

Seychellois National Park (Mahé) where they are rather common. However, none of the stick insects displayed these parasitising flies at that time. Although a wasp attack on *Carausius seychellensis* has been described in the past (Hardling & Thompson 2002), this could not be seen as a parasitical behaviour rather than a predator behaviour. Thus, based on our observations, it is not very likely that these flies are real threats to the Seychelles stick insect *Carausius seychellensis* on the islands of Praslin or Mahe.

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## Seafaring behaviour in House Crows *Corvus splendens* – a precursor to ship-assisted dispersal?

Anthony Cheke

139 Hurst Street, Oxford OX4 1HE, UK.

anthony.cheke@innerbookshop.com

Indian house crows *Corvus splendens* have colonised many parts of the world, largely through through travelling voluntarily on ships without human assistance. Meininger *et al.* (1984) and Ryall (1994, 1995, 2002) have charted their spread; Lever (2005) summarised the present distribution. Given their origin in the sub-continent, the Indian Ocean has been the main theatre of the spread; continental coastal ports have seen most invasions, but they have also reached the oceanic islands. Mauritius was first reached around 1900 (Carié 1904), the birds already ‘multiplying’ around the harbour in Port Louis by 1904 (Carié 1904, *contra* the usually stated date of 1910, e.g. Long 1981, Cheke 1987, Lever 2005, following Meinertzhagen 1912). After the original population was all but wiped out by a powerful cyclone in 1945, the island was recolonised in 1950 (Rountree *et al.* 1952, Cheke 1987). Birds were first seen in the Seychelles in 1970, with further arrivals in 1977 (Ryall 1994); the incipient colony was controlled but more birds have subsequently turned up (Skerrett *et al.* 2001, Ryall 2002). Crows appeared in Réunion in 2004 (Salamolard 2004, Cheke & Hume 2007, Chakouat *passim*); although one of a pair was shot, others are still present.

The house crow is the only landbird that regularly and deliberately hitches rides on ships, unusual behaviour that is potentially dangerous for the birds. These crows are persistent and abundant scavengers in all human habitations in their natural range, including ports, where exploring moored ships is simply an extension of their normal activities. Use of ships in harbour has been cited as an explanation for the birds’

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ship-borne spread (Madge & Burn 2001) - but why stay with a ship when it sails?

A possible answer to this may lie in the remarkable behaviour seen in house crows in Sri Lanka. In June 2005, holidaying in the fishing port of Negumbo on Sri Lanka's west coast north of Colombo, I observed these crows behaving in a very unexpected way. Every morning dozens of sailing catamarans, the local fishing vessels, leave the port for the open sea, returning at or before dusk with their catch. While I was there the boats would leave Negumbo and sail northwards roughly parallel to the coast, gradually moving further from shore. As they passed the hotel strip north of the old town, crows in ones and twos or small groups would leave the settlements and coconut plantations of the coast and fly directly out to sea to catch up with the catamarans. Birds would fly directly to boats 1-2km offshore, apparently riding with the catamarans all day out of sight of land, before being seen to fly back to land as the boats returned in late afternoon. This behaviour was almost confined to house crows, only one jungle crow *C.macrorhynchos* (much less numerous) being seen to fly out to sea.

House crows are extraordinarily abundant on Sri Lanka's west coast, and in an area without gulls *Larus* spp., have learnt to exploit, not only on shore but also at sea, the ample supply of unwanted fish and offal that gulls consume at higher latitudes. Once used to riding on sea-going vessels, crows might easily alight on ships that were heading for the open sea, then becoming as-it-were trapped until the ship reached its next landfall. Indeed the first two birds recorded in Durban were seen "flying in from the sea", presumably off a ship, in 1972 (Ryall 1994). Given the clearly well-established behaviour in western Sri Lanka, it is notable that of the four colonisations by self-introducing birds where the ship's original port is known, two (Somalia & Mauritius, both in 1950) started their journeys in Colombo (Lever 2005). In addition birds have travelled to Australia from Colombo on at least three occasions in 1926-1959, although no colonisation resulted (Meininger *et al.* 1984). The other successful examples are the 1970 arrival in Seychelles of birds on a ship originating in Bombay, and a secondary spread from Aden to Socotra in c.1996, Ryall 2002).

As the birds' seafaring behaviour is very conspicuous, it is odd that it has apparently not been recorded in the literature. None of the standard works on Indian and Sri Lankan birds consulted (Legge 1880, Oates 1889, Dewar 1925, Whistler 1949, Henry 1971, Ali & Ripley 1983, Grimmett *et al.* 1999) mention riding on boats, and Iris Darnton (1975), an old Ceylon hand describing Negumbo's fishery and its attendant crows in 1947, only mentioned birds scavenging on shore. There is no allusion to this behaviour in Ryall's papers already cited or his website, in Madge & Burn's (2001) corvid monograph, nor in Lever's (2005) review of bird introductions; Chris Ryall (*in litt.*) admits to not having encountered it. This would seem to suggest that the behaviour has arisen recently, but House Crows have been spreading by voluntary ship-assisted passage (in addition to deliberate introductions) since at least the 1890s. Once the regular use of steamships significantly reduced journey times between Indian Ocean ports, birds would have been able to survive crossings on which they might previously have starved. Ryall (2002) commented that the faster ships in recent years will have increasingly facilitated longer journeys, including to the Americas. Feare & Mungroo (1990) pointed out that expanding urbanisation and consequent availability of rubbish

tips at destination ports has facilitated establishment in new areas. Some colonies first recorded in the mid-late 20<sup>th</sup> century are suspected to have been present unnoticed for years or even decades (Lever 2005).

Seafaring behaviour may however be older. There is an ancient tradition that Indian and Singhalese mariners carried crows on ocean-going vessels to help them find land. Bisoodoyal (1968) quoted the following passage from the *Indian Review* of August 1961 [grammar unadjusted]:

“ It was an ingenious practice among the early Indians to carry with them trained birds of strong wings in their voyages to guide them to shores in case of difficulty to determine lands and directions .... This instinct particularly of crows, which are a conspicuous species of birds of India, is a common knowledge. There are references to shore-finding birds, crows, in the *Digha Nikaya* and the *Baveru jataka* [both old Buddhist texts -ASC] as having been carried by seafarers in their trading expeditions.”

Anon (1821) mentioned that this use of crows is “said to have been practiced by the people of Ceylon in early times”. This practice may have originally arisen from crows accustomed to fishing boats accidentally alighting on ocean-going vessels, and thus being carried far out to sea before flying off toward the first land eventually sighted. Similar use of corvids (ravens *C. corax*) for land-finding was reportedly used by medieval Viking mariners and recorded in Icelandic sagas (Anon 1821, La Fay 1972). Pre-modern transport, deliberate or accidental, does not however seem to have resulted in any overseas colonisations, as none of these predate the 1840s (Aden) and some early ones (Aden itself, and also Zanzibar, 1890s; Malaya, 1903) were the result of deliberate releases (Lever 2005). In addition to possible accidental long-distance transport by birds used to fish offal as suggested here, Skerrett *et al.* (2001) claimed (without giving any source) that the crows’ spread has been assisted by “Indian sailors often encouraging birds to remain on board by feeding them”.

Whether travelling by accident or encouraged by sailors, it is clear that house crows are amongst the hardest of invasive species to exclude. While import and export restrictions can theoretically control unwanted exotics that are traded or carried by people, it is a different matter for species that have a behavioural pattern that facilitates self-dispersal. Since birds will leave for land well before a ship docks (e.g. the Durban case cited above), control ideally needs to be done on-board while the ship is in the open sea, which, given the myriad ships and crews of different origins, is unlikely to be widely effective. This leaves as the only feasible method prompt action once birds have landed. Fortunately, as scavengers, they tend to gravitate towards rubbish tips and abattoirs, where they can be trapped or shot. The Seychelles are particularly vulnerable to re-invasion, as house crows are now abundant not only in India but also in Mauritius and East and South African ports. Contingency control measures are likely to remain necessary on a long-term basis.

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## Additional 18<sup>th</sup> century records of endemic Seychelles fauna

Anthony Cheke  
139 Hurst Street, Oxford OX4 1HE, UK  
anthony.cheke@innerbookshop.com

While going through 18<sup>th</sup> century manuscripts from Philibert Commerson in Paris to extract data for Mascarene animals, I also came across material from Seychelles - representing species not formally described for many decades after Commerson