LONG-LEGGED BUZZARD (AVES: BUTEO) BREEDING POPULATION FROM MOLDOVA REGION

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Abstract

Long-legged Buzzard (*Buteo rufinus*) is a medium size bird of prey which breeds in the southern Palearctic region. The known breeding area from Romania was limited to the south – eastern part (Dobrogea Region), but the available data on species distribution is very scarce. In the last 10 years, Long-legged Buzzard extended its breeding range north of this region. This northern expansion was also observed in other regions of the species' distribution. However, data on the new species range is almost absent.

During buzzard surveys from 2011 – 2012 in eastern Romania (Moldova Region) new data was recorded on species distribution. This surveys reveals 19 breeding pairs for our study area. All the nests from Moldova Region are built in trees from small patches of forests and with a high percentage of open habitats around. The breeding pairs are not concentrated in specific places, having a homogenous distribution on the entire range of the study area.

The reasons for the expansion are not yet known, but some potential factors driving it could be climate change, empty niche, habitat changing, intra- or interspecific pressure.

The Long-legged Buzzard is listed in Annex I of the Bird Directive as subject of special habitat conservation measures in order to ensure survival and reproduction.

Keywords: Long-legged Buzzard (*Buteo rufinus*), breeding, ecology, Moldova Region

Introduction

The Long-legged Buzzard (*Buteo rufinus*) is a medium size bird of prey which occurs mostly in warm and dry areas from south-eastern Europe, northern Africa, and Asia Minor to north-western China (Snow and Perrins, 1998). Its ecology is poorly studied, being one of Europe's least studied raptors (Vatev 1987). Inhabiting arid and semi-arid environments and prefers open habitat types for foraging (Shirihai, 1996), it feeds mainly on small mammals, but also reptiles birds or even insects, being an opportunistic raptor (Khaleghizadeh et al. 2005, Friedemann et al. 2010).

It had an unfavourable conservation status in Europe (SPEC Category 3, Species of European Conservation Concern) and Russia, where most of its population breeds (Munteanu 2012, Munteanu et al. 1997). The species density is variable across the distribution area, but overall it is declining. However, the species decline was not recorded in Eastern Europe, where it recorded an expansion in the last 10 years (Domashevsky et al. 2005, Baltag 2010).

In Romania the known breeding area until 2007, was limited to Dobrogea Region (South-Eastern part of Romania) with approximately 200 breeding pairs (Danko 2012). In the last years we saw an expansion of is breeding and wintering range in eastern (Baltag et al. 2012) and western Romania (Danko 2012). The first breeding pair for eastern Romania (Moldova Region), was recorded in 2007 (Baltag and Ion 2007). The Long-legged Buzzard expansion was recorded also in Republic of Moldova where it was recorded as a new breeding species (Baltag and Ajder 2011). The Long-legged Buzzard expansion in Europe starts at the mid of the 20th century (Danko 2012). In the last years the species covered most of the south-eastern territory (Baltag and Ajder 2011).

The aim of this study is to present the actual distribution of Long-legged Buzzard from Moldova Region and to analyse some ecological aspects of the new breeding locations.

Materials and Methods

The study area is located in Eastern part of Romania, between Siret and Prut River, at the Eastern border of the European Union. This area is a mosaic of agricultural land (56.81%), natural and artificial forests (14.18%), pastures and herbaceous vegetation associations (12.64%), artificial surfaces (9.07%), vineyards (3.85%), wetlands and water bodies (2.58%) and fruit trees plantations (0.86%, CORINE land cover 2006). The agriculture land is mainly cultivated with grains, potatoes and in the last years, rape, but still in an extensive way for the most part of it. The forest area is quite fragmented with few big forests in central and western part. Most of the pastures from this area are overgrazed by domestic animals.

From a geomorphologic point of view the study region consists of a large hilly plain in the north and a well fragmented plateau in the centre. Large floodplains with a very developed riverbed represent another main feature of the region. Most part of the region has an elevation varying between 50 and 200 m with heights over 500 m but not exceeding 700 m.

This area could be considered the coldest climatic region of Romania (at least for the winter period) with low mean temperatures, discontinuous snow cover and an appreciable atmospheric stability. All these features are enhanced by the high frequency of anticyclone conditions with short outbreaks of Mediterranean cyclones.

During 2011 – 2012 we developed a bird of prey monitoring programme which was specially designed for buzzard species. Using Hawths Tools v.3.x extension in ESRI ArcGIS, v 9.3 software we randomly selected 80 squares of 5 X 5 km. These randomly selected squares cover 8.9 % of the study area (22 465.3 km^2). During the selection process we aimed to have almost the same percentage of habitat types in our squares like in the entire study area (**Figure 1**). For each square we selected between 4 and 8 observation points, in order to cover all the possible habitats or locations (electric pylons) where buzzards could build their nests. The point selection was made, at first, in GIS software, but they were changed in field for a better visibility on the nesting or hunting habitats.

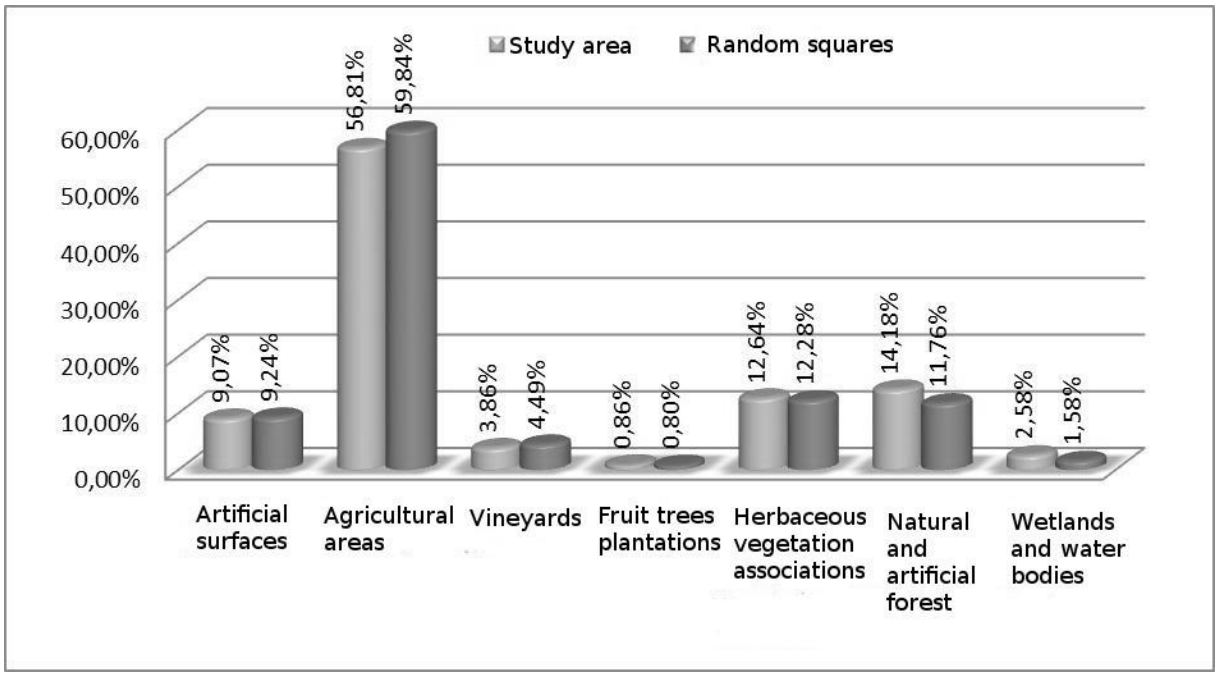

Figure 1: The percentage of habitats in the study area and in the random squares.

The observations were made from vantage points with binoculars 10 X 42 and telescopes 20 – 60 X 65. For each bird of prey observed we recorded the species, age, time of day, habitat where we saw the first time and behaviour. Only those individuals which had a territorial behaviour were recorded as breeding pairs. The other individuals were only mentioned in the field data form without including them in data analysis. To avoid double counting, the team members communicated the position of each individual, using phones or transceiver stations. Also, the bird's positions were recorded on maps. These maps were compared at the end of the day to exclude the possible double counting.

The observations were conducted between April 15th and June 15th. In this period, the adults are very active because of the nesting season and they have to hunt more than in other periods. The observations were made between 9 AM and 6 PM, time of day when birds of prey are active.

For each breeding pair we analysed the habitat composition around the nest (2 km). To detect if there are differences in habitat structure around the nest, we used Friedman's repeated-measures analysis of variance (F_r) in R v. 3.1 statistical software.

Results and Discussions

In the study period (2011 – 2012) we recorded 19 breeding pairs of Long-legged Buzzard in our study area. They are distributed on the entire study area. We did not find a concentration of breeding pairs in a certain area. Some pairs are breeding even in the northern part of our study area (Figure 2). This is the highest number of breeding pairs which was recorded in the eastern part of Moldova Region. Analysing the habitat structure and the breeding pair distribution we estimate an effective of 40 – 70 breeding pairs for the entire Moldova Region.

The breeding pairs of Long-legged Buzzard cover areas with elevation between 27 m and 361 m, with the average of 161.6 m. The elevation is lower than in the southern species territories (Greece, Bulgaria), but this could be influenced by lower temperature in our study area. A higher elevation brings a colder climate. There was an observation of Long-legged Buzzard in the Carpathian Mountains (Bicaz Gorges) but that individual was not breeding there.

The habitat types around the breeding sites are represented by natural and artificial forests (28.8%), agricultural land (24.7%), artificial surfaces (20.8%), pastures and herbaceous vegetation associations (14.8%), vineyards (7.6), wetlands and water bodies (1.8%) and fruit trees plantations (1.5%). However, the difference between the habitat composition around the nest (2 km) is significant ($F_r = 37.83$, $P<0.05$). This data highlights a selectivity of Long-legged Buzzard for open habitats and not for forests as Common Buzzard.

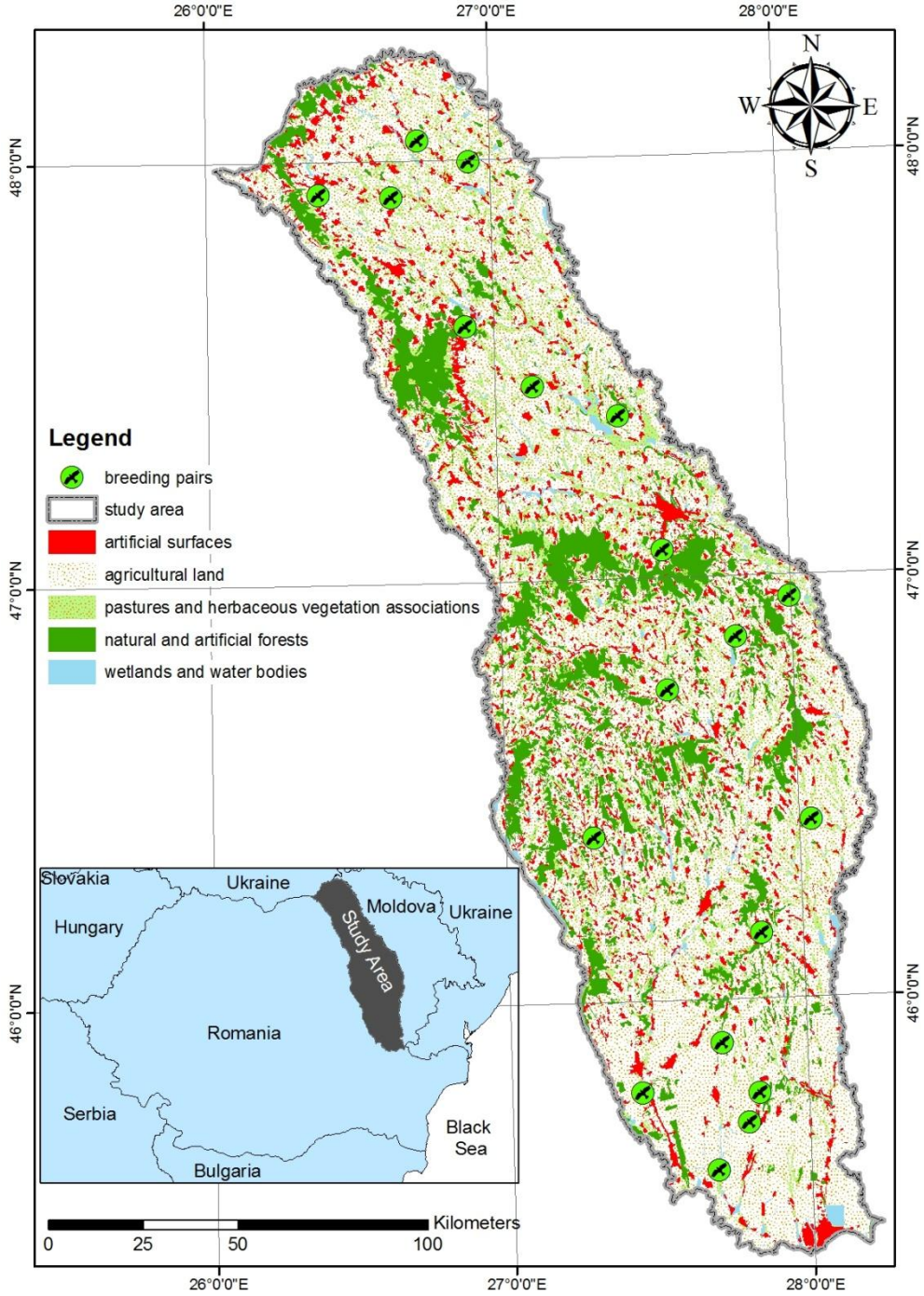

Figure 2: Distribution of long-legged Buzzard breeding pairs in Eastern Romania. Habitat structure according Corine Land Cover 2006. Vineyards and fruit trees plantation are included in agricultural land due to very small patches which are not visible on the map.

Long-legged Buzzard forages in open areas, avoiding dense vegetation where they are apparently unable to locate and pursue their prey (Friedman et al. 2010). The habitat composition around the nests, which we found in our study area, enrol in the species ecology.

Long-legged Buzzard are known to nest on cliffs (Alivizatos et al. 1998, Mullarney et al. 1999) and only accidentally on trees (Shirihai 1996). All the nests from our study area were built in trees. If the habitat is changing and they cannot find suitable breeding areas with cliffs, the Long-legged Buzzard can adapt a new style of nesting on trees (Friedman et al. 2010). In our study area the cliffs are very rare and are usually used for quarrying, which makes it almost impossible for the species to use this type of nest support. This ability to shift the nesting support was a great advantage in its expansion because it is easier to find large open areas with some patches of forest than with rocks.

The Long-legged Buzzard expansion could be influenced by the rise of average temperature in Eastern Romania over the last 30 years (Ion et al. 2013). This rising of the average temperature in March, by 1.4^{o}C, could provide the necessary conditions for breeding (Baltag 2013). This expansion could be also influenced by prey availability. Moldova Region is a very important area for European Ground Squirrel due to high densities (Baltag et al. 2014). Another important factor could be the low coverage of large birds of prey which can compete with the Long-legged Buzzard. The Long-legged Buzzard expansion is still poorly studied and to find the factors which influenced this population movement, further studies are required.

Conclusion

Long-legged Buzzard is a medium size bird of prey which is in expansion for Eastern Europe. In 2011 – 2012 period we recorded 19 breeding pairs of Long-legged Buzzard during a buzzard survey which was conducted in eastern part of Moldova Region (Romania). The estimated breeding population from Moldova Region was estimated to 40 – 70 pairs. The nests were built in trees from forest patches with a high percentage of open habitats. The reasons for this expansion are not yet known, but some potential factors could be climate change, empty niche, habitat changing, intra- or interspecific pressure.

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