



# When the Eyes are Larger than the Stomach: An Instance of a Common House Gecko (*Hemidactylus frenatus* Schlegel, 1836) Preying on a Large American Cockroach (*Periplaneta americana* (Linnaeus, 1758))

Gerrut Norval<sup>1</sup> and Jean-Jay Mao<sup>2</sup>

<sup>1</sup>Applied Behavioural Ecology & Ecosystem Research Unit, Department of Environmental Sciences, UNISA, Private Bag X6, Florida, 1710, Republic of South Africa (gnorval@gmail.com)

<sup>2</sup>Department of Forestry and Natural Resources, National Ilan University, No. 1, Sec. 1, Shen-Lung Rd., Yilan, 260, Taiwan, R.O.C.

Photographs by the senior author.

The Asian or Common House Gecko (*Hemidactylus frenatus* Schlegel 1836) (Fig. 1), also known as the Pacific House Gecko, is primarily an oriental species, and although it is known to be native to southern and southeastern Asia, the exact extent of its native range is not clear (Case et al. 1994).

The species has spread, often with human mediation, pantropically and its introduced range currently includes areas in southeastern Asia, Japan, Central and North America, Madagascar, Africa, Australia, and many islands of the Pacific, Indian, and Atlantic Oceans (Case et al. 1994, Spawls et al.



**Fig. 1.** The Asian House Gecko (*Hemidactylus frenatus*) is abundant on exterior walls in Chiayi City.



**Fig. 2.** The remains of the *adult* American Cockroach (*Periplaneta americana*) attacked by a Common House Gecko (*Hemidactylus frenatus*).

2002, Rödder et al. 2008, Hoskin 2011). In Taiwan, this species occurs islandwide at elevations below 1,000 m and on the outlying islets, but tends to be less frequently encountered in northern parts of the main island (Shang and Lin 2001, Lue et al. 2002).

On 22 May 2013 at ca. 0320 h, the senior author noticed an adult *H. frenatus* (SVL ca. 6 cm) on the exterior wall of an apartment complex in Chiayi City, southwestern Taiwan

(23°28'43"N, 120°22'28"E). Closer examination revealed that the lizard had captured an adult American Cockroach (*Periplaneta americana*). The head of the cockroach was in the lizard's mouth. In order to escape, the cockroach was trying to retreat at a 45° angle (downward and parallel to the wall), but the gecko was pulling in the opposite direction. The senior author went to get his camera, and when he returned ~5 min later, he found that the gecko had moved higher on the wall, and that the cockroach had apparently disappeared. He managed to take one photograph before the lizard fled into a fissure in the wall. As the author turned to leave, he noticed the remains of the cockroach on the ground (Fig. 2), and a later review of the photograph revealed that the head and part of the thorax of the insect were still in the mouth of the gecko (Fig. 3).

Both within its native range and areas into which it has been introduced, *H. frenatus* is a species commonly associated with areas disturbed by anthropogenic activities (Newberry and Jones 2007, Vanderduys and Kutt 2012). These geckos are nocturnal and often are associated with indoor and outdoor lights, where they feed on insects that are attracted to the lights (Newberry and Jones 2007). Petren and Case (1996), Meshaka et al. (2004), and Newberry and Jones (2007) reported roaches as prey of *H. frenatus*, but did not state the species or sizes of prey. Petren and Case (1996) also noted that male *H. frenatus* in particular are adept at preying



**Fig. 3.** The Common House Gecko (*Hemidactylus frenatus*) with the head of the adult American Cockroach (*Periplaneta americana*) visible in its mouth.

on large roaches. On numerous occasions, individuals have been observed preying on smaller adult German Cockroaches (*Blattella germanica*) in southwestern Taiwan (G. Norval, pers. obs.), but due to the large size (ca. 4 cm in length) of adult *P. americana*, the latter is unlikely to be common prey of these geckos. Adult Asian House Geckos have been reported to prey on conspecific hatchlings, the hatchlings and juveniles of Mourning Geckos (*Lepidodactylus lugubris*), as well as on Lesser Night Geckos (*Nactus coindemirensis*) of unknown size (McCoid and Hensley 1993, Cole et al. 2005). Even though some of these prey items could be as large as the cockroach described herein, their bodies are much narrower, which could explain why the gecko had to “break” the cockroach, rather than ingest it intact. The observation described herein not only illustrates how even large insect pests in human residential areas can be preyed upon by human commensal geckos, but it also highlights the opportunistic nature of *H. frenatus* and raises the question of what sizes and shapes limit the prey that can be taken by *H. frenatus*.

#### Acknowledgements

The authors express their gratitude to Shao-Chang Huang for obtaining some of the references, and to the anonymous reviewers, whose comments helped improve this report.

#### Literature Cited

- Case T.J., T. Bolger, and K. Petren. 1994. Invasions and competitive displacement among house geckos in the tropical Pacific. *Ecology* 75:464–477.
- Cole, N.C., C.G. Jones, and S. Harris. 2005. The need for enemy-free space: The impact of an invasive gecko on island endemics. *Biological Conservation* 125:467–474.
- Hoskin, C.J. 2011. The invasion and potential impact of the Asian House Gecko (*Hemidactylus frenatus*) in Australia. *Austral Ecology* 36:240–251.
- Lue, K.Y., M.C. Tu, and G.S. Shang. 2002. *The Transition Kingdom—Guidebook of Amphibians and Reptiles of Taiwan*. SWAN, Taipei, Taiwan (in Chinese).
- McCoid, M.J. and R.A. Hensley. 1993. Shifts in activity patterns in lizards. *Herpetological Review* 24:87–88.
- Meshaka, W.E., B.P. Butterfield, Jr., and J.B. Hauge. 2004. *The Exotic Amphibians and Reptiles of Florida*. Krieger Publishing Company, Malabar, Florida, USA.
- Newberry, B. and D.N. Jones. 2007. Presence of Asian House Gecko *Hemidactylus frenatus* across an urban gradient in Brisbane: Influence of habitat and potential for impact on native gecko species, pp. 59–65. In: D. Lunney, P. Eby, P. Hutchings and S. Burgin (eds.), *Pest or Guest: The Zoology of Overabundance*. Royal Zoological Society of New South Wales, Sydney, Australia.
- Petren, K. and T.J. Case. 1996. An experimental demonstration of exploitation competition in an ongoing invasion. *Ecology* 77:118–132.
- Rödger, D., M. Solé, and W. Böhme. 2008. Predicting the potential distributions of two alien invasive housegeckos (Gekkonidae: *Hemidactylus frenatus*, *Hemidactylus mabouia*). *North-Western Journal of Zoology* 4:236–246.
- Shang, G.S. and S.L. Lin. 2001. *Natural Portraits of the Lizards of Taiwan*. Big Trees Publishers, Taipei, Taiwan (in Chinese).
- Spawls, S., K. Howell, R. Drewes, and J. Ashe. 2002. *A Field Guide to the Reptiles of East Africa*. Academic Press, London, UK.
- Vanderduys, E.P. and A.S. Kutt. 2012. Is the Asian House Gecko, *Hemidactylus frenatus*, really a threat to Australia's biodiversity? *Australian Journal of Zoology* 60:361–367.