What about the regeneration of oaks in the Swedish forests?

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In planning for future forests and in the commitment to favour oaks, there has to be deep knowledge about the occurrence and development of seedlings and saplings. The regeneration of oak has recently been studied in two different surveys. The first one was in non-protected forests, mostly coniferous. The other was in woodland key habitats; with plots both in conservation cutting areas and in areas with free development. The purpose of the studies was to understand the oak regeneration in relation to different forest types, the oak ecology, forest management and forest policy.

The definitions used in the studies are:
- Coniferous forest: at least 60 percent conifers
- Broadleaved forest: at least 70 percent broadleaved trees
- Seedling: small oak, less than 2.5 cm tall
- Sapling: small oak, ≥ 1.3 m tall to 5 cm in diameter at 1.3 meter
- “Large” oak tree, or oak tree: ≥ 15 cm in diameter at 1.3 meter
- Young forest: average height of trees less than 7 meter
- High forest: average height of trees more than 7 meter

Regeneration in broad leaved- and coniferous forests

In the first survey, the regeneration of oaks in deciduous and broad-leaved forests was compared. The results showed that there is considerable more regeneration of oak in broad-leaved forests, but since there are so many more coniferous forests in Sweden, the overall result is that there are substantially more young oaks growing in coniferous forests than in broad-leaved forests.

YOUNG FORESTS
Coniferous: 32–43 oak saplings per hectare
Broad-leaved: > 300 oak saplings per hectare

HIGH FOREST
Coniferous: 32–60 oak saplings per hectare
Broad-leaved: 56–146 oak saplings per hectare

Overall: 63–74 percent of all saplings in the study area (Southern third of Sweden), grew in coniferous young and high forest. These saplings may be favoured rather than removed and it is potentially easy to increase the density of oak trees.
The effect of conservation cutting

In the other study, in woodland key habitats and nature reserves, the focus was on differences in oak regeneration due to cutting or thinning versus free development. The survey started in 2000, and during the winter 2002/2003 half of the one-hectare study plots were thinned by the removal of 25–30 percent of the tree biomass. In 2005 the oak saplings and seedlings was counted again and the results showed that thinning increases seedling density. More light favours survival and growth of oak seedlings. Partial cutting is hence one way to favour oak regeneration.

In a comparison between a national forest inventory during the years 1983 to 1987 and a similar inventory during 1998-2002, the differences in oak regeneration is striking - the oak saplings have decreased substantially, mainly due to browsing by deer and moose. The conclusions from this study is that the forest practices and conservation policies that dominate the Swedish forestry does obviously not favour oak saplings or seedlings. However, the same inventory shows that the number of large oak trees has increased during the same period, so the management of today favours big oaks before young oaks. Since the results from several surveys show that good survival and growth in oak seedlings requires canopy opening, it can be stated that the practice of conservation cutting is necessary to strengthen the regeneration of oak.