

The risk to other Indian Ocean islands of invasive species on Diego Garcia

Anthony Cheke

139 Hurst St, Oxford OX4 1HE, UK

anthony.cheke@innerbookshop.com

In addition to the political issues around the presence of the American base on Diego Garcia, there are biological implications which extend beyond that island to the rest of the Chagos and other islands of the Indian Ocean, perhaps most especially the Seychelles. Since their occupation of Diego Garcia, the Americans have, by accident or design, introduced a number of highly invasive animals, with the risk of doing great harm if they spread to other islands. Flights come in to Diego Garcia regularly from Guam and the main place used by US service personal for rest & recreation is Singapore. Guam is home to several ecologically disastrous species, and Singapore is a major centre of the pet trade, the main way in which inappropriate species are spread around the world.

One of the world's worst tropical pest species is already abundant on Diego Garcia - the notorious Cane Toad *Bufo marinus* that is causing such problems for native wildlife and even domestic pets in Australia (Lever 2001, 2003). Apparently released

sometime between 1980 and 1989 (Lever 2003), they were reported as already ‘very common’ in 1996 (Barnett & Emms 1997, 1998), as they still are (Gordon Rodda, *in litt.*). These South American toads are very large (up to 1 kg) voracious carnivores that compete with native animals for food and have seriously toxic glands in their skin - basically anything that tries to eat them dies - and naïve cats, dogs, marsupials etc. that have never met a lethal amphibian fall victim to its poison. They produce huge numbers of tiny tadpoles and can thus multiply incredibly fast in the right environment - such as Diego Garcia. They have been generally introduced to sugar-producing countries to control pests in the cane fields, but although they (sometimes) lead to some agricultural benefit, the downsides are so bad that they are included as one of the only three amphibians in the official list of the world’s 100 worst invasive alien species (Lowe *et al.* 2004). It would be a disaster if they were to reach other Indian Ocean islands. Attempts were made to introduce them for biological control in Mauritius in the 1930s and 1950s (Cheke & Hume 2008), but they unexpectedly and unusually failed. They might not fail again there, and their probable effects on the unique herpetofauna and invertebrates of the granitic Seychelles do not bear thinking about, nor the consequences if they were to reach Madagascar. No one seems to know how or why they were released on Diego Garcia (Lever 2003).

Guam is infamous amongst ecologists for having had nearly all its native vertebrates wiped out by a single invasive species, the Brown Tree Snake *Boiga irregularis* from the New Guinea area, which slipped in with the US military from the Admiralty Islands in the late 1940s (Fritz & Rodda 1998, Lever 2003). It is nocturnal and so sneaky that it took decades for biologists to discover the cause of the declines, and by then it was too late for most of the birds, lizards and bats affected. This snake will insinuate itself into all sorts of potential hiding places, including crates, luggage and planes. So far the US military, stung by the disaster of their own making in Guam, have so far been vigilant enough to keep it out of Diego Garcia. Back in the 1980s when one was found in a hangar, it escaped into a nearby marsh and the area was doused in petrol and fired to make sure it was killed! (Ted Morris, pers. comm.). Another was found and killed on a ship at anchor before it reached land (Fritts *et al.* 1999, no date given), and ‘about 5 years ago’ one was seen but escaped (Gordon Rodda *in litt.*). However other snakes (even a python) do turn up on planes (Gordon Rodda *in litt.*), and the risk of a pregnant female tree snake arriving unseen is all too real. The Brown Tree Snake is by far the worst of the only two reptiles listed amongst the 100 worst invasive species (Lowe *et al.* 2004), and its establishment on Indian Ocean islands would be the worst ecological disaster since rats arrived on the Mascarenes in the 1600s.

The ‘Bloodsucker’, Indian Garden Lizard or Crested Tree Lizard *Calotes versicolor* has arrived in Diego Garcia within the last few years (date uncertain; Nik Cole & Gordon Rodda, *in litt.*), apparently from Singapore, and is now widespread on the atoll. This is not in itself a risk to other Indian Ocean islands since the damage has already been done - the species has been present in Réunion and Mauritius for over a century (Vinson & Vinson 1969), and more recently been introduced from the latter to Rodrigues (ca.1986, Cheke & Hume 2008) and to the granitic Seychelles (1982 & 2003, Matyot 2004). It is assumed to be nefarious to native invertebrates, but details

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are few (Maureemootoo *et al.* 2003, Matyot 2004); in Rodrigues it is regarded as a pest for sitting on commercial hives and picking off the bees (Jauze 1998), so would be best kept off the northern Chagos if people are to return there. However the fact that this versatile animal made it from Singapore (where it is itself a recent arrival: early 1980s - Lever 2003), shows that there is a risk of other, more damaging, animals arriving from the same direction. Despite quite severe official quarantine arrangements, I don't imagine US military personnel are above attempting to smuggle pets in to liven up their enforced exile on Diego Garcia, and there may even be some legal pets there? Mauritius, Réunion and the Seychelles have strict rules about importing live animals, but unwanted faunal immigrants keep arriving - partly through escaped/released pets (originally traded legally), partly through people smuggling them in (mainly lizards), especially to Réunion (Cheke & Hume 2008).

The widespread house gecko *Gehyra mutilata* has also arrived recently on Diego Garcia (Nik Cole & Gordon Rodda *in litt.*), but again this has been around inhabited islands of the Indian Ocean for a very long time (Cheke 1984, Cheke & Hume 2008), and is generally scarce away from buildings, so is low-risk to native fauna.

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