Sustainable livelihood approach from the lens of the state-and-transition model: an integrated model for social-ecological research and management

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Abstract

Dealing with complex challenges worldwide regarding sustainable development and environmental management requires applied frameworks to understand and manage change in complex social-ecological systems. The sustainable livelihood approach is a framework for thinking and communicating about factors that impact on the livelihoods of rural families from a multidimensional perspective, including wellbeing, health, income, social networks and the local environment. It is designed to assist in identifying changes or transformations that can be performed to institutions, assets or strategies of rural families in order to promote adaptive capacities and resilience to local communities. However, operative tools in order to implement these concepts in a systematic way are still a challenge. In this regard, we concur with other developments that the State-and-Transition Model provides a useful perspective, and a conceptual basis for theory and disciplinary integration that could provide a dynamic perspective of changes and transformations of rural livelihoods. The aim of this paper was to provide a conceptual model for social-ecological research and sustainable management in agro-ecosystems. We suggest adapting the state-and-transition model by including structural and functional features of social-ecological systems, by taking into consideration the livelihood approach. The proposed conceptual model explicitly recognizes that structure and functions are strongly interlinked and must be assessed integrally. Both attributes are analyzed in five types of capital that typically comprise social-ecological systems: natural, human, manufactured, social and financial. We propose to perform the analysis at two levels: i) structural-functional analysis for each capital as separate sub-systems, to better evaluate the impact and interaction with different disturbance factors, and ii) by the integration at a system level. The framework provides an integral perspective to explore system properties such as resilience and resistance, in relation to different kind of disturbance factors and key thresholds: sustainability and subsistence thresholds, which are used as references to support differentiated management. The proposed conceptual model is encouraging as a step towards two main challenges: i) the provision of applied frameworks for social-ecological management, and ii) an attempt to bring closer science and decision making.

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