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## BIRDS AND ANIMALS USING WEAVERS NESTS

**H. Dieter Oschadleus**

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## PHOWN (PHOTOS of Weaver Nests)

### BIRDS AND ANIMALS USING WEAVERS NESTS

*H. Dieter Oschadleus*

\* Corresponding author: doschadleus@gmail.com

*PHOTOS of Weaver Nests (PHOWN) is a Virtual Museum, citizen science project of the Animal Demography Unit, to collect and monitor breeding distributions and colony sizes of weaver birds globally. This paper celebrates 25000 photographic records being submitted between 14 July 2010 and 1 February 2017.*

#### Introduction

Weaver birds are common, widespread species through Africa and southern Asia and play important ecological functions in the environment. Weavers construct unique nests that may survive many months after breeding is completed. This provides opportunities for a variety of birds and animals to use weaver nests to breed or roost in. The large number of records of 'Nest Use' (this study and cited literature) indicates that weaver nests are a keystone resource in the environment. The benefits for Nest Users are likely to include:

- weaver nests provide a thermal barrier in cold areas;
- reduce the energetic costs of building their own nest (Hansell 2000).

In this paper the PHOWN database is analysed for records of Nest Use. Nest Use is where birds or animals use the nest of another species for breeding (in or on top), roosting (at night), or for shelter or protection. Nest associations are not included. For instance, weavers often nest in close association with wasps and raptors (not included here), but if the wasps or raptors use weaver nests as a substrate for their own nests, then the records are included.

#### Methods

The PHOWN database began in mid July 2010 and the data for this analysis was extracted up to 2 February 2017, providing 6.5 years of data collection. Records with Nest Use were marked so that they could be easily extracted. Nest Record Cards are not included in this analysis.

The PHOWN records are listed by Nest User species (with the ADU species number), and the records are compared to the literature. The Latin names of weavers are only listed in Table 2 to save space. A general discussion concludes this paper. To see the details of a particular PHOWN record, see Box 1 at the end of this paper.

#### Results – records by Nest User species

##### 89 Egyptian Goose *Alopochen aegyptiacus*



*Figure 1. Egyptian Goose nesting on top of Sociable Weaver nest, PHOWN 7544, H. Dieter Oschadleus.*

There are three PHOWN records from two weaver species.

*Red-billed Buffalo-Weaver*

PHOWN 7318 – a hole in part of Red-billed Buffalo-Weaver nest mass with lining of feathers was seen; rangers had seen an Egyptian Goose nesting here previously.

PHOWN 8402 – an addled egg on top of a Red-billed Buffalo-Weaver nest had rolled towards the tree trunk; most probably the egg was of an Egyptian Goose (although a raptor egg is possible).

*Sociable Weaver*

PHOWN 7544 – an Egyptian Goose sitting on top of a Sociable Weaver nest.

Egyptian Geese have been reported breeding on the nests of Red-billed Buffalo-Weavers (eg. Winterbottom 1964) and Sociable Weavers (eg. Plowes 1946) before.

**105 Secretarybird *Sagittarius serpentarius***

There is one record of a Secretarybird roosting on top of a Sociable Weaver nest (PHOWN 18687).

There are published records of a Secretarybird using Sociable Weaver nests for roosting (Branch 1998) and breeding (Anderson 2000).

**107 White-backed Vulture *Gyps africanus***

There are 3 records of this species nesting on top of large weaver nests.

PHOWN 14690 – probable nesting record, on top of a Red-billed Buffalo-Weaver nest.

PHOWN 18684 and 24347 – on top of Sociable Weaver nests (vulture chick confirmed in record 18684).

Records of this vulture nesting on top of weaver nests were published in a review that looked at PHOWN records and other published records (Oschadleus 2016f). PHOWN 24347 was submitted after this review was published.

**122 Greater Kestrel *Falco rupicoloides***

A Greater Kestrel was recorded roosting on a Sociable Weaver nest (PHOWN 24801). The kestrel may have been using the site for several years as previous PHOWN records show droppings (but not the bird) in the same hollow near the top of the nest. It is not known if the kestrel has also bred here.

**126 Pygmy Falcon *Polihierax semitorquatus***

There are over 175 PHOWN records of the Pygmy Falcon in Sociable Weaver nests. Most (n=163) records are from Tswalu and these are part of a research project by Robert Thomson (Thomson 2012), and 10 of these records also had wasp nests (see later).



Figure 2. Pygmy Falcon nestling from Sociable Weaver nest, PHOWN 1556, H. Dieter Oschadleus.

A few interesting records will be highlighted here by PHOWN number:

1556 – photo of nestling Pygmy Falcon.

1566 - nest chamber with Pygmy Falcon droppings, but chamber subsequently filled in with grass by Sociable Weavers.

1569 - dead Pygmy Falcon stuck in chamber (Oschadleus 2012).

8736 - Pygmy Falcon pair at nest on telephone pole.

9448 - Pygmy Falcon feeding on Sociable Weaver nestling.

9449 - Pygmy Falcon entering Sociable Weaver chamber.

11413 - Pygmy Falcon feeding on Sociable Weaver.

11708 – furthest south record of Pygmy Falcon on Sociable Weaver nest (but no falcon droppings seen).

Pygmy Falcons are obligate nest users as they never build their own nest (Hockey et al. 2005). In southern Africa they use the nests of Sociable Weavers (e.g. Plowes 1946). In eastern Africa they mainly use the nests of White-headed Buffalo-Weavers *Dinemellia dinemelli* (Brown et al. 1982).

### **133 Verreaux's Eagle *Aquila verreauxii***

Remarkably, there is a record of this eagle successfully breeding on top of a Sociable Weaver nest that was built on a telephone pole. Repeat photos are reported in nine PHOWN records (3048, 6861, 14715, 12061, 13411, 13412, 18488, 18887, 18888), from 2012 to 2014.

These records were also published as a short note (Visagie 2013) and an essay (Fincham 2015).

### **142 Martial Eagle *Polemaetus bellicosus***

There are two PHOWN records of this eagle, both nesting on top of Sociable Weaver nests built on pylons (PHOWN 13438, 200303 without photo).

There is one published record of a Martial Eagle nest on a weaver nest (Maclean 1973).

### **152 Jackal Buzzard *Buteo rufofuscus***

There are two PHOWN records, both on top of Sociable Weaver nests.

PHOWN 8870 – young buzzards in nest, found by Japie Claassen.

PHOWN 11677 – farmer noted that a Jackal Buzzard had bred on top of this weaver nest.

No references to Jackal Buzzard nests on top of weaver nests have been found.

### **165 Pale Chanting Goshawk *Melierax canorus***

There is a record of this raptor nesting on top of a Sociable Weaver nest. A chick and adult are visible in the first photo (PHOWN 18727) and a larger chick in a later visit (PHOWN 18757).

No references to Pale Chanting Goshawk nests on top of weaver nests have been found, although this raptor often uses these weaver nests as hunting perches. Once mating was observed by the raptor on top of a Sociable Weaver nest (Bos 2015) but it is not known if the raptors bred on top of the same nest.

### **330 Rosy-faced Lovebird *Agapornis roseicollis***

There are three PHOWN records of these lovebirds using Sociable Weaver nests.

PHOWN 2350 – flock in nest, one caught during mist-netting.

PHOWN 14713 (and 14714) – lovebirds in chambers; PHOWN 14714 gives additional photos for same record.

It is well known that Rosy-faced Lovebirds breed in Sociable Weaver nests (Hockey et al. 2005).

### Feral, hybrid lovebirds

There is one record of hybrid lovebirds using Cape Weaver nests (PHOWN 568). There were at least eight Cape Weaver nests that were occupied by lovebirds. At least two of these nests had chicks inside them. Only one of the nests was occupied by Cape Weavers.

This is an unusual situation – the lovebirds were released from aviaries and they started breeding in the St Francis Bay area, including using weaver nests (Manser 2013, Symes 2014).

### 359 Barn Owl *Tyto alba*

There are two PHOWN records, including a repeat visit two months later (PHOWN 13108 & 13151), of a Barn Owl raising young in a hole in a Sociable Weaver nest.

There are several published records of Barn Owls breeding or roosting in a hole in a Sociable Weaver nest (e.g. Plowes 1946).

### 368 Spotted Eagle Owl *Bubo africanus*

There are two PHOWN records of this owl nesting on top of Sociable Weaver nests, both records showing chicks in the nest (PHOWN 2213, 7624).

This record (PHOWN 7624) was published (de Swardt 2014), but there are also previous published records of this owl nesting on top of this weaver's nest, e.g. Begg & Begg (2004).

### 369 Giant Eagle Owl *Bubo lacteus*

There is a PHOWN record (18386) of this owl nesting on top of a Red-billed Buffalo-Weaver nest, although the owl is not visible.

There are a large number of published records of this owl breeding on top both Red-billed Buffalo-Weaver (e.g. Reynolds 1990) and Sociable Weaver (e.g. Maclean 1973) nests.

### 432 Acacia Pied Barbet *Tricholaema leucomelas*

There are four PHOWN records of this barbet roosting in Sociable Weaver nests.

2349 – barbet pair caught in mist net flying out from nest at dawn.

11599 – barbet pair caught in mist net at nest but not seen (or may have been missed) in a night survey.

11608 – barbet pair investigating nest while weavers were foraging.

11809 – barbet roosting in nest, seen during night survey.

In addition, there is a record of a barbet investigating an old Cape Weaver nest during the day (PHOWN 18752).



Figure 3. Acacia Pied Barbet roosting in chamber of a Sociable Weaver at night, PHOWN 11809, H. Dieter Oschadleus.

Acacia Pied Barbets seem to investigate weaver nests during the day, presumably to check for suitability (and perhaps check that there are no nest parasites) before choosing to roost there at night.

Acacia Pied Barbets are known to roost in the nests of Sociable Weavers (e.g. Thomson 2012), Cape Weavers (Hockey et al. 2005), and other weavers.

#### **734 Common Myna *Acridotheres tristis***

There is one record of a myna trying to gain access to a White-browed Sparrow-Weaver nest (PHOWN 5835).

There are two published records of these mynas using Red-billed Buffalo-Weaver nests. Lowe (2012) noted that in wild areas of Zimbabwe mynas often use the nests of buffalo-weavers. Penzhorn (2012) observed a myna pair taking nest material into a buffalo-weaver nest. There are no records of mynas breeding in Sparrow-Weaver nests, and the mynas in the above PHOWN record do not seem to have been successful.

#### **Bank Myna *Acridotheres ginginianus***

A Bank Myna tried to take over a Baya Weaver nest in India (PHOWN 18518). The outcome is unknown.

No published records of Bank Myna taking over weaver nests have been found.

#### **1063 Swamp Flycatcher *Muscicapa aquatic***

A pair of Swamp Flycatchers were using an old nest of a weaver (species unidentified) (PHOWN 24334).

Swamp Flycatchers often breed in weaver nests (e.g. Jackson 1938).

#### **2626 Boehm's Flycatcher *Muscicapa boehmi***

These flycatchers raised young in a Village Weaver nest (PHOWN 1697).

Boehm's Flycatchers often breed in weaver nests, particularly the nests of Red-headed Weavers (Urban et al. 1997). The PHOWN record is the first time the Village Weaver has been recorded (Oschadleus 2016a).

#### **784 House Sparrow *Passer domesticus***

There are two PHOWN records of this sparrow resting in Cape Weaver nests during the day, and it is very likely that the sparrows roosted in the nests at night as well. In one case the weaver colony was active (PHOWN 17571), and in the other case the nests were old (PHOWN 19226).



Figure 4. Female House Sparrow resting in a Cape Weaver nest, PHOWN 17571, H. Dieter Oschadleus.

There are several records of House Sparrows using weaver nests for breeding, including the nests of Cape Weaver (Steen 2002) and other weavers (e.g. Riddell 2012).

### 786 Cape Sparrow *Passer capensis*

There are 29 PHOWN records of this sparrow using weaver nests for breeding or roosting, and many of these records have been published.

#### *Breeding records in Cape and Southern Masked Weaver nests*

Breeding records were noted in the nests of Cape Weavers (PHOWN 735, 3194, 6491, 6492, 6494) and Southern Masked Weavers (PHOWN 1328, 2579). These records were reviewed, together with Nest Record Cards and literature records, by Oschadleus & McCarthy (2015), showing that the Cape Sparrow preferred breeding in the larger nest of the Cape Weaver, although there are a few records of breeding in Southern Masked Weaver nests. Also, most records were from the Western Cape which was related to the timing of breeding of the weaver and sparrow.



Figure 5. Male Cape Sparrow breeding in a Cape Weaver nest, PHOWN 735, H. Dieter Oschadleus.

#### *Roosting records in Cape Weaver nests*

In Pinelands, Cape Town, Cape Sparrows roost in Cape Weaver nests regularly in winter (Oschadleus et al. 2017). At a nearby secondary site in Rondebosch, there was one record of Cape Sparrows roosting in a Cape Weaver colony, and no sparrows roosted in Southern Masked Weaver colonies (Oschadleus et al. 2017). The 19 PHOWN roosting records in six different Cape Weaver colonies are listed in the paper.

#### *Roosting records in Sociable Weaver nests*

Three records of roosting by this sparrow in the nests of Sociable Weaver were recorded (PHOWN 11657, 11720, 11734). Sparrows were not photographed but in two cases were seen leaving the Sociable Weaver nests when disturbed.

Roosting by the Cape Sparrow in Sociable Weavers is not unexpected but has not been published previously.

### 789 Scaly-feathered Finch *Sporopipes squamifrons*



Figure 6. Scaly-feathered Finch pair roosting in Sociable Weaver nest, seen in night survey, PHOWN 11724, H. Dieter Oschadleus.

There are two PHOWN records, one where this finch was suspected to breed in the old nest of a Southern Masked Weaver (PHOWN 9134) and one of a finch pair roosting in a Sociable Weaver nest chamber (PHOWN 11724).

In another record (PHOWN 18609) a finch investigated a Southern Masked Weaver nest. Incidentally, in two records (PHOWN 21593, 22830) a finch was seen taking nest material from old weaver nests.

Scaly-feathered Finches have been recorded breeding in the nests of Southern Masked Weavers (Krienke 1938), and roosting in the nests of Sociable Weavers (Cilliers 1999).

### **820 Red-headed Finch *Amadina erythrocephala***

There are 44 PHOWN records of this finch using weaver nests, involving six weaver species:

#### *Red-billed Buffalo-Weaver*

Finches seen at nests during the day, indicating that they may have been breeding in the weaver nests (PHOWN 196, 559).

#### *Sociable Weaver*

Finches investigating nest (PHOWN 2350) or finches roosting in chambers at night (7862, 11841, 11843).

#### *Lesser Masked Weaver*

Two records of probable breeding (PHOWN 2321, 5039).

#### *Chestnut Weaver*

Finches investigating (PHOWN 9478) and breeding (PHOWN 17321) – the latter record shows the eggs of the Red-headed Finch found in a nest in an active weaver colony.

#### *Southern Masked Weaver*

A pair flew into a weaver nest at sunset to roost (PHOWN 768); breeding and roosting in a nest (PHOWN 3008), and a female finch was photographed in the nest of a Southern Masked Weaver (PHOWN 18634).

#### *Cape Weaver*

There are 31 PHOWN records. Finches investigated nests in Limpopo (PHOWN 18387). Interestingly, the 30 other records are all outside the natural range of the Red-headed Finch.

(a) Vanrhynsdorp – roosting (PHOWN 16794) - the finches have been seen here regularly and have been accepted in SABAP2 as a range extension.

(b) Bellville – there are 29 records of these finches at several Cape Weaver colonies in Jack Muller Park, Bellville, South Africa. The finches were seen to roost in nests at night (PHOWN 18086, 18211), showing finches roosting in at least two different weaver nests. Evidence of attempted breeding was found by finch eggs and eggshells below nests (PHOWN 18661, 24901). The finches were seen on most visits (approximately monthly) from July 2015 to January 2017, indicating that they were using the weaver nests permanently for roosting and breeding, but probably also foraged away from the park in nearby gardens (Os Chadleus 2016b, Os Chadleus 2016c). Using weaver nests may save the finches the energetic costs of nest-building, but may also have negative consequences, as shown by a finch that died when trapped in nest material at this site (Os Chadleus 2016c).

The above six weaver species, and some other species, have been recorded as their nests being used for roosting and breeding by the Red-headed Finch (del Hoyo et al. 2010, Hoesch 1936).

### 821 Cut-throat Finch *Amadina fasciata*

There are 16 PHOWN records of this finch using weaver nests, involving four weaver species:

#### *Red-billed Buffalo-Weaver*

Finch pair investigating nest (PHOWN 18386).

#### *Red-headed Weaver*

There are 11 records of this finch present at nests of this weaver. Four records are from one weaver colony over three breeding seasons and 11 visits, indicating that the finches show site fidelity – juveniles were seen on at least two visits (PHOWN 3043, 4859, 6311, 8872). The other PHOWN records are 827, 1466, 7303, 8075, 9178, 11298, 22059).

#### *Village Weaver*

Five finches roosted in two weaver nests at night (PHOWN 2890), and a female investigated old weaver nests (PHOWN 19580).

#### *Southern Masked Weaver*

Finch chicks were fed in a weaver nest (PHOWN 9571), and another investigated a weaver nest (PHOWN 18284).

These four weaver species, and some others, have been recorded as their nests being used for roosting and breeding by the Cut-throat Finch (del Hoyo et al. 2010, Skead 1975).

### 823 Bronze Mannikin *Spermestes cucullatus*

There are three PHOWN records of this finch using weaver nests, involving two weaver species:

#### *Red-headed Weaver*

Mannikins re-lining nest, and the same pair was noted in two records (PHOWN 8416, 8433).

#### *Holub's Golden Weaver*

A mannikin investigated a nest but then only took some seeds, possibly because the nest was being lined by the weaver (PHOWN 9185).

There is a published record of Bronze Mannikins breeding in an old Red-headed Weaver nest (Woodall 1975). Hall (2010) noted a Bronze Mannikin working on the nest of a Holub's Golden Weaver nest. Since there are many records of this manikin using a variety of weaver nests (Oschadleus 2011), it is considered that this behaviour is preparation for taking over a weaver nest, even if it turns out to be unsuccessful, as in the case of PHOWN 9185.

### 839 Blue Waxbill *Uraeginthus angolensis*

There is one PHOWN record (9386) and in this case Blue Waxbills used three (out of ten) nests in a Red-headed Weaver colony.

Incidentally, in another case two waxbills were collecting nest material near Village Weaver nests (PHOWN 18541). The waxbills were not seen to enter the nests while the observer was present, but they may have been lining the weaver nests.

The Blue Waxbill has been recorded as breeding in weaver nests, including Red-headed Weaver nests (Skinner 1998).

### 841 Black-cheeked Waxbill *Estrilda erythronotos*

One record (PHOWN 24560) of this waxbill at a Red-headed Weaver nest, seemingly investigating it in preparation for breeding.

The Black-cheeked Waxbill regularly roosts in weaver nests (Hockey et al. 2005), including a record of roosting in an old Red-headed Weaver nest (Butchart 2000). There are no published records of this waxbill breeding in weaver nests.

### **842 Grey Waxbill *Estrilda perreini***

There is one PHOWN record (17592) and in this case Grey Waxbills used the nest of an Eastern Golden Weaver in Tanzania.

Grey Waxbills have been recorded using the nests of Dark-backed Weavers, Spectacled Weavers and Village Weavers (del Hoyo et al. 2010). This seems to be the first record of Grey Waxbills using Eastern Golden Weaver nests.

### **3976 Blue-capped Cordon-bleu *Uraeginthus cyanocephalus***

There is one PHOWN record (16862) and in this case Cordon-bleus were seen entering the nest of a Lesser Masked Weaver in Tanzania.

The Blue-capped Cordon-bleu has been recorded as breeding in the nests of buffalo weavers in East Africa (del Hoyo et al. 2010). This appears to be the first record of this species using Lesser Masked Weaver nests.

### **Indian Silverbill *Euodice malabarica***

A pair of Indian Silverbills or White-throated Munias took over a Baya Weaver nest in India, probably to breed (PHOWN 18519).

The Indian Silverbill often breeds and roosts in the nests of Baya Weavers (Ali & Ripley 1983), and sometimes in the nests of other Asian weavers.

### **Nest user species not identified**

Three additional records are presented here in brief, where the Nest user identity is not sure.

Juvenile waxbills or mannikins in a weaver nest (PHOWN 17614).

*Amadina* finch in a Southern Masked Weaver nest (PHOWN 15758).

Waxbill (Blue?) nest being built on the base of a Red-headed Weaver nest (PHOWN 7323).

### **Climbing mice *Dendromus* sp.**

There are 21 records of mice nests built inside weaver nests, involving three weaver species.

#### *Southern Red Bishop*

A mouse, probably a climbing mouse species, was found in a nest in an active bishop colony (PHOWN 657).

#### *Cape Weaver*

There are six records, four being from a study at Zandvlei, Cape Town, South Africa, after the weavers completed breeding (Oschadleus 2016d - PHOWN 14395, 14788, 14892, 14893). The other two records are also from Zandvlei, but outside the study period (PHOWN 18601, 24913).

#### *Southern Masked Weaver*

There are 14 records, four being from a study at Zandvlei, Cape Town, South Africa, after the weavers completed breeding (Oschadleus 2016d - PHOWN 14689, 14891, 14894, 15891). Six records are also from Zandvlei, but outside the study period (PHOWN 4912, 5053, 5055, 9387, 9388, 11879). Four records are from other wetlands in Cape Town: from Keyser River (PHOWN 16353), Rondevlei (PHOWN 4276, 14529) and Orange Road

(PHOWN 18669). All records were from deserted colonies, other than one record of a nest resembling a mouse nest in an active weaver colony (PHOWN 11879).

Climbing mice are difficult to identify but some of those in the Cape Weaver and Southern Masked Weaver nests found in Cape Town were identified as Brant's Climbing Mouse *Dendromus mesomelas* (Oschadleus 2016d).

Several *Dendromus* species have been recorded using weaver nests, using the nests of Southern Red Bishops (Schmidt 1968), Southern Masked Weavers and other species (del Hoyo et al. 2010). Cape Weavers have not, however, been recorded previous to the study of Oschadleus (2016d).



Figure 7. Brant's Climbing Mouse inside the nest of a Cape Weaver, PHOWN 14892, H. Dieter Oschadleus.

## Frogs

There are three PHOWN records of frogs resting in weaver nests, involving three weaver species.

### *Southern Masked Weaver*

A nest with three weaver eggs, used by a Painted Reed Frog *Hyperolius marmoratus taeniatus* (PHOWN 8933).

### *Thick-billed Weaver*

An empty nest was used by a Natal Leaf-folding Frog *Afrixalus spinifrons* for resting (PHOWN 2506). This was in the same colony as the next record.

### *Eastern Golden Weaver*

Several weaver nests in one colony were used by several frogs of two species: Painted Reed Frog *Hyperolius marmoratus marmoratus*, and Greater Leaf Folding Frog *Afrixalus fornasinii*, with 1-3 frogs per nest. The weaver colony was active and many nests contained eggs or chicks. One weaver nest contained weaver eggs and a frog, while the other frogs were resting in empty nests. A PHOWN record (PHOWN 13) and two FrogMAP records were submitted.



Figure 8. Natal Leaf-folding Frog caught inside the empty nest of a Thick-billed Weaver, PHOWN 2506, H. Dieter Oschadleus.

Frogs have been recorded in weaver nests previously. Wilson (1948) found a few unidentified tree frogs in the occupied nests of a Grey-headed Social-weaver *Pseudonigrita arnaudi* colony. Kielgast and Lötters (2009) found the African foam-nest tree frog *Chiromantis rufescens* depositing foam-nests with eggs in the empty nests of the Blue-billed Malimbe *Malimbus nitens*. The PHOWN records with the above frog and weaver species have not been recorded before and these records were published by Oschadleus (2015).

### Wasps

There are 38 PHOWN records of wasps using weaver nests as a substrate for their own nests. Most records (n=33) are of paper wasps building their combs on the underside of Sociable Weaver nests at Tswalu, including 10 weaver nests that also had Pygmy Falcons living in the nest mass.

There are two PHOWN records of paper wasp nests on the nests of Red-billed Buffalo-Weavers (PHOWN 2355, 2356). A small paper wasp nest was built inside the old nest of a Spectacled Weaver (PHOWN 1749). There are two records of a mud wasp nest built on the entrance of a Red-headed Weaver nest (PHOWN 7322, 7338).

Nest associations between wasps and birds (including weavers and estrildids) are well known, where their nests are placed close together (Quinn & Ueta 2008). There are such records in PHOWN, but these are not reviewed here. If birds are seeking protection from the wasps, one would expect the birds to build their nests close to existing wasp nests. In the above PHOWN examples, the weaver nests were built first, and the wasps used the weaver nests as a substrate.



Figure 9. Many paper wasp nests on the underside of a Sociable Weaver nest. PHOWN 1555, H. Dieter Oschadleus.

Thomson (2012) noted that paper wasp nests occupied about 11% of Sociable Weaver nests at Tswalu, and the wasps preferred larger weaver nests. The other PHOWN records of wasps on weaver nests have not been published previously, i.e. paper wasp nests on the nests of Red-billed Buffalo-Weavers and in the Spectacled Weaver nest. To my knowledge, there are no published records of mud wasp nests built on weaver nests.

### Locusts

During night surveys of Sociable Weaver nests, locusts were found roosting under two nest masses (PHOWN 11842, 11610).

A variety of invertebrates have been recorded using weaver nests (e.g. Maclean 1973), but locusts have not been listed before.



Figure 10. Locust sleeping on the underside of a Sociable Weaver nest, PHOWN 11610, H. Dieter Oschadleus.

### Other possible records

There is a PHOWN record (1512) of a dead Cape Dwarf Chameleon *Bradypodion pumilum* in a Cape Weaver nest. It may have been looking for insects on or in the nest, where it was probably pecked to death by the weavers (Oschadleus 2012). If the chameleon was seeking shelter in the nest, the record would qualify as Nest Use.

Lesser Swamp Warblers *Acrocephalus gracilirostris* sometimes build their nests below the nests of Cape Weavers, without touching them, but receiving possible shelter from weather and concealment from avian predators (Oschadleus 2016e), and thus could qualify as indirect Nest Use. In addition to the five published PHOWN records, another record is PHOWN 18595.

There are several records of Social Spider webs built adjoining and touching or partially covering White-browed Sparrow-weaver nests (Oschadleus 2014). This could be an example of Nest Use, and needs to be investigated further.

### Discussion

A total of 25000 PHOWN records were available on 1 February 2017. A total of 383 records were marked as Nest Use (Table 1). Some records were repeat visits to a weaver colony, showing that the Nest Users were still present. The percentage of Nest Use records in the PHOWN database is low (1.5%) – this may be due to low search effort outside the breeding season of the weavers.

A wide variety of birds and other organisms use weaver nests for breeding or shelter. This dataset includes 30 identified bird species, and some additional unidentified bird and animal species (Table 1). The nest user species with the highest number of records is the Pygmy Falcon (n=175), most of these records coming from Tswalu. This is followed by the Red-headed Finch (n=44).

The most unusual avian Nest User is the Verreaux's Eagle, which raised chicks on top of a Sociable Weaver nest in successive years.

The most unusual non-avian Nest Users were probably the frogs resting in weaver nests, even using active weaver nests. The commonly known Nest Users of weaver nests are represented in the PHOWN database, with the notable exception of the Orange-breasted Waxbill *Sporaeginthus subflavus*. This waxbill often uses the nests of bishops or other species (Hockey et al. 2005), but there are no records of this waxbill in PHOWN to date.

Sorted by weaver species, the Sociable Weaver has the highest number of Nest Use records (Table 2). Sociable Weaver nests are unique and attract a wide variety of Nest Users, including an obligate Nest User, the Pygmy Falcon. The weaver with the second-most number of Nest User species is the Cape Weaver, but this result is biased by my own intensive searches around Cape Town for Nest users of this weaver. The next species is the Southern Masked

Weaver, a common species in South Africa with the widest distribution, so providing a wide range of species with nest Use opportunities. Fourth is the Red-headed Weaver, a less common weaver than many others, but a species that builds a strong nest of tendrils, and thus its nest may be favoured by finches.

**Table 1.** Number of PHOWN records with ‘Nest Use’, listed by Nest User species.

| Species  | n   |
|--|-----|
| Egyptian Goose <i>Alopochen aegyptiacus</i>      | 3   |
| Secretarybird <i>Sagittarius serpentarius</i>    | 1   |
| White-backed Vulture <i>Gyps africanus</i>       | 3   |
| Greater Kestrel <i>Falco rupicoloides</i>        | 1   |
| Pygmy Falcon <i>Polihierax semitorquatus</i>     | 175 |
| Black Eagle <i>Aquila verreauxii</i>             | 9   |
| Martial Eagle <i>Polemaetus bellicosus</i>       | 2   |
| Jackal Buzzard <i>Buteo rufofuscus</i>           | 2   |
| Pale Chanting Goshawk <i>Melierax canorus</i>    | 1   |
| Rosy-faced Lovebird <i>Agapornis roseicollis</i> | 3   |
| Feral, hybrid lovebirds                          | 1   |
| Barn Owl <i>Tyto alba</i>                        | 2   |
| Spotted Eagle Owl <i>Bubo africanus</i>          | 2   |
| Giant Eagle Owl <i>Bubo lacteus</i>              | 1   |
| Acacia Pied Barbet <i>Tricholaema leucomelas</i> | 5   |
| Common Myna <i>Acridotheres tristis</i>          | 1   |
| Bank Myna <i>Acridotheres ginginianus</i>        | 1   |
| Swamp Flycatcher <i>Muscicapa aquatic</i>        | 1   |
| Boehm's Flycatcher <i>Muscicapa boehmi</i>       | 1   |
| House Sparrow <i>Passer domesticus</i>           | 2   |
| Cape Sparrow <i>Passer melanurus</i>             | 29  |

|  |     |
|--|-----|
| Scaly-feathered Finch <i>Sporopipes squamifrons</i>      | 2   |
| Red-headed Finch <i>Amadina erythrocephala</i>           | 44  |
| Cut-throat Finch <i>Amadina fasciata</i>                 | 16  |
| Bronze Mannikin <i>Spermestes cucullatus</i>             | 3   |
| Blue Waxbill <i>Uraeginthus angolensis</i>               | 1   |
| Black-cheeked Waxbill <i>Estrilda erythronotos</i>       | 1   |
| Grey Waxbill <i>Estrilda perreini</i>                    | 1   |
| Blue-capped Cordon-bleu <i>Uraeginthus cyanocephalus</i> | 1   |
| Indian Silverbill <i>Euodice malabarica</i>              | 1   |
| Unidentified birds                                       | 3   |
| <i>Dendromus</i> Climbing mice                           | 21  |
| Frogs  | 3   |
| Wasps  | 38  |
| Locusts  | 2   |
| Total  | 383 |

The PHOWN database provides a number of new Nest Use records (Table 3). Three Nest Users have not been recording as using any weaver nests: Jackal Buzzard, mud wasps, and locusts. Several birds and animals have been recorded as using weaver nests before, but this study provides new weaver species for these Nest Users.

Interestingly, feral and escaped birds also use weaver nests, as shown above under hybrid Lovebirds and Red-headed Finch. In this case, weaver nests act as a resource – positively for the Nest Users but possibly negatively for conservation.

The Red-headed Finch has expanded its range into the Kruger National Park (SABAP1 vs SABAP2). It would be interesting to know to what extent the finches in the park are breeding in weaver nests, as Nest Use could save them energetic nest building costs, and allow the birds to expend energy on other events, like finding food in their new range.

**Table 2.** Number of PHOWN records with Nest Use, listed by weaver species.

| Species   | n   |
|---|-----|
| Red-billed Buffalo-Weaver <i>Bubalornis niger</i>     | 9   |
| White-browed Sparrow-weaver <i>Plocepasser mahali</i> | 1   |
| Sociable Weaver <i>Philetairus socius</i>             | 248 |
| Spectacled Weaver <i>Ploceus ocularis</i>             | 1   |
| Lesser Masked Weaver <i>Ploceus intermedius</i>       | 3   |
| Red-headed Weaver <i>Anaplectes rubriceps</i>         | 18  |
| Chestnut Weaver <i>Ploceus rubiginosus</i>            | 2   |
| Village Weaver <i>Ploceus cucullatus</i>              | 3   |
| Cape Weaver <i>Ploceus capensis</i>                   | 65  |
| Eastern Golden Weaver <i>Ploceus subaureus</i>        | 2   |
| Holub's Golden Weaver <i>Ploceus xanthops</i>         | 1   |
| Southern Masked Weaver <i>Ploceus velatus</i>         | 24  |
| Thick-billed Weaver <i>Amblyospiza albifrons</i>      | 1   |
| Southern Red Bishop <i>Euplectes orix</i>             | 1   |
| Baya Weaver <i>Ploceus philippinus</i>                | 2   |
| Unidentified weavers                                  | 2   |
| Total   | 382 |

Nest sites in this study were mainly weaver nests in trees, but also included weaver nests built on man-made sites. Frogs and mice were found only in weaver nests built in reeds.

Readers are encouraged to submit PHOWN records, including normal records of weavers breeding, but also records of Nest Use.

**Table 3.** Summary of new records of Nest User – weaver species combinations, based on the PHOWN database.

| Nest user species                       | Weaver species              | Nest use |
|---|-----------------------------|----------|
| <i>New Nest Users</i>                   |                             |          |
| Jackal Buzzard                          | Sociable Weaver             | breed    |
| mud wasp                                | Red-headed Weaver           | breed    |
| locust                                  | Sociable Weaver             | roost    |
| <i>New weaver species for Nest User</i> |                             |          |
| Common Myna                             | White-browed Sparrow-Weaver | attempt  |
| Cape Sparrow                            | Sociable Weaver             | roost    |
| Blue Waxbill                            | Red-headed Weaver           | breed    |
| Grey Waxbill                            | Eastern Golden Weaver       | breed    |
| Blue-capped Cordon-bleu                 | Lesser Masked Weaver        | breed    |
| Brant's Climbing Mouse                  | Cape Weaver                 | breed    |
| paper wasp                              | Red-billed Buffalo-Weaver   | breed    |
| paper wasp                              | Spectacled Weaver           | breed    |

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#### APPENDIX: List of contributors

This paper was based on the PHOWN records submitted by the following ADU participants:

| Observer             | PHOWN records                          |
|----------------------|--|
| Ainsley, Jerome      | 18887, 18888                           |
| Archer, Tony         | 5835, 9134, 18609, 18757, 21593, 22830 |
| Berndt, Jess         | 13438, 200303                          |
| Boyes, Steve         | 568                                    |
| Claassen, Japie      | 3048, 8870, 18727                      |
| de Cauwer, Richard   | 9185, 24334                            |
| De Swardt, Dawie     | 7624                                   |
| Elstadt, Cobus       | 24801                                  |
| Engelbrecht, Derek   | 18386, 18387                           |
| Fincham, John Edward | 6861, 14713, 14715                     |
| Gerrans, Colin Allen | 5039                                   |
| Gerrans, Dennis      | 8402                                   |
| Gibbs, Dalton        | 16862                                  |
| Harebottle, Doug     | 8736                                   |
| Harris, Ann          | 8416                                   |
| Jinnah, Mohammed     | 13108                                  |

|                         |                  |
|-------------------------|------------------|
| Johnstone, Richard Alan | 7862             |
| Kadis, Robyn            | 2579             |
| Kleinjan, Carien        | 12061, 18488     |
| Krochuk, Billi          | 17614            |
| Loftie-Eaton, Megan     | 9386             |
| Loftie-Eaton, Victor G  | 15758            |
| Myburgh, Gert           | 24560            |
| Ngasoma, Sebastian      | 17592            |
| Nuttall, Rick           | 3008             |
| Oschadleus, H. Dieter   | >50              |
| Raubenheimer, Ed        | 18284            |
| Ryan, Peter             | 3194             |
| Spiiby, Jacky           | 9448, 9449       |
| Steen, Lia              | 13411, 13412     |
| Terblanche, Reinier F   | 11413            |
| Thomson, Neil           | 24347            |
| Thomson, Robert         | >100             |
| Tripathi, Anil          | 18518, 18519     |
| Venter, Sarel J         | 9571             |
| Visagie, Ronelle        | 18684, 18687     |
| Willems, Frank          | 1697             |
| Willis, Christopher     | 18634            |
| Zaloumis, Alexander     | 2890, 3043, 9478 |

#### Box 1. Viewing PHOWN records

To view the full record details for any PHOWN record, click on the link, and replace the last number with the required PHOWN number.

[http://weavers.adu.org.za/phown\\_vm.php?vm=13](http://weavers.adu.org.za/phown_vm.php?vm=13)