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RECAPTURE AND MOVEMENT DATA OF GURNEY'S SUGARBIRD PROMEROPS GURNEYI IN THE LYDENBURG AREA, MPUMALANGA PROVINCE, OVER NEARLY THREE DECADES

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Introduction

Gurney's Sugarbird *Promerops gurneyi* is endemic to eastern southern Africa with isolated populations in eastern Zimbabwe and adjacent Mozambique and also in the Waterberg and Soutpansberg mountain ranges in Limpopo Province, South Africa (Brown 2005). Its core range is along the Drakensberg massif associated with *Protea* species where it is locally common (Brown 2005; de Swardt 1997). This species is known to disperse locally at the end of the flowering periods of *Protea* species (mainly *P. roupelliae*) during the winter months, where birds move away from the mountain localities (de Swardt 1991; Symes *et al.* 2001) and these movements have been studied in the Lydenburg area since the early 1980s (de Swardt 1990).

The occurrence of sugarbirds in the mountains surrounding the suburban areas coincides with the peak summer flowering period of *P. roupelliae*, the preferred food plants of sugarbirds growing in these areas, after which birds disperse to the suburban areas during the winter months (de Swardt 1991). They also disperse away from *Protea* localities after fires, through dispersal from natal areas and in response to above- and below-average summer rainfall seasons in mountain localities (de Swardt 1998). This study reports on recapture data obtained since 1998 and reviews the movements of this species over a period of 26 years in the Lydenburg area, Mpumalanga, South Africa.

Study area & methods

Gurney's Sugarbirds were captured and ringed at selected *P. roupelliae* clumps on mountain hillsides and plateaus in the montane grassland areas around Lydenburg, and also during winter in the suburban areas at cultivated *Protea* and *Aloe* spp. since 1987. The study sites were mainly at the Gustav Klingbiel Nature Reserve, Nooitgedacht Nature Reserve and farms on the plateau adjacent to the Long Tom Pass to Sabie, as well as farms on the Steenkampsberg mountain range south-west of Lydenburg. During the winter months (April-July), when cultivated *Protea*, *Aloe* and other species were in flower, sugarbirds were captured at the Lydenburg Production Unit, gardens of the Lydenburg Hospital and also at several private gardens. Most sites were revisited annually to obtain recapture and survival data (de Swardt 1991; 1998).

Ringing sessions during summer were mainly concentrated at the mountain *Protea* clumps, while efforts were made during winter to capture sugarbirds at *Aloe* clumps in the suburban areas. Capture sessions during winter were also made in the mountain areas as sugarbirds were also present there during some seasons. Ringing sites were revisited as frequently as possible to obtain recapture data. These sessions also varied considerably during the years,

especially after 1998 when fewer field visits were made to the study sites (once every three years).

Results

During the study period, a total number of 875 sugarbirds were ringed in the Lydenburg area (data of other ringers included), with a total of 123 individual recaptures and/or recoveries (recapture rate of 14.0 **%**).

Seasonal movements of sugarbirds (a total of 26 individuals) between the mountain and suburban areas have been noted since the early 1980s (de Swardt 1990, 1991; Table 1). A mean seasonal movement distance of 8.3 km and elapsed period of 30.5 months were recorded. The longest distance moved to date for the species is 37 km, by an individual (ring 498404) ringed on 21 May 1993 by Susan Schoeman in her Lydenburg garden and recovered 29 months later at Crystal Springs Resort, Pilgrims Rest, by Warren McLeland.

Six individuals were observed showing possible post fire dispersal after being recaptured at other mountain localities (or moved seasonally) after fires occurred at localities after initial capture (Table 2). Mean inter-population distance moved was 2.25 km. Two sugarbirds ringed at a *Protea* clump at Nooitgedacht Nature Reserve in the Finsbury valley during 2005 were recaptured at a large *Protea* clump at Natalshoop after a fire during winter 2006 (De Swardt 2010; Table 2). During the winter of 2013 the Natalshoop farm was burnt by an accidental fire and the grassland and *Protea* trees were severely damaged by the fire. During February 2014 the Natalshoop site was revisited, but because 90% of the *Protea* trees was burnt by the fire, ringing was commenced at a small clump near the original ringing site. A sugarbird was recaptured (ring CC71255) which was ringed 7 years previously at the original Natalshoop ringing site (Table 2).

A total of 68 sugarbirds were recaptured at, or near (less than 2 km), their original ringing sites in the mountain localities. Several sugarbirds (n = 24) were also recaptured at suburban localities (summer localities of these birds are unknown). The longest time elapsed between ringing and recapture at a suburban site is a sugarbird ringed (by Kotie Herholdt) and recaptured (and resighted) at the Fisheries Institute (ring 4806889) after 13 years (De Swardt 2010). Nineteen sugarbirds were captured after elapsed periods of 4 years or more (mean elapsed time is 69.5 months).

Interesting capture and recapture data were obtained at the Paardeplaats locality along the Long Tom Pass which was the most frequently visited study site during the study period. A total of 295 sugarbirds were captured there since December 1986, of which 129 (43.7 %) were during the winter months (May – August). A total of 39 recaptures were obtained at this locality of birds ringed there (13.2%) and high numbers of sugarbirds were observed at this site during some seasons, for example the 1995/96 and 2007/08 seasons. It was observed that during some high rainfall seasons, more sugarbirds were present (mainly May-July) at this site and its surroundings. During such years of high rainfall (mainly October – February period), it was observed that the *Aloe* species in the valleys were full in flower and still in flower later during the winter nearer to spring (September). During such periods it was not unusual to capture sugarbirds at the *Protea* sites with aloe pollen present on their foreheads (pers. obs).

Discussion

These studies in eastern Mpumalanga, as well as those of Calf & Downs (2002) and Symes *et al.* (2001) in the eastern Free State and KwaZulu-Natal, show that the seasonal presence of Gurney's Sugarbird mostly occurred as a result of the flowering phenology of *Protea* species, but also by other factors such as post fire dispersal and availability of *Protea* inflorescences which is dependent on good rainfall (pers. obs). It is known that the sugarbirds are territorial at their *Protea* localities and have been observed to move to other *Protea* clumps after the occurrence of veld fires (de Swardt 2010). A total of 671 (36.4 %) Gurney's Sugarbirds were captured in *P. roupelliae* woodland in the Mpumalanga and Free State study sites showing their fidelity and association to this vegetation type (de Swardt 2012; unpubl. data). Of 875 sugarbirds ringed in the Lydenburg area, 26 individual recaptures were obtained in the *Protea* clumps were ringed or very close to it. The *P. roupelliae* localities in which the sugarbirds were ringed over the years were affected by grassland fires and post-fire, and seasonal movements were observed in the population (de Swardt 1993; 2010). The sugarbirds will move away to another unburned site when their territory is affected by fire or when nectar resources are depleted.

During dry seasons it was observed that actual number of flowers on *Protea* trees was generally scarce with only a few inflorescences present. During such years, large influxes of sugarbirds were observed in the suburban areas where they also visited flowering aloes (de Swardt 1991, 1998). The furthest seasonal movement record for this species is a recovery in the Pilgrim's Rest area (Brown 2005; SAFRING unpubl. data). In some areas, especially in KwaZulu-Natal, their distribution ranges have extended due to the increase of *Protea* nurseries in these areas and the sugarbirds may even become resident if there are year round nectar supplies (Potgieter *et al.* 2008). Previous studies show that sugarbird seasonal movements coincide with the peak flowering period of *P. roupelliae*, but their movements were also in response to veld fires in *Protea* veld – the birds disperse when nectar resources are depleted (also after drought conditions as this data suggests) (de Swardt 1991; 1993).

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Table 1: Details of seasonal movement data of Gurney's Sugarbirds *Promerops gurneyi* between the mountain localities in the Lydenburg study area (see also de Swardt 1991, 1998). Ad = adult, Sad = sub-adult, M = male, F = female, U = unknown sex.
*438954 was subsequently recaptured twice at mountain locality after 27 months (11 March 1990)

Ringno.	Age	Sex	Ringing locality	Date	Recapture locality	Date	Distance (km)	Months
438902	Ad	F	Paardeplaats	87-02-28	Town	88-05-31	**9.3**	**15**
438906	Ad	F	Paardeplaats	87-02-28	Town	87-06-14	**8.8**	**4**
438911	Ad	M	Sterkspruit	87-03-01	Town	89-06-18	**6**	**28**
438943	Ad	M	Paardeplaats	87-11-28	Town	92-04-27	**8.8**	**53**
438947	Ad	M	Sterkspruit	87-11-29	Town	90-07-07	**6.5**	**31**
438949	Ad	M	Sterkspruit	88-01-09	Prodution Unit	92-06-09	**6.5**	**54**
438952	Ad	F	Sterkspruit	88-01-09	Prodution Unit	89-06-21	**6.5**	**18**
438953	Ad	M	Sterkspruit	88-01-09	Town	89-04-30	**7**	**16**
438954*	Ad	M	Sterkspruit	88-01-09	Town	89-07-23	**7**	**16**
438960	Ad	M	Town	88-05-29	Sterkspruit	89-12-19	**7**	**19**
462109	Ad	M	Prodution Unit	89-06-21	Sterkspruit	89-11-29	**6.5**	**5**
462116	Sad	U	Town	89-06-27	Gustav Klingbiel	89-09-23	**6.8**	**3**
462143	Ad	M	Sterkspruit	89-09-18	Prodution Unit	94-07-08	**6.5**	**57**
462151	Ad	M	Sterkspruit	89-09-18	Prodution Unit	94-07-08	**6.5**	**57**
462152	Ad	F	Sterkspruit	89-09-18	Prodution Unit	92-06-09	**6.5**	**32**
462193	Ad	M	Sterkspruit	89-11-30	Town	92-06-07	**6.8**	**30**
464952	Ad	F	Potloodspruit	90-03-12	Town	97-06-19	**6.9**	**87**
4A00008	Ad	M	Paardeplaats	90-12-02	Prodution Unit	92-07-23	**8.5**	**8**
4A00018	Ad	M	Sterkspruit	90-12-06	Prodution Unit	94-07-08	**7**	**43**
4A00039	Ad	M	Town	92-06-07	Gustav Klingbiel	92-11-20	**7**	**6**
4A00068	Ad	M	Gustav Klingbiel	92-11-20	Visserye	94-08-21	**6.8**	**21**
4A00078	Ad	M	Gustav Klingbiel	92-11-20	Town	94-05-23	**7**	**18**
CC05404	Ad	M	Sterkspruit	92-11-23	Hospitaal	93-06-07	**8.8**	**7**
498404	Ad	M	Town	93-05-21	Pelgrims	99-04-14	**37**	**71**
CC05457	Ad	M	Gustav Klingbiel	96-01-10	Dorp	01-07-10	**7**	**66**
CC05460	Ad	M	Gustav Klingbiel	96-01-10	Hospitaal	98-06-22	**7**	**29**

Table 2: Details of post fire movements in Gurney's Sugarbirds *Promerops gurneyi* between the mountain localities in the Lydenburg study area (see also de Swardt 1991). Ad = adult, M = male, F = female.

Ringno	Age	Se	Ringing locality	Date	Recapture locality	Date	Distance (km)	Months
438949	Ad	M	Sterkspruit	1988-01-09	Production Unit	1992-06-09	**5.5**	**54**
464984	Ad	M	Nooitgedacht farm	1990-07-11	Paardeplaats	1992-11-25	**3.0**	**29**
4A00033	Ad	F	Paardeplaats	1991-12-29	Gustav Klingbiel NR	1992-07-01	**3.2**	**6**
CC34022	Ad	F	Nooitgedacht NR	2005-06-08	Natalshoop	2011-02-19	**1.7**	**69**
CC34026	Ad	M	Nooitgedacht NR	2005-06-08	Natalshoop	2007-11-17	**1.7**	**30**
CC71255	Ad	M	Natalshoop	2007-03-07	Natalshoop Site 2	2014-02-17	**0.5**	**84**