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OUTCOMES OF THE 2009 SYMPOSIUM ON SYSTEMS ANALYSIS IN FOREST RESOURCES

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Abstract.This is the Introduction to and an overview of the Special Section of papers from the 2009 Symposium on Systems Analysis in Forest Resources (SSAFR) held in Charleston, South Carolina on May 26–29, by the symposium organizer and the Guest Editor of this section.

Keywords: Symposium Proceedings, SSAFR, Systems Analysis, OR, Symulations, Programming

1 Background

The 2009 Symposium in Systems Analysis in Forest Resources (SSAFR) was held in Charleston, South Carolina from May 26 to 29. Thirty-five presentations were given at the Symposium on topics ranging from biofuels harvesting logistics to efficiently monitoring the impacts of climate change by speakers from Canada, Chile, China, South Korea, Spain, Portugal, Sweden, the United States, and Vietnam. The Symposium continues a long tradition of workshops sponsored by the Society of American Forester's E-4 Working Group that started with a meeting in Athens, Georgia in 1975. While most of these symposia have occurred in the US, two have been held in Chile, in 1993 and 2003, and the next one will take place in Chile in March 2011 (for more information, contact Andres Weintraub (aweintra@dii.uchile.cl)). All of the meetings have been well-attended by both researchers and practitioners from many countries who are interested in the application of operations research methods to solve forest management problems.

In the past, most of the workshops have resulted in proceedings that provided presenters with an outlet for a written version of their talks. While we kept the option open to have a separate, stand-alone proceedings for the 2009 meeting, we also wanted to give presenters the option of publishing their work in a peer-reviewed outlet. This led to our collaboration with the Journal of Mathematical and Computational Forestry and Natural Resources Sciences (MCFNS), in which any papers submitted for the proceedings as peer-reviewed articles will be published, provided they meet the standards of the journal. At present all of the papers submitted for the proceedings have been submitted for peer review in the journal, and two of the submitted papers have passed the MCFNS peer review and have already been accepted for publication in the journal. Rather than holding up their publication until all papers submitted have been accepted, we have chosen to publish those papers in a special section of this issue, with the expectation that others will be published in a similar section in a later issue. We hope this collaboration between MCFNS and the SSAFR will continue with future workshops as well.

2 Contents of Special Section, Part I

The two papers published in this issue of MCFNS address two topics that have received considerable attention in the literature on the application of operations research methods to forest management problems.

The first topic, the problem of incorporating fire in forest planning models, is a major challenge to operations researchers, given the inherent stochastic nature of fire in forest ecosystems. Pete Bettinger (Bettinger 2010) provides an excellent review of different modeling approaches operations researchers have used to recognize fire in forest planning. The article reviews papers that have applied binary search, dynamic programming, linear and non-linear programming, simulation, and stochastic optimization, among others, to the problem. Modeling efforts such as these have helped forest managers adjust harvest levels to account for losses due to fire, and researchers are even beginning to think about how to use operations research methods to design forested landscapes to make them less susceptible to fire.

The second paper addresses the general area of modeling adjacency constraints in spatially-explicit forest planning models. In particular, Li et al. (2010) considers three methods for generating hypothetical forest

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landscapes that can be used to evaluate adjacency constraint formulations and solution methods. As the authors point out, hypothetical landscapes may have advantages over actual landscapes for doing this type of research. First, it can be very difficult to assemble a large number of actual forest instances, and, second, one can control characteristics of hypothetical landscapes in order to explore how those characteristics affect problem solutions and the solution process.

The above two papers conclude the Part I of this special section. Other papers from the same conference are still under review and they are expected to be published, subject to positive qualification by the MCFNS peer review, under the same Special Section arrangement in Vol. 2, Issue 2 of the MCFNS journal in August 2010.

Acknowledgement

Symposia and papers such as these happen because of the contributions of many people. I would especially like to thank Joe Roise, from North Carolina State University, and the people from ArborGen who organized and led the Symposium's tour of ArborGen's forestry operations in the Carolina lowlands. Carlton Gleed and the Society of American Foresters helped tremendously by handling most of the other logistics of the meeting. Pete Bettinger also helped organize the meeting and has been instrumental in establishing the relationship between the Symposium and the MCFNS. Chris Cieszewski, one of the MCFNS editors, has also been very helpful and flexible in making this possible. Finally, I would like to thank the presenters and attendees of the Symposium.

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