

Does the tokay gecko (*Gekko gekko* [Linnaeus, 1758]) occur in the wild in Taiwan?

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The tokay gecko, *Gekko gekko* (Linnaeus, 1758), naturally occurs throughout northeastern India and Bangladesh, Burma, Thailand, Indochina, southern China, Malaysia, Indonesia, the Philippines, Sulu Archipelago, and the eastern Indo-Australasian Archipelago (Seufer, 1995; Aowphol et al. 2006). It has also been introduced into some Hawaiian islands (Pavia, 1999), and parts of Florida, USA, where it has established populations and has become an exotic invasive species (Meshaka, Butterfield and Hauge, 2004). In Taiwan, *G. gekko* were recorded in the wild in 1923 and 1936 (Shang and Lin, 2001; Lue, Tu and Shang, 2002), so for a period it was listed as a protected species by the Taiwanese authorities. More recently its status as an indigenous species has been doubted, and subsequently it has been regarded as a non-native species that does not exist in the wild in Taiwan (Shang and Lin, 2001; Lue, Tu and Shang, 2002).

On the 17th of October 2008, a large adult male *G. gekko* (Fig. 1) was collected from a tree trunk near to a footpath in a secondary forest, on a hill in Dakeng (24°11'07"N, 120°44'07"E, 285 m elev., datum: WGS84), Taichung County, central western Taiwan (Fig. 2). This specimen

of *G. gekko* had a SVL, TL, and body mass of 158 mm, 90 mm, and 134.3 g respectively. On the 1st of November 2009, another two males were collected from the same area. The first animal (specimen A) had a SVL, TL, and body mass of 138 mm, 130 mm, and 65 g respectively, while that of the other one (specimen B) were 146 mm, 135 mm, and 45.6 g respectively. Specimen B was 30% lighter than specimen A, even though it had a larger SVL, so it was killed with ether for an examination for internal parasites. No parasites were observed, and specimen B was deposited in the herpetological collection of the Natural History Museum of Los Angeles County (LACM), Los Angeles, California, as LACM 178858.

During surveys on reptile diversity in Taichung County, conducted from 1995 to 1996 by the Taiwan Endemic Species Research Institute, no *G. gekko* was recorded in the wild (Hong, 1999). However, there is a slight possibility that a small population may have been overlooked. On the other hand, there is a chance that a founder population was established through anthropogenic activities. Taichung City and the harbour are in close proximity to the locality where the *G. gekko* specimens described herein were found. *Gekko gekko* is used in traditional medicine in many parts of Asia, including Taiwan (Martin and Phipps, 1996; Lue, Tu and Shang, 2002; Chan et al. 2006; Dao Ngoc Van and Tap, 2008; Zhang, Hua and Sun, 2008; Nijman, 2010). Although not very common, *G. gekko* plays a role in the pet trade in Taiwan (Shiao et al. 2006), so therefore the releasing of unwanted pets into the wild may happen (Lam and Wu, 2008).

The main diet of *G. gekko* consists of arthropods, although small geckos (Meshaka, Clouse and McMahan, 1997; Meshaka, Butterfield and Hauge, 2004; Aowphol et al. 2006), and a juvenile corn snake (*Pantherophis guttatus*) have also been reported (Love, 2000), so *G. gekko* could pose a threat to small native vertebrates if an introduced invasive population manages to establish in Taiwan.

We thus recommend that a thorough survey for *G.*

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Figure 1. The large adult male *Gekko gecko* that was collected on the 17th of October 2008, displaying typical gaping behavior. These geckoes will actually bite if handled carelessly (photographed by Gerrut Norval).

gecko be conducted in the area where we found the three males, and a phylogenetic analysis should be performed on the collected individuals in an attempt to determine their origin. It is our recommendation that *G. gecko* should be restricted, or at least, strictly regulated in the pet trade, either as a species with a very limited known distribution and population size in Taiwan, or

as a potential exotic invasive species, depending on the outcome of the phylogenetic analysis.

The remaining collected *G. gecko* are currently being maintained in captivity at the Department of Forestry and Natural Resources, National Ilan University, pending the results of the proposed phylogenetic study.



Figure 2. A map indicating Dakeng, where the *Gekko gecko* described here in were collected, in relation to Taichung City, and Taichung harbor.

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