Kandern City Forest – A traditional multifunctional community forest

C5

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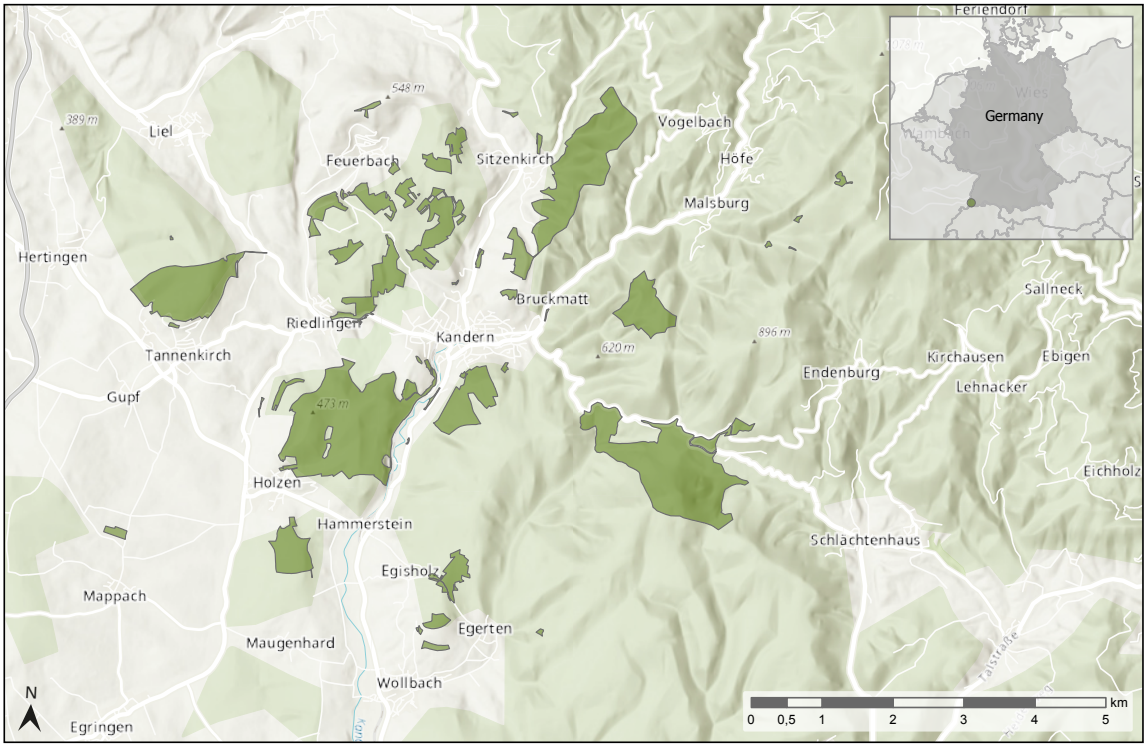
Context, legal frame, and ownership structure

The city forest of Kandern is located in Baden-Württemberg in southwest Germany, not far from the Swiss and French border. The forest enterprise of Kandern has a long tradition of forest management and has produced valuable timber in a selective management system for many decades. Favourable conditions and a heterogeneous topography support the existence of a diverse forest with many different tree species, but also the production of



< Fig. C5.1. Varying landscape with the small city of Kandern in the background and its associated villages between forests and agricultural land. The forests are dominated by oak and beech in the lowland areas at the bottom of the photograph, whereas there is a higher proportion of conifers (silver fir, Douglas fir, and Norway spruce) in the forests in the more upland areas at the top (Photo: City of Kandern).

Statement

"The forest provides a steady and sustainable flow of resources over time. Forest products should be used accordingly!"

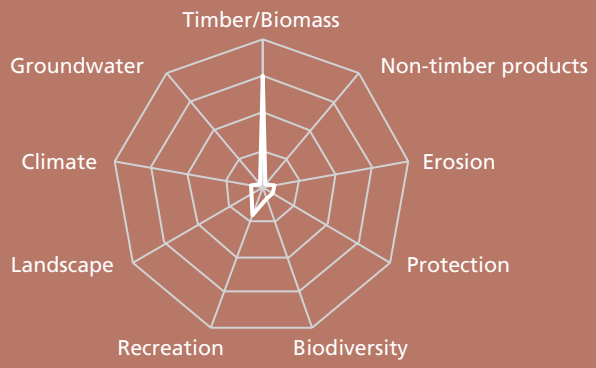


Table C5.1. General information on the city forest of Kandern.

Forest community	Mixed mountain forests and beech / oak forests in the lower parts
Total forest area	887 ha
Main management types	Selection cutting system/'Femel-cuttings' and small-scale gap clearcuts < 0.6 ha (oak management)
Total volume	371 m³/ha
Annual growth	8.7 m³/ha
Annual use	8.5 m³/ha
Deadwood (standing and lying)	18.2 m³/ha
Altitude	350–711 m
ownership	Community forest
Geology	Black Forest bedrock (sandstone – on 200 ha); Rest 'Markgräfler hills' (clayish soil types – fine clay, little clay or marl soils)
Nature protection area (including Natura 2000)	295 ha
Forests with protective function	887 ha. The whole area has a protective function. Some parts of the forest have multiple protective functions (water and habitats)
Climate protection service per year	7.170 to CO_2-equivalent by storage in the forest, in long-lived forest products and substitution effects

valuable timber. The long tradition of forest management and the high forest productivity lead to the production of high-quality timber – mainly oaks (*Quercus robur* and *Q. petraea*) and Douglas fir *(Pseudotsuga menziesii).* Although the Swiss city of Basel is very close (about 23 km), the identification of the area with forestry and its products is still at a very high level.

The forest enterprise is owned by the city of Kandern with about 10000 inhabitants and eight attached villages. The political decision-making body is a council with 14 members and the mayor. The forest area is embedded within a patch of state forest areas and small-scale private forests. The infrastructure, market, and sociological aspects are therefore closely linked to each other. Some services are provided by the Baden-Württemberg state forest administration.

Forest history and cultural heritage

For many centuries oaks (*Quercus robur* and *Q. petraea*) and other broadleaved species (e.g. beech–*Fagus sylvatica;* ash–*Fraxinus excelsior;* or sycamore–*Acer pseudoplatanus*) have been an integral part of forest management in this area. There are some old oaks trees with an age of about 400 years. The long tradition and connection to oak forests are hinted at in the names of areas and roads ('Eichholen' or 'Eichwald'), and also in nursery rhymes, songs, and stories.

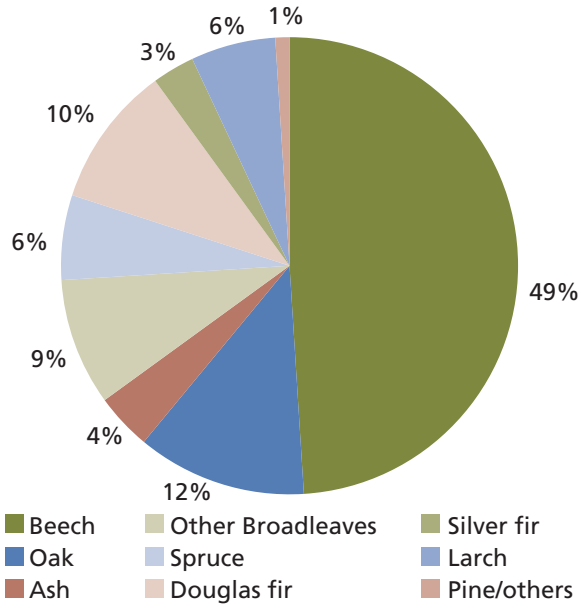


Fig. C5.2. Tree species distribution in the community forest of Kandern.

Recently, there have been several re-organisations of the forest administration and structural changes that have led to the current situation with one responsible forester for the complete city forest area. The area managed by this forester has increased several fold within the last few decades. As a kind of compensation, the state forest agency has taken over some tasks and has reduced the workload and responsibility of the remaining forester. For instance, marketing of the timber is now handled by the local state forest agency.

Thirty years ago, the average price of a solid metre of timber in the city forest was about 75 €/m³. This covered the cost of a forestry worker for about five hours. Today, the timber price is the same as in 1989, but this covers only two hours of work.

Historically, the timber produced by the enterprise has been supplied to a few local clients. Today, there are many wood buyers who have diverse sorting quantity and delivery requirements. Without its own well-trained forest workers, it is very difficult to be flexible and successful on the timber market.

Recent windstorm events as Vivian and Wiebke (1990) and Lothar (1999) have caused structural changes. Severe damage of about 15000 m³ of windthrown timber in the city forest have resulted in a drop in hardwood prices and the enterprise slipped into a deficit. There were two possibilities: (1) reduce personnel costs, which was not possible in the short term; or (2) develop new sources of income with new fields of activity. For this, the city offered to 'rent out' some of the employees in winter to work in other forests, and thus keeping them employed in winter while also carrying out forest management tasks in the city. Thus, it has been possible to run the forest enterprise with its own forest workers. Throughout the years, the model has been adapted and further developed. Looking back, this was a crucial decision for the successful approach as it allowed for a high degree of flexibility.

The main forest types are mixed mountain stands dominated by beech *(Fagus sylvatica),* admixed with Douglas fir and oak. The applied management system is a selection rotation system with a high return frequency (every stand is assessed, at least once every 8–10 years, and silvicultural operations are carried out). The natural forest composition is dominated by beech and a broad range of broadleaved species as cherry *(Prunus avium),* oak, ash, sycamore, linden *(Tilia cordata),* and alder *(Alnus glutinosa).* Oak occurs on about 15 % of the total forest area and has partly been planted and needs a high management intensity. In gaps up to 0.6 ha, oaks are planted and protected against browsing damage and favoured against competing vegetation. This intensive management to promote valuable oak is rather specific and has a long tradition in this forest. Valuable oak timber is, however, the economic and ecological backbone of the enterprise. About 34 % of the forests are designated as Natura 2000 areas, though they are not treated differently. Valuable beech, silver fir *(Abies alba),* Douglas fir and European larch *(Larix decidua)* trees are also part of the production and are produced in a single-tree selection system with increasing gap sizes over time (Badischer Femelschlag). The 887 ha in city forest enterprise all have a protection and recovery function. In addition, some areas have multiple protective functions and protects water restoration or protection of habitats (Natura 2000) at the same time.

Aims of the enterprise

As an economic objective, a surplus is very important. Without a surplus, the forest is a recipient of subsidies and thus more dependent on political decisions. The net yields should flow evenly. Fluctu-

ations in the operating results give rise to mistrust. In good times, which correspond to periods with an economic surplus from forestry, the community has always approved investments in the forest (e.g. forest roads, forest purchases, or recreational facilities). Essential expectations of the population should be met: firewood supply (industrial wood is secondary to firewood); good forest roads and a good forest condition; no major damage caused by forest management operations. Difficult decisions should be communicated properly and with sensitivity. The city is the forest owner and principal. If the city disagrees with something, the forester has to convince them; otherwise, a loss of confidence will be the undesired and mid-term consequence.

Economy

During the period from 1998 to 2009 the enterprise had an annual surplus of about € 120 000, or 138 €/ha. This is about 20 times more than other broadleaved-dominated forests in southwest Germany. From 2010 to 2016, the annual average operating surplus was € 140 000 and 164 €/ha. The total income for that period was about € 4.5 million. Expenses were approximately € 3.5 million. The costs included, for example, more than 30 000 plants that were planted during this period.

Fig. C 5.3. Typical and important economical product in the City Forest Kandern. Example: Douglas fir as 'cash cow' (Photo: Reiner Dickele).

The balance of the enterprise in the last decades is a success story and there are several reasons for this sustainable positive economic result:
- Favourable site conditions;
- Very good work of the pre-accessors; resulting in a good and maintained infrastructure and sustainable management;
- Successful marketing strategy – submissions three times/year;
- Important decision 120 years ago to import and plant Douglas fir;
- Trust in the decisions of the forester;
- Wide range of tree species and own forest workers enables quick reaction to fluctuations in the market and storm damage.

Ownership structure

The City Forest Kandern is a communal forest, though embedded in a network of state forest areas and small-scale private forest patches. This situation is specific, and over the centuries the local inhabitants have identified closely with their forests and forestry. The right to collect and use wood for fuel and construction is important and a basis for the close identification with the forest.

Most important service/product

The main product of the city forest is high-quality timber, mainly from oaks, but also from Douglas fir (fig. C 5.3). However, the value of the forests with respect to recreation and as cultural heritage for the local people is difficult to quantify. Without doubt, this is a very important forest service. The habitats for a multitude of species is connected with this argument. Hunting is another important service.

Fig. C5.4. Special forest biotope (Schonwald), the so-called 'Wolfsschlucht' with calcareous rock formations and very rare species (*Lunaria rediviva* and *Carex pilosa*). The forest has a high touristic value. It also serves as the setting for a theatre production for one show in the summer (Photo: Frank Krumm).

Fig. C5.5. Mixed oak/beech forest including old-growth elements and a carpet of early flowering wood anemone *(Anemone nemorosa)* (Photo: Frank Krumm).

Specialities and rarities

The area is made up of diverse forest habitats, including some rare habitats that are home to a number of rare plant and animal species. There are small patches with forest reserves ('Schonwald' as a special protection format) and protected areas are dispersed across the entire forest area. Rare species – such as the moss *Neckera crispa,* the liverwort *Metzgeria conjugata,* and the sedge *Carex pilosa* – are found in canyon vegetation types with moist conditions and calcareous bedrock formations (fig. C5.1 and C5.4). Also, there are rare species of birds, bats, and other mammals which depend on old-growth forests.

Nature conservation

The state forest administration has introduced the AuT- concept (Alt- und Totholz Konzept; Old and Deadwood concept) (ForstBW, 2016). About 20–30 ha of small stands and tree cohorts with nature protection value are preserved within the managed forest areas. There is a possibility to designate these areas as 'ecopoints' and to get some compensation (paid by the state) for this. Also managed forests without any protection status are of high value for nature conservation because of the large proportion of old-growth structures (fig. C5.5) and higher probabilities to develop habitats for particular species (fig. C5.6).

Fig. C5.6. Old oaks in a managed forest area providing valuable timer and habitat structures (Photo: Frank Krumm).

Population and recreation

The local population identifies strongly with the forest, as traditionally local people have bought and sold firewood in at least four firewood auctions per year. The city provides incentives for local private forest owners to harvest and sell firewood assortments from young stands of broadleaved species (about 35 % of the harvested wood in the region is sold as firewood). There has also been close contact between the municipality and the local population through initiatives such as the forest adventure trail (established in 2003). Since 2003, several features have been added or are planned: 'Kletterwald' (2010), the 'sound path' (2016), and a water station (2020). Further, water has a specific value in the mountainous forests as it is very poor in minerals and in high demand by local beer brewers and distillers. Figure C5.7 shows a fountain built and maintained by the community forest that is frequently used and provides a basis for local products of high value.

Fig. C5.7. Fountain in the middle of the forest. The spring water in the area is well known. This fountain is used as a water source by local distillers and craft beer brewers (Photo: Frank Krumm).

Fig. C5.8. Planted and protected oak regeneration on a small clearcut area (less than 1 ha) as a basis for successful oak management (Photo: Frank Krumm).

Conclusions – Strengths and weaknesses

Management: The presented approach, based on valuable timber production and a high level of understanding in the society for management, depends on local people and the forester identifying strongly with the region and the applied management concept, including small clearcut areas (fig. C5.8). This might change over time as the forester will retire soon and immigration into the region is currently high.

Policy: This type of ownership and the local and small-scale policy allows for more flexibility while making decisions. This depends on the continuing support of the council. Currently it is considered to be a clear strength.

Communication is very basic and local, but is tailored to the aims of the enterprise.

Nature conservation is partly embedded in the daily routine of the forester and depends on his personal understanding. Production and protection are long-term management aims and seem to work well in this case. As oak is one of the main tree species, management of the forest area targets production and nature conservation as dual aims. There are many rarities present and a high share of the area is under protection and under additional survey from nature protection agencies. The tools to maintain multifunctional forests are used and are sufficient. However, successful implementation strongly depends on the managers and also on the control agencies (i.e. the city council and the state agencies) as presented in this case.

Portrait

Our mission is to manage forests for humans needs and wellbeing as a long-term task. We aim to produce valuable timber and maintain the close connection of local people with the forest.

References

ForstBW. 2016: Alt- und Totholz-konzept Baden-Württemberg. Landesbetrieb ForstBW, Stuttgart, Germany. 44 p.