2-km section of the river revealed no other egg masses, amplectant toads, or any other adult toads, although we encountered several tadpoles of varying sizes throughout this section of the river.

Our observation suggests that, in the Río Salado, these toads lay their eggs in relatively shallow pools. During the period when tadpoles are present in the Río Salado (November–February), pools remain relatively shallow; however, tadpoles are more frequently found in deeper and larger pools, and are found only in pools along the main channel of the Río Salado (Woolrich-Piña et al., unpubl. data). Given the relatively shallow nature of the pool in which we observed the amplectant pair, choices of oviposition sites by the adults might be limited beyond laying eggs in the main channel of the river, and tadpoles likely move among pools until the river dries thereby isolating many of the pools. However, further study that more systematically examines the oviposition site selection of these toads would be informative and might provide valuable information to guide any assessment of conservation or management plans of the Río Salado, which is potentially affected by human-alterations, including the use of water from the river for the production of salt in "salineras."

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Discovery of *Goniurosaurus* Geckos (Squamata: Eublepharidae) in Northwestern Guangdong, China

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Photographs by Mian Hou, except where indicated otherwise.

Leopard Geckos of the genus *Goniurosaurus* (Squamata: Eublepharidae) typically inhabit caves and cliffs in forested areas in the Ryu-Kyu Archipelago of Japan and southeastern Asia (Blair et al. 2009). Ten to twelve species have been described, most recently *G. catbaensis* (Ziegler et al. 2008) and *G. huuliensis* (Orlov et al. 2008), both from northern Vietnam. In China, the first Leopard Gecko was reported from Hainan Island in 1908 as *G.* "*lichtenfelderi*" (Zhao and Adler 1993). This insular form was previously thought to be a Vietnamese species but is now separated as *G. hainanensis* (Grismer et al. 2002, Blair et al. 2009). *Goniurosaurus lichtenfelderi* is confined to granitic substrates in northwestern Vietnam and

Table 1. Comparison of *Goniurosaurus* indet. with species of the *G. luii* group (*G. araneus*, *G. bawanglingensis*, *G. catbaensis*, *G. huuliensis*, and *G. luii*) on scale counts and morphometric characters in mm (from our data, Grismer et al. 1999, Orlov et al. 2008). SL = supralabials; IL = infralabials; PM = postmentals; PO = preorbitals; EF = eyelid fringe scales; PVT = paravertebral tubercles between limb insertions; BS = scales around midbody; GST = granular scales surrounding dorsal tubercles; LT4 = basal and distal subdigital lamellae under fourth toe (hind limb); PP = precloacal pores, SVL = snout vent length; HL = head length from snout to posterior of external ear; HW = head width at the widest area of head.

	SL	IL	PM	PO	EF	PVT	BS	GST	LT4	PP	SVL	HL	HW
G. indet. (male)	8	7	2	16	50–51	34	106	9–10	17–21	12	80	23	14
G. indet. (female)	8	7–8	4	14–16	51–55	33	107	10-11	17–21	—	86	23	15
G. araneus	8–11	8–10	4–6	13–18	61–69	32–38	129–149	10–14	23–24	18–23	111–130	30–33	19-25
G. bawanglingensis	8–10	7–11	2–3	12–18	56–67	32–36	104–133	9–13	18–22	37–46	104	—	—
G. catbaensis	8–9	6–8	2–3	—	52–56	33–34	112–127	8–11	22–24	16–21	84–113	23–32	16-23
G. huuliensis	10–11	9–11	2–3	—	41–44	34–36	118–129	12–13	18–20	25–28	108–117	29–33	18-23
G. luii	9–12	8–11	2–6	14–17	52–63	33–35	119–148	9–14	20–24	21–29	106–120	30–33	19-23

offshore islands in the Gulf of Tongkin (Orlov et al. 2008). Today, three species are known in China: *G. hainanensis* and *G. bawanglingensis* are confined to Hainan Island, whereas the presence of *G. luii* on Hainan Island (Grismer et al. 1999) is discredited (L.L. Grismer, pers. comm., 2 March 2010); it does occur in Guangxi Province (Grismer et al. 1999) and northern Vietnam (Vu et al. 2006). Another *Goniurosaurus* has been found in Guangdong Province, and herein we report this new record. This population of *Goniurosaurus* (currently identified as "*G.* indet.") probably represents a new species in the *G. luii* group, which also includes *G. araneus*, *G. bawanglingensis*, *G. catbaensis*, and *G. huuliensis* (Table 1), all of which have five pairs of black transverse dorsal bands beginning just behind the head (the "nuchal loop" of Grismer 1988) and extending to the base of the tail.

The first individual of *Goniurosaurus* indet., collected on 16 July 2007 in a karst cave approximately 160–170 km NW Guangzhou, Guangdong Province, at approximately 250 m in elevation, was an adult male, 80 mm SVL (South China Normal University [SCNU] 26115). Details of the locality, including GPS coordinates, are withheld because of the dire consequences of over-collecting — which has led to the extirpation of entire populations of this genus (e.g., Stuart et al. 2006).

After several failed attempts to collect more animals in June 2008, we returned to the site on 9 February 2010 and secured two additional specimens: an adult female, 86 mm SVL (SCNU 26116) and a juvenile, 48 mm SVL (SCNU 26117). All three specimens have regenerated tails. The cave system in which these geckos were found is small, with two chambers and three openings. The lowest opening is level with the valley floor and about 10 m from the edge of a cultivated paddy; one cannot enter the cave system through this opening. Each of the two upper openings has a chamber that is connected with the other (we could hear each other); they are ~30 m apart in upslope distance. The middle entrance is ~5 m vertically above the valley floor and the upper entrance is ~15 m above the lowest opening. A small stream courses through the lower reaches of both cave chambers and flows out the lowest opening. Stalactites and stalagmites are developed in both chambers, which are well used by humans. We saw pots and pans, feathers of chickens and other birds, ashes, and charcoal. We observed cave crickets and spiders. The slope is cutover and dominated by shrub vegetation, with only a few scattered, mature trees about 50 cm in trunk diameter. The slope and cave entrances face west. SCNU 26115 was found on the cave wall dur-

Adult female (top) and immature of *Goniurosaurus* indet. from Guangdong Province, China.

L.L. GRISMER

The other three species of *Goniurosaurus* that have been recorded from China: *G. hainanensis* (top) and *G. bawanglingensis* (middle) are confined to Hainan Island, whereas *G. luii* (bottom) occurs in Guangxi Province and in northern Vietnam.

ing summer at night; SCNU 26116 and SCNU 26117 were caught among rubble on the cave floor in winter during daytime (we returned later at night but failed to find more geckos). Although the sample size is very small, these data might be suggestive of seasonal behavior.

The two adults are among the dullest in color of all known *Goniurosaurus*. In life, our female (SCNU 26116) had a gray-brown dorsal ground color with dull yellow tints; the five transverse dorsal bands are sooty to near black, bold, and in pairs; each pair has a pale gray-brown band with a dull yellow tint at center; these light center bands are immaculate. The dorsal zones between the bands and the top of the head were spotted and marbled with near-black. The venter was pale, immaculate, lavender to gray-brown. The iris was brick-red. The male (SCNU 26115) is a drab version of the female when preserved and was similar to her in life; its stomach contained fragments of a cave cricket's femur and tibia. Sexual size dimorphism in *Goniurosaurus* typically is female-biased (females are larger), probably because males do not engage in combat behavior, which would favor large male size (Kratochvíl and Frynta 2002).

Immature *Goniurosaurus* typically have brighter coloration than adults (Grismer et al. 1994, 1999). Our juvenile (SCNU 26117) was strongly contrasting red and yellow, and, except for its smaller size, resembles the most colorful adults of *G. bawanglingensis* and *G. luii*, as figured by Blair et al. (2009) and as described by Grismer et al. (1999, 2002) and Vu et al. (2006). The dorsal ground color was light red; the venter was pale yellow; the transverse dorsal bands were bright yellow edged by the near-black paired dorsal bands. The iris was bright red. Dark spotting on the head and in the dorsal ground color was sparse, indicating that increased spotting is a function of age. The two adults differ most notably from members of the *G. luii* group in duller coloration and pattern, smaller size, and fewer precloacal pores (Table 1). Because the taxonomic status of *Goniurosaurus* indet. might require a genetic assessment, our specimens have been preserved in ethanol to facilitate DNA extraction for such comparisons.

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Snakes Using Stumpholes and Windfall Tree-associated Subterranean Structures in Longleaf Pine Forests

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Stumpholes are a common habitat feature of fire-maintained Longleaf Pine ecosystems in the southeastern United States. These stumpholes and associated subterranean tunnels that form as stumps decay or are consumed by fire have been identified as important refugia for numerous vertebrate species (Means 2005; Steen et al., in press). Trees downed by wind, such as those seen after major storm events (Gresham et al. 1991), may create subterranean depressions or cavities near their bases as roots are exposed. These represent potential microhabitats for animals that do not construct their own burrows. Herein we report on five observations of snakes using refugia associated with stumphole tunnels or root cavities of downed trees in Longleaf Pine forests.

On 26 May 2009 at 1300 h, we observed an adult Pigmy Rattlesnake (*Sistrurus miliarius)* alongside a burnt stump; the rattlesnake retreated into a tunnel within the stumphole shortly after being observed. On 13 July 2009 at 0640 h, we observed an adult Coral Snake (*Micrurus fulvius*) on the forest floor. After ~30 sec of observation, the snake was disturbed and made its way to a stump approximately 70 cm from its original location. The snake retreated into a tunnel associated with the stump. Both observations occurred in Okaloosa County, Florida. To our knowledge, they represent the first accounts of these species using this type of refuge. On 8 April 2005 in Upson County, Georgia, we observed a large adult Eastern Kingsnake (*Lampropeltis getula getula*) coiled and partially visible at about 1400 h within the leaf litter of a Longleaf Pine stump.

On 16 June 2009 at 0730 h, we observed an adult Eastern Diamondback Rattlesnake (*Crotalus adamanteus)* within a cavity under the root system of a large downed Sand Live Oak Tree. On 23 July 2009 at 1950 h, we observed an adult Cottonmouth (*Agkistrodon piscivorus*) within a cavity associated with the base of a downed tree on the bank of a small clear-water stream. Both observations occurred in Okaloosa County, Florida.