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PHOtos of Weaver Nests (PHOWN)

CAPE WEAVER NESTING ASSOCIATION AND INTERACTIONS WITH WATERBIRDS

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Abstract

A weaver-waterbird nesting association of three species, namely Cape Weavers, Reed Cormorants and a Hadeda Ibis pair, is described from Cape Town. The polygynous Cape Weavers were actively breeding from June to November 2015, with the Hadedas breeding from July to September, and the Reed Cormorants from late August to October. Several predators were seen in the area, but none elicited a response from the weavers or waterbirds, except a pair of calling Forest Buzzards which silenced the majority of the weaver colony. The weavers started building in the colony first, but when the cormorants arrived, the weavers seemed to build new nests around the cormorant nests.

Introduction

Predation has played a fundamental role in shaping the behaviour and reproductive strategies of birds on both an evolutionary and ecological timescale (Lima 2009, Quinn & Ueta 2008). Protective nesting associations, i.e. a scenario where one or more species directly benefit from the influence of a secondary associate species through the exclusion of shared predators at a nesting site (Quinn & Ueta 2008), is an incredible example of how unlikely relationships result in the mutual benefit of both parties. While protective nest association has been documented across a wide selection of avian orders, it is little studied in the family Ploceidae.

The Cape Weaver *Ploceus capensis* occasionally nests in mixed-weaver species colonies (Skead 1965). This species will occasionally nest near the nests of raptors (Joubert 1932) as well as with waterbirds, such as Hadeda Ibises (Conner 1997) or in heronries (Sadler 1986; Whittington 2002 with regards to Reed Cormorants).

Fig. 1. Cape Weaver colony with waterbird nests at Die OogAdult Reed Cormorants are incubating on the far right (photo: B. Krochuk).

An active Cape Weaver colony in Cape Town at the Die Oog Nature Reserve is known to nest alongside Reed Cormorants *Microcarbo africanus* and a Hadeda Ibis *Bostrychia hagedash* pair (Fig. 1-2). In this study we aimed to determine the overlap in breeding activity between these three species and investigate the potential of protective association between the waterbirds and weavers. The

importance of increasing the number of studies on protective associations has been recently highlighted by Quinn & Ueta (2008).

Study site

Die Oog ("The Eye") is one of the oldest reservoirs in the Constantia Valley, Cape Town. Die Oog was built on top of a hill on a spring between 1716 and 1764 as a water storage dam. In 1981 Bergvliet Farm was subdivided into four portions, with Portion 4 kept as a public open space of 1.3 hectares, now known as the Die Oog Bird Sanctuary and Nature Reserve (Brown & Magoba 2009).

The weaver colony at Die Oog has been present since at least 1984 (Harvey 1984). Nests were present in the line of poplar trees, some willows, and at one stage also in the bamboos on the island before these were cut down in response to roosting Cattle Egrets. In July to September 2013 Bailey et al. (2016) studied how males traded travel costs of collecting nest materials with benefits gained from territory location in the poplar colony at Die Oog.

HDO monitored the colony to various degrees from 2003 (first PHOWN record 6519). Old Reed Cormorant nests were first noticed in April 2013 (PHOWN 5543) – these would have been active in summer 2012 but HDO did not visit Die Oog then. The cormorants did not appear to nest here in 2013 but returned in 2014 and also 2015 (this study).

Methods

Behavioural observations were undertaken at Die Oog from May to November 2015. Observation periods were of at least 30 minutes by BK and were conducted about once a week in all weather conditions. Additional visits were made by HDO but only to count the nests. Both intra- and interspecific interactions were noted, with particular interest in weaver-waterbird interactions and weaver and/or waterbird interaction with predator species (e.g. buzzards, crows, harrier-hawks). Any other incidental interactions (e.g. with other passerines) that occurred were also noted, for sake of completeness.

The timing of breeding activity (suspected eggs and chicks) was noted for all three species. The structure of the colony was described throughout the breeding season and nest counts were conducted at every visit. Changes in the structure of the breeding colony were also investigated.

Fig. 2. Cape Weaver male at nest, near incubating Reed Cormorants at Die Oog (photo: B. Krochuk).

Results

The polygynous Cape Weavers were actively breeding from June to November 2015 (females incubating or feeding chicks), with the Hadedas breeding from about 25 July to 12 September, and the Reed Cormorants from 29 August to 31 October. On 20 September eight Reed Cormorant nests contained at least 15 nestlings. The Hadeda Ibis pair successfully reared a single chick (number of eggs laid is unknown). The cormorants and ibis pair had single breeding attempts with a breeding season that fell within the weavers' breeding season (Fig. 3).

There were very few opportunities to observe predator-prey species interactions throughout the duration of the study, with only six observations over a period of 11 visits. None of the predators elicited a response from the weavers or waterbirds, except a pair of calling Forest Buzzards *Buteo trizonatus* which silenced the majority of the weaver colony (Table 1).

New weaver nests built on the poplar tree that held the cormorant nests gradually moved upwards, splitting the colony in two, with about a quarter of the total nests above the cormorant colony and the remainder below. Waterbird guano progressively accumulated in the water directed below the colony, and also on weaver nests sited below the waterbird nests.

Discussion

Few potential predators were observed as observation time was limited (Table 1). The weavers did not react, possibly as the predators were not seen to be a threat as they were not approaching the nests. Waterbirds also showed no reaction. However, when the Forest Buzzards called the birds became aware of their presence and the colony fell silent.

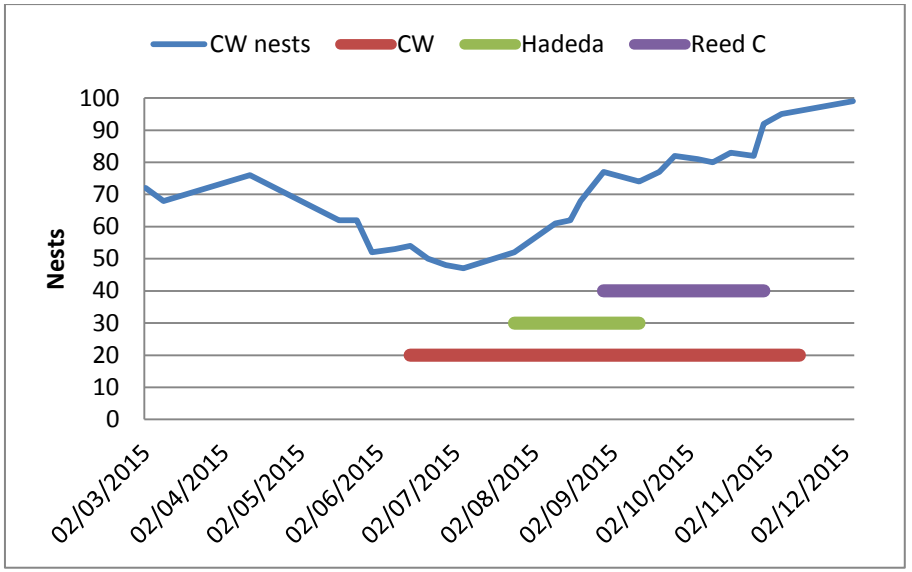

Fig. 3. Breeding season of the Cape Weavers, Hadeda Ibis and Reed Cormorants at Die Oog, 2015. "CW nests" (blue line) indicates the number of Cape Weaver nests per visit. The horizontal bars indicate when eggs and/or chicks were present for the three species studied: CW (red bar)=Cape Weaver, Hadeda (green bar)=Hadeda Ibis, Reed C (purple bar)=Reed Cormorant.

The Cape Weaver colony started breeding earlier than the waterbirds in 2015; this pattern is likely to hold every year. The weavers also bred for longer than the waterbirds. Thus in this case, the weavers did not seem to nest with the waterbirds, but vice versa. The poplars offered suitable habitat for both the weavers and the waterbirds, possibly drawing the species together in a chance association. Alternatively, waterbirds may use the weavers as an indicator of a relatively secure nesting site and therefore nest in the vicinity of them.

The weavers seemed to build new nests around the cormorant nests at the beginning of the season before they were very active but as activity increased the weavers built nests above them. This could be possibly due to the increase in guano production as the breeding season progressed. Although there was complete overlap in the timing of breeding seasons, influence of Hadeda Ibises on the weavers was difficult to discern, likely due to the fact that there was only a single pair.

In conclusion, this study did not record any interaction with predators and was therefore unable to provide any evidence of a protective association. However, anecdotal observations suggest that both weavers and waterbirds benefit from nesting together. For instance, Connor (1997) recorded a Hadeda Ibis chasing away a Long-crested Eagle in a Cape Weaver-Hadeda Ibis mixed colony. This suggests further research may still reveal protective associate benefits for the relationship between Cape Weavers and waterbirds.

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Example of PHOWN record for this colony:
http://weavers.adu.org.za/phown_vm.php?vm=19261

Table 1. Record of interspecific interactions between waterbirds, weavers, and shared predators between 24 May and 27 October 2015 at Die Oog Nature Reserve, Bergvliet, Cape Town.

Date	Predator passing	Weaver reaction	Waterbird reaction	Weaver-Waterbird interactions
24 May	N/A	N/A	N/A	N/A
30 May	N/A	N/A	N/A	N/A
08 Jun	N/A	N/A	N/A	N/A
25 Jun	N/A	N/A	N/A	N/A
10 Aug	N/A	N/A	N/A	New weaver nests built closer to waterbird nests
16 Aug	Forest Buzzard (2) calling	Silence	None	N/A
16 Aug	Pied Crow (2) flyover	None	None	N/A
12 Sep	N/A	N/A	N/A	Many more weaver nests built around the heronry
12 Sep	Pied Crow (2) flyover poplars	None	Some distant Egyptian Geese reacted	N/A
12 Sep	N/A	N/a	N/A	Cormorant droppings under their nests
20 Sep	Black Sparrowhawk (1) flyover	None	None	N/A
20 Sep	African Goshawk (1) distant flyover	None	None	N/A
20 Sep	Pied Crow (1) in area	None	None	N/A
26 Sep	N/A	N/A	N/A	N/A
11 Oct	N/A	N/A	N/A	N/A
27 Oct	N/A	N/A	N/A	N/A