



# A comparative assessment of decision-support tools for ecosystem services quantification and valuation



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## ARTICLE INFO

### Article history:

Received 3 January 2013  
Received in revised form  
20 June 2013  
Accepted 8 July 2013  
Available online 30 July 2013

### Keywords:

Decision support  
Ecosystem services  
Modeling  
Valuation  
Comparative tools assessment

## ABSTRACT

To enter widespread use, ecosystem service assessments need to be quantifiable, replicable, credible, flexible, and affordable. With recent growth in the field of ecosystem services, a variety of decision-support tools has emerged to support more systematic ecosystem services assessment. Despite the growing complexity of the tool landscape, thorough reviews of tools for identifying, assessing, modeling and in some cases monetarily valuing ecosystem services have generally been lacking. In this study, we describe 17 ecosystem services tools and rate their performance against eight evaluative criteria that gauge their readiness for widespread application in public- and private-sector decision making. We describe each of the tools' intended uses, services modeled, analytical approaches, data requirements, and outputs, as well time requirements to run seven tools in a first comparative concurrent application of multiple tools to a common location – the San Pedro River watershed in southeast Arizona, USA, and northern Sonora, Mexico. Based on this work, we offer conclusions about these tools' current 'readiness' for widespread application within both public- and private-sector decision making processes. Finally, we describe potential pathways forward to reduce the resource requirements for running ecosystem services models, which are essential to facilitate their more widespread use in environmental decision making.

Published by Elsevier B.V.

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