

Ground-foraging techniques of Welcome Swallows *Hirundo neoxena*, including an instance of kleptoparasitism

James A. Fitzsimons^{1,2} and Janelle L. Thomas³

¹School of Life and Environmental Sciences, Deakin University, 221 Burwood Highway, Burwood VIC 3125, Australia

Email: james.fitzsimons@deakin.edu.au

²The Nature Conservancy, Suite 3-04, 60 Leicester Street, Carlton VIC 3053, Australia

³BirdLife Australia, Suite 2-05, 60 Leicester Street, Carlton VIC 3053, Australia

Email: janelle.thomas@birdlife.org.au

Summary. All species of swallow primarily forage on the wing although occasionally come to ground to take prey. There are only a few documented cases of Australian swallow species foraging while on the ground, and descriptions of foraging techniques in these instances are limited. Here we provide details of observations on ground-foraging of the Welcome Swallow *Hirundo neoxena* in south-eastern Australia, as well as an instance of kleptoparasitism.

Introduction

All species of swallow (family Hirundinidae) predominantly forage on the wing (Turner & Rose 1989; Turner 2004; Higgins *et al.* 2006), although some species very occasionally come to the ground to forage (e.g. Wolinski 1980; Sealy 1982; Erskine 1984; Hobson & Sealy 1987; Turner 2004; Chişamera & Manole 2005). This behaviour is most frequent either in adverse weather when few insects are flying, or at times when crawling arthropods are particularly abundant (Turner & Rose 1989; Turner 2004). Some species, such as the South African Swallow *Petrochelidon spilodera*, are more prone to foraging on the ground than others (e.g. Earle 1985; Turner 2004). Yet the importance and nature of ground-foraging in swallows are poorly understood (Hobson & Sealy 1987).

In Australia, it appears that only the Welcome Swallow *Hirundo neoxena* and Fairy Martin *Petrochelidon ariel* have been recorded foraging on the ground (Higgins *et al.* 2006) [although the Barn Swallow *H. rustica* has been recorded to do so in other parts of its range outside Australia (e.g. Hobson & Sealy 1987; Turner 2006)]. Descriptions of ground-foraging techniques in Australian swallows are very limited, and are outlined as follows: Brock (1978) observed Welcome Swallows walking behind Common Starlings *Sturnus vulgaris* and Australian Magpies *Cracticus tibicen* for distances of ~50 cm before flying up to catch disturbed insects. Boehm (1957, p. 311) observed flocks of Welcome Swallows ‘following a plough, searching the newly-turned soil, and frequently settling, probably to pick up insects or their pupae’ but also observed Welcome Swallows settling on soil covering sheep carcasses, speculating that they were feeding on flies emerging from the soil. Baldwin (1964, p. 208) observed Fairy Martins to ‘rest



Figure 1. Welcome Swallow foraging on the ground at Dove Lake, Tasmania. Note lowered wings and partially spread tail. Photo: James Fitzsimons

on the ground, where they gathered injured moths and ate charcoal'. Dale (1922, p. 166), on inspection of a municipal sanitary site, found the 'ground was literally black with swallows' (species not specified) and they were observed eating flies emerging from the soil. White (1943) observed many Welcome Swallows settling on clods of earth, apparently eating 'lucerne fleas', before severe thunderstorms. McGilp (1930) saw Welcome Swallows pick up small ants from the ground on several occasions. Beck (1923, p. 163) observed Welcome Swallows alighting on manure – 'evidently newly hatched flies were the attraction'. Edgar (1966, p. 30) had 'several notes of ground feeding by small parties [of Welcome Swallows] on paddocks or farm roads...' in New Zealand, adding that on the ground 'the body is held in a horizontal position: gait is weak and waddling'.

Here we describe four instances of ground-foraging by Welcome Swallows, in Tasmania and Victoria, and provide new details on behaviour and the techniques used.

Observations

Dove Lake, Tasmania

On 29 December 2008 between 1945 and 2000 h, two Welcome Swallows were observed foraging on the asphalt carpark at Dove Lake, Cradle Mountain–Lake St Clair National Park, Tasmania (39°31'S, 145°58'E). The weather was cold (<10°C) and overcast, as it had been for most of the day. The general behaviour consisted of the Swallows flying (separately) to a location on the ground and, once alighted, partially outstretching and lowering their wings so that the tips were touching the ground (i.e. the wings were not folded across the back as is usual while perched)

(see Figure 1); the tail was also partially spread. The Swallows then began what appeared to be a systematic five-point (sometimes more) head-turning motion (from left to right, with ~1 second between each motion) while looking at the ground. Occasionally a Swallow gleaned from the ground from this stationary position, although the target prey could not be determined. In one instance, one Swallow also spent ~20 seconds pecking at a piece of aluminium foil, most likely containing food scraps. In addition to these foraging techniques, the Swallows also walked swiftly, or occasionally ran, to pursue prey on the ground, while maintaining the wing and tail position described above. The Swallows rarely stayed in the same location for >30 seconds and took short, low, and direct flights to a new location in the carpark (where they repeated the behaviour) or a log bordering the carpark. The two Swallows stayed within ~20 m of each other during the course of the observations. Welcome Swallows had been observed foraging ~5 m above the water at Dove Lake earlier in the day, when patchy rain was present.

Cape Nelson, Victoria

Another instance of ground-foraging was observed on 16 April 2011, at ~1230 h, on the asphalt carpark at Cape Nelson Lighthouse (38°26'S, 141°33'E), Cape Nelson State Park, south of Portland, western Victoria. The day was sunny and, at the time of the observation, was 16–17°C (Bureau of Meteorology 2011). At least 20 Welcome Swallows were present in the vicinity of the carpark, often perched on buildings associated with the lighthouse. Some flew down to the ground and drank from a muddy pool of water in a pothole in the carpark. At least two of them landed away from the water and pecked at the ground. Unlike the Swallows at Dove Lake, the Cape Nelson Swallows had their wings folded across the back and were neither actively walking, nor flying short distances from location to location to forage on the ground. Small (<1 cm) white moths, both alive and dead, were observed on the ground at the time (and elsewhere in adjoining Discovery Bay Coastal Park on this day), and may have been the target prey items. Welcome Swallows were also foraging on the wing low over the carpark at Cape Nelson on this day.

Melbourne, Victoria

At ~1400 h on 26 December 2011, JAF observed a group of five Welcome Swallows flying at various heights above the grassed surface at the Melbourne Cricket Ground (37°49'S, 144°59'E), Melbourne, Victoria. A large moth (body length ~3 cm) fluttering low over the grass became the focus for the group of Swallows. Individual Swallows made numerous attempts to capture the moth in flight but struggled to hold it for long, most likely from a combination of (a) its relatively large size, (b) its continued fluttering and (c) harassment from other Swallows in the flock for the moth. This harassment took the form of one Swallow deliberately swooping close (i.e. within centimetres) from above or to the side of the bird holding the moth, causing the moth to be relinquished, mostly while the bird with the moth was in flight. On at least two occasions, a single Swallow landed on the grass in an attempt to capture the incapacitated moth. On at least one of these occasions, the bird on the ground was swooped by other Swallows. When on the ground, the Swallows' wings were folded across the back, and no walking was observed. Eventually one Swallow flew off with the moth.

The Gardens, Tasmania

At 1245 h on 27 February 2012, we observed a Welcome Swallow alight on an asphalt road in front of our oncoming car at The Gardens (41°10'S, 48°17'E), Tasmania. The Swallow pecked twice at the ground before flying off. Upon later inspection, there were no obvious arthropods on the road, and it was presumed that the Swallow was collecting large sand grains (grit), as the road is adjacent to the coast.

Discussion

Swallows are known to either forage low or occasionally come to alight on the ground in adverse weather conditions (as insects are less available higher up), or when there is an abundance of food such as swarming insects (Turner & Rose 1989; Turner 2004). The Welcome Swallows seen at Dove Lake were most likely foraging on the ground because of the cold weather, whereas those at Cape Nelson were more likely responding to an available and easily gatherable food source, rather than a lack of flying insects. The observations of ground-foraging in Melbourne involved the retrieval of a prey item.

There are few descriptions of the techniques that swallows use to forage when on the ground in Australia. For example, running does not appear to have been previously described for Welcome Swallows (Higgins *et al.* 2006). Swallows generally are known to be able to run, but will fly to 'move any great distance' (Gaunt 1969, p. 51). The apparent systematic searching behaviour of the left-to-right head movement, observed in the Welcome Swallows at Dove Lake, has not been previously recorded (Higgins *et al.* 2006). The function of partially spreading and dropping the wings down (as opposed to folding the wings across the back) and spreading the tail while ground-foraging, as observed at Dove Lake, is not clear. Klapste & Klapste (1985, p. 98) described instances of dusting and sunning in Welcome Swallows which showed some similarity to our observations: 'Wings on the sun side spread and lifted to various elevations in different birds. The body was inclined so that the side exposed to the sun was uppermost. Some birds also spread their tails'. However, in the cold and overcast conditions during our observations of the Dove Lake Swallows, sunning was not likely (although black asphalt tends to retain heat so is it possible that the Swallows were taking advantage of a relatively warm surface on this cold day).

Moths have previously been recorded in the diet of the Welcome Swallow, but infrequently (Higgins *et al.* 2006). The moth pursued in the Melbourne observation was a relatively large prey item for the Welcome Swallow.

Although both the Dove Lake and Cape Nelson Welcome Swallows were clearly foraging for invertebrate prey, Turner (2006) noted that the closely related Barn Swallow gives grit to its chicks, probably to break up the hard exoskeleton of prey, and the Tree Martin *Petrochelidon nigricans* has also been observed taking granitic grit near Cann River, Victoria (M. Tarburton pers. comm. 2012). Although Higgins *et al.* (2006) did not document grit being ingested by the Welcome Swallow, Rose (1973) found a small fragment of glass in the stomach of one bird. It is likely that the Welcome Swallow at The Gardens was collecting grit from the road, and it

cannot be ruled out that those at Dove Lake and Cape Nelson may also have been collecting grit from the asphalt carparks. Hobson & Sealy (1987) documented the repetitive picking up and dropping of inedible material (pebbles, grass, leaves and twigs) by various species of North American swallows while on the ground. This behaviour does not appear to have been documented for Australian swallows (Higgins *et al.* 2006).

The competition for the large moth in the Melbourne observation, which resulted in the harassment of the Welcome Swallow with the moth by other individuals, is likely to be an example of intraspecific kleptoparasitism. Kleptoparasitism is generally rare in passerines (Brockmann & Barnard 1979), and although it has been recorded for some Australian passerines, such as woodswallows (e.g. Robinson 1993; Fulton 2005; Recher & Davis 2005; Davis 2009), it does not appear to be recorded for Welcome Swallows (Higgins *et al.* 2006). Outside Australia, von Vietinghoff-Riesch (1955, cited by Turner 2006) recorded the closely-related Barn Swallow stealing a butterfly from a sparrow.

The observations described in the present paper and those of Lindsay (2012) suggest that there is still more to learn on the foraging behaviour of Welcome Swallows. Further documentation of ground-foraging by swallows in Australia, as has occurred in North American species (e.g. Wolinski 1980; Sealy 1982; Erskine 1984; Hobson & Sealy 1987), would improve our understanding of the circumstances and techniques used by Australian swallows when performing this behaviour.

Acknowledgements

Thanks go to Angela Turner, Michael Tarburton and Grant Palmer for helpful comments on a draft of this note.

References

- Baldwin, M. (1964). Birds eating charcoal. *Emu* **64**, 208.
- Beck, R.C. (1923). Ornithological notes. *South Australian Ornithologist* **7**, 163.
- Boehm, E.F. (1957). Perching birds (Passeriformes) of the Mount Mary Plains, South Australia. *Emu* **57**, 311–324.
- Brock, B.J. (1978). Unusual feeding behaviour of swallows. *South Australian Ornithologist* **27**, 288.
- Brockmann, H.J. & Barnard, C.J. (1979). Kleptoparasitism in birds. *Animal Behaviour* **27**, 487–514.
- Bureau of Meteorology (2011). Cape Nelson, Victoria, April 2011, Daily Weather Observations. Bureau of Meteorology. Available online: <http://www.bom.gov.au/climate/dwo/201104/html/IDCJDW3010.201104.shtml> (retrieved 1 May 2011).
- Chişamera, G. & Manole, T. (2005). Preliminary data on the food structure of the Sand Martin nestlings (*Riparia riparia* L. 1975) (Aves: Hirundinidae) in southern Romania. *Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa"* **48**, 383–394.
- Dale, J. (1922). Flies on a sanitary site and typhoid in a boys' home. *South Australian Ornithologist* **8**, 165–166, 168.
- Davis, W.E. Jr (2009). Attempted kleptoparasitism of a Black-faced Cuckoo-shrike by a Dusky Woodswallow. *Tasmanian Bird Report* **33**, 10.

- Earle, R.A. (1985). Foraging behaviour and diet of the South African Cliff Swallow *Hirundo spilodera* (Aves: Hirundinidae). *Navorsinge van die Nasionale Museum, Bloemfontein* **5**, 53–66.
- Edgar, A.T. (1966). Welcome Swallows in New Zealand, 1958–1965. *Notornis* **13**, 27–60.
- Erskine, A.J. (1984). Swallows foraging on the ground. *Wilson Bulletin* **96**, 136–137.
- Fulton, G.R. (2005). Dusky Woodswallows *Artamus cyanopterus* collaborate to kleptoparasitize a Restless Flycatcher *Myiagra inquieta*. *Corella* **29**, 63–64.
- Gaunt, A. (1969). Myology of the leg in swallows. *Auk* **86**, 41–53.
- 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.
- Hobson, K.A. & Sealy, S.G. (1987). Foraging, scavenging and other behaviour of swallows on the ground. *Wilson Bulletin* **99**, 111–116.
- Klapste, J. & Klapste, P. (1985). Dusting, sunning and albinism in Welcome Swallows *Hirundo neoxena*. *Australian Bird Watcher* **11**, 98–99.
- Lindsay, K.J. (2012). A possible instance of piscivory in the Welcome Swallow *Hirundo neoxena*. *Australian Field Ornithology* **29**, 166–168.
- McGilp, J.N. (1930). Swallows and martins – observations made in the far north of South Australia. *South Australian Ornithologist* **10**, 200–204.
- Recher, H.F. & Davis, W.E. Jr. (2005). A record of interspecific kleptoparasitism by an Australian passerine, the Black-faced Woodswallow *Artamus cinereus*. *Corella* **29**, 13–14.
- Robinson, D. (1993). Food piracy by Dusky Woodswallows. *Australian Bird Watcher* **15**, 143–144.
- Rose, A.B. (1973). Food of some Australian birds. *Emu* **73**, 177–183.
- Sealy, S.G. (1982). Rough-winged Swallows scavenging adult midges. *Wilson Bulletin* **94**, 368–369.
- Turner, A.K. (2004). Family Hirundinidae (swallows and martins). In: del Hoyo, J., Elliott, A. & Christie, D.A. (Eds). *Handbook of the Birds of the World, Volume 9: Cotingas to Pipits and Wagtails*, pp. 602–685. Lynx Edicions, Barcelona.
- Turner, A.K. (2006). *The Barn Swallow*. Poyser Monographs, London.
- Turner, A.K. & Rose, C. (1989). *A Handbook to the Swallows and Martins of the World*. Christopher Helm, London.
- von Vietinghoff-Riesch, A. (1955). *Die Rauchschnalbe*. Duncker & Humblot, Berlin.
- White, S.A. (1943). Bird notes. *South Australian Ornithologist* **16**, 56.
- Wolinski, R.A. (1980). Rough-winged Swallow feeding on fly larvae. *Wilson Bulletin* **92**, 121–122.

Received 4 January 2012

