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## Managing Forest Disease Spread with Tangible Participatory Models

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## Managing Forest Disease Spread with Tangible Participatory Models

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**Abstract:** Forest diseases fundamentally diminish the health and functioning of our valuable forest resources. Landscape-scale management efforts to reduce disease spread are a priority but can be fraught with questions about how best to allocate limited resources. Management efforts can be greatly enhanced by spatiotemporal models of disease spread which allow the comparison of alternative scenarios. In many cases, however, models are developed without user-friendly interfaces or consideration of stakeholder motivations, fueling a knowledge-practice gap where better science has not necessarily lead to better management. Tangible Landscape, an open-source participatory modeling tool, has been designed to address this challenge. Stakeholders can intuitively interact with a model of disease spread by placing treatments on a physical representation of the landscape and instantly visualizing results. As a team of interdisciplinary researchers, we are leveraging this novel modeling platform to engage stakeholders battling a new, more aggressive strain of the infectious disease sudden oak death in southwestern Oregon. Through a series of participatory workshops, we are generating spatially-explicit management scenarios, evaluating how stakeholders perceive and interact with the model, and further developing Tangible Landscape as a decision support tool for disease control. Survey results from our first workshop indicate that stakeholders find this system useful for prioritizing management locations and facilitating communication amongst stakeholders. We also found that interaction with the system sparked collaborative learning amongst researchers and participants. While more testing is required, our results suggest that Tangible Landscape is a promising participatory tool for reducing the knowledge-practice gap between scientists and practitioners.

**Keywords:** *disease modelling, participatory modelling, tangible models*