



# Exploiting the Night-light Niche: A West Indian Experience in Hawaii

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Hawaii has no native terrestrial or freshwater reptiles or amphibians (only sea turtles and seasnakes occur naturally in the archipelago). However, the Hawaiian herpetofauna is quite diverse as a consequence of human-mediated introductions that began with the first Polynesian settlers. Today, 31 species are established on at least one of the islands (Table 1). As many as four of the geckos and four of the skinks might have been introduced inadvertently by the Polynesians. Poison Dart Frogs and Cane Toads were introduced intentionally for insect control, soft-shelled turtles for food by Chinese immigrants. Others arrived as stowaways in cargo, including ornamental plants, or descended from escaped or released pets. Interestingly, Hawaiian populations of Cuban Treefrogs, Cuban Flat-headed Frogs, and Green Iguanas probably originated in Florida, where they are also introduced. Tokay Geckos and Azure-tailed Skinks might be extirpated in Hawaii.

The West Indian experience to which I refer in the title occurred one evening in July 2013 during a trip to the “Big Island” of Hawaii. The chorus of Coquis (*Eleutherodactylus coqui*; Fig. 1) was deafening, House Geckos (*Hemidactylus frenatus*; Fig. 2) were actively hunting insects attracted to the porch light of our vacation home near Hilo, and Day Geckos (*Phelsuma laticauda*; Fig. 3), normally diurnal, also were exploiting the night-light niche. All three were on the same wall at the same time, presumably seeking the same insects.

Although the species differed (except the Coquis, which are native to Puerto Rico), the experience was essentially like that on almost any night in the West Indies, where eleuths call, House Geckos hunt around lights, and anoles (Day Gecko analogs) frequently stay active well into the night, seeking the same prey as nocturnal geckos. Because I do most of my fieldwork in the West Indies, I felt right at home, especially since Brown Anoles (*Anolis sagrei*; Fig. 4), another West Indian species, were ubiquitous by day (I have observed Brown Anoles exploiting the night-light niche on Oahu and in the West Indies, but not at this site or at this time).

Nocturnal foraging around artificial lights by amphibians and reptiles, including primarily diurnal species, is well docu-

mented, and exploitation of the night-light niche by the Gold Dust Day Gecko has been recorded in Kona, Hawaii (Perry



Fig. 1. A Puerto Rican Coqui (*Eleutherodactylus coqui*) foraging around an artificial light at night near Hilo, Hawaii.



Fig. 2. A Common House Gecko (*Hemidactylus frenatus*) hunting insects above the same artificial light as the Coqui in Fig. 1.

**Table 1.** Terrestrial and freshwater amphibians and reptiles with established populations in the Hawaiian Islands (McKeown 1996; Kraus 2009, 2012).

Species	Natural Range
<b>Amphibians: Frogs (7)</b>	
Japanese Wrinkled Frog ( <i>Glandirana rugosa</i> ) Ranidae	Japan
American Bullfrog ( <i>Lithobates catesbeianus</i> ) Ranidae	Eastern United States
Green-and-Black Poison Dart Frog ( <i>Dendrobates auratus</i> )** Dendrobatidae	Neotropics
Cuban Treefrog ( <i>Osteopilus septentrionalis</i> ) Hylidae	Bahamas, Cuba, Cayman Islands
Cane Toad ( <i>Rhinella marina</i> )** Bufonidae	Neotropics
Puerto Rican Coqui ( <i>Eleutherodactylus coqui</i> ) Eleutherodactylidae	Puerto Rico
Cuban Flat-headed Frog ( <i>Eleutherodactylus planirostris</i> ) Eleutherodactylidae	Bahamas, Cuba, Cayman Islands
<b>Reptiles: Turtles (3)</b>	
Red-eared Slider ( <i>Trachemys scripta elegans</i> ) Emydidae	Eastern United States
Wattle-necked Softshell ( <i>Palea steindachneri</i> )** Trionychidae	China
Chinese Softshell ( <i>Pelodiscus sinensis</i> )** Trionychidae	Eastern Asia
<b>Reptiles: Lizards (20)</b>	
Green Iguana ( <i>Iguana iguana</i> ) Iguanidae	Neotropics
Green Anole ( <i>Anolis carolinensis</i> ) Dactyloidae	Southeastern United States
Knight Anole ( <i>Anolis equestris</i> ) Dactyloidae	Cuba
Brown Anole ( <i>Anolis sagrei</i> ) Dactyloidae	Bahamas, Cuba, Cayman Islands, Jamaica
Veiled Chameleon ( <i>Chamaeleo calyptratus</i> ) Chamaeleonidae	Arabian Peninsula
Jackson's Chameleon ( <i>Triceros jacksonii</i> ) Chamaeleonidae	Eastern Africa
Stump-toed Gecko ( <i>Gehyra mutilata</i> )* Gekkonidae	Southeastern Asia and Polynesia
Tokay Gecko ( <i>Gekko gekko</i> ) Gekkonidae	Southern Asia
Common House Gecko ( <i>Hemidactylus frenatus</i> ) Gekkonidae	Southern Asia
Indo-Pacific Gecko ( <i>Hemidactylus garnotii</i> )* Gekkonidae	Southeastern Asia and Polynesia
Indo-Pacific Tree Gecko ( <i>Hemiphyllodactylus typus</i> )* Gekkonidae	Southeastern Asia and Polynesia
Mourning Gecko ( <i>Lepidodactylus lugubris</i> )* Gekkonidae	Southeastern Asia, possibly as far as Australia
Gold-dust Day Gecko ( <i>Phelsuma laticauda</i> ) Gekkonidae	Madagascar
Madagascan Day Gecko ( <i>Phelsuma grandis</i> ) Gekkonidae	Madagascar
Orange-spotted Day Gecko ( <i>Phelsuma guimbeaui</i> ) Gekkonidae	Mauritius
Pacific Snake-eyed Skink ( <i>Cryptoblepharus poecilopleurus</i> )* Scincidae	Polynesia
Metallic Skink ( <i>Lampropholis delicata</i> ) Scincidae	Australia
Copper-tailed Skink ( <i>Emoia cyanura</i> )* Scincidae	South Pacific, including Polynesia
Azure-tailed Skink ( <i>Emoia impar</i> )* Scincidae	South Pacific, including Polynesia
Moth Skink ( <i>Lipinia noctua</i> )* Scincidae	Polynesia
<b>Reptiles: Snakes (1)</b>	
Brahminy Blindsnake ( <i>Indotyphlops braminus</i> ) Typhlopidae	Southern Asia

\*possibly introduced inadvertently by Polynesian settlers

\*\*intentionally introduced



**Fig. 3.** A Gold Dust Day Gecko (*Phelsuma laticauda*) at the same artificial light near which the Coqui and gecko were foraging.

and Fisher 2006; Perry et al. 2008; Seifan 2010), but three species using the same light at the same time is an unusual and noteworthy occurrence.

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**Fig. 4.** A female Brown Anole (*Anolis sagrei*), a species now widely distributed in the Hawaiian Islands.