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Sarcoptic mange in wild European rabbit (*Oryctolagus cuniculus*) is related to restocking

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Background: Although sarcoptic mange is widely known to affect many mammal species worldwide, it has just recently been reported for the first time in some free-ranging European wild rabbit (*Oryctolagus cuniculus*) populations. This species of mammal has been recently considered as Near Threatened in the IUCN's Red List, thus we found highly interesting to explore which factors derived from game management (mainly restocking rates and local population abundance) influenced the presence of the disease. Additionally we evaluated whether the parasite affected the local populations by exploring the population trend in the affected hunting estates.

Methods: Our study area is located in Tarragona (NE Spain) and consists of 50 hunting estates. Combining the studied variables (rabbit abundance and restocking rate in the first case, and presence of mange and year effect in the latter), we obtained several models with biological meaning. Then, we performed a model selection procedure following the theoretic information approach based on Akaike's Information Criterion corrected for small sample sizes.

Results: Presence of mange depends on animal abundance and on restocking numbers (Explained Deviance= 22.09%). Rabbit abundance (2001–2007) depends on the presence of mange and on the effect of the year (ED= 23.86%), and clearly declined in the hunting estates with mange, whereas abundance is maintained in mange-free zones.

Conclusions: Wild rabbit restocking is related to the presence of sarcoptic mange in our study area, thus, this measure should be avoided if an efficient sanitary control of the released animals is not carried out. The presence of this disease is also coincident with a population decline in hunting estates, which can be a hinder in rabbit conservation programmes. This case highlights the importance of sanitary control of wild populations. Further research is needed to clear out other aspects such as the origin of the parasite.