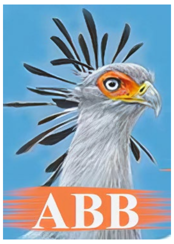

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Village Weaver nesting associations with Black Kites and African Woolly-necked Storks

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Abstract

Village Weavers *Ploceus cucullatus* are known to establish nesting colonies around the nests of larger species, presumably for protection from predators or avian brood parasites. While monitoring Black Kite *Milvus migrans parasitus* and African Woolly-necked Stork *Ciconia microscelis* nests in KwaZulu-Natal, South Africa, we found 52.2% (2017–2018) and 54.9% (2018–2019) of kite nest sites, and 29.7% (2022–2023) and 15.4% (2023–2024) of stork nest sites had weaver colonies placed around them. The high prevalence of breeding association of Village Weavers with kites and the high nesting synchronisation with them may reflect a greater protective benefit than that from associations with African Woolly-necked Storks.

Keywords: breeding, *Ciconia microscelis*, *Milvus migrans parasitus*, *Ploceus cucullatus*, predation.

Village Weavers *Ploceus cucullatus* are frequently associated with human habitation, cultivated areas, rural villages, and urban gardens (Oschadleus 2005). Occasionally, weavers of multiple species establish nesting colonies in the branches of a tree containing the nest of a larger species, including raptors (Gardner et al. 2011, Oschadleus 2016), and colonial waterbirds (Lahti et al. 2002). This behaviour presumably confers protection from nest predators or avian brood parasites because of the aggressive defence of a nest by the larger species or because their general presence lowers the risk of nest predation and parasitism (Brown and Lawes 2007, Tarboton 2014). The prevalence of such nesting associations between weavers and other species have not been assessed to date.

Between July and March in 2017–2018 and 2018–2019, we counted the number of nearly completed Village Weaver nests at 44 (2017–2018) and 51 (2018–2019) nest sites of Black Kite *Milvus migrans* (of the yellow-billed African subspecies *M. m. parasitus*; hereafter: 'kite') near Albert Falls, KwaZulu-Natal, South Africa. We visited every kite nest twice per week and recorded the number of weaver nests on each visit. On each visit, we noted the breeding stage of kites and the nest-building activity of weavers to assess if there was a temporal association in nesting between the two species. Additionally, between August and March in 2022–2023 and 2023–2024, we recorded the presence of weaver nests at 37 (2022–2023) and 52 (2023–2024) nest sites of African Woolly-necked Stork *Ciconia microscelis* (hereafter: woolly-neck) between Howick and Durban, KwaZulu-Natal, South Africa. However, we did not count weaver nests or note their nesting activities beyond active nesting at woolly-neck nests.

Village Weavers established nesting colonies at 23 kite nest sites in 2017–2018 (52.2%) and 28 kite nest sites in 2018–2019 (54.9%; Figure 1). Nine tree species were most prominently used for both a kite nest and an associated Village Weaver colony. These tree species were *Eucalyptus camaldulensis* (47.0%), *Vachellia sieberiana* (19.6%), and *V. robusta* (13.7%). Other less commonly

Figure 1. Village Weavers nesting around Black Kite (top) and African Woolly-necked Stork (below) nests.).

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used tree species (not indigenous; cumulative 19.7%) included *Eucalyptus cinerea*, *Gleditsia triacanthos*, *Grevillia robusta*, *Acacia melanoxylon*, *Pinus* spp., and *Libidibia ferrea*. The size of weaver colonies ranged from 5 to 261 nests. Male weavers began building nests before the arrival of migratory kites at five nest sites in 2017 (Table 1) and four nest sites in 2018 (i.e., at sites used the previous season). At three kite nest sites where weavers initiated nest-building before kites arrived, the kites did not return to the site, and the weavers subsequently abandoned the site and moved to the new active kite nest site. Most (78.6%) weaver colonies attained their maximum number of nests by the time kites were incubating or raising chicks (Table 2). In several cases, weavers stripped leaves so extensively around the kite nest that the kites relocated to another tree with greater shade the following season. Village Weavers nested at only 11 woolly-neck nests in 2022–2023 (29.7%) and eight woolly-neck nests in 2023–2024 (15.4%; Figure 1).

Like many raptors, kites exhibit defensive behaviour when incubating eggs or raising chicks, and may even

Table 1. Examples of nests in which Village Weaver nesting was relatively synchronised with Black Kite nesting in 2017–2018.

Nest	Date of first weaver nests (*n* nests)	Date of first kite present at nest	Date of maximum weaver nests (*n* nests)	Breeding stage of kite at maximum weaver nest count
1	21 August (6)	21 August	20 October (42)	Chicks
2	18 August (27)	18 August	18 September (24)	Incubation
3	11 August (2)	11 August	2 October (28)	Incubation
4	14 August (10)	14 August	25 September (17)	Incubation
5	18 August (3)	18 August	24 November (17)	Chicks
6	30 July (2)	17 August	22 October (35)	Chicks
7	6 August (2)	24 August	22 October (71)	Chicks
8	10 August (4)	17 August	8 October (24)	Incubation
9	30 July (3)	17 August	26 November (7)	Fledgling

Table 2. An example of the relationship between the phenology of Black Kite breeding and Village Weaver nesting activity in 2018–2019.

Breeding stage of kite	Dates	*n* active Village Weaver nests
Not present	30 July–10 August	
Present at nest site	13 August	0
Nest building	17–31 August	0–6
Incubation	3 September–1 October	5–36
Chick rearing	8 October–12 November	24–83
Chick free-flying	19 November–14 January	24–53
Chick independent	21 January–11 February	No active nests

attack intruders (rarely humans), particularly conspecifics (Dean 2005). In many hours of watching woolly-neck nests, we failed to observe agonistic interactions with other species, even when Egyptian Geese *Alopochen aegyptiaca* threatened to usurp nests. These behavioural differences may help explain the higher prevalence of Village Weaver nesting associations with kites compared with woolly-necks. With the threat of weaver nest predators such as Vervet Monkeys *Chlorocebus pygerythrus*, African Harrier-hawks *Polyboroides typus*, and arboreal snakes, weavers likely gain a greater protective advantage when nesting around aggressive raptors like kites (Serle 1954, Gardner et al. 2011).

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