



# The Vallon Marteloscope

Field guide



LIFE SPAN project (LIFE19  
NAT/IT/000104) is co-  
funded by the EU LIFE  
Programme



**SPAN**  
SAPROXYLIC HABITAT NETWORK

# Eastern Cansiglio Forest

The Regional Forest of Eastern Cansiglio covers an area of approximately 1562 hectares. The owner is the Friuli Venezia-Giulia Region, which has managed it since 1966. It falls in the municipalities of Caneva, Polcenigo, and Budoia (Pordenone Province), along the pre-alpine ridge. The Eastern Cansiglio forest is one of the oldest managed forests in Italy. During the rule of the 'Serenissima Republic of Venice', in 1550, due to pressure from the inhabitants of the neighbouring villages both for timber supplies and above all grazing, strict limits were imposed on forest use. Until the first forest management plan in 1638, only areas close to roads were harvested. The plan provided for the thinning of beech trees with a diameter of more than 55 cm. Around the middle of the 18<sup>th</sup> century due to an increased demand for conifers, forest policy changed in their favour. With the decline of the Venetian Republic and Napoleon, the forest fell under Habsburg rule, which tried to impose clear-cutting with reserves. In 1881, under the Kingdom of Italy, the forest was divided into 20 compartments of 10% coniferous forest, 20% mixed forest, and 70% beech forest. The forest was subjected to occasional fellings despite the tendency to form even-aged stands. This resulted in an increase in old trees and a lack of regeneration. From 1910 onwards, more articulated treatments were adopted. The First World War, however, led to increased clear cutting to supply troops and industry. In 1966 the forest became property of the Friuli Venezia Giulia Region. Since 2004, the forest has been certified for sustainable forest management (PEFC ITA 1000:2015 and PEFC ITA 1001-1:2015). Near-to-nature silviculture is applied there including landscape and tourism-recreational aspects. Currently, the forest covers 97.8% of the area, with 2.2% being meadows and ranges. Most of the forest is managed. Beech forests occupy 29.5% of the wooded area, 36.7% are mixed and 15.5% coniferous forest. Forestry reserves cover 17.6%, while 0.7% are protected forests of *Cystopteris sudetica*. Due to intense ungulate pressure, natural regeneration is absent throughout the forest.



1527.7 ha

Total forest area

6.94 m<sup>3</sup>/ha

Annual increment

350.49 m<sup>3</sup>/ha

Average volume

10609 m<sup>3</sup>

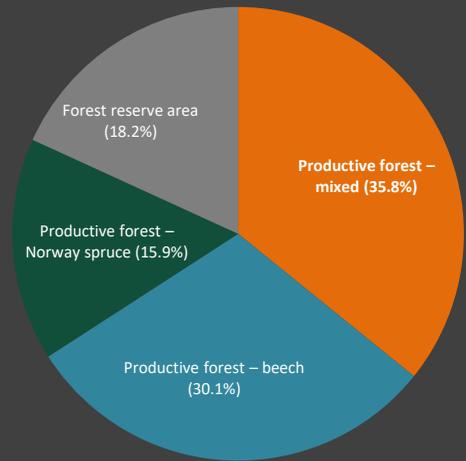
Annual growth

2275 m<sup>3</sup>

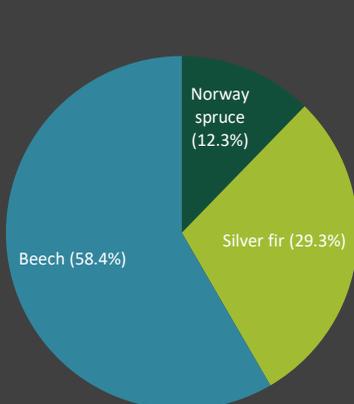
Annual removal

694 m<sup>3</sup>

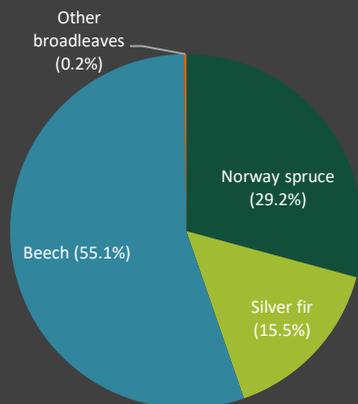
Accidental / sanitary cuts



Forest designation (% of total volume)



Forest reserve area (tree species as % of total volume)



Productive forest (tree species as % of total volume)

# Nature conservation



The Eastern Cansiglio forest falls within the Natura 2000 site “Foresta del Cansiglio” (IT3310006) Special Area of Conservation (SAC) which, thanks to its position and extent, ensures the preservation of an ecological network, supporting the connectivity of several protected areas. Those include “Lago di Santa Croce”, “Gruppo del Visentin a Faverghera - M. Cor”, “Magredi di Pordenone” and “Forra del Torrente Cellina”. Moreover, Eastern Cansiglio forest hosts three natural reserves, “Croseraz-Val Bona”, “Col Piova”, and “Pian delle Stele” which are preserved as wilderness areas.

Most of the area is covered by beech forests, mainly belonging to the habitat type 91K0 (Illyrian *Fagus sylvatica* forests). A minor part belongs to habitat type 9130 (*Asperulo-Fagetum* beech forests). Together, these beech forests cover nearly 90% of the project area.

Currently, conservation measures of the SACs of the Alpine Biogeographic Region (DGR726 of April 11, 2013) are in effect. These include forestry operations that serve wildlife including:

- habitat establishment through active measures
- habitat creation by retaining large trees and deadwood
- allowing for an adequate period to carry out activities in the forest without impacting the reproductive cycle of specific species

A deadwood and habitat tree quantification was carried out in some forest parcels of the Regional Cansiglio Forest in 2021 in the context of the LIFE SPAN project. Dead was quantified at about to 10.32 m<sup>3</sup>/ha, while the number of trees with at least 4 microhabitats resulted in 10 trees/ha.

**269 ha**

forestry reserves

Corresponds roughly to

**18 %**

of the total forest area

**10 ha**

of forest area with protection  
function of *Cystopteris sudetica*

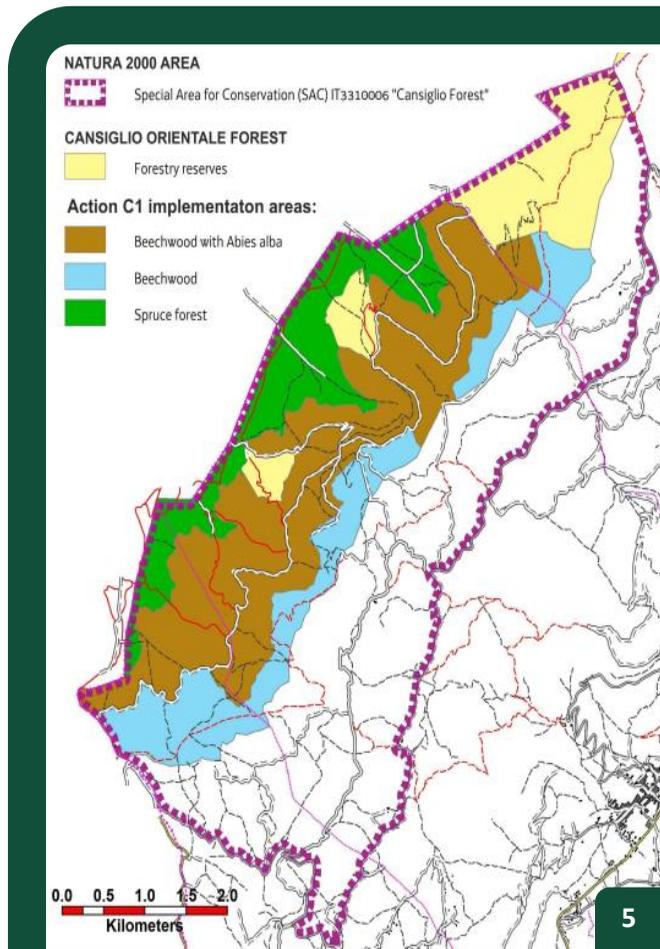
**Deadwood**

**10.3 m<sup>3</sup>/ha**

with a diameter of  
> 5 cm

**10 trees/ha**

with at least four  
microhabitats on  
each tree



# Tree microhabitat 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, that is 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.

*Branch holes*



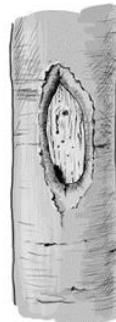
*Crown deadwood*



*Epiphytic  
crypto- and  
phanerogams*



*Bark loss /  
exposed  
sapwood*





*Grey-headed woodpecker  
(Picus canus)*



*Long-horned beetle  
(Morimus funereus)*



*Alpine longhorn beetle  
(Rosalia alpina)*



*Pygmy owl  
(Glacidium passerinum)*

# Research and dissemination in the Eastern Cansiglio Forest

The Eastern Cansiglio Forest cooperates with many Italian research institutions such as the Universities of Udine and Padua, CNR – National Research Council, CREA – Council for Agricultural Research and Economics, and many others. It is also a suitable location for university field excursions and offers students the opportunity of practical training. Within the project ‘LIFE SPAN - Saproxyllic Habitat Network’ (LIFE 19 NAT/IT/000104), 25 so-called “saproxyllic habitat sites” (SHS), were created during the years 2021/2022.

These SHS are “islands” of about 2.5 ha located within commercially managed forest, where targeted measures are carried out to promote biodiversity conservation.

Within each SHS, a gap of 0.15 ha was created to ensure a variation in light conditions providing favourable habitats for specific herbaceous species, insects and bats. To create microhabitats, several interventions were carried out including pollard trees, girdled trees (of different intensity with varying responses over time), tree cavities at different tree heights (birds, bats nesting), basal slits (stagnant water for insect reproduction) and uprooted trees (creation of microhabitats through root plates and deadwood). In addition, tree density on the plots was decreased through targeted thinning operations which also supported an increase in deadwood (lying dead trees).

In each SHS detailed monitoring activities are implemented for quantifying forest response to the different management measures applied in the SHSs, in particular regarding the diversity and frequency of insects, birds, bats, and plant species. The LIFE SPAN project is financially supported by the EU LIFE Program and runs from 2021 to 2026.

The diversity of the Italian site involved "splitting" the planned marteloscope into two smaller ones placed in nearby areas. One marteloscope is in an area designated as forestry reserve since 1971 (Col Piova). The second (Vallon) is planned for productive function.



# Marteloscope site conditions

Altitude:	1190 m.a.s.l
Forest ecological region:	Carnic pre-alps
Geology and soil:	Cretaceous cliff limestone Leptosols
Mean annual temperature:	5.7 °C
Annual precipitation:	1700 mm
Natural forest community:	<i>Piceo abieti faggeto</i>

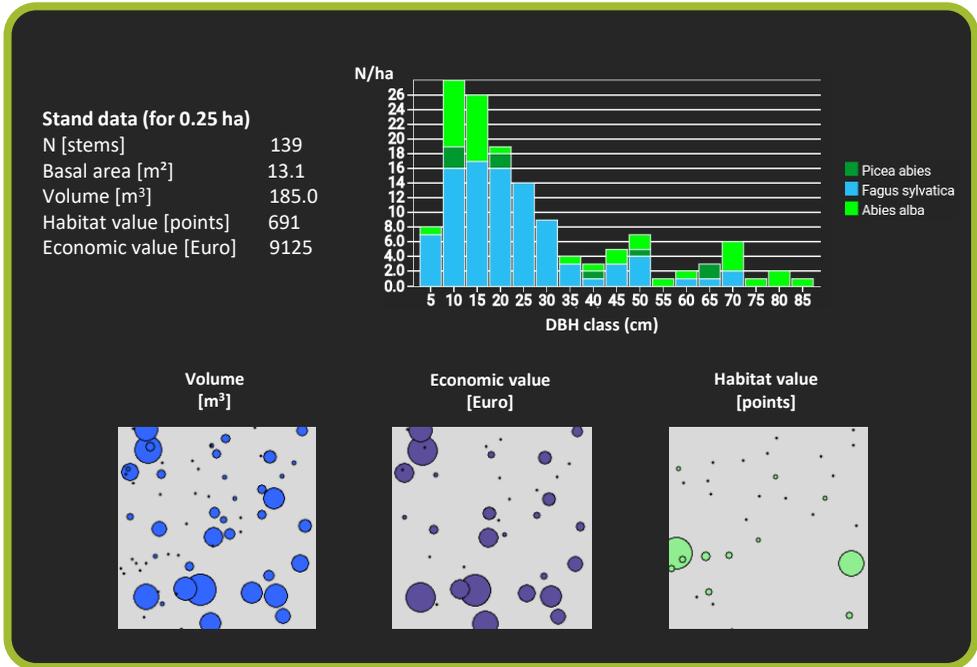
*The Vallon Marteloscope is in an uneven aged group layered stand. The stand is a typical mountain beech forest mixed with silver fir and under active management.*

*The diameter distribution indicates the presence of several tree generations, while natural regeneration, with the exception of a few rare cases of spruce seedlings, is completely absent. The stand average volume accounts to 382 m<sup>3</sup>/ha with an annual increment of 8.2 m<sup>3</sup>/ha. Regarding the overall standing volume of the forest stand, beech accounts for 50%, while silver fir amounts to 30% and spruce to 20%.*



# Marteloscope stand characteristics

The Marteloscope **Vallon** is in a mixed beech, silver fir and Norway spruce uneven aged stand. The stand is included in a Forest Management Plan forestry section named "beech, fir and spruce mixed forests".

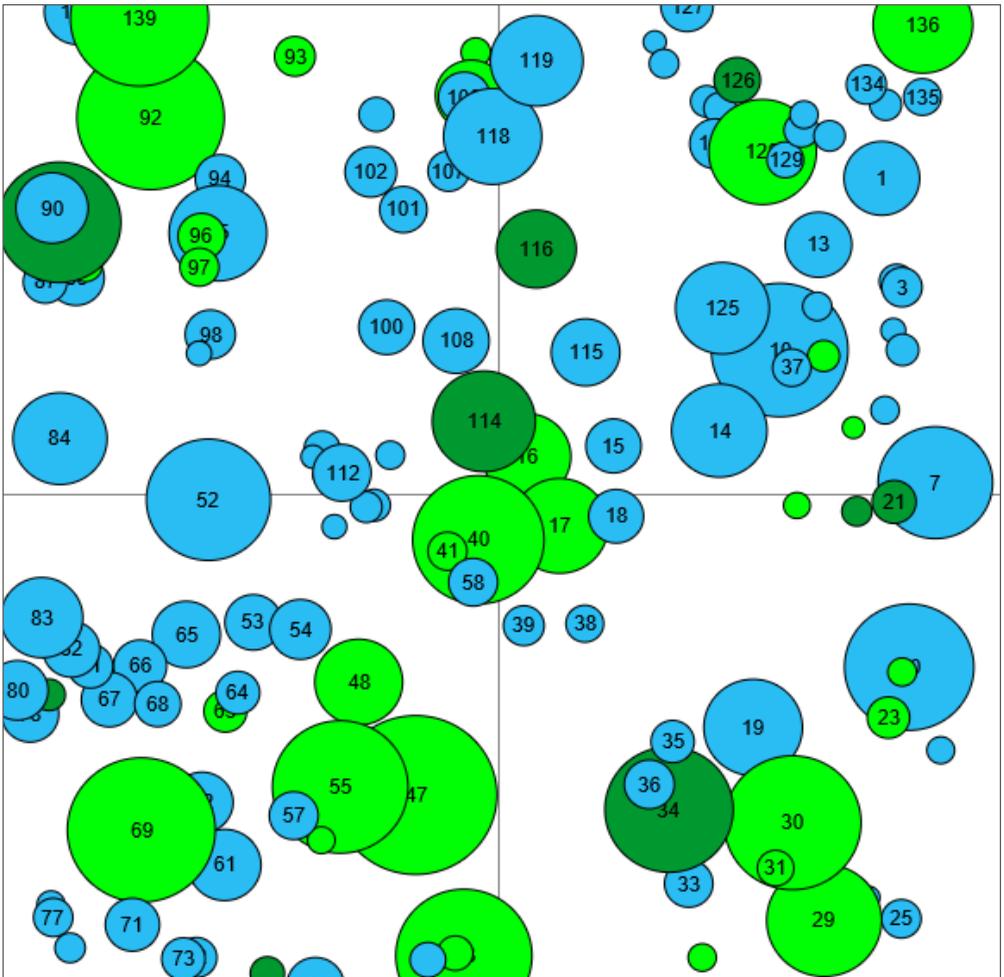


The **economic value (in €)** is estimated for each tree based on volume, stem quality and corresponding local timber price lists.

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 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.

# Marteloscope map (0.25 ha)



Note: circles represent individual trees with ID numbers; colour defines tree species; circle size relates to dbh.

## Tree species

- Silver fir
- Beech
- Norway spruce

In the LIFE SPAN project deadwood habitats are conserved and species of community interest promoted through innovative planning and management. All measures are accompanied by research and their effects evaluated. The economic sustainability is documented for the proposed interventions. The LIFE SPAN project (LIFE19 NAT/IT/000104) is financially supported by the EU LIFE Programme and has a project duration of 2021 to 2026.



Lazzerini, G., Ferretti, F., Di Salvatore, U., Luise, R., Derks, J., Schuck, A., De Cinti, B., 2023. The Vallon Martelloscope – Field Guide. Technical Paper. LIFE SPAN Project (LIFE19 NAT/IT/000104). 12 p.

Photos: Bruno De Cinti (p. 8, upper photo); Fabrizio Ferretti (p. 8, lower photo); Alice Lenzi (p. 7, Morimus funereus); Andreas Schuck (p. 1, 4, 9)

<https://www.lifespansproject.eu>

