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DNA-based monitoring discloses wolves in Denmark

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ABSTRACT

Wolves are rapidly recolonizing their historical ranges in Central Europe, including Denmark. Because of the species' high protection status and conflict potential with human interests, a reliable population monitoring system is a prerequisite for nature management to protect the species, to inform the public and initiate damage prevention and mitigation initiatives in areas where wolves are occurring. Wolves are rarely observed and difficult to distinguish from dogs. However, DNA-based identification methods have proven to be an effective method to verify occurrences of wolves and to identify individuals. The first wolf in Denmark since 1813, found dead in Thy National Park in November 2012, was identified genetically to be a wolf. Its DNA-profile was discovered in the German wolf-DNA database unveiling that it was born in the Milkel Pack in eastern part of Germany. This started the establishment of the DNA-register of wolves in Denmark and with it the genetic monitoring of wolves based on scats and saliva (carcasses) samples. By April 2015, a total of 40 positive DNA-profiles have been detected, representing additionally 22 unique DNA-profiles (18 males and 4 females). Five of the 22 specimens were registered more than once, thereby providing information about their movement patterns. One male was represented in nine samples in the same area in central Jutland suggesting it maintained a stable home range. Similarly, four samples from the same female in approximately the same area in central Jutland, may also suggest permanent residency and potential future breeding. The rather high number of single findings (17 individuals) suggests that more wolves have reached Denmark. The ongoing study shows how genetic monitoring can be used in nature management to identify presence of wolves, occurrence of females (potential breeding areas) as well as single individuals, their geographical origin and movements. In the long run, genetic monitoring will be used to study dispersal patterns, habitat use, survival rates, inbreeding levels etc.



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