THE CONCLUSION OF PERSPECTIVES ON NEW DEVELOPMENTS OF DECISION SUPPORT SYSTEMS FOR SUSTAINABLE FOREST MANAGEMENT

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Abstract. This short discussion of two publications on Decision Support Tools for Sustainable Forest Management concludes the series of this journal's Special Sections on this theme resulting from the 2010 Workshop on Decision Support Systems in Sustainable Forest Management held in Lisbon, Portugal, on April 19-21, 2010. While the current section doesn't exhaust all the collection of the papers that were selected through collaboration between the conference organizers, its participants, and the MCFNS editorial team, it contains the two last papers from that series that passed the peer review process within a one year period (one journal volume timeframe) and were published as a collection of papers under a common banner. Thus, the papers contained here conclude this series of Special Sections on the subject, and any other submission from that same conference that may pass the peer-review process in the future will be published as general submissions.

Keywords: Symposium Proceedings, DSFM, Systems Analysis, Operations Research, Decision Support Systems; Forest Planning Optimization.

1 Background

Starting in 2010 with the second volume (Vol. 2, No. 1) of the Mathematical and Computational Forestry & Natural-Resource Sciences (MCFNS) journal, the MCFNS editorial team has collaborated so far on four series of various conference-related Special Sections on different themes relating to the scope and focus of the MCFNS journal. Among various subjects especially welcomed by the journal are studies in areas of fundamental research in natural resource sciences based on extensive use of mathematics and computing and implementations of new advanced computational technologies as defined in the journal's Scope and Focus section. The journal supports submissions in research outside of the contemporary mainstream forestry and natural resource scientific culture, such as a collection of data and significance analysis, and especially support studies in the areas of mathematical modeling and scientific computing, such as equation derivations and computer simulations, as well as reviews and theoretical discussions. This particular conference theme of Decision Support Tools for Sustainable Forest Management was indeed in the core of this journal's scope and focus. The conference received

50 submissions, from which 15 were accepted for the conference presentation, and subsequently six (as of August 2011) have passed the peer-review process for this journal. Bettinger et al. (2011) presents a more detailed description of the background on this Special Sections series, the conference and its contents and organization, considerations in selecting the papers for publications in these Special Sections, and brief reviews of the four papers published in the previous Special Section.

This Special Section on Decision Support Tools for Sustainable Forest Management contains the two remaining papers that conclude the block of the publications in the Special Section on the 2010 conference on Decision Support Tools for Sustainable Forest Management. The two papers discuss the development, usage, and integration of computational tools for quantitative forest management planning and optimization within different structural frameworks and objective criteria, which include multi-criteria non-monetary values inclusion as well as growth and yield modeling implementations.

2 CONTENTS OF THE SPECIAL SECTION

The two papers (Korosuo et al. 2011, and Wikström et al. 2011) in this Special Section describe two unrelated Swedish studies on Decision Support Systems (DSS). The two papers deal with different aspects of DSS software: one investigates new problems associated with an implementation of DSS software and the other focuses on the development of a new DSS system.

The first paper, by Korosuo et al. (2011), discusses challenges associated with operational comprehensive implementation of the traditional DSS tools within the context of contemporary forest management challenges of multi-criteria decision analysis (MCDA) with non-monetary values of planning parameters generated by forestry related qualitative functions and services. The authors used new-generation computer software to facilitate the comparison of different simulation parameters and outcomes. They discuss the strengths and challenges of the presented study, identify conclusions, and formulate recommendations for other similar approaches.

The paper by Wikström et al. (2011) describes the development of the Heureka system that was originally initiated at SLU (Swedish University of Agricultural Sciences Umeå, Sweden) in 2002 and the first version, which was released in 2009. The described system consists of many modules with three main elements comprised of a stand simulator, an optimization forest level planning tool, and a regional analyses simulator. Many other associated tools and software analysis enhancements have been included in the description and discussion. The paper describes the system architecture, logical connections between the system elements, and the principles of the program implementation and analysis based on the program results.

Both of the above papers offer a strong breadth and depth in the presented topics and constitute a valuable contribution to the literature on the DSS subject. Along with the papers published in the previous MCFNS Special Section on Decision Support Tools for Sustainable Forest Management, the papers presented here conclude the collection of contributions resulting from the 2010 Workshop on Decision Support Tools for Sustainable Forest Management held in Lisbon, Portugal, on April 19-21, 2010.

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