

FIRST RECORD OF COOPERATIVE NESTING IN THE EAGLE OWL *BUBO BUBO*

PRIMERA OBSERVACIÓN DE CRÍA COOPERATIVA EN EL BÚHO REAL *BUBO BUBO*

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Monogamy appears to be the most common mating system amongst raptors and owls. However, alternative breeding strategies have been described (i.e. polygyny, polyandry and cooperative breeding; Newton, 1979; Mikkola, 1983; Del Hoyo *et al.*, 1999; Hatchwell & Komdeur, 2000). Recent studies have shown that co-operative breeding is much more widespread than had previously been thought; indeed, it has been observed in at least 3% of bird species, including as many as 42 birds of prey (Kimball *et al.*, 2003) and 10 owls (Marks *et al.*, 1999).

Although Eagle Owl *Bubo bubo* is considered as monogamous (Cramp & Simmons, 1985), Dalbeck *et al.* (1998) showed that polygamy may occur. The case reported here is of polygynous co-operative breeding observed in a breeding territory of Eagle Owl in the province of Murcia (SE Spain).

Since 1998, an exhaustive study has been carried out on twelve Eagle Owl breeding territories in the province of Murcia. In the study area, due to the presence of a stable population of its main prey, the rabbit *Oryctolagus cuniculus* (*unpub. data*; Martínez *et al.*,

1992; Martínez & Calvo, 2001), the number of pairs of this owl showed both a numerical increase and high productivity (number of fledged young per breeding pairs = 2.62 ± 0.84 ; $n = 31$ breeding attempts).

On the 17 December 2003, during the annual monitoring of the population, a new territory occupied by a pair of Eagle Owls was recorded. The dark feathered female was photographed and observed to be incubating the eggs for a total of 1020 minutes. On the 9 January 2004, the nest on a rocky ledge was observed to contain four eggs and on 3 March four chicks (oldest 10-12 days) were observed. From that moment on, a total of 32 hours of diurnal observation were made from a hide 20-25 metres away. The observations permitted the identification of the male (M1), of uniformly earthy colour, and the female (F1) which was larger than the male and with dark, almost black, plumage. During the pre-laying period and incubation the presence of a third bird was never detected.

On 6 and 8 March, the regular presence was observed of F1 and M1 in the nest and at least two feeds given to the chicks by the female. On

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13 March, at the beginning of the day's observation, the female (F1) was seen to leave the nest and settle near the top of the cliff next to the male (M1). After two minutes a third, very large, bird entered the nest. This bird of unknown sex (U1) could be distinguished from the consort female by its reddish-orange plumage and from the male by its larger size. This third bird (U1) fed the chicks with the remains of a hare's leg for 21 minutes whilst the regular pair remained quiet and showed no signs of alarm or aggression towards the third bird. After feeding the chicks, the third bird (U1) left the nest and sat on a nearby ledge. Five further visits were made to the nest but U1 was never seen. During the last visit, four fledged chicks, the eldest approximately 45 days old, were seen outside the nest.

The observations suggest a case of co-operative breeding, in which a second female occasionally helped feed the chicks. In a study of radiotagged Eagle Owls carried out in Germany (Dalbeck *et al.*, 1998), polygynous behaviour was recorded in birds with little reproductive experience, which frequently interacted with territorial adults occupying habitats of low quality with very low reproductive success. This would suggest that polygyny might be advantageous in situations where the surroundings have a low carrying capacity or in marginal sites where pairs have little breeding success. However, this observation was made in quite the opposite circumstances since the population was increasing as a result of the abundant prey and suitable nesting sites available. The late arrival of an individual in a territory during breeding and any subsequent help in rearing chicks alongside the consort female would represent a help to the pair and an opportunity for the third bird to obtain reproductive experience, thus increasing the long-term prospects of survival (Tella, 1993; Arroyo, 1996; Zuberogoitia *et al.*, 2003; Kimball *et al.*, 2003).

Such polygynous co-operative breeding is probably rare in Eagle Owl. Future research

involving marked populations and genetic analysis may help quantify the frequency and causal factors of this alternative to monogamy in Eagle Owls.

RESUMEN.—*En esta comunicación se describe un caso de reproducción cooperativa en un trío de Búho Real en un área montañosa del sureste de España. El trío, observado en 2004, ocupó un nido, y estaba compuesto por una pareja y un tercer miembro de sexo desconocido. Se propone como explicación probable la obtención de beneficios de vivir en grupo, situación ante la cual la formación de tríos podría ser ventajosa a largo plazo para el individuo ayudante.*

BIBLIOGRAPHY

- ARROYO, B. 1996. A possible case of polyandry in Montagu's harrier. *Journal of Raptor Research*, 30: 100-102.
- CRAMP, S. & SIMMONS, K. E. L. 1985. *The Birds of the Western Palearctic, Vol. IV*. Oxford University Press. Oxford.
- DALBECK, L., BERGERHAUSEN, W. & KRISCHER, O. 1998. Telemetriestudie zur Orts- und Partnertreue beim Uhu *Bubo bubo*. *Vogelwelt*, 119: 337-344.
- DEL HOYO, J., ELLIOT, A. & SARGATAL, J. 1999. *Handbook of the birds of the world. Vol. 5*. Lynx Edicions. Barcelona.
- HATCHWELL, B. J. & KOMDEUR, J. 2000. Ecological constraints, life history traits and the evolution of cooperative breeding. *Animal Behaviour*, 59: 1079-1086.
- KIMBALL, R. T., PARKER, P. G. & BEDNARZ, J. C. 2003. The occurrence and evolution of cooperative breeding among the diurnal raptors (Accipitridae and Falconidae). *The Auk*, 120: 717-729.
- MARKS, J. S., CANNINGS, R. J. & MIKKOLA, H. 1999. Family Strigidae. In, J. Del Hoyo, A. Elliot & J. Sargatal (Eds.): *Handbook of the*

- birds of the world. Vol. 5*, pp.76-151. Lynx Edicions. Barcelona.
- MARTÍNEZ, J. E., SÁNCHEZ, M. A., CARMONA, D., SÁNCHEZ, J. A., ORTUÑO, A & MARTÍNEZ, R. 1992. The ecology and conservation of Eagle Owl (*Bubo bubo*) in Murcia, south-east Spain. In, C.A. Galbraith, I.R. Taylor & S. Percival (Eds.): *The Ecology and conservation of European owls*, pp. 84-88. UK Nature Conservation N° 5.
- MARTÍNEZ, J. E. & CALVO, J. F. 2001. Diet and breeding success of Eagle Owl in southeastern Spain: effect of haemorrhagic disease. *Journal of Raptor Research*, 35: 259-262.
- MIKKOLA, H. 1983. *Owls of Europe*. T & AD Poyser. Calton.
- NEWTON, I. 1979. *Population Ecology of Raptors*. T & A.D. Poyser. London.
- TELLA, J. L. 1993. Polyandrous trios in a population of Egyptian vultures. *Journal of Raptor Research*, 27: 119-120.
- ZUBEROGOITIA, I., MARTÍNEZ, J. A., AZKONA, A., IRAETA, A., CASTILLO, I., ALONSO, R. & HIDALGO, S. 2003. Two cases of cooperative breeding in Eurasian Hobbies. *Journal of Raptor Research*, 37: 342-344.

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