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Learning by Doing: a practical approach to improving stand resilience through Tree Marker Training

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Abstract

The science and practice of forestry is undergoing a phase of rapid development in response to crises related to climate change, threats to forest health and wider geo-political issues. Promoting species and structural diversity, and embracing uncertainty in management planning are recognised as priorities to increase forest resilience. This is challenging foresters to adapt and develop new approaches to managing woodlands at the stand level. Among the most important of these developments is a renewed focus on individual-tree management and a transition from clear-felling in many productive woodlands to wider use of continuous cover forestry (CCF). This represents a paradigm shift that requires innovation in professional forestry education. In this paper, we highlight silvicultural training plots (known as marteloscopes) as a tool to promote skills in the marking of trees to meet specified stand management objectives. Marteloscopes are forest plots up to 1 ha in area where the trees are mapped and scored in terms of a range of attributes, including timber quality, habitat potential and silvicultural role. Students work in groups to mark trees for retention and removal according to a prescribed thinning plan; results are input to software to determine the relative success in achieving objectives, and to stimulate discussion and feedback. A particular focus in Ireland is the introduction of CCF to plantation forests of Sitka spruce (*Picea sitchensis*). Transforming even-aged stands to CCF requires the use of crown thinning to increase stand structural irregularity. This contrasts with low thinning, which is generally used to promote uniformity in stands destined for clear-felling. A compare and contrast approach is employed in training courses so that students can more readily understand the distinction between thinning strategies. The discussion highlights the potential of marteloscopes as an integrative and problem-based learning method to enhance skills and competency in adaptive forest management.