

## A New Gecko of the Genus *Gonydactylus* (Sauria: Gekkonidae) with a Key to the Species from Vietnam

ILYA S. DAREVSKY<sup>1</sup> AND NIKOLAI N. SZCZERBAK<sup>2</sup>

<sup>1</sup>Zoological Institute, Russian Academy of Sciences, St. Petersburg 199034, Russia; <sup>2</sup>Institute of Zoology  
Ukrainian Academy of Sciences, Kiev 252650, Ukraine

**Abstract:** *Gonydactylus paradoxus* sp. nov. from a small off-shore island in South Vietnam distinctly differs from all other known species of the genus *Gonydactylus* in the absence of preanal and femoral pores in males and females. The occurrence in a new insular species of a feature so unusual for the genus *Gonydactylus* may be an external manifestation of founder effect sensu E. Mayr (1942).

**Key words:** Lizards, Gekkonidae, *Gonydactylus*, femoral pores

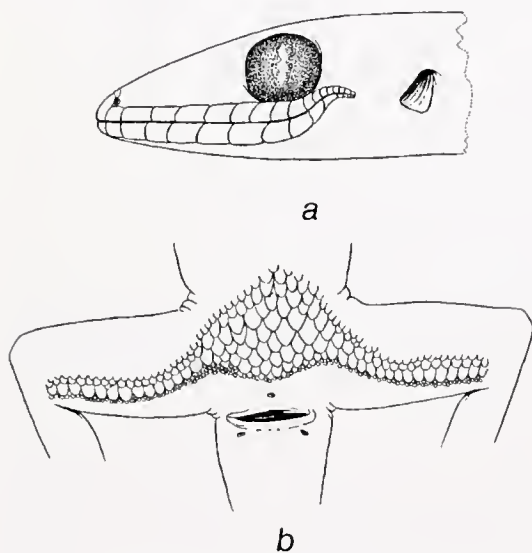


Figure 1. Lateral view of head (a) and preanal and femoral areas (b) of a holotype of *Gonydactylus paradoxus* sp. nov. Note the rows of enlarged preanal and femoral scales.

### Introduction

The validity of the genus *Gonydactylus* Kuhl et van Hasselt, 1822, originally described at the beginning of the last century and long regarded as a synonym of the genus *Cyrtodactylus* Gray, 1827, has recently been advocated by Kluge (1991). According to the latter author and current literature *Gonydactylus* comprises 62 species widely distributed within the South and South-Eastern Asia. Some of them have been only recently described from the Borneo (Hikida, 1990) and from Thailand (Ulber, 1993).

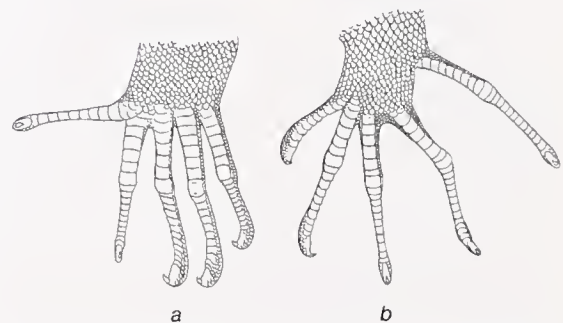


Figure 2. Lower surface of the right manus (a) and right pes (b) of a holotype of *Gonydactylus paradoxus* sp. nov.

Among the most important diagnostic characters in the genus are the pattern of disposition and number of femoral and preanal pores, which are present in specimens of all known species of *Gonydactylus*. Some years ago on a small offshore island of South Vietnam the first author collected a series of specimens of a species of *Gonydactylus* totally devoid of both femoral and preanal pores. A more detailed examination has shown that these lizards constitute a rare new species of the genus *Gonydactylus*. A description of this form is provided below.

The following acronyms and abbreviations are used: ZIL - Zoological Institute, Russian Academy of Sciences, St. Petersburg; ZMK - Zoological Museum, Ukrainian Academy of Sciences, Kiev; SVL - snout-vent length; TL - tail length.

### *Gonydactylus paradoxus* sp. nov. (Figures 1-3)

**Holotype:** ZIL 20310, Hon Thom Isle near south point of Phu Quoc Island, Kieng Giang Province,

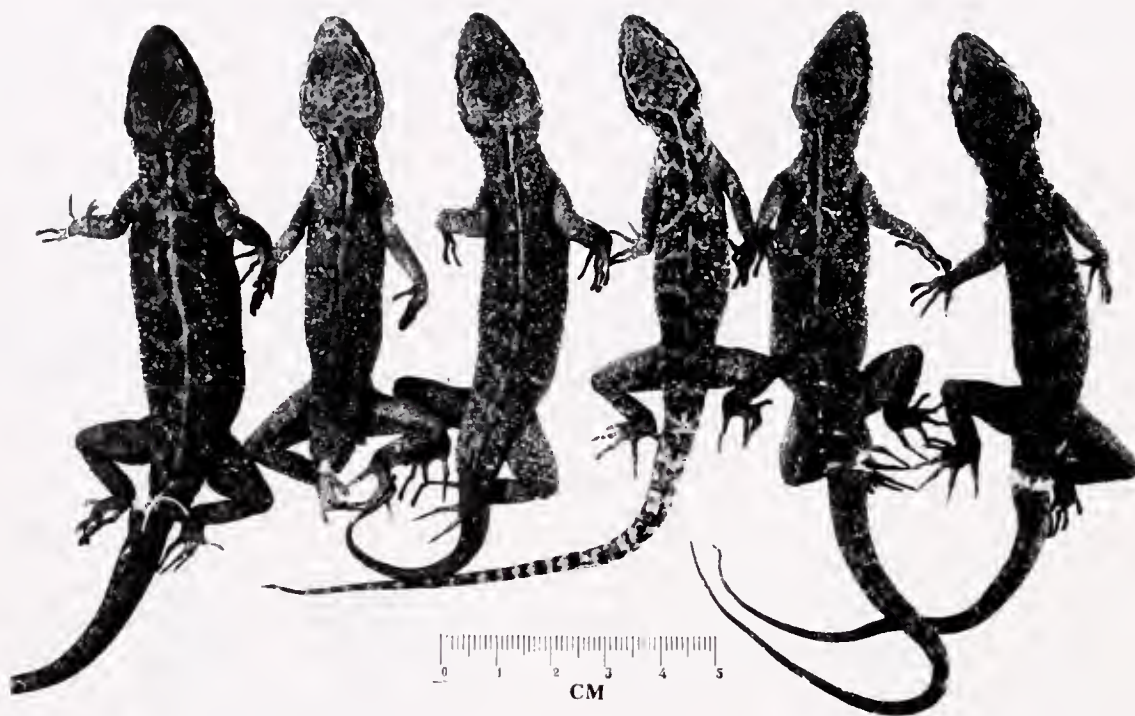


Figure 3. Dorsal coloration variability in six paratype specimens of *Gonydactylus paradoxus* sp. nov.

South Vietnam, coll. I. Darevsky, April 13, 1987, adult male.

**Paratypes:** ZIL 20311-20315, 204-21, 20422, 20479-20481; ZMK Re 22, 23a (7 males, 6 females). Same data as for holotype.

**Etymology:** The species name derives from the Greek word "*paradoxos*" - unusual, strange; in the present case referring to the lack of femoral and preanal pores.

**Diagnosis:** A medium-sized species of *Gonydactylus* with an adult body size of 45-84 mm in SVL; no preanal groove, no preanal and femoral pores in males or females; enlarged femoral scales distinct; 26-36 mid-ventral scale rows between indistinct lateral folds; 17-23 subdigital lamellae under fourth toe; a median series of transversely widened subcaudal scales; irregular crossbands on the dorsum.

**Description of the holotype:** Adult male, 80 mm SVL; 95 mm TL; head oviform; forehead concave; snout obtusely pointed; ear opening oval; eye with vertical *Gekko*-type pupil; rostral large, quadrangular, partially split by a median vertical cleft, contacting nostrils, first upper labials and three enlarged internasals; first upper labial, two postnasals, supranasal and rostral forming border of nostril; scales on snout three or more times larger than on occiput or interorbital

area; approximately 44 granules between palpebral borders of eyelids at the middle of the orbits; granules on the back of the head intermixed with few small conical scales; 10/9 supralabials; mental triangular with labial border wider than labial border of rostral; 9/9 lower labials; one large pair of postmental about 1/2 the size of the first; four gular scales bordering first postmentals between second postmentals followed by small gular granules. Dorsal surface of the body with fine scales mixed with about 16 irregular rows of small rounded conical or trihedral tubercles; small tubercles developed on dorsal part of legs; ventrolateral folds feebly indicated by low rounded tubercles; ventral scales small, cycloid, equal in size; about 30 scalerows between ventrolateral folds; approximately 135 scales in a row from chin shields to vent at medial ventral line; one row of enlarged smooth femoral scales on underside of thighs; no femoral and preanal pores; tail round in cross-section, verticillate, covered dorsally and laterally with small granules, with 4-6 low tubercles near posterior part of each segment; a median series of transversely widened subcaudals.

**Color (in life):** Head and body yellow-brown above, lighter below; back with seven brown-bordered light undulating transverse bands, divided by a narrow lon-

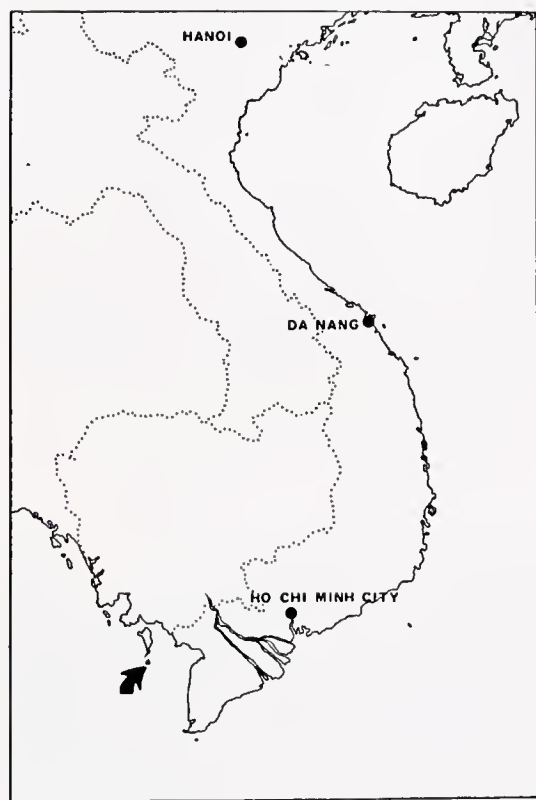


Figure 4. Type locality (indicated by arrow) of *Gonydactylus paradoxus* sp. nov. at Thom Island, Kien Giang Province, South Vietnam.

gitudinal vertebral stripe; tail with dark rings separated by narrow light interspaces.

**Variation:** The paratype specimens resemble the holotype in all major characters. SVL of seven mature males 41.0–84.0 mm and 50.3–78.0 mm for mature females; scale rows between ventrolateral folds 30–34; scales in a row from chin shields to vent 188–144. Variations in dorsal coloration are shown in Fig. 3.

**Distribution:** All specimens are known only from the type locality on Hon Thom Island in South Vietnam (Fig. 4). It can be assumed that this island species also occurs on some of the neighboring small islands in the Gulf of Siam.

**Field notes:** All specimens from the type series were collected at night on dry rocks under the canopy of a secondary dipterocarp forest. By day, however, no geckos were detected at the same place.

**Reproduction:** Four females kept in terraria laid 2 eggs repeatedly. Following about 55 days of incubation, young geckos 45–47 mm in total length were hatched. A peculiar coloration of the young involves

the presence of bright white transverse rings on the tail, which are hardly noticed in the adults.

**Comparative notes:** The intrageneric systematics of the genus *Gonydactylus* has been largely based on the pattern of scutellation of the preanal and femoral areas. The presence of more or less well developed preanal or femoral pores is characteristic of all of previously-described representatives of the genus, the number and disposition of these pores significantly varying in different species. The pores are commonly present in males only, although these may occasionally be distinguishable in females too. Some species display both femoral and preanal pores, whereas others possess either the former or the latter.

There are 15 species of *Gonydactylus* in Indochina, four of which are known from Vietnam. All of them, with the exception of *G. paradoxus* exhibits the presence of preanal pores. As mentioned above, this new species has no pores at all, and thus differs from other representatives of the genus. In this regard *G. paradoxus* exhibits some similarity to some Thai specimens of *G. oldhami* whose males have generally 1–4 preanal pores, but which may lack pores entirely (Smith, 1935; Taylor, 1963; Ulber, 1993). However, *G. oldhami* definitely differs from *G. paradoxus* in a number of other characters, particularly in possessing a non-segmented tail and characteristic white spots on the back. Among other Indochinese species, the new species, according to its coloration and some other markers, seems to be somewhat close to *G. angularis* Smith from south Thailand, but differs from it in some characters, in particular in a larger number (40–48) of ventral scale rows between a ventrolateral folds (versus 30–34 in *G. paradoxus*). On the basis of the majority of its characters the newly described species obviously also differs from *G. condorensis* (Smith, 1921), a Vietnamese endemic insular species from Pulo Condore (Con Dao) Island in the South China Sea. Literature records (Bobrov, 1995) citing *G. philippinicus* from Vietnam are not confirmed by voucher material and seem to be erroneous.

As is generally known, insular animals, in particular some reptile species, often display unusual morphological characters (Mertens, 1934), which may be regarded as a manifestation of the so called "founder effect", originally formulated by E. Mayr (1942). This principle attributes genetic uniformity and phenotypic specificity of specimens within an isolated population to an origin from a small founding population, perhaps a single fertilized female, which might possess certain features not characteristic of the species. It is assumed that the insular population of *Gonydactylus* on Hon Thom may have originated from an acci-



dentally introduced female having some genes controlling the formation in ontogeny of femoral or preanal pores (Darevsky et al., 1991).

### Key to the species of *Gonydactylus* in Vietnam

- 1 (6) Underside of tail with transversely enlarged plates.
- 2 (3) Body banded with four distinct dark light-edged dorsal cross-bars . . . . . *G. intermedius* Smith.
- 3 (2) Body without distinct banded pattern.
- 4 (5) Males with a group of 4 to 7 preanal pores; 35-40 scales across the belly . . . . . *G. condorensis* Smith.
- 5 (4) Males and females without preanal pores; 30-34 scales across the belly. . . . . *G. paradoxus* sp. nov.
- 6 (1) Underside of tail with numerous roundish scales . . . . . *G. irregularis* Smith.

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### Literature Cited

Bobrov, V. V. 1995. Checklist and bibliography of the lizards of Vietnam. Smithsonian Herpetological Information Service. No. 105:1-28.

Darevsky, I. S. 1990. Notes on the reptiles (Squamata) of some offshore island along the coast of Vietnam. Pp. 125-129 In: Peters G. and R. Hutterer (eds.), Vertebrates in the Tropics, Proc. Int. Symp. Biogeography and Systematics in the Tropics, Bonn.

Darevsky, I. S., A. G. Ponomarenko, and G. V. Kuznetsov. 1991. [Zoogeography of offshore island of Vietnam]. Priroda, Moscow, 9:42-48. (In Russian).

Hikida, T. 1990. Bornean Gekkonid Lizards of the Genus *Cyrtodactylus* (Lacertilia: Gekkonidae) with Description of Three New Species. Japanese Journal of Herpetology 13:91-107.

Kluge, A. G. 1991. Checklist of Gekkonid Lizards. Smithsonian Herpetological Information Service. No. 85:1-35.

Mayr, E. 1942. Systematics and the origin of species. Columbia University Press, N.Y.

Martens, R. 1934. Die Insel-Reptilien, ihre Ausbreitung, Variation and Artbildung. Zoologica 32:1-209.

Smith, M. A. 1935. The Fauna of British India, including Ceylon and Burma. Reptilia and Amphibia. Vol. II. Sauria:1-440.

Taylor, E. H. 1963. The Lizards of Thailand. University of Kansas Science Bulletin XLIV:1-1077.

Ulber, T. 1993. Bemerkungen über cyrtodactyline Geckos aus Thailand nebst eschreibungen von zwei neuen Arten (Reptilia: Gekkonidae). Mitt. Zool. Mus. Berl. 69:187-200.