Belgium

Kris Vandekerkhove, Stefan P. P. Vanbeveren, Reinhart Ceulemans, Hugues Lecomte, Didier Marchal, Jenny Mills and Peter Buckley

Facts and Figures

Kris Vandekerkhove

Definitions

Coppice: one-storey forest structure, consisting of resprouts on stools and/or root suckers, occasionally with some trees from seedlings.

Coppice with standards: two-storey forest containing a upper canopy consisting of tall trees originating from seeds, and a lower canopy consisting of resprouts on stools and/or root suckers.

Taillis: une structure à un seul étage constituée de rejets de souches et/ou de drageons, avec éventuellement quelques rares tiges issues de semis.

Taillis sous futaie: peuplement constitué d'un étage supérieur composé d'arbres de futaie issus de semences et d'un étage inférieur issus de rejets de souche et /ou de drageons.

Definitions from the Walloon Forest Inventory

Legal Framework

Traditional coppice and coppice-with-standards forests are considered a legal management system in broadleaved forests. Short rotation coppices, e.g. of willow and poplar, with rotation periods of <8 years are legally not considered 'forest'. They are within the legislation of (agricultural) crops. Source: Bosdecreet 1991 (for Flanders); code forestier (for Wallonia)

Rotation Period

There are no legal restrictions on the rotation period; however the rotation period should be included in the management plan and should be in accordance with silvicultural rules of good practice for the management plan to be approved.

Rotation period generally varies from 8-12 years (alder, ash, birch), in some cases up to 20 years (oak, hazel, hornbeam). Exceptionally shorter (4-6 year in oak for bark stripping used in the tanning industry) and longer rotations (up to 30 years) were used in the past.

Statistics

In Belgium there are still approximately 115,000 ha of coppice and coppice-with-standards (15-20% of the total forest area). This area consists mainly of coppice-with-standards forests with oak in the standards, and hazel, hornbeam, maple, sweet chestnut and birch in the coppice layer.

Low coppice covers about 15,000 ha and consists mainly of black alder in wetland areas and birch and oak on dryer grounds. This type used to be much more common in the past: in 1895 coppice still covered over 100,000 ha. Many were transformed into conifer plantations or high forest of broadleaved trees.

Coppice with standards still cover about 100,000 ha (over 200,000 ha in 1895), mainly in Wallonia, but most of these stands are in gradual conversion towards high forest.

Typology

Simple coppice	'taillis simple', 'hakhout' - about 15,000 ha
Coppice with standards	'taillis sous futaie', 'middelhout' - about 100,000 ha
Pollarding	'têtards', 'knotbomen' - only in the open countryside (willow, poplar, ash)
Short rotation coppice	'korte omloop hout' (KOH) - considered an agricultural crop; not under forest legislation

Images

Coppice-with-standards: oak-hornbeam forest in Cerfontaine (Namur)

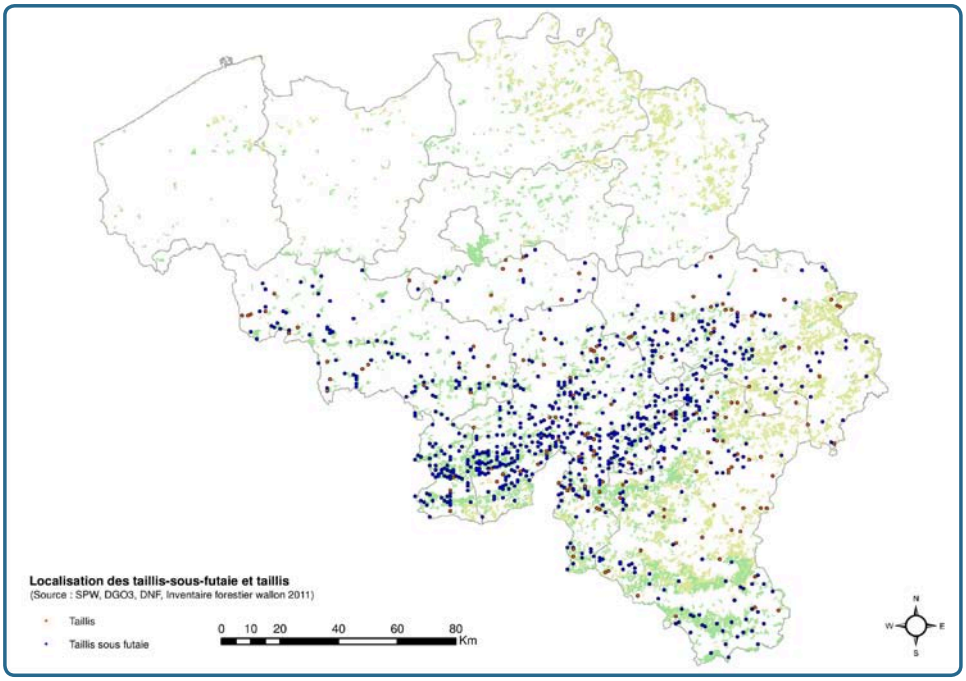
Experimental coppice-with-standards restoration in the Meerdaal Forest (south of Leuven)

Low coppice stands in Bierbeek (left) and Sinaai (right)

Photos: Kris Vandekerkhove and Peter Van de Kerckhove (right)

Map

Hugues Lecomte and Didier Marchal



Occurrence of coppice (orange dots) and coppice-with-standards (blue dots) in Belgium, based on the Walloon Forest Inventory plots (SPW, DGO3, DNF, Inventaire forestier wallon 2011). Operational coppice and coppice with standards forests in the northern part of Belgium (Flanders), are not shown in this map, but are very rare (only a few hundred ha). The background displays forest in Belgium: broadleaved in dark green, conifer in light green. Source: EFI forest map of Europe, version 2011 (Kempeneers et al. 2011; Päivinen et al. 2001; Schuck et al. 2002).

References

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Schuck, A., Van Brusselen, J., Päivinen, R., Häme, T., Kennedy, P. and Folving, S. 2002. *Compilation of a calibrated European forest map derived from NOAA-AVHRR data*. European Forest Institute. EFI Internal Report 13, 44p. plus Annexes.

Description

Stefan P. P. Vanbeveren and Reinhart Ceulemans

In Belgium, the distinction is made between simple coppice cultures (*hakhout*) and coppice with standards (*middelhout*). Coppice cultures have rotations of 2-30 years and were the dominant management regime from the middle ages until the beginning of the 20th century. The early and more frequent revenues, in comparison to traditional forests, were the main motives for this management regime. The main products extracted from coppice cultures are firewood, oak bark (for tanning), charcoal, pole wood and branches for brooms.

For several years, experimental, high density (up to 18,000 trees ha^{-1}), short-rotation (2-4 years) coppice cultures have been established, mainly with *Populus* (Figure 1) and *Salix* species. These short-rotation coppice cultures are currently grown on 30 ha, an area expected to expand with the predicted increase in demand for second generation biofuels.

Coppice with standards is more typical on rich soils. The coppiced trees were mainly selected for firewood (e.g. *Carpinus betulus, Corylus avellana, Fraxinus excelsior, Castanea sativa* and *Alnus*), while the uneven-aged standards were selected to produce timber (e.g. *Quercus, Populus, Fraxinus excelsior* and *Larix*). From the little information available on productivity, stem wood values have been calculated at 2 to 7 m^3 ha^{-1} yr^{-1}.

The use of coppice cultures in Belgium declined in the 20th century as a consequence of a decrease in the demand for firewood and oak bark and an increase in management costs. Most coppice cultures have been converted to oak high forest or abandoned. Conversion to oak forest involved pruning all but one shoot from each stool; this proved, however, to be an unsuccessful management strategy as it led to poor stem quality. The transformation of coppice cultures usually involved inter-planting with different species such as *Pinus sylvestris, Pseudotsuga menziesii* and/or *Larix*, although old coppice stools can still be found. Recently, coppice cultures have

Figure 1. An experimental SRC culture in Lochristi (East-Flanders, Belgium) with *Populus* (genotype Bakan, *P. trichocarpa* Torr & Gray (ex Hook) x *P. maximowiczii* Henry).

received attention for their nature, cultural and historical value. Re-coppicing old stools is not usually sufficient to re-establish coppices due to the low regeneration capacity of buds. Even if these are still capable of sprouting, stem density will be too low, as a consequence of the self-thinning process during past decades. Therefore, new planting is often necessary, which requires protection from wildlife and control of competing understorey growth.

Reference

Den Ouden, J., Jansen, P., Meiresonne, L. & Knol, R., 2010. Chapter 24: *Hakhout en middelhout*. In: *Bosecologie en bosbeheer*. Den Ouden J., Muys B., Mohren F. & Verheyen K. (editors). ISBN 978-90-334-7782-9, Acco, Leuven, Belgium, 674 pp.

Forestry Regulations

Jenny Mills, Peter Buckley and Kris Vandekerkove

Flanders

1990 Forest Decree (Bosdecreet)

The law on Flemish forest management and is valid both for state and private forests.

1997 Nature Decree (Natuuurdecreet)

Aims to maintain, restore and develop the natural environment through protection and management measures.

While the forest management regulation of the Forest Decree still applies, the 1997 decree embodies principles that guide the government not to authorise or accept any management operation or plan that will degrade either the quality or quantity of the natural environment. These 'stand still' precautionary principles are embodied in the guidelines for forest management plans (bosbeheerplans) and felling permits (kapmachtiging) issued by the **Agency for Nature and Forest (Agentschap Natuur & Bos - ANB)**, which are applicable to all forests. The possible conservation impact must be assessed in all planned operations and avoidable damage must be prevented.

The Nature Decree deals with nature reserves, Natura 2000 Special Areas of Conservation, and also sets up the Flemish Ecological Network (Vlaams ecologisch netwerk; VEN) and Integral Interweaving and Supportive Network (Integraal Verwevings- en Ondersteunend Netwerk; IVON), an ecological network of linked, protected and other valuable areas to facilitate species migration. Although the main management aim is nature conservation, other activities, such as recreation, agriculture, forestry, military activities or the extraction of drinking water, are allowed in the VEN and IVON provided they do not jeopardise conservation.

In 2003 the Flemish Government established the **Criteria for Sustainable Forest Management** that include various goals and restrictions that are mandatory for all public and private forests within the VEN.

There are three levels of restrictions:

1. A basic level that applies to all forests

These restrictions are included in the directives for the evaluation of felling permit applications and management plans:

- Deforestation is forbidden (unless with special exceptional permit and procedure).
- No felling or harvest operations are allowed unless described in an approved management plan or in a felling permit authorised by the ANB. For an owner of several scattered small areas that collectively have an area exceeding

five hectares, but are each individually less than 5 ha, there is no obligation to draw up a management plan, but one can be drawn up voluntarily.

- Forest ownerships of >5 ha should have a (limited) management plan covering a 20-year period.
- Clearcutting is to be avoided. Where necessary, the maximum size of clearcuts for poplar and exotic tree species is 3 ha. For native broadleaved woodland, the maximum size is 1 ha, unless transforming homogeneous stands to more mixed stands, when the area may be enlarged to 3 ha.
- Clearcuts should be spread over the forest, at least 100 m apart.
- No felling and harvesting can take place from April 1 - June 30. (This can be extended, shortened or cancelled depending on local ecological conditions.)
- In thinning operations, maximum thinning intensities can be imposed (in % of stem number or basal area).
- Thinning that leads to degradation of the stand quality or structure (removing all quality trees) will not be allowed.
- Coppicing is allowed in appropriate stands and species, with a minimum rotation time of 8 years.
- Specific measures to prevent soil damage may be imposed if the conditions of the felling permit (e.g. fixed skidding tracks, avoiding certain areas).
- Other preconditions can be connected to the felling permit by the forest administration, e.g. pertaining to certain valuable trees or species to be spared.
- Successful regeneration must be established within 5 years after final felling. This can be by natural or artificial regeneration (to be planted within 3 years after final felling).

All regeneration and transformation should follow the 'stand-still' principle:

- Native trees cannot be replaced by exotics.
- Native broadleaved cannot be replaced by native coniferous forest (Scots pine).
- Mixed stands cannot be replaced by homogeneous stands.
- The owner is encouraged to keep and increase levels of dead wood and old trees, but there is no strict target.
- Planting subsidies are given to switch to indigenous tree species and there is a subsidy scheme for public access.
- When applying for a kapmachtiging, ANB decides if felling is permitted within sixty days of submission and under what conditions. If there is no reply within that period, the kapmachtiging is considered granted.
- In private forests, fellings can take place for urgent safety reasons without a kapmachtiging, but ANB must be notified in writing within 24 hours. If felling is necessary for sanitary reasons, a fortnight's notice should be given. Within 6 months after these types of felling, a proposal for rehabilitation measures must be submitted to ANB.

2. 'Criteria for Sustainable Forest Management'

This is compulsory for all forests (both state and private) inside the VEN. Outside VEN areas, forest owners can decide to join voluntarily, in which case they are also eligible for financial incentives and other opportunities (certification) related to CSFM.

In CSFM forests, the basic level restrictions are still in force, but some points are more stringent: it aims for 'continuous improvement' on some points, rather than 'stand-still'.

The following requirements and restrictive measures are applied:

- An extensive management plan is required, with a detailed inventory of elements valuable

for nature conservation and specific management operations to conserve them (e.g. old habitat trees, streams, archaeological sites)

- Choice of tree species: 'stand still' plus a long-term goal for conversion of exotic stands to mixed indigenous on 20% of the surface area.
- Change all homogeneous stands to mixed stands (at least 30% admixture).
- Size of clearcuts: 1 ha, unless the plan is for transformation towards more mixed stands from homogeneous exotic plantations.
- Dead wood: A clear target, 4% of total stock, plus quality requirements: all sizes, standing and lying.
- Overmature trees: a certain number of trees/ha should be selected to be left unharvested.
- 5% of the forest should consist of, or be developed towards 'key habitats'. These can be ecologically valuable open spaces and/or semi-natural stands of mixed native woodland (a selective harvest of high timber value trees not detrimental to the quality is still allowed).

These CSFM criteria are very demanding and for many owners obligatory, but they also give the owner a certain legal security and other opportunities.

The CSFM are considered to be in accordance with the requirements for Natura 2000 habitats and also with FSC and PEFC(*)-certification standards, which makes all forests managed according to CSFM automatically eligible for individual or group-certification.

Some extra financial incentives are also provided:

- The owner is excepted from certain taxes and succession rights.
- Subsidy (per ha) for key-habitats and management of valuable open spaces.
- Subsidies for the production of an extensive management plan.

(*) No official Flemish PEFC-standard exists at this moment, but the CSFM is in accordance with global PEFC-standards, and the official standards of neighbouring countries or regions, like the Netherlands and Wallonia.

3. 'Management Vision for Public Forests'

This is applied to all public forests and is compulsory for State-owned Domanial forests. It includes very high standards of forest management, particularly for nature conservation; they are comparable to CSFM but go further for some elements. In particular, there are higher targets for tree species composition.

- The basic principle is close-to-nature forestry, with small-scale interventions, selective thinnings and abandoning of final cuts. Clearcuts (1 ha or more) are only allowed in exceptional cases.
- In the long term, the majority of forest stands in public forests should consist of mixed, uneven aged, indigenous forest stands and 80% of all stands should consist of indigenous species. There should be at least a 30% admixture of indigenous species in the remaining exotic stands.
- All stands must be mixed, meaning that no species should cover over 90% of the basal area.
- New afforestations are to be of indigenous species. Poplar clones may be used as a 'pioneer' generation, at most on 50% of the area.
- Natural regeneration is used whenever possible.
- Special attention and appropriate management is given to valuable non-forest biotopes in the forest complex (heathland, ponds, etc.). These permanent open spaces, together with transient open spaces with high conservation value, should cover at least 5-15% of the total forest area.
- Special attention is also given to rare and vulnerable species (hollow trees with bat colonies, breeding areas of rare bird species, etc.).

- Special attention is also given to rare local genotypes of trees and shrubs.
- No commercial harvesting (with heavy machinery) is allowed in valuable and vulnerable riparian forests and swamp forests.
- Changes in natural hydrology should be restricted to the absolute minimum.
- Old trees: some trees are spared to become old and die naturally. They can be spread over the stand or grouped. If spread over the stand, at least 10 trees/ha are to be spared (for very large trees and low stem numbers: at least 10% of the stand basal area). If clustered, areas of at least 5% of the stand are selected and remain unharvested.
- On dead wood, the same threshold is set as in CSFM: at least 4% of the standing stock, both standing and lying, in all decay classes, and representative for the species composition and size distribution of the stand.

As public forest management is not privatised (as in other countries), the forest administration is not eligible for any subsidies. They receive a yearly budget in order to realise these and other services, such as recreational infrastructure.

Forests within the Natura 2000-network

For forests within SACs there are no clear restrictions, but from the executive orders on Natura 2000 targets, it is clear that forests that adhere to a certain habitat type should at least comply with the CSFM if they want to reach the required favourable status of conservation.

A new nature management plan (natuurbeheerplan)

The ANB is working on the integration of the Forest and Nature decrees. When this new legislation comes into force, management of different types of natural areas will be covered by a single conservation plan. Individual management plans will continue, with some revisions to thresholds, limits, etc. This will not change current rules for specific points related to coppice, so coppice can be applied in 'appropriate' stands: the evaluation of the appropriateness will be done by the local official of ANB. In practice, this means that approval will be given in cases of 'continuation' or 'restoration' of previous coppice stands, and may be approved for young stands of broadleaved forest that are able to resprout to coppice (i.e. all except for beech). For old, well-structured broadleaved high forest stands, conversion to coppice may be regarded as a degradation of present natural values and a violation of the 'stand still principle', so may be refused. If these old, mixed stands are previous coppice-with-standards stands, permission will most probably be given for restoration of this type of management, under the prerequisite that ecologically valuable standard trees are to be spared.

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Wallonia

A new **Forest Code** (Code Forestier), covering private and public forests, was adopted by the Walloon Parliament in 2008. It replaced the former Code, which dated from 1854. Some of the objectives are to: produce wood of increased quality and quantity; fight climate change; safeguard biodiversity; fight fragmentation; diversify the forests; and ensure the social, recreational and educational role of the forest. The Code encourages the use of tree species adapted to local soil conditions, genetic conservation (rare tree species and local ecotypes), natural regeneration, an uneven-aged structure, and soil and water protection (limits on clear-cutting, drainage, etc.). Inheritance tax on standing timber has been abolished to encourage planting of species such as oak or beech rather than conifers.

Some of the regulations are:

- Except in urgent, authorized cases, it is forbidden to clearfell coupes over 5 ha in forests with more than 50% conifers. For areas with more than 50% broadleaves, the maximum clearfell allowed is 3 ha. This applies to all felling, which leaves an amount of woody material less than 75m^3/ha for standards and at least 25m^3/ha for coppice-with-standards of strong shoots.
- All requests for urgent and non-urgent coupes must be submitted to a section of the Department of Nature and Forests (Département de la Nature et des Forêts).
- The use of pesticides, herbicides and fungicides are prohibited, except in certain cases specified by the Government, in order to fight specific diseases and invasive species.
- All public forests contiguously larger than 20 hectares must have a management plan.
- Management plans are optional for small private forests. A simple management plan ("document simple de gestion"), mainly describing the planned harvests for the following 20-year period can be produced but is not obligatory.
- In the absence of a management plan, all harvesting requires an explicit authorisation from the administration.
- In public forests, at least one tree of exceptional biological interest (dead or damaged trees) must be retained for each 2 ha.
- In broadleaved stands, up to 2 dead or windthrown trees per ha with a diameter of 40 cm must be retained, unless they are dangerous or of high economic value.
- In conifer stands, 2 stumps of broken or dead trees should be retained per hectare, including those in clearfell areas.

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