

Beyond the brink: The White-fronted Chat's path to extinction

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The White-fronted Chat is a small insectivorous bird that is now extinct at Sydney Olympic Park and most likely across the entire Sydney basin. The population size had already shrunk to a non-viable level by the time the plight of this species was identified. A program of investigations and management actions aimed to conserve the population as best we could, and also to investigate factors contributing to its decline with the hope it would help conservation of chats elsewhere. The decline and eventual local extinction of this species serves as a reminder that there are tipping points beyond which a species is not recoverable – in small populations the impact of threats like predation, human disturbance and extreme weather events are magnified and can ultimately prove fatal. The challenge going forward is to remember the chats and to not allow our other species to get to that tipping point.

Introduction

White-fronted Chats (*Epthianura albifrons*) have a widespread distribution across southern Australia but have declined over much of their range. They have historically been recorded from 56 different locations across the Sydney region, but by 2003 the Sydney population was limited to two isolated and closed subpopulations located at Towra Point Nature Reserve near Kurnell, and within Newington Nature Reserve at Sydney Olympic Park. Very low numbers were present at both locations, and they were separated by 25 kilometres of urbanised land across which the birds were unlikely to fly.

At Sydney Olympic Park, the birds were regularly recorded in the saltmarshes of Newington Nature Reserve, with occasional sightings reported from other parts of Sydney Olympic Park and on grassland on the northern side of the Parramatta River. White-fronted Chats were once found in saltmarsh adjoining the Waterbird Refuge at Bicentennial Park, but no sightings had been recorded at that location since 1997.

Population size determination

A 2004 review of Sydney Olympic Park's long-term bird monitoring data (Major 2004) identified the White-fronted Chat as a species of high priority due to its declining numbers. The chat population had dropped from an estimated 60-100 birds in 1996 (when regular monitoring of the Park's bird population began), to just 26 birds recorded in 1997 to 22 birds recorded in 2000 (Straw 1999; Spencer & Saintilan 2005), though there was much uncertainty around the actual population size. A targeted monitoring program was recommended to determine population size, with the resulting information to then guide any further monitoring or management decisions.



White-fronted Chat (male), Newington Nature Reserve

Chats tend to forage in pairs or small groups for most of the year, however during autumn they typically aggregate into flocks each evening and share communal nocturnal roosts. By counting birds at this time, it was believed that a reasonably accurate estimation could be made of the total number of birds comprising the local population.

The areas that White-fronted Chats most often frequented at Newington Nature Reserve were determined in two preliminary surveys. Two transects through the wetlands were chosen to cover as much of this area as possible, accounting for the unexploded ordnance access restrictions which then applied to the Reserve. These transects were surveyed on eight occasions between March and May 2005 over a two-hourly survey period. The largest flock observed in these surveys was 19 birds, which was taken to be the total population size.

In spring 2005, one chat nest containing three eggs was identified – one egg hatched and the chick appeared to

1. Mark-recapture surveys

Prior to a 2008 mark-recapture program, eleven birds (six males and five females) were regularly recorded in and around the nature reserve.

Three mark-recapture surveys were carried out between June and September 2008 using mist-nets at locations where the chats were commonly recorded. Wooden 'lures' in conjunction with chat calls played on an MP3 player attached to a speaker were used to attract birds towards the mist-nets. When in close proximity to the nets, however, chats appeared to be aware of their presence and generally flew over them. Nevertheless, birds were successfully captured after being 'herded' towards the nets by researchers.

Eight birds (six males and two females) were captured and marked with different colour band combinations to enable identification of individual birds. A third female was observed during the June survey but was not captured, and was not observed again during the subsequent mark-recapture surveys. Three of the banded birds (two males and one female) were first year adults (i.e. fledged during the 2007/08 breeding season).

Other bird species captured in the mist-nets were the Superb Fairy-wren, Golden-headed Cisticola and Black-fronted Dotterel, all of which are common in the Main Lagoon saltmarsh.

2. Raven control

A raven control program commenced in November 2007 (licensed under the *National Parks & Wildlife Act 1974*), with culling events taking place whenever flocks of more than ten ravens were observed within the Reserve or on adjacent land. Culling was undertaken by a licensed contractor using firearms fitted with a silencer. A total of 104

ravens were culled over 2007/08, successfully reducing the number of ravens present in the chat's breeding grounds.

3. Nest predation investigation

The nature and extent of nest predation was investigated in November 2007. A total of 32 artificial nests (made from rubber tennis ball inners covered in coconut fibre) containing artificial eggs made of plasticine were installed in saltmarsh and mangroves in Newington Nature Reserve for two weeks in November 2007, after which they were removed and checked for signs of predator activity. Foxes, cats, rats and particularly ravens were believed to be likely predators. Ravens are a known nest predator and large flocks were regularly present in and around the saltmarsh areas where chats were known to breed.

There was no clear indication of predation by ravens or other species although approximately one third of the artificial nests had been disturbed to some extent, apparently by small birds and possibly rodents.

4. Nest monitoring

Mark-recapture surveys enabled extensive observations of chat behaviour in their saltmarsh habitat. During the September 2008 survey, a pair of birds was observed periodically flying in and out of a stand of *Suaeda australis*, and a search of the area revealed a nest with three eggs. Another pair of birds was observed exhibiting similar behaviour a few days later and a search revealed a nest with three eggs at the base of a mangrove sapling. Both nests were monitored every few days to determine hatching and nestling survival rates, and with a view to banding nestlings (which is best undertaken when they are 5-10 days old).



Making artificial nests used to investigate nest predation



Approximately a third of all artificial nests showed signs of disturbance and damage



Wooden lures used to attract birds to mist nets



Banded birds were individually colour-coded



Nest concealed in *Suaeda australis*. Chicks and female parent subsequently lost to predation



Chick in this nest appeared to successfully fledge

Eggs in the first nest had hatched by September 25 when two nestlings were observed. There was no sign of the remaining egg or a third nestling. Banding was proposed for September 28, however, the nest was found empty, and the remains of both chicks plus those of the female parent (including the leg bands) were found below the nest. Predation was consistent with that of an Australian Kestrel, which feeds on its prey where it catches it and which is frequently observed hunting over the saltmarsh.

Two eggs hatched in the second nest on October 3. Banding was proposed for October 9, however the nest was found destroyed and empty the day before banding, with no signs of the nestlings or unhatched egg. This was most likely the result of a terrestrial predator such as a rat, fox or cat.

5. Sensitivity to human disturbance

Sensitivity to human disturbance was investigated in the student research project. Chats reacted to the presence of

people at around 32 metres distance, whereas two other species of small birds found in the same saltmarsh habitats – Richard's Pipit and Superb Fairy Wren – allowed humans to get much closer before reacting (Jenner 2011). This finding is consistent with the chat's Sydney distribution shrinking over the years to the point where they were only found in nature reserves where there was no human disturbance.

Decline leading to local extinction

In 2010, the White-fronted Chat was listed under New South Wales threatened species legislation as a 'vulnerable species', and the Sydney regional population (Newington and Towra Point) was listed as an 'endangered population'. Justification for these listings was strongly based on the data and analysis arising from the student research project undertaken at Sydney Olympic Park and Towra Point.

The last individual of the species at Sydney Olympic Park was recorded in 2017; this same sole bird had been

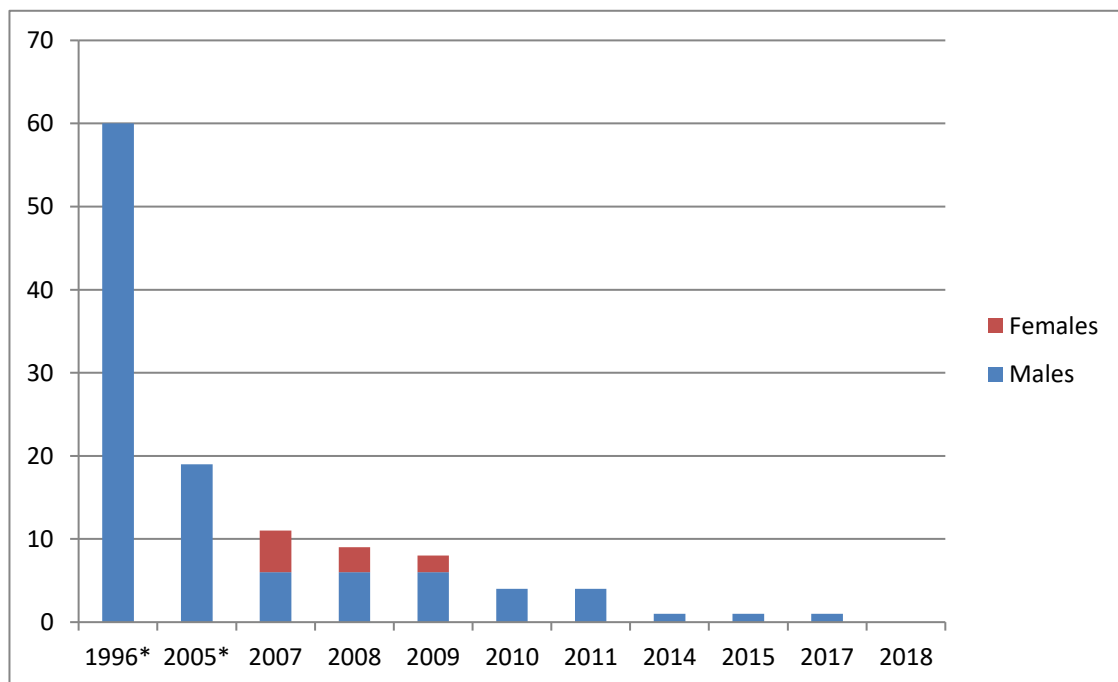


Figure 1 Decline of the White-fronted Chat at Sydney Olympic Park
*Sexes were not separately recorded in 1996 and 2005 surveys

recorded regularly over a long period of time, and is believed to have died later that same year. This male bird was banded as an adult in 2008 and thus would have been over ten years of age at the time he was last seen, which is a considerable age for a small bird to survive in the wild, and the longest-lived chat on record (Richard Major, pers comm.).

The chat population was already in trouble when it came to our attention in 2005, and the pattern of decline continued despite efforts to reduce potential nest predators, protection of core habitat from human disturbance, evidence of successful recruitment in successive years, and increases in the extent of saltmarsh habitat. Females died out several years before the males, and this may have been exacerbated by predation whilst on the nest, as was observed during monitoring. Female chats undertake all nocturnal incubation; thus they are likely to be more susceptible to predation by raptors at their peak hunting times of dusk and dawn, and perhaps also to nocturnal predators such as the fox, rat and cat.

The plight of the White-fronted Chat illustrates the vulnerability of small populations to threats like predation, human disturbance and extreme weather events. Sydney Olympic Park is widely recognised as an urban biodiversity hotspot, but its habitats are small, isolated, highly modified and subject to increasing human disturbance. Careful stewardship is needed for them to sustain a rich diversity and abundance of wildlife into the future. Our challenge going forward is to prevent other species from declining to the point where a species is not recoverable.

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