

# **Conservation genetics : new tools and hope for threatened species.**

Johan R. MICHAUX

Unité de génétique de la conservation, Institut de botanique, Liège, Belgium.

Abstract :

Conservation genetics is an applied and interdisciplinary science, involving the application of evolutionary and genetic methods to the conservation and restoration of biodiversity.

This recent field of research encompasses two main aims: the genetic management of small and fragmented populations in order to maximize their genetic diversity and to minimize inbreeding depression; the delimitation of « Evolutionary significant units » (ESU) and « Management Units » (MU) and the resolution of taxonomic uncertainties. It also helps to better understand the biology of threatened species and to search if they are characterised by particular biological characters explaining their fragility.

The development of new molecular techniques allows to study endangered species using “non invasive” approaches. A small piece of tissue, some hairs, several drops of saliva or even faeces are now sufficient to analyse the genetic diversity, the genetic structure and the isolation level of populations.

Using different examples of mammal species studied in our laboratory (European mink, Pyrenean desman, South East Asian endemic rodents, polar bear, wild cat...), I will explain the great interest but also the limitations and constraints of this field of research. A particular emphasis will be done concerning the risks of hybridization and outbreeding processes, the presence of invasive species or the interest of conservation genetics for reintroduction or translocation projects.

Finally, I will conclude by discussing connections between conservation genetics and the wider field of conservation biology.