



Damage to Air Conditioning Units Caused by Geckos

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Habitat destruction and modification are among the main human-induced causes of extinction (Tilman et al. 1997, Krauss et al. 2010), and in many parts of the world are causing a decline in reptilian populations (Gibbons et al. 2000). One of the most serious causes of habitat destruction and modification worldwide is urbanization (McKinney 2002, Garden et al. 2006, Pauchard et al. 2006). However, not all species are adversely affected by urbanization, and

some species, like *Hemidactylus mabouia* (Moreau de Jonnès 1818) and *Trachylepis punctatissima* (Smith 1849), can be human commensals and can thrive in urban environments (Treglia 2006, Norval and Norval 2007). However, some problem species can cause financial and/or health-related problems. For example, a study involving various human commensals, including some lizards, implicated some of these animals in the high prevalence of *Salmonella* infections in



Fig. 1. Bowring's Gecko (*Hemidactylus bowringii*) is a human commensal throughout its range (native and introduced), and in some localities can be very common. Photograph by Jean-Jay Mao.



Fig. 2. The Asian or Common House Gecko (*Hemidactylus frenatus*) is an aggressive territorial species that is a human commensal throughout its range (native and introduced). Photograph by Gerrut Norval.

Guam (Haddock et al. 1990). Also on Guam, invasive Brown Treesnakes (*Boiga irregularis*) regularly cause power failures when they are electrocuted while crawling across insulators, thus creating a bridge between the wire and a pole (Fritts and Chiszar 1999).

Bowring's Gecko (*Hemidactylus bowringii* [Gray 1845]; Fig. 1) has a native range that extends from eastern Indochina, through southern China, to Taiwan and the Ryukyu Islands (McMahan and Zug 2007). In Taiwan, this species mainly occurs at altitudes below 1,200 m in the central and northern parts of the island, but some have been recorded in southern and eastern regions (Shang and Lin 2001, Lue et al. 2002). The Asian or Common House Gecko (*Hemidactylus frenatus* Schlegel 1836) is primarily an Oriental species, but introduced populations have been reported from parts of Southeast Asia, Japan, parts of central America, Mexico, some localities in the southern USA, Madagascar, parts of Africa, Australia, and many islands of the Pacific, Indian, and Atlantic Oceans (Case et al. 1994, Rödder et al. 2008, Kraus 2009, Hoskin 2011). In Taiwan, this gecko species mainly occurs at altitudes below 1,000 m in the central and southern parts of the island, as well as on the outlying islets, but some have been recorded in northern regions of the main island (Shang and Lin 2001, Lue et al. 2002).

In a three-year period (2010–2012), at the residence of C.W. Chang, in Sanshing District, Yilan, northeastern Taiwan, during the months May–June, geckos of both species on several occasions have caused damage to the internal electrical components of both Fujimaru and Panasonic air

conditioning units by being electrocuted as they crawled over the control panel, causing a short-circuit. Every time, repairs to the air-conditioner unit amounted to ca. NTD 5,000 (ca. US\$ 170). To determine what species of geckos are present, we conducted a search in the house and surrounding area. We collected 12 geckos belonging to the species *H. bowringii* and *H. frenatus*. *Hemidactylus bowringii* ($n = 6$) ranged in snout-vent length (SVL) and tail length (TL) from 28 to 51 mm (mean \pm SD = 39.3 ± 8.0 mm) and 32 to 57 mm (44.2 ± 11.4 mm) respectively, whereas those of *H. frenatus* ($n = 6$) were 28–44 mm (37.2 ± 6.3 mm) and 28–51 mm (40.2 ± 9.1 mm) respectively. For both species, only adults were collected inside the house.

In an effort to avoid further damage to the air-conditioning units and the financial expenses associated with it, C.W. Chang unplugs the units when not in use to prevent the heat of the electrical circuits from attracting geckos. In addition, some glue-trap boards are placed around the indoor component of the air conditioners to prevent geckos from entering them.

Williams (2011) and a number of online sources (e.g., David, accessed 2013) have implicated geckos in damage to air-conditioning units, and according to a technician who installs and repairs air conditioners in Chiayi City (southwestern Taiwan), damage caused to air-conditioners by geckos is fairly common (C.C. Kuo, personal communication). Resolving the issue by attempting to manage the populations of these animals will be problematic. Any animals removed will most likely simply be replaced by immigrants.

Also, since species like *H. frenatus* prey on pest insects such as dipterans, hymenopterans, and lepidopterans (Petren and Case 1996, Meshaka et al. 2004, Newberry and Jones 2007), the occurrence of these lizards, especially in gardens and exterior walls, should be encouraged in rural and urban areas. Williams (2011) suggested that camphor balls placed in air-conditioning units might repel these lizards, and turning units completely off (disconnecting them from an electrical power source) when not in use can reduce the incidence of burn-outs caused by electrocuted geckos. However, the most effective method would be to install screens over vents and other openings to prevent geckos from entering or at least exclude them from the electrical components. This not only would ensure the safety of the air-conditioning unit users and the geckos, but also could mitigate conflict between humans and these lizards, which can be beneficial in other respects in anthropogenic environments.

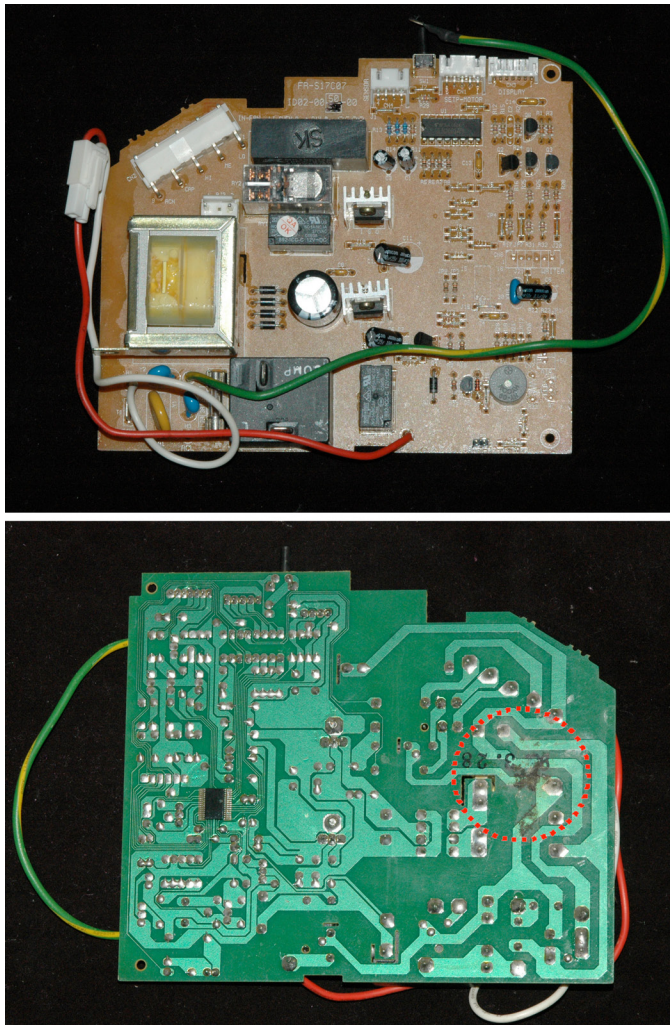


Fig. 3. Front (top) and rear (bottom) views of a Fujimaru electricity control panel short-circuited by an Asian or Common House Gecko (*Hemidactylus frenatus*) that was electrocuted on the panel (red circle) when the gecko crawled over it. Photograph by Jean-Jay Mao.

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