Mangroves are intertidal forests that are entirely or partially inundated by seawater twice a day, and thus present a challenging environment for terrestrial reptiles. A number of reptile species occur in mangroves globally, including the snake *Boiga dendrophila*, the monitor *Varanus indicus* and the saltwater crocodile *Crocodylus porosus*, but very little is known about the use of this habitat by reptiles in Madagascar. Four species of arboreal lizard (*Phelsuma cf. dubia*, *Geckolepis* sp., *Furcifer pardalis* and *F. oustaleti*) have been recorded in the mangroves of Diego Suarez Bay, northern Madagascar (D’Cruze et al., 2007), but we know nothing about their ecology in this unique ecosystem. Here we present an observation of a novel interaction between a gecko adapted to sub-arid environments and a mangrove tree.

On 09.10.2013 at approximately 11:00 and again on 25.10.2013 at 11:30, B. Taylor observed an adult *Phelsuma mutabilis* (Grandidier, 1869) (Squamata: Gekkonidae) drinking nectar from the flowers of the mangrove tree *Sonneratia alba* Sm. (Lythraceae) - flowering period October to December – at Ambondrolava (23°15’35.7” S, 43°37’23.6” E), a mangrove and freshwater wetland complex in southwest Madagascar (see Gardner et al. 2012 for site description). Both observations took place in the same tree, at a height of approximately 3 m; in each case the individual was observed entering a newly opened flower head of *S. alba*, pushing aside exerted stamens until approximately a third of the body length was within the flower (Fig. 1-3). The lizard then left the targeted flower and moved along the branch towards the centre of the tree; on both observations this activity lasted less than five minutes;
with an estimated one to two minutes spent within the flower itself. The first observation was made during an ebbing tide and the second was during low spring tide. The tree is on the edge of the main mangrove channel which is inundated by sea water during all flood tides, located approximately 120 m distant from the nearest permanently dry land; a topographically elevated area within the mangrove forest which is surrounded at flood tides on all sides.

The day geckos, genus *Phelsuma*, are a radiation of over 40 species of diurnal, arboreal geckos occurring on the African mainland and islands throughout the western Indian Ocean, with a centre of diversity on Madagascar (Rocha et al., 2010). Like all geckos *Phelsuma* are primarily insectivorous, but some species include pollen or nectar in their diet or milk honeydew-producing planthoppers (Gardner, 1984; Murphy and Myers, 1996; Fölling, Knogge and Böhme, 2001; Bauer, 2003; Hansen et al., 2007). *Phelsuma mutabilis* is widespread in the dry and sub-arid regions of western and southern Madagascar (Glaw and Vences, 2007) and, like several members of the genus, is highly adaptable to different habitat types, being common even in cities (Gardner and Jasper, 2009). The observation of the species in mangroves adds to the evidence of its behavioural plasticity.

The gecko does not appear to have been pollinating the flower. *Sonneratia alba* has white, night-blooming flowers typically pollinated by bats (including the Madagascar flying fox *Pteropus rufus* within the region, (C. Gardner pers. obs.)) and hawk moths, and is also visited by bees during the day (B. Taylor pers. obs.). It thus holds its pollen on long, exserted stamens, which didn’t appear to be touched by the gecko as it drank from the base of the flower. In addition, pollen was not observed on the face or body of the gecko on either occasion. As such the exact relationship between plant and animal is unclear, and requires further study.

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**Figure 2.** Adult *Phelsuma mutabilis* entering flower of *Sonneratia alba* in the mangrove at Ambondrolava, southwest Madagascar, on 25.10.2013. Photo B. Taylor (photo taken from elevated 4m tall platform).

**Figure 3.** Adult *Phelsuma mutabilis* inside flower of *Sonneratia alba* in the mangrove at Ambondrolava, southwest Madagascar, on 25.10.2013. Photo B. Taylor (photo taken from elevated 4m tall platform).
References


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