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La viabilité des populations de carnivores

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Abstract

This thesis is intended to provide conservationists with tools to better conserve endangered carnivores, using population viability analysis. The main part of the dissertation deals with population models to investigate demographic aspects of carnivore conservation. Focusing on several case studies, we look at how life history patterns can affect population viability and species resilience to perturbations. After having set the scene by reviewing the history and use of population models in conservation biology, we then develop general deterministic and branching process population models to lay out a comparison of several carnivore species demography. We then focus our attention on two carnivores with different social systems - Siberian tiger and grey wolf. Using various demographic modelling approaches, we suggest that the widely accepted assumption that tigers are inherently resilient to perturbations should be re-examined. With the development of an Individual-Based Model, we evaluate the impact of management strategies advocated by the French government for grey wolves in the Alps and provide the basis for adaptive management strategies when wolf removals would be triggered by demographic signals. One of the conservation action in which population dynamics is critical are reintroductions. Based on a previously published database of carnivore reintroductions, we conduct a thorough statistical analysis of factors affecting their success, revealing that some families are easier to reintroduce. We then focus our attention on two challenging case studies. The first one is the Pyrenean brown bear whose survival requires releasing a balanced number of females to insure population persistence while mitigating political opposition. The second one is the Amur leopard which is the most critically endangered cat in the world. Here, building a new population to prevent infectious disease outbreaks requires taking individuals from an already tiny population and we find that whatever strategies are chosen, perspectives are risky and bleak. The four previous case studies are examples illustrating carnivore conservation synthesizes most of the key aspects of conservation biology: charismatic and either hated or loved by the public, carnivores are often advocated as being conservation umbrellas for other smaller species, good indicators for ecosystem health and keystone species. Yet their conservation is far from being a success. We review a decade of research in carnivore conservation, by looking at peer reviewed articles, grey literature and conferences, totalling more than 1.500 items. We find that research has addressed mainly ecological issues and not enough actions to stop species decline. These results raise serious concerns about the ability of the conservation community to successfully tackle the challenge to provide the best available knowledge to reverse the current extinction crisis and we suggest a new research agenda for a truly inter-disciplinary research. We provide an example of such conservation effort by detailing the Snow Leopard Survival Strategy, an international and collaborative effort involving more than 70 conservationists from 18 countries and aimed at improving snow leopard conservation. We finally discuss the prospect of conservation and which innovative approaches seem critically needed.

Keywords: Carnivores, Conservation, Population Viability Analysis, Model