

Mating isolation between subspecies of honeybees (*Apis mellifera*) on an island

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The island of Læsø was the centre of a long dispute between the Danish State and part of the local beekeepers. In 1993, the State declared the whole island a conservation area of *Apis mellifera mellifera*, but some beekeepers fought in court for their right to keep other subspecies of honey bees, which they regard as more productive. The State won the case in 2001, but found it challenging to enforce the rules. In order to end the stalemate, in 2005 two zones were established on the island of Læsø, as a means of separating *A. m. mellifera* from other honeybees. The Eastern part of Læsø, a 17km² piece of land, was thus declared a conservation area for *A. m. mellifera*. This division was accepted by all beekeepers and the purity of the 116 colonies established in this conservation area was carefully monitored.

In order to determine whether stray drones mating outside their allocated area were compromising the isolation, we caught flying drones with a pheromone-lured William trap at four locations spread across the island. A total of 480 drones were analysed at 26 microsatellite loci in order to determine the origin of the individuals caught at each site. Although *A. m. mellifera* drones could be found outside their conservation area, drones of other strains were not found within this area. All drones caught within the conservation area for *A. m. mellifera* (n=238) were from this subspecies. Very few hybrid drones (n=14) were found outside this area. Our results indicate that the physical separation of the various strains of honey bees on Læsø is an efficient method to achieve mating isolation. These results are of interest for other cases where subspecies of honey bees need to be separated for conservation purposes and they fill a gap in our knowledge of honey bee mating biology.