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THE LITTLE OWL IN THE "PROYECTO NOCTUA"

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Résumé : La Chevêche d'Athéna dans le projet Noctua.

L'étude de l'évolution des populations de rapaces diurnes et nocturnes est une activité qui demande une forte implication des biologistes, des gestionnaires et des volontaires pour contrebalancer l'actuel manque de ressources allouées à la conservation en Europe. La connaissance des populations de nocturnes en Espagne est extrêmement limitée et basée principalement sur des études à petite échelle menées en peu de temps. Aucune méthode standardisée n'est utilisée dans ces études; ainsi, les comparaisons entre différentes zones d'étude ne sont pas faisables et les résultats ne peuvent pas être utilisés par les gestionnaires. Pour une zone donnée, les résultats d'études locales sont très différents de ceux obtenus à partir d'études standardisées menées sur une longue période. Cet état de fait nous a conduit à développer une enquête standardisée basée sur l'implication de volontaires enthousiastes et motivés pour mener un programme à long terme avec l'appui logistique de S.E.O./BirdLife. A ce jour, aucun fond n'est disponible pour ce projet, baptisé du nom du rapace nocturne supposé le plus abondant en Espagne (PROYECTO NOCTUA). A notre connaissance, c'est la première tentative espagnole pour établir un programme de recherche standardisé à long terme sur les rapaces nocturnes.

La Chevêche d'Athéna est une des espèces cibles du projet. Ses populations européennes ont décliné et la population espagnole, bien qu'apparem-ment en bonne santé sur le plan numérique, est aussi suspectée de décliner. Les changements d'utilisation des sols sont potentiellement la cause de ce déclin en Europe. Le trafic routier, qui peut être une cause majeure de mortalité en Espagne, s'ajoute aux préoccupations pour le futur de la Chevêche d'Athéna dans notre pays.

INTRODUCTION

Due to the current general lack of resources devoted to conservation and to the common place idea that abundant species are not worth the time and effort, the Little Owl is a fine example of a bird for which conservation measures are implemented merely on the basis of conjecture. Therefore, there is a reasonable doubt about the possible efficiency of such measures.

A review of the available literature on owls in Spain illustrates our previous statement. Because it would reveal a complete lack of published information about the ecology of this owl (FAJARDO, 1995). The Little Owl is probably the most abundant owl

in the Iberian Peninsula. The Spanish Breeding Bird Atlas tentatively suggested a figure of 50.000-60.000 pairs (PEREZ OLEA, 1997). Based on conjecture, a downward trend in the Spanish population was also suggested in this Atlas.

Stimulated by the current state of the study of the ecology of owls in Spain, and of our experience in population studies of owls in Finland, in 1992 we began to set up the basis of a long-term, nation-wide, owl research program. We began by studying the efficiency of survey techniques in a large study area (2300 km^2, in the province of Biscay, North Spain) (ZUBEROGOITIA & CAMPOS, 1997). The playback method was revealed as being the most labour-efficient method for the owl community, with the possible exception of the Eagle Owl (*Bubo bubo*) (MARTINEZ & LOPEZ, *in prep.*). As for the Little Owl, 272 territories were detected in the study area during four years (1992-1996). The overall success of the playback method did not vary throughout the year for Little Owls and nor did it vary with the weather conditions. This was in contrast with results obtained for the Barn Owl (*Tyto alba*), which showed seasonal differences in territorial behaviour (i.e. response to the broadcast of territorial calls) and also strong variations related to weather conditions (ZUBEROGOITIA & CAMPOS, 1998).

After defining the survey protocole, in 1997 we contacted SEO/Birdlife for support, and since then SEO/Birdlife guarantees the logistic side (forms, mailing, recording tapes) for the long-term owl-monitoring program known as Proyecto NOCTUA. The good response from volunteers has yielded 111 study plots unevenly distributed across Spain, 81 of which have been monitored since 1997. One of the main objectives of the project for the next years is to aim for a homogeneous number of study plots across the different habitats.

METHODS

Since 1997, volunteers are asked to randomly select at least one 10x10 km plot (UTM Projection) within their potential travel area. Two 1.500 m transects are then selected randomly within the plots, each of which are punctuated by four calling stations 500 m apart one from the other.

Starting at dusk, the calls of every owl species present in the Iberian Peninsula (but for the Eagle Owl) are broadcast from each calling station according to the size of the owls, from the smallest (Scops Owl, *Otus scops*), to the second largest (Tawny Owl *Strix aluco*). Calls for every species last for 5 minutes, with a 10 minutes pause between species. In each calling station, the number of individuals responding to the tapes and/or visualised is recorded in a standard spreadsheet and the estimated location of the calling individuals is plotted in 1 : 50.000 land use maps. From a coarse grained level to a fine-grained level, data on habitat composition around each calling station is also recorded in a standard spreadsheet.

Census periods range from November to February for the Eagle Owl and Tawny Owl and from May to August for all the other species.

RESULTS

The first year of the project (1997) was considered as a pilot year. In spite of several logistic adjustments that imposed a few drawbacks to our objectives, the response from the volunteers was very satisfactory, and 61 transects were surveyed out of a total of 33 plots located in 12 different provinces. In 1998 the coverage was higher (219 transects, 111 plots, 28 provinces). In 1999 the total number of surveyed plots was lower (62 plots, 122 transects) but, most encouragingly, 81 of these transects had been surveyed the previous year.

The relative abundance of the Little Owl (and of every other species) was calculated as the mean number of individuals per kilometre. The mean values of the abundance of the Little Owl did not vary between years (1998 : X= 1.26, sd= 1.77; 1999 : X= 1.53, sd= 2.39 ; Wilcoxon Signed Rank Test for paired samples, z= -1.227, p= 0.22). No conclusion can be gathered from these results due to the short period of time over which the survey has been performed.

Habitat preferences

Using the variables from each plot we performed a Logistic Regression Analysis (Forward, Wald statistic) in order to obtain models that would describe the habitat use of the Little owl for all the study plots. Two variables were retained by the analysis : "Level 3" (Table 1) and the variable "provinces". When this model was used to re-classify the samples it correctly reclassified 74.57 % of the grid cells. 54.70 % of grid cells containing Little Owls were misclassified, while 90.51 of grid cells not containing Little Owls were correctly classified.

Dense woods seem to have a negative influence in the habitat selection by Little Owls, while dry cultures and farming areas seem to favour the persistence of the owl. On the other hand, analysing all provinces one by one does not show a significant value in the regression model, neither do they show significance one by one ($X^2_{32} = 32.45$; $P > 0.05$). Analysing each variable one by one, we obtain a preference of the owl for settling in areas with bushes, crags and prairies, in this order. On the other hand, wooded areas were scarcely occupied ($X^2_7 = 66.26$; $P < 0.01$). Only Holm Oak forests, Cork Oak forests and Olive trees show values higher than expected ($X^2_9 = 17.69$; $P < 0.05$).

Level 1	Level 2	Level 3	Level 4
Woods	1. Deciduous trees	1.Open woods	1.Shrubs
	2. *Quercus faginea*	2. Dense wood	2. No shrubs
	3. Perennial oak trees		
	4. Conifers		
	5. Deciduous and *Q. faginea* trees		
	6. Deciduous and perennial tree		
	7. Deciduous trees and conifers		
	8. Conifers and *Q. faginea*		

	9. Conifers and perennial trees		
	10. Perennial trees and Q.faginea		
Bushes	1. Non altered wood original/non original wood, under regeneration process.	3. Open bush	3. > 1m high
		4. Dense bushes	4. 50 cm- 1m
			5. < 50 cm
	2. Young trees		
	3. Mountain bushes		
	4. Large and medium bushes		
	5. Others		
Prairies and marshes			
	1. High mountain pastures	5. Hedges	6. Sparse trees/bushes
	2. Wet pastures, bog peat trees/bushes	6. No hedges	7. No sparse trees / bushes
	3.Fertile lowlands/occasional flooded pastures		
	4. Dry pastures		
	5. Reed beds		
	6. Rushes		
	7. Ferns		
	8. Marshes		
Agricultural landscape			
	1. Cereal	7. Irrigated farming	8. Hedges
	2. Cereal and grass	8. Dry farming	9. No hedges
	3. Olive trees		
	4. Fruit trees		
	5. Vineyards		
	6. Vegetable garden		
	7. paddies		
	8. Others		
Human Areas			
	1. Inside town	9. With trees	10. Wetlands
	2. Village	10. No trees	11. No wetlands
	3. Industrial area		
	4. Suburb		
	5. Parks and gardens		
	6. Cemetery		
	7. Dump		
Wetlands	1. Ponds (< 50 m^2)	11. Trees	12. Reed beds
	2. Ponds (50 ñ 450 m^2)	12. No trees	13. No reed beds
	3. Salt ponds (50-450 m^2)		
	4. Lakes		
	5. Ponds (450 m^2)		
	6. Gravel peat.		
	7. Creek (< 1m wide)		
	8. River (> 2 m wide)		
	9. Ditch (< 1 m wide)		
	10. Channel (> 1 m wide)		
Coast	1. Beach	13. Vegetation	14. Sand
	2. Cliffs	14. No vegetation	15. Stones
	3. Harbours		
	4. River/estuary		
	4. Dunes		
	5. Salt marshes		

Crags	1. Crag	15. High mountain 16. No vegetation
	2. Rocky outcrop/hillside	16. Lower/medium 17. Herbs
	3. Other rocky areas height mountain	18. Shrubs
	4. Stone pit/mines	19. Trees

Table 1 : Variables used in the Logistic Regression Analysis.

DISCUSSION

Our results, even if preliminary, are in agreement with other studies on habitat preferences of the Little Owl (MIKKOLA, 1983 ; TUCKER & HEATH, 1994 ; GÉNOT *et al.*, 1997 ; PEREZ-OLEA, 1997 ; SEO/BIRDLIFE, 1999). Although the Little Owl is a versatile owl, capable of inhabiting a variety of habitat types, it seems to occur less in large woodland. In our study plots, the Little Owl was mostly present in meadows, areas with Mediterranean shrubs, dry cultures of trees and crags surrounded by the previous mentioned land uses. *Quercus* meadows are the most likely wooded areas to host Little Owl populations. As mentioned above, our results are tentative, and currently there is a large bias towards antropic environments, because volunteers tend to elude remote habitats with poor or no development, and a deeper insight will be possible in a few years time.

CONCLUSIONS

1- In the long run, we expect to provide an analysis of the influence of timing (hour and season) on the detectability of the different owl species, as well as the influence of habitat type and owl composition on the abundance of the different species.

2- We expect to test for possible population changes related with changes in habitat composition and structure.

3- As a final outcome, we intend to provide both the scientific community and managers with a solid method for censusing owls in large areas of Spain, and with a full report on the relationships between habitat changes and the abundance of owls.

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