

Recent distribution of red-legged partridge *Alectoris rufa* in Piedmont (North Western Italy): signs of recent spreading

PAOLO TIZZANI^{1*}, GIOVANNI BOANO², MAURO MOSSO³, MICHELE PELAZZA⁴, SABRINA CAROLFI⁵, MANUELA FERRA⁶, NORMAN MARLETTA⁷, GIUSEPPE PIO⁸, IRENE PELLEGRINO⁹, PIER GIUSEPPE MENEGUZZI¹, FABRIZIO SILVANO¹⁰, ENNIO NEGRI¹⁰, SILVIO SPANO¹¹

¹Dipartimento di Scienze Veterinarie, Università degli Studi di Torino - Via Leonardo da Vinci 44, 10090 Grugliasco (TO)

²Museo Civico di Storia Naturale di Carmagnola, Parco Cascina Vigna - Via San Francesco di Sales 188, 10022 Carmagnola (TO)

³ATC AT1 - Via Serafino Grassi 35, 14100 Asti

⁴ATC CN5 - Piazza della Chiesa 3, 12070 Gorzegno (CN)

⁵Osservatorio Faunistico della Provincia di Alessandria - Via Galimberti 2/A, 15100 Alessandria

⁶ATC AL4 - Via Gramsci 32/1, 15011 Acqui Terme (AL)

⁷ATC CN3 - Via Barbacana 1, 12042 Bra (CN)

⁸ATC CN4 - C.so Michele Coppino 40/f, 12051 Alba (CN)

⁹Università del Piemonte Orientale - Viale Teresa Michel 11, 15121 Alessandria

¹⁰Museo di Storia Naturale - Via Umberto I 62 Stazzano (AL)

¹¹Università di Genova - Corso Europa 26, 16132 Genova

*Corresponding author: Paolo Tizzani (paolo.tizzani@unito.it)

Abstract – The red-legged partridge *Alectoris rufa* in Piedmont (NW Italy) is historically limited to the hilly and low-mountain areas of the southern half of the region, in particular lying in the Langhe and the Apennines on the Ligurian border, in the districts of Cuneo, Asti and Alessandria. In the Cuneo district, on the Maritime Alps, hybrid populations with *Alectoris graeca* were also known. The distribution of the species has been mapped in some occasions with the “Atlases” projects of the GPSO (Gruppo Piemontese Studi Ornitologici) and special enquiries. On this occasion we tried to update the geographical distribution of the species using data conferred by bird-watchers on www.regione.piemonte.it/aves/, managed by the GPSO, enquiries among hunters’ organizations and specific field researches. The resulting distribution is shown on a 10 km square grid. The species shows signs of distribution dynamism, with the occupation of some lowland areas, where it was totally absent until the ‘90s. A little range expansion is noticeable also in the Western Monferrato. The situation seems to be more stable (or even declining) in the Langhe area and the species is now disappeared from the alpine border. In general we are seeing an areal contraction or density reduction on hills and mountains and an extension on lowlands. The observed changes seem to be attributable mainly to environmental and climate changes.

Key-words: *Alectoris rufa*, Piedmont region, population spread, areal increase, distribution maps.

INTRODUCTION

The natural distribution of the red-legged partridge *Alectoris rufa* extend through Portugal, Spain, Andorra, France and Italy. The species presents a fragmented distribution in Piedmont, with populations that greatly vary in size. In this region it is historically limited to the hilly and low-mountain areas of the Southern part of the region; in particular it inhabits the Langhe and the Apennines on the Liguria border, in the districts of Cuneo, Asti and Alessandria.

In the Maritime Alps, hybrid populations with *Alectoris graeca* were once reported (Martorelli 1913) but the few

recent observations of *A. rufa* in alpine areas are mainly due to restocking operations (Lasagna *pers. comm.*).

After several years characterized by a high risk of local extinction, some populations from Northwest Italy are now undergoing a demographic increase with areal expansion. This paper reports some information on these demographic changes.

MATERIAL AND METHODS

The geographical distribution of the species was updated

using: data conferred by bird-watchers from 2009 to 2011 on the internet site “aves.piemonte” (www.regione.piemonte.it/aves) managed by the GPSO (Gruppo Piemontese Studi Ornitologici); enquiries among hunters’ organizations; specific field researches (red-legged partridge project in Alessandria province). The resulting distribution was mapped on a 5 km x 5 km UTM grid square.

Monitoring of abundance and movement of the species was carried out above all in a sample area in Alessandria district with data obtained by I) a network of trained observers and II) the capture-recapture survey of 310 ringed individuals captured in 2009, 2010 and 2011.

Our results were compared with those ones of previous researches in particular of “Atlases” projects of the GPSO (Mingozzi *et al.* 1988, Cucco *et al.* 1996). To obtain comparable distribution we reported our data to the same spatial resolution (IGM - Istituto Geografico Militare - grid of 10x10 Km). Special enquiries (Spanò *et al.* 1986, 1989) gave also information about past population abundances and they were helpful to evaluate recent changes.

RESULTS

Our results show that the red-legged partridge is widespread in a large part of Southern Piedmont (below Po river), from the Western border of Langhe to the extreme South-Eastern of the region (Curone Valley), North to the hills of Western Monferrato and to the Po river covering

up to 167 squares of the 5 km x 5 km UTM (Fig. 1). The past distribution area (Fig. 2) compared at the same resolution with the present one (Fig. 3) shows signs of distribution dynamism with an evident increase in the numbers of occupied squares (59 vs. 41).

One of the most important range increase is reported in the lowland areas of Alessandria district (South-Eastern Piedmont), where the species appeared at the beginning of the ‘90s. This spreading, is due to natural expansion of Apennine populations, even if it should be noted that these populations were subject to some restocking operations in the recent past (Negri *et al.* 2013).

The spreading was observed along the main rivers and especially along the Scrivia. Twelve months later, the recaptures of two previously marked partridges showed movements northward between 4 and 5 kilometres along these corridors. These rivers act as the only ecological network left in heavily cultivated areas for the expansion of many animal species. These dispersion movements show that the species is able to rapidly colonize new areas in the presence of adequate environmental conditions.

Other smaller nuclei, established in the Western Monferrato (Asti district), as well as in the lowland and low hills of the Northern Cuneo district (Roero area) and up at the border of the Torino district, were certainly due to successful restocking operation carried out in the ‘80s (Monferrato) and ‘90s (Cuneo and Torino). In particular the presence of a small and isolated population near Castelnuovo Don Bosco (NW of Asti) (Fig. 2) was known since

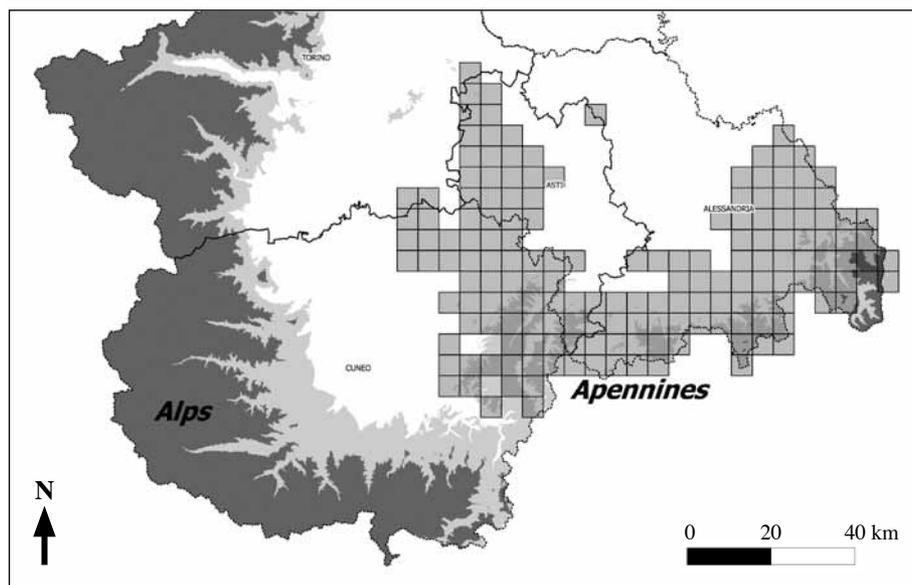


Figure 1. Red-legged partridge distribution in Piedmont Region in 2011 on a 5x5 km grid.

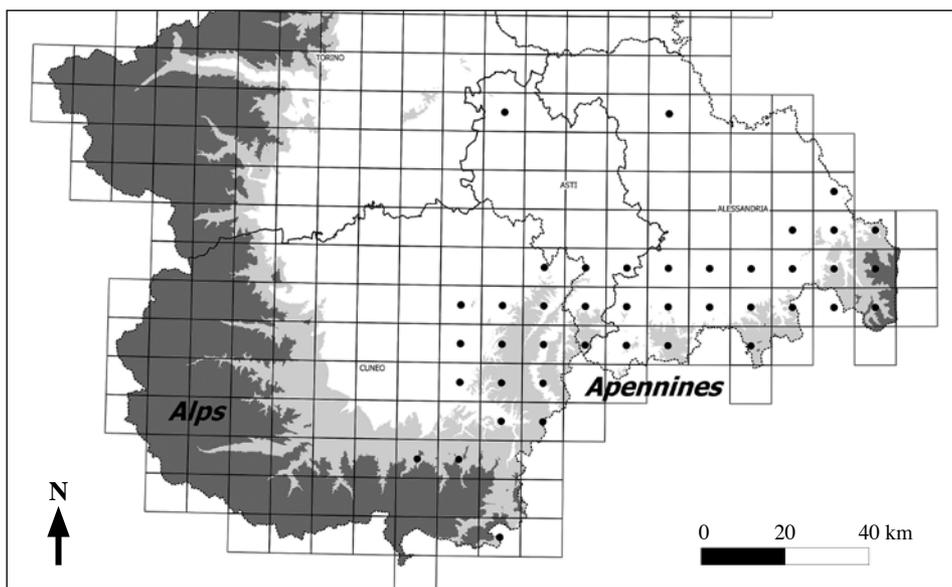


Figure 2. Red-legged partridge distribution in Piedmont Region in 1984 on a 10x10 km grid.

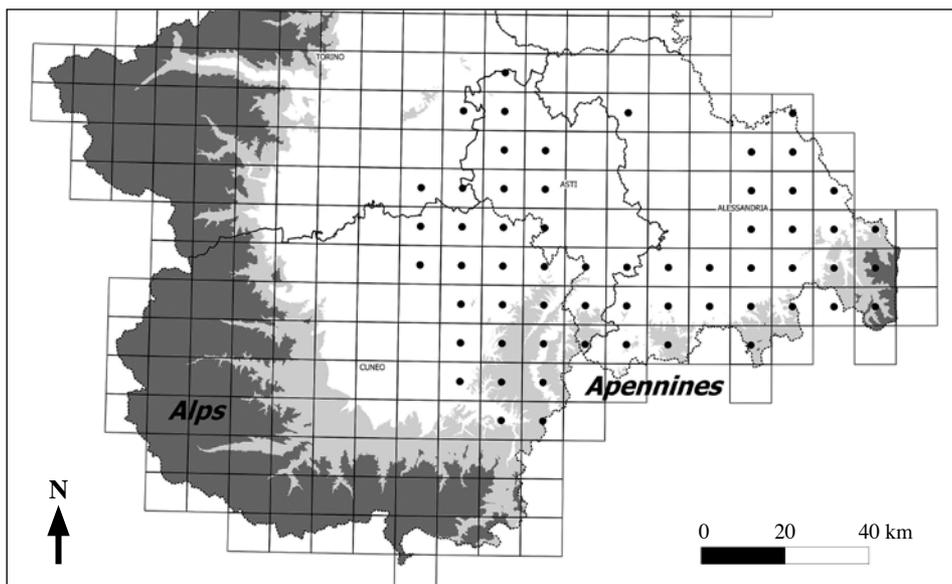


Figure 3. Red-legged partridge distribution in Piedmont Region in 2011 on a 10x10 km grid.

1981-1982 (Spanò *et al.* 1989) and it is now confirmed in a larger area including the north-western area of the Monferrato hills. In the low hills of Roero and the nearby plains (NW of Alba - CN) a similar population dating from 2000 (G. Boano ined.) is known. In the Langhe instead the population seems to be declining, but more specific investigations are needed for this area.

DISCUSSION

Distribution and abundance of red-legged partridge have deeply changed in the last 30 years. The causes that have driven this species to its current *status* are complex and we speculate that they are closely related to human activities in most cases.

In general we are seeing an areal contraction or density reduction on hills and mountains and an areal extension on lowlands. The observed changes do not seem attributable only to restocking with captive-bred partridges and introduction of game birds, but above all to environmental and climate changes.

Rural abandonment produces several changes in the landscape that can be detrimental for the re-establishment of red-legged partridge. First of all, the forest encroachment in the mountain and upper hills through the natural vegetation succession disadvantages the species, favouring at the same time some partridge predators such as foxes and martens (Sacchi & Meriggi 1995, Rondinini & Boitani 2002, Evans 2004, Balestrieri *et al.* 2008).

On the contrary, the recovery of natural vegetation along the rivers and the change of crops have increased the possibilities for some species at lower altitudes. Corn allows the red-legged partridge to live in a deeply artificial environment provided an access to patches of natural elements as those found along the main rivers (wooded area).

The institution of protected areas has been seriously enhanced by the administration, creating better environmental conditions for the spread of this species. Moreover the hunting pressure also has generally decreased with the complete hunting ban in the Alessandria and Asti districts in the last 15 years. In some specific cases reintroductions have also boosted the species recovery. They acted by allowing the recolonization of empty areas, starting from source populations (Data from Osservatorio Faunistico Regione Piemonte - <http://www.regione.piemonte.it/agri/index.htm>).

Other reasons for the observed changes may be linked to climate changes with many mild winters that improve juvenile partridge survival, increasing the population density (Blank *et al.* 1967).

All these reasons may have different weight in the ob-

served changes of red-legged partridge abundance and distribution, so there is a need to extend and continue a thorough monitoring in order to evaluate the population dynamic and to improve the management at the aim of maintaining healthy populations.

REFERENCES

- Balestrieri A., Ruiz-Gonzalez A., Remonti L., Gomez-Moliner B.J., Debernardi P., Gola L. & Prigioni C., 2008. Colonization of the Western River Po plain by the pine marten (*Martes martes*). *Hystrix*, It. J. Mamm. (n.s.) Suppl.: 70.
- Blank T.H., Southwood T.R.E. & Cross D.J., 1967. The ecology of the partridge. I. Outline of population processes with particular reference to chick mortality and nest density. *J Anim Ecol* 36: 549-556.
- Cucco M., Levi L., Maffei G. & Pulcher C., 1996. Atlante degli uccelli di Piemonte e Valle d'Aosta in inverno (1986-1992). *Mus. Reg. Sci. Nat., Torino, Monografie* 19: 1-395.
- Evans K.L., 2004. The potential for interactions between predation and habitat change to cause population declines of farmland birds. *Ibis* 146: 1-13.
- Martorelli G., 1913. Intorno alla *Caccabis labatei* Buteille. *Riv. Ital. Orn. (I Serie)* 2: 184/191.
- Mingozzi T., Boano G., Pulcher C. & coll., 1988. Atlante degli uccelli nidificanti in Piemonte e Val d'Aosta 1980-1984. *Mus. Reg. Sci. Nat., Monografie* 8: 1-513.
- Negri A., Pellegrino I., Mucci N., Randi E., Tizzani P., Meneguz P.G. & Malacarne G., 2013. Mitochondrial DNA and microsatellite markers evidence a different pattern of hybridization in red-legged partridge (*Alectoris rufa*) populations from NW Italy. *Eur. J. Wild. Res.* 59: 407-419.
- Osservatorio Faunistico Regione Piemonte. <http://www.regione.piemonte.it/agri/index.htm>
- Rondinini C. & Boitani L., 2002. Habitat use by beech martens in a fragmented landscape. *Ecography* 25: 257-264.
- Sacchi O. & Meriggi A., 1995. Habitat requirements of the stone marten (*Martes foina*) on the tyrrhenian slopes of the Northern Apennines. *Hystrix (n.s.)* 7: 99-104.
- Spanò S., Traverso G., Truffi G. & Zacchetti D., 1985. Distribuzione e consistenza della Pernice rossa *Alectoris rufa* in Italia e definizione dell'areale potenziale di reintroduzione della specie. *Atti II Conv. ital. Orn.:* 55-57.
- Spanò S., Traverso G., Truffi G. & Zacchetti D., 1989. La pernice rossa *Alectoris rufa* (L.) in Italia. *Boll. Mus. Ist. Biol. Univ. Genova* 53: 5-33.