



## Home-range and land-use of reared and wild Red-legged Partridges

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**Abstract:** In Italy several small populations of red-legged partridges (*Alectoris rufa*) have been restored in areas where the species was extirpated. In these areas, the release of different animals must be carefully planned since the size of the reconstituted populations does not meet the minimal size required to guard the species from a new extinction. We therefore thought it important to carry out research in order to estimate the integration ability of the released raised-partridges with the wild population, the survival rates, the use of the habitat and the home-ranges of both populations.

In the protected area of Petroio (Vinci-FI-Central Italy), where there was an estimated population of 60 wild partridges, 350 raised partridges were released during August. In January, 6 raised partridges and 21 wild partridges were captured by traps. 6 subjects of each group (raised or wild) were therefore equipped with radio necklaces and located biweekly until July 2006.

No difference in mortality rates (50% = 3 birds each) was observed between wild or raised partridges that had survived to the winter (estimated mortality release-winter = 95.1%). Raised partridges, that survive after their release in the wild, are able to integrate themselves in mixed flocks with the wild partridges. Also the raised partridges are able to breed (of the 3 observed broods of the radiotagged birds 2 belonged to the raised and 1 to the wild). Vineyards with grass between the rows of vines were the habitat most frequented (more than 25% of the localizations). The distance from the subsidiary artificial feeding points significantly increased during broods showing the necessity to increase the number and dispersion of the supplementary feeders in spring to help the animals meet their dietary demands. The distance from the houses and home ranges surfaces did not differ between wild and raised.

*Keywords: radio collar      management   habitat   protected area*



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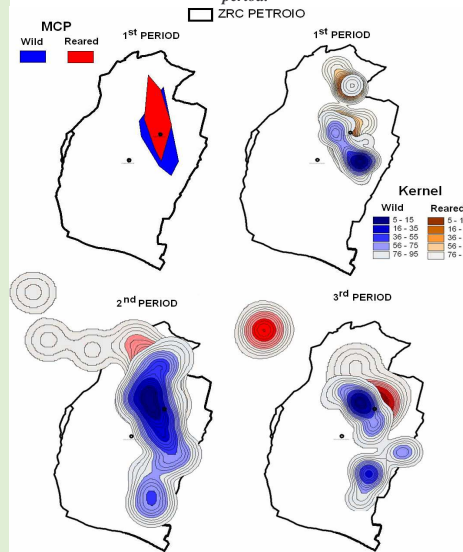
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### Introduction

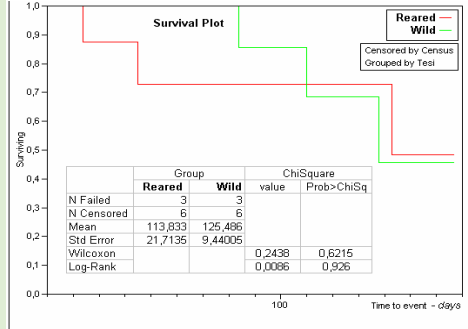
In Italy several small populations of red-legged partridges (*Alectoris rufa*) have been restored in areas where the species was extirpated. In these areas, the release of different animals must be carefully planned since the size of the reconstituted populations does not meet the minimal size required to guard the species from a new extinction. We therefore thought it important to carry out research in order to estimate the integration ability of the released raised-partridges with the wild population, the survival rates, the use of the habitat and the home-ranges of both populations.



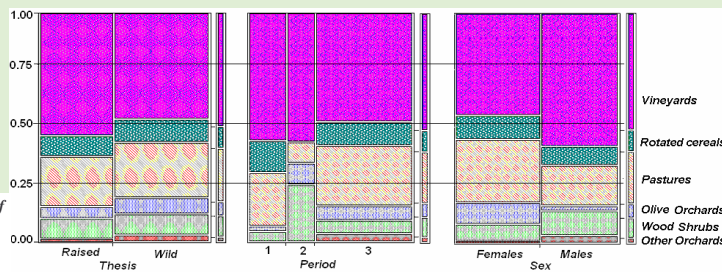
Home range (MCPs and Kernel home range analysis) of the partridges in relationship to the origin (reared or wild) and to the period.



Estimated survival rates of the partridges in relationship to the origin.



Contingency analysis of partridges land use by thesis, period and sex; mosaic plots.



### Materials and methods

The animals monitored in the protected area of Petroio (Vinci-FI-Central Italy) belong to two groups: "reared" and "wild".

- "Reared", artificially heated chicks, hatched in incubator, were released in August

- "Wild" were born in wild life by a parents bearing to a reconstituted Red-legged partridge population.

In January partridges were captured by traps and a VHF transmitter radio collar was positioned on 6 partridges per group. The gross estimation of the survival of the reared partridges was 95.1% !! (summer census 350 reared and 60 Wild).

Winter trapping 6 reared and 21 wild). Radiotracking started at the end of January and finished at half-July. For the analysis the period of study was divided into three parts: winter grouping, pre-reproduction and reproduction. Each sighting was recorded on GPS equipment and transmitted to GIS software.

Home range and distances between partridges and supplementary feeders and country houses in relationship to the origin (reared or wild), to the period and to the sex.

Period	1 <sup>st</sup>		2 <sup>nd</sup>		3 <sup>rd</sup>		
	Reared	Wild	Reared	Wild	Reared	Wild	
Origin	15	29	18	16	49	58	
n	15	29	18	16	49	58	
m	110,00	197,0	465,0	284,0	751,0	485,0	
sd	103,1	95,2	95,4	102,1	84,1	48,0	
Distance from the nearest feeder	n	22	21	12	26	55	
m	183,0	192,0	245,0	304,0	307,0	263,0	
sd	96,0	82,7	110,0	147,1	54,6	31,2	
Sex	Origin	Reared	Wild	Reared	Wild	Reared	Wild
n	15	29	16	16	49	58	
m	224,0	219,0	176,0	178,0	202,0	159,0	
sd	25,1	30,3	24,3	24,4	15,4	13,7	
Home range	n	6	5	5	3	4	
m	3,8	18,0	8,0	27,0	19,6	12,0	
sd	0,46	7,94	0,32	56,18	10,78	8,03	

### Results

No difference in mortality rates (50% = 3 birds each) was observed between wild or raised partridges that had survived to the winter (estimated mortality release-winter = 95.1%). Raised partridges, that survive after their release in the wild, are able to integrate themselves in mixed flocks with the wild partridges. Also the raised partridges are able to breed (of the 3 observed broods of the radiotagged birds 2 belonged to the raised and 1 to the wild). Vineyards with grass between the rows of vines were the habitat most frequented (more than 25% of the localizations). The distance from the subsidiary artificial feeding points significantly increased during broods showing the necessity to increase the number and dispersion of the supplementary feeders in spring to help the animals meet their dietary demands. The distance from the houses and home ranges surfaces did not differ between wild and raised.

### Conclusions

The raising technology must be improved to increase the survival rate after release. The raised partridges are able to contribute to the reproduction of the reconstituted wild populations.

The high mortality rates observed during the reproduction period suggest to increase the natural nesting sites or to protect the existing nesting sites by predators.