Short Communcation

Copying nesting attempts in the European Bee-eater (*Merops apiaster*). II. Long-term effects on the group

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Abstract - Following copying nesting attempts in a new site (Londei, 2020), the place was kept under observation for the next five years to assess the effects of that episode on the birds, both the few that had succeeded and the many that had failed in breeding there. While successful breeding positively affected site fidelity in the subjects notwithstanding a decrease in the number of their fledglings, breeding failure diverted the interest of most birds from the site from the next year on. Therefore, it seems that initial group fidelity, likely the cause of the copying nesting attempts, was reduced to a small number of followers of the breeders and remain dependent on the persistence of successful breeding.

Key words: colonial birds, copying behaviour, group fidelity, nesting site, site fidelity.

Riassunto - Tentativi di nidificazione copiata nel gruccione (*Merops apiaster*). II. Effetti a lungo termine sul gruppo.

A seguito di tentativi di nidificazione copiata in un nuovo sito (Londei, 2020), il luogo è stato tenuto sotto osservazione per i successivi cinque anni per valutare gli effetti di quell'episodio sugli uccelli, sia i pochi che erano riusciti sia i molti che avevano fallito a riprodursi là. Mentre il successo riproduttivo ha avuto effetto positivo sulla fedeltà dei soggetti al sito nonostante una diminuzione del numero degli involi, il fallimento riproduttivo ha distolto l'interesse della maggior parte degli uccelli dal sito già dall'anno successivo. Pertanto, un'iniziale fedeltà al gruppo, probabile causa dei tentativi di nidificazione copiata, è sembrata ridursi a pochi seguaci dei riproduttori e dipendere dalla persistenza di successo riproduttivo.

Parole chiave: comportamento imitativo, fedeltà al gruppo, fedeltà al sito, sito di nidificazione, uccelli coloniali.

I reported in this journal on a group of European Bee-eaters (*Merops apiaster*) that in 2020 tried to nest in a new site in a copying way, mostly failing because of the unmovable pebbles they encountered during the excavation of the tunnels (Londei, 2020). For five years after that episode, I have been keeping the site (Site A in Londei, 2020) (44°45'N, 9°23'E) under observation to assess the effects of that event on the birds. Fig. 1 shows the positions of the active nests from 2020 to 2023, this being the last year when the birds nested there. In the present image of the area, obtained exactly five years after the photograph in my previous publication (Fig. 1 Site A: a), a retreat of the riverbank is barely noticeable, but vegetation-covered deposits at its base reveal erosion. At the end of July 2023, the riverbank had an intermediate appearance. While the tunnels of the two active nests of that year were 100 and 120 cm deep, the tunnels of the previous years had partly collapsed at the entrance. Obvious position changes of the active nest from 2020 to 2023 (Fig. 1) suggest that it was difficult for the birds, in all probability the same two pairs, to find a suitable terrain to excavate. Tab. 1 provides a synopsis of the observations from 2020 to 2025. As observations in the relevant months were not regular enough to see within-year trends of the bird presence, I only provide the maximum number of birds seen at the same time in the given month. This means the minimum number of birds that visited the area in that month. No comparison is given here with the artificial sand heap (Site B in Londei, 2020) where in 2020 the failing nesters made their second choice, seven pairs succeeding there, because the heap was removed by the following spring. The active nests in the nearest colony (Fig. 2), 10.5 km downstream (Londei, 2020), were recorded to get an idea of the population trend in a wider area. No relevant changes appeared in that colony. The number of active nests in the site in question remained two until 2023, but the number of fledglings decreased from four to one. The two pairs produced two nestlings each in 2020 and one each in 2021. Several birds occurred near the site during the spring migration (May) in all the years when the two pairs nested there. However, just after the year of the massive failure of nesting attempts (2020), the bird presence in the nesting months (June and July) shrank to the nesting pairs and their fledglings. The abrupt decrease in freshly excavated nesting holes (Tab. 1) and the following observations were further clues that most of the birds lost interest in the nesting site, as well as the adjacent foraging area. From my country house, situated near the river between the site and the nearest colony, I kept the passing birds under observation in the

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late afternoon. Their flights were always towards that colony, which, in the absence of the artificial sand heap in between, I assumed to be the most likely destination. From 2021 to 2023, I saw up to 15 birds in May, six in June, five in July, and 19 in August. In 2024 and 2025, instead, I saw only a group of four in May in both years and no birds in June, July, or August. It seems, therefore, that only the two pairs that had been nesting up to 2023 visited the area later, and at the beginning of the breeding season only.

I proposed in my previous paper that birds had insisted on difficult excavations because they were copying the activity of conspecifics that served as models. For further research, I then suggested that finding social attraction and public information in a place where no breeding attempt was previously made would allow disentangling social philopatry (the fidelity to a group) from spatial philopatry (the fidelity to a breeding site). The European Bee-eater is seen as having both behavioural traits (Bastian & Bastian, 2024). Brust *et al*. (2015) proposed that birds may use a site as long as good positions regarding physical properties are available and subsequently switch to new sites in the surrounding area. In the present case, it seems that the two pairs that enjoyed successful nesting at the new site kept visiting it for at least two years, even though they did not breed there. Conversely, an initial failure in excavating the nest seemed sufficient to discourage (at least) the seven pairs that in the same year made their second nesting choice in the artificial sand heap (Londei, 2020) from making further visits to the former site. Offspring of the two pairs were probably the only exception. Lessels & Krebs (1989) found that the fledged chicks of adult birds were about twice as likely as those of juvenile birds to return to their natal colony in a subsequent year, suggesting that more competent breeding pairs would have more followers. No comparison with breeding juveniles was available in the present study. However, the decrease in birds visiting the site in May, just in the first year of breeding absence there, suggests such a dependence on successful breeders. In keeping with previous studies on site fidelity, the present observations add that a successful breeding experience at a new site may positively affect spatial philopatry in the subjects even if the number of their fledglings decreases in time, whereas a breeding failure may negatively affect the subjects from that moment on. A novel suggestion is provided about group fidelity, which cannot at a new site be confused with site fidelity. As far as information about nesting places is concerned, copying nesting attempts at the new site would necessarily be due to group fidelity. However, nesting failure of most birds would restrict group fidelity to a small number of followers of the successful breeders, maybe their offspring only, and leave it dependent on the persistence of successful breeding. I previously proposed that familiar conspecifics might trust each other even, or even more, when facing completely unknown situations. Now, the extended effect of a negative experience suggests that familiar conspecifics would trust each other mainly, if not solely, when in unknown situations.



Fig. 1 - The site under observation on 14 July 2025, with the positions of the active nests in 2020 (0), 2021 (1), 2022 (2), and 2023 (3) / Il sito sotto osservazione il 14 luglio 2025, con la posizione dei nidi attivi nel 2020 (0), 2021 (1), 2022 (2) e 2023 (3).



Fig. 2 - The nearest colony on 4 July 2025 / La colonia più vicina il 4 luglio 2025.

Tab. 1 - Synopsis of the observations / Sinossi delle osservazioni.

Year	2020	2021	2022	2023	2024	2025
Bird maximum nearby in May	12	N/A	15	10	4	7
Bird maximum nearby in June	12	4	6	4	0	0
Bird maximum nearby in July	30	6	5	5	0	0
Nest holes of the year	37	2	3	4	0	0
Active nests	2	2	2	2	0	0
Fledglings	4	2	1	1	0	0
Active nests in the nearest colony	N/A	12	11	15	12	11

REFERENCES

Bastian H.-V. & Bastian A., 2024 – European Bee-eater (*Merops apiaster*), version 3.0. In: Birds of the World. Billerman S. M. & Keeney B. K. (eds). *Cornell Lab of Ornithology*, Ithaca, NY, USA.

Brust V., Bastian H.-V., Bastian A. & Schmoll T., 2015 – Determinants of between-year burrow re-occupation in a colony of the European bee-eater *Merops apiaster*. *Ecology and Evolution*, 5 (15): 3223-3230.

Lessells C.M. & Krebs J.R., 1989 – Age and Breeding Performance of European Bee-eaters. *Auk*, 106: 375-382.

Londei T., 2020 – Copying nesting attempts in a new site may be the wrong choice. A case in the European Bee-eater (*Merops apiaster*). *Rivista Italiana di Ornitologia - Research in Ornithology*, 90 (2): 91-94.