

The Social Benefits of Participatory System Dynamics Modeling in a Wildlife Conservation Context

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Abstract:

Traditional conservation planning tools rarely capture the complex behavior of social-ecological systems. The growing application of systems thinking, and related approaches, can help conservation organizations avoid unintended consequences and improve evidence-based decision making. Yet, more rigorous evaluation of these methods is needed. One complex system where systems thinking could be especially valuable is the illegal wildlife trade, specifically connections between farming of tigers and wild tiger conservation. Participatory system dynamics (SD) modeling is one approach that could increase understanding and provide social benefits to diverse groups working together, while improving strategy. We used mixed-methods evaluation involving pre-post surveys, key informant interviews, and researcher observations to assess the social benefits of a 2021-2023 virtual participatory SD process with 49 subject matter experts (25 of whom completed pre-and post-process questionnaires) spanning diverse and global perspectives. We found that participatory SD changed beliefs about the threats farms pose to wild tiger populations; although participants did not perceive tangible shifts in thinking. Participants appreciated the opportunity to talk, learn, and collaborate constructively with other experts (including those they disagreed with), yet measurable changes in trust among participants were minor. The process was long and intensive, yet compared to a peripherally-engaged Consulting Group (n = 19), participants in the more frequently-engaged Modeling Group (n = 9) generally reported higher social benefits and overall perceived value of the process. This study provides a rigorous framework for evaluating participatory modeling and supports the use of such approaches to improve understanding and collaboration, and consensus building in conservation.