4.3 Naturalness

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> *The Swiss forest is part of a century-old cultural landscape. In Switzerland there is virtually no virgin forest left, but 19 per cent of the total forest area has not been used for over 50 years. Around 5 per cent of the total forest area has not been actively managed or grazed by livestock for as long as 100 years.*

> *Even managed forests may reach an almost natural state if they consist of tree species native to the site. However, in the lowlands, forests in old development stages, which are especially important for species diversity, are lacking.*

> *Forest management is increasingly promoting near-natural mixed broadleaf forests. Since 1995[1], pure spruce stands on the Swiss Plateau, which are not natural there, have decreased from 11 to 6 per cent.*

A forest's degree of naturalness indicates how much humans have influenced and changed its structure and processes. Two questions are central: how high is the proportion of original and undisturbed natural and virgin forest? And how natural are the managed forests thanks to near-natural silviculture?

Virgin and natural forest

In virgin forests, no changes due to humans have occurred. Such original habitats are valuable because all natural processes can take place without interference. Nevertheless, in central Europe, virgin forests often do not have more species living in them than used forests. Virgin forests are, however, home to more species that are sensitive to disturbance or that require old forests for their development, such as certain types of mollusc, moss and lichen (BDM 2009). In Europe (excluding Russia), virgin forests today make up only 4 per cent of the forest area (Forest Europe et al. 2011), and most of them are in Scandinavia and Eastern Europe. In Switzerland, virgin forests occupy only around 30 hectares, and thus, together with the forests in Derborence (Canton Valais) and Scatlè (Canton Grisons), make up less than 0.01 per cent of the total forest area. The Bödmeren Forest (Canton Schwyz) also has certain characteristics of a virgin forest.

Natural forests are forests that have grown from natural regeneration and have developed freely for a long time without human intervention (Commarmot and Brang 2011). The composition of their tree species corresponds to that of virgin forests. Such forests develop if they have a near-natural tree species composition and are no longer managed. With time, they go through all the stages of natural forest development. Today, this is increasingly happening on the Southern slopes of the Alps and at high altitudes. The proportion of forests that have not been used for at least 50 years rose from 14 per cent in 1995 to 19 per cent in 2013. The regional differences are, however, considerable. On the Southern slopes of the Alps, the proportion today amounts to 59 per cent, but on the Swiss Plateau to, on average, only 2 per cent (Fig. 4.3.1). Around 5 per cent of forest areas have been neither managed nor grazed by livestock for over 100 years (Brändli et al. 2010a). These are largely natural forests, which age in a natural way if they are not used. Stands in natural forest reserves (section 4.9) also develop gradually into natural forests.

Not all natural forests are ideal habitats. If they are close to civilisation with a dense network of forest paths and roads, their quality as a habitat will be negatively affected. For example, people and dogs disturb sensitive animals and birds like the capercaillie. Undisturbed habitats have become rare in Switzerland. Only 21 per cent of the forest area is more than 500 metres away from a forest road. Some of these isolated forests have not been used for over 100 years and are considered 'undisturbed forest wildernesses'. They make up around 3 per cent of the forest area (Brändli et al. 2010a).

Near-natural silviculture

In Switzerland, forests are managed primarily for wood production and for protection against natural hazards (section 1.1), using a near-natural management approach as required by the Forest Act. This is reflected in, for example, the composition of tree species, which is, to a large extent, near-natural (Fig. 4.3.2). In the lowlands, where broadleaf forests naturally occur, the proportion of conifers is, however, often larger than in natural forests. Today, stands in the broadleaf forest areas that are unnatural (>75 % proportion of conifers), or very unnatural, (>75 % proportion of spruce) still make up 21 per cent of the total forest area. A quarter of these are pure spruce stands where the proportion of spruce is

over 90 per cent (Brändli et al. 2015). Such forests are ecologically and economically risky. They have low species diversity and are susceptible to windthrow and bark beetle infestations. Between 1995 and 2013, the proportional area in the whole of Switzerland of stands that are very unnatural decreased from 12 to 9 per cent, on the Swiss Plateau from 19 to 11 per cent, and that of pure spruce stands on the Swiss Plateau from 11 to 6 per cent. This development is the result of windthrow, bark beetle infestations and the near-natural silviculture practised for several decades. Another effect of this form of management is that natural regeneration with tree species adapted to the site has steadily increased (section 4.2). Near-natural silviculture is oriented towards the tree species composition of natural forests, but for economic reasons aims to have a slightly higher proportion of conifers.

In managed forests, trees and stands are harvested long before they die naturally. Normally, they live for barely half of their natural lifespan (section 1.3). To improve the conditions for species diversity, deadwood and habitat trees are left as they are, and old growth patches and forest reserves are created (section 4.5).

Certain forest types are especially important for habitat diversity. The federal government has produced a list of forest communities of national priority similar to that of the national priority forest species (section 4.8; FOEN 2015). Of the total of 121 forest communities found in Switzerland, 50 have a priority level of 1–3, occupying an estimated 3.4 per cent of the forest area. A further 26 forest communities, such as the larch-Swiss stone pine forest, have a lower priority of 4. While larch-Swiss stone pine forests are not endangered in this country, Switzerland does have a great responsibility for them in the context of the whole of Europe. Their quality can be maintained either through near-natural silviculture or by conserving natural forest reserves or special forest reserves.

[1] Development since the publication of the Forest Report 2005, which refers to data from the NFI 1993/95.

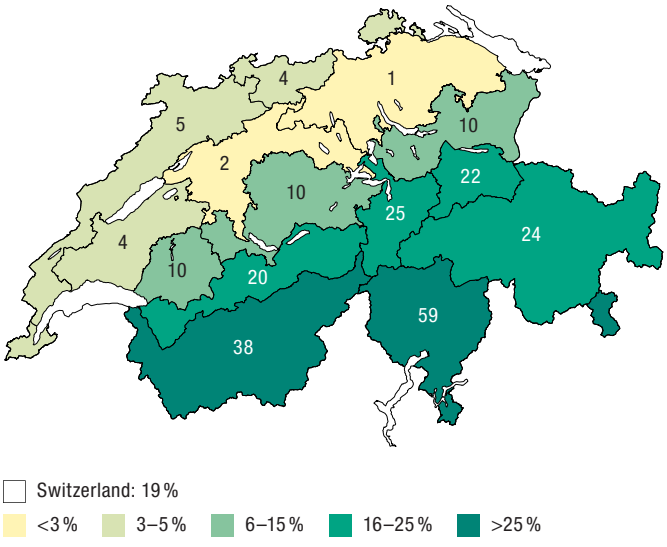

Fig. 4.3.1 *Proportion of forest areas where no forestry interventions have taken place for over 50 years in the 14 economic regions. Source: NFI 2009/13*

Fig. 4.3.2 *Near-natural managed forest with a tree species composition adapted to the site and with natural regeneration. Photo: Urs-Beat Brändli*