



# Learning lessons from virtual tools

– Integrating biodiversity into forest management

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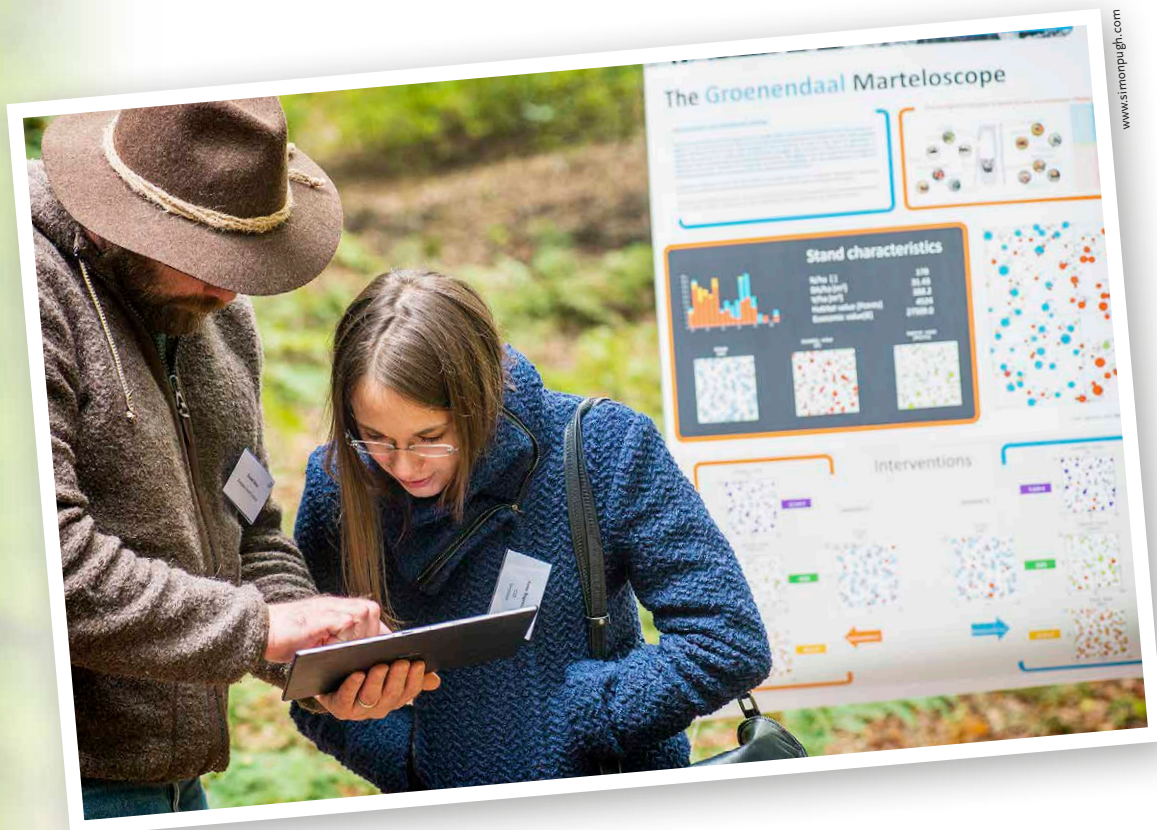
ANDREAS SCHUCK AND DANIEL KRAUS, EFICENT

Forest policies are manifold and originate from various sectors. They are informed by both research and practice and take into consideration the perspectives of stakeholders and interest groups. Forest management must put policy targets into practice by deciding where, when and what kind of interventions are applied for each forest stand. The Integrate+ project is establishing a European network of demonstration sites for the integration of biodiversity conservation into forest management. It aims to provide tools to help visualise the consequences of different silvicultural approaches, including their effect on biodiversity.

There is a wide range of theoretical strategies and concepts in forestry, which can result in differences when implementing certain silvicultural practices, even if clear forest management guidelines are in place. Thus, it is important to have a good understanding of the key factors influencing practitioners' decisions when applying silvicultural tools, including their levels of experience and knowledge on forest dynamics. Experimental silviculture (trial and error) will not provide answers. Simulating interventions applied by individual practitioners within the same stand, however, provides much insight. This is exactly what 'Marteloscopes' (*M-scopes*) do. The term is derived from French and describes a more detailed examination of tree selection and their consequences on the stand and its future development relating towards a particular management goal.

## MARTELOSOPES

M-scopes are the centerpiece of the Integrate+ demonstration site network that is currently being established throughout Europe. They serve for virtual tree selection exercises and act as showcases for field visits. The main goal of M-scopes is to train and eventually improve decision making capacities. In Integrate+ they are adapted to address the aspects of integrating biodiversity into forest management. An M-scope is a one-hectare, rectangular plot in which each individual tree is assessed for its location, height and diameter, economic value (stem quality, local timber price) and ecological parameters (microhabitats). Based on this dataset, tree selection exercises can be performed and displayed directly through software (known as 'I+' software) operating on mobile devices. 'I+' allows



Daniel Kraus and Andreas Schuck from EFICIENT presented the work of the Integrate+ project and the Sonian Forest Marteloscope in October, part of the ThinkForest Science-Policy in Action Day which focused on biodiversity and forest management.

for immediate feedback in the M-scope on the economic and ecological implications of the virtual selection. In this way, different management strategies and their consequences can be objectively discussed by the participants on site. These may include forest practitioners, decision makers, scientists, students or other interested groups.

### HABITAT STRUCTURES

Integrate+ gives particular attention to habitat structures in its M-scopes. Large quantities of deadwood and a high density of old microhabitat-bearing trees are characteristic elements of natural forests, in particular in old-growth phases. These phases are often absent or rare in managed forests, even in forests under close-to-nature management. In selective harvests and thinnings, 'defective' trees displaying or potentially

developing old-growth habitat structures are often removed. Yet, an important share of forest biodiversity is strictly or primarily dependent on such elements for their survival, especially those species that depend on deadwood. Conservation of biodiversity in commercial forest stands is thus linked to retaining such microhabitat structures. Identifying so called 'conflict trees' in terms of economic and ecological values expressed through such habitat structures allow initiating a constructive exchange amongst participants of the virtual tree selection exercises on management options and their trade-offs.

### WHAT DOES THE FUTURE HOLD?

The established M-scopes and the 'I+' software have already received considerable attention. The State Forest Administration of Baden-Wuerttemberg (ForstBW) expressed

interest to utilize the tools in support for their silvicultural trainer programme. The Bavarian Forest Enterprise (BaySF) visited an Integrate+ demonstration site in the course of a high level meeting in Bavaria. After having completed a virtual tree selection exercise as part of an M-Scope visit, a Georgian delegation accompanied by the Deputy Minister of Environment and Natural Resources stated that "such demonstration sites and the I+ software are highly useful training tools but also a vehicle for communication between research, policy and practice".

Further M-scopes are currently being established in many European countries including e.g. Belgium, the Czech Republic, Finland, France, Luxembourg, Poland, Slovenia, Spain, Sweden and Switzerland.

For more information:  
[www.integrateplus.org](http://www.integrateplus.org)