

Invasive Eurasian Tree Sparrows *Passer montanus* on Troughton Island in the North Kimberley of Western Australia: A cyclone-induced colonisation attempt?

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Abstract. Four Eurasian Tree Sparrows *Passer montanus* were recorded on Troughton Island, north-western Western Australia, on 6–8 August 2016. Reports indicate that these were the remaining birds (or progeny) from a group of 17 birds that arrived after a storm in c. 2011; the population then dwindled despite apparently breeding over the next 5 years. This represents the first documented colonisation by this species of a near-shore location in Australia with little or no likelihood of ship assistance.

Introduction

This note documents the occurrence of the Eurasian Tree Sparrow *Passer montanus* on Troughton Island, 16 km north of Cape Bougainville in the Kimberley region of Western Australia. A joint expedition to Troughton Island (13°45'S, 126°9'E) was conducted by staff from the Western Australian Department of Parks and Wildlife, Mungalalu Truscott Airbase, University of Western Australia, and Wunambal Gaambera Aboriginal Corporation's Uunguu Rangers to make a biological survey of nesting sea turtle activity on 6–8 August 2016. Troughton Island (76.28 ha) is a flat island rising to 6 m above sea-level with an airfield maintained as a support system to oil and gas operations in the Timor Sea. An automatic weather station on Troughton Island is maintained by the Bureau of Meteorology.

Observations

During the visit to Troughton Island, the resident caretakers (BN & HN) pointed out a flock of four sparrows (later identified as Eurasian Tree Sparrows) flitting to and from Boab *Adansonia gregorii* trees planted near buildings that service the airstrip. Male and female Eurasian Tree Sparrows cannot be distinguished easily (in contrast with other sparrows, in which females have dull plumage). Photographs show that at least three of the four birds were adults (Figure 1). The sparrows fed in mown grass stubble, which offered a close clear view and positive species identification multiple times a day. Sparse grasses were seeding across the mown airstrip as well as in areas left to native vegetation.

The Western Australian Department of Agriculture and Food conducted a follow-up trip on 23–24 August 2016 (Vinnicombe 2016), and found that the sparrows were taking fresh water from a dripping air-conditioner as there

were no other potable water sources on the island. Three of the four sparrows were dispatched, of which two carcasses were retrieved and submitted for avian influenza testing, with negative results (TV unpubl. data). The fourth sparrow was still on the island in mid September but was not seen after c. 20 September 2016 (HN & BN unpubl. data).

An earlier caretaker on Troughton Island, Peter King (2016, pers. comm.), reported: "As to the sparrows, 17 birds arrived on the island about five years ago following a storm in 2011. Some died within the first month, the Children's Pythons *Antaresia childreni* cleaned up some and the population has been in decline since arriving. They have had young but never seemed to thrive".

Specimens collected

The two retrieved carcasses were frozen and sent to the Western Australian Museum on 27 October 2016 and prepared as study skins. Details of these specimens are as follows.

Adult male, registered number A39706. Total length 151 mm; weight 21 g; exposed culmen 10 mm; entire culmen 14 mm; bill depth 7.1 mm; wing 71 mm; tail 54 mm; tarsus 20 mm; middle toe and claw 17 mm. Skull fully ossified. Testes enlarged, 7 x 5 mm. Iris dark; bill black; legs pinkish white. Forehead, crown, nape and hindneck to edge of ear-coverts rich chestnut-brown (maroon-chestnut). Lores, narrow line just below eye and continuing posterior to eye, gape patch, chin and centre of throat to upper breast black. Cheeks, some ear-coverts and sides of neck white; lower portion of ear-coverts black. Mantle and scapulars rufous-cinnamon; boldly streaked black back; rump and uppertail-coverts buffy brown; lesser and median upperwing-coverts mostly black or greyish black, narrowly edged with pale rufous-cinnamon on outer margins. Primaries, secondaries and tertiaries blackish



Figure 1. Eurasian Tree Sparrows that remained on Troughton Island, Western Australia, in 2016 from an initial 17 birds recorded following a 2011 storm event. Bills are noticeably shallower than in birds from south-eastern Australia (see Figure 2). Photos: B. Newman

brown, the primaries narrowly edged on outer webs and the secondaries and tertials broadly edged and tipped with rufous-cinnamon. Tail dark brown with narrow pale margins to rectrices. Breast and flanks pale brownish grey, grading to buffy brown on lower flanks and thighs. Belly dull white. Axillaries and underwing-coverts mostly cinnamon-buff, with whitish bases. Marginal coverts buff with dark shaft streaks. Undersurface of remiges greyish brown with cinnamon-buff inner margins. Undertail grey.

Immature female, registered number A39707. Total length 146 mm; weight 17.5 g; exposed culmen 10 mm; entire culmen 14 mm; bill depth 7.4 mm; wing 69 mm; tail 54 mm; tarsus 20 mm; middle toe and claw 16 mm. Skull and ovary damaged. Ovary ~3–4 mm in length. Iris dark; bill black and legs pinkish brown. Plumage very similar to male A39706.

Discussion

The Eurasian Tree Sparrow specimens collected from Troughton Island match well in size and colour with two specimens from Sumbawa Island, eastern Indonesia, in the Western Australian Museum collection (both males, wing length 65 and 69 mm, weight 16 and 17 g). Based on size and plumage, especially crown and back colour and bill depth, we believe the Troughton Island specimens belong



Figure 2. Eurasian Tree Sparrow (subspecies ? intermediate *montanus* and *saturatus*) at the Eastern Treatment Plant in Victoria, south-eastern Australia, showing deeper bill than the birds on Troughton Island. Photo: Mike Carter

to the south-eastern Asian subspecies *P. m. malaccensis* that ranges from the southern Himalayas and Nepal through Bangladesh, Thailand, Malaysia and Indonesia as far as the eastern Lesser Sundas.

Eurasian Tree Sparrows are native to a large range in Europe and Asia, and are the common urban sparrow in south-eastern Asia and western Indonesia (Summers-Smith 2009). Their range is stated to have recently expanded eastwards through introductions and ship-assisted passage (Coates & Bishop 1997), along with natural spread (Summers-Smith 2009).

The closest population of Eurasian Tree Sparrows to Troughton Island is 400 km north in Indonesia (West Timor or Sumba) (Coates & Bishop 1997; Trainor *et al.* 2008; Johnstone *et al.* 2014). In Timor, the species was first noted as present in 1974, and has continued to spread throughout East Timor since 2002, and it has colonised Wetar, Lembata and Semau Islands in Indonesia relatively recently (Johnstone *et al.* 2014).

The species colonised Christmas Island in 1981–1983, with early arrivals near the docks perhaps suggesting ship-assisted passage, and the population had increased to ~1000 birds by 2005 despite some attempts to control them (Stokes *et al.* 1987; Johnstone & Darnell 2004; James & McAllan 2014). In Western Australia, it is listed by Johnstone & Storr (2004) as an uncommon ship-assisted vagrant, first recorded at Geraldton in 1966, and virtually all records have been associated with ports, including Broome, Port Hedland, Dampier, Fremantle, Bunbury and Albany. So far, this species has been unable to gain a permanent foothold in Western Australia, although there are reports of several pairs possibly nesting at Port Hedland in a light tower in 1986 and in Cocos Palms *Syagrus romanzoffiana* in November 2002 (Johnstone & Storr 2004). Several factors may have reduced the ability of the small founding population to thrive on Troughton Island in the 5 years

since arrival in 2011, including predation by Children's Pythons (as reported by Peter King), lack of reliable fresh water (with the air conditioner providing a discontinuous and potentially toxic source of moisture) and eventually the Western Australian policy of controlling this species.

The only established populations in continental Australia are in south-eastern Australia, where Eurasian Tree Sparrows (apparently from Europe and Asia, including China) were introduced between 1863 and 1881, and became established in the Melbourne area and later in towns in central and northern Victoria, and some centres in the Riverina region of New South Wales (>2000 km south-east of Troughton Island) (Long 1981; Blakers *et al.* 1984; Barrett *et al.* 2003; Higgins *et al.* 2006). However, these sedentary populations were always small and have declined substantially in recent years (e.g. Loyn & Menkhorst 2011), so it is extremely unlikely that the birds on Troughton Island originated from those distant locations. Furthermore, Keve (1976) considered the south-eastern Australian population to be intermediate between nominate *montanus* of Europe and northern Asia and *saturatus* of Japan, South Korea and Taiwan. Birds from Victoria resemble British birds in coloration of plumage and have a deep bill (9.1–9.7 mm) (Higgins *et al.* 2006) (see Figure 2). Subspecies *malaccensis* differs from the nominate form in being darker and deeper in colour overall and in having a noticeably shallower bill, consistent with the two Troughton Island specimens (bill depth 7.1 and 7.4 mm). Judging from coloration and measurements, virtually all Western Australian specimens belong to the subspecies *P. m. malaccensis* of south-eastern Asia (see Johnstone & Storr 2004).

Eurasian Tree Sparrows are considered as potential agricultural pests in Western Australia, where they quite often arrive on ships from south-eastern Asia (Massam 1999; Johnstone & Storr 2004; Higgins *et al.* 2006). Hence they are classed as a prohibited species in that state, and are intercepted for biosecurity reasons (Massam 1999; OZCAM 2016). This policy also aims to address the threat of avian influenza, which is lethal to poultry and potentially fatal to humans. Similar treatment is applied to House Sparrows *P. domesticus*, which are rare in south-eastern Asia (Summers-Smith 2009) but are a common introduced bird in eastern Australia, despite recent declines (Higgins *et al.* 2006), and in the north have spread as far west as Darwin, Northern Territory (OZCAM 2016).

Australia's monsoonal tropics generate an annual incursion of multiple cyclones and tropical lows that pass into the Timor Sea (Bureau of Meteorology 2016). Recent tropical cyclones such as Carlos in 2011 followed relatively direct paths across the Timor Sea toward the North Kimberley (Bureau of Meteorology 2016). Cyclone Carlos hit the 'Top End' in mid February 2011 and coincided with King's observation of the sparrows' arrival, and could be considered a plausible explanation for these individuals being displaced to Troughton Island. It is probably more than just coincidence that the first Eurasian Tree Sparrows seen on Ashmore Reef (12°20'S, 123°0'E) were found on 4 April 2011. Up to six (but more usually two to three) Eurasian Tree Sparrows have been seen there annually on West Island since but not on every visit, indicating discontinuous occupation. Nesting was observed there in 2014, but the success is not known (R. Clarke, M. Carter & G. Swann unpubl. data).

An alternative explanation of ship-assisted colonisation of Troughton Island seems far less likely. All previous records of Eurasian Tree Sparrows in Western Australia show an obvious correlation with major shipping ports (Johnstone & Storr 2004; Johnstone *et al.* 2013; OZCAM 2016). However, Troughton Island cannot handle large cargo vessels, even though it is serviced at intervals of 6 months by 35- or 45-m-long shore barges travelling from Darwin.

A third possibility is that the birds were partly ship assisted or used some of the oil rigs in the Timor Sea essentially to island-hop their way to Troughton Island. At any rate, an extreme weather event or one or more of these options could have played a part in driving these birds to Troughton Island. This record highlights the value of photographs and museum specimens in documenting details of sex, age, breeding condition, and morphology, which thus helps determine the region of origin of these birds.

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References

- Barrett, G., Silcocks, A., Barry, S., Cunningham, R. & Poulter, R. (2003). *The New Atlas of Australian Birds*. Birds Australia, Melbourne.
- Blakers, M., Davies, S.J.J.F. & Reilly, P.N. (1984). *The Atlas of Australian Birds*. Melbourne University Press, Melbourne.
- Bureau of Meteorology (2016). Tropical cyclone information for the Australian region. Available online: <http://www.bom.gov.au/cgi-bin/silo/> (retrieved 10 August 2016).
- Coates, B.J. & Bishop, K.D. (1997). *Guide to the Birds of Wallacea*. Dove Publications, Brisbane.
- Higgins P.J., Peter, J.M. & Cowling, S.J. (Eds) (2006). *Handbook of Australian, New Zealand & Antarctic Birds, Volume 7: Boatbill to Starlings*. Oxford University Press, Melbourne.
- James, D.J. & McAllan, A.W. (2014). The birds of Christmas Island, Indian Ocean: A review. *Australian Field Ornithology* **31** (Supplement), S1–S175.
- Johnstone, R.E. & Darnell, J.C. (2004). Appendix A. Annotated checklist of Christmas Island birds. In: Johnstone, R.E. & Storr, W.G.M. (Eds). *Handbook of Western Australian Birds, Volume II: Passerines (Blue-winged Pitta to Goldfinch)*. Western Australian Museum, Perth.
- Johnstone, R.E. & Storr, W.G.M. (2004). *Handbook of Western Australian Birds, Volume II: Passerines (Blue-winged Pitta to Goldfinch)*. Western Australian Museum, Perth.
- Johnstone, R.E., Burbidge, A.H. & Darnell, J.C. (2013). Birds of the Pilbara region, including seas and offshore islands, Western Australia: Distribution, status and historical changes. *Records of the Western Australian Museum, Supplement* **78**, 343–441.
- Johnstone, R.E., Hidayat, O., Darnell, J.C. & Trainor, C.R. (2014). The avifauna of Semau Island, Lesser Sundas, Indonesia: Ecology, taxonomy and conservation. *Western Australian Naturalist* **29**, 162–221.
- Keve, A. (1976). Some remarks on the taxonomic position of the Tree Sparrows introduced into Australia. *Emu* **76**, 152–153.

- Long, J.L. (1981). *Introduced Birds of the World*. Reed, Sydney.
- Loyn, R.H. & Menkhorst, P.W. (2011). The bird fauna of Melbourne: Changes over a century of urban growth and climate change, using a benchmark from Keartland (1900). *Victorian Naturalist* **128**, 210–231.
- Massam, M. (1999). Sparrows. Farmnote No. 117/99. Agriculture Western Australia. Available online: <http://agric.firstsoftwaresolutions.com/fullRecord.jsp?recnoListAttr=recnoList&recno=19950> (retrieved 1 February 2009).
- OZCAM (2016). *Online Zoological Collections of Australian Museums*. Available online: <http://ozcam.org.au/> (retrieved 10 August 2016).
- Stokes, T., Merton, D., Hicks, J. & Tranter, J. (1987). Additional records of birds from Christmas Island, Indian Ocean. *Australian Bird Watcher* **12**, 1–7.
- Summers-Smith, J.D. (2009). Family Passeridae (Old World sparrows). In: del Hoyo, J., Elliott, A. & Christie, D.A. (Eds) (2009). *Handbook of the Birds of the World, Volume 14: Bush-shrikes to Old World Sparrows*, pp. 760–813. Lynx Edicions, Barcelona, Spain.
- Trainor, C.R., Santana, F., Pinto, P., Xavier, A.F, Safford, R. & Grimmett, R. (2008). Birds, birding and conservation in Timore-Leste. *BirdingASIA* **9**, 16–45.
- Vinnicombe, T. (2016). Troughton Island Sparrows. Unpublished field report. Department of Agriculture & Food, Western Australia.

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