Coming home: reintroduction of Italian hares (Lepus corsicanus) in the Isle of Elba

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Introduction

The Italian hare (Lepus corsicanus) is an endemic species of the Italian peninsula and Sicily, genetically and morphologically distinct from the European hare (Lepus europaeus), originated in the Mediterranean glacial refugia areas during the glaciations (Pierpaoli et al., 1999; Riga et al., 2001; Randi et al., 2007). The distribution range of the Italian hare, until 1930, included the Isle of Elba, up to the isle of Sicily. Currently, the northern boundary of the distribution range includes the Monte Amiata (Grosseto), the provinces of Termini and Aquila, in the National Park of Abruzzo (Trocchi & Riga, 2001); it is the only wild Lepus species on the island, despite the introduction of the European hare for hunting purposes (Pierpaoli et al., 1999).

Thanks to the project for the conservation of the Italian hare, funded by Italian environmental Ministry, a reintroduction project was started on the Isle of Elba, within the territory of the National Park of the Tuscan Archipelago, where the species became extinct at the end of the XIX century.

The reintroduction of the Italian hare in suitable areas is one of the priority actions of the National Action Plan for the Conservation of Lepus corsicanus, this last one was drawn up with the purpose to define the steps to promote the conservation of the species, to enhance information about the current status and ecology of this species of high conservation value, even suggesting normative adaptations (Trocchi & Riga, 2001). The project is focused to achieve the goals 3.3 and 3.7 of the Action Plan, according to the method described as described by mitochondrial DNA sequencing. Molecular Ecology. 8 (2):1805-1817.

Reintroduction period and choice of study areas

The project develops over two years and distinct reintroduction areas have been identified, one for each year: spring 2015 on Monte Calamita and spring 2016 on Monte Perone, both characterized by a Mediterranean environment.

Feasibility study

- Population dynamics simulation with Vortex 5.42 software to verify the feasibility of the population
- Nest analysis to evaluate the feasibility of the project
- Habitat suitability models for the island of Elba, to evaluate the most suitable areas for the species
- Monitoring program

Reintroduction

The reintroduction were carried out in the months of March and April, when the weather conditions are more favorable, in order to ensure the founder animals’ welfare.

The released subjects came from “Centro Fannucchi di Bienta” (Lucca - Tuscany) and from “Area Fannucchi della Lepra italica nel Parco Regionale Marittorio” (Viterbo – Latium). The hares (males and females) had an average weight of 2,3 ± 0,4 kg and at release were microchipped. A total of 38 subjects were released: 30 fitted with VHF tracking collars (average weight 31 ± 0,5 g) and 8 without tracking collars.

Monitoring activity

The project furnishes a daily radio-tracking activity for the first thirty days after the release, hereinafter it is performed weekly. For the radio-tracking activity a Yagi-Uda directional antenna and a VHF FT 817 receiver were used. During monitoring informations such as date, time, weather conditions, animal sightings, environments and eventual remarks were collected. Died subjects were retrieved and a full evaluation of the cause of death was made before sending the carcass to “Istituto Zooprofilattico Sperimentale delle Venerioni” for a more detailed assessment. The radio-tracking activity was supported by camera trapping (5004 monitoring hours in the first month during the two years of activity), by using 6 Tomahawk GC500 and 4 Rocken Guard-520 camera traps. Additionally 3 spotlight sessions were performed in the chosen areas, over a total line of 12.7 km.

Results

The differences between the survival curves of the subjects released on Monte Perone and originating from the two breeding centers (Bienta and Marittorio) were statistically not significant: Log-rank test, \( \chi^2 = 2,71 \) p = 0,102. Thereafter, the release mortality in March 2015 at Monte Calamita was significantly higher, where 60% of the subjects died. On Monte Perone, instead, only 15% of the hares died.

The camera trap data analysis showed, in the area affected by a higher mortality (Monte Calamita), a greater anthropic disturbance, and in both a high density of wild boar.

The main cause of death appears to be due to predation, probably marten, but predation by cat and dog can not be excluded.

The European Hare, released on the territory for hunting purposes, has been sighted, with the monitoring methods described above, on Monte Calamita.

Conclusions

The analysis shows that the survival of the subjects seems to be influenced by variables related to the reintroduction area and not to the breeding center. The camera trap data analysis showed, in the area affected by a higher mortality (Monte Calamita), a greater anthropic disturbance, and in both a high density of wild boar.

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Analyis

The survival curves of the hares, the related to the 30 days after release, were compared using the Kaplan-Meier method and the log-rank test (Bolton, 1990). At the first the survival curves concerning the subjects originating from the two different breeding centres (Bienta and Marittorio) were compared. Given that no statistical difference was instead, the survival curves, related to the subjects released within the two reintroduction areas (Perone and Calamita) (see graphic b), were compared.

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