

Predation by Tokay gecko on the introduced American Cockroach on Mindanao Island, Philippines

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Photograph by: Von Carlo P. Dela Torre.

Subject identified by: Elsa May Delima-Baron.

Location: Davao City, Davao del Sur Province, Mindanao Island, Philippines (7.0858°N, 125.6083°E).

Habitat: Urban: grassy patch adjacent to a road.

Date and time: 02 October 2021, 20:17 hrs.

Identity of subject: Tokay gecko, *Gekko gekko* (Reptilia: Squamata: Gekkonidae).

Description of record: During a herpetofaunal survey we observed a predation event on an American Cockroach by a Tokay gecko in a grassy patch adjacent to a road. The prey was in a dorsal position and already seized on its thorax by the Tokay while clinging onto a blade of grass (Figure 1). Actual consumption of the prey was not visible to the observers since the gecko moved away from its original spot three minutes after initial observation. Based on how the prey was seized, the gecko is assumed to have been close to the prey item when it was spotted.



Fig. 1.

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Remarks: The genus *Gekko* has a widespread distribution in Southeast Asia, Japan, and the Philippines with 81 recognized species (Uetz et al. 2021). In the Philippines, this genus currently comprises 16 species, of which, the following 13 species are endemic: *G. athymus*, *G. carusadensis*, *G. coi*, *G. crombota*, *G. ernstkelleri*, *G. gigante*, *G. gulat*, *G. intermedius*, *G. mindorensis*, *G. palawensis*, *G. porosus*, *G. romblon*, and *G. rossi* (Brown et al. 2011; Siler et al. 2012). Philippine *Gekko* species have been observed in different habitats including caves (Brown and Alcala 2000; Rosler et al. 2006), and disturbed and secondary growth forests (Linkem et al., 2010; Siler et al. 2012). Additionally, they are commonly found in crevices in parks, artificial structures in and around human habitation, large rocks in rivers, and on concrete structures close to aquatic habitats (Linkem et al., 2010; Brown et al. 2013).

The diverse habitats of *Gekko* species may facilitate their adaptive differentiation regarding food acquisition and dietary preferences (Kim et al. 2019a). Several studies have documented the diet of *Gekko* species. Weterings and Weterings (2018) reported *G. monarchus* feeding on white bread whereas another paper reported opportunistic feeding on insects attracted to artificial light (McKelvy and Ozelski-McKelvy 2012; Kim et al. 2019b; Kobayashi and Mori 2020). Termites, wasps, true flies, spiders, and sawflies also formed part of *Gekko*'s diet (Affandi and Zulkipli 2013).

Tokay gecko, *Gekko gecko* (Linnaeus 1758), are widely distributed in Southeast Asia, eastern and northeastern India, southern China, Nepal, and Bangladesh. It was introduced in the United States of America (i.e., Florida & Hawaii), Madagascar, and West Indies (Das 2010) unintentionally as stowaways in cargo ships and intentionally for the pet trade and pest control (Wilson and Porras 1983; Kraus 2009). *Gekko gecko* inhabits buildings, home gardens, and sites near human-dominated habitats (Wilson and Porras 1983; Aowphol et al. 2006; Brown et al. 2013; Behm et al. 2018; Yashmita-Ulman and Singh 2021).

Gekko gecko is a generalist feeder reported to prey on a wide variety of vertebrates, and invertebrates (Meshaka et al. 1997; Love 2000; Aowphol et al. 2006; Bucol and Alcala 2013; Krysko and Love 2016) and even on bread (Weterings and Weterings 2019). The actual predation of *G. gecko* on vertebrates such as juvenile eastern cornsnake, *Pantherophis guttatus* (Love 2000); the agamid *Calotes versicolor* (Aowphol et al. 2006); Cuban tree frog, *Osteopilus septentrionalis*, and Carolina wren, *Thryothorus ludovicianus* (Krysko and Love 2016); juvenile house rat, *Rattus tanezumi* (Bucol and Alcala 2013) and attempted predation of olive-backed sunbird, *Cinnyris jugularis* (Sy and Tanalgo 2018) are known. Moreover, diet composition through gut content analysis revealed prey items such as beetles, moths, mantids, spiders, caterpillars, and roaches (Meshaka et al. 1997; Aowphol et al. 2006; Singh and Choudhury 2016). Aside from vertebrates and invertebrates, they may feed opportunistically on bread, cookies, and crackers (Weterings and Weterings 2019). This gecko can be a sit-and-wait or active forager, depending on the availability of prey items. When prey is scarce, it tends to sit-and-wait but becomes an active feeder if prey items are highly abundant (Aowphol et al. 2006). Our observation may not directly support this gecko's sit and wait foraging nature as previously reported by Aowphol et al. (2006) but it highlights close proximity as a factor for successful predation.

As a generalist feeder, *Gekko gecko* consumes several species of arthropods, including cockroaches (Meshaka et al., 1997; Stanner et al. 1998; Singh and Choudhury 2016). Feeding observations of *G. gecko* were mainly in walls of infrastructures and on tree trunks or branches (Aowphol et al. 2006; Singh and Choudhury 2016). However, none of these reports accounted for actual predation of this gecko on cockroaches in a grassy patch adjacent to a road. This feeding event occurring in a disturbed area is not novel given the capacity of the gecko to dwell in various habitats with different levels of disturbance (Aowphol et al. 2006; Bucol and Alcala 2013; Singh and Choudhury 2016; Behm et al. 2018; Yashmita-Ulman & Singh 2021). Our observation provides the first report of a non-wall insect predation event (i.e. in a grassy patch adjacent to a road) by the Tokay Gecko on a cockroach in the Philippines.

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