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Journal of Ecology and Natural Resources
ISSN: 2578-4994

Predation of wolves on feral horses in Apennines Areas of Southern Italy: A Case Study Report

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Short Communication
Volume 7 Issue 2
Received Date: May 24, 2023
Published Date: June 23, 2023
DOI: 10.23880/jenr-16000338

Abstract

Although wolf predation on horses is generally low, it can be significant where horses are grazed extensively and there are low densities of wild prey, such as in Southern Europe. The economic damage of wolf predation on horses can have a major impact in certain situations involving free-ranging horse populations and the topic needs more attention. This is the case of Spain, Portugal and Italy where it is possible to find many examples of wolf predations on feral horses. The main factor predisposing horses to wolf pre¬dation worldwide is the free-ranging management system. In Italy special attention is given to the horses bred in a particular area of the Southern Apennines: the Pentro horses; they represent a rare endangered equine population of Molise Region with its owns genetic characterisation. The losses of horses caused by wolves predations increase exponentially from year to year. Considering the very low number of Pentro Horses, any prey represents a considerable loss from a morphological and genetical point of view. Consequently, the predation phenomena represent a considerable limit to the selection and maintenance of these horses. This is why it was decided to create a special database with the aim of monitoring, analyzing and preventing predatory phenomena and consequently to keep under control the number of predatory events by the wolf. The database was processed by collection of data concerning: when the predation take place, the age of the preyed equines, the type of injury and the parts of the body injured or removed by the wolf, the body location of the damage and the recognition and value of money compensation. The data collected evidenced how there is a need for innovative approaches to prop¬erly mitigate predation and support the traditional free-ranging husbandry system with its high ecologi¬cal and cultural value.

Keywords: Feral Horses; Wolf; Predation; Free-Ranging Systems

Introduction

Throughout history, the wolf has faced threats of extinction and today the increase in the number of heads of this species represents an ecological recovery. The wolf recolonization started naturally in the 1980s first in northern Apennines [1] and then from the 1990s in the Alps [2,3]. Now the species is expanding and is present in all the Alps, coming from both the Apennines-western Alps and from the northeast. Locally high wolf predation on horses is reported in many parts of southern Europe. In Italy wolf predations on horses are observed in most part of the Italian territory, such as in the Abruzzo region [4], in the Northeastern Apennines [1], in Northern Italy [2,3] and in Southern Apennines [5-

7] where horses can locally reach 40% of wolf diet [4]. According to the ISPRA (Italian Institute for Environmental Protection and Research, 2022) survey [8,9] a number of around 950 specimens is estimated in the Alpine regions, while there are almost 2400 those distributed along the rest of the peninsula, for a total of about 3300 wolves in Italy. The recovery of the wolf population in Italy is associated with a negative impact both from an economic and social point of view, sometimes even very high, such as those situations that involve some endangered and rare population of feral horses. In Spain and Portugal there are similar situations: the Galician ponies in Spain (Cabalo de Pura Raza Galega) and Garrana ponies in Portugal [10-13]. It is therefore necessary to better manage the presence of the wolf, with the aim of minimizing the impacts to the detriment of livestock activities but being careful with the compromission of the survival of the wolf. The wolf is a protected species regulated by national and international laws [14]. The wolf, being a predatory carnivore, also represents a problem for the livestock sector [15-17]. In fact, the losses of domestic livestock and wild ungulates caused by the wolf are increasingly significant, with important economic losses. This threat is also experienced in the Italian Molise region especially (Italian Southern Apennines) in the Montenero Val Cocchiara Municipality (Isernia) (Figure1) where the main prey of the wolf is the Pentro horse, a rare endangered equine population of Molise Region with its owns genetic characterisation [18].

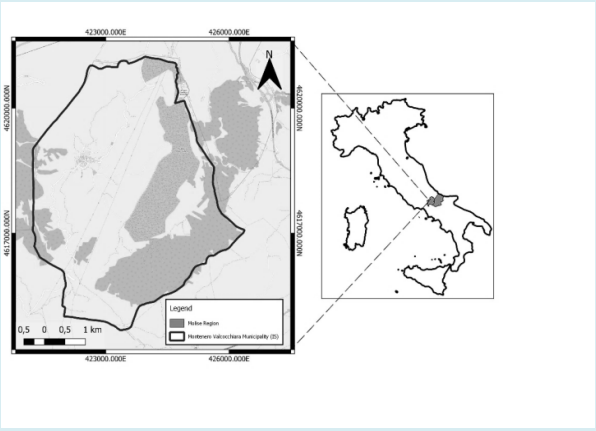

Figure 1: Molise region in the Italian Southern Apennines.

The losses of horses caused by this predator increase exponentially from year to year (Figure 2). Considering the very low number of Pentro Horses, any prey represents a loss of biodiversity and an obstacle to the selection of this population; consequently, those horses that could be interesting from a morphological and genetic point of view for selection are lost. In fact, wolf predations are one of the threats to the preservation and selection of the Pentro Horse. With reference to the predations of the Pentro horse, a Database was created with the aim of monitoring, analyzing and preventing predatory phenomena and consequently to keep under control the number of predatory events by the wolf. In this way it will be possible to have a broader and more precise vision of the losses that farmers have suffered and suffer over the years to provide a digital archive with data on horse depredations in recent years and to prevent any future predations.

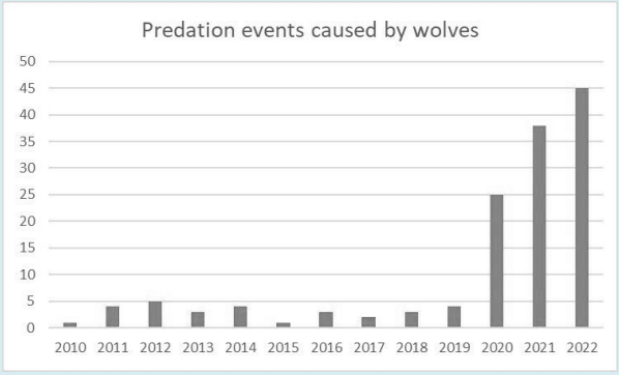

Figure 2: Number of wolf predatory events in the Municipality of Montenero Valcocchiara in the period 2010-2022.

Methods: Database Processing

The database was processed by collection of data concerning:

- When the predation take place
- Age of the preyed equines
- Type of injury and parts of the body injured or removed by the wolf
- Body location of the damage
- Recognition and value of money compensation

In addition to the trend of wolf predatory phenomena over the years other important information were extrapolated from the reports analyzed: this allows to better understand the behavioral habits of the wolf and this represents an aid element for a better control of the presence of this species on livestock activities and possibly prevent attacks. A section of the Database is reserved to the surveys on carcasses which are carried out during the inspections for the compilation of the compensation reports. In the digital sheets, for each predation event, the type of injury caused to the prey and the parts of the body injured or removed from the animal were indicated. In addition to the data on the surveys of the carcasses, the data relating to the surveys on the body position of the damage were also entered in the database; other data concern the geographical characteristics, such as name of the area, altitude, longitude, latitude, type of environment, etc. referred to each predatory event. The meteorological aspects

and any evidence regarding the predation event were then indicated.

Results

Predatory events increased in the years 2020-2022 (Figure 2). The predations usually take place at night or during the dawn hours; rarely wolf attacks were detected during the day, it is therefore a prevalent nocturnal animal. The inspection takes place the same day of the damage; this is important to ensure an accurate analysis of the predatory phenomenon. From the analysis of the Database, it was also observed that predatory phenomena are concentrated in the spring/summer period from April to September because it corresponds to the presence of foals which generally born between April and May onwards. A certain number of predations were also recorded in the months of October and November, but in a smaller percentage. The recognition of the presence of the wolf in this case is revealed by the presence of footprints in mud or excrement, therefore thanks to indirect indications of presence of the animal, since, as mentioned before, the wolf acts mainly at night therefore it is difficult to spot it directly. A further aspect that can be found in the Database is the age of the horses preyed upon by wolves (Figure 3). The subjects preyed on are mainly foals under the age of two, starting from the first days of age. The wolf reaches its prey by pursuit, taking advantage of its high resistance manages to run for a very large amount of time coming to exhaust the prey. Foals are the favorite prey because of their physical structure and musculature they do not allow him to move very quickly as a consequence they are prey easily reachable by the predator. In fact, the wolf carries out a real selection on the physical characteristics of the prey: generally, the most vulnerable animals (old, weak, newborn, sick, injured, debilitating) have a better chance of being reached and preyed upon [19]. From an ecological point of view, this generally represents a fundamental factor since the weak links are eliminated from the population, keeping it healthy and vigorous.

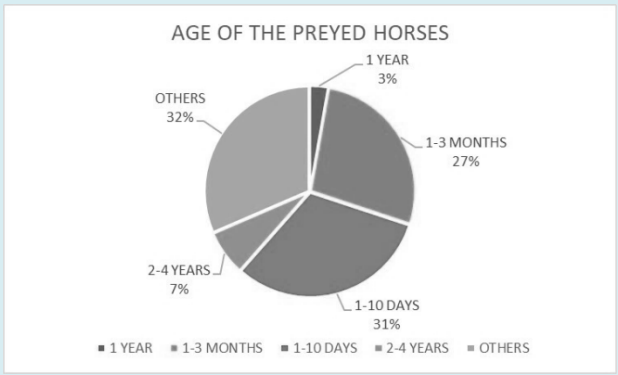

Figure 3: Age of the preyed horses.

In most of the predatory events the wolf attacked the prey causing lacerations and bites; the parts of the preyed equines most affected by the wolf are: the abdomen, the hind limbs, the chest and the neck. The sheet dedicated to the findings on the carcass also contains notes regarding any remains left in the area of depredations or bloody traces on the ground, which represent evidence for the compensation (Figure 4). Figure 5 shows the outcomes of official assessments of alleged wolf attacks on horses which highlights that in most part of cases the preyed horses are deceased.

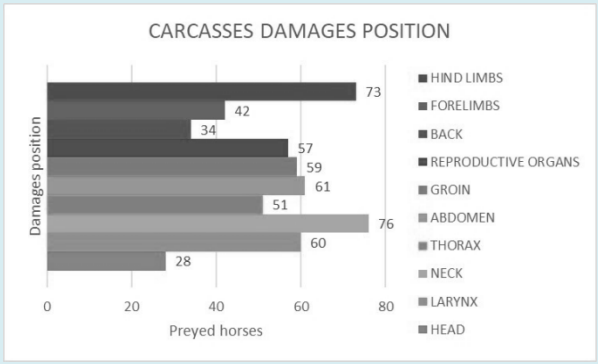

Figure 4: Wolf attacks: carcass damages position in the body of the preyed horses.

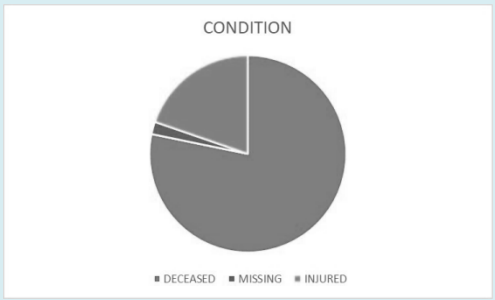

Figure 5: Outcomes of official assessments of alleged wolf attacks on preyed horses.

Discussion and Conclusions

The presence of the wolf is increasingly significant in Italy; if, on the one hand, this situation represents a recovery of the wolf from an ecological point of view, it has a significant impact on livestock activities. Since the wolf is a species of fundamental importance for ecological recovery, it is important to implement measures that allow to mitigate and prevent the damage caused by it favoring the coexistence between man and wolf. In this study the role of the wolf was approached in relation to the effect of predation on a rare population of feral horses, the Pentro Horses, located in

a rural area of Southern Italian Apennines. The predation phenomena represent a considerable limit to the selection and maintenance of these horses which benefits from special protection contributions. The current compensation system fails to alleviate the economic losses of these free-ranging horses because it is difficult to implement damage prevention measures in free-ranging husbandry systems; sometimes there is a difficulty in finding carcasses, particularly of foals that are consumed quickly and also a difficulty in finding kill marks on carcasses to confirm the cause of death. Moreover, the low levels of compensation create difficulties for owners to replace lost animals in order to benefit from subsidies for livestock production. The digitization of reports of predatory events has allowed us to have a broader and more complete vision of the losses that farmers have suffered and suffer over the years. The Database has been made available to the municipality with the aim of providing a digital archive with data on horse depredations in recent years; the Database will then be updated with data on any future predatory phenomena. These monitoring and estimates represent a valid element for controlling the presence of the wolf in the various territories and preventing the damages caused. There is a need for innovative approaches to properly mitigate predation and support the traditional free-ranging husbandry system with its high ecological and cultural value. Wolf predation on free-ranging horses involves economic losses for their owners, who are often financially disadvantaged [20,21]. Effective management measures should be implemented, such as: increasing the abundance and diversity of wild ungulates to reduce wolf predation pressure, particularly on foals; preventing the removal of horses that die of natural causes to allow wolves to scavenge on their carcasses; applying damage prevention measures compatible with free-ranging horse husbandry systems; adjusting economic compensation policies to traditional socioeconomic costs related to wolf predation [15]. Some of these measures will mitigate the impact of wolf predation on free-ranging horses, encouraging horse owners to maintain this traditional husbandry practice which has important cultural and ecological roles. The assessment of socioeconomic traits associated with predation on livestock is essential for supporting management practices to minimize conflicts with breeders [22], particularly when endangered breeds are involved.

Acknowledgements

We thank the Municipality of Montenero Valcocchiara and the breeders of Pentro horses for their availability in finding the data concerning the wolf attacks.

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