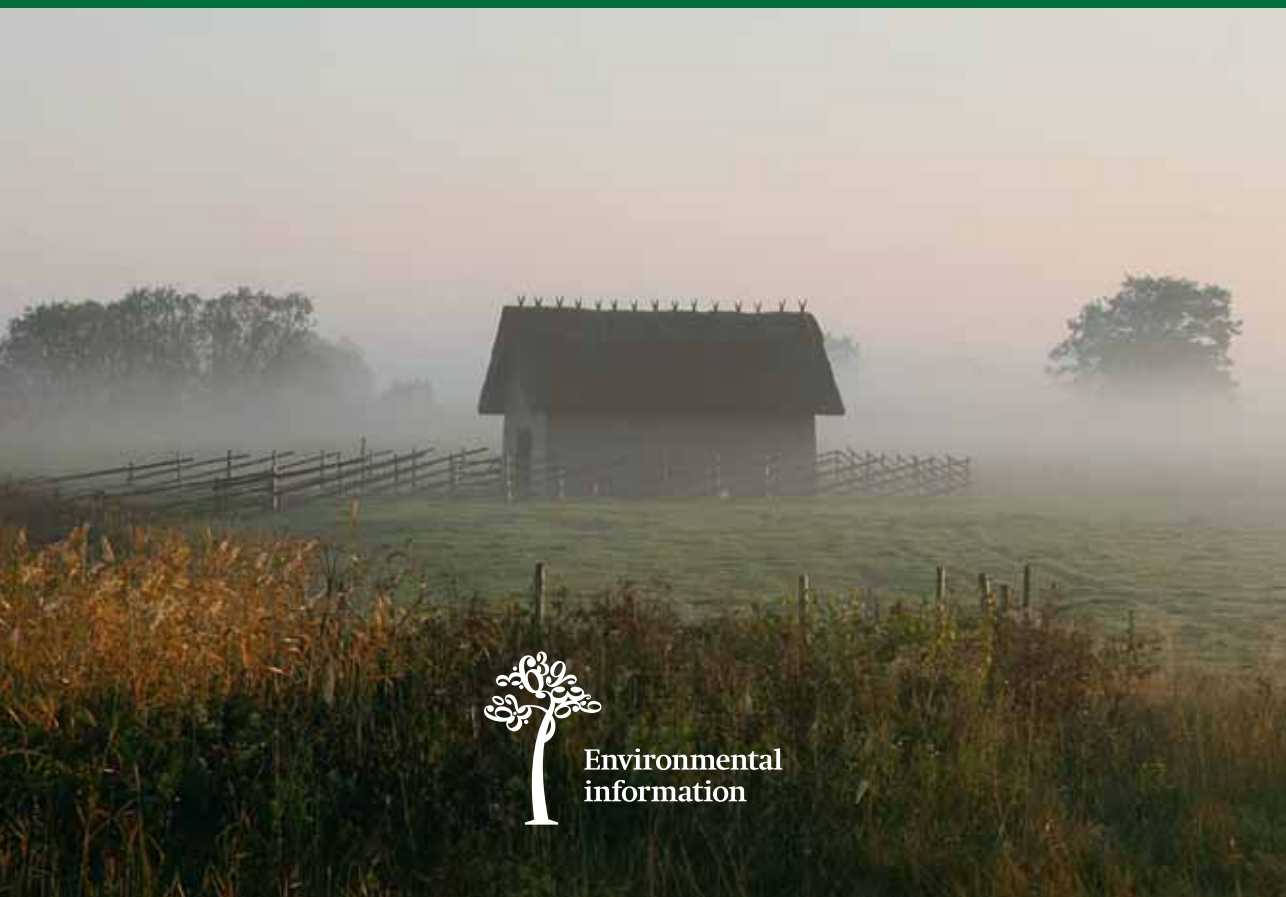
Diversity of Nature in Estonia

# Estonian Nature Conservation in 2007



Environmental information

Diversity of Nature in Estonia

# ESTONIAN NATURE CONSERVATION IN 2007

Estonian Environment Information Centre
Tallinn 2008

**Published as 3rd book within series**
**"Diversity of Nature in Estonia"**

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**Cover photo:** Floodplain meadow at Suitsu. Matsalu National Park. Author: Mati Kose.

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**Publisher:**

Keskkonnainfo

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**Printed by:** Tallinna Raamatutrükikoja OÜ, Laki 26, 12915 Tallinn, Estonia, www.trt.ee

Printed on 100% recycled paper Cyclus Offset with environmentally friendly colours



ISSN 1406-2399
ISBN 978-9985-881-54-5 (hard copy)
ISBN 978-9985-881-56-9 (online)

# Foreword

Dear reader,

The book you are holding is an overview of Estonian nature conservation management in 2007 – 16 years after the restoration of independence and three years after accession to the European Union. It is in these most recent years of rapid economic development that nature conservation has become one of the top topics of discussion in Estonian society. In complying with the European Union's legal acts in the field of nature conservation, Estonia has selected areas suitable for the Natura 2000 network and established state protection regimes for these areas. Pressure on the natural environment has increased as a result of accelerated economic development and urban sprawl due to Estonia's economic success in the last decade. At the same time, the state of the environment and conservation have become greater priorities in Estonia. Local people have become vocal opponents of development that harms local habitats and living environment and environmental impact assessments now focus more on how natural values might be affected.

The purpose of this book is to provide a compact overview of Estonian nature conservation in its current state. Following accession to international conventions, membership of the European Union and updates to legal acts on nature conservation, many innovations have been introduced in Estonian nature conservation, and a better understanding of the details would benefit every one of us. With this purpose in mind, this book explains the essence of different levels of nature conservation sites, supplemented with statistical and illustrative material. Intended to be a concise guide for those who need a guide to the official landscape, this book will hopefully also be a useful reference book for nature lovers everywhere.

**Happy reading!**

# Contents

Author: Toomas Tuul

Wooden path at Viru bog. Lahemaa National Park.

# Introduction

In recent decades, Estonia has lacked an in-depth factbook on the state of Estonian nature conservation that would make it easier to get answers about the what, why and how of conservation as well as figures. Previously smaller amounts of data were available in various publications: in parts of environmental overviews or statistical publications as well as over the Internet.

The first part of the book views the history of Estonian nature conservation – from the middle of the 19th century up until the present-day. The second part takes a brief look at the structure of Estonia's system of nature conservation features as well as the official structure of agencies related to nature conservation. The third, most extensive part focuses on protected areas in general. The topic is divided into a number of subsections. An overview is provided of the international dimension of nature conservation and the treaties and international obligations to which Estonia has acceded and is bound. In addition, it identified connections between the international treaties and related protected sites with the sites in Estonia that are designated at national level. A large part of the chapter is devoted to the various areas under conservation in Estonia, the different categories of such sites and the protection regime.

The section also deals with conservation management and data related to ownership. The fourth part of the publication examines protected species from both the aspect of international treaties and obligations and domestic law. The fifth part focuses on different habitats and habitat conservation.

Each different part is structured as similarly as possible to the others. First of all, a general description of the type of protected site is provided, with reference to the legal basis. This is followed by various figures (in the form of tables, graphs and maps) which either describe the number of such sites in Estonia or analyze them based on a separate indicator (property ownership). If necessary, additional notes are provided for a better understanding of the information. The information serves to characterize Estonia as a whole as well as on the level of the counties and municipalities.

The data used in the publication are generally given as of 1 July 2007. Data from another date, and information which should be credited differently upon use, bears an additional corresponding marking.

The editors would like to acknowledge all who provided suggestions, advice and additional data assisting the production of this work.

Author: Arne Ader

Great Ringed Plover at island Vaika. Vilsandi National Park.

# 1. History of nature conservation in Estonia

## 1.1. Tsarist era

At the end of the 19th century, before the establishment of the Republic of Estonia, nature conservation was primarily the preserve of civic initiative on the part of individuals and societies. In 1853, the Estonian Naturalist Society was founded, dedicated to the study of nature and furthering of conservation. Protection of natural monuments – erratic boulders, old trees – and symbolic species of fauna such as eagles became the number one priority. Back then, nature conservation was clearly aimed at preserving sites worthy of protection as they were, restricting all forms of intervention by humans, even necessary intervention. Above all, nature was treated as usable assets. Land owners had the best opportunity for conserving nature, and provisions pertaining to preservation of trees and boulders were even added to rental contracts.

To ensure nesting possibilities for birds and prevent their eggs from being collected, captain Artur Toom, the head of the lighthouse on the island of Vilsandi leased the Vaika islands from the Kihelkonna church manor. In 1910, the Riga Naturalist Society took over as lessee of the Vaika islands, but Toom retained actual powers of supervision. The Vaika islands became the first area under conservation in the Baltic States. Known as the Vaika Islands Bird Sanctuary, this was the birthplace of the first nature management activities – in the form of establishing nesting opportunities for birds. As people's knowledge of nature grew and the economy became stronger, more attention was turned toward practical conservation of natural areas. In 1913, the Friends of Nature Society in Saaremaa was founded, the first of its kind. This period also represents the laying of the groundwork for the Friends of Nature Society in Tartu and interest grew in describing the components of Estonia's natural environment and evaluation of its values.

## 1.2. Republic of Estonia (1918–1940)

Immediately after the War of independence, scholars at the University of Tartu started a discussion for organizing nature conservation. In 1920, the nascent Tartu Naturalists Society's nature conservation section contacted the Ministries of Education and Agriculture, requesting its assistance for preserving natural monuments. Both of the ministries promised assistance. In the years that followed, the Tartu Naturalists Society's nature conservation section gathered a great number of data on natural monuments and made proposals for placing them under conservation. In 1924, the first protected areas (e.g. the Järvselja primeval forest, Harilaid, Kastre-Peravalla reserve) in the independent Republic of Estonia were established. Shortly thereafter the necessity of a Nature Conservation Act sank in, and in 1929, the first draft law was prepared by the nature conservation section (Andres Mathiesen, Artur Luha, Edmund Spohr, Gustav Vilbaste etc).

The draft law, which made the rounds in a number of ministries, did not reach the level of cabinet session, however, as the official state policy did not allow the introduction of bills that would lead to excessive additional expenditures. It was a time of economic crisis, and nature was approached above all from a preservationist aspect, which in economic terms resulted in only expenditures for the state.

Following the economic crisis, the topic of nature conservation once again was raised and Nature Conservation Act was drafted again by professor Lippmaa. The legal act was passed this time, and on 17 December 1935, the first Estonian nature conservation act entered into force. According to that legal act, nature conservation was the preservation and protection of formations and communities that are a part of nature. Above all, the foundations of conservation lay in restrictions on any activity that changed the status quo. There was an attempt to preserve natural objects as they were, even dispensing with the requirement of spontaneous change through natural processes and the need for management and stewardship activities for preserving value. Thus nature conservation in this period primarily followed the preservationist model of environmentalism.

Author: Arne Ader

Limestone klint at Ontika protected landscape area.

In connection with the entry into force of the new Constitution and resulting changes in the executive branch of the Republic of Estonia, the 1935 Nature Conservation Act was replaced with the new Nature Conservation Act in 1938. The new act covered the preservation and maintenance of public parks, gardens and squares and home beautification, but nothing fundamental changed in nature conservation. However, it marked a further step toward defining natural values – from sole assessment of primeval natural assets in the direction of semi-natural objects transformed and shaped through the hand of man. At the same time, however, the primary goal of nature reserves during this period was to serve as a basis for research. For this reason, the focus lay on areas with a small surface that had diverse research potential and were better in economic health.

By 1941, when World War II reached Estonian shores, the nature conservation register established in 1936 contained 549 entries for sites under nature conservation: of these, 238 were erratic boulders, 236 trees, 47 areas, 26 species of flora and 2 springs.

Author: Mati Kose

Black Stork.

## 1.3. Estonian SSR

Due to World War II, the state nature protection system ceased to function in Estonia. Nature conservation activity regained momentum in the 1950s after Estonia was incorporated into the Soviet Union. The nature conservation section of the Naturalist Society resumed activity in 1951, but proposals as to legitimizing nature conservation and establishing protected areas fell on deaf ears. In 1955, the Commission for Nature Conservation was created at the Academy of Sciences, and the Commission was headed by naturalists who had graduated from university before the war – Eerik Kumari and Endel Varep. Indeed, continuity with general principles recognized before the war had a large role in the renaissance of nature conservation in post-war Estonia. In 1957, the Nature Conservation Act of the Estonian SSR was adopted as a result of the groundwork laid by the Commission for Nature Conservation. The legal act was the first of its type in the Soviet Union. Immediately, the first, ostensibly new protected areas were created, which in effect covered a majority of the ones established during the Republican period. The legal act enshrined in law protection for species and nature monuments, yet still from primarily a preservationist approach.

The first protected area based on international principles – Lahemaa National Park, the first national park in the entire Soviet Union – was established in 1971. In 1981, Lahemaa became the first Estonian protected area to receive a development plan, the predecessor of the modern management plan. This represented a huge step forward from developing nature conservation activities solely from a preservationist tack toward today's more renewable-restorative direction. But the approach taken with regard to nature conservation for flora and fauna in this period can be seen as more a form of renewing natural resources in order to create opportunities for developing hunting, fishing, forestry, et cetera.

In addition to the national protected areas, reserves of local importance were also created in the Estonian SSR. A characteristic feature of the Soviet period was the lack of a legal basis for nature conservation. Nature conservation was governed by executive acts separately for each protected area.

As protected units were established in the Soviet period mainly in accordance with acute need on an ad hoc basis, by the time Estonia restored its independence, a fairly diverse yet uneven network of protected areas had taken shape, and its preservation was not ensured so much by state measures or the state legal and administrative system as by circumstances independent of nature conservation, such as the Soviet border guard and the socialist economic system, with the resettlement of people from certain areas due to nationalization and forced collectivization of agriculture.

Author: Arne Ader

Protected oak tree – Viiralti tamm.

## 1.4. Republic of Estonia (1991–present)

One of the key nature conservation decisions in newly independent Estonia was to preserve the continuity of protected areas: areas that had been granted protection in the Soviet era remained under conservation in the Republic of Estonia, regardless of land ownership. The Protection of Natural objects Act enacted in 1994 served as the foundation of this principle. Nature conservation was not limited only to land traditionally owned by the state. However, as the natural assets and their condition in the areas under conservation had not been exhaustively inventoried, one of the most important basic activities of the new independence era was to describe the natural assets collectively and defining the current state of the assets. The primary impetus was undoubtedly the need to obtain an overview of what had been preserved in border zones and elsewhere on military sites. These were generally no-go areas for rank-and-file naturalists in the Soviet era.

Thus, in the closing decade of the last century, Estonia's finest experts inventoried the natural objects that were part of military bases in the Alam-Pedja area, the Pakri islands and Põhja-Kõrvemaa, as well as to conduct several habitat-type-based inventories (see chapter 5). Thorough inventories were also conducted in areas already under conservation, primarily in the course of drafting management plans. Of the latter, the management plans for Matsalu nature reserve (now a national park), Alam-Pedja nature reserve and Soomaa national park deserve separate mention. As the first of their kind in Estonia, they are already the basis in practice for the activities necessary for conservation of the natural assets in these areas.

A key finding of the inventories of "heritage" (semi-natural) landscapes was that the semi-natural biotic communities were in danger of being destroyed. Extensive management – grazing and mowing – of these areas, which have the highest biodiversity in Estonia per square metre, had, for the most part, ceased.

Author: Toomas Tuul

Scottish highland cows at floodplain. Matsalu National Park.

This provided an impetus for extensive discussions, initially among conservationists and later among environmentalists in general. It was argued that nature conservation cannot be viewed as a separate field of activity, but instead, that activities necessary for protection and preservation of natural assets must be integrated with all other facets of life in a state, and done in the most sustainable and balanced manner. In 2001, after long preparations, a system of nature conservation subsidies for preserving and restoring semi-natural biotic communities was launched. The administrative authorities of each protected area and environmental authorities in each county entered into agreements with land owners for maintaining coastal, floodplain and wooded meadows and grasslands on mineral soils, as well as wooded pastures and alvars. Thus Estonia had for the first time initiated an economic instrument for activities necessary for preserving natural assets outside of the direct state administrative system (including areas under conservation); there was direct communication with land owners. An amendment to the Protected Natural Objects Act established a new type of subsidy – the nature conservation subsidy, which gave the abovementioned economic instrument a legal basis. A special feature of the latter is that, whereas subsidies are generally paid (and must be paid) primarily to assist people, the nature conservation subsidy, as the name says, above all supports nature in all its diversity – with the purpose of preserving nature through practical human activities.

In addition, the implementation of the nature conservation subsidy system enhanced the possibilities for managing conservation of valuable biota and species through the European Union environmental cooperation programme, Life-Nature. Estonia joined the programme in 2000 and has, among other uses, employed it to organize protection for natural assets in Karula and Matsalu national parks, Silma natural conservation area, Häädemeeste, Kõpu peninsula;

Author: Lauri Klein

EU directive species – Woodland Brown on Saaremaa island.

to restore European mink and natterjack toad populations, and to purchase herd animals and mowing equipment.

From the mid-1990s, nature conservation in Estonia has been characterized by assumption of the obligations of EU nature conservation. Nature conservation in the European Union is based first and foremost on the bird and habitat directives, on the basis of which the network of so-called Natura 2000 areas has now been established in Estonia. This was also accompanied by the adaptation of the corresponding legal framework. Assessment of environmental impacts resulted in the obligation to assess impacts on plants and animals (more specifically on the Natura 2000 conservation sites), not only humans and human environments. At the same time a similar vision of environmental impact assessment spread to the general planning system and the comprehensive plans and detailed plans of local governments began undergoing strategic environmental impact assessment, including, in part, assessment of impacts on flora and fauna. Another development of the post-EU-accession period is that thematic plans for ecological networks and valuable landscapes were began to be drafted on the county level, which in terms of their legal status, unfortunately remain documents with solely an advisory nature. But some local governments have dealt with specifying their ecological network in the course of compiling their detailed plan.

The early days of the new independence era was also a time when the keeping of the nature conservation register resumed. For this purpose, data had to be catalogued as well as digitized. The Estonian Nature Information System (EELIS)[1] was initiated for this purpose. This information system supplies the current Environmental Register with data on protected sites and is the source of the statistical extracts presented in the following chapters of this publication.

[1]www.eelis.ee

Author: Toomas Tuul

Early morning mist on wooden path at Kakerdaja bog. Põhja-Kõrvemaa protected landscape area.

## 2. The current situation in 2007

The primary basic piece of legislation governing nature conservation in Estonia is the Nature Conservation Act. As of 2007, six different spatially definable types of legally protected sites are stipulated on the basis of this Act (see table 1).

In addition to these, woodland key habitats established on the basis of the Forest Act can also be considered to directly govern protection of flora and fauna. Types of objects arising from legal acts protecting animate nature indirectly through restrictions with a different purpose (water conservation, shoreline and riverbank protection) are listed in table 2. The following chapters deal only with the types of objects specified in table 1.

**Table 1.** Types of protected sites in Estonia

| Type of protected site | Legal act |
|---|---|
| Protected areas:<br>– National park<br>– Nature reserve<br>– Protected landscape area | Nature Conservation Act |
| Limited-conservation area | Nature conservation Act |
| Species protection site | Nature Conservation Act |
| Protected nature monument | Nature Conservation Act |
| Natural object protected at the municipal level | Nature Conservation Act |
| Protected species | Nature Conservation Act |
| Woodland key habitat | Forest Act |

**Table 2.** Types of natural objects under indirect protection in Estonia

| Type of object | Legal act |
|---|---|
| Protected forest | Forest Act |
| Protection forest | Forest Act |
| Heritage conservation area | Heritage Conservation Act |
| Monument | Heritage Conservation Act |
| Environmental monitoring station or area | Environmental Monitoring Act |
| Shore or bank limited management zone | Nature Conservation Act |
| Shore or bank no-construction zone | Nature Conservation Act |
| Shore or bank water protection zone | Water Act |
| Sanitary protection zone of water intake | Water Act |
| Shore path | Water Act |
| Nitrate sensitive area | Water Act |

As of 2007, Estonia is party to around ten international treaties that directly or indirectly deal with protection of flora and fauna. Through membership in European Environment Agency and this agency's technical information network, each year a number of data on the state level are forwarded to the global nature conservation database. The Estonian Nature Information System (EELIS) serves as an integrated part of the national environmental register. The groundwork has been laid for the Clearing-House Mechanism of Convention on Biological Diversity[1] the counterpart of which on the state level – BTV[2] (biodiversity information network) has an open Web interface where every interested person can send their observations for verification.

Today every protected area, limited-conservation area, species protection site and nature monument has both an administrative authority – the county environmental authority – and a conservation management authority – the State Nature Conservation Centre (see figure 1). For natural monuments protected at the municipal level, the administrative authority is either the local government that placed the natural monument under protection or the municipal authority.

The administrative authority of the protected area shall participate in discussions of plans with an effect on the protected natural object as well as in environmental impact assessments, shall issue authorizations for use and impose terms and conditions for use of the environment. The conservation management authority shall organize activities arising from the conservation regimes and nature conservation programme, nature studies and introduction of the site, and shall monitor compliance with the requirements of the conservation rules on the protected natural object. If the administration of the protected natural objects is county-based, meaning that the administrative authority's operating district coincides with the county borders (each county has its own environmental authority), conservation management shall proceed from the location of the protected natural objects. The State Nature Conservation Centre has eight regions (Harju-Rapla, Järva-Lääne-Viru, Ida-Viru, Jõgeva-Tartu, Põlva-Valga-Võru, Pärnu-Viljandi, Hiiu-Lääne, Saare). Specification of their operating areas is based on the principle that each protected natural object should lie within the boundaries of only one region (see figure 7).

[1] Clearing-house mechanism of Convention on Biological Diversity (CBD-CHM), basing on article 17 of convention.
[2] http://btv.eelis.ee/

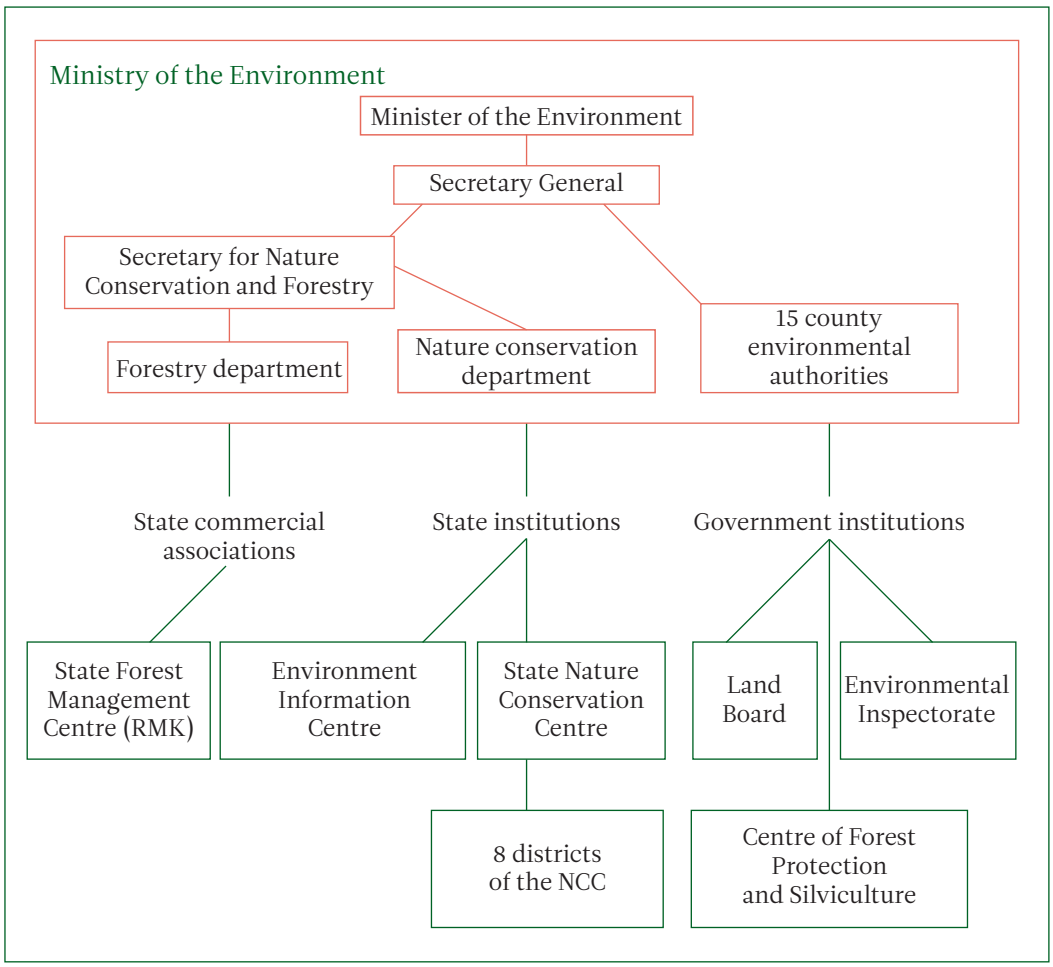



**Figure 1.** Simplified administrative structure for organizing nature conservation.

Of the Ministry of the Environment's structural units, the nature conservation department organizes nature conservation policy, and the forest department develops and implements forest policy (see figure 1). The forest department is also charged with organizing implementation of principles of preserving the diversity of the biota under forest protection. Of the agencies in the area of administration, the State Forest Management Centre (RMK) deals with managing state forests and has developed nature tourism in the form of establishing hiking trails (the latter on areas under nature conservation).

The Estonian Environment Information Centre gathers, analyzes, processes and acts as a clearinghouse for environmental information, including nature conservation related information, and keeps the Environmental Register. The Environmental Register public service allows anyone to view the features entered into the register[1]. The Environmental Inspectorate performs supervision in the field of the environment, including nature conservation. The Land Board administers the land cadastre and the related database of restrictions. The Centre of Forest Protection and Silviculture keeps the state forest register, among its other fields of activity.

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

Author: Mati Kose

Cattle and swans at Haeska. Matsalu National Park.

# 3. Protected natural objects and natural objects with conservation value

## 3.1. Natural objects protected on the basis of international agreement

The most stringent international obligation that Estonia has adopted for protection of its natural assets is compliance with European Union directives; through membership of the EU the directives must be integrated into the national legislation. There are two such directives and they are discussed in greater detail in chapters 3.1.1 and 4.1.3. The next most stringent are the conventions. The primary conventions on nature conservation to which Estonia has acceded are the following:

- The Ramsar Convention on international wetlands, especially bird habitats (see chapter 3.1.2);
- the Bern Convention on protection of European flora and fauna and their habitats (see chapter 3.1.3 and chapter 4.1.1);
- the Convention on the Protection of the Marine Environment of the Baltic Sea Area – HELCOM (see chapter 3.1.4)
- the Washington Convention on International Trade in Endangered Species – CITES;
- the Convention on Biological Diversity (the Rio de Janeiro Convention) and the Cartagena Protocol on Biosafety.

As the last two items in the above list do not directly define protected areas, they are not treated below.

Besides conventions, other areas in Estonia that can be classed as international spatially definable types of areas meant explicitly for nature conservation include the biosphere reserves on the list of the UNESCO programme "Man and the Biosphere" (3.1.5), and the areas that have received the so-called European Diploma awarded by the Council of Europe (3.1.6). Chapters 3.1.7 and 4.1.2 describe the systems for categorizing protected and endangered species developed by the IUCN and the conformity of Estonian areas and species to them. Chapter 3.1.8 lists the basic principles for the Pan-European ecological network and the green network specified as thematic plans on the Estonian national and county levels.

### 3.1.1. European Union directives and the Natura 2000 network

Upon accession to the European Union, the Republic of Estonia assumed the obligation to comply with EU directives and to bring national legal acts into conformity with them. The EU directives that deal directly with nature conservation in the classic sense are Council Directive 79/409/EC on the Conservation of Wild Birds – the bird directive – and Council Directive 92/43/EC on Conservation of Natural Habitats and of Wild Fauna and Flora – the habitat directive.

Article 4 of the bird directive sets forth the obligation of EU member states to establish areas for the protection of bird species listed in Annex I to the directive as well as for birds regularly migrating through the area, encompassing their nesting, moulting and wintering areas as well as migratory stopovers. These areas are termed Special Protection Areas (SPAs). There are a total of 194 bird species in Annex I to the bird directive, of which 136 occur in Estonia. Among them are all of our rare bird species such as the eagles, black stork, white-backed woodpecker, but the list also contains species that are fairly common but rare elsewhere in Europe such as the white stork. A total of 66 SPAs have been established in Estonia in the framework of compliance with the bird directive, with a total area of 1 234 200 ha. SPAs cover 13% of the land territory of Estonia. A total of 4 617 SPAs have been established in the European Union with a total area of 38 654 697 ha and SPAs cover 9.9% of the land territory of the EU.

Article 3 of the bird directive sets forth the obligation of EU member states to establish a coherent network of protected areas which would, in addition to the above SPAs, also include the natural habitat types listed in Annex I to the habitat directive and the areas containing the habitats for the species listed in Annex II. These areas are termed Special Areas of Conservation (SACs, formerly "Sites of Community Importance"). This coherent ecological network is, according to the habitat directive, to be termed the Natura 2000 network. Annex I to the habitat directive includes a total of 253 habitat types, 60 of which occur in Estonia. They include marine and coastal habitats, rivers, lakes, semi-natural grasslands (including wooded meadows, coastal meadows, alvars and alluvial meadows), forest and mire habitats and such features as cliffs and outcrops.

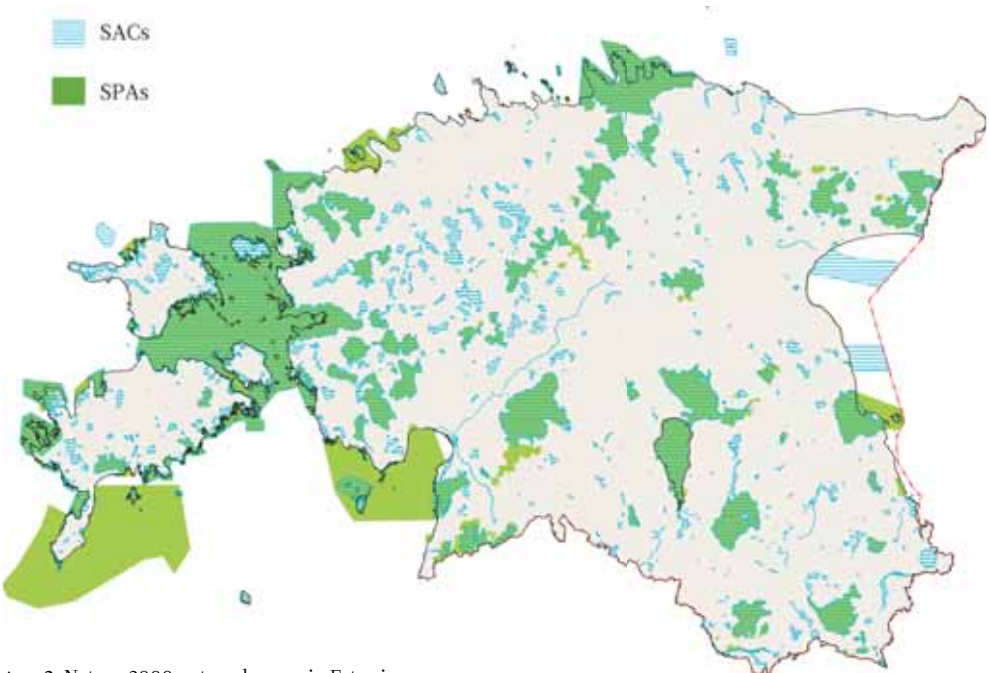



**Figure 2.** Natura 2000 network areas in Estonia.

Annex II of the habitat directive lists a total of 276 species of fauna and 521 species of flora. SACs have been established in Estonia for 22 species of flora and 30 species of fauna. As a specific exception, Estonia currently does not have an obligation to establish SACs for species in habitats that are still common in Estonia but which are already rare elsewhere in Europe, such as the brown bear, wolf, lynx and beaver. Estonia has selected SACs to protect the habitats of 15 species of vascular plants (such as the pasqueflower, lady's slipper orchid, and Rhinanthus osiliensis), 7 species of mosses and lichens (such as the slender green feathermoss), 16 invertebrates (including dragonflies, butterflies, beetles, small snails, molluscs), 7 species of fish (such as the European bullhead, weather loach, salmon), 1 amphibian (great crested newt) and 6 mammals (such as the European mink, seals, flying squirrel). There are a total of 509 SACs with a total area of 1 055 476 ha. SACs cover 15% of the land territory of Estonia.

The European Union has specified a total of 20 862 Natura 2000 areas – spanning a total area of 54 581 542 ha and thus 12.2% of the EU's land territory is covered by SACs.

The Natura 2000 network covers 16% of the land territory of Estonia. As most of the bird species coincides with the SACs either in part or in full, we have a total 1 421 028 ha of Natura 2000 area, of which about one-half is marine and the other half is land (figure 2).

Upon accession to the European Union, when the Natura 2000 areas had only just been established, 67% of Natura areas coincided with the protected areas existing at that time. In most of the counties, the majority of the Natura areas in terms of total area were part of existing protected areas. Only on the island of Saaremaa and Pärnu County did more Natura 2000 area territory lie outside of the existing protected areas.

In Estonia, the Natura 2000 areas are protected on the basis of the Nature Conservation Act and according to the Act, our Natura 2000 areas are either traditional protected areas – national parks, nature reserves, protected landscapes – or limited-conservation areas, which have a less strict management system, and species protection sites, intended for habitat protection (figure 3) (see the chapter on 3.2 "National objects").

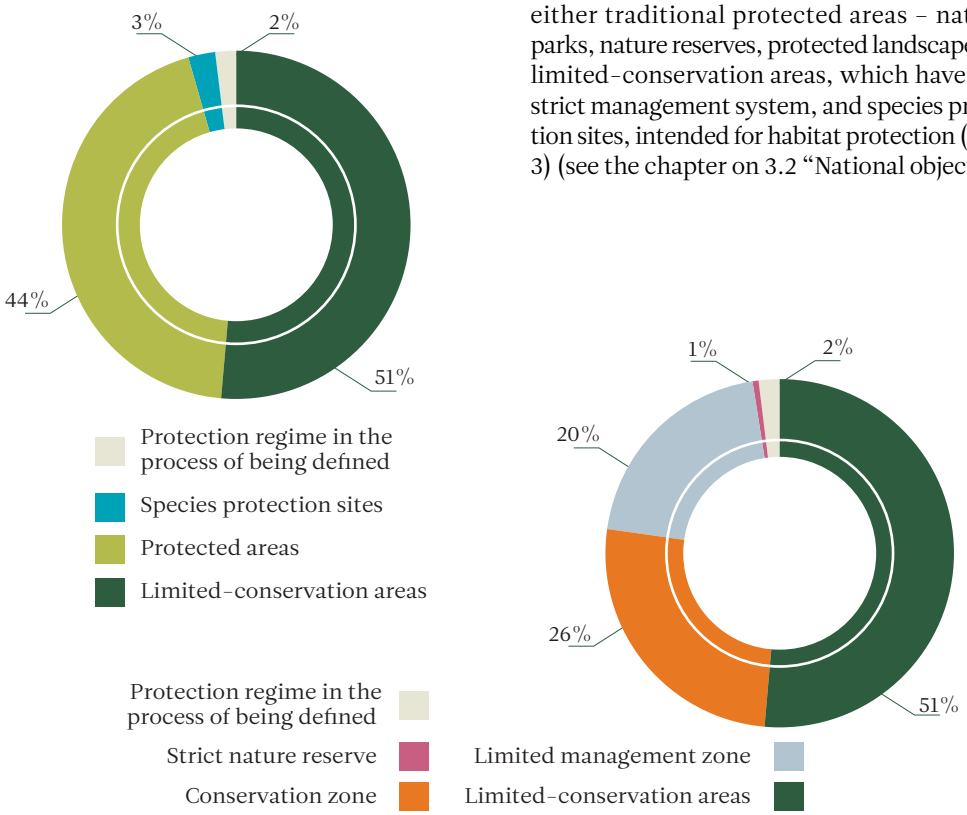



**Figure 3.** Distribution of Natura 2000 network areas by type of protected natural objects and zoning.

### 3.1.2. The Ramsar Convention on Wetlands

The purpose of the Ramsar Convention is to protect wetlands around the world, as their size and value is on the decrease due to irrigation, pollution and economic exploitation. The Convention stresses the great ecological role of wetlands, especially as migratory, rest and nesting sites for water birds. All of the parties to the Convention must implement measures for the protection of wetlands and pursuant to Article 2.4 of the Convention, submit at least one wetland for inclusion in the Ramsar List of Wetlands of International Importance.

As of today, 157 countries have joined the convention and the List of Wetlands of International Importance includes 1 702 areas with a total area of 152 985 664 hectares. Estonia has included 11 wetlands with a total area of 218 344 hectares (figure 4).

- Matsalu National Park, added 29/03/94, area: 48 610 ha
- Alam-Pedja Nature Reserve, added 17/06/97, area: 26 000 ha
- Emajõe Suursoo Mire and Piirissaar, added 17/06/97, area: 32 600 ha
- Endla Nature Reserve, added 17/06/97, area: 8 050 ha
- Hiiumaa islets and Käina Bay, added 17/06/97, area: 17 700 ha
- Muraka Nature Reserve, added 17/06/97, area: 12 400 ha
- Nigula Nature Reserve, added 17/06/97, area: 4 651 ha
- Puhtu-Laelatu-Nehatu Wetland Complex, added 17/06/97, area: 4 640 ha
- Soomaa National Park, added 17/06/97, area: 37 169 ha
- Vilsandi National Park, added 17/06/97, area: 24 100 ha
- Laidevahe Nature Reserve, added 31/03/03, area: 2 424 ha

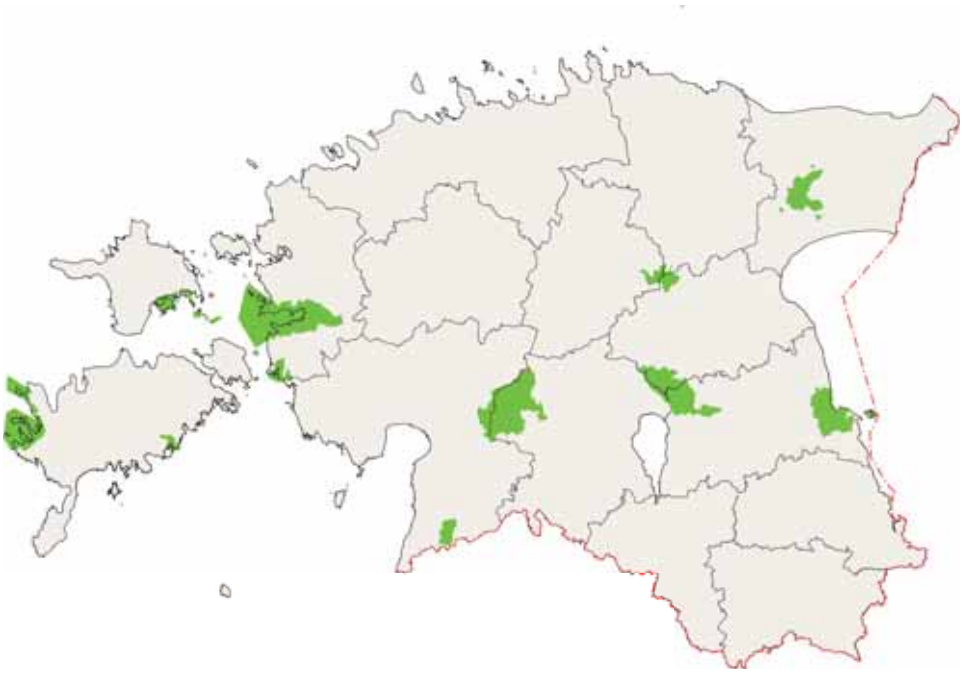


**Figure 4.** Wetlands of international importance in Estonia.

### 3.1.3. The Bern Convention

The Bern Convention on protection of European flora and fauna and their habitats was developed by the Council of the European Communities and signed for the first time in 1979. The purpose of the Convention is the preservation of the flora and fauna of Europe and their natural habitats and the promotion of international cooperation for the protection of wild nature, with special attention paid to protection of endangered species, including endangered migratory birds.

The means for achieving the Convention's objectives is the protection of all natural species of flora and fauna and their habitats and special protection for some species of plants and animals. The species subject to special protection are included in Annex I to the Convention (strictly protected plant species), Annex II (strictly protected animal species) and Annex III (protected animal species). Annex IV lists the prohibited means and methods of trapping and killing animals.

To organize the above-mentioned protection, states signatory to the Convention (pursuant to resolution no. 5 of the Convention) have the obligation to establish the so-called Emerald Network areas of special conservation interest. This network of ecological reserves can be viewed as an extension of the principles of the Natura 2000 conservation areas set forth in the Council directives to non-EU countries – the countries signatory to the Bern Convention – as well as to species not covered by the EU directives. The habitat directive thus can be treated as a legal act which provides for the compliance of the Bern Convention in EU countries.

### 3.1.4. The Convention on the Protection of the Marine Environment of the Baltic Sea Area

Adopted in 1974, the Convention, known as HELCOM, was supplemented in 1992 and its primary goals are the following: to prevent and eliminate pollution of the Baltic from land, air and ships in order to promote the ecological restoration of the Baltic Sea Area and the preservation of its ecological balance; to engage in scientific and technical cooperation in developing modern environmental protection measures; to coordinate the conducting of scientific research into the marine environment and atmosphere; to develop and implement a common environmental protection strategy in the Baltic Sea region.

Recommendation 15/5 of this Convention was approved on 10 March 1994 and which, having regard to Article 13, paragraph b) of the Convention, recommends measures be taken to establish a system of Coastal and Marine Baltic Sea Protected Areas (BSPA) describes the recommended protection categories. These guidelines were updated and approved in November 2003. In addition there are guidelines approved in July 2005 for organizing protection of these BSPAs.

In line with the recommendation, 62 BSPAs are specified. In addition to them, there are another 24 marine areas on the so-called waiting list, which were selected by experts in 1998. The following marine protection areas protected on the basis of the Helsinki Convention are within Estonian boundaries:

- **Lahemaa National Park,** approved 7/14/05
- **Matsalu National Park,** approved 7/14/05
- **Vilsandi National Park,** approved 7/14/05
- **Hiiumaa islets,** approved 7/14/05
- **Kõpu peninsula on Hiiumaa,** approved 7/14/05

### 3.1.5. UNESCO biosphere reserves

The principle of the UNESCO's Man and the Biosphere programme is to balance the economy and nature on the local level, and to do so in a manner that addresses global integrity. Local problems are in the focus, encompassing both physical and social sciences at the same time. Sustainable rural economy is promoted (local raw material and products made from them and the corresponding services), culture is valued and education developed. There are a total of 507 areas in the global biosphere reserve network, spanning 102 countries. Estonia has one UNESCO biosphere reserve.

The West Estonian Archipelago Biosphere Reserve received UNESCO recognition in 1990. The reserve is still in existence, even though legally speaking it has been divided into core areas protected under the Nature Conservation Act and transition zones, in which protection is enforced through non-governmental methods. The area, of a size of 1 560 000 hectares, includes most of the islands of western Estonia, including Saaremaa, Hiiumaa, Muhu, Vormsi and a great number of smaller islands and islets and parts of the Väinameri Sea between them. The primary objective of the reserve is to preserve the landscapes and cultural heritage of the islands, including extensive sustainable agriculture, fishing, forestry and tourism.

Author: Heiko Kruusi

Old windmill at Vormsi island. Biosphere Reserve of West-Estonian Archipelago.

### 3.1.6. The European Diploma

The European Diploma was created by the Council of Europe in 1965 as an award conferring a special status. It is given to areas because of their outstanding scientific, cultural or aesthetic qualities; they must also have in place a conservation scheme which promotes sustainable development. This diploma is given out to natural or semi-natural protected areas which preserve extraordinary biological, geological and landscape diversity, where a suitable conservation scheme is in place and sustainable conservation management takes place.

This prestigious diploma has been awarded to about 60 areas in 23 European countries. The diploma is awarded to a deserving area for five years, after which a new evaluation takes place. Such periodic assessment of sustainability by the CE creates the need for continual renewal of the conservation scheme and supervision on the local level.

The first Estonian protected area to be awarded the European Diploma was Matsalu National Park (then Matsalu nature reserve) on 3 October 2003 as area which protects biotic diversity extraordinary in Europe; above all mention was made of the diversity and protection of bird species, as well as the especially good cooperation between local residents and the protected area's employees.

Author: Arne Ader

Cranes on coastal meadow. Matsalu National Park.

### 3.1.7. The World Conservation Union (IUCN)

The World Conservation Union is the largest global conservation network, uniting representatives from 83 countries through 110 state agencies and more than 800 NGOs as well as more than 10 000 scientists and experts from 181 countries. As an institution, the union is a body with a multicultural and multilingual staff of about 1100 employees from 40 countries. The headquarters is in Switzerland. The IUCN was created in 1948 in France and has been known under its current name since 1990. On the state level, Estonia has been a member of the body since 2007.

In addition to forming international conservation policy and practical project-based activities, the IUCN also maintains many international databases through its network of partners and establishes a number of criteria and categories. The endangered species categories are discussed in greater detail in 4.1.2. As to protected area management, the IUCN has established the following categories:

Ia – protected area that is preserved completely untouched or managed only for scientific or monitoring purposes;
Ib – protected area managed only through limited activity which strictly preserves the natural state (wilderness protection);
II – national park, protected area where above all, the integrity of the ecosystem is preserved, including for recreational purposes;
III – protected area which includes one or more feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance;
IV – protected area which is subject to active intervention as to ensure the maintenance of habitat or meet the requirements of specific species;
V – protected area whose value is mainly due to its landscape features;
VI – an area, the management of which is aimed at sustainable preservation of natural objects.

In general terms, the following are the Estonian counterparts of the IUCN categories, pursuant to the Nature Conservation Act:

Ia – strict nature reserve;
Ib – natural part of a conservation zone and the most strictly protected area of a species protection site's conservation zone;
III – protected natural monument;
IV – a maintained part of a conservation zone, if it was established for purposes of species protection and special protection zone within a species protection site;
V – a maintained part of a special protection zone (established for other purposes) and a limited management zone within a landscape protection area, including parks; object protected at the municipal level;
VI – limited management zone within a nature reserve, national park, limited-conservation area or species protection site.

The most widespread type of area in Estonia has a protection regime corresponding to IUCN category VI (figure 5).

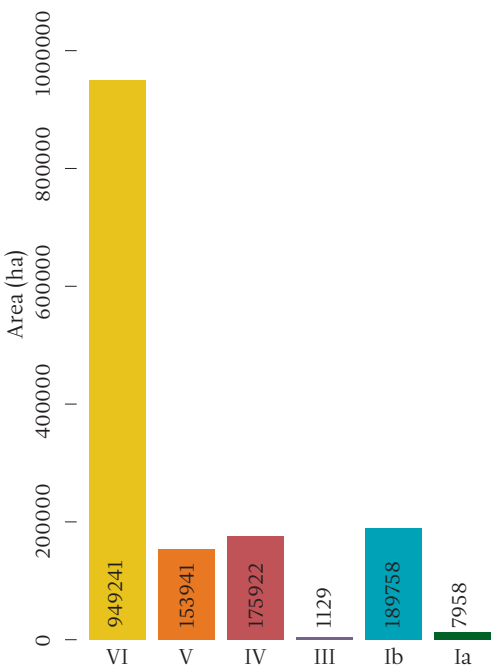



**Figure 5.** Areas in Estonia corresponding to IUCN categories (analysis conducted on the basis of extract from the Environmental Register as of 18.10.2007).

### 3.1.8. The Ecological Network

The Pan-European biological and landscape diversity strategy was approved at the third Environment for Europe conference of Environment Ministers in Sofia on 25 October 1995.

The strategy attempts to implement existing policies, initiatives, mechanisms and scientific programmes in a more coordinated and effective manner and to use funds and information for the protection of European biological and landscape diversity.

The long-term goal is to protect biological and landscape diversity throughout Europe in the 20 years following the adoption of the strategy. In order to do this, the following goals must be achieved.

1) threats to European biological and landscape diversity are reduced;
2) the resilience of European biological and landscape diversity is increased;
3) the ecological coherence of Europe is strengthened;
4) the public is involved in protection of biological and landscape diversity.

During this period ecosystems, habitats, species and landscape elements of key importance must be preserved, renewed and enlarged through creation and effective implementation of a Pan-European ecological network.

The Pan-European biological and landscape diversity strategy stipulates the development of the Pan-European ecological network for the protection of ecosystems, habitats, species and their genetic diversity and landscapes of European importance.

The Pan-European Ecological Network will contribute to achieving the main goals of the Strategy by ensuring that:

1) a full range of ecosystems, habitats, species and their genetic diversity, and landscapes of European importance are conserved;
2) habitats are large enough to place species in a favourable conservation status;
3) there are sufficient opportunities for the dispersal and migration.
4) elimination of elements harmful to ecosystems of key importance and buffering of ecosystems from potential threats.

Estonia also takes part in the process of developing the ecological network described. On the state level, the idea of the econetwork has entered use in Estonia but it has been implemented in an adapted manner (as described below).

Author: Mati Kose

View from watching tower of Suur-Munamägi Hill. Haanja Nature Park.

The ecological network in Estonia complements the network of protected areas, combining them with natural areas into an integral system. The elements of the network include core areas – areas that have a higher value (natural, environment protection etc) than their surroundings and on which the entire network is predominantly based, as well as corridors which ensure coherency and territorial integrity of the network. The Ecological Network helps soften or prevent human impacts, creating the foundation for biota to develop in a natural direction. This supports biological diversity, ensures a stable environmental status and maintains processes which shape the environment and which are vital to humans (groundwater and surface water generation, air purification, natural cycles of chemical elements etc). The Ecological Network planning goal is not to specify an extensive "green space" and exclude it from economic activity, but instead to ensure a structure for the space that is more justified from a conservation perspective, based on various development trends, and analysis of needs and the location of infrastructure.

The Planning Act in force in Estonia sets forth, as one objective of the national spatial plan, a system ensuring the preservation of various types of ecosystems and landscapes and balancing the impact of settlement systems and economic activities which is comprised of natural and semi-natural biotic communities. The next level of planning after the national spatial plan is the county plan. Here the Planning Act (Section 7) provides for a thematic plan to be prepared pursuant to the objectives specified in the Act in order to supplement the county plan. Among the objectives of the Act is the planning of measures to ensure the preservation of natural resources, valuable arable land, landscapes and natural biotic communities, and the functioning of the ecological network.

By Order 763-k of the Government of the Republic, issued in 1999 and entitled "Initiation of thematic plans for county plans", the plan "Environmental conditions for guiding settlement and land use" was initiated in all of Estonia's counties. The two most important subtopics of this plan are "Ecological network" and "Valuable landscapes". One of the most important objectives of the thematic plan is to ensure a spatial structure that is more justified from a conservation perspective.

The county thematic plan entitled "Environmental conditions for guiding settlement and land use" is the basis for the following:

1) preparing general and detailed plans;
2) preparing management plans for catchment areas;
3) preparing management plans;
4) preparing forest management plans;
5) preparing land management plans;
6) managing nature conservation outside of protection areas;
7) planning national infrastructures.

In addition to the fact that the county thematic plan is the basic material for compiling local governments' general plans, Section 8 of the Planning Act stipulates that one of the specific objectives of the general plan is to establish the conditions to ensure the functioning of the ecological network.

Figure 6 shows that Estonian ecological network in comparison with the locations of protected areas, limited-conservation areas, settlements and main roads. The connection between the location of the core areas of the ecological network and the major forest and marshland systems can be clearly seen.

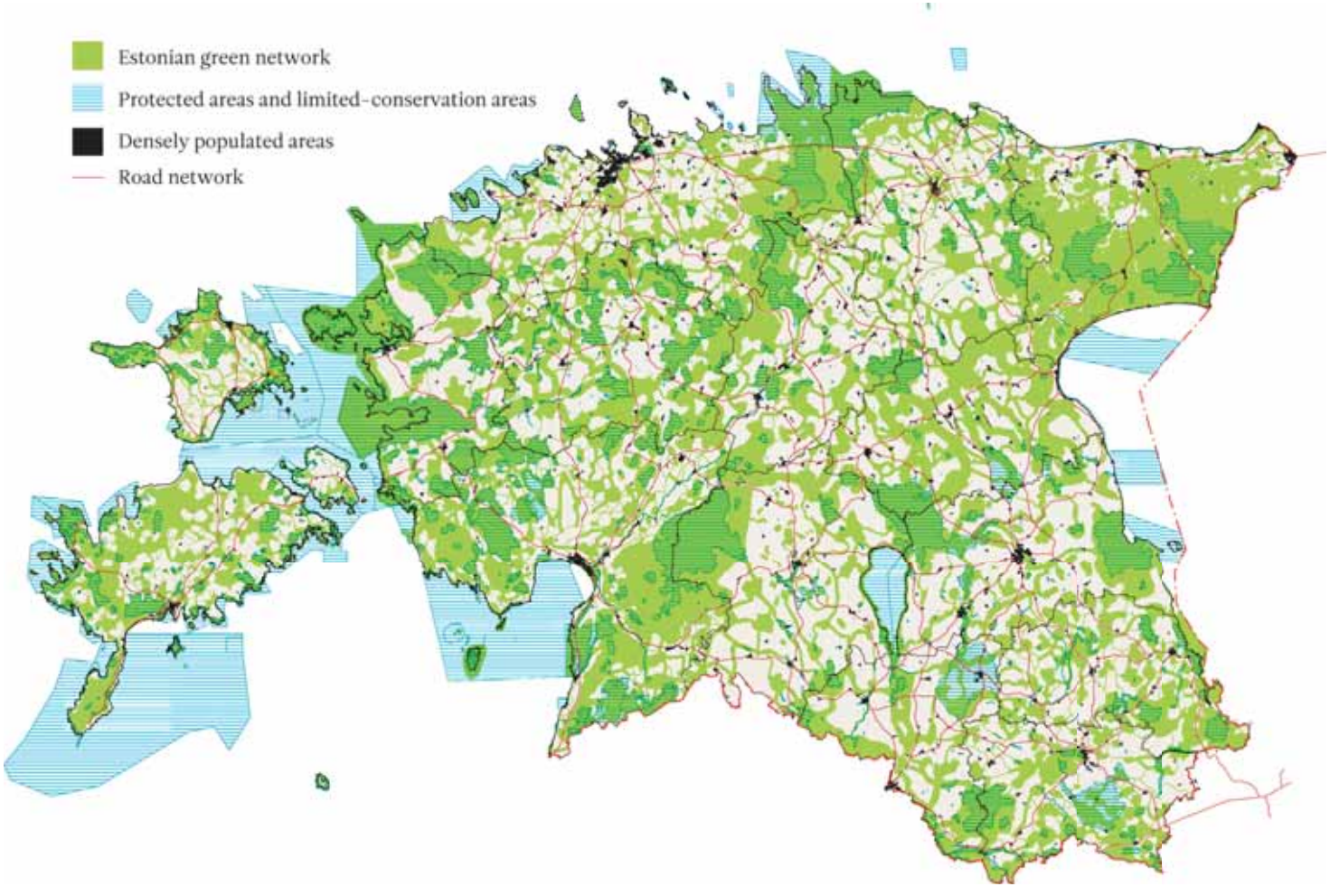



**Figure 6.** The Estonian ecological network with respect to protected areas, limited-conservation areas, settlements and main roads.

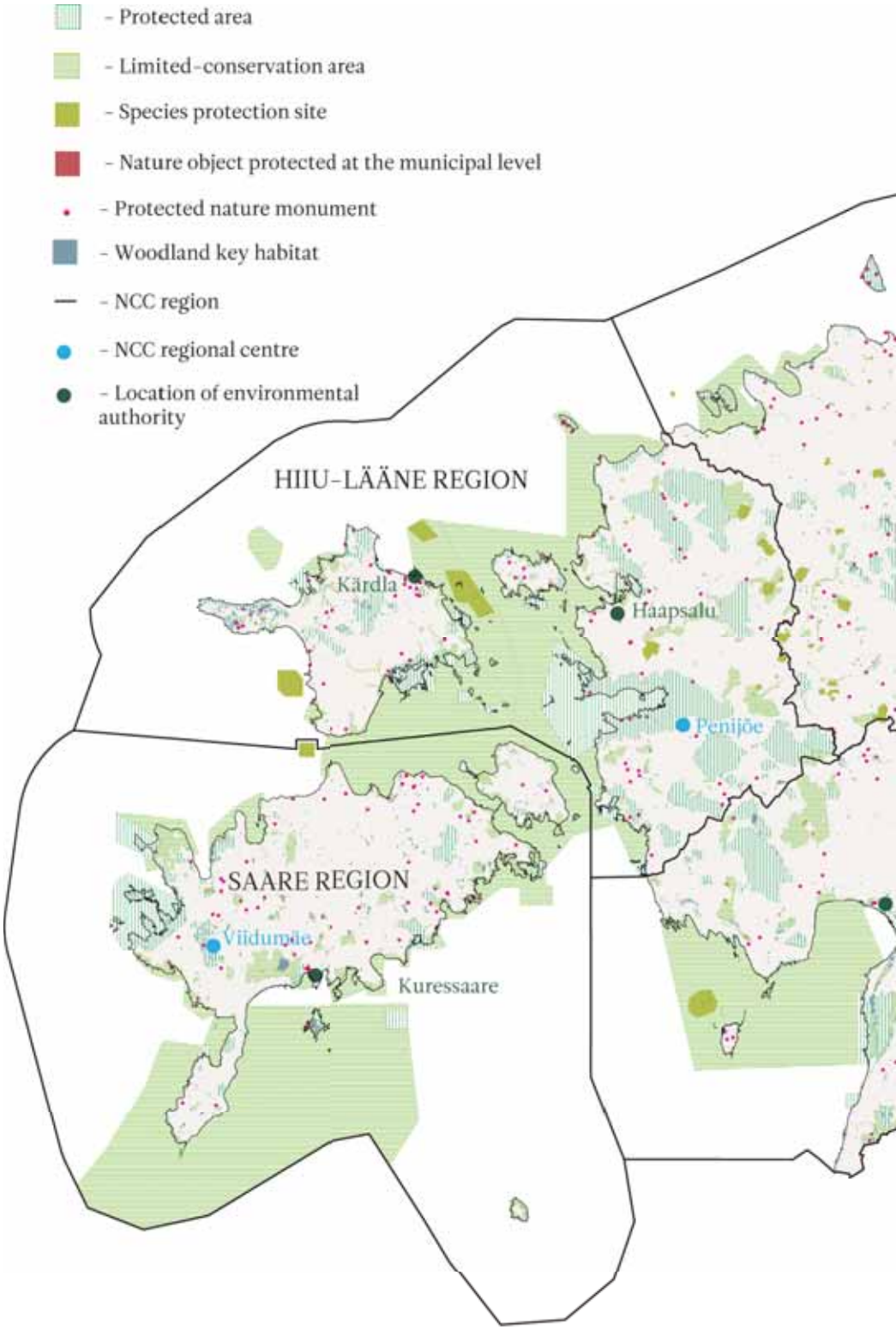
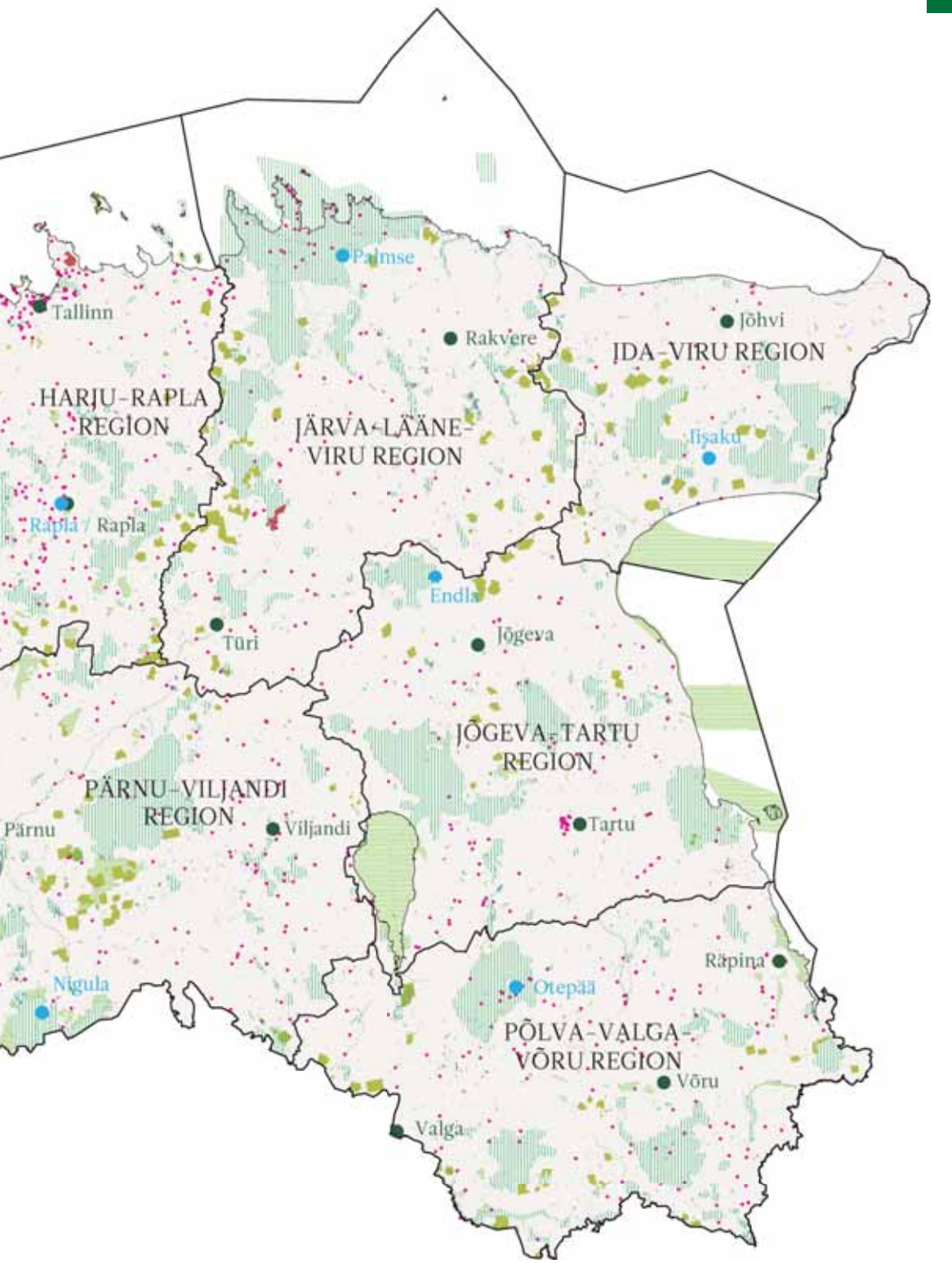



**Figure 7.** Protected objects together with the location of environmental authorities and Nature Conservation Centres.


Paimse
Tallinn
Rakvere
Jõhvi
IDA-VIRU REGION
HARJU-RAPLA REGION
JÄRVA-LÄÄNE-VIRU REGION
Iisaku
Rapla
Rapla
Endla
Türi
Jõgeva
JÕGEVA-TARTU REGION
PÄRNU-VILJANDI REGION
Pärnu
Viljandi
Tartu
Räpina
Nigula
Otepää
PÕLVA-VALGA-VÕRU REGION
Võru
Valga

## 3.2. National objects

The national legal basis for nature conservation is provided by the Nature Conservation Act. The types of protected natural objects derive from Section 4 of the Act. The sections below deal with protected areas (3.2.1), limited-conservation areas (3.2.2), species protection sites (3.2.3), nature monuments (3.2.4), natural objects protected at the municipal level (3.2.5) and woodland key habitats defined on the basis of Section 23 of the Forest Act (3.2.6). First an overview is given of each feature by type together with the legal definition and how they are distributed by number of features and their area. This is followed by data on the protected territory tabulated through spatial analysis (3.2.7) and finally the protection regime is dealt with (3.2.8) by type of zone.

### 3.2.1. Protected areas

A protected area is an area maintained in a state unaltered by human activity or used subject to special requirements where the natural environment is preserved, protected, restored, researched or introduced. The protected areas are: national parks, nature reserves and protected landscape areas. The protection regime for a protected area is based on the protection rules and the Nature Conservation Act.

As of 1 July 2007, there are five national parks in Estonia, 129 nature reserves, 149 protected landscape areas (PLA) and nature parks (NP) and 124 protected areas with unrevised protection rules, in addition to 543 protected parks and forest stands.

The total area of protected areas is 683 099 ha, of which 591 024 is land territory. The smallest area is a park in Tallinn, "Roheline turg" ("Green market"), 0.05 ha, and the largest is Lahemaa National Park – 72 504 ha. The average size of a protected area is 759 hectares. As municipality of Piirissaare is completely covered by a protected area, there are still local governments without any protected area (see figure 8).

Author: Tiina Napp

Green market in old town of Tallinn – smallest protected area in Estonia.

## National park

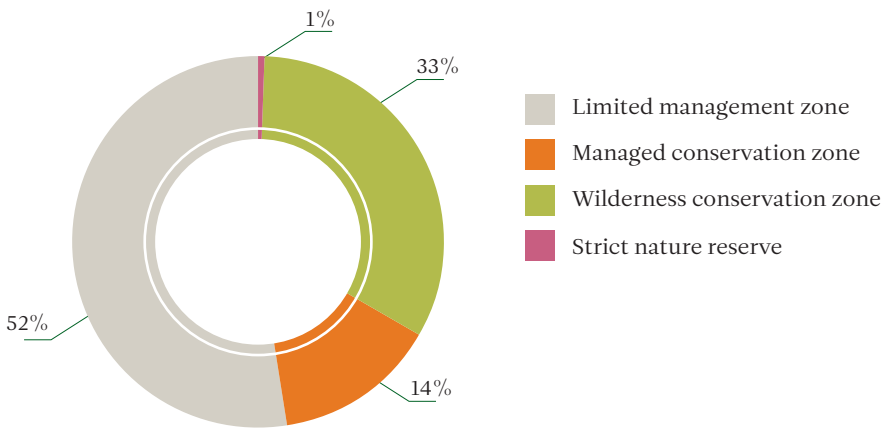
A national park is a protected area prescribed for the preservation, protection, restoration, research and introduction of the natural environment, landscapes, cultural heritage and balanced use of the environment of the protected area (§26 of the Nature Conservation Act).

Estonia has five national parks.

1) Lahemaa – for the protection of the natural and cultural heritage of the coastal landscapes of Northern Estonia;
2) Karula – for the protection of the natural and cultural heritage of the hilly moraine landscapes of Southern Estonia;
3) Soomaa – for the protection of the natural and cultural heritage of the mire landscapes and floodplain landscapes of transition zone of Estonia;
4) Vilsandi – for the protection of the natural and cultural heritage of the coastal landscapes of the Western Estonian archipelago;
5) Matsalu – for the protection of the characteristic biotic communities of Western Estonia and of the natural and cultural heritage of the Väinameri Sea region.

Karula is the smallest national park – 12 300 ha, and the biggest is Lahemaa – 72 504 ha.

| Number of National parks | Land area (ha) | Water (ha) | Total (ha) |
|---|---|---|---|
| 5 | 129 370 | 67 449 | 196 819 |



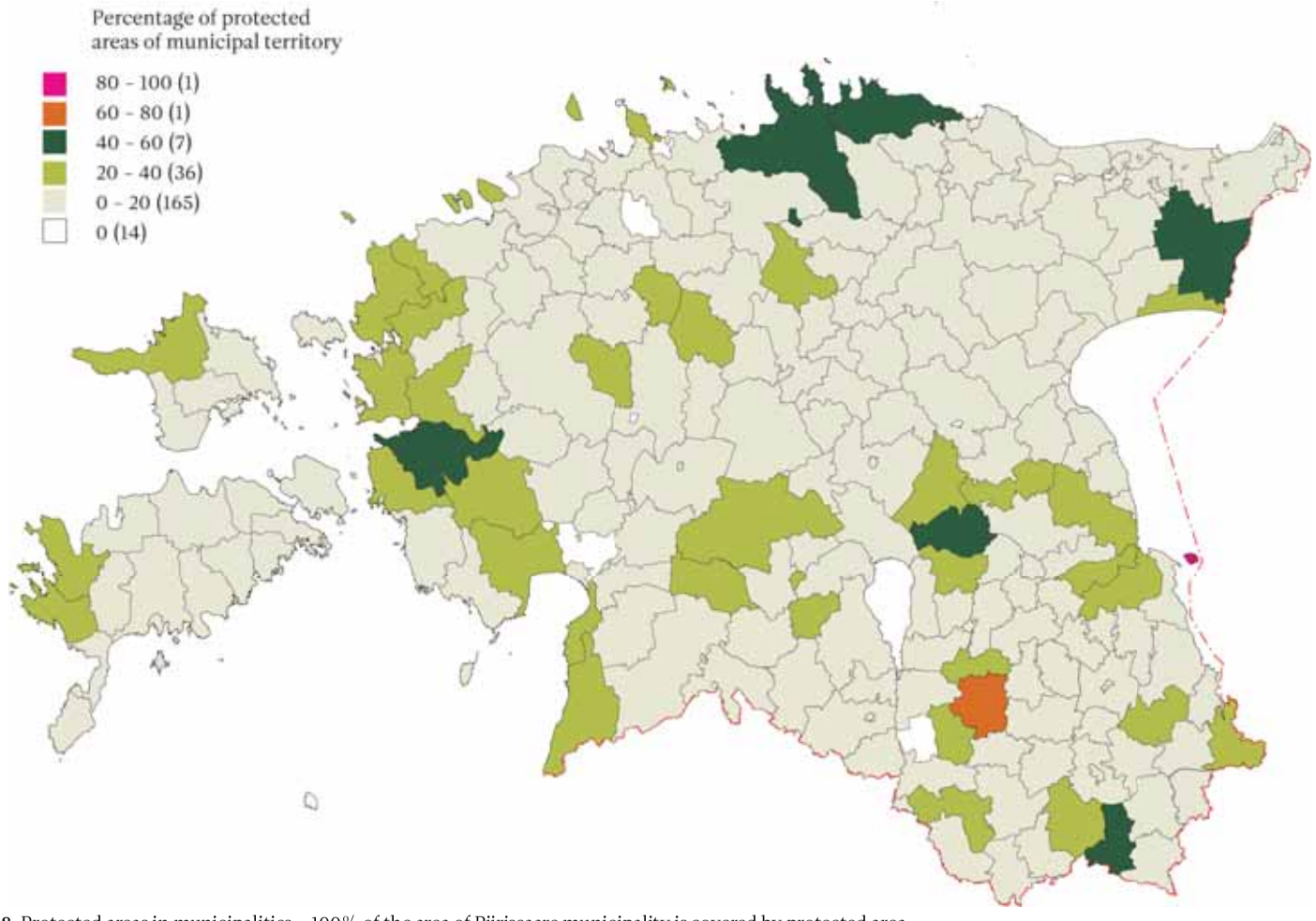


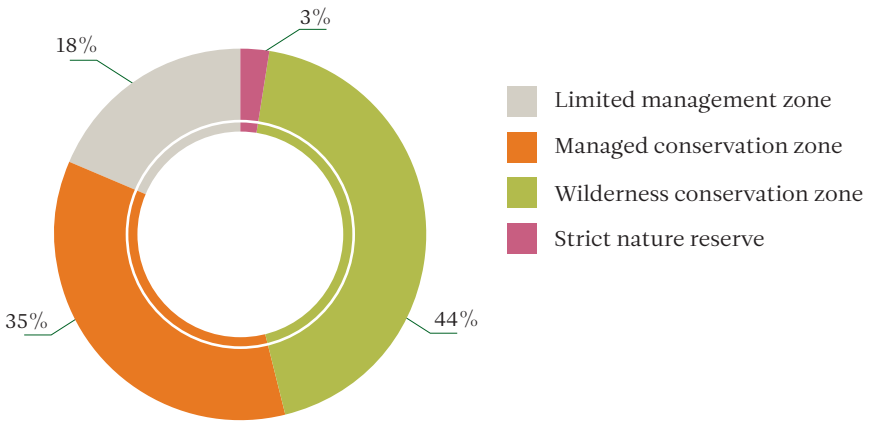

**Figure 8.** Protected areas in municipalities – 100% of the area of Piirissaare municipality is covered by protected area.
The following municipalities have no protected areas: town of Jõgeva, Kiviõli, Maardu, Mõisaküla, Narva-Jõesuu, Püssi and Võhma;
Järvakandi, Kiili, Kohtla-Nõmme, Lavassaare, Sauga, Tootsi and Õru rural municipalities.

## Nature reserve

A nature reserve is a protected area prescribed for the preservation, protection, restoration, research and introduction of the natural environment (§27 of the Nature Conservation Act).

The smallest 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.

| Number of Nature reserves | Land area (ha) | Water (ha) | Total (ha) |
|---|---|---|---|
| 129 | 244 105 | 13 824 | 257 929 |




Author: Arne Ader

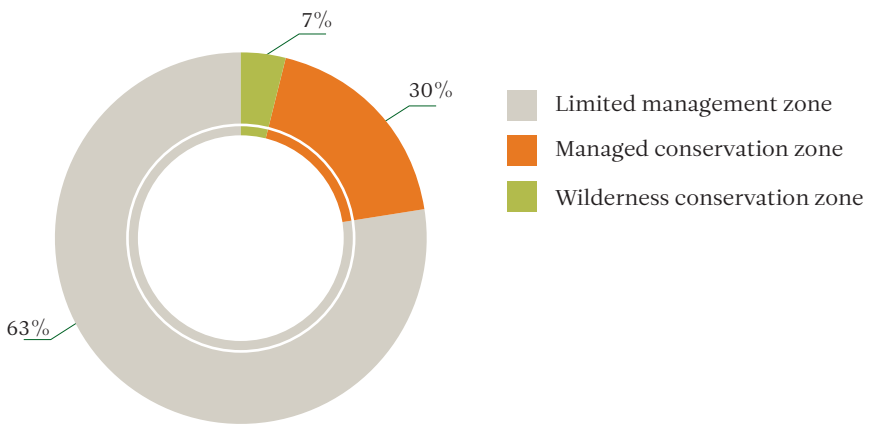
Suur Emajõgi river between Ihamaa and Reku. Alam-Pedja Nature Reserve

## Protected landscape area (nature park)

A protected landscape area is an area prescribed for the preservation, protection, restoration, research, introduction and regulation of use of landscapes of the protected area. Park, arboretums and forest stands are special types of protected landscape areas. The protection rules for protected parks, arboretums and forest stands is in force for the protection of parks, arboretums and forest stands (RT I 2006, 12, 89) (§28 of the Nature Conservation Act).

The smallest is the Papioru protected landscape area in Viljandi County – 4 ha, and the biggest is the Otepää nature park – 22 430 ha.

The smallest of the parks and forest stands under protection is "Roheline turg", a park in Tallinn – 0.05 ha, and the biggest is Palmse park together with park forest in Lahemaa National Park – 278 ha.




| | Number | Land area (ha) | Water (ha) | Total (ha) |
|---|---|---|---|---|
| PLA/NP | 149 | 180 379 | 10 652 | 191 031 |
| park | 455 | 4 355 | 0 | 4 355 |
| forest stand | 88 | 707 | 0 | 707 |

## Protected areas with unrevised protection rules

Protected areas with unrevised protection rules are protected areas that were placed under conservation in the years from 1957–1994 but do not have an approved set of new protection rules (in conformity with the Protected Natural objects Act or the Nature Conservation Act). These areas include a fairly wide array in terms of designation and purpose of protection. These areas were placed under protection by executive committees of the Soviet-era raion (administrative unit), or, later, by county governments.

Examples include botanical or zoological protected areas and wetland protection areas. Activity in limited management zones (Subsection 31 (2) of the NCA) of protected areas established before the Nature Conservation Act entered into force is allowed only with the consent of the administrative authority unless provided otherwise by the protection regime. The protection regime and boundaries of these areas are being reviewed and protection rules are in preparation.

The smallest protected area with unrevised protection rules is called "Place where the yellow narcissus is found" in Tartu County – 0.3 ha, and the largest is the Emajõe-Suursoo – 18 131 ha, also in Tartu County.

| Number of protected areas with unrevised protection rules | Land area (ha) | Water (ha) | Total (ha) |
|---|---|---|---|
| 111 | 32 108 | 150 | 32 258 |

Author: Arne Ader

Perävalla River. Emajõe-Suursoo.

### 3.2.2. Limited-conservation areas

A limited-conservation area is an area determined for protection of natural habitats. In order to ensure the preservation of the area, the impact of planned activities is assessed and activities that harm the favourable condition of the area are prohibited. A limited-conservation area is established with the aim to ensure the favourable conservation status of wild fauna, flora and fungi unless it has been ensured by any other method. Destruction or harming of the habitats for the protection of which a limited-conservation area was formed, significantly disturbing the protected species, and all activities which are likely to endanger the favourable conservation status of the habitats and protected species are prohibited within a limited-conservation area. (NCA §4 and §32).

The smallest is Vanajõe limited-conservation area on the island of Hiiumaa – 0.2 ha, and the largest is Kura kurk limited-conservation area, which primarily covers marine areas–188 815 ha. The average size of a limited-conservation area is 2 180 hectares.

The limited-conservation areas are placed under protection by regulation of the Government of the Republic. No separate protection rules are established and zones are not created. The activities and restrictions permitted within a limited-conservation area derive directly from legislation – Chapter 5 of the Nature Conservation Act – and are specified in the management plan.

| Number of limited-conservation areas | Land area (ha) | Water (ha) | Total (ha) |
|---|---|---|---|
| 343 | 113 783 | 633 877 | 747 660 |

Author: Toomas Tuul

Island Viirelaid at limited conservation area Väinamere.

### 3.2.3. Species protection sites

The aim of the species protection site is to ensure protection through preservation of their habitats. A species protection site is a permanently or periodically inhabited habitat specified in the regulation of the Minister of the Environment or Nature Conservation Act. Species protection sites are established outside protected areas or within a limited management zone of a protected area.

A species protection sites are delimited and used pursuant to special requirements which are (NCA Subsection 4 (1))

1) the breeding area or other site of periodic aggregation of a protected animal species;
2) the natural habitat of a protected plant or fungus;
3) the spawning site of salmon or river lamprey;
4) hibernation site of brown bear;
5) natural habitat of the crayfish;
6) badger sett with more than ten entrances.

Unless a site of a protected species, except for unoccupied artificial nests, has been determined, the following shall be deemed to be a species protection site (NCA § 50 (2)):

1) nesting tree of a flying squirrel, and the surrounding area within the radius of 25 m;
2) nesting tree of a white-tailed eagle, short-toed eagle or osprey, and the surrounding area within the radius of 200 m;
3) nesting tree of a greater spotted eagle or black stork, and the surrounding area within the radius of 250 m;
4) nesting tree of a lesser spotted eagle and the surrounding area within the radius of 100 m;
5) nesting tree of a golden eagle, and the surrounding area within the radius of 500 m;
6) nesting tree of a mixed couple of a greater spotted eagle and lesser spotted eagle, and the surrounding area within the radius of 250 m.

| Number of species protection sites | Land area (ha) | Water (ha) | Total (ha) |
|---|---|---|---|
| 869 | 74 542 | 12 810 | 87 353 |

According to the protection regime, the area of species protection sites is distributed as follows: 33 067 ha in the conservation zone and 54 501 ha in the limited management zone. The greatest number of species protection sites is in Tartu County and Pärnu County – 108 and 103 respectively – but in terms of area Pärnu County is in the lead – 15 330 ha. In terms of area of the counties, the ones in which species protection sites comprise the highest percentage of their territory are Pärnu, Rapla, Järva, Jõgeva, Valga and Ida-Viru County (figure 9). Of the 869 species protection sites 423 are established by the minister's regulation (figure 10). The total area of such species protection sites is 83 848 ha. The rest of the area is from the circular species protection sites established around eagles' and black stork's nests pursuant to the Nature Conservation Act. The lesser spotted eagle has the most species protection sites – 285 species protection sites. By area, the capercaillie has the most species protection sites – 64 141 ha.

Author: Ingmar Muusikus

Capercaille male in lekking pose.

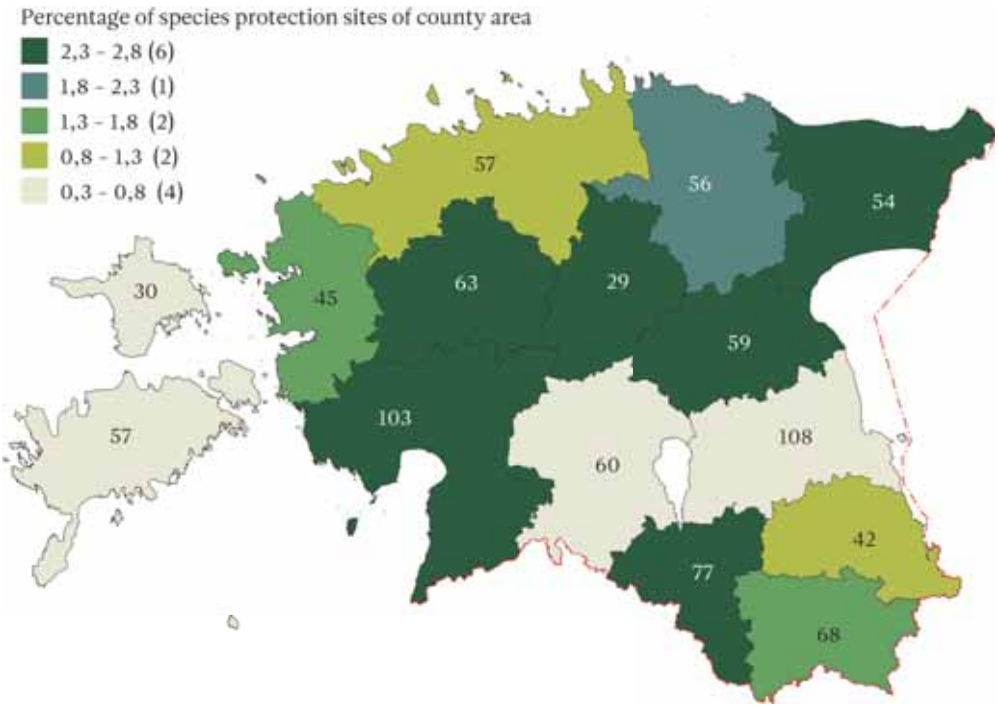



**Figure 9.** Percentage of species protection sites of county area. Only the land portion is taken into account (without Lake Võrtsjärv and Lake Peipsi). The numeral refers to the number of species protection sites in each county.

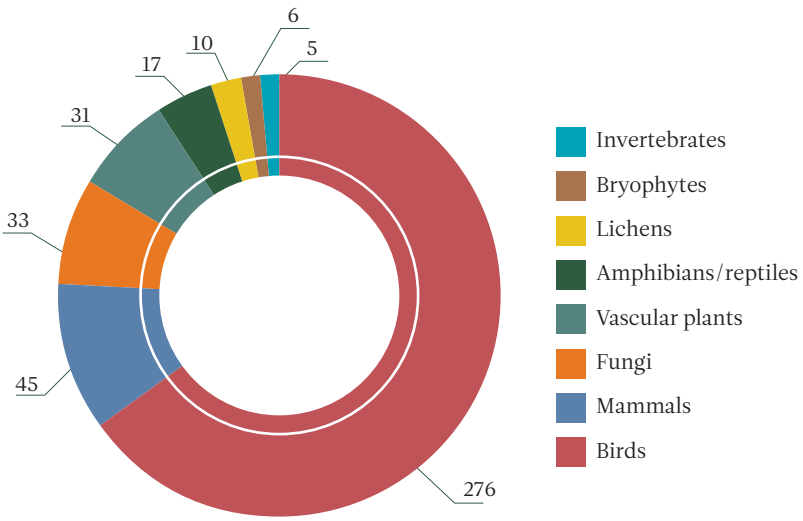



**Figure 10.** Number of species protection sites approved by regulation of the Minister of the Environment per species group.

### 3.2.4. Protected nature monuments

Protected nature monument shall mean an animate or inanimate natural object with scientific, aesthetic or historical and cultural value such as a tree, spring, erratic boulder, waterfall, rapid, bluff, terrace, outcrop, cave or karstic form or system which is protected on the basis of the Nature Conservation Act (NCA Subsection 4 (6)).

A protected zone extending to the distance of 50 m from a protected nature monument of a landscape shall be formed around the feature unless a smaller area has been provided upon placing the feature under protection. The boundary of the limited management zone surrounding a protected nature monument consisting of a group of objects (such as an erratic stone field or group of trees) shall be considered to be an imaginary line connecting the outer limits of the objects. The land underlying the group of objects is also part of the limited management zone. The Nature Conservation Act prohibits activity that may harm the condition or the appearance of a protected nature monument. The protection regime valid in the limited management zone is set forth in the protection rules for protected nature monuments (Section 68 of the NCA).

Harju County is the county with the greatest number of protected nature monuments. Harju County includes the city of Tallinn, which is the municipality with the most protected nature monuments. There are 120 individual protected natural objects in Tallinn. Considering the county areas as well, Harju County, Rapla County and Hiiu County have the highest concentration of nature monuments (figure 11).

| Number of protected nature monuments | Area including surrounding limited management zone (ha) |
|---|---|
| 1 194 (of which trees and groups of trees account for 724, erratics and erratic fields 358, other objects 112) | 1 129 |

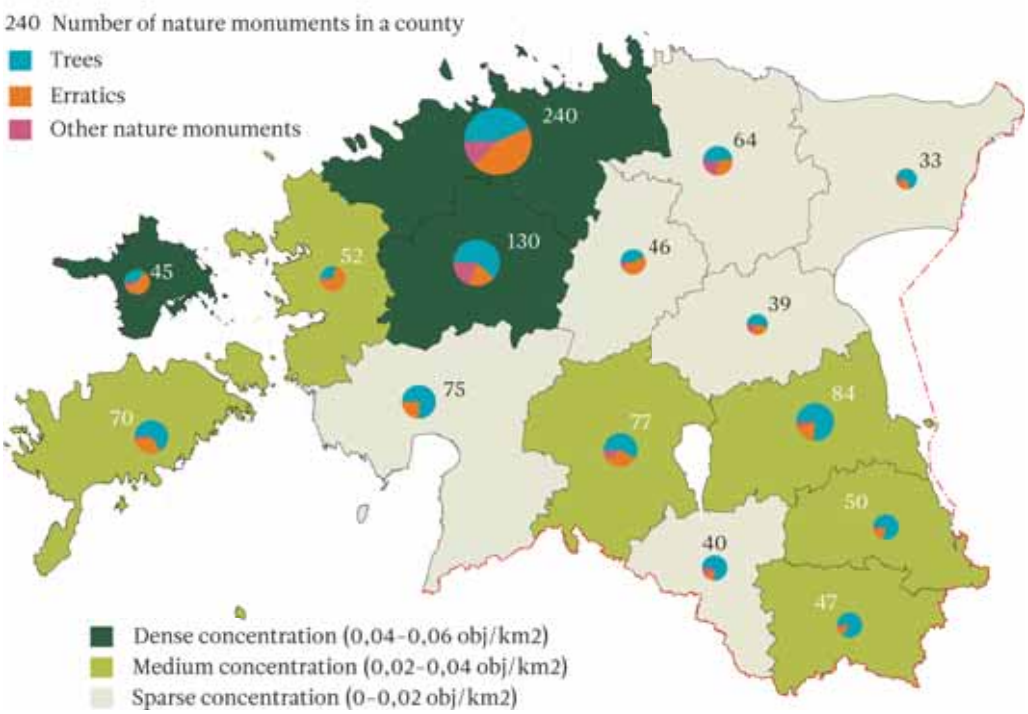



Figure 11. Protected nature monuments by county. The figure does not include destroyed protected nature monuments with unknown location which have not been removed from legal protection.

Largest protected erratic boulders in Estonia

| | Name of giant erratic boulder | Location | Volume above ground | Diameter |
|---|---|---|---|---|
| 1 | Ehalkivi | In Lääne-Virumaa County, 1km east of Letipea cape | 930 $m^3$ | 49.6 m |
| 2 | Muuga kabelikivi | Harju County, Muuga | 728 $m^3$ | 58.0 m |
| 3 | Majakivi | Juminda peninsula | 584 $m^3$ | 40.9 m |

Protected trees with the greatest circumference in Estonia (taken at a height of 1.3m (Relve 2003)

| | Name of tree | Location | Diameter | Year of measurement |
|---|---|---|---|---|
| 1 | Tamme-Lauri oak | Võru County, Urvaste | 825 cm | 2001 |
| 2 | Raasiku giant willow | Harju County, Raasiku | 764 cm | 1999 |
| 3 | Täri linden | Saaremaa, Mustjala | 680 cm | 2000 |


Author: Reigo Roasto

Protected boulder Jaagu-Mihkli hiiekivi – protected nature monument.

### 3.2.5. Natural objects protected at the municipal level

The objective for nature conservation at the municipal level is determination by local governments of the conditions for the protection and use of valuable landscapes representing specific character of the natural and cultural environment, settlement patterns or land use, or individual features of such landscapes (NCA §43).

At the municipal level, a landscape, valuable arable land, natural biotic community, individual landscape object, park, green area or an individual feature of a green area which has not been placed under protection as an individual protected nature monument and is not located within a protected area may be a protected site. (NCA §4).

The possibility of placing natural objects under protection arose again in connection with the adoption of the Nature Conservation Act in 2004. The possibility of placing them under protection is established by municipal and city council regulation and plans.

Two local protected areas have been entered in the Environmental Register: the Mäealuse protected landscape area in Harju County in Viimsi municipality and Koordi bog in Järva County in Roosna-Alliku municipality. Rehatse, in Kuusalu municipality, and Rahkvälja, in Kose municipality, are known to have been approved as well, but the data had not been reached the Environmental Register as of 1 July 2007.

| Number | Land area (ha) | Water (ha) | Total (ha) |
|---|---|---|---|
| 2 | 1 347 | 0 | 1 347 |

Author: Uudo Timm

Mäealuse – natural object protected at the municipal level.

### 3.2.6. Woodland key habitats

Section 23 of the Forest Act stipulates that a woodland key habitat is an area of up to seven hectares which needs protection in a commercial forest or protection forest and where the probability of the occurrence of narrowly adapted, endangered, vulnerable or rare species is great.

A woodland key habitat is such a part of a forest in a commercial or protection forest where no active economic activity has taken place and where as a result, the living conditions are suitable (dry and decomposed wood of different ages, gaps in a stand, vicinity of springs etc) for a number of species that are sensitive toward changes and disruptions in living conditions.

The selection of woodland key habitats is organized by the Centre of Forest Protection and Silviculture and the county environmental authorities. Only experts who have undergone training and hold a certificate may select new woodland key habitats or change existing ones.

Protection of woodland key habitats in the state forests is organized by the State Forest Management Centre (RMK) – according to the respective directive of the Minister of the Environment.

Forest owners may sign agreements with the Private Forest Centre under which the owner undertakes not to conduct activities that could lead to the harming or destruction of the woodland key habitat. In return the state compensates owners for the income foregone.

Three-fourths of all woodland key habitats are located in state forests and state-owned land illegally nationalized by the Soviet regime.

The number of woodland key habitats protected on the basis of agreement is greatest in Pärnu County (40 areas) and the fewest number of these is in Järva County (1 area).

The greatest number of woodland key habitats is in Pärnu County (1 676; 19.6% of the total) and the fewest in Põlva County (170; 2% of the total) (table 3). Considering the percentage of woodland key habitats of the area of commercial and protection forests, the counties with the highest concentration of woodland key habitats are Hiiumaa, Saaremaa, Pärnu County and Lääne-Viru County (figure 12).

| Number of woodland key habitats | Area (ha) | Average size (ha) |
|---|---|---|
| 8 559 | 23 015 | 2.7 |

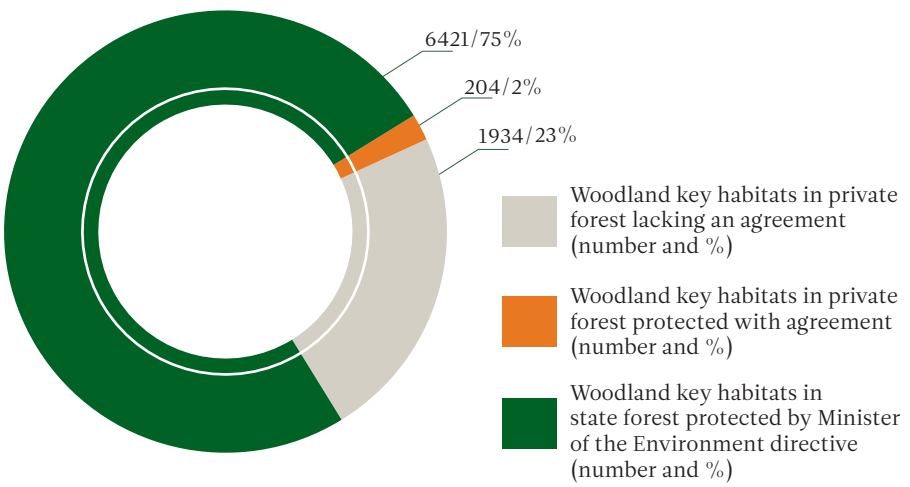


**Table 3.** Number of woodland key habitats and relative distribution by county

| County | Number of woodland key habitats | % of the total | Area of woodland key habitats (ha) | % of total area |
|---|---|---|---|---|
| Harju | 743 | 8.7 | 1716.7 | 7.5 |
| Hiiumaa | 550 | 6.4 | 1421.4 | 6.2 |
| Ida-Viru | 604 | 7.1 | 2144.4 | 9.3 |
| Jõgeva | 272 | 3.2 | 642.4 | 2.8 |
| Järva | 242 | 2.8 | 717.9 | 3.1 |
| Lääne | 314 | 3.7 | 619.2 | 2.7 |
| Lääne-Viru | 940 | 11.0 | 2846.2 | 12.4 |
| Põlva | 170 | 2.0 | 414.0 | 1.8 |
| Pärnu | 1676 | 19.6 | 3895.6 | 16.9 |
| Rapla | 552 | 6.4 | 1398.3 | 6.1 |
| Saaremaa | 597 | 7.0 | 3130.2 | 13.6 |
| Tartu | 257 | 3.0 | 752.4 | 3.3 |
| Valga | 549 | 6.4 | 1105.7 | 4.8 |
| Viljandi | 648 | 7.6 | 1379.6 | 6.0 |
| Võru | 445 | 5.2 | 831.2 | 3.6 |
| Total | 8559 | 100.0 | 23015.0 | 100.0 |

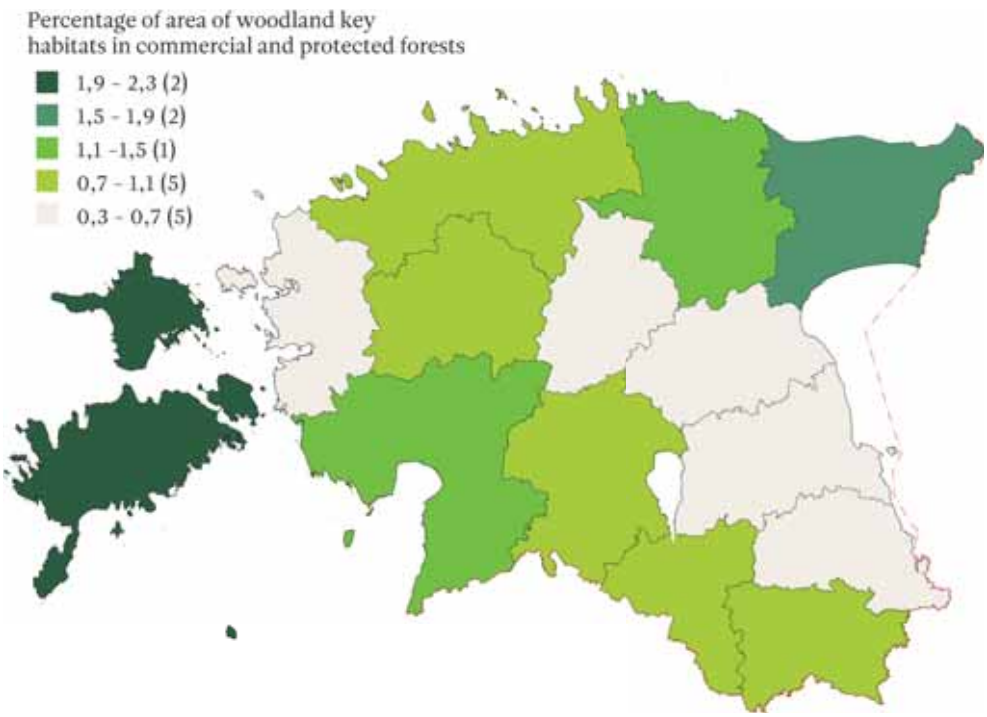



**Figure 12.** Percentage of woodland key habitats of the area of commercial and protection forests.

Classification and guidelines for woodland key habitats are established by regulation of the Minister of the Environment. In accordance with this regulation, the woodland key habitats fall into two major groups – biotopes related to forest (7376 woodland key habitats, 86.2%) and woodland key habitats related to landscape elements (1183 woodland key habitats, 13,8%).

### Types of woodland key habitats related to landscape elements.

| Number | |
|---|---|
| 165 | Overgrown wooded grasslands |
| 116 | Small wetland islands and peninsulas |
| 107 | Banks of streams |
| 101 | Other steep slopes |
| 95 | Individual large trees |
| 84 | Steep river and lake banks |
| 62 | Shallow river banks and lake shores |
| 58 | Hazel groves |
| 52 | Typical wooded meadows |
| 50 | Spring-rich areas |
| 48 | Parks |
| 44 | Wooded meadows |
| 41 | Typical grassland/pasture land |
| 34 | Banks and shores of temporary water bodies |
| 34 | Banks and shores of other water bodies |
| 21 | Streamside dams |
| 21 | Klint (limestone banks) forest |
| 16 | Low banks and floodplains |
| 15 | Edges of mires and fens |
| 11 | Areas influenced by beaver dams |
| 8 | Burn areas |

### Types of woodland key habitats related to forest.

| Number | |
|---|---|
| 1784 | Pine and mixed pine forests |
| 1608 | Spruce and mixed spruce forests |
| 998 | Other deciduous forests |
| 759 | Broad-leaved forests |
| 607 | Pine groves and mixed pine forests in wetlands |
| 572 | Aspen forests |
| 356 | Alder forests |
| 338 | Alvar forests |
| 320 | Spruce stands and mixed spruce forest in wetlands |
| 34 | Broad-leaved forests in wetlands |

### 3.2.7. Protected territory

In calculating the percentage of Estonia's territory that is under protection, we have taken into account the protected areas, limited-conservation areas, species protection sites, protection zones for protected nature monuments and objects protected on the municipal level. As the abovementioned objects may be overlapping, digital spatial data were processed so that the overlapping areas would be excluded. Thus the amount of protected territory as a share of total Estonian territory was ascertained, and in more detail, on the county and municipal level; this is the total area.

A total of 17.9% of Estonian land (not including Võrtsjärv and Peipsi) is under protection. Lääne County has the greatest amount of protected territory (~32%), and Põlva County has the least (~9%) (figure 13 and 14).

By adding up the number of protected areas, limited-conservation areas, species protection sites, protection zones for protected nature monuments and objects on the municipal level, we obtain the number of protected sites (figure 14 and 16).

The city of Tallinn has the greatest number of protected sites (153), and a large share of them are protected nature monuments, followed by Märjamaa municipality with 97 objects, Kusalu municipality with 64, Saarde municipality with 62 and Türi municipality with 49. On the basis of a GIS query, the following units have no objects: Järvakandi municipality, the towns of Kiviõli, Mõisaküla, Püssi, Võhma and Jõgeva and Tootsi municipality. According to area of the protected territory, the greatest amount of land is under protection in Piirissaare municipality (100%) followed by Otepää (~67%), Ruhnu (66%), Kihnu (~65%), Vihula (~60%) and Haanja municipality (~53%). Over half of the municipality's territory is taken up by protected sites in 8 municipalities (figure 16).

Protected areas are the type of protected site with the largest percentage of Estonian mainland territory (national parks, nature reserves, protected landscape areas, areas with unrevised protection rules and parks and forest stands) – 11.71% (figure 15).

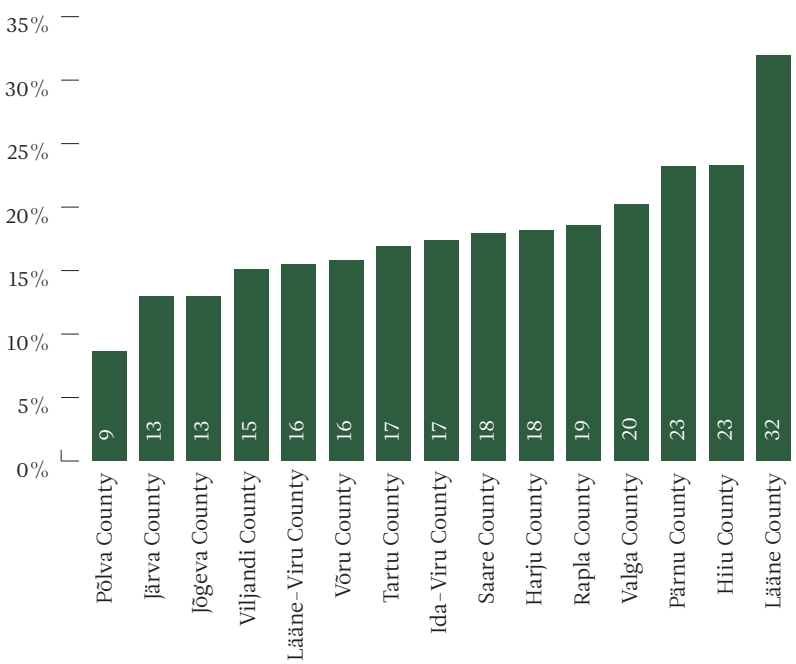



**Figure 13.** Percentage of protected territory of the county total area.

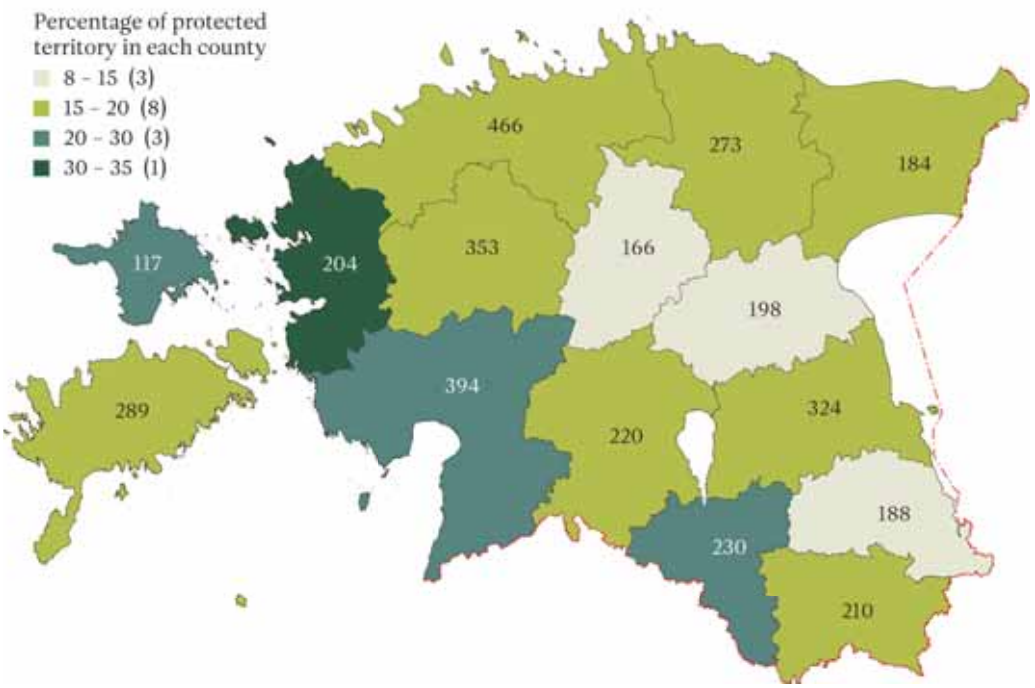



**Figure 14.** Number of protected sites in each county and the share of protected territory of the county total area. Features that are in more than one county or municipality are taken into account in all units.

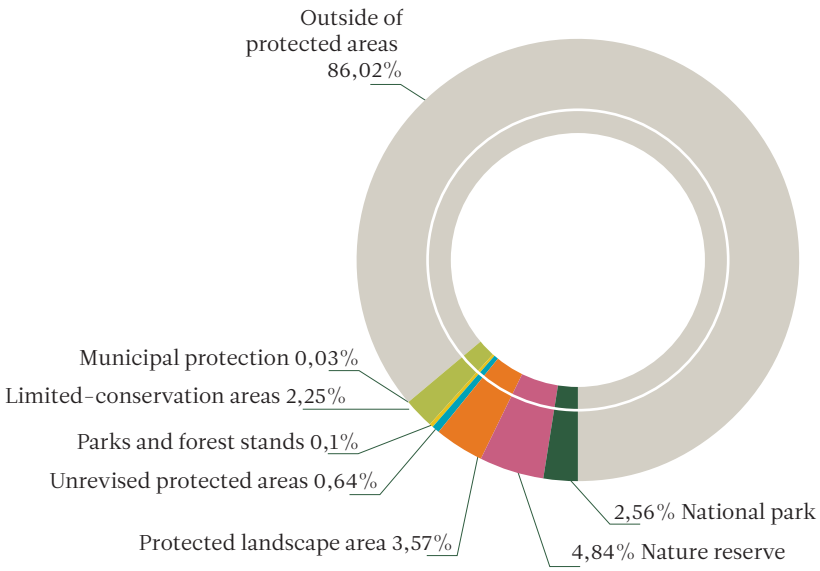



**Figure 15.** Percentage of the area of protected sites in Estonian land territory, by type of object.
Not included here: species protection sites and nature monuments, as part of these coincide with other protected sites.

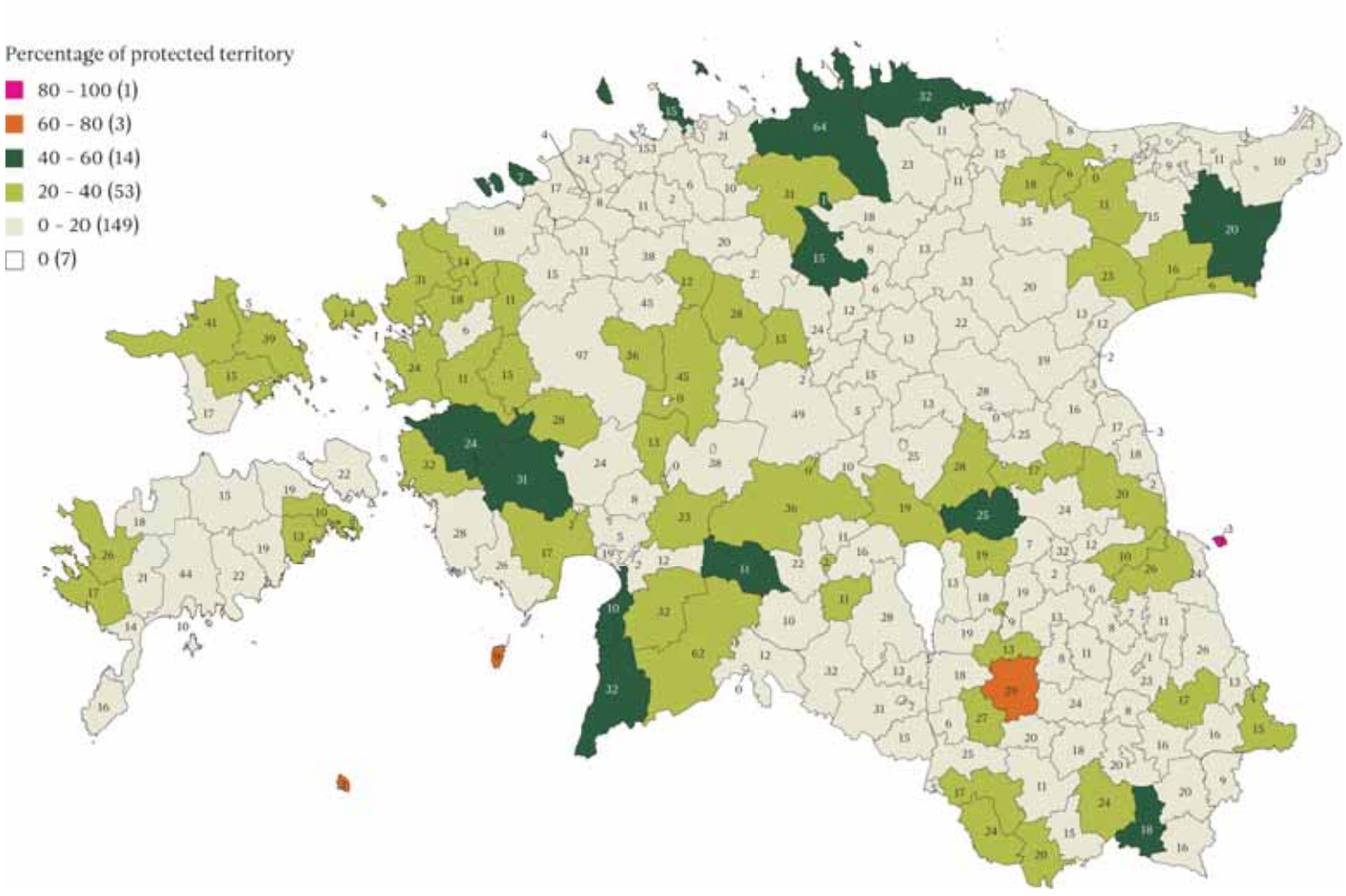



**Figure 16.** Share of the protected territory of the area of municipal units (%) and number of protected sites on the municipal territory.
Features that are in a number of counties or municipalities are taken into account in all units. Number on the map is showing number of objects per municipal units.
Units that do not contain any protected objects are: rural municipalities of Järvakandi and Tootsi; Kiviõli , Mõisaküla, Püssi, Võhma and Jõgeva towns.

### 3.2.8. Protection regime

**Protection rules.**

The protection regime for protected areas, species protection sites and protected nature monuments is established by the protection rules. The protection rules are a specification of the provisions set forth in the Nature Conservation Act within the limits permitted by legislation. The Government of the Republic shall establish separate protection rules for each protected area. Parks and nature monuments have common protection rules for the entire site type (Protection rules for protected nature monuments, Protection rules for parks, arboretums and forest stands). The protection rules for species protection sites are established separately for each species or group of species, considering the protection needs of one or more species.

No protection rules as such are compiled for limited-conservation areas. The activities and restrictions permitted within a limited-conservation area derive directly from legislation and are specified in the management plan.

The protection rules delineate the extent of the protection zone with one or several different levels of strictness, and the validity of the restrictions (full or partial, temporary or permanent) set forth in the Nature Conservation Act is established for each zone (Section 12 of the NCA). As to how the protection regime for the given objects is distributed, this is seen from the following table:

**Table 4.** Distribution of protected sites into management zones (restrictions that do not arise from those provided for strict nature reserves, conservation zones and limited management zones are classed under "other protection regime")

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

* Partial protection regime for limited management zones is in force for protected areas with unrevised protection rules, unless provided otherwise in the protection regime for the protected area (NCA § 91 (4)).

**A strict nature reserve**

is an area of land or water with nature that is untouched by direct human activity, upon which the preservation and development of natural biotic communities is ensured solely as a result of natural processes. All forms of human activity are prohibited on strict nature reserves, including the presence of humans, save exceptional cases.

Such exceptional cases are the performance of supervision and rescue operations, activities related to administration and organization of protection, and with the consent of the administrative authority of the area, scientific activity and monitoring and assessment of the state of the natural object (NCA Section 29).

| Number of strict nature reserves | Land area (ha) | Water (ha) | Total (ha) |
|---|---|---|---|
| 29 | 7024 | 934 | 7958 |

**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. Mineral resources present within a conservation zone are not deemed to be resources intended for exploitation. Time restrictions on access to conservation zones can be established (such as for nesting season) (NCA § 30).

Depending on whether the purpose of protection is to keep biotic communities natural or semi-natural, a distinction is made between wilderness conservation zones and managed ones.

The natural development of natural processes is protected in the wilderness conservation zones of protected areas. Often human help is needed in a managed conservation zone of a protected area (such as for maintaining meadows, mowing and grazing of coastal grasslands, cutting brush etc).

| Name of conservation zone | Number | Land area (ha) | Water area (ha) | Total (ha) |
|---|---|---|---|---|
| Managed conservation zone within protected area | 560 | 164 168 | 13 741 | 177 909 |
| Wilderness conservation zone within protected area | 314 | 164 910 | 24 848 | 189 758 |
| Conservation zone within species protection site | 833 | 29 538 | 3 529 | 33 067 |

**A limited management zone**

is a land or water area of a protected area where economic activities are permitted, taking account of the restrictions provided by the Nature Conservation Act (NCA Section 31).

| Name of limited management zone | Number | Land area (ha) | Water area (ha) | Total (ha) |
|---|---|---|---|---|
| Limited management zone within protected area | 342 | 217 752 | 52 402 | 270 166 |
| Limited management zone within species protection site | 228 | 45 212 | 9 289 | 54 501 |

**Protection regime in figures.**

Strict nature reserves – the zones with the strictest protection regime – account for 0.2% of Estonian territory (figure 17). The conservation zones account for the greatest share – 8% all told. Here the analysis was conducted according to protection regime for the objects under protection, pursuant to table 4 earlier in this book. As the objects may be overlapping, digital spatial data were processed so that the overlapping areas would be excluded.

By protection regime "other protection regime" accounts for the greatest share, due to the fact that it includes the limited-conservation areas spanning a large area. Here total area of the zones and areas is taken into account – both land and sea area. There are relatively equal amounts of conservation zone and limited management zone – 26% and 24% respectively (figure 18).

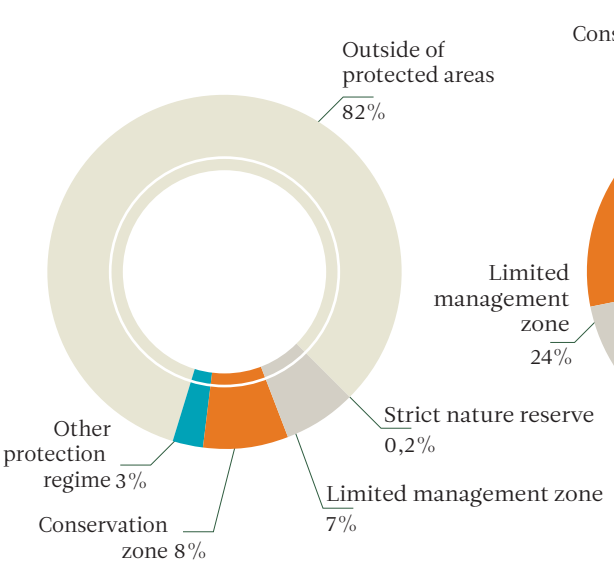



**Figure 17.** Relative importance of each protection regime with respect to Estonian territory.

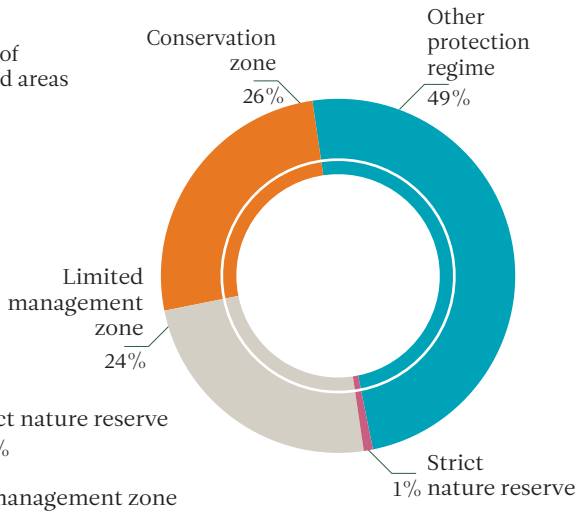



**Figure 18.** Distribution of protected areas according to protection regime (including marine areas).

## 3.3. Protection management

### 3.3.1. Management plans and action plans

A management plan is compiled in order to organize protection for protected areas (except for parks, arboretums and forest stands) and limited-conservation areas.

The management plan lists the significant environmental factors and their impact on the natural object, the purpose of protection, the work necessary to achieve it, the preferential order in which the work is to be performed, timetable and amount of work and budget.

The management plan is approved by the Minister of the Environment and it is published on the Ministry of the Environment's website. At the moment there are 25 valid management plans. Of these, 22 were established for protected areas, 2 for limited-conservation areas (Pakri limited-conservation area, Räpina polder limited-conservation area) and one for maintaining the semi-natural biotic communities of limited-conservation areas.

Management plans for a number of other protected areas are in preparation.

Action plans are compiled for organizing protection for protection category I or ensuring favourable status for a species, if the results of a scientific inventory of the species show that the measures applied thus far do not ensure protection, or if international obligations so require. The action plan for the protection of a species is established by the Minister of the Environment and it consists of the following:

1) data on the biology, abundance and range of the species;
2) conditions for ensuring the favourable condition for the endangered species;
3) species risk factors;
4) purpose of protection or control;
5) order of preference of the measures necessary for achieving favourable situation or controlling the species and the timetable for implementation;
6) budget for organizing protection or control.

**As of 2007, valid management plans are in effect for the following reserves and parks:**

- Andsu lakes protected landscape area
- Avaste nature reserve
- Endla nature reserve
- Kolga nature reserve
- Kääpa nature reserve
- Laiksaare nature reserve
- Laulasmaa protected landscape area
- Laulaste nature reserve
- Leigri nature reserve
- Mõisamõtsa nature reserve
- Nõmme-Mustamäe protected landscape area
- Ohepalu nature reserve
- Osmussaare nature reserve
- Padakõrve nature reserve
- Pajaka nature reserve
- Pakri protected landscape area
- Puhatu nature reserve
- Saarjõe nature reserve
- Soomaa National Park
- Soontaga nature reserve
- Tellise nature reserve
- Teringi nature reserve

**As of 2007 action plans have been approved for protection of the following species:**

- lady's slipper orchid
- frog orchid
- Northern hawk's-beard
- ferns in protection category I
- Arctic raspberry
- Braun's holly fern
- European yew
- *Dactylorhiza ruthei* orchid
- green-winged orchid
- greater spotted eagle
- dunlin *(Calidris alpina schinzii)*
- common crane
- natterjack toad
- large predators
- capercaillie
- lesser spotted eagle
- European mink
- black stork
- bats
- medicinal leech
- Eurasian eagle owl
- osprey
- ringed seal
- flying squirrel
- great crested newt

Author: Toomas Tuul

Pasture with junipers at Vormsi island.

### 3.3.2. Land ownership

No general summary of the distribution of protected sites by ownership has been conducted so far. This analysis of areas where protected natural objects registered in the information system for objects causing restrictions in the land cadastre (KPOIS) overlap cadastral units, was performed on the basis of data obtained from the Land Board[1].

The types of ownership are state ownership, ownership under public law, private property, municipal and mixed ownership (if the land unit has more than one owner, such as state and private), in addition a part of the land is unregistered (still in state ownership).

Ownership analysis has been done for protected areas, limited conservation areas, species protection sites, protected nature monuments, natural objects protected at the municipal level and Natura 2000 areas. On diagrams there is given a division of territory of protected objects by ownership at state level as well as per counties and also per management zones that refer to strictness of protection. Analysis is basing on protected object type and the results can't be summarized because several types overlap with each other.

The greatest part of the land in protected areas is state property 57% (333 866 ha), 23% (134 285 ha) is privately owned and 19% (114 231 ha) is unregistered. Pärnu County has the most state land in protected areas – 41 056 ha, and Valga County has the most private land – 20 464 ha. Harju County has the most unregistered land – 18 300 ha (figure 19).

The greatest part of the land in limited-conservation areas is privately owned 40% (44 725 ha), 30% (34 161 ha) is state owned and 29% (33 385 ha) is unregistered. As to limited-conservation areas, Pärnu County has the greatest amount of land in state ownership – 19 626 ha (57% of state property in limited-conservation areas), and Saaremaa has the greatest amount of private property – 18 298 ha (41% of private property in limited-conservation areas). Saaremaa also has the greatest amount of unregistered land – 9 409 ha (figure 20).

Of the species protection sites, the greatest part of the land, 47% (34 583 ha), is state-held, 37% (2 913 ha) is unregistered and 16% (12 029 ha) is in private ownership. With regard to species protection sites, Pärnu County has the most state land – 6 352 ha, secondly has the most private land Ida-Viru County– 5 021 ha. Five counties – Rapla, Pärnu, Lääne-Viru, Ida-Viru and Valga County (ranging from 1 027 to 1 477 ha) have relatively equal amounts of private land. Pärnu County – 4 874 ha and Rapla County – 4 742 ha have the most unregistered land (figure 21).

As the Natura 2000 network theme is very actual, analysis is brought out also separately. In Estonia Natura 2000 areas consist of protected areas, limited-conservation areas and species protection sites. Of the Natura areas, 50% is state held (348 953 ha), 27% (185 655 ha) is private and 22% (150 401 ha) is unregistered. On Natura areas, Pärnu County has the most state land – 59 652 ha, Saaremaa has the most in private ownership – 39 647 ha and Pärnu County has the most unregistered land – 26 649 ha (figure 22).

[1] Land cadastre data 25 Sep 2007, cadastral units 4 Oct 2007, data on KPOIS protected sites 01.10.2007

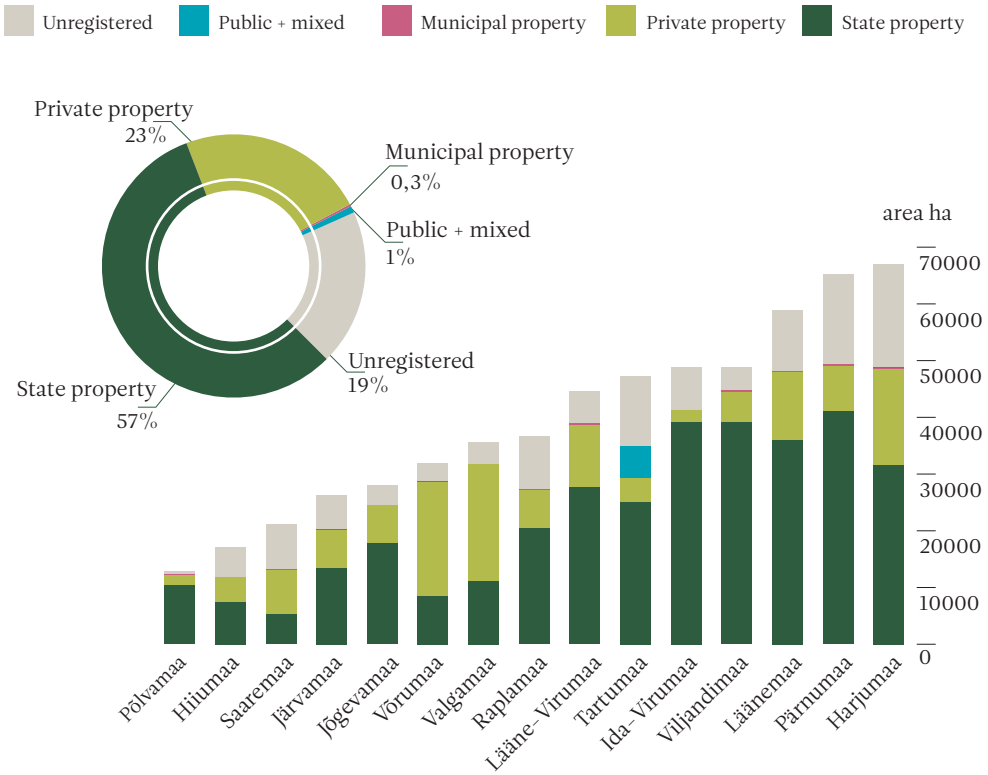



**Figure 19.** Land ownership on protected areas

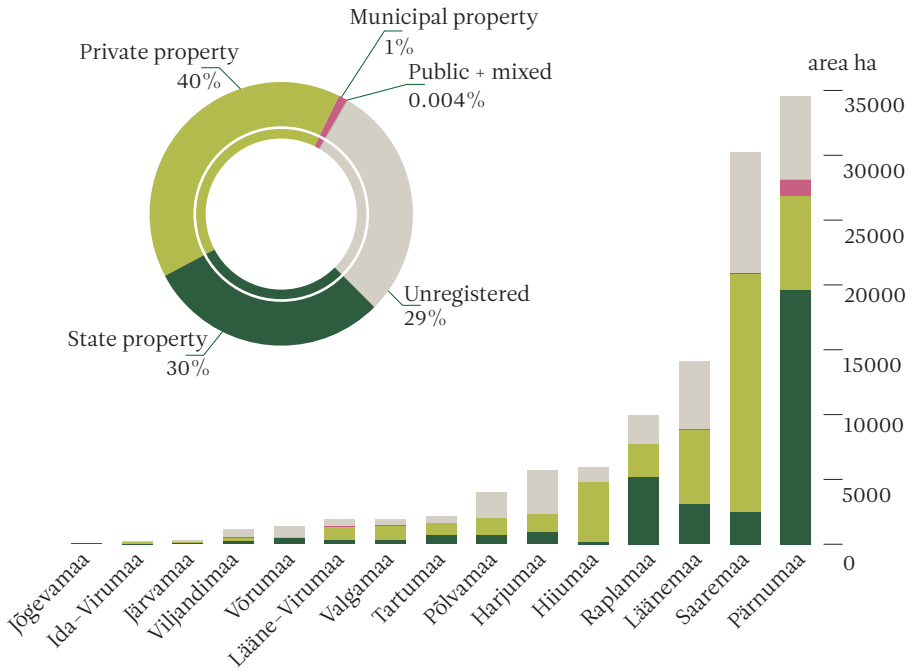



**Figure 20.** Land ownership on limited-conservation areas

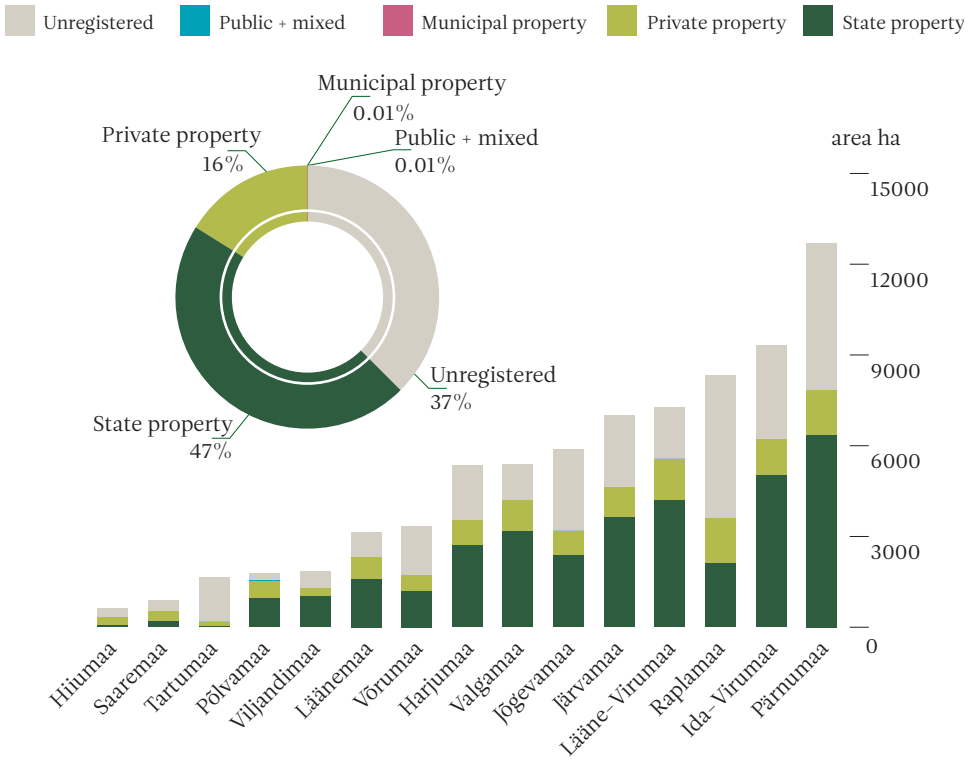



**Figure 21.** Land ownership on species protection sites

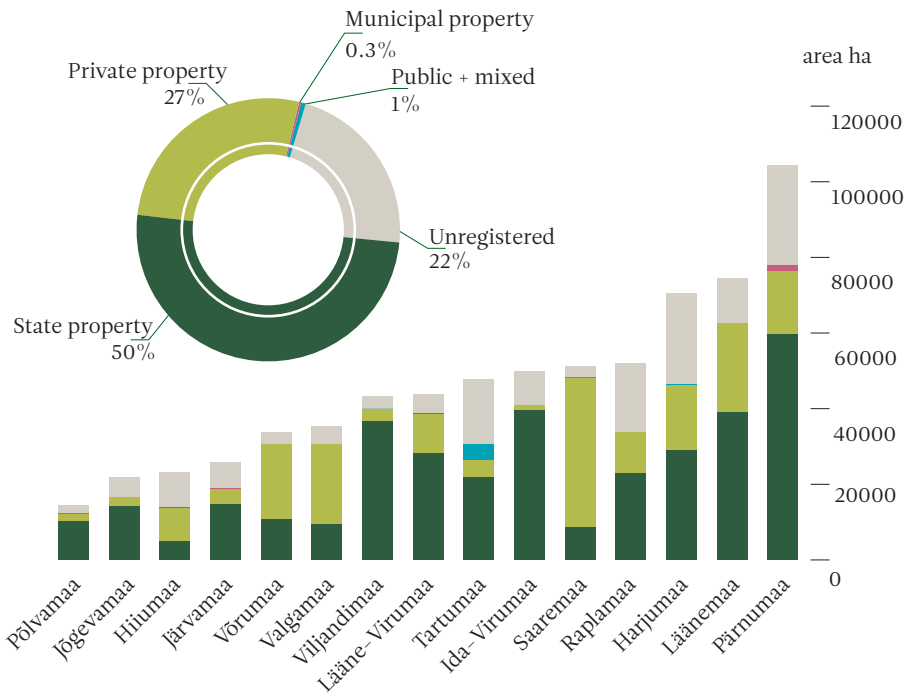



**Figure 22.** Land ownership on Natura 2000 areas

57% (550 ha) of the land on nature monuments is unregistered, 35% (339 ha) is in private ownership, 5% (51 ha) is in municipal ownership and 3% (33 ha) is in state ownership.

The amount of unregistered land on nature monuments is greatest in Rapla County – 154 ha and Harju County – 97 ha. Rapla County – 147 ha and Harju County – 75 ha, have the greatest amount of land underlying nature monuments in private hands, Rapla County has the most in state ownership – 18 ha and Harju County the most in municipal hands – 39 ha (figure 23).

Distribution of land ownership of objects protected at the municipal level there are only two objects total in Estonia. Of these, only the Mäealuse protected landscape area in Harju County has registered land, with 32% (435 ha) of state land, 10% (140 ha) of private land and 1% (12 ha) of municipal land. A total of 57% – 760 ha of the area of the two objects protected at the municipal level is unregistered.

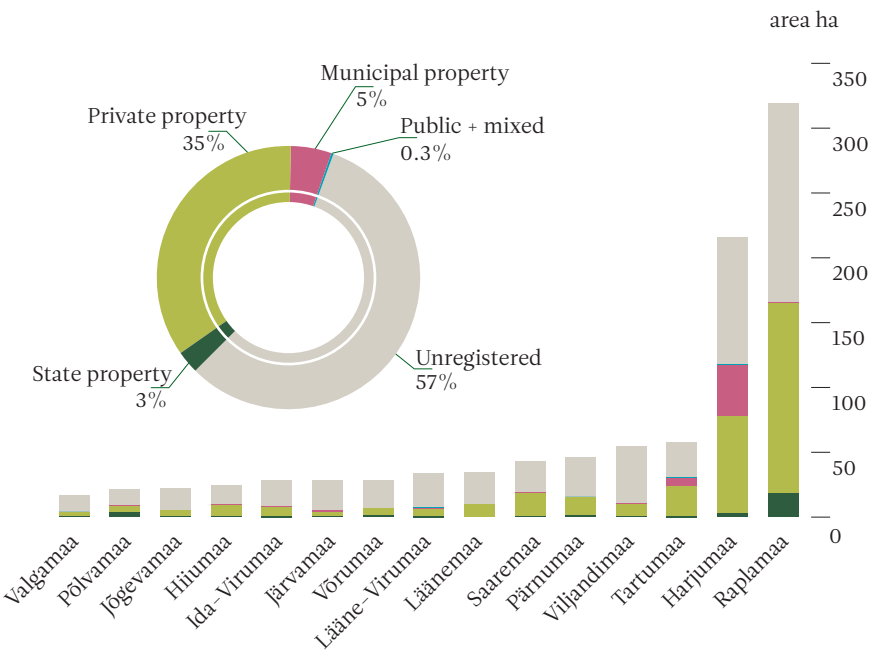



**Figure 23.** Land ownership on nature monuments

In terms of distribution of land ownership, a trend seen in the case of protected areas is that the more strict the zone, the more land is in state ownership. In strict nature zones, as the area with the most stringent protection regime, there is no private land at all; almost all of it is state property. A total of 5% (355 ha) of strict nature reserve land is unregistered (figure 24); 2% (2503 ha) of the land in wilderness conservation zones is private, while 86% (142 332 ha) is state land. In the managed conservation zones, 59% (96 028 ha) is state land, and 29% (48 313 ha) is unregistered and 12% (19 688 ha) is in private ownership (figure 24).

The share of private property in limited management zones is largest of all the zones – 44% (111 817 ha), 36% (88 836 ha) is in state hands and 17% (41 652 ha) is unregistered.

The greatest amount of land in the conservation zones of species protection sites is unregistered – 50% (14 537 ha). A total of 36% (10 711 ha) is in state property and 14% (4273 ha) is in private ownership. (See figure 24.) With regard to limited management zones in species protection sites, the greatest amount of land is in state ownership 53% (23 871 ha). A total of 30% (13 584 ha) there is unregistered, and 17% (7 756 ha) is in private ownership.

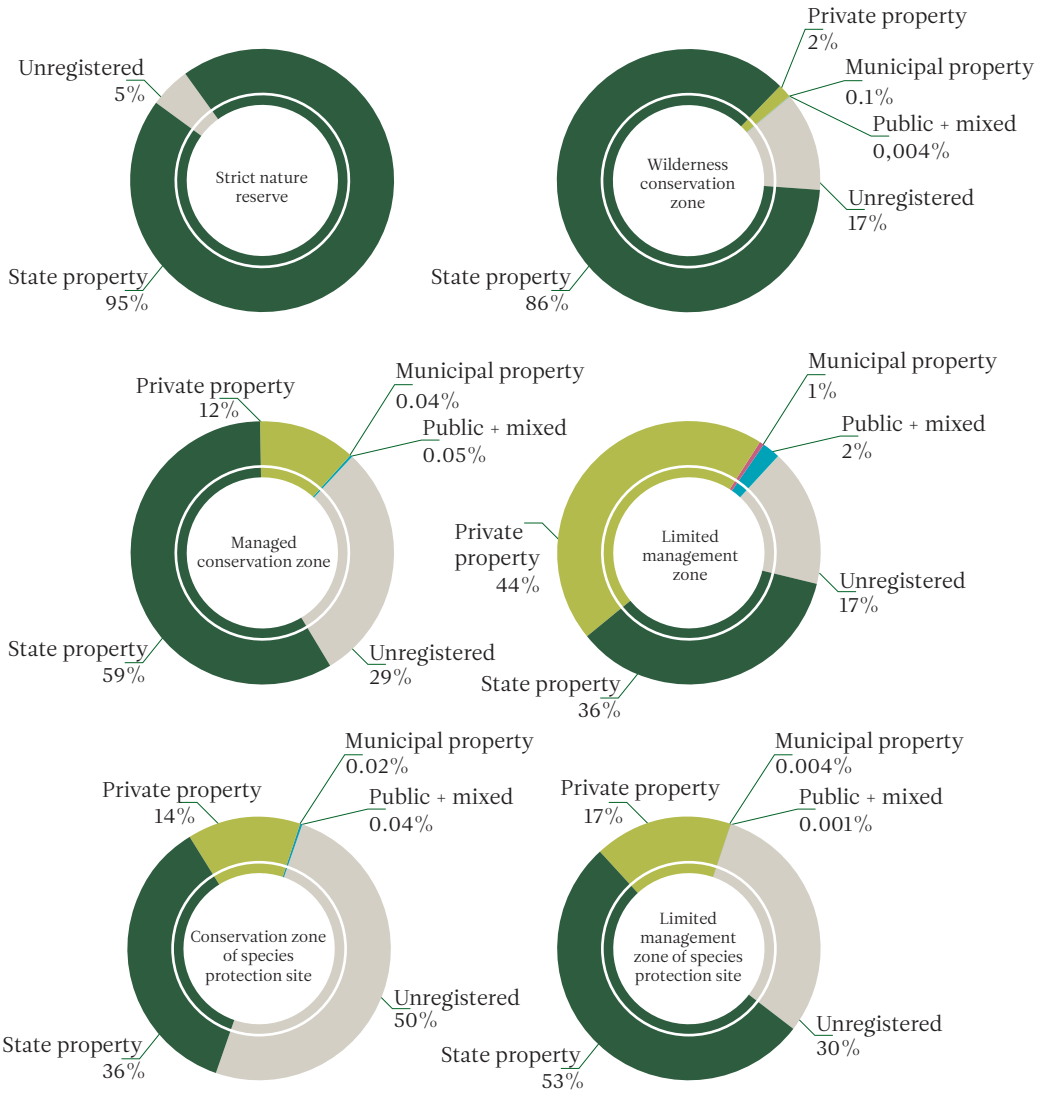



**Figure 24.** Distribution of land ownership in zones of protected areas and species protection sites including the area of areas with unrevised protection rules and parks (as their protection regime also corresponds to the protection regime for limited management zones)

As a conclusion the greatest part of the privately owned land is on limited-conservation areas, which have the mildest protection regime – 40% (44 725 ha). Percetage of privately owned land is biggest on protected areas – 23%. It is also the largest area among all protected objects. Whereas on protected areas there is 134 285 ha private land, 83% (111 817 ha) of it is within the limited management zone.

Percentage of state owned land is biggest also on protected areas – 57% it is also the largest area – 333 866 ha.

Percentage of unregistered land is biggest on species protection sites – 57% (550 ha) but the largest area is on protected areas 19% (114 231 ha).

Percentage of municipally owned land is bigger on protected nature monuments – 5% or 51 ha, in other objects it doesn't have relative importance. Occurrence of public and mixed ownership is also relatively small.

## 3.3.3. Land tax

Pursuant to the Land Tax Act, land tax is not assessed on land on which economic activity is prohibited by law or in accordance with procedure set forth in legislation. Obligatory activity that is necessary for preserving the protected site and set forth by the protection rules is not considered economic activity. Land tax on land on which economic activity is restricted by law or in accordance with procedure set forth in legislation is assessed pursuant to decision of the Government of the Republic at a rate of 25, 50 or 75 per cent of the tax rate.

The land tax rate is reduced for protected areas (national parks, nature reserves and protected landscape areas), limited-conservation areas and species protection sites. On protected areas and species protection sites, the tax rate reduction takes place by zone. For strict nature reserves and the wilderness conservation zones, the tax rate is 0% due to the prohibition on economic activity. For the managed conservation zones, the tax rate is mainly 25%, occationally 50%.

The land tax rate is reduced by the Government of the Republic by regulation separately in the case of each protected area, and by county in the case of limited-conservation areas.

Land tax incentives had been approved as of 2007 for 5 national parks covering an area of 129 370 ha, 72 nature reserves spanning 174 911 ha, 115 protected landscape areas with an area of 150 690 ha, one park (Elva-Peedu forest park) with an area of 188 ha, 168 species protection sites (capercaillie and great crested newt) with an area of 64 488 ha and 148 limited-conservation areas of a total 32 361 ha (figure 25).

Here, in addition to national parks, nature reserves and protected landscape areas, limited-conservation areas and species protection sites, protected nature monuments are included, along with protected areas with unrevised protection rules and objects protected at the municipal level, without sea, Võrtsjärv and Lake Peipsi areas. The 100% tax rate includes the area of protected sites on which the tax rate has not been adjusted.

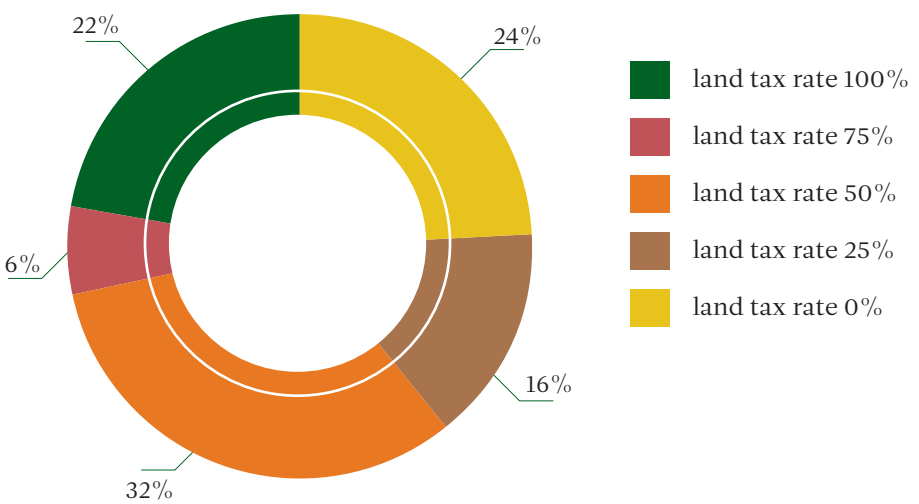



**Figure 25.** Land tax rate for protected sites.

Author: Arne Ader

Pygmy Owl.

# 4. Threatened and protected species

## 4.1. Species with international importance

### 4.1.1. Bern convention species[1]

The purpose of the Bern Convention is the conservation of the flora and fauna of Europe and their natural habitats especially those which require international cooperation for their conservation. Particular emphasis is given to endangered and vulnerable species, including migratory species (figure 26).

The countries signatory to the Bern Convention, including Estonia, must adopt measures ensuring the conservation of populations of flora and fauna.

Appendix I of the Bern Convention lists the species of plants which it is prohibited to pick, cut, uproot or collect.

Appendix II lists the species of animals which it is prohibited to deliberately capture, kill, disturb (especially during breeding season) or gather the eggs of. It is also not permitted to destroy their breeding and resting sites. Individuals of the animals listed in Annex II may not be possessed or traded, either living or dead.

In the case of the animal species listed in Appendix III, it must be considered that the population would not be placed in jeopardy.

Of the species found in Estonia, a total of 444 are listed in the annexes to the Bern Convention, 19 of them in Appendix I, 263 in Appendix II and 162 in Appendix III.

[1]A list of the species can be found on page http://conventions.coe.int/Convention on the Conservation of European Wildlife and Natural Habitats

Author: Mati Kose

Cranes in Matsalu.

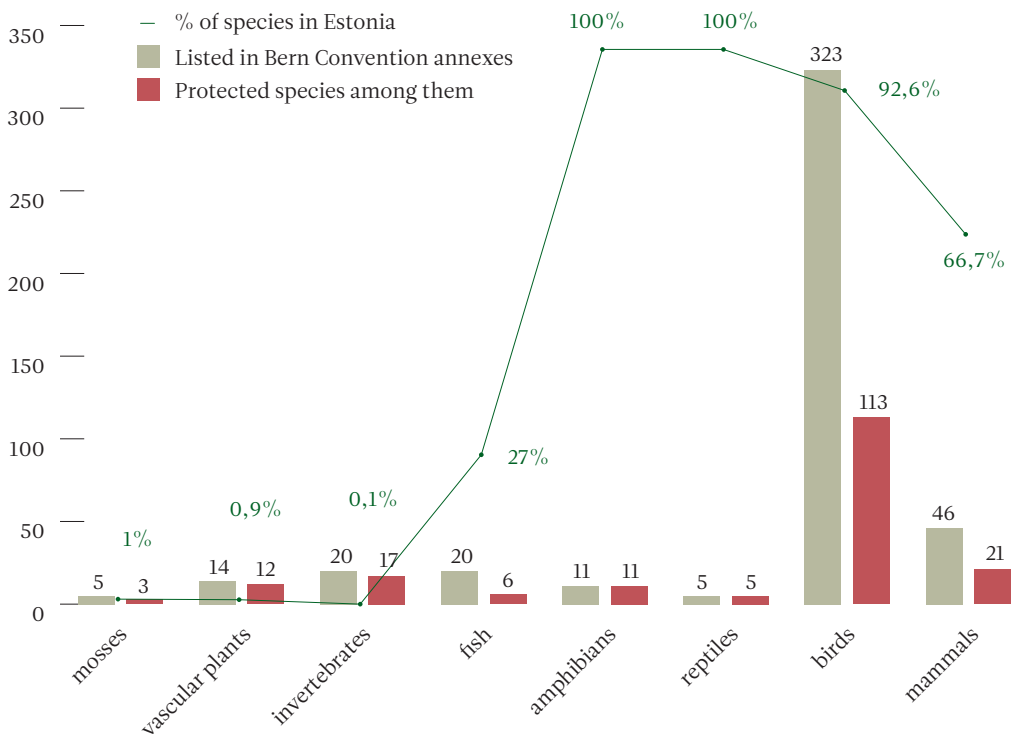



**Figure 26.** Number of species listed in the Bern Convention annexes, share of protected species among them and the percentage of those species out of the total number of species found in Estonia.

Author: Mati Kose

Lynx.

### 4.1.2. IUCN Red List species[1]

The categories of the IUCN Red List and criteria for classification in various categories are selected so that species in danger of global extinction could be classified in a simple and understandable manner (figures 27 and 28):

[1]IUCN 2006. 2006 IUCN Red List of Threatened Species. <www.iucnredlist.org>. Downloaded on 24 April 2007.

**IUCN Red List categories:**

- **Extinct (EX)** – A taxon is extinct when the last individual is dead.

- **Extinct in the wild (EW)** – a taxon is considered extinct in the wild when it is only extant in captivity or naturalized populations.

- **Critically endangered (CR)** – when a taxon corresponds to one of the following criteria:
  - Population size reduction of ≥ 90% over the last 10 years or three generations, where the causes of the reduction are clearly reversible and understood and ceased;
  - Population size reduction of ≥ 80% over the last 10 years or three generations, but the causes of the reduction are not clearly reversible or understood or ceased;
  - Expected population size reduction of ≥ 80% over the next 10 years or three generations;
  - Extent of occurrence (potential range) estimated to be less than 100 km²;
  - Area of occupancy under 10 km²;
  - Population size estimated to number fewer than 250 mature individuals, with an estimated continuing decline of at least 25% within three years or one generation or extreme fluctuations in the number of mature individuals; no subpopulation larger than 50 mature individuals or 90% of mature individuals are in one subpopulation;
  - Population size estimated to number fewer than 50 mature individuals;
  - Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or three generations.

- **Endangered (EN)** – when a taxon corresponds to one of the following criteria:
  - Population size reduction of ≥ 70% over the last 10 years or three generations, where the causes of the reduction are clearly reversible and understood and ceased;
  - Population size reduction of ≥ 50% over the last 10 years or three generations, but the causes of the reduction are not clearly reversible or understood or ceased;
  - Expected population size reduction of ≥ 50% over the next 10 years or three generations;
  - Extent of occurrence (potential range) estimated to be less than 5000 km²;
  - Area of occupancy under 500 km²;
  - Population size estimated to number fewer than 2500 mature individuals, with an estimated continuing decline of at least 20% within five years or two generation or extreme fluctuations in the number of mature individuals in the population; no subpopulation larger than 250 mature individuals or 95% of mature individu als are in one subpopulation;
  - Population size estimated to number fewer than 250 mature individuals;
  - Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or five generations.

- **Vulnerable (VU)** – when a taxon corresponds to one of the following criteria:
  - Population size reduction of ≥ 50% over the last 10 years or three generations, where the causes of the reduction are clearly reversible and understood and ceased;
  - Population size reduction of ≥ 30% over the last 10 years or three generations, but the causes of the reduction are not clearly reversible or understood or ceased;
  - Expected population size reduction of ≥ 30% over the next 10 years or three generations;
  - Extent of occurrence (potential range) estimated to be less than 20 000 km²;
  - Area of occupancy under 2 000 km²;
  - Population size estimated to number fewer than 10 000 mature individuals, with an estimated continuing decline of at least 10% within ten years or three generations or extreme fluctuations in the number of mature individuals in the population; no subpopulation larger than 1000 mature individuals or all mature individuals are in one subpopulation;
  - Population size estimated to number fewer than 1000 mature individuals;
  - Quantitative analysis showing the probability of extinction in the wild is at least 10% within 100.

- **Near Threatened (NT)**

- **Least Concern (LC)**

Of Estonian species, 408 are on the IUCN Red List. Three of them are plant and 405 animal species. The species are distributed as follows into the categories: One species (European sea sturgeon) is critically endangered, one species is endangered (European mink), 13 species are vulnerable. The data set for 12 species is insufficient for assigning a category, and the rest of the 381 species are distributed between the near threatened and least concern categories.

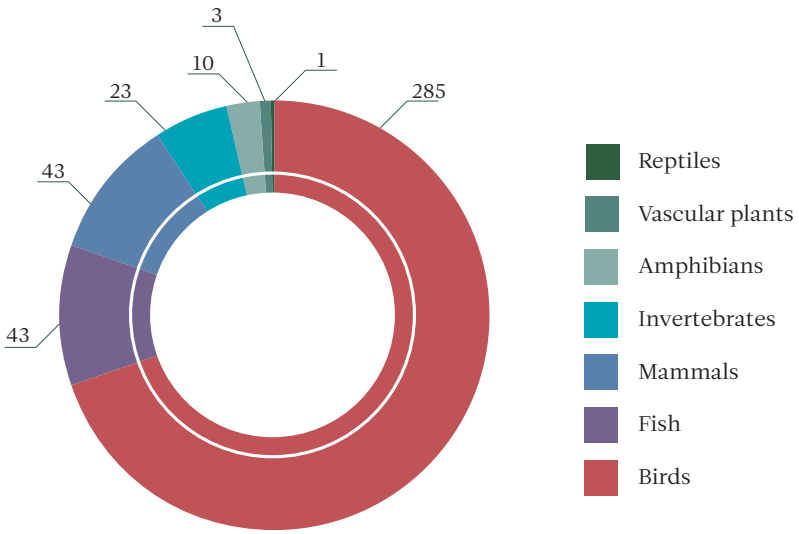



**Figure 27.** Number of species in the IUCN Red List, registered in Estonia, by species group.

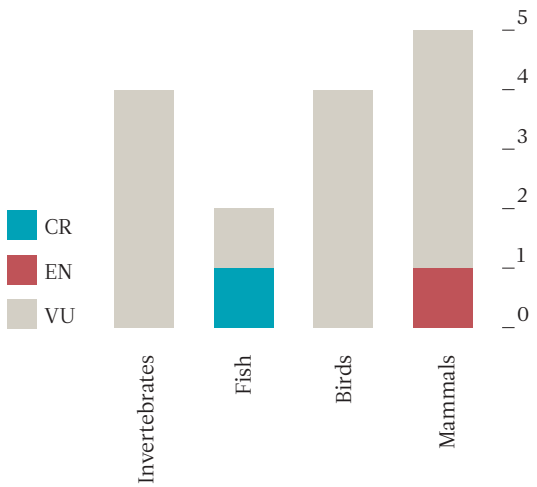



**Figure 28.** Number of species registered in Estonia and belonging to the three IUCN endangered categories (CR – critically endangered, EN – endangered and VU – vulnerable).

Author: Mati Kose

Dunlin (*Calidris alpina schinzii*).

### 4.1.3. Species listed in the Annexes to the directives[1]

Council Directive 79/409/EC on conservation of wild birds deals with protection, management and monitoring of bird species naturally occurring in Europe. The EU member states must implement special measures for the protection of habitats of the species listed in Annex I of the directive. SPAs (special protection areas) are established for the protection of these species. Annex I includes, for instance, species in danger of extinction or which are endangered due to the small population or changes in their habitats. The species in the directive's Annex II/1 may be hunted pursuant to national legislation. The species listed in Annex II/2 may be hunted only in specified member states. In the case of the species in Annex III/1, the sale and activity related to the sale of the birds, their body parts and products made from them are allowed if the birds were killed or trapped lawfully. In the case of the species in Annex III/2, it is possible for member states to allow the sale of the birds, their body parts or products made from them if the birds were killed or trapped lawfully and certain restrictions are imposed on the sale and related activities.

Of the bird species found in Estonia, 170 are listed in the bird directive's Annexes – nearly half. Of these, another one-half – 84 species are under protection in Estonia (figure 29).

Council Directive 79/409/EC on conservation of natural habitats and wild flora and fauna deals with ensuring biodiversity through protection of natural species and habitats. For the protection of the species listed in Annex II to the directive, SACs (special areas of conservation) must be established in member states for the preservation or restoration of conditions favourable for these species. It is prohibited to capture and kill the animals listed in Annex IV in the wild or to disturb them or destroy their eggs. It is also prohibited to destroy or harm the areas where these species breed or rest. The plant species listed in Annex IV may not be picked, cut, collected or uprooted in their natural natural range in the wild. Keeping, transport or sale of the species in Annex IV is prohibited. The member states may adopt measures to ensure that the taking in the wild and exploitation of the species in Annex V, is compatible with maintaining the favourable conservation status.

The habitat directive Annexes list 147 Estonian animal and plant species. 87 of them are protected in Estonia (figure 29).

[1]A list of the species can be found on http://eur-lex.europa.eu/et/index.htm. Council of the European Communities Directive of 2 April 1979, on Conservation of Wild Birds and Council Directive 92/43/EC, of 21 May 1992, on Conservation of Natural Habitats and of Wild Flora and Fauna

Author: Mati Kose

Otter.

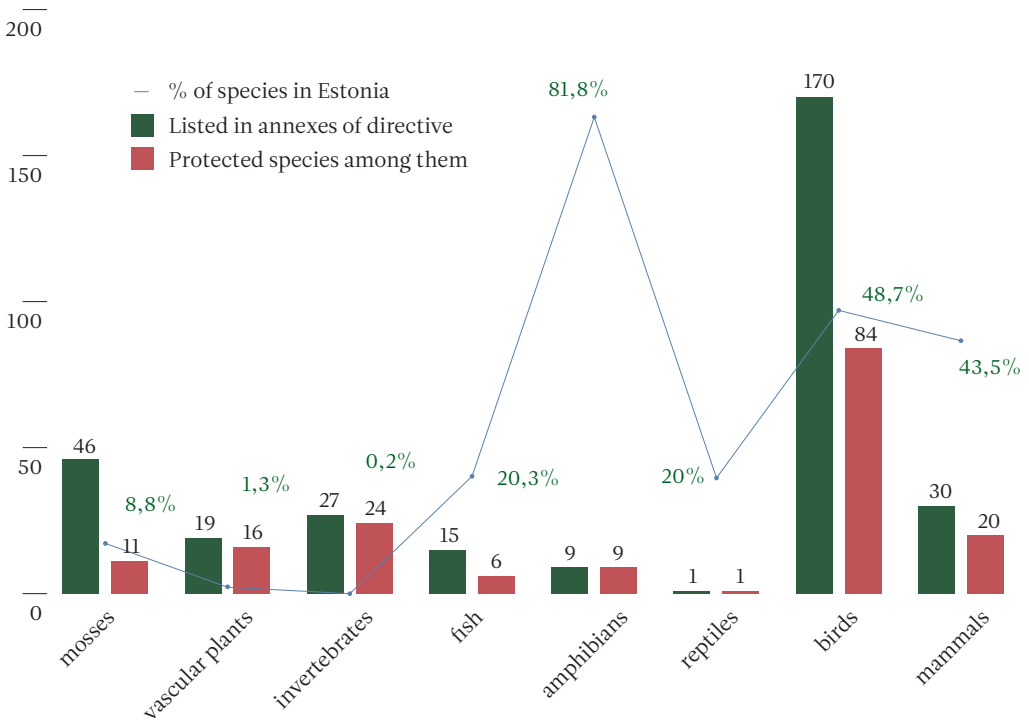



**Figure 29.** Number of species listed in the annexes of the directives, the share of protected species among them and the percentage of the species listed in the annexes of the directives out of the total number of species found in Estonia.

Author: Arne Ader

Wooded meadow with orchids Lady's Slipper.

## 4.2. Species classified as threatened and protected in Estonia

### 4.2.1. Estonian Red Data Book species

The Estonian Red Data Book includes endangered species as well as species that are already extinct or are likely extinct. It also deals with species that are not yet directly endangered but nevertheless require attention (figure 30). The most recent Red Data Book was released in 1998, and 1 318 species are assigned to the various categories.

The species are divided into various categories of endangerment (figure 31). This distribution corresponds to the system in use in the Nordic countries. The Red Data Book categories are:

0 – Extinct or probably extinct – these species are present from 1850–1949, but have not been encountered in Estonia since 1950.

1 – Endangered – the abundance of these species has decreased or habitats have been damaged to such an extent that the survival of the species is in doubt.

2 – Vulnerable – abundance and range are decreasing rapidly and if threat factors continue they may fall into the endangered category.

3 – Rare – populations can easily be jeopardized as the species occur in a limited area, in diffuse or small habitats.

4 – Care demanding – species that are currently quite common but whose condition requires monitoring.

5 – Indeterminate – these species fall into the other categories but since there are not sufficient data, a precise category cannot be assigned for them.

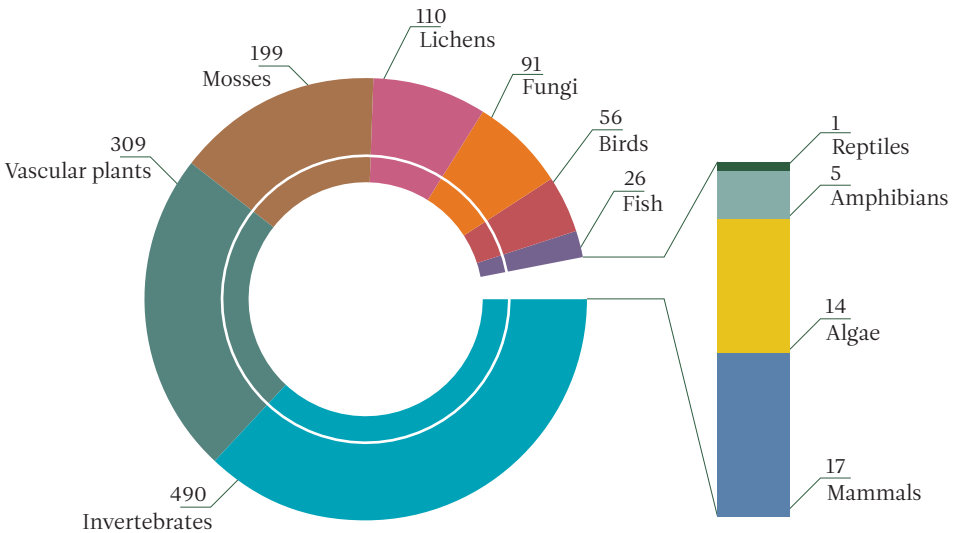



**Figure 30.** Number of species in the Estonian Red Data Book (1998), by group.

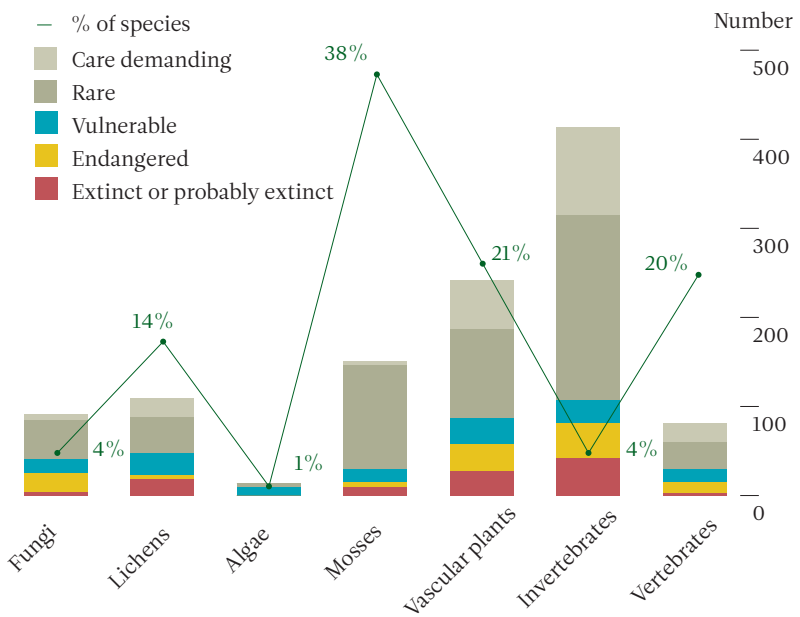



**Figure 31.** Number of species listed in the Estonian Red Data Book, and percentage of the species assigned to Red Data Book categories out of the total number of species found in Estonia.

Author: Mati Kose

Female Capercaille.

### 4.2.2. Protected species

In accordance with the Nature Conservation Act, the protected species are divided into three categories based on their endangered status (figure 32). The most endangered species fall into category I and the less endangered species fall into category III. The lists of the species belonging to protection categories I and II are established by regulation of the Government of the Republic and the list of species belonging to protection category III by regulation of the Minister of the Environment.

**The following are included in category I:**

1) Species that in Estonia are rare, occur on a very limited area, in a few places, in isolated or very diffuse populations;

2) Species in danger of extinction, whose abundance has decreased due to the impact of human activity and habitats have been damaged to a critical threshold and survival in Estonia, should the effect of danger factors persist, is very doubtful.

**The following are included in category II:**

1) Species that are endangered as their abundance is small or decreasing and their occurrence in Estonia is decreasing due to overuse or habitat destruction or damage;

2) Species which may be in danger of extinction should the effect of danger factors persist.

**The following are included in category III:**

1) Species whose abundance is threatened by the destruction or damage to habitats and whose abundance has decreased to the point that they may be included among endangered species should the effect of danger factors persist;

2) Species which were included in category I or II but which are now no longer in danger due to the implementation of protective measures.

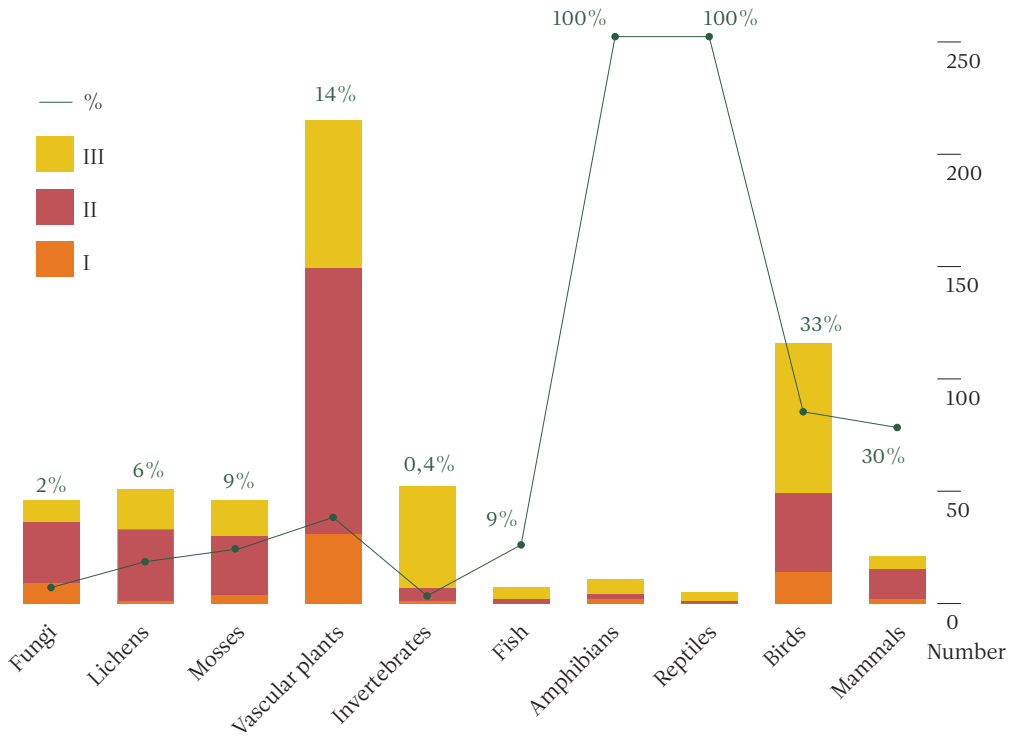



**Figure 32.** Number of species assigned to various protection categories and percentage of protected species out of the total number of species found in Estonia.

All of the habitats of the species in category I must be protected by protected areas or species protection sites. In the case of category II, at least one-half of the habitats must be protected and in the case of category III, at least 10%. Of species under protection in Estonia, 64 are in protection category I, 262 are in protection category II and 244 are in protection category III.

The greatest number of the sites of protected species listed in the Environmental Register (the size of the areas and abundance of the species there are not given) are in the vicinity of Tallinn and Tartu and south-eastern and Western Estonia (figure 33). This does not reflect only the range of the protected species in Estonia but also to what extent they have been studied.

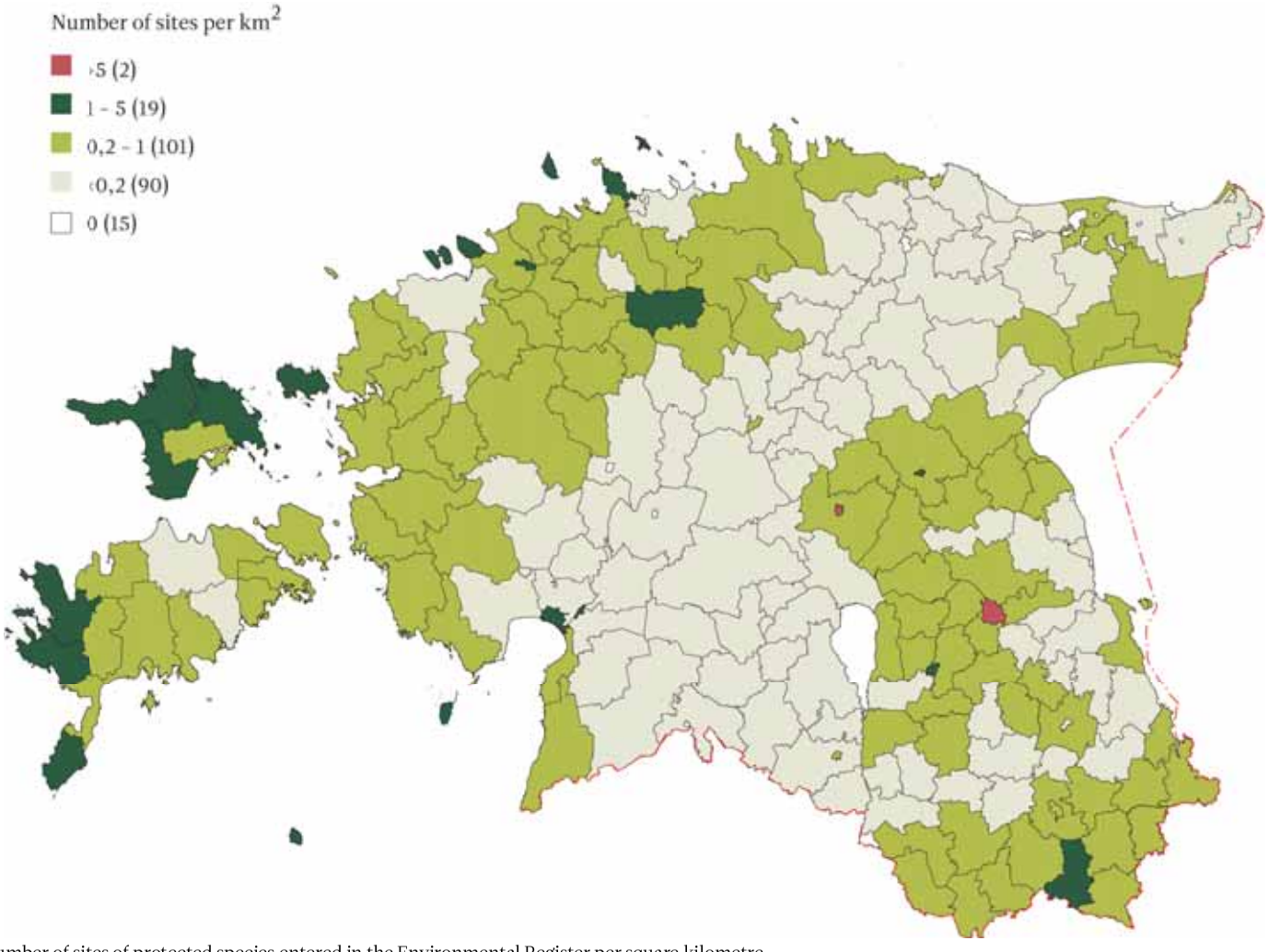



**Figure 33.** Number of sites of protected species entered in the Environmental Register per square kilometre.

Author: Toomas Tuul

View from Emumäe Hill that situates at protected landscape area with same name.

# 5. Habitats

## 5.1. Habitat inventories

A key component of biodiversity aside from species is their habitats – the aggregate of the conditions for animate and inanimate nature necessary for the existence and development of the population of a species. Changes in the state of habitats have a direct impact on species and thereby the biodiversity situation in general. A number of pan-Estonian inventories have been conducted since the restoration of independence in order to ascertain the occurrence and condition of various habitat types (table 5).

The time of the inventory of the woodland key habitats and various meadows listed in the table is the period in which the inventory of the given habitat was conducted; it also provides the name of the institution which carried out the inventory. The given habitats have been inventoried on a smaller scale later as well.

In addition to the inventories based on habitat types, comprehensive spatial inventories have also been conducted regarding Estonia (table 6, figure 34).

**Table 5.** Estonian habitat inventories from 1991 to the present

| Inventory | Purpose | Time | Performed by | Output(s) |
|---|---|---|---|---|
| Inventory of old-growth and natural forest | To provide information about the occurrence and status of old growth forest in Estonia | 1993–1996 | Estonian Fund for Nature | Estonian Fund for Nature database of old-growth forests |
| Inventory of coastal and floodplain meadows | To provide information on the status and occurrence of coastal and floodplain meadows | 1993–1996 | Estonian Fund for Nature | „Eesti ranna- ja luhaniidud". Estonian Fund for Nature 1996 |
| Inventory of wooded meadows | To provide information about the occurrence and status of wooded meadows in lowland Estonia | 1995–1996 | Estonian Fund for Nature | „Puisniidud – Estonia Maritima nr 2". Kukk, T. Kull, K. 1997 |
| Wetland inventory | To provide information the occurrence, status and protection value of wetlands not under protection in Estonia | 1997–1998 | Estonian Fund for Nature | – Estonian Fund for Nature database of wetlands with spatial data<br>– „Eesti märgalade inventeerimine 1997". Estonian Ministry of the Environment, 1999 |
| Network of Estonian protected forest areas project | To assess the representativeness, protection value and expedience of the protection regimes of the forests in current protected areas to assess the protection value of forests outside of the protection areas and to make proposals for establishing additional protected areas | 1996–2001 | Carl Bro International AS, Estonian Ministry of the Environment | – „Eesti metsakaitsealade võrgustiku rakendamise kava". Ministry of the Environment of the Republic of Estonia, 2001<br><br>– Ministry of the Environment database with spatial data |
| Inventory of Estonian wooded, coastal, floodplain and alvar meadows | To assess the occurrence and condition of Estonian wooded, coastal, floodplain and alvar meadows | 1999–2000 | Estonian Seminatural Community Conservation Association | – Estonian Seminatural Community Conservation Association database of Estonian meadows with spatial data<br>–„Läänemaa pärandkooslused". Estonian Seminatural Community Conservation Association, 2001 |
| Inventory of woodland key habitats | To assess the occurrence and proportion of valuable forest biotopes | 1999–2002 | Estonian Ministry of the Environment, Östra Götaland Forest Board | – Centre of Forest Protection and Silviculture database of woodland key habitats with spatial data<br>– Environmental Register http://register.keskkonnainfo.ee/envreg/main<br>– „Vääriselupaikade inventuur Eestis 1999–2002". Estonian Ministry of the Environment and the Swedish Östra Götaland Forest Board, 2003 |
| Inventories of the Natura 2000 habitat types | To define the occurrence in Estonia of the endangered habitat types listed in Annex I to the habitat directive (92/43/EMÜ) | 2001– | Estonian Ministry of the Environment | Estonian Ministry of the Environment database of Natura 2000 habitats with spatial data |

**Table 6.** Comprehensive spatial inventories of Estonia from 1991 to the present

| Inventory | Purpose | Time | Performed by | Output(s) |
|---|---|---|---|---|
| Forest management | To compile a digitally rendered database on the occurrence of Estonian forest land on the basis of a common methodological basis | ongoing | Forest management firms, RMK (The State Forest Management Centre). | Centre of Forest Protection and Silviculture administered State Forest Register database: www.metsad.ee/mets_reg/ |
| Estonian Basic Map | To cover the entire territory of Estonia with a digital topographical database | 1991– | Land Board | Estonian Basic Map 1:10000 http://www.maaamet.ee |
| CORINE LandCover project 1990 | To compile a digital database on the occurrence and range of natural, semi-natural and manmade areas on a common methodological basis | 1993–1995 | The Estonian Environment Information Centre | The Estonian Environment Information Centre (http://www.keskkonnainfo.ee/) Estonian spatial database of land cover, as of 1995<br><br>„Eesti maakate. Corine Land Cover projekti täitmine Eestis". The Estonian Environment Information Centre (1999) |
| CORINE LandCover project 2000 | To compile a digital database on the occurrence and range of natural, semi-natural and manmade areas on a common methodological basis | 1999–2001 | The Estonian Environment Information Centre | The Estonian Environment Information Centre (http://www.keskkonnainfo.ee/) Estonian spatial database of land cover, as of 2000 |
| CORINE LandCover project 2005 | To compile, on a common methodological basis, a digital database on the occurrence and range of natural, semi-natural and manmade areas in Estonia | 2005–2006 | The Estonian Environment Information Centre | Ministry of the Environment's Environment Information Centre (http://www.keskkonnainfo.ee/) Estonian spatial database of land cover, as of 2000 |

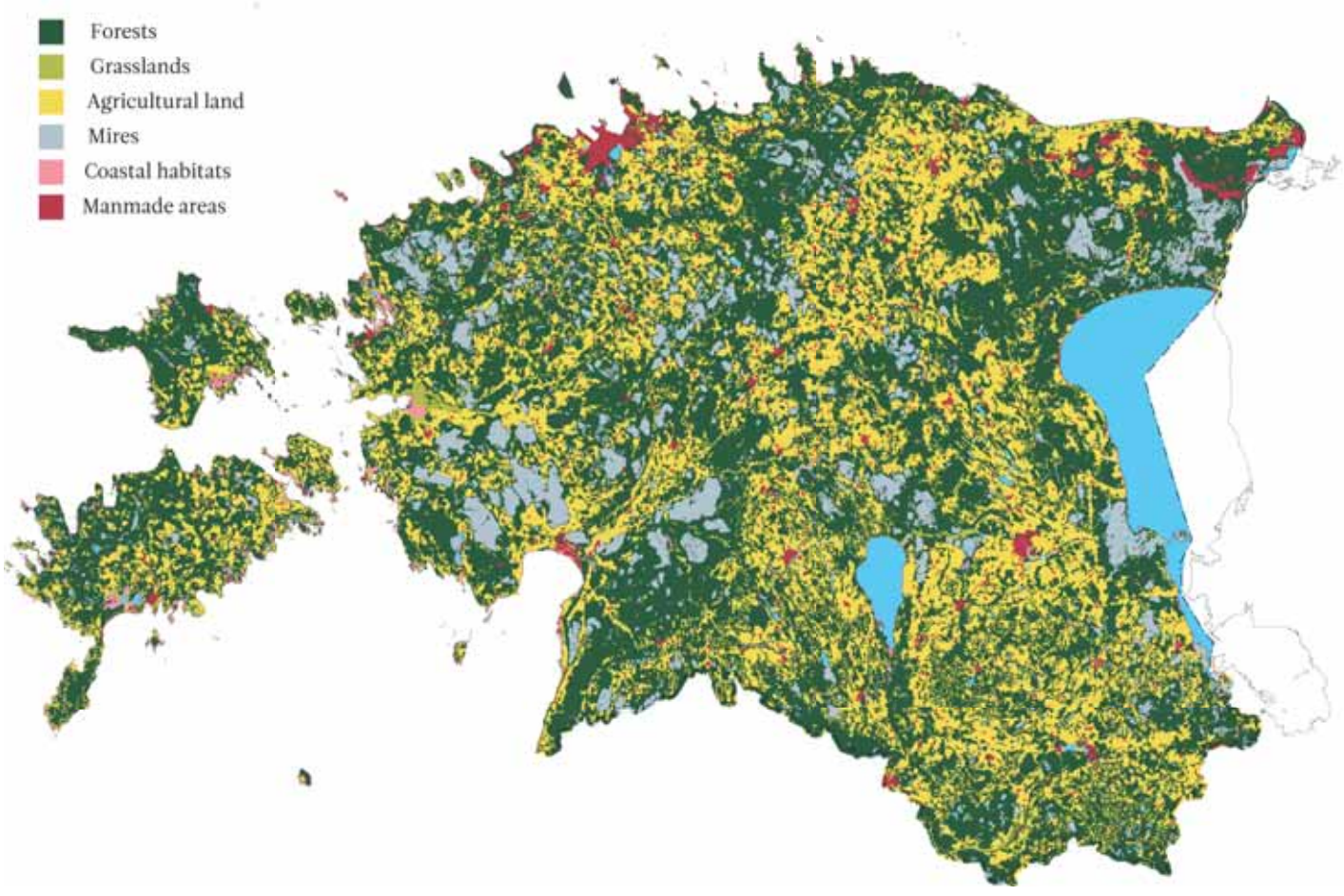



**Figure 34.** Estonian land cover on the basis of CORINE LandCover 2000 data.

Author: Arne Ader

Forest road at Puhtu–Laelatu Nature Reserve.

## 5.2. Habitat protection

### 5.2.1. Protection of threatened species habitats

To give an overview of the occurrence and protected extent of various habitats in Estonia in 2007, the land cover spatial database from 2000 was used. That database is basing on interpretation of satellite imagery covering all of Estonia and is called CORINE LandCover. Land cover was used with the boundaries of areas under conservation (protected areas, limited-conservation areas, species protection sites, natural objects protected at the municipal level, protected nature monuments) according to National Environmental Register. Since the smallest distinguishable land cover unit in the CORINE LandCover (CLC) database is 25 hectares, the data are generalized accordingly. Despite this, an overview can be given of the occurrence of habitats on the protected areas. An exception is bodies of water, as in the case of a 25 ha level of generalization, all bodies of water smallest than this size are omitted from the database. Thus, in the case of bodies of water in this analysis, map layers created on the basis of the Estonian Basic Map and entered into the Environmental Register are used instead of the CORINE LandCover database. The habitats of the endangered species listed in the Estonian Red Data Book are the basis for grouping the land cover types of the CORINE LandCover database (table 7). This is so that it would be possible to make generalizations about the extent of protection of Estonia's endangered species and habitats. The Estonian Red Data Book habitat system was compiled by the book's editors on the model of the Nordic red books, especially that of Finland. The Red Data Book habitats provide separate information on the number of the endangered species for which each specific habitat is the primary or most preferred habitat and the number of the species for which it is one of the habitats – that is, a habitat where the species may occur although it is not the most preferred habitat for the species.

**Table 7.** Correspondence table between Corine Land Cover classes (CLC) and Estonian Red Data Book (PR) habitat types along with the number of threatened species (sources: CLC Project and the Estonian Red Data Book, 1998)

| CLC code | Group name and CLC land cover category name | PR habitat types | Number of species | |
|---|---|---|---|---|
| | | | Primary habitat | One of the habitats |
| | **Group: Artificial surfaces** | | 15 (1%) | 93 (7%) |
| 111<br>121<br>122<br>123<br>124<br>132<br>333<br>131<br>133 | Continuous urban fabric<br>Industrial or commercial units<br>Road and rail network and associated land<br>Port areas<br>Airports<br>Dump sites<br>Sparsely vegetated areas<br>Mineral extraction sites<br>Construction sites | Buildings, roadsides, wastelands, rubbish dumps, open-casts | | |
| | **Group: Parks and gardens** | | 15 (1%) | 59 (4.5%) |
| 112<br>141<br>142<br>222 | Discontinuous urban fabric<br>Green urban areas<br>Sports and leisure facilities<br>Fruit trees and berry plantations | Parks, gardens, courtyards | | |
| | **Group: Agricultural land** | | (2%) | (3.8%) |
| 211<br>231<br>242<br>243 | Non-irrigated arable land<br>Pastures<br>Complex cultivation patterns<br>Land principally occupied by agriculture | Cultivated meadows, fields, pastures | | |
| | **Group: Deciduous forests** | | 201 (15%) | 261 (19.8%) |
| 311 | Broad-leaved forest | Deciduous forests, old deciduous forests, wooded meadows | | |
| | **Group: Coniferous forests** | | 119 (9%) | 150 (11.4%) |
| 312 | Coniferous forests | Coniferous forests, old coniferous forests | | |
| | **Group: Mixed forests** | | 108 (8%) | 182 (13.8%) |
| 313 | Mixed forests | Mixed forests, old mixed forests | | |
| | **Group: Natural grasslands** | | 100 (8%) | 169 (12.9%) |
| 321<br>322 | Natural grasslands<br>Moors and heathland | Coastal meadows, floodplains, alvars, heaths | | |
| | **Group: Shrubland** | | 23 (2%) | 84 (6.4%) |
| 3241<br>334 | Transitional woodland / scrub on mineral land<br>Burnt areas | Bushes, young forests, clearcuts, burn areas | | |
| | **Group: Coastal habitats** | | 140 (11%) | 207 (15.7%) |
| 331<br>4111<br>421 | Beaches, dunes, sands<br>Inland marshes<br>Salt marshes | Seashores, lake shores and river banks, dunes and sandy plains | | |

| CLC code | Group name and CLC land cover category name | PR habitat types | Number of species | |
|---|---|---|---|---|
| | | | Primary habitat | One of the habitats |
| | **Group: Mires** | | 41 (3%) | 77 (5.8%) |
| 3242<br>4112<br>4121<br>4122 | Transitional woodland / scrub on mire<br>Open fens and transitional bogs<br>Open lawn and pool communities<br>Peat extraction areas | Mires, transitional mires, bogs | | |
| | **Group: Inland waters** | | 252 (19%) | 334 (25.3%) |
| 511<br>512<br>521 | Water courses<br>Water bodies<br>Coastal lagoons | Rivers (including canals and ditches), springs, lakes, temporary bodies of water | | |
| | **Group: Marine waters** | | 54 (4%) | 58 (4.4%) |
| 523 | Sea and ocean | Sea | | |

In terms of the habitat types grouped on the basis of CORINE LandCover and the Estonian Red Data Book, agricultural land (32.3%) makes up the greatest part of Estonian territory, followed by mixed forests (18.4%) and coniferous forests (18.2%) (table 8, figure 35).

**Table 8.** Areas and extent of protection in Estonia of habitat types grouped on the basis of CORINE LandCover and the Estonian Red Data Book

| Habitats | Total in Estonia (km²) | % of territory | Protected (km²) | % of the habitat | % of the territory | Under strict protection (km²) | % of the habitat | % of the territory |
|---|---|---|---|---|---|---|---|---|
| Agricultural land | 14 785 | 32.3 | 734 | 5.0 | 1.60 | 5 | 0.03 | 0.011 |
| Mixed forest | 8 438 | 18.4 | 1 169 | 13.9 | 2.56 | 195.5 | 2.32 | 0.427 |
| Coniferous forests | 8 311 | 18.2 | 1 968 | 23.7 | 4.30 | 395 | 4.75 | 0.863 |
| Broad-leaved forests | 4 338 | 9.5 | 659 | 15.2 | 1.44 | 118 | 2.72 | 0.258 |
| Mires | 3 062 | 6.7 | 1962 | 64.1 | 4.29 | 942 | 30.76 | 2.059 |
| Brush | 2654 | 5.8 | 481 | 18.1 | 1.05 | 39 | 1.47 | 0.085 |
| Inland bodies of water | 2 216 | 4.8 | 1 016.5 | 45.9 | 2.22 | 15 | 0.68 | 0.033 |
| Parks and gardens | 572 | 1.3 | 34 | 5.9 | 0.07 | 0.3 | 0.05 | 0.001 |
| Natural grasslands | 558 | 1.2 | 321 | 57.5 | 0.70 | 14 | 2.51 | 0.031 |
| Coastal habitats | 414 | 0.9 | 284.5 | 68.7 | 0.62 | 36 | 8.70 | 0.079 |
| Manmade areas | 405 | 0.9 | 16.5 | 4.1 | 0.04 | 1 | 0.25 | 0.002 |
| Sea* | 25 050 | – | 6877 | 27.5 | – | 289.5 | 1.16 | – |
| **TOTAL** | **70 803** | **100** | **155 22.5** | **21.9** | **18.90** | **2 050.3** | **2.90** | **3.848** |

* Calculations for bodies of water are made not on the basis of the CLC but rather map layers created on the basis of the Estonian Basic Map and entered into the Environmental Register. The analysis of inland bodies of water also includes Lake Peipsi and Lake Võrtsjärv. Lake Peipsi and Võrtsjärv are also included in the territory calculations.

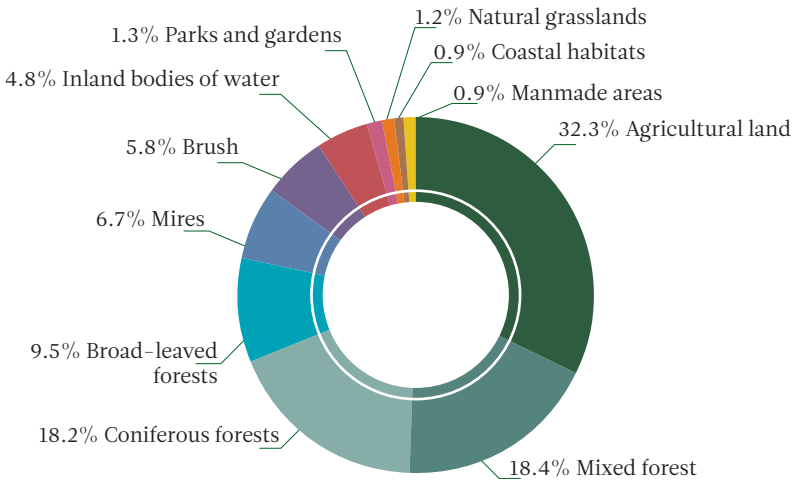



**Figure 35.** Distribution of habitat types grouped on the basis of CORINE LandCover and the Estonian Red Data Book (except for the sea) on Estonian territory in 2000.

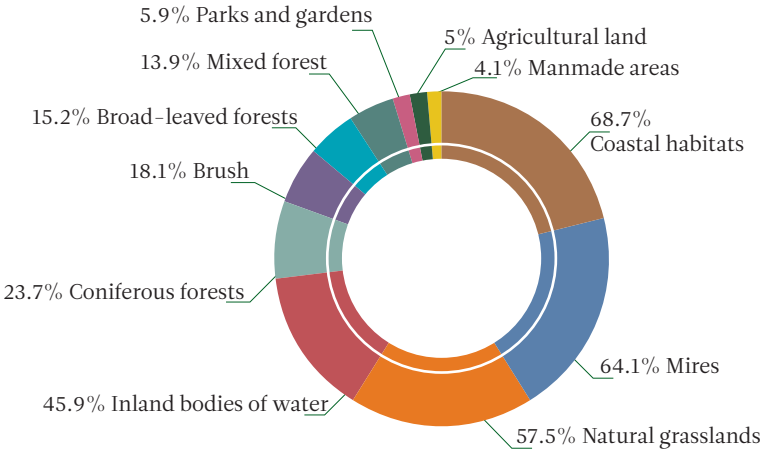



**Figure 36.** Extent of protection of habitats in Estonia on the basis of the land cover in 2000 and protected areas in 2007 (calculated as a percentage of the total area of a given habitat).

As of 1 July 2007, a total of 17.9% of Estonian territory was under protection (18.9% including Lake Peipsi and Võrtsjärv) (see 3.2.7; table 8). The greatest amount of land is protected in the case of coastal habitats (68.7%), mires (64.1%), natural grasslands (57.5%) and inland bodies of water (45.9%) (table 8; figure 36). In addition, forests are important for biodiversity, of which only coniferous forests have more than 20% under protection. Slightly more than one-eighth of the area of deciduous and mixed forests is under protection. At the same time, according to the Red Data Book (see table 7), 15% of the species listed as endangered have deciduous forests as their primary habitat and 8% as mixed forests. Forests are the primary habitat for a total of 401 endangered species, which accounts to about 30% of species endangered in Estonia. Mires have the greatest amount of territory (30.76%) under strict protection (IUCN categories Ia and Ib), followed by coastal habitats (8.7%) and coniferous forests (4.75%) (see table 8).

Author: Mati Kose

Limited conservation area of Majori Lake. Natura 2000 site.

### 5.2.2. Habitat directive habitats in Estonia

Sixty of the habitat types endangered in Europe and listed in Annex I to the Council Directive 92/43/EC on Conservation of Natural Habitats and Wild Fauna and Flora are found in Estonia. Estonia has delineated 509 Special Areas of Conservation (SACs) with a total area of 1 055 476 ha for the protection of the most representative areas of occurrence of these and the plant and animal species listed in Annex II to the habitat directive. Table 9 shows which CORINE LandCover land cover types are most likely to contain the habitat types specified in Annex I to the habitat directive.

**Table 9.** Likely occurrence of Natura 2000 habitat types in CORINE LandCover types.

| **CORINE LandCover types with codes)** | **Natura 2000 habitat types (with codes)** |
|---|---|
| **Broad-leaved forests** | |
| Broad-leaved forests (311) | Western taiga (*9010)<br>Fennoscandian hemiboreal natural old broad-leaved deciduous forests (*9020)<br>Fennoscandian wooded pastures (9070)<br>*Tilio-Acerion* forests of slopes, screes and ravines (*9180)<br>Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*91E0)<br>Riparian mixed forests of *Quercus robur*, *Ulmus laevis* and *Ulmus minor*, *Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers (91F0) |
| **Coniferous forest** | |
| Coniferous forest (312) | Western taiga (*9010)<br>Fennoscandian herb-rich forests with *Picea abies* (9050)<br>Coniferous forests on, or connected to, glaciofluvial eskers (9060) |

| CORINE LandCover types with codes) | Natura 2000 habitat types (with codes) |
|---|---|
| **Mixed forest** | |
| Mixed forest (313) | Western taiga (*9010)<br>Fennoscandian deciduous swamp woods (*9080)<br>Bog woodland (*91D0) |
| **Mires** | |
| Transitional woodland / scrub on mineral land (3242)<br>Open fens and transitional bogs (4112)<br>Open lawn and pool communities (4121) | Active raised bogs (*7110)<br>Degraded raised bogs still capable of natural regeneration (7120)<br>Transition mires and quaking bogs (7140)<br>Fennoscandian mineral-rich springs and springfens (7160)<br>Calcareous fens with *Cladium mariscus*<br>and species of the *Caricion davallianae* (*7210)<br>Petrifying springs with tufa formation (*Cratoneurion*) (*7220)<br>Alkaline fens (7230)<br>Bog woodland (*91D0) |
| Meadows/Natural grasslands | |
| Natural grassland (321)<br>Moors and heathland (322) | Boreal Baltic coastal meadows (*1630)<br>Dry sand heaths with *Calluna* and *Empetrum nigrum* (2320)<br>Inland dunes with open *Corynephorus* and *Agrostis* grasslands (2330)<br>European dry heaths (4030)<br>*Juniperus communis* formations on heaths or calcareous grasslands (5130)<br>Semi-natural dry grasslands and scrubland facies<br>on calcareous substrates (6210)<br>Fennoscandian lowland species-rich dry to mesic grasslands (*6270)<br>Nordic alvar and precambrian calcareous flatrocks (*6280)<br>*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (6410)<br>Hydrophilous tall herb fringe coummunities<br>of plains and of the montane to alpine levels (6430)<br>Northern boreal alluvial meadows (6450)<br>Lowland hay meadows (6510)<br>Fennoscandian wooded meadows (*6530)<br>Limestone pavements (*8240) |
| **Coast** | |
| Beaches, dunes and sand plains (331)<br>Inland marshes (4111)<br>Salt marshes (421) | Mudflats and sandflats not covered by seawater at low tide (1140)<br>Annual vegetation of drift lines (1210)<br>Perennial vegetation of stony banks (1220)<br>Vegetated sea cliffs of the Atlantic and Baltic coasts (1230)<br>*Salicornia* and other annuals colonizing mud and sand (1310)<br>Boreal Baltic islets and small islands (1620)<br>Boreal Baltic coastal meadows (*1630)<br>Boreal Baltic sandy beaches with perennial vegetation (1640)<br>Embryonic shifting dunes (2110)<br>Shifting dunes along the shoreline<br>with *Ammophila arenaria* ("white dunes") (2120)<br>Fixed coastal dunes with herbaceous vegetation ("gray dunes") (*2130)<br>Decalcified fixed dunes with *Empetrum nigrum* (*2140)<br>Dunes with *Salix repens ssp. argentea* (*Salicion arenariae*) (2170)<br>Wooded dunes of the Atlantic, Continental and Boreal region (2180)<br>Humid dune slacks (2190) |

| CORINE LandCover types with codes) | Natura 2000 habitat types (with codes) |
|---|---|
| **Marine waters** | |
| Sea and ocean (523) | Sandbanks which are slightly covered by seawater (1110)<br>Estuaries (1130)<br>Large shallow inlets and bays (1160)<br>Reefs (1170) |
| **Inland bodies of water** | |
| Water courses (511)<br>Water bodies (512)<br>Coastal lagoons (521) | Coastal lagoons (*1150)<br>Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) (3110)<br>Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletalia uniflorae* and/or *Isoeto Nanojuncetea* (3130)<br>Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.* (3140)<br>Natural eutrophic lakes with *Magnopotamion of Hydrocharition* - type vegetation (3150)<br>Natural dystrophic lakes and ponds (3160)<br>Turloughs (*3180)<br>Water courses of plain to montane levels with the Ranunculion fluitans and *Callitricho-Batrachion* vegetation (3260) |

* Denotes the habitat types of primary importance in Europe

In addition, there are in Estonia three habitat directive habitats whose areas are small and which as a result are not reflected in the CORINE LandCover database's smallest distinguishable land cover unit (25 ha). These habitats are calcareous rocky slopes with chasmophytic vegetation (8210), silicicolous rocky slopes with chasmophytic vegetation (8220) and caves not open to the public (8310).

# Summary

Although Estonia is a moderately small country by area, it has a relatively great amount of unspoiled, protected nature, greater in terms of percentage than that of many European countries with an even larger surface area. Only a few countries in Europe can afford to have more than 15% of land under protection. In Estonia, the figure is all of 17.9%. The areas under the strictest protection – those preserved completely untouched or managed only for scientific or monitoring purposes (IUCN category Ia) and those managed only through limited activity which strictly preserves the natural state (IUCN Ib) account for almost 4% of the land area of Estonia.

As of 2007, the Estonian natural conservation system has a long history behind it and many organizational details have settled into place. The abundance of the types of nature conservation areas and protection categories show that nature conservation has become quite advanced. At the same time, this holds true above all with regard to legal nature conservation and management of areas – that is, the typology and definition of the areas. On the other hand, organization of management in these areas and protection of species that need protection outside of these areas is a field that seems still be in its infancy. A total of 25 management plans have been approved as of 2007, in a situation where there are a total of over 1000 protected areas and limited-conservation areas in Estonia. Action plans for protection of species have been developed for only 25 species. There are a total of 570 protected species in Estonia, and 64 in category I alone. As an important step in the field of nature conservation outside of "natural core areas", Estonia has established a thematic plan on the county level which defines the green corridors between the areas. These corridors have but an advisory nature for plans established on the Estonian municipal level, and the question of survival or destruction of "natural core areas" by isolation has been left to local officials to decide.

The existing data set as of 2007 was not sufficient to perform a detailed, precise analysis of diversity of and extent of protection of Estonian habitats. However, using the level of generalization permitted on the state level (interpretation of various habitat types for CORINE land cover categories with a 25 ha resolution) certain conclusions can be drawn. As a large generalization appears to be that a sufficient area of mires and bogs are under protection. At the same time this does not mean that protection on these areas is sufficiently organized. The 25-ha level of generalization indicates sufficient protection for meadows and coastal habitats. We cannot fail to mention that most of the semi-natural meadow areas with a higher natural diversity have become fragmented into pieces smaller than 25 ha and thus are left out of the analysis. The greatest shortcomings concern protection of deciduous and mixed forest, which are the primary habitats for one-fifth of the species that are threatened in Estonia. The deciduous and mixed forests include at least eight habitat types valued in European Union, the comprehensive delineation of which in Estonia has likely not been sufficient as of today and the inventory of these needs constant updating.

Regardless of the abovementioned shortcomings, the state of Estonia's nature conservation in 2007 can be considered good and highly promising. In the near future, the well-delineated protected areas must, through a comprehensive, approach integrated with various sectors of the economy, be joined into a vital network that is able to preserve the sum as well as its parts. We must learn more than we have so far from the mistakes made in the nature conservation policy of industrialized Western European countries. Otherwise, Estonia will also be forced to acknowledge in the future that a spatially fragmented and unbalanced natural environment is impoverished and can only be restored at an extreme cost, if at all.

# DOCUMENTATION PAGE / BIBLIOGRAAFILINE INFO

| | |
|---|---|
| Publisher | Estonian Environment Information Centre |
| Date | April 2008 |
| Editor | Lauri Klein |
| Title of publication | Estonian Nature Conservation in 2007 |
| Theme of publication | Overview of nature conservation in Estonia at 2007 |
| Abstract | Estonian nature conservation has passed a long development history for year 2007. Protected area is almost one fifth of state territory. There exist a lot of internationally designated sites and even more those that are designated at national level. Nature conservation system has been developed well at administrative and juridical level, but is still developing on management level. If site based nature conservation can be evaluated as well regulated already, then species, and more even habitat based conservation as well as nature conservation outside of designated sites is just under development. Very first steps are also taken on integrated planning of nature conservation. |
| Keywords | Nature conservation, designated site, nature reserve, protected species, threatened species, habitat |
| Electronic publication | www.keskkonnainfo.ee |
| ISSN | ISSN 1406–2399 |
| ISBN (hard copy) | ISBN 978–9985–881–54–5 |
| ISBN (online) | ISBN 978–9985–881–56–9 |
| No. of pages | 80 |
| Language | English |
| Distributor | Estonian Environment Information Centre, Mustamäe tee 33, 10616 Tallinn, Estonia Tel: +372 673 7577, Fax: +372 673 7599, info@ic.envir.ee |
| Printing place and year | Tallinna Raamatutrükikoja LLC, Tallinn 2008 |

| | |
|---|---|
| Kirjastaja | Keskkonnaministeeriumi Info- ja Tehnokeskus |
| Väljaandmise aeg | Aprill 2008 |
| Toimetaja | Lauri Klein |
| Pealkiri | Eesti looduse kaitse aastal 2007 |
| Väljaande sisu | Ülevaade looduse kaitsest Eestis aastal 2007 |
| Kokkuvõte | Aastaks 2007 on Eesti looduse kaitse teinud läbi pika arengutee. Pindalaliselt on jõutud riigi territooriumist pea viiendiku kaitseni. Hulgaliselt on rahvusvahelise seadusandluse alusel kaitstavaid objekte ja veelgi enam riiklikul tasandil kaitstavaid. Administratiiv-juriidiliselt on looduse kaitse suhteliselt kaugele arenenud, kuid korralduslikult veel mitte. Kui kaitstava ala põhine kaitse on suhteliselt hästi reguleeritud, siis liikide ja eriti elupaikade kaitse ning looduse kaitse väljaspool kaitstavaid alasid alles kujuneb. Algstaadiumis on looduse kaitse kompleksne planeerimine. |
| Märksõnad | Looduskaitse, kaitstav ala, kaitseala, kaitsealune liik, ohustatud liik, elupaik |
| Võrguväljaanne | www.keskkonnainfo.ee |
| ISSN | ISSN 1406–2399 |
| ISBN (trükis) | ISBN 978–9985–881–54–5 |
| ISBN (e-trükis) | ISBN 978–9985–881–56–9 |
| Lehekülgede arv | 80 |
| Keel | Inglise |
| Väljaande levitaja | Keskkonnaministeeriumi Info-ja Tehnokeskus, Mustamäe tee 33, 10616 Tallinn Tel: +372 673 7577, Faks: +372 673 7599, info@ic.envir.ee |
| Trükkimise koht ja aeg | Tallinna Raamatutrükikoja OÜ, Tallinn 2008 |