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Sex at second sight. Pitfalls of sexing Water Rails *Rallus aquaticus* and Spotted Crakes *Porzana porzana* using morphology and molecular techniques

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Eilers A., Schmitz Ornés A., Haase M. 2012. Sex at second sight. Pitfalls of sexing Water Rails *Rallus aquaticus* and Spotted Crakes *Porzana porzana* using morphology and molecular techniques. Acta Ornithol. 47: 1–9. DOI 10.3161/000164512X653863

Abstract. Based on plumage traits it is impossible to reliably identify the sex of Water Rail *Rallus aquaticus* and Spotted Crake *Porzana porzana*. In order to analyze their sexual size dimorphism we collected morphometric data and, for genetic control, feather pins as DNA source of 71 adult Water Rails and 31 Spotted Crakes during the breeding season 2008–2009. We determined the sex of each individual using PCR based molecular techniques taking into account the length polymorphism of the sex linked CHD1Z allele encountered in Water Rails. The polymorphism of this sex marker may have caused erroneous conclusions in previous studies using different approaches. In the present case, unawareness of the polymorphism would have lead to the misclassification of 50.8% of the individuals, which would result in problems with morphological comparison of the sexes. In general, males of both species were significantly larger than females. However, single measurements partly showed a high overlap of the sexes. Conducting a stepwise discriminant function analysis revealed bill, maximum wing chord and tarsus length as best discriminants for Water Rail. The resultant discriminant function, which allows assigning an individual to one of the sexes with a specific accuracy by its body measurements, correctly classified 98.6%. In Spotted Crakes the analysis included tarsus and wing length into the model and assigned the sex with an accuracy of 100%. The discriminant functions thus represent a simple and cost efficient way to determine the sex of these rallids for field ornithologists.

Key words: Rallidae, molecular sexing, sexual dimorphism, heterozygosity, morphology, discriminant function analysis

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Hunger is not the only determinant of nestling begging behavior and parental feeding in the Black-billed Magpie *Pica pica*

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Lee S.-I. Choi J., Choe J. C. 2012. Hunger is not the only determinant of nestling begging behavior and parental feeding in the Black-billed Magpie *Pica pica*. Acta Ornithol. 47: 10–18. DOI 10.3161/000164512X653872

Abstract. Nestlings can employ a combination of tactics to obtain provisioning from the parents. In this observational study, we examined whether nestling begging behavior reflects hunger level and how parents respond to nestling begging in the Black-billed Magpie *Pica pica* by putting small video-cameras in six Magpie nests. Our results revealed a strong effect of nestling begging behavior on parental feeding. Begging earlier than others and stretching the neck towards the parent was important in inducing parental provisioning regardless of age of the nestlings. Being closer to the nest entrance slightly increased the chance of being fed, but did not influence parental feeding priority. The number of nestling begging events increased with the time interval since the last feeding, which indicates that begging frequency reflects the hunger level of the brood. However, in contrast to what can be predicted when begging behavior reflects hunger levels of nestlings, nestlings increased their begging level when parents provided more feedings in the previous visits and vocalized begging negatively affected the probability and the order of being fed by the parent. In addition, sensitivity in begging behavior and parental feeding decisions depended on nestlings' age, which suggests a possibility that parental feeding decisions change with growth stages of nestlings. Our results imply that begging behavior and food allocation in Magpies does not solely determined by the hunger level of nestlings.

Key words: nestling begging, parental feeding, signal of hunger, Black-billed Magpie

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Breeding biology of Rock Sparrows *Petronia petronia* in the Tibetan plateau, with special reference to life history variation across altitudes

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Li S., Lu X. 2012. Breeding biology of Rock Sparrows *Petronia petronia* in the Tibetan plateau, with special reference to life history variation across altitudes. Acta Ornithol. 47: 19–25. DOI 10.3161/000164512X653881

Abstract. The Rock Sparrow *Petronia petronia* has been well studied with respect to reproductive biology at low-altitude in Europe, but not at high altitudes. This study presents the information on a Rock Sparrow population breeding in an alpine meadow at 3400 m altitude and compares the life history traits with their lower-altitude counterparts studied in Europe. The birds are resident all year round in this area. Nests of Rock Sparrows tended to cluster and were mainly located in abandoned burrows of the Ground Tit *Parus humilis*. Pairs were monogamous and territorial behaviors were absent, which differed from European populations, where Rock Sparrows show a series of mating systems and display strong territoriality around the nest site. Egg-laying took place between late May and late June, with every pair making a single nesting attempt. Clutch size averaged 5.1 ± 0.9, incubation undertaken by female only lasted 12.7 ± 0.8 days, and young in the nest were fed by both parents for 19.9 ± 0.7 days. Breeding success, measured as the proportion of nests with at least one fledgling, was 89%. Compared to their lower-altitude populations studied in Europe, the high-altitude Rock Sparrows start breeding later, experience a shorter breeding season, produce fewer but bigger eggs, and have a longer nestling period. Such a life history strategy that allows birds to allocate more energy into individual offspring should be adaptive to the harsh high-altitude conditions.

Key words: altitudinal gradient, life history, *Petronia petronia*, reproduction, Tibetan plateau

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Foraging patterns reveal niche separation in tropical insectivorous birds

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Mansor M. S., Mohd Sah S. A. 2012. Foraging patterns reveal niche separation in tropical insectivorous birds. Acta Ornithol. 47: 27–36. DOI 10.3161/000164512X653890

Abstract. The study examines the uses of attack maneuvers and foraging substrates by ten insectivorous passerine birds to explain how these trophically similar species can coexist in the same habitat, a central question in ecology. Information on the foraging height, attack maneuvers, substrate and foliage density was collected independently for each foraging bird. Sallying was the most frequently used attack maneuver, and leaves were the most frequently used substrate. Statistical analyses showed that the variation in the foraging data was significantly influenced by foraging height, followed by attack maneuver, substrate, and lastly foliage density. The foraging height, the parameters of the attack maneuvers and substrate effectively divided the birds into three foraging guilds: (1) 'High-sally insectivores' — birds that foraged in higher strata using sallying tactics, namely Arctic Warbler *Phylloscopus borealis*, Black-naped Monarch *Hypothymis azurea*, Asian Paradise-flycatcher *Terpsiphone paradisi* and Asian Brown Flycatcher *Muscicapa dauurica*; (2) 'High-foliage insectivores' — birds that foraged in higher strata using glean-stretch-hang tactics, namely White-bellied Erpornis *Erpornis zantholeuca*, Green Iora *Aegithina viridissima*, and Pin-striped Tit-babbler *Macronous gularis*; and (3) 'Understory insectivores' — birds that foraged in lower strata, namely Abbott's Babbler *Malacocincla abbotti*, Chestnut-winged Babbler *Stachyris erythroptera*, and Rufescent Prinia *Prinia rufescens*. Except for Asian Paradise-flycatcher and Asian Brown Flycatcher, no other two species used similar foraging heights, substrates and attack maneuvers at the same time. However, the use of foliage density differed significantly between these two species. Therefore this parameter should also be taken into consideration in analysis of foraging niche in tropical birds.

Key words: behaviour, feeding ecology, insectivores, limestone habitats, tropical forest

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Local and landscape-level factors affecting the density and distribution of the Feral Pigeon *Columba livia* var. *domestica* in an urban environment

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Przybylska K., Haidt A., Myczko Ł., Ekner-Grzyb A., Rosin Z. M., Kwieciński Z., Tryjanowski P., Suchodolska J., Takacs V., Jankowiak Ł., Tobółka M., Wasielewski O., Graclik A., Krawczyk A. J., Kasprzak A., Szwajkowski P., Wylegała P., Malecha A. W., Mizera T., Skórka P. 2012. Local and landscape-level factors affecting the density and distribution of the Feral Pigeon *Columba livia* var. *domestica* in an urban environment. Acta Ornithol. 47: 37–45. DOI 10.3161/000164512X653908

Abstract. Urbanization is the most dynamic phenomenon worldwide and many species colonize urban environment. Some of these species became so abundant in towns and cities that they are regarded pests, are human health hazard, causes damage to buildings and affect other urban species. Therefore, it is important to understand how such successful colonizers utilize urban environment and which factors affects their population densities. One of such species is the most common urban pest bird in the world, the Feral Pigeon *Columba livia* var. *domestica*. The aim of this study was to investigate how local food resources and the composition of the urban landscape affects densities of Feral Pigeon in the city of Poznań (Western Poland). Three counts were made in summer 2010 in 60 0.5 km x 0.5 km plots (25 ha) distributed randomly across residential areas in the city. The density of pigeons showed significant spatial autocorrelation, both positive and negative one. The density of pigeons was highest in plots with more tall buildings (over four floors), a large number of human-related food resources, schools, and a high proportion of green space. The density of pigeons was lower in plots with a higher density of streets and located further from the city centre. The solution to the pigeon problem appears to be to plan residential areas with low-rise buildings. To control the number of pigeons in urban areas, we suggest preventing access to local food resources by using litter-bins that are inaccessible to animals. The public should also be educated to behave appropriately towards pigeons and refrain from feeding them intentionally.

Key words: urban ecosystems, pest, landscape ecology, residential areas, spatial autocorrelation

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Major roads have a negative impact on the Tawny Owl *Strix aluco* and the Little Owl *Athene noctua* populations

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Silva C. C., Lourenço R., Godinho S., Gomes E., Sabino-Marques H., Medinas D., Neves V., Silva C., Rabaça J. E., Mira A. 2012. Major roads have a negative impact on the Tawny Owl *Strix aluco* and the Little Owl *Athene noctua* populations. Acta Ornithol. 47: 47–54. DOI 10.3161/000164512X653917

Abstract. The increasing road networks threaten ecosystems by direct effects such as increased mortality due to collision with vehicles and by various indirect effects leading to road avoidance. We censused Tawny Owls *Strix aluco* and Little Owls *Athene noctua* in 2005, 2007 and 2009 in a rural landscape in Southern Portugal in order to study the effects of roads and habitat characteristics on Tawny Owl density and Little Owl presence. The presence of both owl species in the 70 census locations was coherent among years. Our results showed that Tawny Owl density near major roads was lower, with the negative effects extending possibly up to 2 km. The probability of Little Owl presence was also negatively affected by the proximity to major roads. The negative effects of roads were significant even considering habitat preferences and spatial autocorrelation, which had the most marked effect on the density or presence of both owls. The reduced occupancy by Tawny Owls and Little Owls of habitats near major roads may be caused by several factors, including increased mortality, disturbance caused by high traffic density, and increased fragmentation. Traffic noise in particular may affect intra-specific communication and hunting efficiency. Consequently, habitat near roads may represent lower-quality territories for owls.

Key words: *Athene noctua*, *Strix aluco*, Mediterranean landscape, road mortality, traffic noise

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Ground nest depredation by European Black-billed Magpies *Pica pica*: an experimental study with artificial nests

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Suvorov P., Svobodová J., Koubová M., Dohnalová L. 2012. Ground nest depredation by European Black-billed Magpies *Pica pica*: an experimental study with artificial nests. Acta Ornithol. 47: 55–61. DOI 10.3161/000164512X653926

Abstract. Nest characteristics can significantly affect specific behaviour of predators during nest depredation, such as relating to nest searching, manipulating and eating eggs. However, the effect of egg size and coloration on behaviour of avian predators rarely has been quantified. Since the European Black-billed Magpie *Pica pica* is regarded as an important nest predator in suburban areas, we studied the effect of different types of artificial ground nests — baited with chicken and quail eggs — on predation probability by magpie. In addition, to compare temporal changes in magpie predation, experimental clutches were installed at 39 active magpie nests in two breeding stages: incubation stage and stage of nestling feeding. In our experiment, magpies detected almost all artificial nests at both breeding stages. However in contrast to our prediction, nests were preferentially depredated at the first stage. This probably was due to the change of magpie foraging preference to invertebrates as a main food of nestlings. Furthermore, we found that predation rate did not differ between real and wax eggs, suggesting that magpies are not able to discriminate between them. Whereas quail eggs were carried away, chicken eggs were consumed in the nest where remnants of egg shell and egg content were left. Obviously, the possibility to immediately carry the egg away increases food attractiveness for magpies. Therefore, we conclude that chicken eggs are more suitable for identification of middle-sized avian predators than quail eggs.

Key words: artificial nest, bird predator, predator-generalist, suburban area

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Reproduction and population dynamics of Hawfinches *Coccothraustes coccothraustes* in the primeval forest of Białowieża National Park (NE Poland)

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Tomiałojć L. 2012. Reproduction and population dynamics of Hawfinches *Coccothraustes coccothraustes* in the primeval forest of Białowieża National Park (NE Poland). Acta Ornithol. 47: 63–78. DOI 10.3161/000164512X653935

Abstract. The breeding performance of Hawfinches was studied during seven years (1991–98, except 1995) under conditions of an extensive close-to-pristine oak-lime-hornbeam forest in the Białowieża National Park, eastern Poland. Two 30–31.5 ha plots were regularly checked each year to find most nests present, usually observed since the period of their construction. Mean clutch size (5.27 ± 0.66, for best year — 5.5) finally produced small family size, owing to a partial loss, fledging and post-fledging mortality. Average breeding losses calculated traditional way were 72.8% (n = 202), mostly due to egg robbing, then predation on nestlings (three times less frequent), and, sporadically, adverse weather conditions at the moment of fledging. Nesting success (5.9–35.7%, 27.2% on average), strongly varying between years, is lower than in most Hawfinch populations from other (anthropogenic) habitats, being one of the lowest among temperate Passerines. In spite of low production of young the species remains numerous across deciduous stands of the Białowieża Forest, with its numbers even increasing since the 1980s. This large and dense population living in an apparently optimal habitat may, sporadically, be supported by influxes from other (anthropogenic?) sites.

Key words: Hawfinch, reproduction, nest mortality, population changes, pristine forest, Białowieża National Park

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Winter night inspections of nest boxes affect their occupancy and reuse for roosting by cavity nesting birds

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Tyller Z., Martin Paclík M., Remeš V. 2012. Winter night inspections of nest boxes affect their occupancy and reuse for roosting by cavity nesting birds. Acta Ornithol. 47: 79–85. DOI 10.3161/000164512X653944

Abstract. Overwintering strategies are important for the survival of resident birds in temperate climates and among the most important are adjustments in roosting behaviour. In cavity roosting birds, previous studies have frequently used contact checks of man-made nest boxes to quantify roost-site occupancy. However, there is a concern that occupancy rate estimated by this method may be biased due to procedural disturbance. In this study, we quantified this potential bias by examining the winter time occupancy of 182 nest boxes in a floodplain forest in the Czech Republic. Nest boxes were checked three times a month from November to February 2007–2010 by three methods with decreasing level of potential disturbance. We obtained 1319 records of roosting birds of three species, with 94% being Great Tits, *Parus major*. We found a considerable decline in nest box occupancy throughout the winter when using the contact method (capture and handling of the bird), whilst occupancy rates remained constant when using the two non-contact methods (visual inspection of the opened nest box; the inspection by Infra red light mini camera passed through the entrance). The contact method was also associated with lower reuse rate of individual nest boxes. In conclusion, the commonly used direct night checks of nest boxes caused a disturbance to roosting birds and thus can lead to biased conclusions when studying winter time roosting behaviour in birds. More generally, this study demonstrates that using nest boxes may introduce bias in studies conducted during the non-breeding season, similarly as has been demonstrated for studies conducted in the breeding season.

Key words: nest box, handling, mini-camera, Great Tit, *Parus major*, roosting, methods, hole nesting birds

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The weekend bias in recording rare birds: mechanisms and consequencess

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Żmihorski M., Sparks T. H., Tryjanowski P. 2012. The weekend bias in recording rare birds: mechanisms and consequences. Acta Ornithol. 47: 87–94. DOI 10.3161/000164512X653953

Abstract. The creation of species lists is a quick and relatively cheap method to evaluate the biodiversity value of some sites and as such they are used in various conservation actions. Species lists typically focus on recording rare and endangered species, usually by volunteers who watch birds during their free time, which may lead to an uneven distribution of observations during the week. We examine whether and to what extent a weekend bias exists in the recording by volunteers of rare bird species. We used a database summarizing 1679 records throughout Poland of 154 rare bird species represented by 2433 individual birds. The proportion of individual birds recorded during weekends was significantly higher than expected by chance. The proportion of records of rare birds that were made during weekends varied from 32.4% in July to 54.9% in November and the weekend bias was lowest during the summer holidays (i.e. July and August). Species varied in their weekend bias, however species size and conspicuousness scores did not explain species-specific weekend bias. Species richness as a function of sampled individuals did not differ between weekends and weekdays. We suggest that potential biases caused by increased weekend recording need to be considered when comparing abundances based on lists from different sites or seasons, e.g. in studies on the effect of weather on birds. Our results suggest that the weekend effect is not qualitative but only reflects changes in sampling effort across the week and therefore records from weekends and weekdays are comparable in term of species composition.

Key words: biodiversity inventories, detectability, holidays, migration, rarities, social effect, vagrants, volunteers

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Piracy at the nest: factors driving kleptoparasitic behaviour of Common Tern *Sterna hirundo* chicks

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Oswald S., Arnold J., Hatch J., Nisbet I. 2012. Piracy at the nest: factors driving kleptoparasitic behaviour of Common Tern *Sterna hirundo* chicks. Acta Ornithol. 47: 95–100. DOI 10.3161/000164512X653971

Abstract. Stealing of provisioned food items by adult conspecifics (intraspecific kleptoparasitism or piracy) is common among birds, can reduce breeding success and may be one disadvantage of colonial breeding. Theft by chicks from neighbouring broods has rarely been quantified but may have similar reproductive consequences and the factors that influence it require further study. We took advantage of unusually diverse weather during the critical early stages of growth to elucidate the factors driving kleptoparasitic behavior of Common Tern *Sterna hirundo* chicks. Kleptoparasitism was restricted to misty days when large chicks were fed much smaller fish than on other days, inducing them to steal from neighbouring broods with young chicks. Our study indicates that kleptoparasitism by chicks could be a way to overcome shortfalls in parental provisioning, and may be a net cost of colonial breeding. Our results both provide evidence of a potential mechanism behind food-stealing by chicks and suggest hypotheses for future testing.

Key words: intraspecific kleptoparasitism, chick kleptoparasitism, Common Tern, seabird ecology, food provisioning, weather

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