



The Jägerhäuschen Marteloscope

Field guide

Landesbetrieb Wald und Holz
Nordrhein-Westfalen



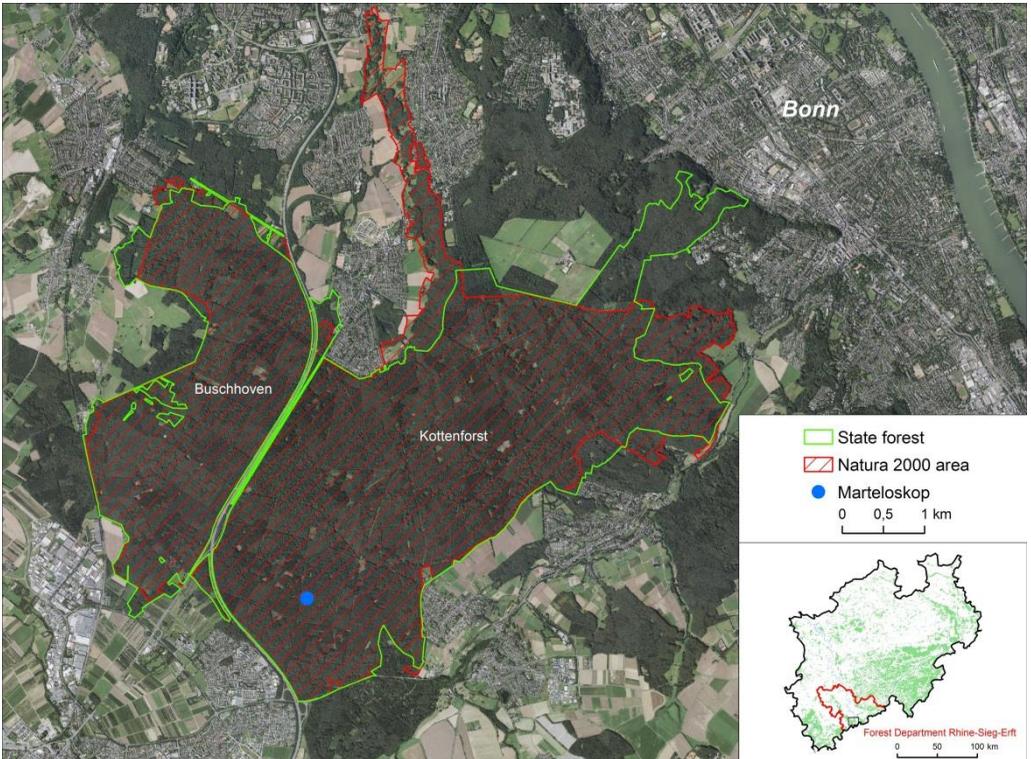
Regionalforstamt Rhein - Sieg - Erft



State Forest Kottenforst

The Federal State North Rhine-Westphalia (NRW) owns 13 %, or 113,000 hectares, of the total forest area in NRW. *Wald und Holz NRW* is responsible for managing these forests and in addition provides its expertise and assistance to private forest owners. The regional forest district office, *Regionalforstamt Rhein-Sieg-Erft*, manages about 60,000 hectares of forest in the Greater Cologne/Bonn area. Of these approximately 22,000 hectares are state-owned.

There are several well-known forests including the Königsforst, the Siebengebirge and the Kottenforst. They all vary considerably in their site conditions. The Kottenforst is located in the west and southwest of the former German capital of Bonn. The local state forests are a part of the forest districts *Kottenforst* and *Buschhoven*. The Kottenforst is dominated by old oak stands. They are embedded in a concentric arranged network of forest paths and roads which served in the past for electoral par force hunting. Jägerhäuschen (“hunters cottage”) is a relic within these former hunting grounds. It was built around 1750 as a relay-station where hold horses were ready to replace those exhausted.



3,900 ha

Total forest area

7.9 m³/ha

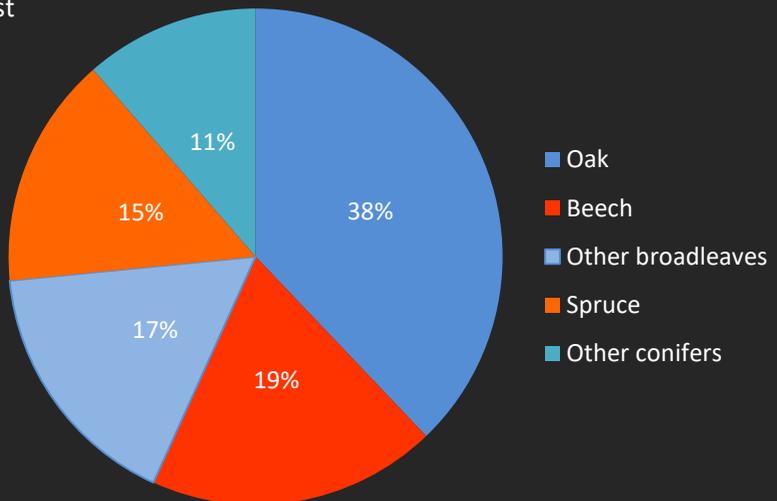
Annual increment

225 m³/ha

Actual average stock

2,300 ha

are state forest



18,000 m³

is the total annual increment

4.1 m³/ha

is the annual felling rate

74 %

Broadleaves

26 %

Conifers

Biodiversity concept



The Kottenforst is part of the Natura 2000 network. It harbours old-growth oak forests protected under the Habitat Directive. These forests are habitat for several species of European importance. Those include the middle spotted woodpecker, Bechstein's bat and the great crested newt. The applied biodiversity concept in Kottenforst is a cornerstone of multi-functional forest management and ensures a favourable conservation status for protected habitats and species.

Old trees and deadwood provide crucial microhabitats for forest dwelling species.

Wald und Holz NRW has developed the wood-biotope concept "*Xylobius*" for maintaining and increasing such elements in managed state forests in NRW. It is adapted to conditions of oak forests. According to *Xylobius* all stands older than 100 years are examined for habitat trees. All identified habitat trees displaying for example cavities, nests or conks of fungi are marked and protected. Veteran trees and large dead trees are also selected.

Small stands with a high density of habitat trees are excluded from any use as so called '*deadwood areas*'. Groups of around 15 habitat trees are established in stands with low habitat trees density for future deadwood accumulation. Further measures are allowed for protecting old-growth oaks from being outgrown by beech. If safety standards of wood harvesting in a stand cannot be met they are excluded from any management. Besides *Xylobius* there are the following supplementary measures:

- Seven strictly protected forest areas were designated exclusively for nature conservation.
- Uniform stands of non-native species like Norway spruce are transformed to multi-layered, mixed oak forests. Aim is to reconnect fragmented oak stands.
- Non-forest habitats and species are given attention by maintaining and restoring e.g. spawn ponds for amphibians, species-rich forest meadows and are managed along given conservation objectives.

The Kottenforst receives many visitors due to its location near the City of Bonn. Awareness raising and providing information are central tasks of the regional forest district office. Using various media tools and offering guided walks and educational activities the high ecological value of Kottenforst's oak forests is emphasized.

The biodiversity concept is implemented in the framework of the LIFE+ project „Villevälder – Wald- und Wasserwelten“ and financed by the European Union and North Rhine-Westphalia (2014 – 2019).

2,324 ha

are Natura 2000 area

94.5 %

of Natura 2000 areas are state forests

235 ha

are strict forest reserves

11.9 %

are set aside forests

22 %

of the stands are older than 100 years

6.4 m³/ha

deadwood (DBH > 40cm) in stands older than 100 years

There are **10.3**

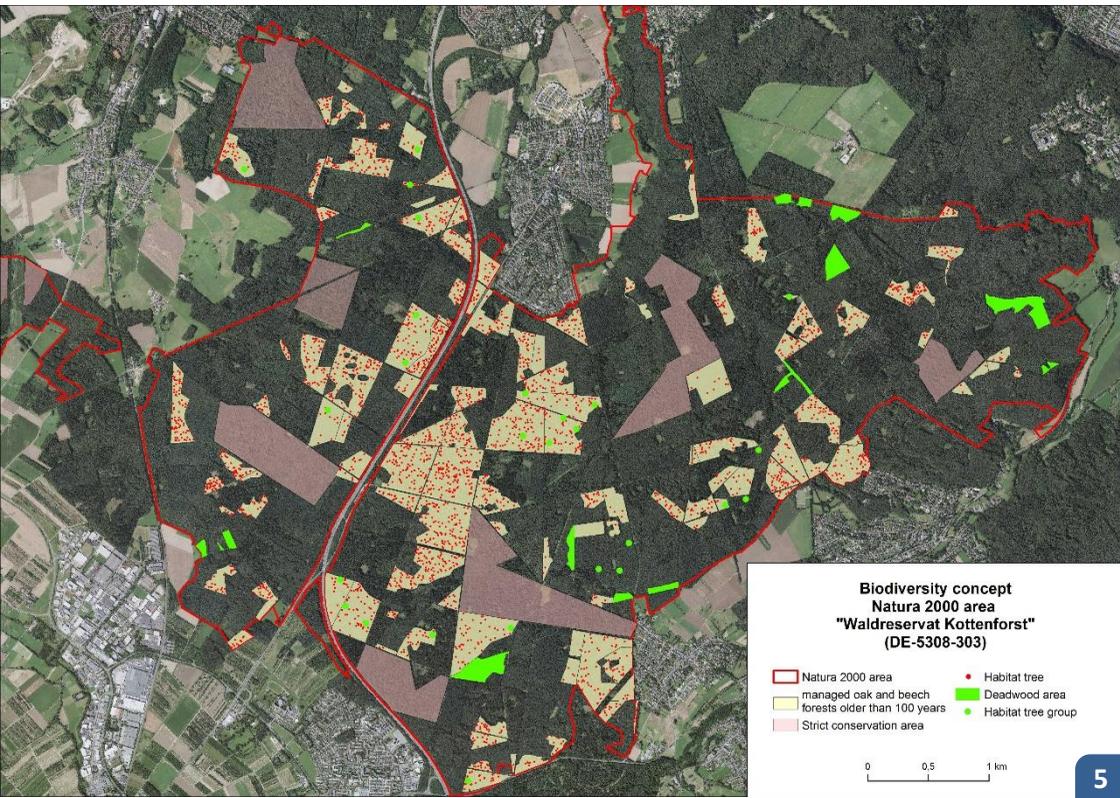
habitat trees per hectare in stands older than 100 years

There are **26**

designated habitat tree groups

28 ha

is the size of six deadwood areas



Biodiversity concept
Natura 2000 area
"Waldreservat Kottenforst"
(DE-5308-303)

- Natura 2000 area
- managed oak and beech forests older than 100 years
- Strict conservation area
- Habitat tree
- Deadwood area
- Habitat tree group

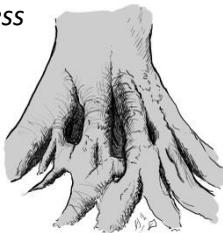
0 0,5 1 km

Habitat structures

Large quantities of deadwood and a high density of old microhabitat-bearing trees are characteristic elements of natural forests, especially of the old-growth phases. These phases are often absent or rare in managed forests, even in forests under close-to-nature management. Also in selective harvests and thinnings, 'defective' trees referring to these old-growth phases (hollow, dead and languishing trees) are often removed. Yet, an important share of forest biodiversity is strictly or primarily dependent on these elements for their survival, especially 'saproxylic' species, those are species depending on deadwood.

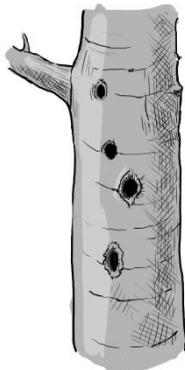
Most species dependent of old-growth-elements and phases have become threatened. Conservation of biodiversity in commercial forest stands is mainly a question of conservation of adequate amounts of deadwood and retention of such microhabitat structures.

Root buttress cavities



Large mould cavities

Woodpecker cavities



Crown deadwood

...and biodiversity



Dendrocopos medius



Myotis bechsteinii



Lucanus cervus



Phellinus robustus



Triturus cristatus



Arnica montana

Site conditions

Altitude:	180 m.a.s.l.
Forest ecological region:	Niederrheinische Bucht, Ville
Soil:	surface water gley (Pseudogley)
Geology:	Aeolian silt deposit over Rhine gravel terrace, medium basicity, temporary wet
Mean annual temperature:	9.4 °C
Annual precipitation:	650 mm
Natural forest community:	Stellario-Carpinetum

*Oak-hornbeam-forests occur on temporary wet soils where the soil conditions are not suitable for beech. They have a sub-Atlantic and medio-European range preferring a mild and rainfall-rich climate. The multi-layered, uneven-aged stand is dominated by *Quercus petraea*. *Carpinus betulus* and *Fagus sylvatica* form a second canopy layer. Natural regeneration of hornbeam and beech occur under canopy gaps.*

Species: *Anemone nemorosa*, *Athyrium filix-femina*, *Carex remota*, *Milium effusum*, *Oxalis acetosella*, *Stellaria holostea*.

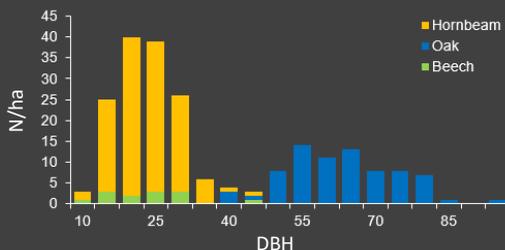


Stand characteristics

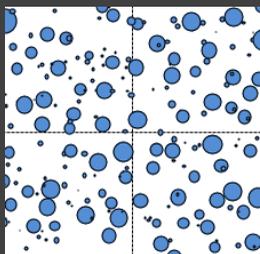
The Marteloscope **Jägerhäuschen** is located in a double-layered stand of mainly oak and hornbeam of 140 years.

Stand data

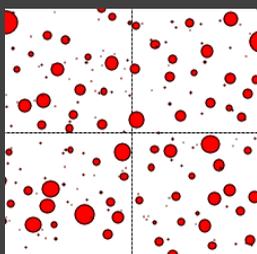
N [stems/ha]	217
BA [m ² /ha]	30.70
Volume [m ³ /ha]	416.4
Habitat value [points]	1,603
Economic value [Euros]	62,808.-



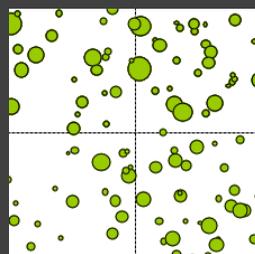
Volume
[m³]



Economic value
[Euro]



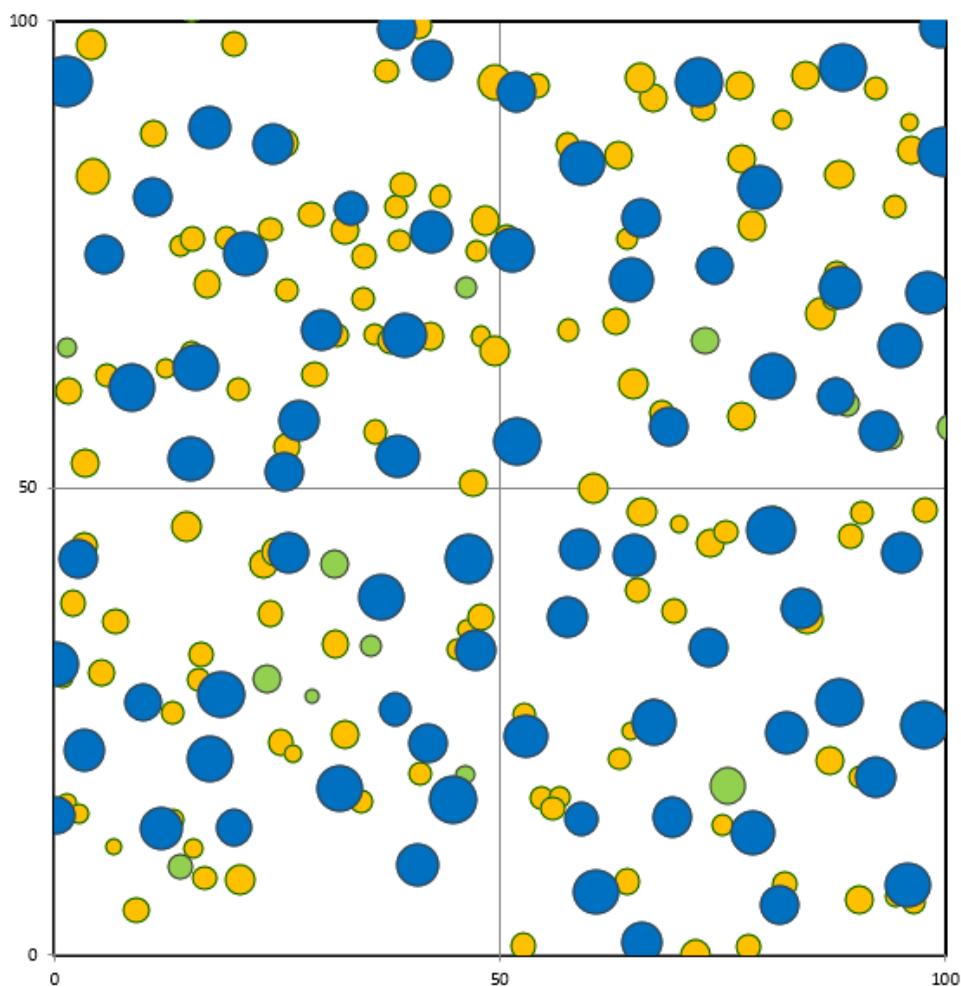
Habitat value
[points]



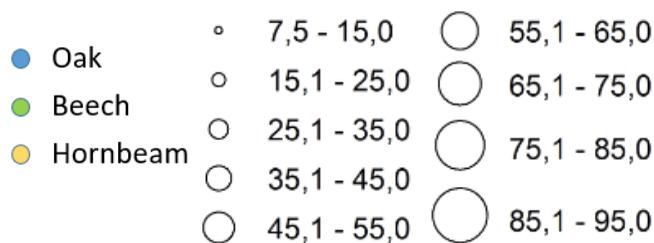
The **economic value (in €)** is estimated for each tree based on volume, stem quality and corresponding local timber price lists.

The **habitat value (in points)** is assessed for each tree based on tree microhabitats, taking into account rarity of each habitat and duration for it to develop.

The evaluation of the habitat value is based on a comprehensive catalogue of tree microhabitats. It comprises 23 saproxylic and epixylic features such as cavities, large dead branches, cracks and loose bark, epiphytes, sap runs, or trunk rot characteristics. Tree microhabitats are of prime importance for specialized and often endangered forest species of flora and fauna.



Tree species dbh [cm]



The demonstration project Integrate+ is funded by the German Federal Ministry of Food and Agriculture (BMEL) to establish a European network of demonstration sites for the integration of biodiversity conservation into forest management.

The Integrate+ project runs from December 2013 to March 2017 and builds on a partner network from research and practice with a focus on implementation of integrative management and enhancing transnational exchange of experiences.



Louen, F., Striepen, K., Schölmerich, U., Schuck, A., 2017. The Jägerhäuschen Marteloscope field guide. Technical Paper No. 24. 12 p.

Photos: Marco König (*Dendrocopos medius* and *Myotis bechsteinii*), Henrik Larsson/fotolia (*Lucanus cervus*), fotoculus/Flickr (*Phellinus robustus*), Frank Grawe (*Triturus cristatus*), Biologische Station Bonn/Rhein-Erft e.V (*Arnica montana*).

European Forest Institute, 2017