

The monitoring of Little Owl *Athene noctua* in Chełm (SE Poland) in 1998-2000

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1. Introduction

For many years in parts of Europe, Little Owl *Athene noctua* populations have declined, sometimes to extinction (Manez 1994, Genot *et al.* 1997). Little Owl has also disappeared from territories in Poland, particularly in the west where a sharp population decline has been recorded in agricultural landscapes and cities (Tomiałojć 1990, Dyrz *et al.* 1991, Jermaczek *et al.* 1995, Bednorz *et al.* 2000).

The first data concerning Little Owl numbers in 20 cities in Lublin district (SE Poland) were obtained in the 1990s. Chełm was found to have the highest population and density of this species (Grzywaczewski & Kitowski 2000a). This population was the ideal choice for monitoring studies, the purpose of which was to estimate the numbers, distribution and nesting preferences of the species.

2. Study area and methods

Chełm (51°08'N, 23°30'E) is a medium-sized city in southeast Poland (Fig. 1), 35.7 km² in area, and has some 70 000 inhabitants. The chalk hills on which it is built ranges from 178-232 m asl in height (Kondracki 2000). Its climate is continen-

tal, and the mean maximum temperature (24.2°C) is amongst the highest in Poland (Kaszewski *et al.* 1995).

The city landscape is characterised by a high percentage (38%) of arable land and habitation (36%), an inefficiently developed road system (11%), small woods and bushy areas (7%), and industrial estates (8%). The arable land includes cultivated areas, some larger than 10 ha, meadows, smallish orchards and vegetable gardens. The accommodation comprises single-storey houses or blocks of flats, which are mostly limited to four storeys due to the calcareous chalk bedrock. The flats are surrounded by mown or trodden

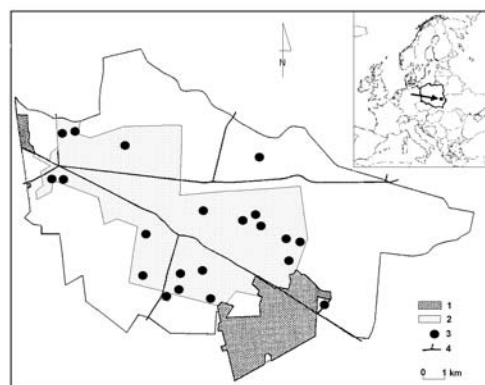


Fig. 1. Distribution of Little Owl *Athene noctua* in Chełm (SE Poland).

1. Forests.
2. Single-storey houses and blocks of flats on estates.
3. Little Owl *Athene noctua* territories.
4. Main roads.

grassy squares. Most homes are adjacent to arable land (Chełm City Hall records).

The observations in 1998-2000 were conducted according to a standard recommended method (Domaszewicz *et al.* 1984), the study area being the city of Chełm. We plotted on a 1:10 000 map the detected Little Owl calling and contact points. The resultant network showed the points to be c300-400 m from one other. We made two effective nocturnal control surveys of the city during each reproduction season, as were 1-2 additional controls in places where territorial occupancy was uncertain. The study period covered the peak of Little Owl calling activity from the last third of February to the end of April (Exo 1988). Most controls were carried out during the first peak of nocturnal calling activity, which occurs from sunset till about midnight (Exo 1989). We also conducted several additional night-long observations. On windless and rainless nights in suitable periods of high-pressure weather, we used voice stimulation. In addition, we conducted day controls, the purpose of which was to localise territories, particularly those where birds had not reacted to nocturnal voice stimulation. This enabled us to search for other traces of Little Owl presence, such as feathers, pellets, and roosts of young and adult birds.

3. Results

In the city area, there were 14-19 Little Owl territories during the studies, giving a territory density of 4.0-5.3/10 km² (Tab. 1). Of N=21 territories, most (67%) were found to be close to the blocks of flats, while 28% were adjacent to the single-

storey houses. Only one territory (5%) was found in the industrial part of the city. However, most territories (81%) were recorded in transitional zones between the areas of human habitation and fields, meadows and gardens. Only four (19%) territories were found in the city centre (Fig. 1), but they were close to gardens, parks and lawns. In the above territories, the Little Owl used holes in ceilings, roofs, chimneys, openings and attics. Despite the presence of numerous trees with holes, we found no nests in the city area parks and woods.

4. Discussion

In the 1980s and 90s, Little Owls were counted in a number of Polish cities. Reliable censuses were made in Gliwice (W Poland) (19-20 bp/136 km², Tomiałojć 1990), Kraśnik (SE Poland) (8 bp/32 km², Frączek & Szewczyk 2000). For Hrubieszów (7 bp/32.8 km²), Biłgoraj (4 bp/20.8 km²) and 17 other cities and small towns in SE Poland, the breeding density ranged from (0.07-4.5 bp/10 km² (Grzywaczewski & Kitowski 2000b). In comparison to those figures, the number and density of Little Owls in Chełm are amongst the highest in Poland. The Chełm figures were several times higher than those pertaining to agricultural landscape areas rich in meadows and willows (*Salix spp*) or to extensive orchards considered

Tab. 1. Number and density of Little Owl *Athene noctua* territories in 1998-2000.

Years	Number of territories	Number of territories/10 km ²
1998	17-19 territories	4.8-5.3
1999	14-16 territories	4.0-4.5
2000	14-16 territories	4.0-4.5

optimal for Little Owl in Poland and Central Europe, where the relevant densities ranged from 0.1-1.5 bp/10 km² (Jermaczek *et al.* 1990, Dombrowski *et al.* 1991, Fronczak & Dombrowski 1991, Kowalski *et al.* 1991, Vogrin 1997).

Away from cities, in central and western Europe, hollow trees seem to be the preferred breeding sites of Little Owl (Manez 1994, Génot *et al.* 1997). However, in Chełm and other southern Polish cities (Grzywaczewski & Kitowski 2000a, 2000b) the species avoided nesting in hollow trees. In the agricultural environs of Chełm, nesting occurred only in buildings, as it did in Chełm itself, where blocks of flats were particularly favoured (Grzywaczewski 2000). Furthermore, nesting in hollow trees elsewhere in the agricultural landscape of southeast Poland is exceptional (Kitowski & Kisiel 2003). These findings contradict those in Little Owl data gathered in Poland up to the 1980s (summarised by Ruprecht & Szwagrzak, 1988), which cite many cases of nesting in hollow trees in parks and municipal cemeteries.

The high numbers of Little Owl in Chełm seem to be influenced by the ease of access to plentiful breeding places in estates of blocks of flats and single-storey buildings. Characteristic of these estates are open spaces comprised of regularly mown or trodden grass, suitable foraging grounds for the owls. The typical calcareous hilly landscape of the city and its surroundings and the relatively warm climate favour dry vegetation cover suitable for Little Owls to hunt, for here such a short-legged species faces none of the difficulties in catching prey that it encounters on short-cut hay grasslands.

Little Owl monitoring will continue,

enabling us to investigate the population trends. It will also help us to undertake measures to help protect the species from population decline.

References

- Bednorz, J., Kupczyk, M., Kuźniak, S. & A. Winięcki. 2000. [Birds of Wielkopolska. Faunistic monograph]. – Bogucki Wyd. Nauk, Poznań, Poland. (In Polish with English abstract).
- Dyrz, A., Grabiński, W., Stawarczyk, T. & J. Witkowski. 1991. [Birds of Silesia. Faunistic monograph]. University of Wrocław. Dept. of Avian Ecology, Wrocław, Poland. (In Polish with English abstract).
- Domaszewicz, A., Jabłoński, P. & Z. Lewartowski. (Eds). 1984. [Methods of Owl counting]. – [Bulletin of the Scientific Circle of Biologists]. Warsaw University, Warsaw, Poland. (In Polish).
- Dombrowski, A., Fronczak, J. & M. Kowalski. 1991. [Population density and habitat preferences of owls (*Strigiformes*) on agricultural areas of the Mazowsze Lowland (central Poland)]. – Acta orn. 26: 39-54. (In Polish with English abstract).
- Exo, K. M. 1988. Annual cycle and ecological adaptations in the Little Owl (*Athene noctua*). – J. für Orn. 129: 393-416.
- Exo, K. M. 1989. Daily activity patterns of Little Owls (*Athene noctua*). – Vogelwelt 35: 94-114.
- Frączek, T. & P. Szewczyk. 2000. [Occurrence of owls (*Strigiformes*) pp. 22-23. in: Kraśnik]. [The Fourth Presentation of Activity of Scientific Naturalist Circles]. Słupsk. Poland. (In Polish).
- Fronczak, J. & A. Dombrowski. 1991. [Owls (*Strigiformes*) in an agricultural and forest landscape of the south Podlasie Lowland (Eastern Poland)]. – Acta orn. 26: 55-61. (In Polish with English abstract).
- Génot, J.-C., M. Juillard & D. van Nieuwenhuysse. 1997. Little Owl *Athene noctua*. pp. 408-409. In: Hagemeijer, E. J. M. & M. J. Blair. (Eds). The EBCC Atlas of European Breeding Birds: Their Distribution and Abundance. – T & AD Poyser, London, U.K.
- Grzywaczewski, G. 2000. [Occurrence of Little Owl *Athene noctua* (Scop., 1769) in the agricultural landscape of the environs of Chełm]. pp. 24-25. In: Radwan, S., Lorkiewicz, Z., Pleszyński, J. & M. Rozmus. (Eds). – [Proceedings of the Conference on Problems of Protection and Exploitation of Agricultural Areas of great natural values]. Janów Lubelski, October 2000. (In Polish).

- Grzywaczewski, G. & I. Kitowski. 2000a. [Occurrence of Owls (*Strigiformes*) in Chełm]. Pp. 189-193. In: Łętowski, J. (Ed.). [Natural values of Chełm Landscape Park and its surroundings]. – Wydaw. UMCS, Lublin, Poland. (In Polish).
- Grzywaczewski, G. & I. Kitowski. 2000b. Owls (*Strigiformes*) in cities of the Lublin region (SE Poland). Proceedings of Conference Birds of Prey and Owls. pp. 22-23. Czech Society for Ornithology. Mikulov, 24-26 November 2000.
- Jermaczek, A., Czwałga, T. & R. Stańko. 1990. [Number and distribution of Owls (*Strigiformes*) in the landscape of the Polish Lubusian region]. – Lub. Przegl. Przyr. 1: 41-50. (In Polish).
- Jermaczek, A., Czwałga, T., Jermaczek, D., Krzyśków, T., Rudawski, W. & R. Stańko. 1995. [Birds of the Polish Lubusian region. Faunistic monograph]. – Wyd. Lubuskiego Klubu Przyrodników, Świebodzin, Poland. (In Polish).
- Kaszewski, B. M., Mrugała, S. & W. Warakowski. 1995. [Environment of the Lublin region: Climate]. – LTN, Lublin, Poland. (In Polish).
- Kitowski, I. & E. Kisiel. (2003). Distribution of Little Owl *Athene noctua* and Barn Owl *Tyto alba* in the Zamość region (SE Poland) in the light of atlas studies. – *Ornis Hungarica* 12-13 (1-2): 271-274.
- Kondracki, J. 2000. [Regional Geography of Poland]. – PWN, Warsaw, Poland. (In Polish).
- Kowalski, M., Lippoman, T. & P. Oglecki. 1991. [Census of owls *Strigiformes* in eastern part of Kampinos National Park (Central Poland)]. – *Acta orn.* 26: 23-29. (In Polish with English abstract).
- Manez, M. 1994. Little Owl *Athene noctua*. In: Tucker, G. M., Heath, M. F., Tomiałojć, L. & R. F. A. Grimmett. (Eds). Birds in Europe: their conservation status. Cambridge U.K. BirdLife International. BirdLife Conservation Series No 3.
- Ruprecht A. & A. Szwańgrzak. 1988. [Atlas of Polish owls *Strigiformes*.] *Studia Nat. Seria A*: 1-153. pp (In Polish with English summary)
- Tomiałojć, L. 1990. [The birds of Poland. Distribution and abundance]. – PWN, Warszawa, Poland. (In Polish with English abstract).
- Vogrin, M. 1997. Little Owl (*Athene noctua*): a highly endangered species in NE Slovenia. – *Buteo* 9: 99-102.