

EFFECTS OF SELECTIVE CUTTING ON STRUCTURAL ATTRIBUTES AND OAK RECRUITMENT IN STANDS OF MIXED FORESTS IN SOUTHERN SWEDEN

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Oak-dominated and mixed oak forests worldwide support high levels of biodiversity and provide many ecosystem services. Despite their importance as foundational species for many ecosystems, oak dominance is declining worldwide. One of the main explanations for the decline in oak forests is failure in oak regeneration and its inability to grow and reach into the overstory. So far, research has focused on influences of browsing and fire on the early stages of natural regeneration. Examples of successful recruitment of oak into the overstory in mixed, uneven-aged forests are largely missing. This study investigated the effect of selective cutting on stand structure and oak recruitment, and, which specific stand structural attributes favour oak recruitment into the overstory. We focused on recruiting oak trees in the lower and middle canopy (diameter at breast height [d.b.h.] 5.0 to 9.9 cm and 10.0 to 19.9 cm, respectively) that were outside the browsing height. Our results showed that stand density negatively influenced oak recruitment of the smaller size class. An increase in canopy openness had a positive effect on the density of the larger diameter size class. Further, a higher canopy openness with a lower shade-casting index suggested a potential positive relationship of light transmission and oak recruitment. The study results show that different size classes of oak recruitment benefit from either a decrease in stand density or an increase in canopy openness. These variables

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together with the light transmission of the overstory should be considered when ensuring the continuity of mixed, uneven-aged forests with a high proportion of oak in closer-to-nature forest management systems.