

## **Summary**

### **Safeguarding genetic diversity in red deer in cultural landscape**

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Living conditions for the red deer have changed dramatically during the last decades, particularly due to a massive fragmentation of its habitats and increasing areal demands for different types of human land use.

Above all, deer damage in forestry is a continuing problem and has been a leading factor in dealing with the species for a long time.

Red deer fulfill important ecosystem functions, but also have to become part of efforts to conserve biodiversity in cultural landscapes. Up to now, the species could be effectively and sustainably integrated into land use scenarios in only a few cases, thus creating the preconditions for long-term conservation of red deer genetic diversity in cultural landscapes. Therefore, policy makers and local stakeholders are facing the question of how to constructively handle the complex situation of red deer habitats and population management. The objective of the project was to develop the foundation for an exemplary management of red deer in the four central, and - to a large extent - isolated red deer populations of Schleswig-Holstein.

Specifically, the main focus was to create a comprehensive base of behavioral and genetic data for decision-making in red deer management.

For this purpose, genetic samples of 313 individuals in Schleswig-Holstein, Denmark and Mecklenburg-Western Pomerania were investigated, in order to determine genetic diversity and structure of the respective populations. Furthermore, 22 individuals from six hunting communities were captured and fitted with GPS-collars to gather detailed information about habitat use and activity patterns. In this way, Schleswig-Holstein received an unparalleled state of knowledge about its red deer populations.

The somewhat surprising results enabled comprehensive inferences about the management of the species and indicate an obvious need for action. Results were extensively discussed with the stakeholders and have already been integrated into some important decision processes during the project. The key to improve red deer management is a regional database that is tailored to meet the practical requirements and analyzed in a goal-oriented way. However, in order to implement the gained knowledge into practice, extensive changes in control and use of red deer populations for hunting purposes are necessary, on various institutional levels, with landowners, hunters and authorities. Those changes can only be achieved in intermediate terms and by means of a constant moderation process.

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