Ural Owl Strix uralensis Population Dynamics and Range Expansion in Western Ukraine

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Ural Owl *Strix uralensis* population dynamics and range expansion in western Ukraine

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Until the end of the 20th century, the distribution of the Ural Owl *Strix uralensis* was limited to the Carpathian Mountain area of southwestern Ukraine. The abundance and distribution of Ural Owls in the Ukrainian Roztochchya area was investigated in 2005 and 2007; the density of owls was found to be 1.7–2.0 pairs/10 km^2. The species was a very rare vagrant in this area at the beginning of 1990s. The population of the owl has expanded in the past decade and it is now a common species in almost all of western Ukraine. The first indication of a change in the owl population was through an increase in the number of wintering specimens (including those killed on roads). The Ural Owl prefers old beech and rarely uses mixed forests in newly settled forest areas.

Key words: Ural Owl, *Strix uralensis*, range expansion, population trend, western Ukraine

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INTRODUCTION

The main range of the Ural Owl *Strix uralensis* reflects the forested part of Eurasia from the Vistula River and Scandinavia to the Pacific Ocean (Stepanyan 1990). Seven to ten subspecies are found in this area (König *et al.* 1999; Mebs & Scherzinger 2000). Owl populations outside of this range, e.g. central and southeastern Europe and central China, including the Carpathians Mountains, are believed to be postglacial relicts. Despite the wide distribution and rather high abundance across its range in Eurasia (Korpimäki 1992, Saurola 1997), the Ural Owl remains relatively poorly known outside of its main range.

The Ural Owl was included in the Red Data Book of Ukraine (Peklo 1994) as being *rare*. Positive trends in the population and range have been registered in western Ukraine. Considerable changes in the status of Carpathian populations have taken place during the last decade. The aim of this study was to examine changes in the distribution and abundance of Ural Owls in western Ukraine.

METHODS

Study area

The Carpathian Mountains extend in an arc from Serbia and Romania through Ukraine into Slovakia, Poland, Czech Republic, and into Austria. Ukraine is bordered by Belarus on the north, Poland, Slovakia and Hungary on the west, and Romania and Moldova on the south. Western Ukraine is situated from 44° to 52°N (24°E) in the continental temperate zone of eastern Europe and is mostly flat or rolling with the Carpathian Mountains (rising to 2000 m). The highest Carpathian peaks ("Hoverla" at 2061 m a.s.l. and others) are barren and alpine. Western Ukraine has many rivers, as the Dnister and Zakhidny Buh ("Western Buh"). Ninety percent of the area receives between 450 and 700 mm of precipitation per year, making it ideal for agriculture. Ninety percent of the area has snow on the ground 70–100 days a year. A belt of deciduous forest in western Ukraine transitions to pine and mixed forest in northwest Ukraine.

The investigations were carried out in the Ukrainian part of the Roztochchya area, a narrow hilly range

75 km long in west-central Ukraine, extending from the city of Lviv, to the Polish border (Fig. 1A). Hilly relief is typical for this area; average elevations are 300–350 m a.s.l. The area is characterized by productive forests of hornbeam-oak, pine-oak, and oak, with alder forests in the lowlands. There are also small areas of beech, which grow on hills and ridges. Where forests end, swamps with birch and willow can be found. The Roztochchya area is part of the main watershed for rivers draining into the Black and Baltic Seas. The study area was Yavorivsky National Park (7108 ha) representing the typical landscape of the Roztochchya (Fig. 1B). The park, as well as for all the Roztochchya area, is about 90% covered with forests. Young and middle-age woodlands predominate, old stands (e.g. > 100 yrs) cover about 10% of the area. Current and historic observations of Ural Owls were collected from many sources.

Surveys

Field investigations into the distribution and density of Ural Owl breeding pairs were carried out in March-April of 2005 and 2007. Transect routes with playback sampling stations was the main survey method (Voronetsky *et al.* 1990, Bashta 1997). Surveys were conducted from darkness until 1:00–2:00. A combined series of male and female territorial calls (from the CD "Owls of the Europe", Pelz 2003) were used. At each stop, silent listening periods alternated with playback of the Ural Owl. The playback protocol consisted of 2 min playback, 2–3 min listening, 2–3 min playback, 3–4 min listening, 2–3 min playback, then a final 3–4 min listening; thus a total of up to 19 min was spent at a given survey station. The locations of all stations and all located owls were mapped. Routes were 3–8 km in length. A total of 28 survey stations along 56.7 km of transect routes were visited; I surveyed all routes twice.

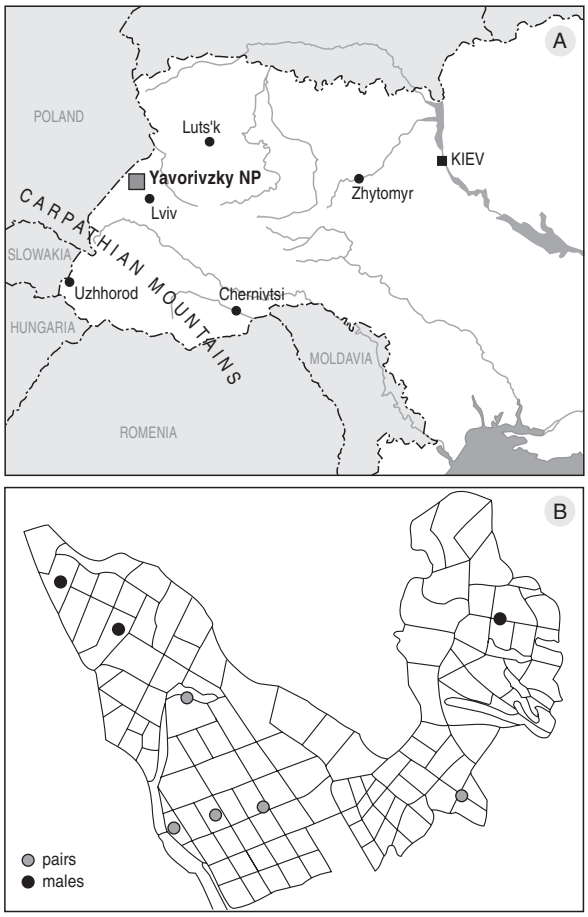

Figure 1. A) Location of the Yavorivsky National Park study area, western Ukraine. B) Ural Owl breeding areas in the Yavorivsky National Park, Ukraine.

RESULTS

Trends in the Ukraine Carpathians

Historical data about the Ural Owl distribution are known for the eastern Carpathians from Hrabar (1931), Kistyakivsky (1950), Strautman (1954), and Tatarynov (1973). Strautman (1954) noted that it was a typical bird of the southern and south-western slopes of the Carpathians. Nowadays the species occurs throughout all of the eastern Carpathians. According to our investigations in the Transcarpathian region during 2003–07, it was one of the most numerous owl species in the mountain and foothill areas. The species is wintering and breeding in different places of the northeastern foothill areas (Buchko 1999, P. Bundzyak, pers. comm.). The eastern-most winter record of Ural Owls in Ukraine is from the Podillya area (Kapelukh 1998, Novak 2003).

At the beginning of the 1990s the Ural Owl was a very rare vagrant species in the Roztochchya area (Guziy 1996), observed mainly during the winter period. It is supposed that Ural Owl numbers began to increase in this area about 10–12 years ago in the late 1990s. The first indication was an increase in the number of wintering owls (including those killed on the roads), as well as owls seen during the summer and even in the city of Lviv. Non-breeding individuals were noted in the region almost every year. The first breeding pair was noted in an old raven nest in the "Pohulanka" park in 2006 (A. Bokotey, pers. comm.).

General observations obtained during the last decade indicate that, at the western part of Ukraine, an

expansion of the Ural Owl distribution occurred in northern and north-easterly directions from the Carpathian Mountains (Fig. 2).

Yavorivsky National Park surveys

Our surveys in the Yavorivsky National Park found 8 Ural Owl territories comprised of 5 breeding pairs and 3 males (Fig. 1). Relative density consisted of 1.7–2.0 pairs/10 km^2. This density is slightly higher than that of 0.5–1.0 breeding pairs per 10 km^2 in Scandinavia and Belarus (Lundberg 1981, Pietiäinen 1989, Tishechkin & Ivanovsky 1998), but less than the 4.5–5.0 pairs/10 km^2 found in southwestern Poland (Cwikowski 1995).

In areas outside the Carpathians with newly discovered owls, we noted that the Ural Owl was found mainly in old beech and rarely in the mixed forests with poorly developed undergrowth. Some males called repeatedly from old spruce in the Roztochchya, however, no nests were found.

DISCUSSION

A decrease in the Ural Owl was observed in the Carpathian National Nature Park (Ukraine) at the end of the 20th century; however the species was considered common in the deciduous forest zone (Z. Kryvoglavy, pers. comm.). In the adjacent Carpathian Biosphere Reserve, this owl has recently been reported in the Uholka-Shyrokoluzhansky, Svydovets, Chornohora and Marmarosh massifs. As of 2003–04 about 25 pairs were counted, and the breeding population is considered stable (Hodovanets 2006). In Bukovyna area the owl is considered rare in the fir-spruce and beech-spruce forests (P. Bundzyak, pers.comm.). It is a rare species in the "Gorgany" Nature Reserve, with an estimated five pairs (Kyseliuk & Hodovanets 2006). In the Roztochchya area, the Ural Owl has become a common species during the last decade.

In Ukraine, Ural Owls occurred only in the Carpathians area until the last decade. The subspecies *S. u. macroura* has increased its range southwards and westwards in Slovakia and Hungary (Mebs & Scherzinger 2000, Danko *et al.* 2002, Adamec *et al.* 2003, Kristin *et al.* 2007). The placement of nest boxes has influenced the process of range expansion in eastern Slovakia (Danko *et al.* 2002). Reintroduction programs at German and Czech sites have been able to re-establish apparently stable populations in the Moravian-Silesian Beskids (Schäffer 1993, Scherzinger 1996, Bufka & Kloubec 1999, Vermouzek *et al.* 2004).

Figure 2. Distribution of the Ural Owl in western Ukraine, as of 1990 and 2007.

Ural Owls have been found to prefer old coniferous and mixed forests (Pukinskiy 2005). In the Carpathians, this owl preferred the beech and mixed-beech forests up to 1100–1300 m a.s.l. In other parts of the Carpathian Mountains, as well as in the Balkan Mountains, the species occurs mainly in old beech and beech-fir forests (Glutz von Blotzheim & Bauer 1994, Danko 2002, Nankinov 2002). It may breed rarely in spruce forests, especially in northern Slovakia (Karaska *et al.* 1997). Although I did not examine habitat aspects

specifically, some general observations of habitat use in the Roztochchya were observed. Owls were detected at points closer to riparian habitats as well as other open areas like glades, clear-cut area, and pasture-grounds. As these areas hold important small mammal prey, they are likely important factors influencing Ural Owl nesting. Possible factors affecting nest locations may be microclimate; almost all the nests were noted in quiet sites, protected from the wind, with south or east exposures, and at 250–340 m a.s.l. The relation of the Ural Owl distribution to the forestry practices was investigated insufficiently. Such data are very important for more effective protection of the species, since this owl is a top predator of the forest area and is an important biological indicator of semi-natural forests (Scherzinger 2003). More data on the Ural Owl use and preference of breeding and feeding habitats as well as nest sites are needed, especially in newly occupied areas.

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SAMENVATTING

Tot het einde van de twintigste eeuw kwam de Oeraluil *Strix uralensis* in Oekraïne als broedvogel alleen voor in de Karpaten in het zuidwesten van het land. In het Roztochchyagebied ten noorden van de Karpaten was de soort tot het begin van de jaren negentig van de vorige eeuw alleen als dwaalgast bekend. Het laatste decennium is de soort sterk toegenomen. De soort is nu een vrij algemene broedvogel in het westen van Oekraïne. De areaaluitbreiding werd ingeluid door een toename van het aantal overwinterende vogels en aangetroffen verkeersslachtoffers. In 2005 en 2007 broedden in het Roztochchyagebied 1,7 tot 2,0 paren per 10 km^2. Bij de kolonisatie van de nieuwe gebieden verkoos de soort oude beukenbossen boven gemengde bossen.

ARDEA

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