

RECORDS OF SHARP-TAILED SANDPIPERS *CALIDRIS ACUMINATA* IN THE HUNTER ESTUARY, NEW SOUTH WALES

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The Hunter Estuary in New South Wales, Australia has been shown to be internationally significant for Sharp-tailed Sandpipers *Calidris acuminata*. The estuary has hosted more than 1% of the non-breeding population in six seasons since 2002, with an estimated 7,000-8,000 birds present in 2014-15 (4.5-5% of the total Flyway population). The very high numbers are associated with the recent restoration of tidal flushing at two wetlands, at Tomago and Hexham, both of which previously had been reclaimed for cattle grazing and are now restored predominantly to saltmarsh.

INTRODUCTION

Large numbers of Sharp-tailed Sandpipers *Calidris acuminata* visit Australia in the non-breeding season. The species, which is confined to the East Asian – Australasian Flyway (EAAF), has an estimated population of 160,000 birds. More than 90% of birds come to Australia especially the southern parts (Bamford *et al.* 2008). The population status within Australia is unclear, with evidence of decline at some locations (Minton *et al.* 2012, Hansen 2011) contrasting with stable (Cooper *et al.* 2012) and increasing (Wilson *et al.* 2011) populations reported elsewhere.

Sharp-tailed Sandpipers are often found at ephemeral wetlands across inland Australia (Bamford *et al.* 2008). Thus, their distribution in Australia varies considerably from year to year depending where inland rain has fallen. Bamford *et al.* (2008) list 39 sites in Australia where more than 1,600 Sharp-tailed Sandpipers have been recorded. This figure equates to 1% of the total EAAF population hence those sites are internationally important for Sharp-tailed Sandpipers (Bamford *et al.* 2008). This large number of important sites reflects the varying distribution patterns of the species in response to inland rainfall (or absence of it). More recently, sites in Australia which have hosted

more than 0.1% of the population of a shorebird species are considered nationally significant (Department of the Environment, Water, Heritage and Arts 2009, Clemens *et al.* 2010).

Bamford *et al.* (2008) listed only nine sites outside Australia as internationally important for Sharp-tailed Sandpipers. This reflects a migration pattern of birds travelling at low density in a broad front across eastern Asia (Higgins & Davies 1996) and perhaps also travelling directly to northern Australia and Papua-New Guinea before spreading further south (Lane 1987). Only ~10% of the population passes through the Yellow Sea area between mainland China and the Korean Peninsula, during northward migration and even fewer on their southward migration (Barter 2000). A relationship has been shown to exist between Yellow Sea dependence and population decline for many shorebird species (Amano *et al.* 2010, Wilson *et al.* 2011).

Although the Hunter Estuary and lower Hunter Valley in New South Wales (NSW) contain extensive areas of wetlands, no sites were recognised as internationally significant for Sharp-tailed Sandpipers by Bamford *et al.* (2008). However, a record of around 1,800 birds at Hexham Swamp (Figure 1) in 2002 (Stuart 2003) was overlooked. Prior to 2008, there had

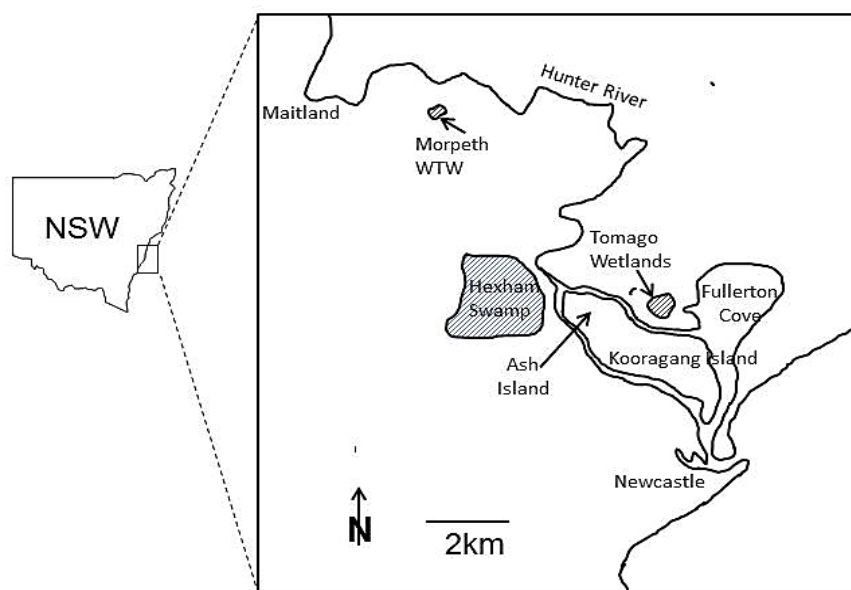


Figure 1. Main wetlands sites in the Hunter River estuary.

been several records of 1000-1200 birds in the Hunter Estuary, below the 1% population threshold. More recently, in November 2009, 2460 birds were recorded at Morpeth Wastewater Treatment Works which is approximately 15 km upstream from the estuary (Newman and Lindsey 2011).

Since 2013, there have been significant numbers of Sharp-tailed Sandpipers present in the Hunter Estuary in the non-breeding season. In this paper, those recent records are documented and comparisons made with earlier records. Two locations within the Hunter Estuary have proven to be very attractive for Sharp-tailed Sandpipers, with many thousands of them often present. Both of the wetlands, Hexham Swamp and Tomago Wetlands (Figure 1), have had tidal flushing reinstated to them recently after long periods of it being prevented (Lindsey 2012, Hunter Local Land Services 2015). This has significantly increased the amount of saltmarsh habitat within the estuary. The successful restoration of these wetlands into saltmarsh habitat provides encouragement for similar ventures that may be being contemplated elsewhere.

METHODS

Most of the data for the Hunter Estuary were obtained from structured surveys by members of the Hunter Bird Observers Club (HBOC). They have been supplemented by opportunistic counts made during other visits to key locations around the estuary. Regular monthly monitoring of Hunter Estuary shorebird sites commenced in April 1999. A standard procedure has been used (Stuart *et al.* 2013) involving multiple teams which visit all the known high tide roost sites. Since 2013, a survey team has visited Tomago Wetlands at the same time as the other Hunter Estuary sites. Regular surveys at Tomago began in 2007 but during 2007-2012 they were conducted on a different day to the main estuary surveys. Tidal flushing occurred very intermittently over 2007-2011 and shorebirds were only occasionally recorded (Lindsey 2012). Shorebirds only began to occur in substantial numbers in late 2012 (Stuart 2013), spurring the decision to begin surveying it simultaneously with other estuary sites. Similarly, during 2009-2013 Hexham Swamp was surveyed on a different day to the main estuary surveys, but since 2014 has been included into the simultaneous effort. Records for Hexham Swamp from prior to 2009 are based on opportunistic sightings reported to HBOC, as there were no systematic surveys conducted.

RESULTS

Figure 2 shows the monthly counts for Sharp-tailed Sandpipers in the Hunter Estuary since 1999 when regular surveys began. The graph is based on a combination of the results from regular surveys and opportunistic records. The highest count obtained for the estuary for every month has been plotted.

In the Hunter Estuary (Figure 2), there were many counts of hundreds of birds between 1999 and 2013,

including more than 1,000 birds recorded in March 2002, December 2002, February 2003, March 2005, December 2009, December 2010 and November 2011. In both the 2013-14 and 2014-15 non-breeding seasons, at least 1000 birds were present throughout, and usually the counts were much higher. The peak counts, based on estimates of flocks in flight including counts made from photographs, were 7000-8000 birds present on 30 January 2014 and 14 December 2014. At the time of writing (October 2015), more than 5000 Sharp-tailed Sandpipers have again returned to the estuary. Many of the records were from Hexham Swamp and Tomago Wetlands, two rehabilitated wetlands containing extensive salt marsh habitat. The highest monthly counts at Hexham Swamp from 2009 onwards are presented in Figure 3, and for Tomago in Figure 4. Figures 3 and 4 are based on a combination of regular surveys and opportunistic sightings. Hexham Swamp currently is the more readily accessible of the two sites and so it has more frequent records.

There also were some high counts at Hexham Swamp reported to HBOC prior to 2009: 1000+ birds in September 2002, 1800 birds in October 2002, 1500+ birds in October 2004, 500+ birds in December 2006 and 300+ birds in December 2007.

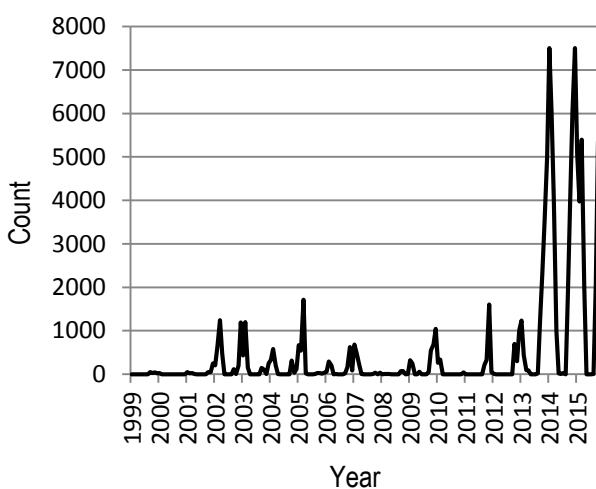


Figure 2 Total counts of Sharp-tailed Sandpiper in the Hunter Estuary

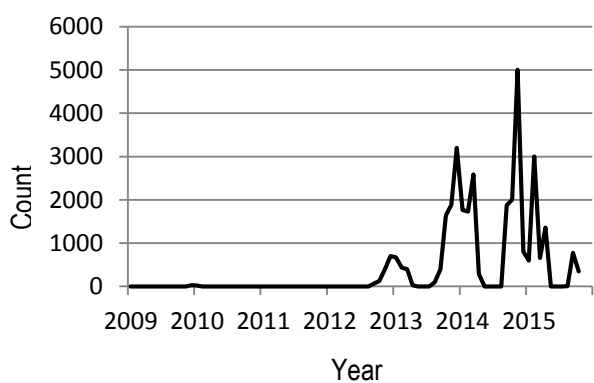


Figure 3 Counts of Sharp-tailed Sandpiper at Tomago Wetlands

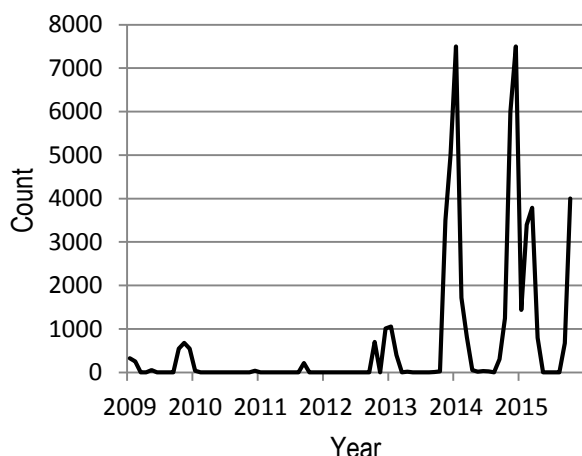


Figure 4 Counts of Sharp-tailed Sandpiper at Hexham Swamp.

DISCUSSION

Most of the high counts for the Hunter Estuary have been of birds present for several months at a time. Sometimes there has been a shorter-term peak, which might represent a brief surge in numbers but which might also reflect the practical difficulties in counting Sharp-tailed Sandpipers. When in the Hunter Estuary, they mostly are quite widely dispersed whilst they either roost or forage, and the entire flock is rarely on view simultaneously.

The very large numbers of Sharp-tailed Sandpipers in the three non-breeding seasons since 2013-14 have predominantly been associated with rehabilitated wetlands at Hexham Swamp and Tomago. Both formerly were tidal but had been closed off for long periods in order to generate grazing land. Tidal gates were installed at Tomago in 1976 (Lindsey 2012). Although in 1983 it was recommended that tidal flushing be reinstated to restore saltmarsh habitat (Clarke and van Gessel 1983), it was not until 2008 that all the necessary approvals were in place and a new gate system was installed. However, because of several operational issues and then a period of heavy rain, the site did not start to become tidally influenced until early 2012 (Lindsey 2012). Small numbers of shorebirds began to visit Tomago Wetlands in September that year, including increasing numbers of Sharp-tailed Sandpipers which peaked at ~700 birds later that season. In the 2013-14 and 2014-15 seasons, several thousands of Sharp-tailed Sandpipers were regularly found foraging and roosting in salt marsh at Tomago (Figure 3). Stages 1 and 2 of the rehabilitation project have created ~100 ha of wetland with an additional 62.5 ha expected during Stage 3 for which construction work is just starting (UNSW Water Research Laboratory 2015).

Hexham Swamp became closed to tidal flushing in the early 1970s when a series of eight floodgates was progressively installed. In December 2009, one floodgate was re-opened, and then others progressively until July 2013 when all eight gates had been re-opened

(Hunter Local Land Services 2015). A minimum of 600 ha of land is expected to become inundated by completion of the rehabilitation project in 2016 (Hunter Local Land Services 2015).

Sharp-tailed Sandpipers were occasionally recorded at Hexham Swamp in large counts when it was a freshwater swamp, but these were short-duration events. Approximately 1800 birds were present in October 2002 (Stuart 2003) and 1500 birds in October 2004 (Stuart 2005). These records possibly involved birds on migration passage. There were intermittent reports of lesser numbers during 2004-2009, again probably involving birds on passage. The first period of a sustained presence by Sharp-tailed Sandpipers was October-December 2010 (Figure 4), coinciding with the opening of the third floodgate (Hunter Local Land Services 2015). In the 2012-2013 non-breeding season, the peak count was 1057 birds. In the 2013-14 and 2014-15 seasons, many thousands of Sharp-tailed Sandpipers were regularly found foraging and roosting at Hexham Swamp (Figure 4). The peak counts were of 7000-8000 birds. The counts for airborne birds were supported by many ground counts of 4000-6000 birds. There were considerable practical difficulties in obtaining an accurate count of Sharp-tailed Sandpipers on the ground as they usually were widely dispersed.

During these recent episodes, Sharp-tailed Sandpipers have sometimes roosted elsewhere around the Hunter Estuary (i.e. at other known high tide roost sites). However, Hexham Swamp and Tomago Wetlands have been the main foraging areas for them, and their usual roosting locations. They were recorded only infrequently and in low numbers at Ash Island which in earlier years was the most favoured site for them in the estuary.

With an estimated total EAAF population of 160,000 birds (Bamford *et al.* 2008), the counts of 7000-8000 birds in the Hunter Estuary represent 4.5-5% of the population. There have only been eight sites in Australia which have recorded more than 7000 Sharp-tailed Sandpipers in one survey (Bamford *et al.*, 2008).

These very high counts in the Hunter Estuary are unprecedented. There are three known records of 1000-1200 birds (in 1989, 1993 and 1994) but most maximum counts since 1969, when records first are available, have been of only a few hundreds of birds (Stuart 2014, van Gessel and Kendall 2015). Almost certainly, favourable conditions at the two restored salt marsh wetlands has been a major factor in attracting so many birds for such sustained periods.

CONCLUSIONS

The Hunter Estuary is an internationally important site for Sharp-tailed Sandpiper based on several records in the last 15 years where more than 1% of the total EAAF population were observed and very large counts in the 2013-14, 2014-15 and 2015-16 non-breeding seasons involving up to 4.5-5% of the EAAF population. In recent years, the birds have mainly utilised two newly rehabilitated wetlands where extensive areas of

saltmarsh habitat has successfully been restored. Whether this is a transitional effect or a more permanent one will become clearer from the intended ongoing monitoring.

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REFERENCES

- Amato, T., T. Szekely, K. Koyama, H. Amano & W.J. Sutherland.** 2010. A framework for monitoring the status of populations: An example from wader populations in the East Asian – Australasian flyway. *Biological Conservation* 143: 2238-2247.
- Bamford, M., D. Watkins, W. Bancroft, G. Tischler & J. Wahl.** 2008. Migratory Shorebirds of the East Asian – Australasian Flyway: Population Estimates and Internationally Important Sites. Wetlands International – Oceania. Canberra, Australia.
- Barter, M.** 2002. Shorebirds of the Yellow Sea: Importance, Threats and Conservation Status. Wetlands International Global Series 9, International Wader Studies 12, Canberra, Australia.
- Department of the Environment, Water, Heritage and Arts.** 2009. EPBC Act Policy Statement 3.21 – Significant Impact Guidelines for 36 Migratory Shorebird Species. Department of the Environment, Water, Heritage and the Arts, Australian Government.
- Clarke, C.J. & F.W.C. van Gessel.** 1983. Habitat evaluation – birds. In: *An investigation of the natural areas of Kooragang Island, Hunter River*. Moss, J. (Ed.), Department of Environment and Planning, Sydney, 117-144.
- Clemens, R.S., M.A. Weston, A. Haslem, A. Silcocks & J. Ferris.** 2010. Identification of significant shorebird areas: thresholds and criteria. *Diversity Distrib.* 16: 229-242.
- Cooper, R., R. Clemens, N. Oliveira & A. Chase.** 2012. Long-term declines in migratory shorebird abundance in North-east Tasmania. *Stilt* 61: 19-29.
- Hansen, B.** 2011. A brief overview of literature on waders in decline. *Stilt* 60: 6-8.
- Higgins, P.J. & S.J.J.F. Davies.** (Eds) 1996. Handbook of Australian, New Zealand and Antarctic Birds Volume 3: Snipe to Pigeons. (Oxford University Press: Melbourne.)
- Hunter Local Land Services.** 2015. Report of the Lower Hunter Community Advisory Group. www.hunterlls.nws.gov.au. Accessed 19 October 2015.
- Lane, B.A.** 1987. Shorebirds in Australia. (Thomas Nelson: Melbourne, Australia.)
- Lindsey, A.** 2012. Birds of Tomago Wetlands, Hunter Wetlands National Park 2007-2012. *The Whistler* 6: 1-10.
- Minton, C., P. Dann, A. Ewing, S. Taylor, R. Jessop, P. Anton & R. Clemens.** 2012. Trends of shorebirds in Corner Inlet, Victoria, 1982-2011. *Stilt* 61: 3-18.
- Newman, M. & A. Lindsey.** 2011. A ten-year study of shorebirds at the Morpeth Wastewater Treatment Works near Maitland in New South Wales. *Stilt* 60: 37-45.
- Stuart, A.** (Ed.) 2003. Hunter Region of New South Wales Annual Bird Report Number 10 (2002). (Hunter Bird Observers Club Inc.: New Lambton, NSW.)
- Stuart, A.** (Ed.) 2005. Hunter Region of New South Wales Annual Bird Report Number 12 (2004). (Hunter Bird Observers Club Inc.: New Lambton, NSW.)
- Stuart, A.** 2014. Early Hunter Region avian records. Part 3. A review of historical data about shorebirds in the Hunter Estuary. *The Whistler* 8: 10-22.
- Stuart, A., C. Herbert, L. Crawford, A. Lindsey, M. Roderick, N. McNaughton, J. Powers & L. Huxtable.** 2013. Hunter Estuary Population Counts 1999-2010. *Stilt* 63-64: 46-49.
- UNSW Water Research Laboratory.** 2015. Tidal Restoration and Wetland Creation at the Kooragang Nature Reserve (Tomago, NSW). <http://www.wrl.unsw.edu.au/tomago-wetland-restoration-project>. Accessed 19 October 2015.
- van Gessel, F. & T. Kendall.** 2015. Kooragang Island Bird Counts 1969-1977. HBOC Special Report No. 7 (Hunter Bird Observers Club: New Lambton, NSW).
- Wilson, H.B., B.E. Kendall, R.A. Fuller, D.A. Milton & H.P. Possingham.** 2011. Analyzing variability and the rate of decline of migratory shorebirds in Moreton Bay, Australia. *Conservation Biology* 25: 758-766.