

# New breeding of the Eurasian Dotterel, *Eudromias morinellus*, in the Italian Alps

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**Abstract** - Eurasian Dotterel *Eudromias morinellus* is a summer visitor to northern Europe, but occurs more patchily farther south, with Europe accounting for less than half of its global breeding range. It has an extremely large range with an European breeding population relatively small (<42,000 pairs), but was stable between 1970-1990. Spain hosts the largest breeding population of Southern Europe (Gutiérrez 1997; Valle & Scarton 1999).

Over the Alps the species is threatened of extinction due to its small population size. The main breeding alpine population settled in Austria with a maximum of ten reproductive pairs since 2003. In Switzerland after two breeding events recorded in the Grisons in 1965 and 1998, three more broods occurred in 2012 and 2013.

In Italy the main reproductive population, varying from 1 to 6 pairs, is located in Abruzzo's Apennines whereas from 1974 to 1996 several breeding events were recorded. Last breeding was confirmed up to 1994.

In the Italian Alps breeding was suspected in few instances, but it was only confirmed in 1978 (one pair plus another possible one in South Tyrol) and 1994-95 in Lombardy region (one pair in Upper Valtellina).

**Key words:** Eurasian Dotterel, *Eudromias morinellus*, waders, nesting, mountains, Italy.

**Riassunto** - Nuova nidificazione del Piviere tortolino, *Eudromias morinellus*, sulle Alpi italiane.

Il Piviere tortolino è un visitatore estivo in Europa settentrionale ed è presente con una distribuzione molto più frammentata più a sud. L'Europa rappresenta meno della metà dell'areale riproduttivo globale della specie, che ha un range estremamente ampio, mantenutosi stabile tra il 1970 e il 1990. La Spagna ospita la popolazione riproduttiva più numerosa del Sud Europa. Sulle Alpi, la specie è minacciata di estinzione, soprattutto a causa delle piccole dimensioni della popolazione;

per esempio, la principale popolazione nidificante alpina è presente in Austria con un massimo di dieci coppie riproduttive dal 2003. In Italia l'ultima nidificazione era stata accertata nel 1995 in Lombardia (1 coppia in Alta Valtellina) e sul resto delle Alpi la nidificazione è stata sospettata negli scorsi anni in pochi altri casi. In questo articolo descriviamo la nidificazione della specie, avvenuta nell'estate del 2014, che rappresenta un'importante conferma della riproduzione delle specie in Italia dopo 17 anni dall'ultima nidificazione certa. L'articolo include anche un confronto di dati riproduttivi raccolti nelle Alpi Centrali (Italia e Svizzera) e descrive il diverso ruolo tra i sessi nelle cure parentali.

**Parole chiave:** Piviere tortolino, *Eudromias morinellus*, trampolieri, montagne, Italia.

## INTRODUCTION

The Eurasian Dotterel, *Eudromias morinellus*, is a summer visitor to northern Europe, but can also be found more patchily farther south. It has an extremely large breeding range. Europe accounts for less than half of this, and has a relatively small breeding population (<42,000 pairs), which was stable between 1970-1990. Although there were declines in Finland and the United Kingdom during 1990-2000, key populations in Norway and Sweden were stable, and the species probably declined only slightly overall. Consequently, it is provisionally evaluated as Secure (BirdLife, 2014). Spain hosts the largest breeding population of southern Europe (Gutiérrez, 1997; Valle & Scarton, 1999).

In the Alps, the species is threatened by extinction due to its small population size. The main alpine breeding population has settled in Austria, with a maximum of ten reproductive pairs since 2003. In Switzerland, after two breeding events recorded in the Grisons in 1965 and 1998, three more broods occurred in 2012 and 2013 (Müller-Derungs *et al.*, 2014).

In Italy, the main reproductive population varies from 1 to 6 pairs and is located in the Abruzzo Apennines. From 1974 to 1994, several breeding events were recorded (Santone, 1995); breeding was confirmed last in 1996 (Santone, in Brichetti & Fracasso, 2004). Breeding has been suspected in a few instances in the Italian Alps, but was confirmed only in 1978 (one pair plus another possible one in South Tyrol by Niederfriniger, 1980 and 1982) and 1994-1995 (one pair in Upper Valtellina, Lombardy, by Bernasconi *et al.*, 1996).

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## MATERIALS AND METHODS

In Italy, the Eurasian Dotterel is a very rare breeding species. It is more common during its non-stop travels, staging there first at a number of traditional sites. In the study area – Upper Valtellina, in the province of Sondrio (central Alps, northern Italy) – the species is regularly migrant in August and September in groups composed of 2-15 individuals (max. 30 individuals, Del Tugno *pers. obs.*); less frequently, some individuals have been observed also in October. In this area, the species frequents flat, open uplands on mountain ridges and plateaus with a sparse vegetation of moss, short grass or lichen, or bare patches of rock (Alpine tundra).

In order to find potential breeding pairs, we randomly investigated the most suitable areas where the species has been observed during autumnal migration. Whereas past breeding events were observed with the aid of binoculars or telescope, we walked along transect lines between 1 and 5 km long. This field survey was carried out from 2011 to 2014, between June and the second half of July, with the help of Sondrio Province wardens and volunteers.

## RESULTS

### Study area

The breeding site located in Upper Valtellina was 2700-2750 m a.s.l., with exposure SW on a wind edge naked-rush sward (Fig. 1). The whole area is scarcely grazed in summer, mostly by cows.

The area is characterized by the mutual presence of two habitat types included within EU Habitats Directive Annex I: “Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)” and “Alpine and subalpine calcareous grasslands”.

The first habitat type (code 8110) consists of communities of siliceous scree of the superior montane level to the snow level, growing on more or less moving “cryoclastic systems” with variable granulometry and belonging to the *Androsacetalia alpinae* order. The most representative plants are *Luzula alpinopilosa*, *Oxyria digyna*, *Saxifraga oppositifolia*, *Veronica alpina*, *Saxifraga aizoides*, *Criptogramma crispa* and *Doronicum clusii*. The degree of vegetation ground coverage is very thin (usually <50%).

The second habitat type (code 6170) recorded within the breeding area consists of alpine grasslands of base-rich soils with *Dryas octopetala*, *Gentiana nivalis*, *Gentiana campestris*, *Alchemilla hoppeana*, *Alchemilla conjuncta*, *Alchemilla flabellata*, *Anthyllis vulneraria*, *Astragalus alpinus*, *Aster alpinus*, *Draba aizoides*, *Globularia nudicaulis*, *Helianthemum nummularium ssp. grandiflorum*, *Helianthemum oelandicum ssp. alpestre*, *Pulsatilla alpina ssp. alpina*, *Phyteuma orbiculare* and *Polygala alpestris*.

We analysed data from weather stations at a mean of 2045 m a.s.l. (period 2008-2011) in the surroundings of the breeding site because no meteorological data were available for a higher altitude and the observation period. The data came from four weather stations of ARPA Lombardia: Cancano, 1855 m a.s.l.; Foscagno, 2250 m a.s.l.; Oga S. Colombano, 2295 m a.s.l.; S. Caterina, 1780 m a.s.l.



Fig. 1 - Breeding site characterized by low vegetation and stones. / Sito di nidificazione caratterizzato da bassa vegetazione e pietre. (Photo/Foto: Enrico Bassi).



The average temperatures of the coldest and warmest month were, respectively,  $-6.5^{\circ}\text{C}$  (January) and  $11.7^{\circ}\text{C}$  (August); the average minimum temperature in January was  $-9.7^{\circ}\text{C}$ , and the average maximum temperature in August was  $16.1^{\circ}\text{C}$ . The average annual precipitation was 1018 mm, falling especially as rain from June to September and as snow from November to March.

### The breeding event

In the afternoon of 19th July, 2014, an adult was observed displaying antipredator behaviour, *i.e.*, showing typical distraction displays such as “mobile and stationary injury feigning”, as described by Byrkjedal (1987) in Norway. No sure information was collected about the sex of this individual.

On the morning of 25<sup>th</sup> July, we went back to the area of the first sighting to find the individual and validate the breeding event. Four hundred metres away from the initial observation point, we observed a female adult again displaying distraction behaviour due to our presence, for around 30 minutes at almost 10 m from three hidden and camouflaged chicks. Besides this behaviour, the female produced vocal calls to divert our attention and alert the potential danger to its chicks.

To avoid any kind of disturbance or fatal consequences, such as trampling of not-yet hatched eggs and of chicks, we remained at an observation distance of almost 70 m from the female, using a telescope and binoculars. From this observation point, we waited until the female became quiet and beckoned the chicks to her. After detecting the chicks, we waited for an hour, maintaining the safety distance from the family group, which began to feed.

Chicks had a similar age and size between 5-8 days of life.

To evaluate the age of the chicks with more precision and possibly ring them, we captured one (Fig. 2). However, it was unfit for ringing because of its very early age (5-7 days old), and so it was released quickly.

Considering an incubation time of 24-28 days (range, 22-30 days), we estimated the egg-laying date to have been between the 21st and the 25<sup>th</sup> June (range, 19-27 June), and hatching to have occurred on 19<sup>th</sup> July ( $\pm 1$  day).

Two hours after the first sighting, a male adult displaying typical distraction behaviour was sighted 50 m away from the chicks. No other adults were observed in the area.



Fig. 2 - One of the three chicks on the day of discovery. / Uno dei tre pulcini il giorno della scoperta. (Photo/Foto: Enrico Viganò).

## DISCUSSION

This result represents an important confirmation of the breeding of the species in Italy after 17 years from the last reproduction events recorded in 1996 in the Abruzzo Apennines (Santone, Brichetti & Fracasso, 2004) and in 1994 and 1995 in Upper Valtellina (central Alps, Bernasconi *et al.*, 1996). Unfortunately, this latter breeding site was deeply transformed some years later by the creation of a ski area (Favaron, 2005), and the species has not been confirmed since, except during autumnal migration. In 1998, a successful breeding attempt was confirmed around 4 km from the Italian breeding site, in Switzerland, 100 m from the Italian border (Meier-Zwicky, 1999).

The egg-laying date for this species ranges from the end of May to 10<sup>th</sup> July, whilst the hatching date is

between 18-25<sup>th</sup> June and 5-8<sup>th</sup> August (Tab. 1). With regard to data from Müller-Derungs *et al.* (2014), the egg-laying dates recorded in the Grisons from 2012 to 2013 were notably delayed. The reason for this postponement is unclear but, as reported in the literature, egg-laying in polyandric females can be repeated for up to five times per reproductive season (Holt *et al.*, 2002).

In 2014, despite not being able to detect the nest, we estimated its altitude to be 2700-2750 m a.s.l. This is within the mean altitude cited for the Italian central Alps (N=2) and the Grisons (N=4). An observation was made above 2900 m a.s.l. only on one occasion (Grisons, 1998), but the nest was not found (Tab. 1).

Tab. 1 - Comparison of reproductive parameters concerning breeding events in the Central Alps: Upper Valtellina (Italy) and Grisons Canton (Switzerland). / Confronto dei parametri riproduttivi riguardanti i casi di nidificazione registrati sulle Alpi centrali: Alta Valtellina (Italia) e Canton Grigioni (Svizzera).

Central Alps (year)	Nest altitude (m a.s.l.)	Egg laying, date	Hatching, date (N° chicks/eggs)	Author, year
Grisons (1965)	2670	First half of June	10-14 July (3 chicks)	Wernli, 1967 Burnier, 1965
Upper Valtellina (1994)	2630	12-16 June (range 10-18 June)	9-10 July (3 chicks)	Bernasconi <i>et al.</i> , 1996
Upper Valtellina (1995)	2450-2650	1-10 July (3 eggs)	Not recorded	Bernasconi <i>et al.</i> 1996
Grisons (1998)	2920 (obs. point)	First half of June	1-6 July (1 chick)	Meier-Zwicky, 1999
Grisons (2012)	2600	First 10 days of July	14-17 July (3 chicks)	Müller-Derungs <i>et al.</i> 2014
Grisons (2012)	2650	First 10 days of July	1-10 August (3 chicks)	Müller-Derungs <i>et al.</i> 2014
Grisons (2013)	2770	First 10 days of July	29-30 July (3 chicks)	Müller-Derungs <i>et al.</i> 2014
Upper Valtellina (2014)	2700-2750	21-25 June (range 19-27)	19 July (3)	This study

During our observations, the female (Fig. 3) always defended and accompanied the chicks, while the male was never observed before at least one hour from our arrival. The male then would remain 80 m away from the chicks for about 20 minutes, while the female displayed distraction behaviour again, 5-10 m away from the chicks (Fig. 4).

Cases of females defending chicks are very rare: the care of eggs and young are mainly carried out – often exclusively – by males. In the literature, females have not been reported to remain in sole charge of eggs or young, but sometimes may share early and late stages of incubation. Usually, parental care by males is continuous after fledging, while the female remains absent from the territory to a greater or lesser extent (Cramp & Simmons, 1983).

Lücker *et al.* (2011) reported a case in arctic Norway of one female defending chicks against her own partner before they left the nest. Another lone female was seen leading three chicks for five days in a very small section of the study area; these authors considered that event as the only recorded case of a female with chicks outside the

nest. In southern Norway, females were reported not to perform incubation of the first clutch, but would seek a new mate after the male start incubating; ~20% of females participated in incubating second clutches, but were seldom observed in close contact with chicks (Cramp & Simmons, 1983).

Thus, we confirm Upper Valtellina as one of the most suitable alpine areas for the scarce breeding population of the Eurasian Dotterel. Further investigations are required to identify new territories in neighbouring areas and to obtain more information on the reproductive strategy and number of clutches of this small and precious alpine population.

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Fig. 3 - The female defended the chicks with vocal and distraction display. / La femmina ha difeso i pulcini con manifestazioni vocali e parate di distrazione. (Photo/Foto: Gianfranco Scieghi).



Fig. 4 - The female always defended the chicks at close distance. / La femmina ha sempre difeso i pulcini a distanza ravvicinata. (Photo/Foto: Enrico Viganò).

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