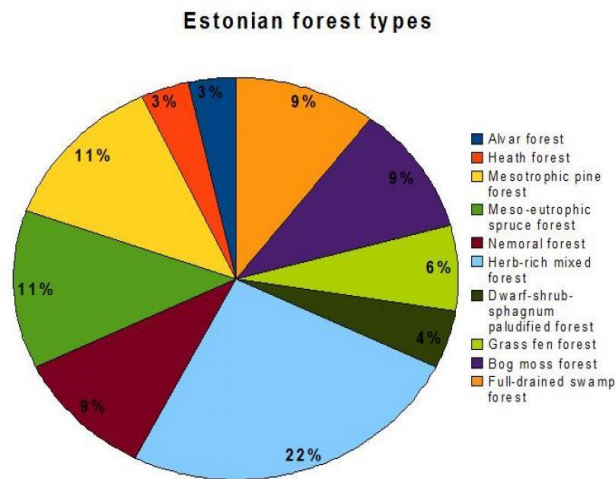


## Forest characteristics and forest types - Estonia

In Estonia forests are being used intensively; 2 million of hectares (approximately 53 %) of the land is covered with forests. Mostly we have pine forests especially in northern, western and south-eastern part of Estonia. In the central Estonia are most common spruce forests. Estonian Forests belong to mixed forests zone. Conifer stands are dominating but we have also strong wood stands. Nowadays can naturally form a forest only pine and spruce, our birch and aspen stands are temporary. Without human interaction they would all be soon replaced with conifer forests. The global system in Estonia is represented by sclerophyllous dry forest, disturbed natural forest, lower montane forest and freshwater swamp forest.

### Forest types in Estonia



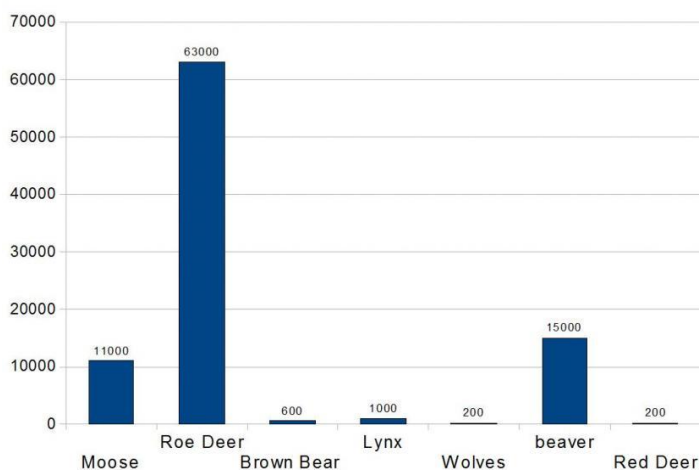
*Peatlands are very important in forests*

There are 10 main forest types in Estonia which are categorized by E. Lõhmus and are mainly used: Alvar forest are mostly spread in Western Estonia and islands and occur in 3 % of the forests. Heath forest is mostly spread in Northern Estonia and also occurs in 3 % of the forests. Mesotrophic pine forest is spread in Southeastern and Northern Estonia and islands and occurs in 11 % of the forests. Meso-eutrophic spruce forest main area of distribution is Southeastern, Northern and Northeastern part of the country and occurs in 11 % of the forests. Nemoral forests are mostly spread in Central and Eastern Estonia and occur in 9 % of the forests. The main area of distribution of herb-rich mixed forests on wet gley soils are islands and Western Estonia and occur in 22 % of the forests. Dwarf-shrub-sphagnum paludified forests are spread in Northern and southwestern part of the country and occurrence is 4 %. Grass fen forests occurs in 6 %, bog moss forests occurs in 9 % and full-drained swamp forests occurs also in 9 % of the forests and they are spread all over the country.

# Typical and exceptional fauna and flora species in forests - Estonia

## Fauna

Approximate number of bigger animals in Estonian forests



There is a big number of animals in our forests. The biggest carnivore is brown bear (*Ursus arctos*) with more than 600 individuals but the biggest animal is moose (*Alces alces*) with more than 9000 individuals. In addition we have eurasian lynx (*Lynx lynx*) with almost 1000 exemplars and wolves (*Canis lupus*) with about 200 exemplars. They all together indicate good ecological condition of Estonian forest. Herbivores are represented with 100000 individuals of roe deers (*Capreolus*

*capreolus*) and little number (200 individuals) of red deers (*Cervus elaphus*).

Smaller animals are red foxes (*Vulpes vulpes*), wild boars (*Sus scrofa*), european pine marten (*Martes martes*), brown hare (*Lepus europaeus*), mountain hare (*Lepus timidus*) and endangered species like european mink (*Mustela lutreola*), siberian flying squirrel (*Pteromys volans*), and several species of dormouse. Reintroduced species are eurasian beavers (*Castor fiber*), red deers (Estonia is the northern border of red deer distribution) and european mink.

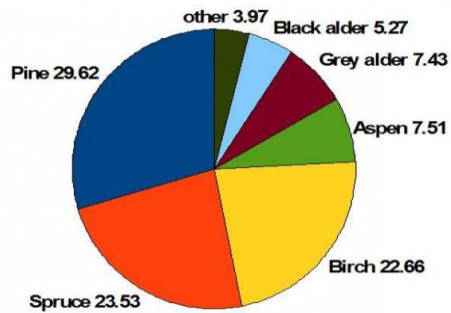


Exceptional animal species are: raccoon dogs (*Nyctereutes procyonoides*), muskrats (*Ondatra zibethicus*) and american mink (*Mustela vison*), which has crowd off european mink. European mink exists now only on isolated island of Hiiumaa (where all the american minks are removed) and have been reintroduced there since the year 2000. Because of the big number of wild animals in our forests, we have developed game management. In Estonia are

allowed to hunt all animals that are not endangered, for example: wolves, bears, hares, and deers. Game management for moose and deers is necessary because they like to eat young trees and it makes forest owners very difficult to renew their forest. Wolves are allowed to hunt if they are attacking people or sheep cattle. If the number of wolves is getting to big, it's very difficult for farmers to keep the sheep.

## Flora

Tree species occurrence in Estonian forests



Estonia is situated on a transitional area where the coniferous Euro-Siberian taiga opens onto a European zone of deciduous forests. In Estonia you may find big coniferous forests and also many very big and valuable deciduous forests. There are 87 native and more than 500 introduced tree and bush species recorded. Most common trees in Estonian forests are Scots Pine (*Pinus sylvestris* (29 %)), Norway Spruce (*Picea Abies* (23 %)), Silver and Downy Birch (*Betula pendula* and *Betula pubescens* (22 %)), Aspen (*Populus tremula* (8 %)), Gray and Common Alder (*Alnus incana* and *Alnus glutinosa*). Most common invasive tree and bush species are thicket shadbush (*Amelanchier spicata*), rugosa rose (*Rosa rugosa*), red elderberry (*Sambucus racemosa*), Hedge cotoneaster (*Cotoneaster lucidus*), Ontario Balsam Poplar (*Populus balsamifera*). Most common under-wood species are Mezereon (*Daphne mezereum*), Smell Fox (*Anemone nemorosa*), Fly Honeysuckle (*Lonicera xylosteum*), Rowan Tree (*Sorbus aucuparia*), Bird Cherry (*Prunus padus*), Common Hazel (*Corylus avellana*). Common herb layer species are Liverwort (*Marchantia polymorpha*), Common wood-sorrel (*Oxalis acetosella*), Lily of the Walley (*Convallaria majalis*), True-Lover's Knot (*Paris quadrifolia*) and many fern species. In Estonia we have also 36 species of orchids and all of them are under protection. In our forests can be found Red Helleborine (*Cephalanthera rubra*), Coralroot Orchid (*Corallorhiza trifida*), Lady's Slipper (*Cypripedium calceolus*) and a lot more. They are not common herb layer species but they are spread quite widely.



# Forms of nature protection such as national parks and Natura 2000 sites - Estonia

In Estonia natural areas are protected on the basis of international agreements of two European Union directives which are the most stringent: the bird directive and the habitat directive. Next are conventions: The Ramsar Convention on international wetlands, especially bird habitats, the Bern Convention on protection of European flora and fauna and their habitats: a total of 444 species found in Estonia are listed in the annexes to the Bern Convention (most of them are birds) and The Convention on the Protection of the Marine Environment of the Baltic Sea Area (HELCOM).

In the year 2010 Estonian Natura 2000 network consists of 66 bird areas and 531 nature areas. Most of bird and nature areas are coinciding and total area is 14 590 km<sup>2</sup> and covers 16.5 % of Estonian land area. From total Estonian land area is under protection 18 %.



Forms of national nature protection are:

- 1) Protected areas:
  - 5 national parks: the biggest - Lahemaa, the smallest- Karula, Soomaa, Vilsandi and Matsalu,
  - Nature conservation area: smallest Anne and biggest Alam-Pedja
  - Landscape protection area (nature park).
- 2) Limited-conservation areas
- 3) Species protection sites
- 4) Protected species, fossils and minerals
- 5) Protected nature monuments
- 6) Natural objects protected at the municipal level

# Organization of Forestry - Estonia

By usage our forests are split in our forest law into three categories:

1. *Commercial forests* are areas where are allowed all the ways to use the forests. They form 80 % of our forests.
2. *Forests for protecting the nature objects.* There is prohibited all the ways to use forests in business purpose. They form 12 % of forests.
3. *Forests for protecting environmental statuses.* They are located in protected areas, shore waters and beaches, near watersources, on water uptakes, on areas with big risk of erosion and wind, alvar areas and on objects of natural heritage. They form 8 % of forests.

By ownership our forests are divided also in three categories.

1. *State forests* are managed by The State Forest Management Centre (RMK). Estonian state forests are divided into 17 forest districts. RMK creates and maintain opportunities for holidays and camping in forests in Estonia. State forests form approximately 39 % of our forests.
2. *Private forests* are managed by private-owners. They can get help and information about forests and forest management from Private Owner's Centre. They form about 44 %
3. *Ownership is unidentified* for 17 % of forests. These forestlands are added to the state forest or are sold on the auctions.

