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Effect of old nest material on nest site selection and breeding parameters in secondary hole nesters — a review

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Mazgajski T. D. 2007. Effect of old nest material on nest site selection and breeding parameters in secondary hole nesters — a review. Acta Ornithol. 42: 1–14.

Abstract. Hole nesting birds, due to the long lasting nature of cavities, use their nest sites for many years. Therefore, they may face the problem of the presence of nest material from previous breeding seasons. For a long time, the problem of old nest presence was not addressed in studies of this group of birds because nestboxes, a useful tool in studies of hole nesters, were cleaned by investigators, with old nests removed before each breeding season. In this review, the available results of experiments related to the effects of old nests on hole nesting birds are collected, recapitulated and discussed. The possible effects of old nests on nest site choice and breeding parameters, such as phenology, clutch size, fledging condition, as well as on ectoparasite numbers in a new nest, are presented. The findings show that studies on the problem of old nests started to be conducted mainly in the early 1990's, and to date more then thirty papers have been published related to this topic. The most frequent subjects of such studies in Europe were the Pied Flycather *Ficedula hypoleuca*, Blue and Great Tits *Cyanistes caeruleus*, *Parus major*, and European Starling *Sturnus vulgaris*, while in North America — the House Wren *Troglodytes aedon* and Eastern Bluebird *Sialia sialis*. The analysis of existing papers reveals that a majority of studies did not find any significant effect of old nest presence on nest site selection. In most papers, the presence of old nests did not influence birds' breeding parameters. Worse reproductive output in nestboxes containing old nests was found very rarely, and in particular seasons or study areas. Data on ectoparasite occurrence in relation to the presence of old nest material were presented only in a few papers. Fewer fleas were found in new nests built in artificially cleaned sites compared to sites containing old nests. The abundance of mites and blow fly larvae was not related to nestbox treatment. The results of this review suggest that there is no clear pattern of effects of old nest presence on hole nesters' breeding. It seems that the location of the study area, which influences the time available for birds' reproduction, is especially important for migratory species, and the impact of the ectoparasites dominating in a given study area may influence obtained results. This paper also suggests the direction of future work in this topic. Of most importance are studies carried out in natural tree holes, as the decomposition rate of old nest material could be much higher in such cavities than in nestboxes, and studies providing detailed descriptions of the costs and benefits of nest site cleaning behaviour of the birds themselves.

Key words: cavity nesters, hole nesting birds, old nests, nest site cleaning behaviour, reuse, ectoparasites, nestboxes

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Seasonal interchange of the European Robin *Erithacus rubecula* populations in an evergreen holm oak forest

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Domínguez M., Barba E., Cantó J. L., López G. M., Monrós J. S. 2007. Seasonal interchange of the European Robin *Erithacus rubecula* populations in an evergreen holm oak forest. Acta Ornithol. 42: 15–21.

Abstract. European Robins are found at "La Font Roja" Natural Park in SE Spain throughout the year. Analysis of recaptures of individually marked birds during 3 years strongly suggests that individuals breeding in the park abandon it during the winter, while a new wintering population occupies the park between November and March. We found that during 5 weeks in April and 3 weeks in October the two populations overlapped. We also analysed the biometry of the "local" (breeding) and "wintering" populations. The local population had significantly shorter wings, and longer tails and tarsi than the wintering population. In both populations, juveniles had shorter wings and longer tails than adults, but tarsus length did not differ between age classes. Among the local birds, males had longer wings and tails than females, but tarsus length did not differ between sexes (sex could not be determined in the wintering population). Biometric analyses supported the hypothesis of the occurrence of two separate populations in the study area, and also that the migratory tendency (as derived from wing and tail lengths) was higher among the wintering birds.

Key words: European Robin, *Erithacus rubecula*, biometry, flight-related morphology, migratory tendency, population replacement, wintering quarters

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Dispersion asymmetry within a Feral Pigeon *Columba livia* population

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Hetmański T. 2007. Dispersion asymmetry within a Feral Pigeon *Columba livia* population. Acta Ornithol. 42: 23–31.

Abstract. The aim of the study was to determine the pattern of dispersion in Feral Pigeons, as well as the factors influencing the degree of dispersion. Aside from studying variation in dispersion among the bird colonies, the direction and distance of dispersion were also analysed. The results of the study point unequivocally to strong dispersion asymmetry in the population, which is mainly age-biased. There were great differences in dispersion between adult (reproducing) individuals and young individuals that had not yet joined the breeding population. Each year, young individuals which had permanently left their natal colonies accounted for 20–30% of the young birds that ultimately joined the breeding population. The insignificant degree of dispersion among adult birds (from 0 to 0.8% per year) was due to their strong philopatry towards their breeding sites. A lack of reproductive success did not have any effect on dispersion in the case of the breeding pairs studied. A factor conducive to a bird's departure from the natal colony was the high density of breeding pairs present in the colony. It was found that the direction of dispersion was from a colony with a higher density to a colony with a lower density of pigeons. The Feral Pigeons did not emigrate to join colonies of domestic pigeons kept on the outskirts of the city, nor did they emigrate to other towns in the neighbourhood of the study area (Słupsk, NW Poland). The time when young birds left the natal colony did not influence the degree of their dispersion. Young birds that left their natal colony experienced significantly higher breeding success in their new colony, compared to those young birds that remained in the natal colony, where the density of breeding pairs was high. Young females dispersed more often than young males, although this difference was not statistically significant. This article also discusses the dispersion mechanism in the case of young pigeons.

Key words: Feral Pigeon, *Columba livia*, animal movement, dispersal pattern

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Inter-nest variability in the egg to hatchling mass ratio in the Common Pochard *Aythya ferina*: Does female body mass matter?

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Hořák D., Albrecht T., Klvaňa P., Musil P. 2007. Inter-nest variability in the egg to hatchling mass ratio in the Common Pochard *Aythya ferina*: Does female body mass matter? Acta Ornithol. 42: 33–38.

Abstract. Offspring survival and subsequent fitness are assumed to increase with offspring size. Although the relationship between egg size and young size in birds has attracted considerable scientific attention, to our knowledge no study so far has investigated differences among nests with respect to this relationship. The aim of this study was to find out 1) whether some inter-nest variation in the egg mass — young mass relationship exists among nests of Common Pochards, and 2) whether such a variation could be attributed to the body mass of the female measured in the last 5 days of incubation. Egg mass explained a higher portion of the variability in young mass in nests of heavier females. Those females produced smaller young for eggs of a given size. We suggest a trade-off between current and future reproduction as being the evolutionary mechanism underlying the relationship between female body mass and hatchling body mass.

Key words: Common Pochard, *Aythya ferina*, life history, precocial bird, reproduction

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Variation in bird diversity in relation to habitat size in the urban landscape of Seoul, South Korea

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Kim J., Chae J., Koo T.-H. 2007. Variation in bird diversity in relation to habitat size in the urban landscape of Seoul, South Korea. Acta Ornithol. 42: 39–44.

Abstract. This study was carried out to find what factors could affect bird diversity in green areas in an urban landscape. We selected 83 sites of different size and type of urban landscapes in Seoul, South Korea and surveyed bird diversity. Urban green patches were grouped into three subclasses: < 1 ha, 1–10 ha and > 10 ha. The cumulative bird diversity was greater in the subclass 1-10 ha than in < 1 ha or in > 10 ha. We suggest that bird diversity was closely related to habitat size, especially in the category 1–10 ha, and recommend this area be used to establish new bird habitats in urban landscapes. The number of bird species was significantly correlated with the number of insect species in studied patches, but was not correlated with the size of green areas or the distance to roads. Therefore, we suggest that the number of insect species is the most important factor affecting bird diversity within our urban study area.

Key words: bird diversity, urban landscape, urban planning, insects, roads, Korea

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Nest holes of Great Spotted Woodpeckers *Dendrocopos major* and Middle Spotted Woodpeckers *D. medius*: Do they really differ in size?

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Kosiński Z., Ksit P. 2007. Nest holes of Great Spotted Woodpeckers *Dendrocopos major* and Middle Spotted Woodpeckers *D. medius*: Do they really differ in size? Acta Ornithol. 42: 45–52.

Abstract. Great- and Middle Spotted Woodpecker nest-hole dimensions and tree diameters at hole-entrance height were analyzed in order to test the hypothesis that Middle Spotted Woodpeckers, by making use of a thinner substrate and excavating smaller nest-holes, may reduce interspecific competition for nest-sites with Great Spotted Woodpeckers. It was found that only the vertical diameter of Great Spotted Woodpecker nest-hole openings and the entrance-hole area (49.2 mm, 17.8 cm^2 respectively) were significantly larger than the corresponding parameters in Middle Spotted Woodpeckers (44.9 mm, 16.2 cm^2). The average tree diameter at nest-height was 42.7 cm in Great Spotted Woodpeckers and 38.2 cm in Middle Spotted Woodpeckers, and did not differ between the two species. There were no correlations between the tree diameter at nest height and nest height in either species. The small variation in hole-entrance diameters (CV ≤ 10%) and the distance that a predator had to reach to plunder the nest (≥ 19 cm) are most likely to protect woodpeckers' broods against arboreal predators — mainly Pine Martens. It is concluded that the tree diameter at nest-height probably makes little or no difference with respect to avoidance by Middle Spotted Woodpeckers of competition with Great Spotted Woodpeckers. The role of nest-hole size in terms of its influence on reproduction is also discussed.

Key words: Great Spotted Woodpecker, Middle Spotted Woodpecker, *Dendrocopos medius*, *Dendrocopos major*, nest-hole dimension, substrate thickness, cavity kleptoparasitism

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Habitat and annual variation in arthropod abundance affects Blue Tit *Cyanistes caeruleus* reproduction

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Marciniak B., Nadolski J., Nowakowska M., Loga B., Bańbura J. 2007. Habitat and annual variation in arthropod abundance affects Blue Tit *Cyanistes caeruleus* reproduction. Acta Ornithol. 42: 53–62.

Abstract. Arthropod assemblages living in tree canopies in two habitat types — a rich woodland and poor parkland — were studied in 2003–2005 as a background for describing the dynamics of caterpillars; the study system was located in central Poland. Caterpillars, the optimal food of breeding tits, varied in abundance between both habitats and years. The peak abundance of caterpillars was at least 3 times higher in the woodland than in the parkland habitat. There were also pronounced differences in caterpillar production between years, with every consecutive year during 2003–2005 being trophically worse than the previous one. The Blue Tits' timing of breeding coincided roughly with the timing of caterpillar abundance in particular years. Mean clutch size corresponded strictly to the inter-habitat and inter-year pattern of variation in caterpillar availability, suggesting adaptive responses in Blue Tit reproduction to food resources.

Key words: Blue Tit, *Cyanistes caeruleus*, habitat variation, annual variation, arthropods, caterpillars, food, clutch size, timing of breeding

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Survival rates of young Magpies *Pica pica* in a mountain population of eastern Spain

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Ponz Miranda A., Gil-Delgado Alberti J. A., López Iborra G. M. 2007. Survival rates of young Magpies *Pica pica* in a mountain population of area of eastern Spain. Acta Ornithol. 42: 63–68.

Abstract. The aim of this study was to estimate the survival of young Magpies between fledging and the next breeding season and to identify some of the factors affecting it. A total of 50 nestlings were colour-ringed in two breeding seasons in the valley of the Pitarque River (Teruel, E Spain), and were monitored weekly until May of the following year. 59 nestlings were also colour-ringed in two nearby localities (4–5 km) to detect possible dispersal to and from our study area. Mark-recapture analyses were used to estimate weekly survival, which was assumed to be constant for periods of four weeks in order to reduce the number of parameters. Models with the effect of time, age class, season and year were fitted, and the best models were selected using quasi-likelihood Akaike's Information Criterion adjusted for small sample sizes ($QAIC_c$). The best three models included seasonal variation in survival, and the second and third models also selected the effect of age class. The seasonal variation in the survival of young Magpies exhibited two critical moments: firstly, on becoming independent of the parent birds (August–September), and secondly, when individuals abandoned the communal roost and started to establish their own territories (February–March). The weight of 14-day-old nestlings positively affected survival until 4 and 6 months after leaving the nest. No evidence for dispersal was found; this supports the view that survival does indeed decrease in the cited periods, possibly because of the increased risk of predation.

Key words: Magpie, *Pica pica*, survival, population tendency, mountain area, population, Spain

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How urban Kestrels *Falco tinnunculus* divide their hunting grounds: partitioning or cohabitation?

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Riegert J., Fainová D., Mikeš V., Fuchs R. 2007. How urban Kestrels *Falco tinnunculus* divide their hunting grounds: partitioning or cohabitation? Acta Ornithol. 42: 69–76.

Abstract. The hunting ranges of 34 male urban Kestrels were studied in a small city (40 km^2) in S Bohemia (Czech Republic). It was assumed that males from the city center and periphery hunt for voles mainly on the city's outskirts. The "city-center" males are unable to defend their hunting ranges on the periphery because of aggression on the part of the "periphery" Kestrels. To counter this, they may either 1) invade the hunting ranges of periphery males or 2) establish their own exclusive hunting ranges. Our data supported the first suggestion. Hunting range size varied greatly, from 0.8 to 25.0 km^2 (7.2 ± 6.9 km^2), with large overlaps of between 0.3% and 51.4% (12.5 ± 11.6%). The ranges of city-center males were several times larger than those of the periphery males, and greatly overlapped the ranges of other city center and periphery males. Overlapping of the hunting ranges of periphery males was less extensive. The higher energy costs in terms of flying to distant suitable hunting areas and frequent changes of hunting grounds should decrease the preference for nesting in the city center. Therefore, we suggest that Kestrels derive other advantages from living in the city center (e.g., the high quality of nest sites). Cohabitation, whereby city center males invade the hunting grounds of periphery males, appears to be a more effective strategy than partitioning.

Key words: Kestrel, *Falco tinnunculus*, urban, hunting range

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Seasonal diet of the Grey Heron *Ardea cinerea* on an oceanic island (Tenerife, Canary Islands): indirect interaction with wild seed plants

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Rodríguez A., Rodríguez B., Rumeu B., Nogales M. 2007. Seasonal diet of the Grey Heron *Ardea cinerea* on an oceanic island (Tenerife, Canary Islands): indirect interaction with wild seed plants. Acta Ornithol. 42: 77–87.

Abstract. In 199 pellets analyzed a total of 7 460 prey items were counted, 96.2% of which were arthropods. Aeshnidae larvae (Odonata) made up 66.1% of the total prey items and were the main invertebrate group. Vertebrates constituted 3.8%, with reptiles and mammals being the main prey of this type (1.8% each). Despite the small size of the invertebrates, this group reached > 60% in terms of biomass. All the main prey items varied significantly among seasons. Odonata was the most important group in all seasons, reaching its maximum value in summer. In the case of vertebrates, reptiles were captured mainly in spring, mammals in winter. With regard to indirect interaction with seeds, a total of 901 seeds associated with lizard remains were found in 77 pellets, indicating that they had previously been consumed by these reptiles. External visual damage of seeds was low and only 1.1% was destroyed. No seeds germinated after the four-month germination experiment and practically all of them were unviable. In conclusion, these results indicate that Grey Heron diet on islands varies in comparison with continental zones, including an important number of invertebrates and reptiles. Furthermore, this bird acts as an opportunistic secondary seed disperser, although its ecological effect does not seem to be very significant for the dynamics of the Canary Island ecosystems.

Key words: Grey Heron, *Ardea cinerea*, feeding ecology, seasonal diet pattern, secondary seed disperser, islands

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Diversity loss to bird communities after regulation of riverine meanders: Is it compensated by growing oaks on fishpond dams?

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Šálek M., Svobodová J., Zasadil P. 2007. Loss of diversity in bird communities after regulation of riverine meanders: How strong is the compensatory effect of mature growth on fishpond dams? Acta Ornithol. 42: 89–97.

Abstract. Alterations to riverine ecosystems and the establishment of new man-made habitats along rivers have been accompanied by changes in vegetation composition and structure, which affect the birds inhabiting riparian stands. We examined the differences between bird communities inhabiting the relict growth of river meanders and those inhabiting secondary plantations along the Rivers Otava and Blanice (Czech Republic). In addition, we investigated whether the well-developed oak plantations on artificial fishpond dams, which are common in the studied landscape, might compensate for the loss of bird diversity following river regulation. Breeding bird community and habitat attributes were studied on 30 fixed-width line transects and analysed using Multivariate Redundancy Analysis. Relict meanders were the most structurally diversified habitat type, with the highest species diversity and the great richness of forest birds. In contrast, secondary plantations were the simplest stands with the poorest communities inhabited by more farmland species. Fishpond dams, though resembling the meanders more so than secondary stands, were found to be insufficient compensation for river meanders in regard to avian diversity. Supporting diverse plantations of softwood tree species and widening the narrow belts along river banks are highlighted as ways of managing riparian stands that are beneficial to birds.

Key words: biodiversity loss, fishpond stands, habitat deterioration, redundancy analysis, river ecosystems

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Differences in the nestling diets of sympatric Redstarts *Phoenicurus phoenicurus* and Black Redstarts *P. ochruros*: Species-specific preferences or responses to food supply?

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Sedláček O., Fuchs R., Exnerová A. 2007. Differences in the nestling diets of sympatric Redstarts *Phoenicurus phoenicurus* and Black Redstarts *P. ochruros*: species-specific preferences or responses to food supply? Acta Ornithol. 42: 99–106.

Abstract. We have investigated whether differences in nestling diet found between locally sympatric Redstarts and Black Redstarts are caused by species-specific preferences or by a different food supply in their territories. The diet of nestlings in a mosaic-like urban environment was studied using the neck-collar method. We found no significant difference in the length of Redstart and Black Redstart prey items. However, the two species did bring to their nestlings invertebrates of different taxa. We used the variance partitioning method based on multivariate Redundancy Analysis to test the influence of habitat, timing of breeding, and the species of redstart itself on nestling-diet composition. Most of the variance in the nestling diet (all the canonical axes explained 70.6% of the variance) could be attributed to habitat variables (34%) and the timing of breeding (8.9%), but only 8.1% to the species of redstart. We suggest that the diet of the two redstart species is influenced largely by current prey availability and, consequently, that interspecific competition is avoided primarily by territory exclusion rather than by food-niche separation. We consider the variance partitioning method to be a powerful tool for identifying the effects of various explanatory variables that could influence food composition in birds.

Key words: diet selection, interspecific competition, local sympatry, urban environment, seasonal variation, Redundancy Analysis, variance partitioning

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Weather-dependent variation in the cold-season diet of urban Kestrels *Falco tinnunculus*

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Żmihorski M., Rejt Ł. 2007. Weather-dependent variation in the cold-season diet of urban Kestrels *Falco tinnunculus*. Acta Ornithol. 42: 107–113.

Abstract. The composition and variation of the diet of urban Kestrels in Warsaw (Central Poland) were studied during non-breeding periods (October-March) between 1995 and 2003. A total of 1 651 pellets were collected (at 15 sites), in which 2 390 vertebrate prey items were found. The most common prey were small rodents (80% of items, 78% of biomass), predominantly Common Voles. Birds were markedly less common (7% of items, 11% of biomass). The dietary composition was variable during the cold season. Mean ambient temperature and the consecutive day of the cold season did influence the diet composition but snow depth did not. The main prey category in the Kestrels' diet — Microtidae — remained stable and independent of weather conditions. The percentages of mice and birds were negatively affected by mean ambient temperature, and consumption of birds was higher at the beginning (October) than at the end of the winter (March). Prey number and biomass of prey per pellet decreased during the cold season but were not influenced by temperature. The index of food niche breadth was inversely proportional to temperature.

Key words: Kestrel, *Falco tinnunculus*, ambient temperature, diet variability, urban habitat

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SHORT NOTES

First breeding age in captive and wild Bearded Vultures *Gypaetus barbatus*

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Antor R. J., Margalida A., Frey H., Heredia R., Lorente L., Sesé J. A. 2007. First breeding age in captive and wild Bearded Vultures *Gypaetus barbatus*. Acta Ornithol. 42: 114–118.

Abstract. We present data on the age of first breeding in captive and wild Bearded Vultures. The mean age of first breeding (egg-laying) in the captive population was 7.7 years for females and 8.9 for males. The first offspring was raised on average by 8.3-year-old females and 9.7-year-old males. In wild Bearded Vultures, first-time-paired and territorial individuals were recorded when they were 6.5 years old, on average. The mean age of first breeding was 8.1 years, whereas the mean age of first successful breeding was 11.4. Paired females were recorded at the age of 6.5 years and breeding at 6, whereas the youngest recorded paired males were 6.4 years old and breeding at 7. 39.5% of the marked birds alive over 6 years were recorded as not yet territorial, suggesting the existence of a substantial fraction of adult floaters without breeding territories. Pyrenean Bearded Vultures are characterized by delayed reproduction, with the first breeding attempt taking place well after the acquisition of full adult plumage. We discuss whether deferred breeding in this increasing population could be explained by the increase in density and/or mortality rate in the younger age groups, which could affect the age of maturity.

Key words: Bearded Vulture, *Gypaetus barbatus*, age of first breeding, delayed maturity

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