Afring News online 39:9-13, 2010

Barn Swallow: The World's Best Known Migrant

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Hirundo rustica rustica - adult

The Barn Swallow, or the European Swallow as it was previously known, is a widespread and common summer visitor to southern Africa. It is often regarded as the announcer of spring/summer in both the northern and southern hemispheres; it is also one of most well known migrants in the world, which in a way makes it one of the most studied birds in the world. So why do we still study them? The answer to this is simple – they are amazing little bird.

Most of the work is done in their breeding grounds in Europe, and in southern Africa the only research generally is ringing. I started ringing at Mt. Moreland, where the roost hosts 3 million birds during the southern African summer, three seasons ago, primarily to try and find out more about the movements of these birds before the new King Shaka International Airport opened in 2010. Once you start, however, you just get more and more involved and things can progress at an alarming rate, which is what has happened this past season with a roost at Umzumbe on the KwaZulu-Natal (KZN) South Coast, which hosts 1.5 million swallows. Recently I have also been studying the recapture data of the Barn Swallows from the SAFRING database. This has shown some very interesting movements of the birds in southern Africa. It seems to confirm some suspicions that we have had regarding the roosting sites north of Cape Town.

Analysis of SAFRING recoveries

The analysis of the data was time consuming and entailed sifting through an excess of 900 records. The first step was to calculate the time elapsed from ringing to recapturing and this allowed me to separate out a couple of hundred records of birds that were recaptured during the same season at the same site. Although it sounds irrelevant, it at least suggests that swallows remain at the same roost site throughout the season. I was also able to establish the oldest bird on the system which happened to be a swallow ringed in Durban at the Kwa Mashu Sewrage works on 11 December 1966 - it was recaptured in Durban North on 4 December 1975, 3280 days (over 8 years) later with the distance between the two ringing sites being 8 km. This bird has however covered around 160 000 km on migration alone (2 journeys a year of about 10 000 km per journey). I was also able to obtain migration times for

Swallows flying around nets

the birds with the quickest time being 27 days from ringing to recapturing. This bird was ringed in the Hawaan Forest area of Umhlanga Rocks on 12 April 1970 and recaptured in Whitely Bay, England on 9 May 1970 with a straight line distance between the two points of 9915 km. The second quickest was a bird ringed in Johannesburg and recaptured in Leninsk, Russia, 34 days later with a distance of 10 548 km. We must also remember that the birds never left on migration the day they were ringed and in all likelihood were not recaptured on the day they arrived. The northward migration is always quicker than the southerly migration, and the reason for this is a natural instinct I refer to as “The need to Breed”. On the southerly migration there is no need to arrive here as quickly as possible and reclaim your nesting site and partner.

My next step was to calculate the distance travelled for all the birds. This also showed some very interesting facts, with birds being recaptured the day after being ringed a distance of 54 km from the ringing site. This was for quite a few birds giving a good indication of the daily feeding range of the birds. I was also able to see that the greatest distance on a single migration was a bird ringed in Zeekoevlei, Cape Town, and was recaptured near Krasnozerskoye, Russia with a distance travelled of 11384 km.

Barn Swallows massing before dropping to roost

After all of this I looked at the birds ringed within southern Africa at the start of the swallow season and recaptured later in the same season, showing that some of the birds ringed in the northern roosts in the region ended up at the southern roosts, giving a clear indication that the swallows use the large roosts on their migration southwards. This alone could be a worrying factor as any disturbance or damage to these roosts could cause problems for the southern birds on their migration, a point that is very relevant with the opening of the King Shaka Airport near Durban. Its runway finishes 2.6 km away from the reed beds at Mt. Moreland. In defence of the airport, a bird strike radar has been installed and if used correctly should prevent any bird strikes from happening.

Ringing in KZN

The three seasons of ringing at Mt. Moreland has allowed the ringing of well over 1000 swallows to date with only one recapture of a foreign ringed bird. This is not the return most people would expect, but it is still extremely rewarding considering the large size of the roost. Most roosts that achieve high returns are either small roosts of less than 30 000 swallows or large roosts of birds in a very small area. Mt. Moreland unfortunately does not match any of these criteria with an estimated 3 million swallows and a reed bed covering 35.5 hectares. The site has in the past been visited by overseas Barn Swallow researchers, the two most notable being Prof. Anders Pape Moller, who was contributed to the EIA process for the new airport, and Dr. Tibor Szep, as well as some local ornithologists like the late Professor Steven Piper. The sight of such a huge number of birds circling before plummeting into the reed bed is awe-inspiring and should be on everybody's wish list. The view site is open every evening during the swallow season, from mid October to mid April (for information and directions visit the website at http://www.barnswallow.co.za).

Mt. Moreland View Site as seen from ringing site

Our one recapture to date was a bird that was ringed in Nilsia – Finland on 27 July 2008 and we recaptured it on 13 December 2008. The bird was ringed as a nestling and was already starting to show the odd reddish feather on the throat at the time of recapture. Another bird that we ringed the day before has recently been found dead at Kirovograd in southern Ukraine. This bird, coincidently, was found on the same day (1 May 2010) that the new airport - that threatens their existence at the "largest swallow roost in South Africa" - opened. It is uncertain if this bird was resident in the Ukraine or if it was heading further north.

In addition to the Mt. Moreland roost I recently started ringing at the Umzumbe roost on the KZN South Coast. This roost hosts about 1.5 million Barn Swallows. The roost is only accessible by crossing the Umzumbe River on foot, and not by vehicle. It is under no threat and hopefully will be utilized for many a year to come. My ringing site here is 900m from the roost (too great a distance to carry all the equipment to the reeds, also there are security reasons for the vehicle) and so has proved quite a difficult site to ring. Recent sessions have added another 589 captures in 6 weeks. The birds captured here have thrown up some very interesting questions. Two of the swallows had only one leg each, a most unusual

Barn Swallow with missing leg

find in these birds, according to Anders Pape Moller (University Pierre & Marie Curie, Paris, France). Moller has only recorded this in two birds of the tens of thousands of birds he has ringed. A paper was written by Anders along with T.A. Mousseau (Department of Biological Studies, University of South Carolina, U.S.A), F. de Lope (Universidad de Extremadura, Avda, Spain) and N. Saino (Universita degli Studi di Milano, Italy), of a study done after the Chernobyl disaster of 1986. This study (1991 to 2006) noted that the Barn Swallows' odds of disabilities and defects rose dramatically. Among the problems were missing legs, deformed beaks, bent and uneven tail streamers and partial albinism or leucistic feathers. The number of swallows with one or two white feathers mixed amongst their blue and red feathers is about 2%, at Chernobyl this rose upwards of 15% of the birds during the study period, another site or control site was used in the Ukraine approximately 220 km away. It was also noted that a large number of birds developed a reddish colour on the belly, more common in the Ukraine than elsewhere. This, however, cannot be solely attributable to the Chernobyl Disaster as interbreeding between different subspecies of swallow occurs, about 5% of the Ukraine's population shows this trait, whereas in western Europe the number is down to 1%. The study showed that the swallows had a higher birth defect rate than any other part of Europe.

Inconsistent and bent tail streamers

The Umzumbe roost has now started to raise questions as to where a lot of these birds breed in Europe, due to the high number of birds with the odd white feather where it should not be, the two birds with only one leg, a large number of swallows with inconsistent tail streamers along with the reddish underparts could lead us to suspect that these swallows are from the Ukraine and in particular from the Chernobyl area. In total 12% of the birds ringed at Umzumbe have shown variations in leucistic feathers, tail streamer problems and the two

An example of leucistic feathers and pale reddish colouring

Another example of leucistic and dark reddish plumage

one-legged birds. In addition to this the colour variation on the belly ranging from pale reddish to reddish occurred in 27% of the birds ringed. We do know that birds from the Ukraine have been recaptured in Johannesburg, Pretoria, Lake Kariba, Gabarone, Harare and Durban, unfortunately ringing is not as common in the Ukraine as it once was but we can only wait and see if the current data can be proven.

Considering the distance between the Umzumbe and Mt. Moreland roosts is 120 km a variation in colour between the birds at each site could be used as a study roost (Umzumbe) and a control roost (Mt. Moreland). All birds were handled, ringed and colour graded by myself to get a consistent colour coding. The birds were sorted into 4 different categories of colour on the belly, the first was what we expect on the birds and that is white, the second I called buffy where the feathers were almost a dirty white, the third I called Pale Reddish and these feathers had a definite reddish colour to them but not a deep red colour, the fourth variation was classified as dark reddish and these birds had a more even reddish colour on the belly and just a little lighter shade to the red on the throat.

Table 1. Belly colour variations at two locations

	Umzumbe Roost n=367	Mt. Moreland Roost n=243
White Belly	52.40%	71.70%
Buffy Belly	20.60%	20.75%
Pale Reddish Belly	21.60%	5.66%
Dark Reddish Belly	5.4%	1.89%

Over the years I have realized that the Barn Swallow can be used to indicate impending changes in the weather. How they can sense this only they will know but two instances are worth noting. The first being 8 years ago when during February the swallows near Port Shepstone were behaving as if it was time to migrate (at least 4 to 6 weeks early). They were sitting on telephone lines and having a feeding frenzy over the sugar cane, and the next day they had all disappeared. At the time you think that is strange, however, that evening a storm hit the South Coast uprooting trees and lifting roofs off houses. Somehow the birds sensed the change in the pressure and moved north early to avoid the storm. The second instance was in November 2009 at Mt. Moreland. We ringed on the Friday and Saturday evenings where good numbers of birds were caught, but on going through the data it could be seen that most birds had not started their primary feather moult. Normally by this stage they should be onto the third or fourth feather (as seen from previous seasons). On the Sunday evening very few birds came into roost, then on the Monday even less arrived, and on the Tuesday very wet and cold weather arrived and lasted for 5 days. Once the weather had warmed up and the food supply was again present the swallows arrived back in their usual numbers and in December we noted that they had started to moult their primary feathers. In both cases this begs the question as to how they could sense the change in the weather, and does this influence their migration.