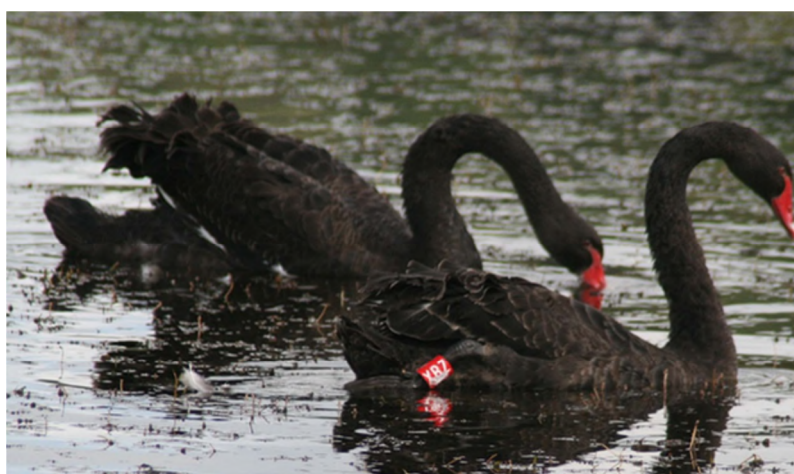


Bird banding in Queensland in 2017

By Jon Coleman

Since 2006 three bird banding projects have been conducted in Queensland by the author and a team of voluntary assistants. These projects are supported by Birds Queensland who provide insurance cover for activities and the Queensland Wader Study Group who fund shorebird banding activities. The projects concern (1) the breeding biology of Black Swans, (2) the movements, and fidelity and of shorebird populations utilising Moreton Bay, and (3) the establishment of survival and productivity rates of a wide range of other bird species across many habitats throughout Queensland and Northern New south Wales. A brief summary of each project and its progress in 2017 is given below.

1. Black Swan breeding biology



Colour-marked Black Swans,
Pacific Pines, Gold Coast
(Jon Coleman)



Colour-banded adult female
nesting, Pacific Pines,
Gold Coast



Project aims

The study aims to establish mortality rates, dispersal patterns, Lifetime Reproductive Success, productivity and recruitment in Black Swans. In addition, the population in a defined study area will be monitored over a long period of time to establish population indices for breeding and non-breeding contingents of the population and establish long term trends in the black swan population.

Methods

The project involves a combination of capturing and banding with field survey work. Known breeding sites within the study area are visited each year to establish the presence of territorial pairs and

record if they breed and how many cygnets they hatch and rear. Attempts are made to catch and band all paired birds and where possible cygnets are also banded after being caught by hand.

Sites identified as non-breeding flock sites are visited each month, when numbers of birds and band numbers are recorded, and un-banded birds, where possible caught and banded. Where flocks of moulting birds are identified, attempts may be made to catch whole flocks when the birds are flightless to take the full range of biometric measures, band new birds and assess body condition during moult and hence moult site quality.

Every captured bird receives two bands, a standard ABBBS metal band on one leg, and an individually engraved colour band on the other leg. The combinations used can easily be read in the field by researchers or members of the public, without the need to recapture the bird. For each captured bird, measurements are made of tarsus length, radius bone length, total head length, bill length, bill width, and body weight, which is used to create a body condition index.

By repeating this field work consistently over a period of years, long-term population trends in the study area are being established. Data on survival, productivity and recruitment are being collated to determine Lifetime Reproductive Success, and used to understand the cause of individual variation in these factors, the cause of that variation and its impact on overall population demography. Continual monitoring, in the manner described above, with reports of colour sightings from the public, is generating comprehensive data on local movements, moult, migration (enabling the catchment areas of those sites to be established), dispersal of juveniles from the natal site and breeding site fidelity. Potentially irruptive behaviour can also be monitored and documented.

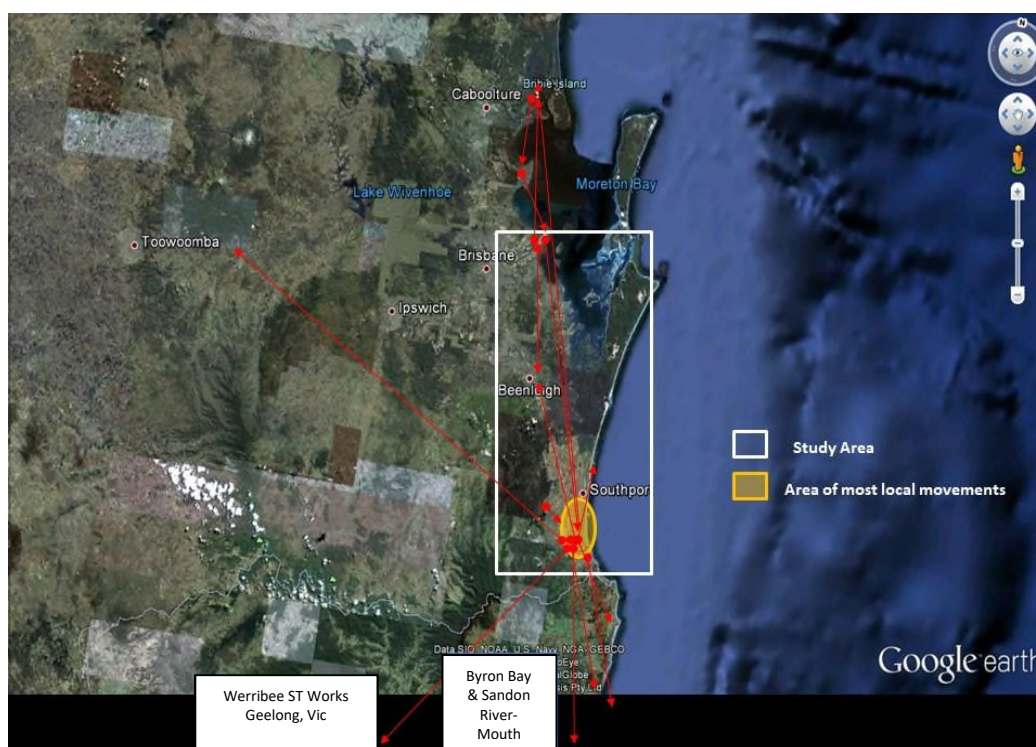


Figure 1. Recorded movements of Black Swans banded during this study

Results

From 2006 to 2017, 520 swans were banded, to which 55 were added in 2017 with 2,907 resightings recorded to date. The majority of recorded movements have occurred within Moreton Bay, but some birds have also been sighted in the Northern Rivers area of New South Wales and one bird was sighted in Werribee, Victoria. In 2017, 40 separate pairs were identified, compared to 44 in 2016 and only 27 in 2015. Of the 40 pairs, 22 were found breeding, and 29 breeding attempts were recorded. Figure 2 shows that 2013 was by far the poorest year recorded so far in terms of number of breeding

pairs with the following two years showing a gradual improvement, and 2016 showing a return to pre-2012 numbers. The reasons for the poor breeding season in 2013 are unclear.

Six pairs bred more than once in the calendar year. Five pairs nested twice, three of them successfully producing cygnets in both attempts. One pair nested three times, producing cygnets only in their final attempt. Of the 29 breeding attempts, six (19%) failed to produce cygnets, compared to 10(32%) in 2016, 5(28%) in 2015 and 7(39%) in 2014, indicating that 2017 was one of the most successful years for reproduction (Fig. 3).

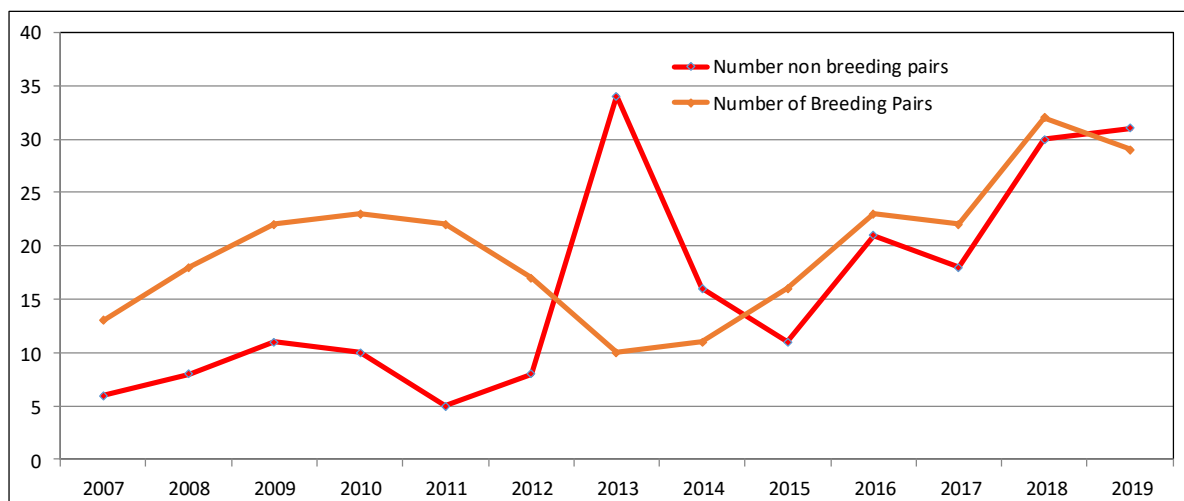


Figure 2. Number of breeding and non-breeding pairs recorded in each year of the study (2007-2017)

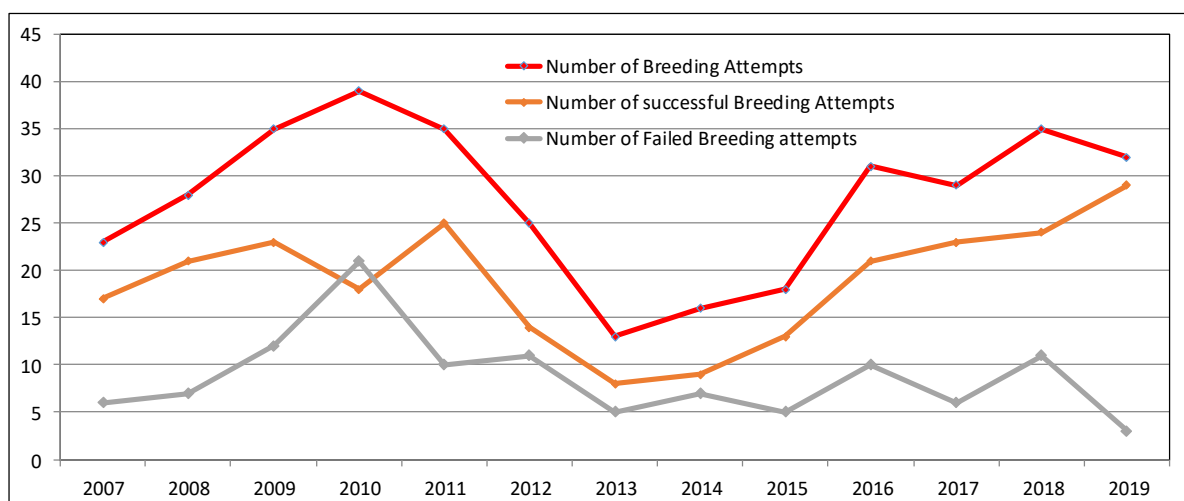


Figure 3. Number of breeding attempts recorded in each year of the study (2007-2017)

Hatching success for those breeding in 2016 was 2.88 ($n=29$, $SE=0.4$) per breeding attempt (compared to 2.54 and 2.04 in 2016 and 2015 respectively), which was the highest number of cygnets hatched per breeding attempt recorded in this study. Rearing success in 2017 was 2.19 cygnets per breeding attempt ($n=29$, $SE=0.4$), considerably better than that of 0.61 cygnets in 2014, and the third highest number of cygnets reared per breeding attempt recorded in the study.

Publications arising from this study

- Coleman, J.T. 2010. Observations on breeding in the Black Swan *Cygnus atratus* in south-eastern Queensland. *Corella* 34: 103-106.
- Coleman, J.T. 2014. Breeding biology of the Black Swan *Cygnus atratus* in south-east Queensland, Australia. *Wildfowl* 64: 217-230.