DSV Seminars 2019

UNIVERSITÀ DEGLI STUDI DI TRIESTE

DIPARTIMENTO DI SCIENZE DELLA VITA

PhD Program in Environmental Life Sciences

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Seminar room, 1st floor, Q Building, Via Giorgieri nº 5, Trieste

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Mapping potential species distribution in human dominated landscapes: multi-state species distribution models, landscape connectivity and mortality

Species ranges are changing in response to human-related disturbances and often management and conservation decisions must be based on incomplete information. In this context, species distribution models (SDMs) represent the most widely used tool, but they often lack any reference to demographic performance of the population under study, spatial structure of the habitat patches, or connectivity at the landscape level. Combining a multi-state SDM with a landscape pattern analysis and a mortality model, I developed a spatially-explicit, integrated model to assist and inform conservation planning for the Apennine brown bear in central Italy. I identified 15 critical habitat areas, potentially hosting 76 adult female bears. Many of these areas are, however, characterized by high levels of human-related mortality, making them attractive sink-like areas. Structural connectivity was higher in the northern part of the study area while only limited connectivity characterizes the core area, where most of the bears currently live. My integrated model indicates that the conservation of this relict and isolated bear population is a realistic conservation goal, as I estimated that 192–270 bears could live across the Apennines. My modelling framework enhances the biological realism of traditional SDMs and provides a conservation planning tool that integrates habitat suitability, mortality risk (as a component of the total demographic performance) and structural connectivity among habitat patches at the landscape scale. It is particularly suited for endangered species living in a human-modified landscape where establishing a realistic and spatially explicit conservation goal would facilitate pro-active management.