Individual-based modeling as a decision tool for the conservation of the endangered huemul deer (Hippocamelus bisulcus) in southern Chile

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One of the greatest challenges for conservation biology is providing solutions for endangered species in modern landscapes, usually with deficient biological information on how species respond to landscape disturbances. These limitations are severe in developing countries where the lack of resources restricts the potential for basic ecological research. One way in which this limitation has been mitigated is with the use of individual-based spatially explicit population models (SEPMs). We developed a SEPM for the endangered huemul deer (Hippocamelus bisulcus) of southern Chile. The goal was to project the population trajectories under three different development scenarios (present conditions, increased livestock density and hydroelectric dams) in southern Chile, identifying key demographic variables associated to landscape features. The model simulated weekly movements, age and general status of all individuals in the population and the landscape in which they lived during a 40-year per