Expansion of the breeding range and probable high-altitude nesting of the European Nightjar *Caprimulgus europaeus* in the Carnic Alps (North-eastern Italy)

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The European Nightjar *Caprimulgus europaeus* is a species linked to hot, dry open environments where it feeds on insects, especially Lepidoptera and Coleoptera, that it captures in flight (Cramp 1985). In the Alpine zone it is found mainly along valley floors and lower slopes, and it presents large gaps in its range particularly in the innermost sector of the Alps (Mezzavilla 1989, Meschini & Frugis 1993, Bocca & Maffei 1997, Rassati 1997, Niederfriniger *et al.* 1998, Caula *et al.* 2005, Pedrini *et al.* 2005, Bionda & Bordignon 2006). In the Eastern Alps it breeds mainly at elevations below 1000 m a.s.l. (Rassati 1997, Niederfriniger *et al.* 1998, Pedrini *et al.* 2005). In recent decades an expansion of the breeding range has been observed in the Carnic Alps (Rassati 2011). To quantify the expansion data collected during censuses of the Corncrake *Crex crex* in the Tagliamento and Lumiei valleys have been used. Those censuses were carried out each year (since 1988) in the period in which the European Nightjar also nests (June), thus it was possible to yield regular records of its presences. Those censuses were supplemented with targeted surveys to define more precisely the areas occupied and elevations reached.

In the study area in the early 1990s the species was distributed along the valley floors and south-facing slopes as far as the area of Forni di Sotto and along the southern slopes of the Mount Tinisa group and Mount Nauleni, where in particularly favourable environmental conditions (extensive dry, sunny gravelly slopes with zones of sparse vegetation cover) it reached 1000-1100 m a.s.l. (Rassati 1997 and *pers. obs.*).

In the last years of the 20th century the European Nightjar began to colonize more internal areas and higher elevations along both the valley floor and the south-facing slope. In 1999, it was contacted in the zone of Forni di Sopra where in the subsequent years it settled along the valley floor and in part of the areas above it. In parallel, the species moved up the southern slopes of the Mt. Tinisa group and Mt. Nauleni; in 2009 there occurred the first contact in the breeding season ever recorded in the zone of Pura Pass, at over 1400 m a.s.l. Later its presence was recorded at over 1500 m. In the area between Mount Pura and Mt. Nauleni, males and females, courtship flights and behaviours attributable to nesting (*sensu* Cramp 1985) were observed, enough to consider nesting likely, if not certain, at over 1400 m a.s.l.

Therefore, the European Nightjar has come to colonize the innermost sector of the upper Tagliamento Valley as far as the rural zone in correspondence to the highest urban area, Forni di Sopra. The species has also occupied a typically Alpine environment such as the Pura pastures (Fig. 1) which are surrounded by Norway Spruce *Picea abies*, Silver Fir *Abies alba* and Beech *Fagus sylvatica* woods, with the presence of European Larch *Larix decidua*, where species with Eurosiberian boreoalpine distribution breed, such as the Capercaillie *Tetrao urogallus* (Rassati 2009) and the Hazel Grouse *Bonasa bonasia* (Rassati 2012). This situation, putting in contact thermophile and microtherm species, is a novelty in the Alpine ornithological picture.

The expansion of the range into mountain zones is a positive sign since the European Nightjar has suffered greatly from anthropization of the lowland areas, where it has disappeared from broad sectors and has shown a decline in Europe, especially in the western parts (Hagemeijer & Blair 1997, BirdLife International 2004). It is included in Annex I of Directive 2009/147/EC on the conservation of wild birds as a species subject to special conservation measures.

The high-altitude pastures in which the European Nightjar was found are less extensive and more closed than 25 years ago due to colonization by trees and shrubs on account of the diminished use by livestock, and thus the habitats are apparently less suitable for the species. Therefore, it is believed that, as happened with other species considered thermophile (e.g. the Eurasian Scops Owl *Otus scops*), the expansion may have been favoured by climate changes (Rassati 2013). In some respects, this is making the Alps ever more similar to the mountain groups of south and central Italy where nesting up to 1500 m a.s.l. of the European

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Figure 1. Pura pastures.

Nightjar was already reported in the 1980s (Meschini & Frugis 1993). In this regard, it is known that the increase in mean temperature in the last few decades has favoured the movement up the valleys and slopes of the insect species preyed upon by this caprimulgid (cf. for example Battisti 2004) and this has allowed the expansion of its range.

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Associate editor: ***Bruno Massa***