

Proposed strategic management of fallow deer to conserve endemic red deer in the Mesola forest, Ferrara, Italy

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Abstract

The Mesola Forest (1,058 ha), located in the Ferrara province in the north of Italy, is completely enclosed and is home to a small group of endemic red deer (*Cervus elaphus*) that used to be widespread across all of North Italy. The Forest also contains a large population of fallow deer (*Dama dama*) re-introduced in the 1950s-1960s. Since 1982, the fallow deer have been managed by shooting however the population has continued to increase. Therefore shooting of the fallow deer is not only ineffective but is also unpopular and may cause stress in both red deer and fallow deer. The Modena Veterinary Service and the Antivivisection League suggested adoption of a fertility control programme based on the use of an immunocontraceptive vaccine (GonaConTM) registered in the USA for white-tailed deer. The use of the vaccine could help to reduce the fertility of the fallow deer population and lead to an increase in the red deer population which is currently too small to be safe from extinction. The fertility control program for the fallow deer population is proposed as part of a strategy to maintain the biodiversity of the Mesola Forest.

Keywords: *Dama dama*, fallow deer, fertility control, GonaConTM, immunocontraception, killing, multi-year contraception, shooting

Introduction

The Mesola Forest is located in the Ferrara province, in the North of Italy. This 1,058 hectares is one of the last remnants of the primordial plain forest in the 'Delta del Po' Park. Currently, the forest hosts around 120 red deer (*C. elaphus*). These animals are the remnant of a once vast, endemic population that was widespread in all the forests of the North of Italy. The Forest is also home to a large fallow deer population (*D. dama*) which was re-introduced in the 1950s and 1960s because the original population introduced by the Estense family during the Renaissance became extinct in 1945. The fallow deer population has rapidly increased and caused excessive over-browsing and over-grazing in the Mesola Forest. After 20 years the overpopulation of fallow deer resulted in the adoption of handling and shooting plans (1982). This approach did not solve the problem since, after 3,180 killings in twenty years (most of them in the last few years), the fallow deer population in 2010 remains around 950-1,000 compared to 602 in 2006 (Gallo, 2008; Lovari and Nobili, 2010). In order to resolve this problem the Modena Local Veterinary Service (AUSL) and the Antivivisection League have proposed to the Government Administration responsible for the forest reserve safeguard, to adopt a population management programme based on immunocontraception (Cooper and Larsen, 2006). This type of contraceptive control consists in the administration of a single shot vaccine to obtain multi-year infertility. The project which will last for 8-15 years is regarded as feasible and could substitute existing, ineffective culling management.

Methods

The Authors proposed to the Puntamarina Biodiversity Office (Army Forestal Corp) a cooperation programme which aims at controlling the fertility in the fallow deer population using a contraceptive vaccine called (GonaConTM) already licensed for use in North American white-tailed deer (Killian et al., 2008). The implementation of a management programme, based on existing subdivisions of the internal areas of the fenced Forest is under scrutiny. These sub-enclosures would make it possible to handle female fallow deer to treat them with the contraceptive vaccine and equip them with an ear-tag and to sample blood to monitor the antibodies levels. The UK's Food and Environment Research Agency has been contacted to finalise the research programme and to provide the contraceptive. The vaccination plan, which must be approved by the Italian Health Authority, could have the first positive effects after

2-5 years by allowing an initial stabilisation, followed by an effective numerical reduction of the fallow deer population without the need to continue with shooting schemes. The Authors propose to set up an interdisciplinary team (veterinarians and wildlife technicians) to manage the vaccination activities and the provision of supplementary food to the two populations of deer.

Predicted benefits

Thanks to this programme in a few years it should be possible to vaccinate the vast majority of fallow deer living in the Mesola Forest. The main target of the project is to reduce that population and also to increase the number of red deer in the reserve. If the number of red deer increases it could be reintroduced to other suitable sites thus enhancing the survival of this endemic deer. If shooting was maintained, immunocontraception could still be used after an initial reduction through culling to manage the residual herd of fallow deer and to keep the planned maximum number (20-40) of an allochthonous species of historic interest in this Reserve. Moreover, the experience gained in using the GonaConTM vaccine in the Mesola Forest would be extremely useful to extend the approach to small deer enclosures maintained in many Italian parks, reserves and farms as wildlife exhibits for tourists. All these structures often house excessive number of animals (such as deer, wild-boar) that, due to public opposition, cannot be managed through culling. Another important aspect of the program proposed has been the creation of a team composed of vets and wildlife experts who will be responsible for the vaccinations and the serological monitoring of the fallow deer. They will also provide essential advice on nutrition and animal welfare matters related to the two ungulates species of the Reserve and thus help to restore the biodiversity of the area.

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