USING STRUCTURED DECISION-MAKING TO MANAGE DISEASE RISK FOR MONTANA WILDLIFE

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Abstract: We used structured decision-making to develop a 2-part framework to assist managers in the proactive management of disease outbreaks in Montana. The first part of the framework was a model to estimate the probability of disease outbreak given field observations available to managers. The second part of the framework was a decision analysis that evaluated likely outcomes of management alternatives based on the estimated probability of disease outbreak, and applied manager's values for different objectives to indicate a preferred management strategy. We used pneumonia in bighorn sheep (*Ovis canadensis*) as a case study for our approach, applying it to 2 populations in Montana that differed in their likelihood of a pneumonia outbreak. The framework provided credible predictions of both probability of disease outbreaks as well as biological and monetary consequences of management actions. The structured decision-making approach to this problem was valuable for defining the challenges of disease management in a decentralized agency where decisions were generally made at the local level in cooperation with stakeholders. Our approach provides local managers with the ability to tailor management planning for disease outbreaks to local conditions. Further work is needed to refine our disease risk models and decision analysis, including robust prediction of disease outbreaks and improved assessment of management alternatives.

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