
Taxonomy and genetics

Vanishing beasts: the conservation of African rhinoceros

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Molecular tools are used for the assessment and monitoring of biodiversity which aid in conservation decisions and management. Recent developments in molecular methods have allowed researchers to analyse species at a genetic and/or genomic level. The level of analysis will depend on the available resources, funding, training, and access to technologies. In some countries/institutions, traditional genetic data such as microsatellites are still utilised in conservation decisions and in others advanced technologies that produce genome data for species are incorporated into management. Genetic/genomic information can answer a variety of research questions at either a higher evolutionary level or at phylogeographic, phylogenetic or population level. In this contribution, black rhinoceros is used as a case study to illustrate how genetic and genomic information can complement each other in conservation management. Genetic (microsatellites and mitochondrial DNA) data for black rhinoceros showed erosion of genetic diversity across the distributional range of the species and several evolutionarily significant units (ESUs) have been identified for the species. Data also showed that genome level analysis often identified finer scale patterns that were not observed using traditional markers such as mitochondrial DNA or microsatellite data, but the overall patterns of diversity were supported by all marker types. In addition, genomic data provided further information regarding inbreeding and genetic load. These genetic/genomic results should be implemented in future conservation actions for the species.