Many specialist species in open woodland

Open woodland is characterised by gaps in the canopy that allow a lot of light to reach the ground. Many specialist species rely on open woodland as habitat, especially plants and insects, but also some birds. A striking number of them are threatened and depend on measures for their protection and conservation. Some conservation projects are underway, but further efforts are needed.

Open woodland offers habitat for many plant and animal species that have become rare and are now considered threatened. These woods have an open canopy, allowing a lot of light to reach the forest floor or ground vegetation. Without human intervention, such woodland only exists on extremely unproductive soils, where trees and shrubs struggle to grow despite plenty of light, either because it is too dry or too wet, or because nutrient content is very low. Examples are various types of warmth-loving Scots pine forest, larch forest at the upper tree line in the southern Alps, and mountain pine forest in raised bogs [3].

But open woodland can also come about through human activity and was much more widespread in the past. Unlike the regulated silviculture common today, which focusses on the production of stemwood, the exploitation of woods used to be a lot more varied [2, 12, 13]. Almost all usable material was taken from the forest: wood, leaf litter and fresh leaves, berries, bark, conifer cones and, by means of cutting or grazing, the undergrowth. Over time, this massive exploitation of biomass and nutrients caused poor soils to develop, creating habitat for plants and animals that in more nutrient-rich locations would immediately be forced out by more competitive, «dominant» species [10]. In fact, the habitats that developed in the course of such diverse and intensive forms of exploitation can hardly be called «forests». Rather, they are mixed, park-like landscapes with scattered trees, groups of shrubs and very short ground vegetation. In the course of the 19th and 20th centuries, these diverse forms of usage lost their economic significance. They were abandoned, with the exception of woodland grazing, which continues in the Alps and Jura today. In some parts of the Alps, grazed woodland still accounts for more than 20 % of forest area [7].

Open woodland for plants and insects, but also for birds

There are hundreds of species that thrive on nutrient-poor soils, especially plants such as Round-leaved Restharrow *Ononis rotundifolia* in the «steppe pine forests» of inner-Alpine valleys [3] or Garland Flower *Daphne cneorum* as a typical plant of calcareous pine forests [1]. For many insect species too, open woods are important habitats. Geiser [6] lists 1343 species of saproxylic beetles in Germany, most of which only occupy stands of old growth and deadwood that have a dry and warm micro-climate due to their open, park-like structure [5]; examples are Great Capricorn Beetle *Cerambyx cerdo* and the Darkling Beetle *Bius thoracicus*. Some bird species also inhabit open woodland. Woods that provide suitable habitat for European Nightjar, Western Bonelli's Warbler, Middle Spotted Woodpecker, European Turtle-dove, Western Capercaillie and Hazel Grouse differ in many respects, but share the common feature of an open canopy.

Pierre Mollet

Forest dominated by mountain pine with scattered spruce on boggy ground; with its open stands, this is prime habitat for Western Capercaillie. Because of its low capacity for growth, this forest remains open over time without the need for conservation measures.

Gilberto Pasinelli

Open oak-pine forest on sandy soil in the northern part of the Canton of Zurich. Measures such as regular mowing are needed to maintain the open structure, creating valuable habitat for several orchid species

Antoine Sierro

Trees were felled in a pine forest near VS to create space for the European Nightjar.

Need for conservation programmes

Given that many birds of open woodland are threatened, at least at a regional scale, conservation programmes have a high priority. For certain species such as Western Capercaillie or European Nightjar, such programmes have been underway for several years. The Swiss Ornithological Institute launched a conservation scheme for Western Capercaillie in 1988 on behalf of the federal government. Conservation measures for the European Nightjar have been implemented by the Canton of Valais in collaboration with the Ornithological Institute since 2001. In both cases there has been some initial success, but no significant shift to positive population trends across large areas has yet been achieved [4, 11].

The Canton of Zurich has taken a different approach, focussing less on individual species and more on open woodland as a diverse type of habitat. The importance of open woodland was already emphasised in the early 1990s, when the canton developed its nature conservation strategy [9]. Later, a special action plan for the promotion of open woodland was established [1]. The federal government has also recognised the need to act [8]. An action plan is currently being devised that proposes to promote open woodland and pioneer habitats for species of national conservation concern.

A variety of measures, regular maintenance

Measures for creating open woodland can vary widely depending on soil conditions, climate, and target species. Some places might require grazing by cattle, sheep or even goats, while regular mowing may be sufficient in others. In some areas, thinning interventions may be all it takes to reduce the density of a forest. Importantly, all measures are to be implemented primarily in woods on unproductive soils. If soils are too nutrient-rich, the plentiful sunlight will cause vegetation to grow again too rapidly. There are also types of woodland, like the above-mentioned mountain pine forests in raised bogs, that are so unproductive that no measures are needed to maintain habitat quality.

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[1] Abegg et al. (2005); [2] Bürgi & Stuber (2003); [3] Delarze et al. (2015a–b); [4] Ehrbar et al. (2015); [5] Geiser (1989); [6] Geiser (1991); [7] Gotsch et al. (2002); [8] Imesch et al. (2015a–b); [9] Regierungsrat des Kantons Zürich (1995); [10] Schiess & Schiess-Bühler (1997); [11] Sierro (2016); [12] Stuber & Bürgi (2001); [13] Stuber & Bürgi (2002)

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