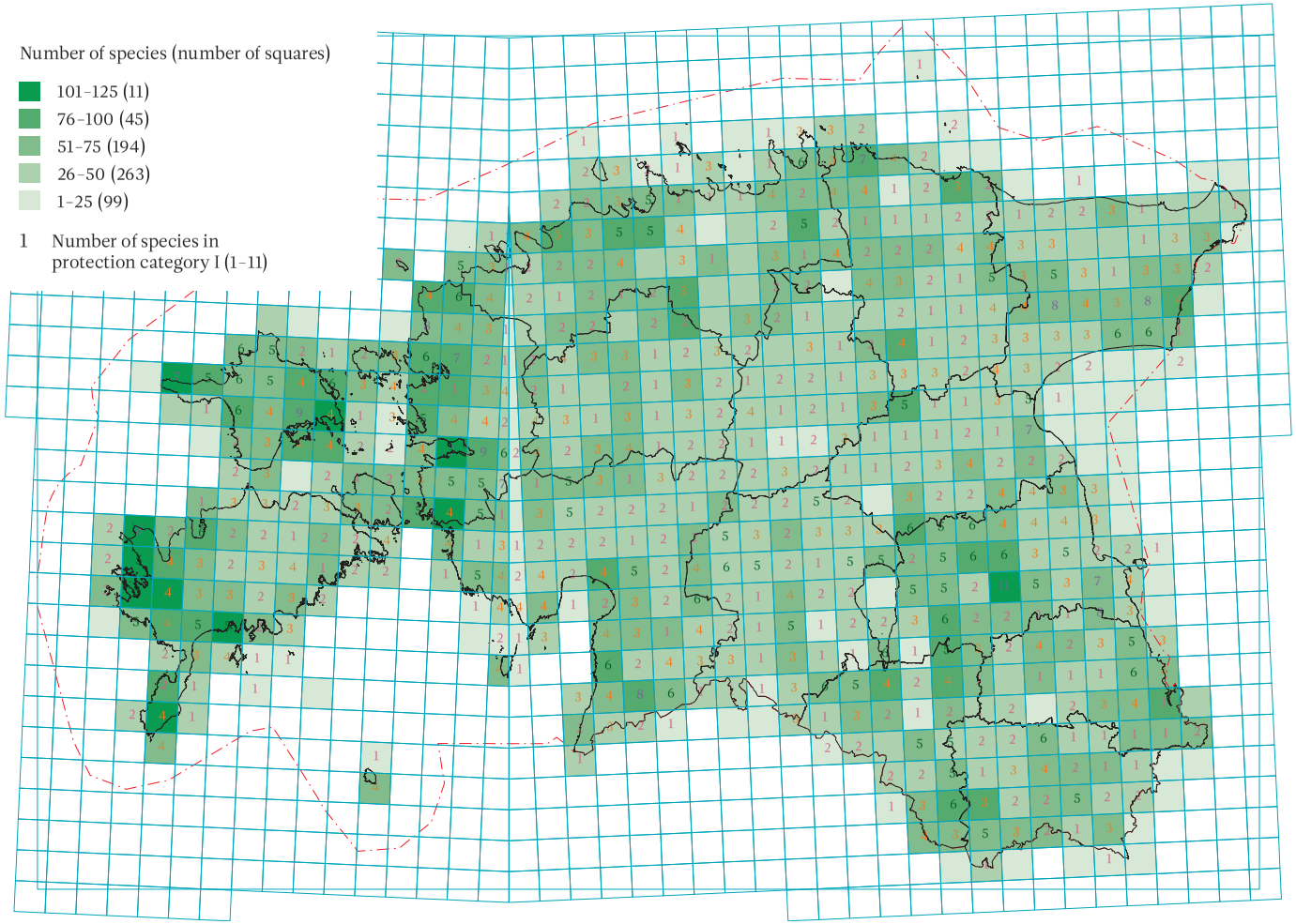


Figure 51. Distribution of protected species in Estonia on the basis of various databases and atlases

Photographer: Uudo Timm

Photo 31. Lusitanian snail.

4.2.5 Alien species

The species included on the list of alien species fall into four categories: invasive, potentially invasive, non-invasive and undefined status. Alien species that have arrived or introduced due to human activity. Invasive alien species are the ones that have managed to survive in nature and endanger local ecosystems.

The list of alien species includes a total 956 species, with 63 of them invasive and 71 potentially invasive (figure 52). But most of them have not had an invasiveness category assigned yet.

Vascular plants are the greatest contingent in the list (739 species) followed by invertebrates (175 species). They also lead among Invasive species – 44 vascular plants and 16 invertebrates (see figure 53).

One of the best-known and most vexing alien species in Estonia is Sosnowsky's hogweed. As of 2007, anti-hogweed programmes have been conducted regularly (see table 14) and alien species control plan has been prepared as well (see section 3.5).

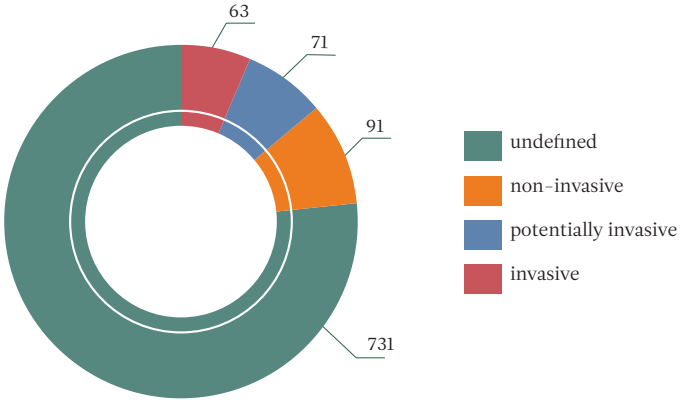


Figure 52. Distribution of alien species based on their invasiveness

Table 14. Sosnovski hogweed in the years 2007–2011

year	2007	2008	2009	2010	2011
area (ha)	609	886	861	1173	1473

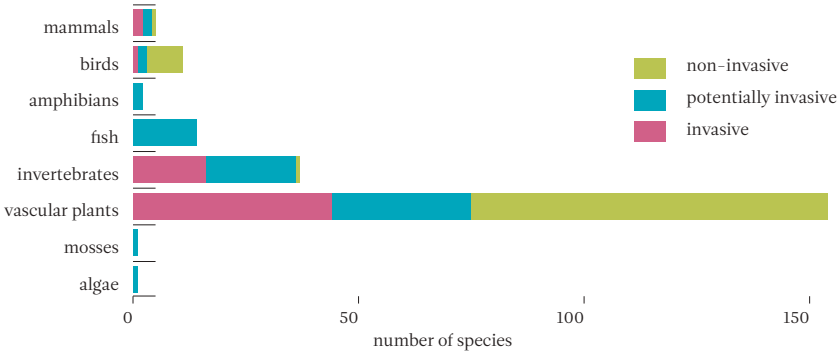


Figure 53. Distribution of species based on their invasiveness, by different species groups

The places in which invasive alien species are found according to the Environmental Register and the Nature Observation database (LVA) occur most frequently in northern Estonia, Viljandi County and central Saare County. Sites where such species are found in eastern Estonia are lesser known (see figure 54).

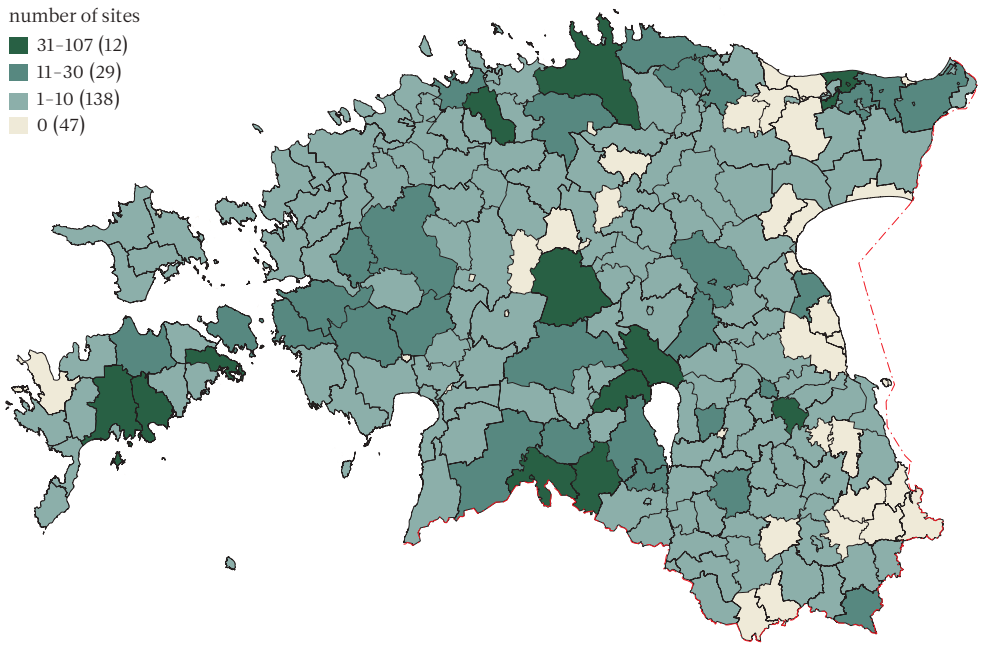


Figure 54. Places in which invasive alien species in the Environmental Register and the LVA are found

Photographer: Aarne Tuule

Photo 32. Forest habitats are the most widely distributed habitats in Estonia.

5. Habitats and habitat protection

The following sections give an overview of the distribution of Estonian habitat groups and their protection in 2011. The overview is provided from two viewpoints: first of all, from an analysis of the distribution and protection of habitat groups formed on the basis of CORINE land use database types covering all of Estonia; and secondly, on as an analysis of existing data for three major habitat groups (wetlands, meadows, forests). In addition, an overview is provided regarding the status of Natura 2000 Habitats Directive habitats and their protection on spatially protected natural objects. Due to the two above ways of viewing habitat groups, the figures for the same objects may vary somewhat due to the different level of precision.

Approximately 46% of Estonia is covered by forests, 7.3% by mires and 3.1% by meadows. A total of 18% of forest land is under protection (including 8% in nature reserves and conservation zones), 60% of meadows and 67% 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, while Saare County leads in distribution and protection of meadows. In the case of mires, there are no counties that clearly stand out, but Pärnu County, Rapla County and Lääne County could be mentioned.

Over four years, protection of almost all naturally valuable habitat groups has increased. Coastal habitats are the only exception, as the area has decreased by about 5%, on the basis of the CORINE land cover database. As the distribution of coastal habitats has decreased even more, the actual percentage of protection has risen. It should be considered that coastal habitats often have a low surface area and are not reflected in the CORINE database all that accurately. Coastal habitats have been placed under protection with the new and revised protected areas and limited-conservation areas established in 2007–2011 and thus their area has not necessarily decreased as much as the land cover database suggests.

Photographer: Aarne Tuule

Photo 33. Kõnnu Suursoo.

5.1 Changes in the distribution of CORINE land cover types

In the four years since the publication of *Estonian Nature Conservation in 2007,* a new CORINE LandCover digital database was 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 2006 is Estonia's latest database on CORINE land cover types and places in which they occur, and thus this publication uses the database to give an overview of the spread of various habitat groups in Estonia in 2011.

As the smallest land cover unit in the CORINE LandCover (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 thus be omitted from the database. The CORINE LandCover database is thus not used for bodies of water in this analysis, but rather, the Environmental Register map layers created on the basis of the Estonian basic map.

In the interests of comparability with the most recent volume in this series, *Estonian Nature Conservation in 2007,* the habitats of endangered species presented in the 1998 Estonian Red Data Book (table 15) were used as the basis for grouping the land cover types into habitat groups. The compilers of the book developed the Estonian Red Data Book habitat system on the basis of the Nordic red books, in particular the Finnish one. In the case of the Red Book habitats, it was separately distinguished for how many endangered species each habitat was the primary or preferred habitat and for how many it was just a habitat – i.e. a habitat where a given species may live but which is not the most preferred habitat for that species.

Table 15. Habitat groups formed on the basis of the CORINE land cover classes (CLC) and number of endangered species by groups (sources: CLC project and Estonian Red Data Book 1998, full table can be found in the book *Estonian Nature Conservation in 2007*)

Habitat group	Number of species	
	Primary habitat	One of the habitats
Artificial surfaces	15 (1%)	93 (7%)
Parks and gardens	15 (1%)	59 (4.5%)
Agricultural land	30 (2%)	50 (3.8%)
Deciduous forests	201 (15%)	261 (19.8%)
Coniferous forests	119 (9%)	150 (11.4%)
Mixed forests	108 (8%)	182 (13.8%)
Natural grasslands	100 (7.5%)	169 (12.9%)
Shrubland	23 (2%)	84 (6.4%)
Coastal habitats	140 (11%)	207 (15.7%)
Mires	41 (3%)	77 (5.8%)
Inland waters	252 (19%)	334 (25.3%)
Sea	54 (4%)	58 (4.4%)

On the basis of the habitat groups formed on the basis of the CORINE LandCover 2006 database, agricultural land (32.2%) makes up the largest share of Estonian territory, followed by mixed forests (18.3%) and coniferous forests (17.6%).

Compared to the previous CORINE LandCover map form 2000, the area of all three of the largest groups has decreased. The areas of the following habitat groups has increased: shrubland (10.7%↑), parks and gardens (4.9%↑), deciduous forests (2.9%↑) and natural grasslands (0.7%↑).

The greatest changes in percentage from 2000–2006 were in artificial surfaces (8.4%↓), coastal habitats (5.6%↓) and coniferous forests (3.5%↓) (table 16). A large share of the decrease in the area of artificial surfaces occurred in sparsely vegetated areas (a CLC category) which have primarily become shrubland. The areas of artificial surface types, such as urban fabric, industrial or commercial units and construction sites have increased in the interim.

Table 16. Areas of habitat groups formed on the basis of CORINE LandCover (CLC) categories in Estonia, 2000 and 2006

Habitat group	Total in Estonia (km^2) in 2000	Total in Estonia (km^2) in 2006	Change %	% of Estonian territory in 2000.	% of Estonian territory in 2006.
Agricultural land	14785	14740	0.3%↓	32.3	32.2
Mixed forests	8438	8387	0.6%↓	18.4	18.3
Coniferous forests	8311	8021	3.5%↓	18.2	17.6
Deciduous forests	4338	4463	2.9%↑	9.5	9.8
Mires	3062	3059	0%	6.7	6.7
Shrubland	2654	2937	10.7%↑	5.8	6.4
Inland waters*	2216	2201	0.7%↓	4.8	4.8

Habitat group	Total in Estonia (km²) in 2000	Total in Estonia (km²) in 2006	Change %	% of Estonian territory in 2000.	% of Estonian territory in 2006.
Parks and gardens	572	600	4.9%↑	1.3	1.3
Natural grasslands	558	562	0.7%↑	1.2	1.2
Coastal habitats	414	391	5.6%↓	0.9	0.9
Artificial surfaces	405	371	8.4%↓	0.9	0.8
Marine waters*	25050	24990	0%**	–	–
TOTAL	70803	70722	0%**	100	100

* The computations of bodies of water were not made on the basis of CLC CORINE LandCover database, but on the basis of Environmental Register map layers created on the basis of the Estonian basic map. The analysis of inland waters includes Lake Peipsi and Võrtsjärv. In the calculations, Lake Peipsi and Võrtsjärv are included in the territory.
** Due to a minor technical error in the process of rounding, the total areas of 2000 and 2006 do not match precisely.

In analysis of the database of changes in CORINE LandCover 2006, it became evident that the biggest changes in 2000–2006 took place in terms of forests and shrubland: 629.2 km² of coniferous, mixed and deciduous forests has become shrubland (afforestation) and 204 km² of shrubland has become forest (table 17). It should be taken into account that the CORINE LandCover methodology recognizes only changes of over 5 ha. The changes in the ratio of forests to shrubland reflect timber cuts. In recent (after 2000) cutting areas, forests have become shrubland (afforestation). In previous cutting areas, the land cover category classified as shrubland has now been reassigned as forest.

In addition, the area of shrubland has increased at the expense of mixed-use agricultural land and cropland even though process of fields becoming overgrown has slowed compared to the 1990s. It should also be noted that changes of cropland into parks and gardens (hence the 5% increase of most parks and gardens), which stems from the establishment of new residential neighbourhoods. The latter trend is most evident in the vicinity of Estonia's biggest cities, Tallinn, Tartu and Pärnu.

Table 17. Largest changes between habitat on the basis of the CORINE LandCover 2006 database of land cover changes

Habitat group on the basis of CORINE LandCover 2000	Habitat group on the basis of CORINE LandCover 2006	Area of changes (km²)
Coniferous forests	Shrubland	293.3
Mixed forests	Shrubland	268.2
Shrubland	Deciduous forests	108.4
Shrubland	Mixed forests	86.3
Deciduous forests	Shrubland	67.7
Agricultural land	Parks and gardens	14.4
Artificial surfaces	Shrubland	13.6
Agricultural land	Shrubland	10.7
Shrubland	Artificial surfaces	9.3
Shrubland	Coniferous forests	9.3

5.2 Distribution and protection of mires

In 1997, the Estonian Fund for Nature and its partners performed an inventory of Estonia's wetlands[13], aimed at identifying the distribution, status and conservation value of the largest wetlands not under protection. Over ten years later (December 2008 – April 2011) the Fund for Nature and the Environmental Board conducted a complete inventory of Estonian mires[14] and prepared, on the basis of the results, recommendations for their potential use, including establishing of restrictions necessary for nature conservation, to find ways and means of preserving their diversity for the future.

The point of departure for the project was a 1997 inventory in the course of which data on 1 376 wetlands were collected. The same methodology was used for the new inventory as well so that the data would be comparable. The goal for two seasons of field work, 2009 and 2010, was to inventory 8 000 mire areas. In the project launch stage, the terms of reference became more specific and the number of inventory areas increased to about 13 000.

The data from the field work were digitized and analyzed and a database compiled that should become are a valuable primary database for officials and planners, who need to know whether peat extraction could be considered in the case of a given mire. The basic data collected were submitted along with a map layer to the Estonian Nature Information System (EELIS).

Along with the 1997 data, 11 023 mires or mire communities were identified in Estonia, covering **255 358 hectares**. This area was divided into five categories based on the general assessment proceeding from the Natura habitat inventory data form: extremely high value, high value, significant value, low or lacking value and unknown/undefined value (table 18).

Table 18. Range of Estonian mires on the basis of the wetland inventory data according to general assessment assigned to each

General assessment category	Area (ha)	Percentage (%)
Extremely high value (A)	63 661	24.9
High value (B)	115 290	45.2
Significant value (C)	51 501	20.2
Low or lacking value (D)	15 322	6.0
Unknown/undefined value	9 584	3.7
TOTAL	255 358	100.0

By adding the natural wetlands from the CORINE land cover database to the mire inventory data, Estonia's wetland area comes to slightly over 332 000 ha, which is 7.3% of the country's area (in CORINE database, natural mires make up 6.4%, but according to mire inventories make up 5.6% of Estonia's territory) (figure 55).

By county, the greatest percentage of mires is in Pärnu County (18.5% of Estonian mires), where the large Soomaa and Lavassaare mire complexes are located. This is followed by the Alutaguse wetland areas in Ida-Viru County (11.6%), Harju County (9.9%) and Rapla County (9.2%). The smallest county by area, Hiiu County, also has the smallest percentage of Estonian mires (0.9%) (figure 56). The top three by percentage of county covered by mires are Pärnu County (12.8%), Lääne County (12.2%) and Ida-Viru County (11.3%). Võru County has the lowest percentage of area covered by mires (2.7%) (figure 57).

[13] Paal jt. 1999. Eesti märgalade inventeerimine 1997. a. Eesti Keskkonnaministeerium. Tartu.
[14] Paal, J. Leibak, E. 2011. Estonian Mires: Inventory of Habitats. Eestimaa Looduse Fond. Tartu.

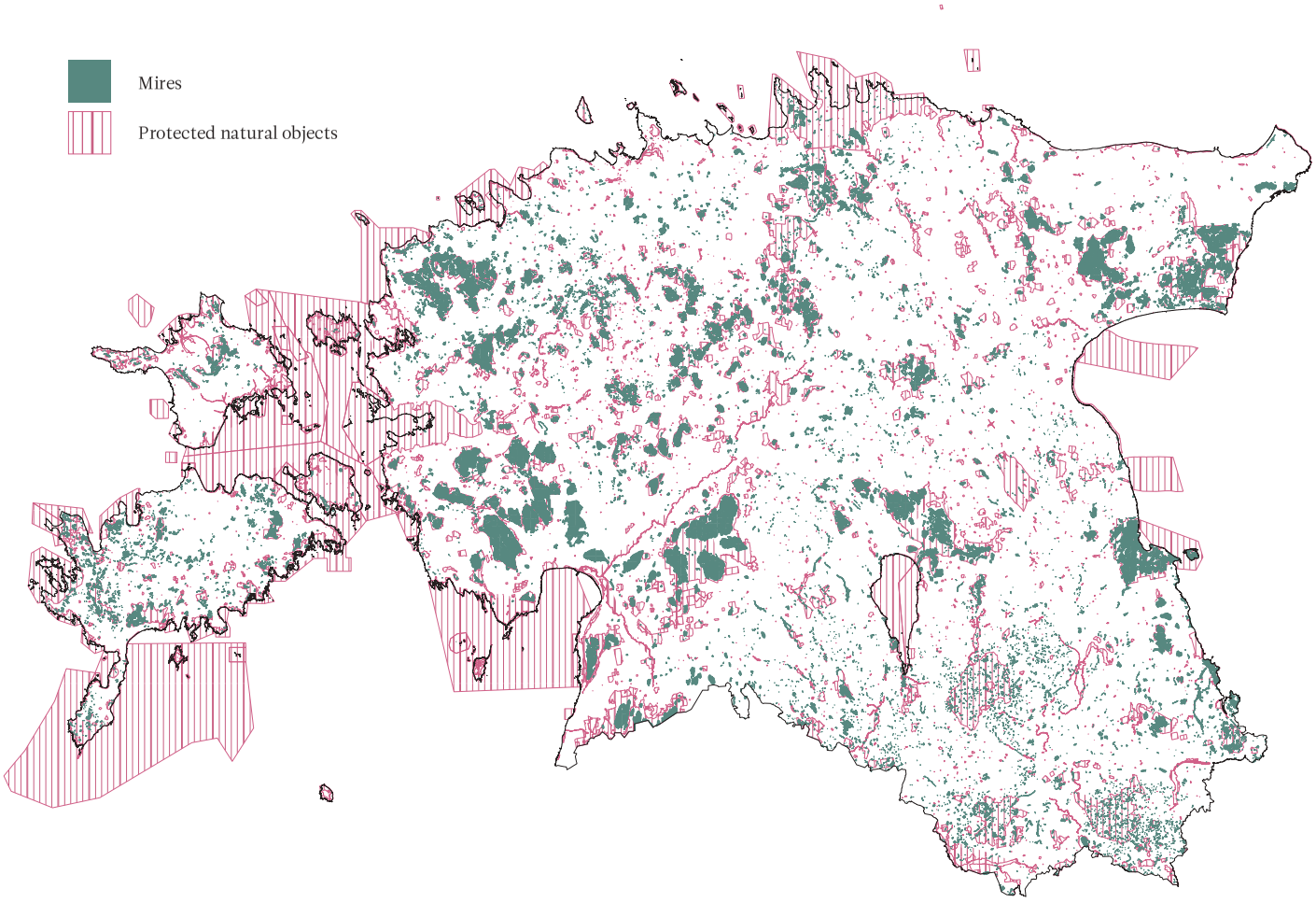


Figure 55. Mires inventoried in 2009–2010 together with CORINE land cover database mire areas (not including peat extraction areas (type no. 4122)) and protected natural objects.

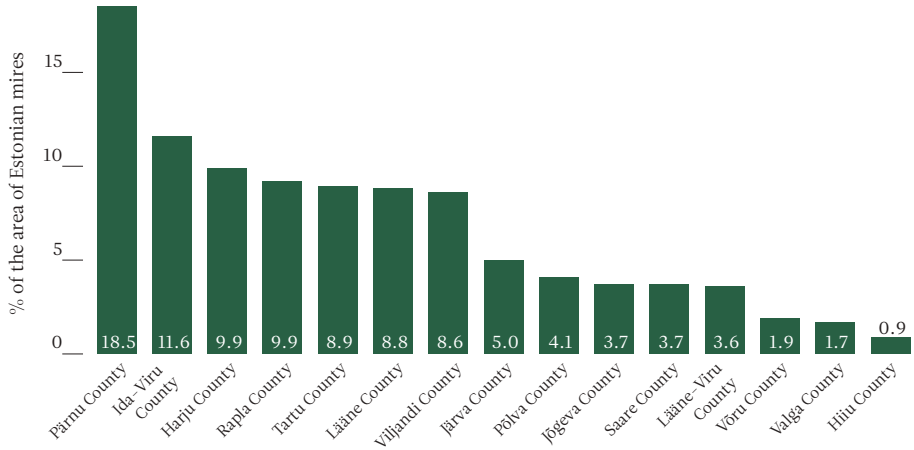


Figure 56. Distribution of Estonian mires between counties

On the basis of the wetlands inventory and the data on wetlands added to them from the CORINE land cover database, we see that 67% of Estonian mires are under protection (table 19).

By county, Lääne County has the highest percentage of wetlands under protection. A total of 83.5% of the county's mires are protected. Lääne is followed by Rapla County (80.5%) and Tartu County (76.6%). At the same time, Pärnu County, which has the most mires, comes only eighth in this regard, with 68.1% under protection. On the other hand, Hiiumaa comes sixth with 69.7% of its mires under protection. Võru County has the lowest percentage of wetlands under protection – 38.2% (figure 57).

These figures show that Estonian wetlands are fairly well protected. Even so, the status of wetland habitats listed in the annex to the Habitats Directive was assessed primarily as inadequate and even bad in the case of some habitat types (see section 5.6), from which it may be concluded that a favourable status has not yet been achieved for habitats in formerly degraded mire areas.

Table 19. Protection of inventoried wetlands in Estonia[15]

Habitat type	Paal type code	Area under protection (ha)	Percentage of inventoried area under protection	Percentage of protected mire that has high value
Poor fens	3.1.1.1	9888	50	72
Rich fens	3.1.1.2	12 360	64	91
Minerotrophic quagmires	3.1.1.3	960	59	87
Floodplain fens	3.1.1.4	1656	52	72
Mixotrophic grass mires	3.1.2.1	27 359	81	91
Mixotrophic quagmires	3.1.2.2	2792	76	99
Spring fens	3.1.3.1	432	55	93
Heath moors	3.2.1.1	487	42	93
Bogs	3.2.2	115 453	76	90
TOTAL		171 387	67	89

[15] Paal, J. Leibak, E. 2011. Estonian Mires: Inventory of Habitats. Eestimaa Looduse Fond. Tartu.

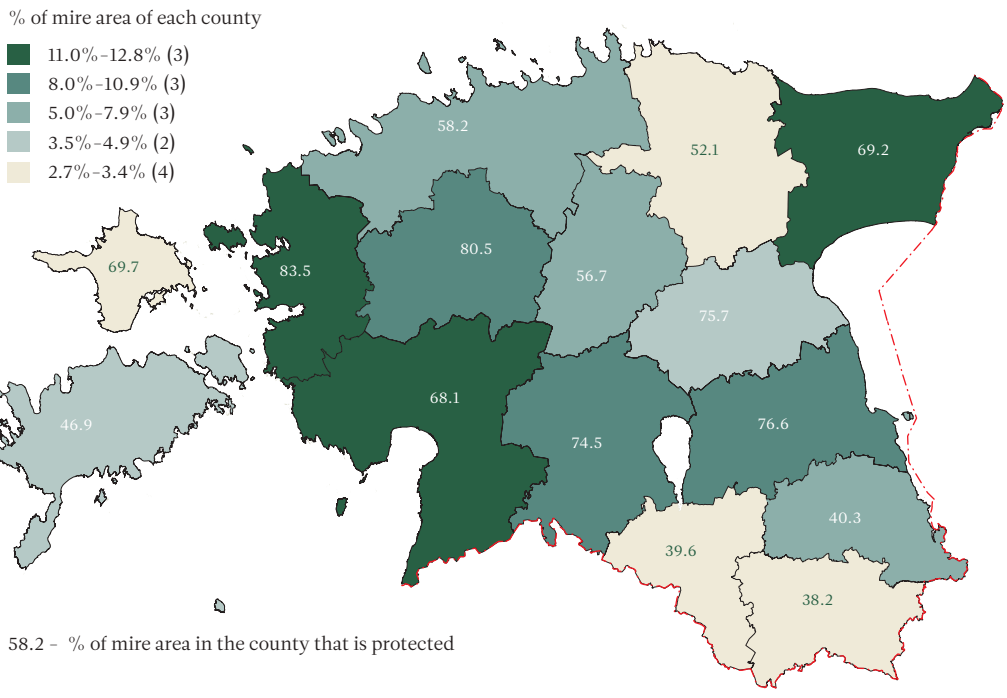


Figure 57. Percentage of mires in each county and percentage of each county's mires that are protected.

On the basis of the mire inventory data, most of the wetland habitat types (75%) in the Habitats Directive (European Council directive 92/43/EEC) represented in Estonia are on Natura 2000 areas. Most (99%) of habitat type 7150 (Depressions on peat substrates of the Rynchosporion) are on Natura areas. The lowest percentage occurring in Natura areas (13%) is seen in the case of type 7120 (degraded raised bogs still capable of natural regeneration) (table 20).

Table 20. Area of Habitats Directive wetland habitat types and % found in Natura 2000 areas

Habitat type*	Area (ha) on Natura 2000 areas	% 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 Rynchosporion	468	99
7160 – Fennoscandian mineral-rich springs and springfens	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

* The four-digit numbers in the habitat type column are the habitat type codes as given in the Habitats Directive

In addition, the Tallinn University Ecology Institute's landscape ecology department was commissioned by the Ministry of the Environment in 2009 to perform an inventory of Estonian swamp forests[16]. The objective of the work was to set out an inventory of nature conservation values of Estonia's peat-based areas (in natural state and degraded) covering hitherto uninventoried peat-based areas outside protected areas and limited-conservation areas, focusing on swamp woods and wooded bogs.

According to the swamp woods report, Estonia has a total of 919 100 ha of paludified forest and swamp woods. Of these, 80 000 ha are located on protected natural objects and 840 000 ha outside them. Of the latter, a total of around 11 000 ha were inventoried on the basis of analysis of previous map data and assessments as being in good nature condition (table 21). Of these, 69 swamp woods with an area of 1876 ha (table 22) were selected as having conservation value, and 16 swamp woods with a total area of 682 ha as meriting preservation.

Table 21. Range of inventoried swamp woods according to habitat type [16]

Habitat type*	Number of areas	Area (ha)			Total area (ha)
		Min	Max	Average	
paludified forest	25	1.3	252	29	731
minerotrophic mobile water swamp forest	23	1	84	20	458
minerotrophic stagnant water swamp forest	94	4	190	22	2037
mixotrophic (transitional) bog forest	42	6	230	29	1202
ombrotrophic bog forest	85	1.3	125	30	2588
drained peatland forest	73	2.3	285	52	3768
treeless fen	37	0.3	110	12	459
wooded transition mire	5	5.7	30	13	64
treed ombrotrophic raised bog	8	2.1	82	18	145
spring fen	1	1.4	1.4	1.4	1.4
reeds	1	3.9	3.9	3.9	3.9
forest on mineral land	2	3.1	35	18	38
Total	396	0.3	285	29	11 496

* Despite the previous analysis some of the areas in the section did not have a paludified forest or swamp forest as their type.

Table 22. Number and area of swamp forest meriting conservation [16]

Swamp forest type	Number of areas	Total area (ha)	Average area of area (ha)
minerotrophic mobile water swamp forest	10	192	19
minerotrophic stagnant water swamp forest	15	209	14
mixotrophic (transitional) bog forest	12	520	43
ombrotrophic bog forest	30	842	28
paludifying forest	2	90	45
alluvial minerotrophic mobile water swamp forest	1	30	30
Total	69	1876	27

[16] Soometsade inventuur 2009/Soometsad väljaspool kaitsealasid/aruanne. TLÜ Ökoloogia Instituut. Tallinn, 2010.

Photographer: Arne Ader

Photo 34. Kurkse coastal meadow.

5.3 Distribution and protection of meadows

The peak era for semi-natural landscapes in Estonia was the end of the 19th century and beginning of the 20th century. Their area reached 18 000 km², which is about 40% of Estonia's current territory[17]. After World War II, the area of semi-natural landscapes began diminishing rapidly as manual labour was replaced by large-scale production and intensive agriculture, and difficult to manage grasslands of low fertility were not suitable for this. The latter became overgrown and eventually, forests (the area of Estonian woodland has increased a little more than 50% since the end of WWII[18]).

In 2006, on the basis of the information on various databases, Marek Sammul and Toomas Kukk assessed the area of Estonian grasslands as around 130 000 ha, of which 60–70% has high value.

For this publication, the data from the Estonian Seminatural Community Conservation Association meadows database, the CORINE land cover database of natural grasslands and semi-natural areas eligible or potentially eligible for maintenance subsidies were aggregated. On their basis, Estonia has 138 500 ha of meadowland, which is 3.1% of the country's area (45 227 km²).

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; table 16).

The most meadows are in the western counties. Saare County has the most meadows (26.4% of Estonian meadows). This is followed by Lääne County (18.8%), Harju County (9.0%) and Pärnu County (8.9%). South-eastern and central Estonia have the fewest meadows. The fewest meadows are in Järva County (1.4% of Estonian meadows) (figure 58). By the percentage of area of meadows per county, the top three are Saare County (meadows cover 12.5% of the county), Lääne County (10.9%) and Hiiu County (7.7%). Järva County has the lowest percentage of any county covered by meadows (0.8%) (figure 59).

[17] Kukk, T. Sammul, M. 2006. Loodusdirektiivi poollooduslikud kooslused ja nende pindala Eestis. Sammul, M. Eesti Looduseuurijate Seltsi aastaraamat. 84. köide. Tartu. 114–158.

[18] Raiesmaa, R. Valgepea, M. Merenäkk, M. Raudsaar, M. 2011. Olukorrast metsanduses 2011. http://www.envir.ee/orb.aw/class=file/action=preview/id=1174092/Olukorrast_metsanduses_2011_ver1.0_2.pdf

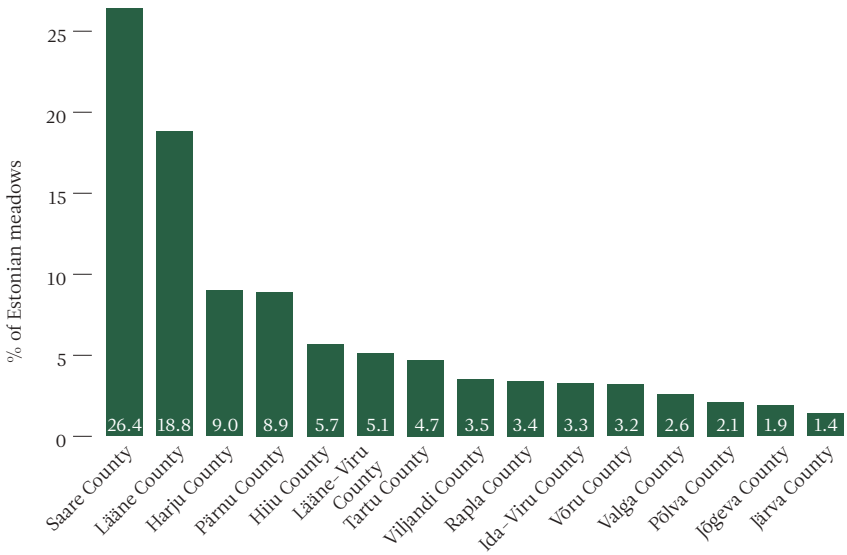


Figure 58 . Distribution of Estonian meadows between counties

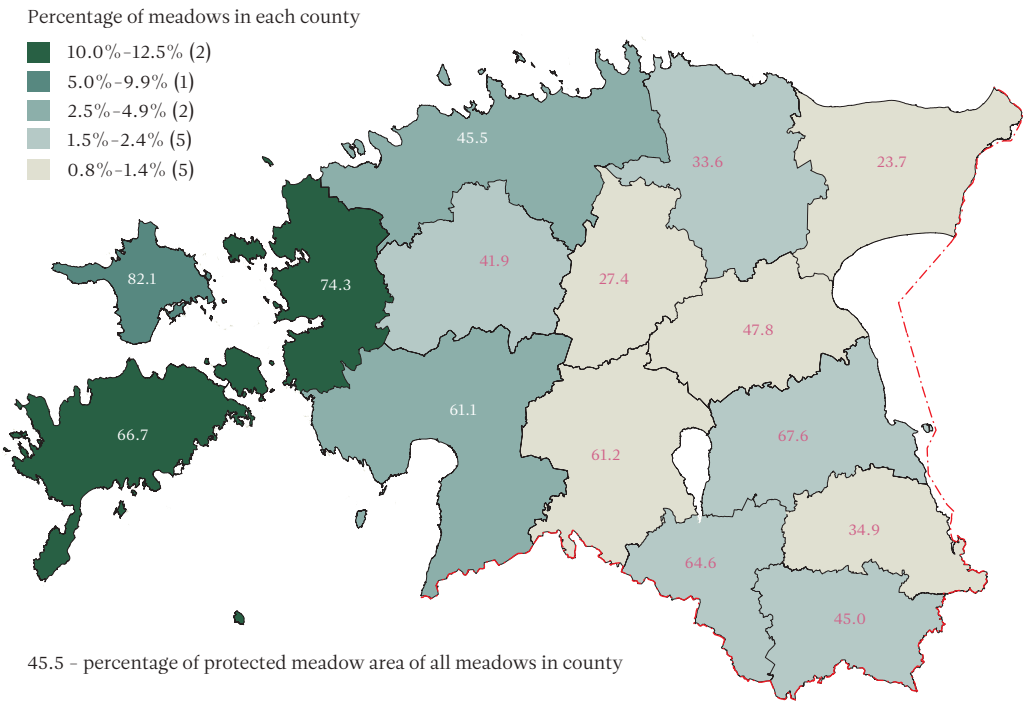


Figure 59. Percentage of meadows in each county and percentage of each county's meadows that are protected.

On the basis of data from the Estonian Seminatural Community Conservation Association meadows database, and the CORINE land cover database of natural grasslands and semi-natural areas eligible or potentially eligible for maintenance subsidies, 60% of Estonian meadows are under protection.

Hiiu County has the highest percentage of meadowland under protection. A total of 82.1% of the county's meadows are protected. This is followed by Lääne County (74.3%), Tartu County (67.6%) and Saare County (66.7%). While meadows make up around one-tenth of the county's area in Hiiu, Lääne and Saare County, the figure is just 1/50 in Tartu County, but on the other hand those, primarily riparian meadows, are largely on the Alam-Pedja nature reserve and the Emajõe-Suursoo protected area. The lowest percentage of meadowland is under protection in Ida-Viru County. The figure is only 23.7% there (figure 59).

On the basis of the data from the Seminatural Community Conservation Association meadows database, and the CORINE land cover database of natural grasslands and semi-natural areas eligible or potentially eligible for maintenance subsidies, Northern boreal alluvial meadows (6450) are the most common meadow habitat type – 26 000 ha. These are followed by Boreal Baltic coastal meadows (1630*) – 22 700 hectares, Nordic alvar and precambrian calcareous flatrocks (6280*) – 19 800 ha and Fennoscandian lowland species-rich dry to mesic grasslands (6270*) – 10 100 ha. Dry heaths are the type with the greatest percentage under protection (4030) – 93%. Also over 90% protected are Boreal Baltic coastal meadows (1630*) – 92% and Molinia meadows (6410) – 91% (table 23).

Table 23. Range of Habitats Directive meadow habitats in Estonia

Habitats Directive habitat type*	Total in Estonia (ha)	On protected natural objects (ha)	Protected % of the total area
6450 – Northern boreal alluvial meadows	26 000	17 800	68
1630* – Boreal Baltic coastal meadows	22 700	20 900	92
6280* – Nordic alvar and precambrian calcareous flatrocks	19 800	12 000	61
6270* – Fennoscandian lowland species-rich dry to mesic grasslands	10 100	5 100	50
6530* – Fennoscandian wooded meadows	8 200	4 600	56
6510 – Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	8 000	3 700	46
6210* – Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites)	7 250	4 500	62
9070 – Fennoscandian wooded pastures	4 700	3 250	69
5130 – Juniperus communis formations on heaths or calcareous grasslands	4 000	3 250	81
6430 – Hydrophilous tall herb fringe communities	3 750	2 050	55
6410 – Molinia meadows	1 750	1 600	91
4030 – Dry heaths	1 050	975	93
2320 – Dry sand heaths with Calluna and Empetrum nigrum	150	70	47
8240* – Limestone pavements	110	80	73
TOTAL	117 560	79 875	68

* The four-digit numbers in the habitat type column are the habitat type codes as given in the Habitats Directive Asterisks denote priority habitats.

5.4 Distribution and protection of forests

According to the national forest inventory in 2008, Estonia has 2 197 400 ha[19] of forest (2009: 2 209 000 ha), which is 49% of Estonia's area (45 227 km²). Of this, 2 062 800 ha is forested, which is close to 46% of Estonia's area. By county, Pärnu County has the most forest land (11% of the national total). This is followed by Harju County (9.9%) and Viljandi County (8.2%). The smallest share of Estonian forest is in the smallest county – Hiiu County (2.3% of forest land) (figure 60).

Going by percentage of forested area, Hiiu County (with 69%), Ida-Viru County (58%) and Valga County (57%) are the top three counties. Tartu County has the lowest percentage of covered by forest (38%) (figure 62).

By majority tree species, Estonia's most common type of forest is pine forests (33.7% of forests). Birch forests are second (30.4%) and spruce comes third (17.1%)[19]. Forests in which other tree species are predominant occur much less frequently: majority grey alder (8.1%), aspen (5.7%), black alder (3.2%).

With regard to habitat type groups, the most common forest type in Estonia according to the national forest inventory of 2008 is mesotrophic forests (23.1% of forests). This is followed by mesoeutrophic forests (21.7%), herb-rich forests on gley soil (17.4%), drained peatland forests (14.4%) and nemoral forests (10.8%). Other groups are under 10% (figure 61).

In terms of percentage of forested area, Estonia is fifth in Europe after Finland, Sweden, Slovenia and Latvia.[20]

According to the forest inventory of 2008 assessment, the largest Habitats Directive categories of forest in Estonia were bog woodland (91D0*) – 85 500 ha. These are followed by western taiga (9010*) – 81 800 hectares, and Fennoscandian deciduous swamp woods (9080*) – 50 300 ha (table 24).

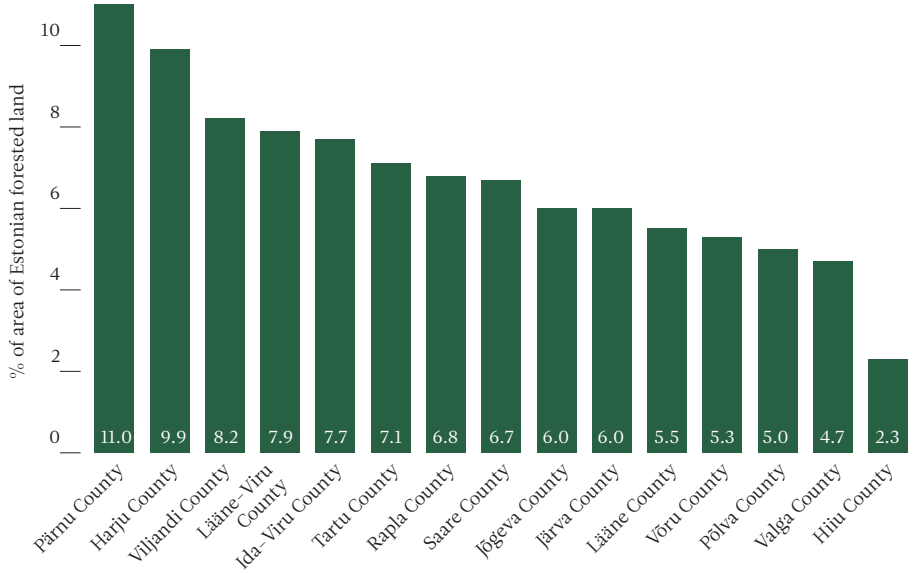


Figure 60. Distribution of Estonian forest between counties on the basis of the national forest inventory of 2008

[19] Aastaraamat Mets 2009. Keskkonnateabe Keskus. Tartu, 2010.
[20] Estonian Forestry 2011 – http://www.keskkonnainfo.ee/failid/forestry2011/EstonianForestry.swf

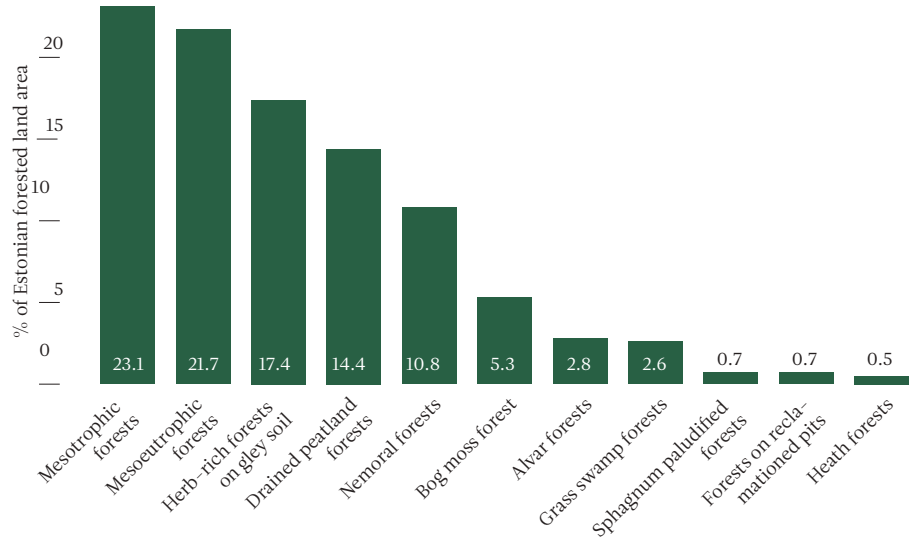


Figure 61. Occurrence of forest habitat types according to the national forest inventory of 2008

Table 24. Distribution of Habitats Directive forest habitats in Estonia according to the national forest inventory of 2008

Habitats Directive habitat type*	Area in Estonia (ha)
9010* – western taiga	81 800
9020* – Fennoscandian hemiboreal natural old broad-leaved deciduous forests	1 300
9050 – Fennoscandian herb-rich forests with Picea abies	8 600
9060 – Coniferous forests on, or connected to, glaciofluvial eskers	8 900
9070 – Fennoscandian wooded pastures	1 800
9080* – Fennoscandian deciduous swamp woods	50 300
9180* – Tilio-Acerion forests of slopes, screes and ravines	–
91D0* – Bog woodland	85 500
91E0 – Alluvial forests with Alnus glutinosa and Fraxinus excelsior	300
91F0 – Riparian mixed forests of Quercus robur, Ulmus laevis and Ulmus minor, Fraxinus excelsior or Fraxinus angustifolia, along the great rivers	200
2180 – wooded dunes	23 400

* The four-digit numbers in the habitat type column are the habitat type codes as given in the Habitats Directive Asterisks denote priority habitats. Types 9180*, 91E0 and 91F0 do not have an assessment or have a relatively large margin of error.

By age, (10-year increments) 41–50 and 51–60-year-old forests cover the largest area according to the national forest inventory (2008). Both account for 15% of all forests. Estonia has a total 5.8% forests that are older than a century, but not all of which are classified in terms of structure and appearance of the community as species-rich old natural forest where human-shy species lacking in managed forests may be found.

There are a total of approx. 406 000 ha of forest on protected natural objects (on the basis of forest layers of Estonia's base map) – which is about 18% of total forest area. Of the latter, a total of about 178 000 ha –

8% of all forests – is under strict protection – in strict nature reserves and conservation zones of protected areas and species protection sites (table 25). By county, the greatest percentage of forest is protected in Lääne County, where 26% of forests are protected. This is followed by Pärnu County with 24% and Lääne-Viru and Valga County with 23%. In general, we see that the share of protected forest is greater in counties with large protected areas (e.g. Matsalu in Lääne County, Lahemaa in Harju and Lääne-Viru County, and Otepää in Valga County). The share of protected forest is lowest in Põlva County –only 8% of forest.

Forest is most strictly protected in Hiiu County, which in terms of overall share of protected forest (19%) is only seventh. There 13% of forest is under strict protection. This is followed by Pärnu County (12%), Lääne County (11%) and Tartu County (10%). Also over the national average are Lääne and Ida-Viru County and Viljandi County (9% in each). Forest is strictly protected to the least extent in Põlva County, with 3% (figure 62).

Table 25. Distribution of protected forest among various protection regimes

Protection regime	Forest area (ha)
strict nature reserve	3100
conservation zone	175 000
limited management zone	182 600
limited-conservation area	44 500
TOTAL	406 200

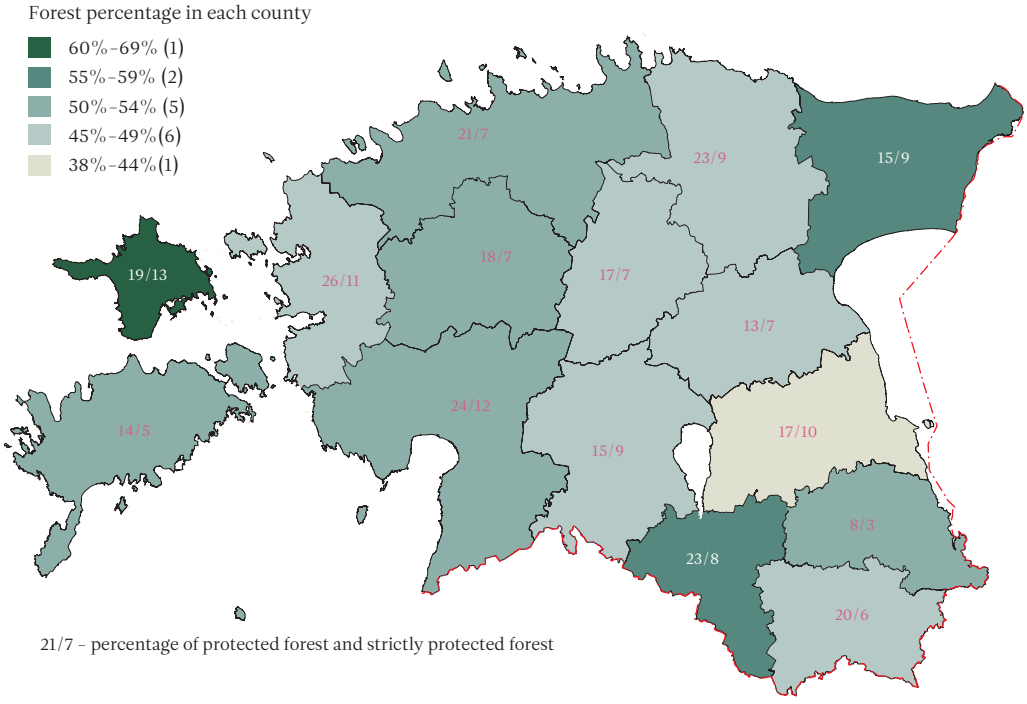


Figure 62. Forest percentage in each county and percentage of protected forest and strictly protected forest (strict nature reserve, protected area conservation zones and conservation zones of species protection sites)

5.5 Changes in habitat protection

On the basis of the habitat groups formed from CORINE LandCover database, the greatest percentage under protection have similarly to 2007 also in 2011 coastal habitats (69.2%), followed by mires (64.6%), natural grassland (58.9%) and inland waters (46.1%).

In the last four years, the percentage of the protected area of eight habitat groups has increased (mixed forests, coniferous forest, deciduous forest, mires, natural grassland, coastal habitats, sea). The protected area in seven habitat types has increased in absolute terms, but in the case of one of them (parks and gardens), the share of protected area has decreased (0.1%↓). The reason is that the total area of parks and gardens increased in Estonia between 2007–2011 to a greater share (4.9%↑) than the protected area in this group (2.94%↑) (table 26). As the increase in the area of parks and gardens is due largely to the establishment of new residential neighbourhoods in Tallinn, Tartu and Pärnu (which lack nature conservation value) it is logical that the percentage of the habitat area with respect to the total decreases.

According to Corine LandCover data, more than one-half of the area of coastal habitats, mires and natural grasslands is under protection.

The protected area in two habitat types (inland waters and coastal habitats) increased relative to the group but decreased in absolute terms. In the case of inland waters, the decrease is insignificant (0.15%↓) and may stem from refinements of map data in the interim period (calculations on bodies of water were made on the basis of Environmental Register data, not the CORINE database). With regard to coastal habitats, it is evident that since their total area has decreased 5.6%↓ compared to the CORINE LandCover 2000 database (see section 5.1, table 16) and the area under protection is down 4.92%↓, a situation has arisen where the percentage of the area under protection with respect to habitat group's total area in Estonia has increased even while the protected area has decreased in absolute terms by close to 5%↓ (table 26).

Table 26. Protection for habitat groups formed on the basis of CLC categories in Estonia

Habitat group	Protected in 2007 (km²)	% of the habitat group area in 2007	Protected in 2011 (km²)	% of the change in strictly protected area (2007–2011)	% of the habitat group area in 2011
Agricultural land	734	5.0	732.5	0.2↓	5.0
Mixed forests	1169	13.9	1205	3.08↑	14.4
Coniferous forests	1968	23.7	2005	1.88↑	25.0
Deciduous forests	659	15.2	688.5	4.48↑	15.4
Mires	1962	64.1	1977	0.76↑	64.6
Shrubland	481	18.1	466	3.12↓	15.9
Inland waters*	1016.5	45.9	1015	0.15↓	46.1
Parks and gardens	34	5.9	35	2.94↑	5.8
Natural grasslands	321	57.5	331	3.12↑	58.9
Coastal habitats	284.5	68.7	270.5	4.92↓	69.2
Artificial surfaces	16.5	4.1	15	9.09↓	4.0
Marine waters*	6584	26.3	6705	1.84↑	26.8
TOTAL	15229.5	21.5	15445.5		21.8

* The computations of bodies of water were not made on the basis of CORINE LandCover database, but rather the Environmental Register map layers created on the basis of the Estonian basic map. The analysis of inland waters includes Lake Peipsi and Võrtsjärv. Note: There was a typographical error in sea area in the book Estonian Nature Conservation in 2007 due to which the total area under protection in the table was also incorrectly given. This error has now been corrected in the above table.

In the period from 1 July 2007 to 1 July 2011, one new protected area and one new limited-conservation area were placed under protection. The boundaries and protection regime for 11 existing protected areas and three limited-conservation areas were updated (the revisions to the protected parks and stands have not been taken into consideration here). In the case of these limited-conservation areas, the conservation objective primarily pertains to riparian and marine habitats. The Gretagrundi limited-conservation area was set up in 2010 near Ruhnu island as a new limited-conservation area for the protection of sandbanks which are slightly covered by sea water all the time (1110)[21] and reefs (1170). With regard to new and revised protected areas, the objective has primarily been to protect coastal habitats, forest and meadows and, to a lesser extent, rocky slopes and mires. For instance, the Suurupi nature reserve, placed under protection in 2009, protects various coastal habitats, rock slopes and forests.

If we compare the changes in protection of the habitat groups formed on the basis of the CORINE land cover types with the habitat types of Annex I of the Habitats Directive specified as conservation objectives of protected areas and limited-conservation areas placed under protraction in 2007–2011, we see that both indicate an increase in protected forests, meadows and marine areas. A difference can be seen in coastal habitats, however. According to CORINE, protected coastal habitats have decreased, while a number of coastal habitats were named in conservation objectives of new and revised protected areas and limited-conservation areas. The reason may be the small size of coastal habitats, as all 25 ha land cover units are not reflected in the CORINE methodology, due to which coastal habitats may not have decreased as much as the CORINE land cover database suggests.

Strict protection for habitat groups can be computed in two ways.

According to the IUCN categories, categories Ia and Ib are defined as strict protection (see section 3.1). In Estonia, strict nature reserves and wilderness parts of conservation zones as well as strictly protected parts of species protection site conservation zones correspond to this. Domestically, also considered to be strict protection alongside strict nature reserves are all conservation zones, regardless of whether it is the wilderness or managed part. Thus according to domestic calculations, the area defined as strict protection encompasses a much greater area than that defined by IUCN.

Of the habitat groups formed on the basis of the CORINE LandCover database, according to the IUCN categories Estonia has the greatest amount of mires under protection (close to 31% of the habitat group area) followed by coastal habitats (9%) and coniferous forests (close to 5%) (table 27). According to the domestic calculations, 47% of mires are under protection, 24.7% of natural grasslands and close to 12.5% of coniferous forests. In the case of other habitat groups, the indicator is below 10% (table 28).

[21] Four-digit numbers after habitat type denote the EU Habitats Directive habitat type codes.

Table 27. Strict protection for habitat groups formed on the basis of CLC land cover categories in Estonia, on the basis of IUCN categories Ia and Ib

Habitat group	Under strict protection (IUCN Ia and Ib) 2007 (km^2)	% of the habitat group area 2007	Under strict protection (IUCN Ia and Ib) 2011 (km^2)	% of the change in strictly protected area (2007–2011)	% of the habitat group area 2011
Agricultural land	5	0.03	5.5	10.0↑	0.04
Mixed forests	195.5	2.32	202	3.32↑	2.41
Coniferous forests	395	4.75	399.5	1.14↑	4.98
Deciduous forests	118	2.72	125	5.93↑	2.80
Mires	942	30.76	943.5	0.16↑	30.84
Shrubland	39	1.47	36	7.69↓	1.23
Inland waters*	15	0.68	14.5	3.33↓	0.66
Parks and gardens	0.3	0.05	0.3	0	0.05
Natural grasslands	14	2.51	14	0	2.49
Coastal habitats	36	8.70	35	2.78↓	8.95
Artificial surfaces	1	0.25	0.4	60↓	0.11
Marine waters*	289.5	1.16	286	1.21↓	1.14
TOTAL	2050.3	2.9	2061.7		2.9

* The computations of bodies of water were not made on the basis of CORINE LandCover database, but rather the Environmental Register map layers created on the basis of the Estonian basic map. The analysis of inland waters includes Lake Peipsi and Võrtsjärv.

Table 28. Strict protection for habitat groups formed on the basis of CLC land cover categories in Estonia

Habitat group	Under strict protection (strict nature reserves and conservation zones) in 2011 (km^2)	% of habitat group area
Agricultural land	35	0.2
Mixed forests	488	5.8
Coniferous forests	997	12.4
Deciduous forests	318	7.1
Mires	1437	47
Shrubland	162	5.5
Inland waters*	43	2
Parks and gardens	2	0.3
Natural grasslands	139	24.7
Coastal habitats	96	24.6
Artificial surfaces	3	0.8
Marine waters*	430	1.7
TOTAL	4150	5.9

* The computations of bodies of water were not made on the basis of CORINE LandCover database, but rather the Environmental Register map layers created on the basis of the Estonian basic map. The analysis of inland waters includes Lake Peipsi and Võrtsjärv. The total also includes the area of the marine area.

Photographer: Arne Ader

Photo 35. Morning on the River Navesti.

5.6 Habitats listed in the annexes to the EU Habitats Directive

Estonia has 60 habitat types listed in Annex I to the Council directive 92/43/EEC (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 bodies, rocky slopes 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. The reporting must address each habitat type at the biogeographical region level. As Estonia is completely within the boreal biogeographical region, Estonia must fill in only one data form per habitat type.

One-half of Estonian habitat types are either in favourable status (42%) or unknown status (8%).

The report to be submitted to Europe consists of three parts: a general part on implementation of the directive, form for assessment of state of a species and a form for evaluating the state 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 direction of change. In addition, a list of the main threats and influences is presented along with information on the estimated or computed 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.

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

Estonia submitted such a report for the first time in 2007, and the next one must be submitted in 2013. The completion of the 2007 report was commissioned from habitat group specialists or existing inventories' data. At the same time, the Article 11 of the Habitats Directive requires member states to organize state monitoring so that it would feed information for completing reporting. The European Commission is looking for monitoring-based reports regarding the next reporting period – 2013.

The greatest part of Estonian habitats are in favourable status – 42% (25 habitat types), 35% (21) are in inadequate status, and 15% (9) have bad status. Information is deficient regarding 8% (5) of habitats so the assessment is unknown (figure 63).

The report states that the greatest share of habitats in favourable status are in the marine and coastal habitats category, while the situation is worst in the case of freshwater bodies of water and mires (table 29). Compared to other European Union countries, Estonia is far from the worst. In the boreal region, only 13% of habitat types are favourable, and the majority are inadequate (42%) or bad (40%).

The situation in the European Union as a whole cannot be lauded, either, where 37% are bad, 28% inadequate and only 17% are in favourable status; a significant share of the habitat type statuses are unknown (18%)[22].

Viewing only the priority habitat types listed in the Habitats Directive annex, whose distribution has significantly decreased and which EU has taken on a special responsibility to preserve, their situation is much worse.

Only 17% of priority habitats in Estonia are in favourable status (3) while 44% (8) are in inadequate and 28% (5) are bad. The status of two is unknown (figure 63). Compared to European Union countries, Estonia is not in worse shape. In the European Union, 14% of priority habitat types are favourable, while over 70% total are inadequate or bad.

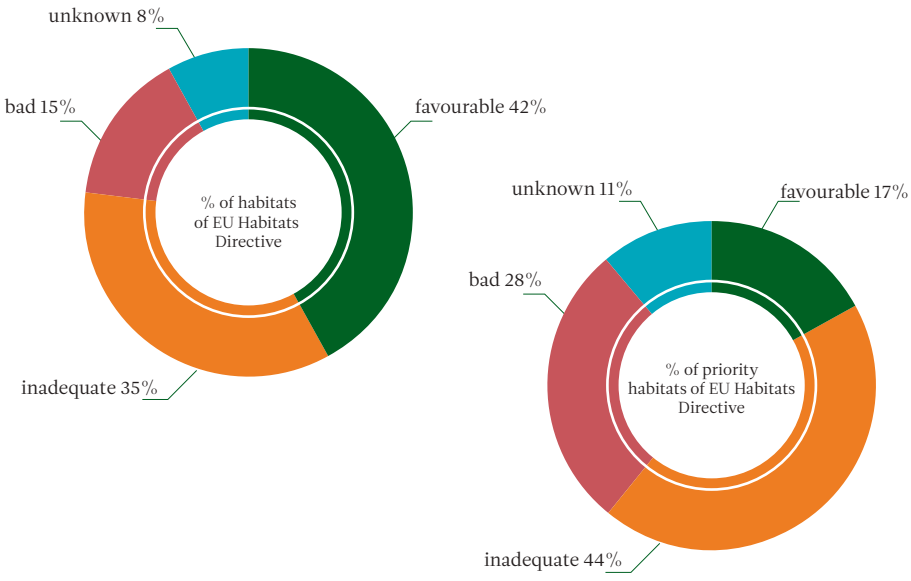


Figure 63. Assessment of the status in Estonia of habitats listed in the annex to the EU Habitats Directive, including priority habitats

[22] http://eea.eionet.europa.eu/Public/irc/eionet-circle/habitats-art17report/library?l=/papers_technical/overview_conservation_1/_EN_1.0_&a=d

Table 29. Assessment of the status in Estonia of habitats listed in the annex to the EU 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	unknown
2180	Wooded dunes	favourable
2190	Humid dune slacks	favourable
2320	Dry sand heaths with Calluna and Empetrum nigrum	unknown
2330	Inland dunes with open Corynephorus and agrostis grasslands	inadequate
3110	Oligotrophic waters of sandy plains	bad
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	bad
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp	bad
3150	Natural eutrophic lakes	inadequate
3160	Natural dystrophic lakes and ponds	unknown
3180*	Turloughs	bad
3260	Water courses	inadequate
4030	Dry heaths	unknown
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
6270*	Fennoscandian lowland species-rich dry to mesic grasslands	inadequate
6280*	Nordic alvar and precambrian calcareous flatrocks	inadequate
6410	Molinia meadows	favourable

Habitat type code *	Habitat type	Status assessment
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
7120	Degraded raised bogs still capable of natural regeneration	inadequate
7140	Transition mires and quaking bogs	inadequate
7150	Depressions on peat substrates of the Rhynchosporion	inadequate
7160	Fennoscandian mineral-rich springs and spring fens	inadequate
7210*	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	bad
7220*	Petrifying springs with tufa formation (Cratoneurion)	unknown
7230	Alkaline fens	bad
8210	Calcareous rocky slopes with chasmophytic vegetation	favourable
8220	Siliceous rocky slopes with chasmophytic vegetation	favourable
8240*	Limestone pavements	inadequate
8310	Caves	favourable
9010*	Western Taiga	bad
9020*	Fennoscandian hemiboreal natural old broad-leaved deciduous forests	bad
9050	Fennoscandian herb-rich forests with Picea abies	inadequate
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
91E0*	Alluvial forests with Alnus glutinosa and Fraxinus excelsior	inadequate
91F0	Riparian mixed forests of Quercus robur, Ulmus laevis and Ulmus minor, Fraxinus excelsior or Fraxinus angustifolia, along the great rivers	inadequate

* Asterisks denote priority habitats.

The threats to preservation of habitat status most frequently mentioned in member states' reports were forestry, agriculture and natural development of communities.

The results of the report on status of habitat types listed in Annex I to the Habitats Directive are not surprising as the annexes to the Directive include the habitat types threatened on European Union territory, and they were selected in the first place due to their rarity and endangered condition. For the next reporting period, it is presumed that thanks to the nature conservation measures applied in member states, at least some of the species will have improved status.

Photographer: Heiko Kruusi

Photo 36. Old-growth forest along the River Poruni.

5.7 Distribution of habitats on 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 the EU Habitats Directive are protected on total of 505 protected natural objects in Estonia. It should be noted that on 94 protected areas (296 763 ha) protection rules approved following the Protected Natural Objects Act (i.e. 1994-2004) are valid and on 107 protected areas (28 152 ha) an even older protection regime is in place, and thus 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 simply not yet been updated. Such areas include several extensive protected areas, such as Lahemaa, Matsalu and Vilsandi National Park, all of which have many habitat types of European importance.

The Western taiga habitat type is specified as a protection objective most often.

Western taiga areas (9010*)[23] are found on 185 of the 505 limited-conservation areas, protected areas and local level areas (976 362 ha or 63.5% of the area of protected natural objects) whose protection rules list Habitats Directive habitat types as a conservation objective. This is followed by deciduous swamp woods (9080*) on 167 areas and alkaline fens (7230) on 118 areas (figure 64).

The most infrequent types are Decalcified fixed dunes with Empetrum nigrum (2140*) and estuaries (1130). Both of these types are protected on just one protected natural object (figure 65). The only habitat type not specified on any of the 505 areas as a conservation objective is Dunes with *Salix repens ssp. argentea (Salicion arenariae)* (2170).

[23] Four-digit numbers after habitat type denote the EU Habitats Directive habitat type codes. Asterisks denote priority habitats.

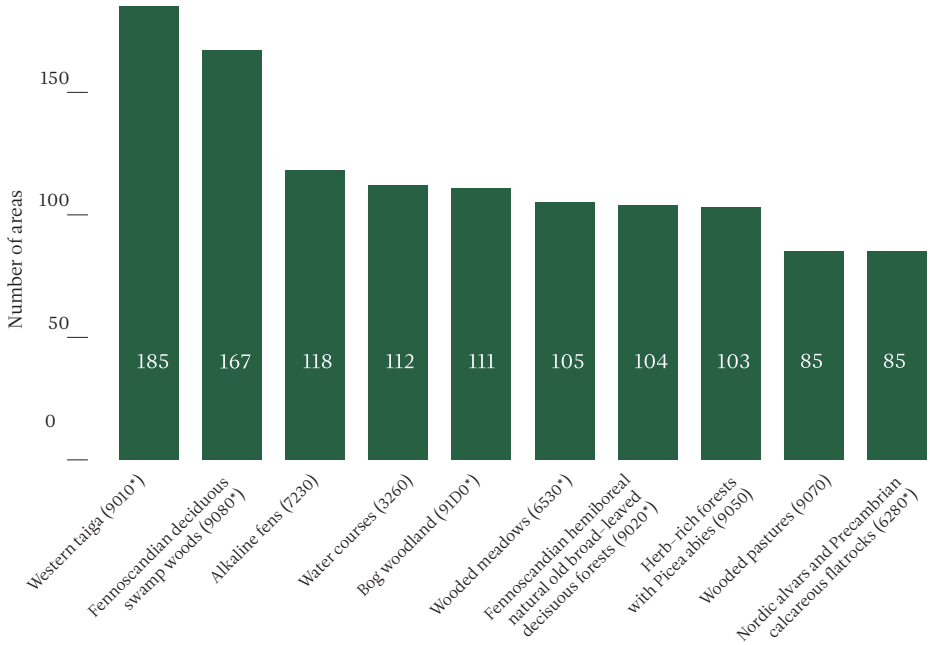


Figure 64. Habitat types listed in the Habitats Directive whose conservation and preservation is a conservation objective on the greatest number of Estonian protected areas and limited-conservation areas and one object protected at the municipal level (Estonia has a total of 60 of the habitat types listed in Annex I to the Habitats Directive)

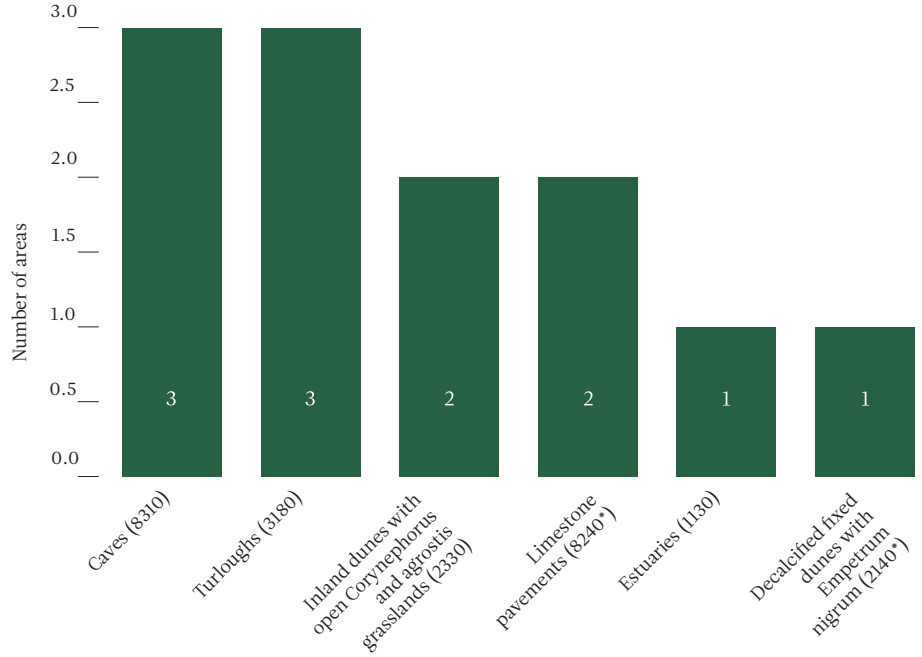


Figure 65. Habitat types listed in the Habitats Directive whose conservation and preservation is a conservation objective on the fewest number of Estonian protected areas and limited-conservation areas and one object protected at the municipal level (Estonia has a total of 60 of the habitat types listed in Annex I to the Habitats Directive)

Of the 505 areas, Luitemaa nature reserve has the greatest number of habitat types specified as conservation objective – 28, making up 47% of the Annex I habitat types found in Estonia. More than 20 habitat types are also protected in Vormsi protected landscape (24), Tagamõisa limited-conservation area (24) and Väinamere limited-conservation area (the part of it located in Lääne County and Saare County has 23 habitat types and the part in Hiiu County has 22 habitat types).

Of the habitat groups prepared on the basis of the CORINE LandCover categories (see section 5.1), marine waters (43.4%) makes up the greatest share on 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%), mires (12.8%) and mixed forests (7.8%) (figure 66).

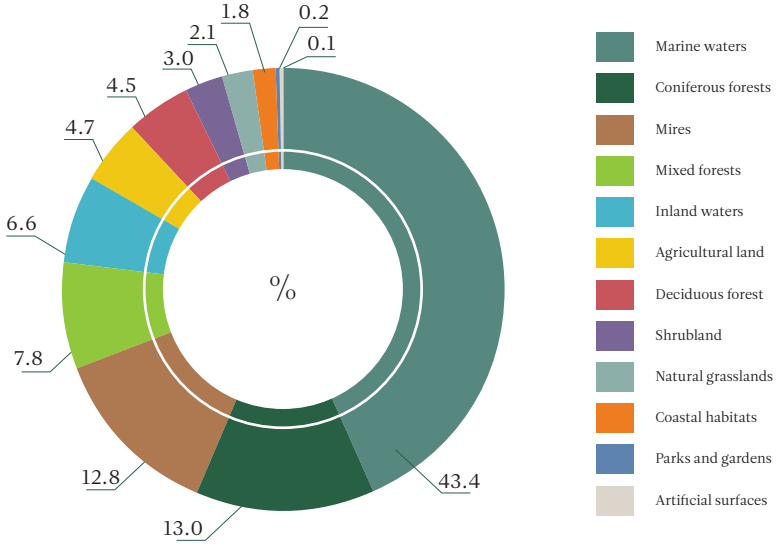


Figure 66. Distribution of habitat groups on protected natural objects

Photographer: Arne Ader

Photo 37. Evening sky at Austurgrunne. Vormsi.

Conclusion

Compared to 2007, conservation of Estonian nature has improved primarily in marine areas and inland waters, while the overall percentage of protected territory has seen little increase – just 0.2 percentage points, from 17.9% in 2007 to 18.1% in 2011. A total of 31.1% of the country's waters are protected; 22.7% of Estonia overall. Four-fifths of Estonia's coastline is under protection. Nearly one-fifth of the length of water courses are located within protected natural objects and these areas also contain 969 small lakes, which is over one-half of the area of such lakes. The total area of the Natura 2000 areas has grown, by about 250 km^2 in the case of SPAs and by approximately 730 km^2 in the case of SCIs. In terms of number, species protection sites have seen the greatest increase (289); these are generally small or medium sized areas devoted to protection of a species. The number of natural objects protected at the municipal level has also increased significantly – from two to 19. The last mentioned two facts clearly signal that nature conservation in Estonia has become more species centred and is more in the local community's sphere of interest. Perhaps the fact that the number of nature conservation violations has consistently decreased also attests to this. Yet Estonia still has 227 protected species (including 26 in category I) not mentioned in the protection rules of any area under protection.

In 2010, Estonia marked the 100th anniversary of the establishment of the country's first nature reserve, at a time when the world was fretfully assessing the accelerating destruction of biodiversity. Although Estonia's good environmental outlook (the fact that human settlement is concentrated in cities and population density is low) give the country a strong starting position to be one of the world's leaders in sustainable development, progress in nature conservation in the last four years falls short of the required level. There is growing and deepening view in Estonia that nature conservation is the special interest of a small circle. Yet now that the world has declared the years 2010-2020 the International Decade on Biodiversity, the goal of which is to halt the decrease in biodiversity and damage to ecosystems, Estonia, too, has succeeded in integrating global and EU strategic goals into the objectives of our draft national nature conservation development plan. Our goal is that by 2020 Estonian species and habitats will be in a favourable status and diversity of landscapes is ensured, and habitats will function as a single ecological network; that natural resources will suffice for the long term and their use takes place based on an ecosystemic approach; that are knowledgeable about nature and serve as good stewards, able to apply their knowledge in everyday life.

As the EU has set a general goal by 2020 of halting the decrease of biodiversity and damage, Estonia as a member state must also exert effort as by that conservation management plans must be prepared for more than 1 000 areas with a total area of more than 14 000 km^2 (about one-third of Estonia's area). To preserve biodiversity, it will be necessary to ensure that the network of protected natural objects is integral. Green network thematic plans in local governments are unspecified and there have not been adequate studies conducted as to whether and how this network will guarantee the spatial integrity of the protected natural objects. At the same time, species are becoming more threatened in nearly all species groups. The share of areas under strict protection is decreasing, forest stock is becoming younger and fragmented. Fens and transition mires – essential for biodiversity – are continuing to be destroyed. And thus, even though the protection of nearly all naturally valuable habitat groups has increased, there has not yet been sufficient purposeful integration with preservation of the quality of ecosystems and their key components. Estonia has the most habitat types of European importance in favourable status in the marine and coastal habitats category, but the situation is worst in the case of freshwater bodies of water and mires – specifically fens and transition mires. While offshore spatial planning is only in its infancy, land reform is nearly 100% complete and spatial planning of economic activity has been progressing at full speed for quite some time. Thus, for nature to be protected in the near future, Estonia will above all have to attain transparency of spatial planning and environmental impact assessment and to organize protection on the existing network of protected natural objects, focusing attention on preservation of the most biodiverse communities (e.g. bringing destruction of fens and transition mires via drainage systems to a halt).

DOCUMENTATION PAGE

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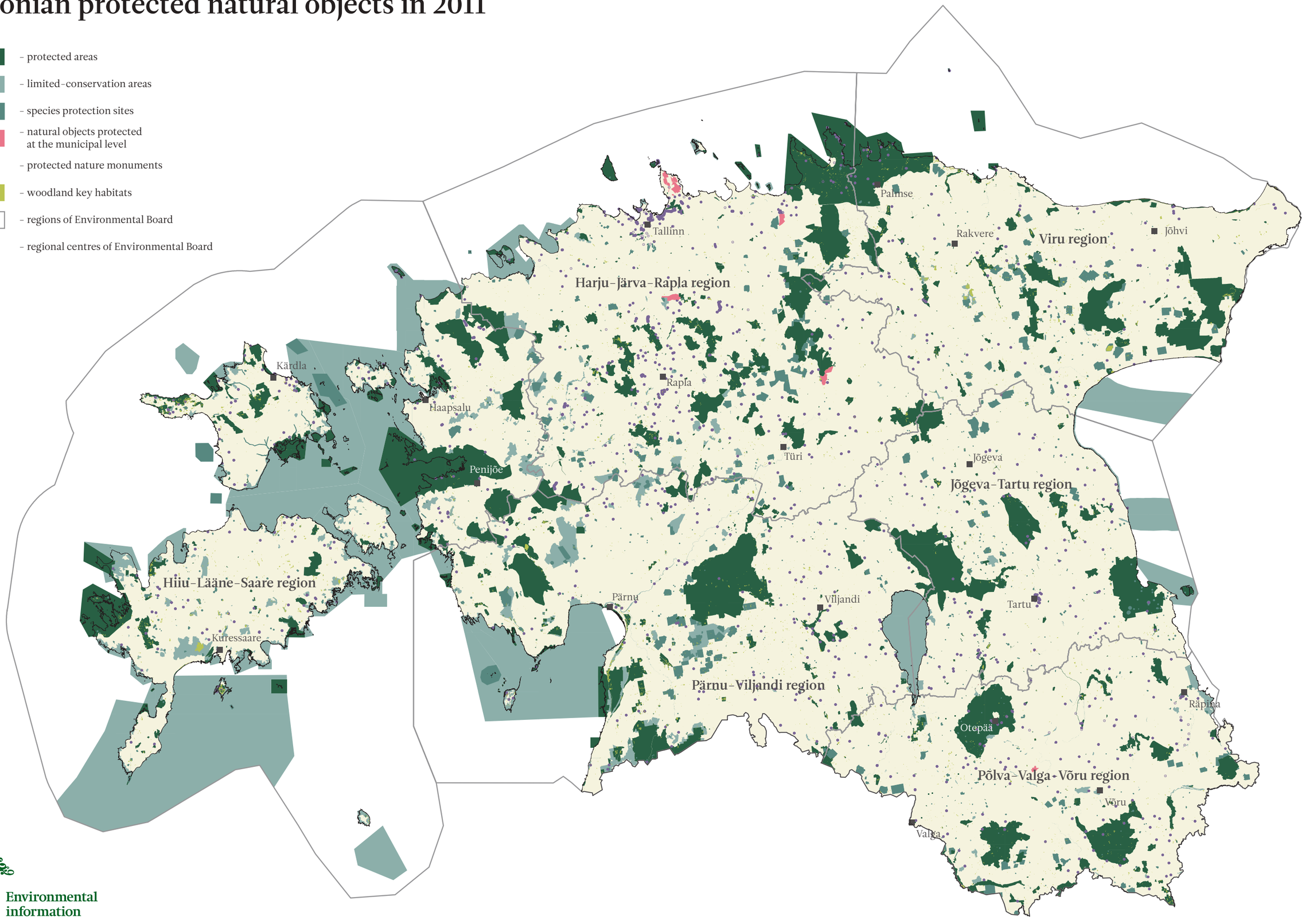
Estonian protected natural objects in 2011

- protected areas
- limited-conservation areas
- species protection sites
- natural objects protected at the municipal level
- protected nature monuments
- woodland key habitats
- regions of Environmental Board

Penijõe - regional centres of Environmental Board



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