

LITTLE OWL *ATHENE NOCTUA* STATUS AND HABITAT SELECTION IN THE TOWN OF BERGAMO (LOMBARDY, NORTHERN ITALY).

STATUS EN HABITATSELECTIE VAN DE STEENUIL *ATHENE NOCTUA* IN DE STAD BERGAMO (LOMBARDIJE, NOORD-ITALIË).

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ABSTRACT

A census of nocturnal birds of prey, which was called Progetto Strigiformi Città di Bergamo was organized by the local division of LIPU (with more than 40 people joining it) in the town of Bergamo (Lombardia, northern Italy) during the years 1997-2000. It is an innovative research in Italy, previously performed only in the town of Pavia.

Bergamo (116000 inhabitants) lies at the foot of the Orobic Alps and its territory (38.76km²) has different natural and anthropomorphized habitats located on the plain and on the hills. Here one can find historical and more modern urban areas and vast woods on the hills, parks and gardens in the Parco Regionale dei Colli, together with degraded areas in the southern part of the town.

The census of the Little Owl *Athene noctua* was performed using the playback method. We discovered this species as the most common bird of prey in this territory. During the two years of this research we went out to look for Owls for 95 times from October to May and for 310 hours of study. In the surveyed area (23.5km²) we discovered 34 territorial couples of Little Owl or an overall density of 1.44 couples/km², a high average compared to other Italian towns.

In order to better define the environmental preferences of the Little Owl in Bergamo, we quantified the following environmental features per square grid cell of 500 by 500m. This allowed us to identify differences (even in density) of environments that were studied: historical centre, parks and gardens, industrial and sub-urban areas. In particular, it was very interesting to discover the presence of the Little Owl in the green areas of the town, often together with the Tawny Owl *Strix aluco* which usually has a higher density in this kind of environment. In conclusion, the Little Owl is the most widespread raptor found in the different environments of the territory of Bergamo where it often prefers nesting on the roofs of the historical centre, on the buildings of the new industrial areas and the old massive walls of the XVI century.

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INTRODUCTION

A census of nocturnal birds of prey was carried out in the town of Bergamo (Lombardy, Northern Italy) in the years 1997-2000. The project - denominated Progetto Strigiformi Città di Bergamo - was organized by the LIPU (Lega Italiana Protezione Uccelli - Italian Bird Protection League) local division and involved more than 40 people (Figure 1).



Figure 1. Owl project in the city of Bergamo.
Figuur 1. Project uilen in de stad Bergamo.

Such investigation is unusual for Italy, the only ones previously conducted having taken place in Pavia (Galeotti and Morimando 1991) and in Siena (Morimando et al. 1995).

In the last years, some studies conducted in the Bergamo district dealt with the Little Owl *Athene noctua* (Mastrorilli 1997, 1998, 1999a).

Ornithological data, even general, concerning Bergamo are deficient and outdated (Guerra 1979, Galeotti et al.1985).

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STUDY AREA AND METHODS

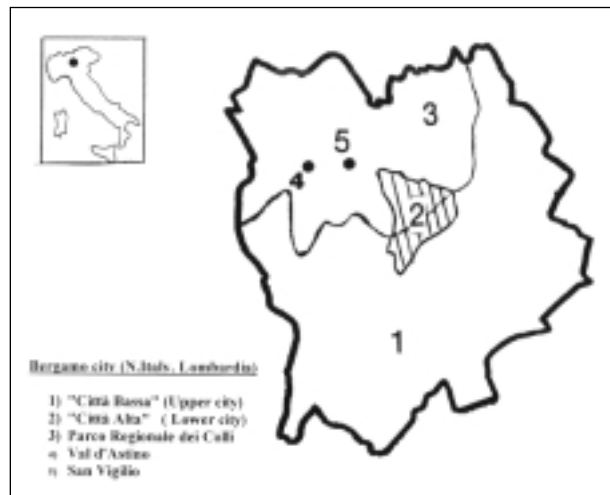
Bergamo (116.000 inhabitants) lies at the foot of the Orobic Alps (Figure 2). The research area (38.76 km²) is characterised by a mosaic of natural environments and built-up areas and includes plains and hills. The local difference in altitude rises up to 521m. The town (Figure 3) is divided into two parts: Città Alta ("Upper City", the old and central one) and Città Bassa ("Lower City"). The former is surrounded by an ancient wall and lies on hills overlooking the land. Parks, gardens and large woods located on the hills and included in a protected area (Parco Regionale dei Colli) contrast with the historical and modern quarters. The southern portion of the research area is degraded because of its disharmonious development.



Figure 2. Bergamo situated in northern Italy near the Orobic Alps.
 Figuur 2. Situatieschets van Bergamo in Noord-Italië, dichtbij de Orobic Alpen.

Figure 3. Map of Bergamo city indicating the distribution of the different habitats.

Figuur 3. Kaart van Bergamo stad met aanduiding van de verschillende habitats.



The census was carried out using a standardized playback recording technique (Galeotti 1991, Cesaris 1988, Sacchi 1994) which was not utilized in Città Alta (Upper City). The field nights took place between 19.30 and midnight. As suggested by investigations dealt with in Pavia (Sala 1988), we postponed the time in Città Alta (Upper City) - between 3 and 7 a.m. - because of the presence of many tourists and visitors. During the first two years, the 95 field nights - 310 hours in all - took place between October and May. In order to better define the Little Owls habitat preferences in Bergamo, the study area (23.5 km²) was divided using a grid. Each square (0.25 km²) was given a prevailing environment typology, as in Dinetti et al. (1995) and in Dinetti & Fraissinet (2001). This technique enables an evaluation of the adequacy of Bergamo urban areas for Little Owl.

RESULTS

During the investigation, 5 species were censused: the Barn Owl *Tyto alba* (1 couple), the Little Owl *Athene noctua*, the Scops Owl *Otus scops* (3 couples) and the Tawny Owl *Strix aluco* (19 couples) are breeding birds, while the Long-eared Owl *Asio otus* winters in a small roost located at the border between Bergamo and the village of Gorle (Mastrorilli 1999b).

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Typology	Km ²	A.noctua breeding pairs	Density
Città Alta (Upper City)	4.75	4	0.84
Green areas urban parks. Parco dei Colli	6.75	10	1.48
Areas built-up after the Second World War	2	0	0
Rural areas. suburbs	3.25	7	2.15
Industrial areas. railway stations. former industrial areas	2.25	4	1.77
Monumental areas	1.75	5	2.85
Mixed urban areas and not defined areas	2.75	4	1.45

Table 1 Little Owl habitat selection in Bergamo
Tabel 1. Habitatselectie van de Steenuil in Bergamo.

Despite contacts during the breeding season, no evidence of nesting Long-eared Owls was found. A nesting couple of the Tengmalm's Owl *Aegolius funereus* (Guerra 1979) was recorded on Monte Bastia (521 m above sea level). No further data have been reported regarding this species. During the study, 34 territorial Little Owl breeding pairs - average density 1.44 couple/km², close to the highest values reported in Lombardy (Galeotti and Sacchi 1996) - were recorded (Table 1).

The Little Owl is well distributed in the urban areas, except for the portions built up after the Second World War, characterised by high buildings, scanty vegetation and few cavities suitable for nesting.

DISCUSSION

Factors increasing prey accessibility, prey availability, cavity presence and decreasing predator pressure or human influence have a positive impact on Little Owl presence (Génot and Van Nieuwenhuysen submitted). We discuss the variability of occupied habitats in Bergamo according to these characteristics.

In the Italian district capitals, the Little Owl shows adaptability in the choice of breeding sites (Dinetti and Fraissinet, 2001). It mostly occupies trees, bell towers, towers, and house roofs. In Bergamo, the suitable trees (Horse-chestnut *Aesculus hippocastanum* and Plane trees *Platanus* sp.) are located at the border of Città Alta (Upper City) and are mainly occupied by the Tawny Owl and, in the past, by the Scops Owl (Guerra 1979). Competition forces Little Owls to nest in garrets - especially in Città Alta (Upper City) -, in prefabricated sheds or in farmhouses (in the suburbs), in accordance with a trend recorded elsewhere in the Bergamo District (Mastrorilli 1999a).

The Little Owl is well distributed in the study area at different densities. The highest densities characterise the monumental portions of the town. The large and extended ancient wall, dating back to the sixteenth century and surrounding Città Alta (Upper City), provides the Little Owl with breeding sites while the nearby vegetable gardens and meadows supply trophic resources.

In the 60s and 70s, the importance of the ancient wall was pointed out by Guerra (1979), since it used to offer nesting sites for species nowadays missing, such as the Barn Owl *Tyto alba*, the Wall Creeper *Tichodroma muraria*, the Yellowhammer *Emberiza citrinella* and the Lesser Grey Shrike *Lanius minor*.

In the Parco Regionale dei Colli, the Little Owl and the Tawny Owl can co-exist. In other towns, the latter restricts the presence of the Little Owl (Galeotti in Bernini et al.1998).

The occurrence of many rural buildings at the borders of woods (Val d'Astino, S.Vigilio, Valverde, Monterosso) supplies suitable cavities, where Little Owls can find shelter and nesting sites. In the western part of the area, the landscape of Val



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d'Astino is characterised by unusual and propitious features. In Val D'Astino, the occurrence of 4 nocturnal birds of prey was recorded: a Little Owl and a Barn Owl nest in Astino Monastery (XV century), while the Tawny Owl (2 pairs) and the Scops Owl (1 pair) occupy territories located at the border (data collected in 1999).

The industrial areas seem to be favourable for the Little Owl too. During the night, these habitats are not disturbed and the meadows located among sheds and factories promote the presence of micromammals. In Città Alta (Upper City), the Little Owl occupies the innermost portions, while the occurrence of some Tawny Owl couples at the border affect its potential breeding there. This disagrees with what was recorded in Pavia, where the town centre is not inhabited by the Little Owl (Galeotti in Bernini et al. 1998).

The Little Owl density recorded in the present study is higher than the Lombard average value (Galeotti and Sacchi 1996). In Bergamo, the proximity of the Alps, elsewhere affecting the occurrence of the Little Owl (LIPU 1998), shows no influence on the species.

In the next years, several public works (stadium, hospital) are planned. They will modify parts of the research area, threatening some areas vital for Little Owls. Therefore our presented results might become crucial information to assess the impact of the planned works.

CONCLUSION

The Little Owl shows a regular distribution in the town of Bergamo with a preference for monumental areas and suburbs. Thirty-four Little Owl breeding pairs (average density 1.44 couple/km²) were recorded. The only places where the species experiences some difficulties of settlement are the areas built-up after the Second World war.

The lack of historical information relevant to the presence of the Little Owl in the town of Bergamo does not allow us to analyse the species trend. This research, however will offer a base-line to refer to in future research. As for the situation of the towns of northern Italy, Bergamo is one of the urban areas where Little Owl appears to be settled very well.



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SAMENVATTING

Tussen 1997 en 2000 liep in Bergamo (N.-Italië) een uilenproject, georganiseerd door de plaatselijke afdeling van de Italiaanse Vogelbeschermingsliga waaraan veertig vrijwilligers deelnamen. Door het inventariseren van nachtroofvogels wilde men een idee krijgen over de status van o.a. de Steenuil *Athene noctua* in Bergamo.

Bergamo telt 116.000 inwoners en situeert zich aan de voet van de Orobic-Alpen, beslaat 38.76 km² en bestaat uit zowel natuurlijke als urbane habitats die zich in de heuvels en de valleien situeren.

Bergamo kan ingedeeld worden in een "upper city" of het oude centrale stadsdeel en een "lower city", een eerder door een disharmonieuze ontwikkeling gedegradeerd gedeelte.

Het onderzochte studiegebied (23.5 km²) werd onderverdeeld in hokken van 25ha, ondergebracht in verschillende typologische klassen.

Tijdens het onderzoek werden vijf verschillende nachtroofvogels waargenomen: de Kerkuil *Tyto alba* met 1 koppel, de Dwergooruil *Otus scops* met 3 broedparen, de Bosuil *Strix aluco* met 19 broedparen, de Ransuil *Asio otus* werd wel waargenomen maar een nestplaats werd niet gevonden.

De Steenuil *Athene noctua* werd tijdens de onderzoeksperiode het meest frequent waargenomen met 34 broedparen of 1,44 broedparen/km². De Steenuil komt in het oude stadsdeel nog vrij goed aan bod (1,48 broedparen/km²), in het naoorlogse stadsdeel daarentegen komt de soort helemaal niet voor. Hoge gebouwen voeren hier de boventoon en er valt erg weinig groen te bespeuren. Komt daar nog eens bij dat er een absoluut gebrek is aan nestholten. Dat alles maakt het voor de Steenuil allesbehalve aantrekkelijk.

De Steenuil heeft zich nochtans opmerkelijk aangepast en vindt in de meeste Italiaanse steden voldoende geschikte nestplaatsen. De Steenuil zoekt het vooral in het monumentale deel van Bergamo en de 16de eeuwse stadsmuren waar dichtheden van 2.85 broedparen/km² geteld werden. De bomen rond het oude stadsdeel bieden nestgelegenheid maar worden echter vooral ingenomen door de Bosuil en in het verleden ook de Dwergooruil.

In het Regionaal Park (Dei Colli) komen Steenuil (1.48 broedparen/km²) en Bosuil naast elkaar voor.

Ook industriële gebieden schrikken de Steenuil niet af (1.77 broedparen/km²). 's Nachts is het hier rustig, er zijn geschikte nestplaatsen en de uitgestrekte grasvelden zijn rijk aan kleine zoogdieren.

Samenvatting door Jenny De Laet

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