

# A new species of *Dixonius* from Nui Chua National Park, Ninh Thuan Province, southern Vietnam (Squamata, Gekkonidae)

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## Abstract

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## Key Words

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A new species of the geckonid genus *Dixonius* is described from Nui Chua National Park, Ninh Thuan Province in southern Vietnam. The description is based on four adult specimens, two males and females each. The new species is distinguished from any other *Dixonius* by the combination of the following characters: maximum SVL 38.6 mm; bold dark canthal stripe terminating at back of head (occiput); more or less dark barred lips; patternless yellowish-orange back and tail; supranasals in distinct contact; 8–9 supralabials, with supralabials six or seven in mid-orbital position; 18–19 ventral scale rows at midbody; males with 5 precloacal pores. We further provide the first record of *D. cf. vietnamensis* for Ninh Thuan Province, which occurs in sympatry with the new species in coastal Nui Chua National Park. We provide first data on the natural history of the new species and a key to all five known *Dixonius* species.

## Introduction

The genus *Dixonius* was established by Bauer et al. (1997) for Southeast Asian leaf-toed geckos formerly placed in the polyphyletic and nearly cosmopolitan genus *Phyllodactylus*, on the basis of morphology and its disjunctive distribution. Amongst others, the presence of precloacal pores, the tuberculate dorsum, the reduction in length of phalanx 2 of digit IV of the manus, and the proximally bifurcate hypischium are characteristic features that serve to diagnose this genus from all other leaf-toed geckos (Bauer et al. 1997). Two species of *Dixonius* have been recognized by Rösler (2000) and Kluge (2001): the larger and more widespread *Dixonius siamensis* Boulenger, 1898 (type locality Dong Paya Fai Mts., Sara Buri and Nakhon Ratchasima Provinces, eastern Thailand) from Myanmar, Thailand, Cambodia, Laos and Vietnam, as well as the largely patternless *Dixonius melanostictus* Taylor, 1962 (type locality Muak Lek, Sara Buri Province, eastern Thailand) known from Thailand (Stuart 1999; Cox et al. 1998; Bauer et al. 2004; Das 2004; Nguyen et al. 2005; Grismer et al. 2007). The latter species has also been reported from Ma Da, Dong Nai Province, Vietnam (Bobrov 1992). However, it still remains to be investi-

gated whether *D. melanostictus* is continuously distributed in the intervening areas or whether the Vietnamese population represents a disjunctive population or rather a distinct species (Bauer et al. 2004). Most probably, further species remain to be recognized within the widely distributed *D. siamensis* as geographic variation in colour pattern (Taylor 1963) and karyotypic variation (Ota et al. 2001) suggest. Recently, Bauer et al. (2004) described *D. hangseesom* Bauer, Sumontha, Grossmann, Pauwels & Vogel, 2004 from Kanchanaburi Province, Thailand, and Das (2004) *D. vietnamensis* from Nha Trang, Khanh Hoa Province at the eastern coast of southern Vietnam. The latter recently was recorded by Stuart et al. (2006) for the first time from three localities in hilly eastern Cambodia.

A preliminary herpetological field survey conducted by the senior author in the year 2003 in Nui Chua National Park, Ninh Thuan Province, southern Vietnam, lead to the first record of *Dixonius* representatives from that region. Nui Chua National Park comprises about 29,865 ha including 7,352 ha coastal zone, and is located close to Khanh Hoa Province, from where *D. vietnamensis* was described. Further excursions to Nui Chua National Park took place in the years 2006 and 2007 (Ngo 2006), so that a total of four adult *Dix-*

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*onius* sp. could be obtained from that region. These specimens occurred in syntopy with *D. cf. vietnamensis* but distinctly differed from this and the further known *Dixonius* species in colour pattern and scalation. We herein describe it as a new species.

## Material and methods

*Dixonius* specimens were anaesthetized with ethyl acetate, euthanized and subsequently fixed in 10% formaldehyde as well as preserved in 75% ethanol afterwards. Voucher specimens are deposited in the Zoological Collection of the Faculty of Biology, University of Natural Sciences (UNS) in Ho Chi Minh City, Vietnam, in the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK), Bonn, Germany, and in the Museum für Naturkunde der Humboldt-Universität zu Berlin (ZMB), Germany.

Methods followed Bauer et al. (2004) and Das (2004). Sex was determined on the basis of hemipenial swellings together with the presence of precloacal pores considered indicative of males. Measurements were taken on the right side of the body, with dial calipers to the nearest 0.1 mm. For abbreviations of measurements see Table 1.

## Results

The overall morphology and pholidosis of the unnamed specimens from Nui Chua National Park are typical of the genus *Dixonius* as defined by Bauer et al. (1997): digits bearing a single pair of enlarged terminal scanners; dorsal scalation tuberculate; tubercles keeled longitudinally; granules on snout larger than those on dorsum of body; rostral scale with median cleft; first supralabial enters nostril; enlarged chinshields and lateral gulars; margins of pupil crenelate (in preserved specimens); precloacal pores present; series of cloacal spurs present; and midventral row of transversely enlarged caudal scales. Although the unnamed specimens show most typical characters of the genus *Dixonius*, they distinctly differ from the known species in that genus with respect to size, scalation and colour pattern. Thus, we regard these specimens as representing a new species, which we describe herein.

**Table 1.** Measurements and scale counts taken.

Measurements	
Snout-vent length (SVL)	from tip of snout to vent
head length (HL)	distance between retroarticular process of jaw and snout tip
head width (HW)	maximum width of head
head height (HH)	maximum height of head, from occiput to underside of jaws
eye diameter (ED)	greatest horizontal diameter of eye
nares to eye distance (NarEye)	distance between anteriormost point of eye and nostril
snout to eye distance (SnEye)	distance between anteriormost point of eye and tip of snout
eye to ear distance (EyeEar)	distance from anterior edge of ear opening to posterior corner of eye
ear length (EarL)	longest dimension of ear
internarial distance (Internar)	distance between nares
interorbital distance (Interorb)	shortest distance between left and right supraciliary scale rows
trunk length (TrunkL)	distance from axilla to groin, measured from posterior edge of forelimb insertion to anterior edge of hindlimb insertion
forearm length (ForeaL)	from base of palm to elbow
crus length (CrusL)	from base of heel to knee
tail length (TailL)	from vent to tip of tail
tail width (TailW)	measured at base of tail
Scalation	
SL	Supralabials
MO	number of supralabials at midorbital position
IL	Infralabials
IO	interorbital scales (at narrowest point between orbits)
MD	midbody scale rows (number of longitudinal ventral scale rows counted midway between axilla and groin)
PV	paravertebral scales (number of scales in a paravertebral row from first scale posterior to parietal scale to last scale at the level of vent opening)
PV'	number of scales in a paravertebral row between limb insertions
PP	precloacal pores
TubR	longitudinal rows of dorsal tubercles
T4	lamellae under fourth toe (number of scales from the distal one containing claw to basal one, that broadly contacts adjacent fragmented scale)

***Dixonius aaronbaueri* sp. n.**

*Holotype.* UNS 0284, an adult male (Fig. 1), from Binh Tien forest station, Ninh Hai District, Nui Chua National Park, Ninh Thuan Province, southern Vietnam, 11°46' N 109°11' E, 4–5 m a.s.l.; collected by Ngo Van Tri on 23 August 2007.

*Diagnosis.* A species of the genus *Dixonius*, characterized by a combination of the following characters: 1) maximum SVL 38.6 mm; 2) bold dark canthal stripe terminating at back of head (occiput); 3) more or less dark barred lips; 4) patternless yellowish-orange dorsum; 5) unpatterned yellowish-orange tail dorsum; 6) supranasals in distinct contact; 7) 8–9 supralabials, with supralabials six or seven in midorbital position; 8) 18–19 ventral scale rows at midbody; 9) 5 precloacal pores in males.

*Description of the holotype.* Adult male, snout-vent length 31.8 mm. Head longer than wide, depressed, distinct from slender neck. Lores and interorbital region weakly inflated, canthus rostralis prominent. Snout moderately short, rounded, longer than eye diameter, scales on snout and forehead heterogeneous, rounded to hexagonal, slightly keeled; scales on snout larger than those on occipital region. Eye large, with vertical pupil; pupil with crenelated margins; supraciliaries short, without spines. Ear opening obliquely oval, relatively large; eye to ear distance somewhat larger than diameter of the eye. Rostral approximately 0.3 mm high and 0.8 mm wide, dorsally incompletely divided by a straight rostral groove; two enlarged supranasals in broad contact anteriorly, rostral in contact with first supralabial, nostril and supranasal; nostril round, each surrounded by supranasal, rostral, first supralabial, and two enlarged postnasals; one row of enlarged, blackish scales separates eye from supralabials. Mental triangular, wider (1.5 mm) than long (1.1 mm); two pairs of enlarged postmentals; anteriormost pair of postmentals about three times larger than posterior pair; posterior pair of postmentals approximately 5–6 times larger than adjacent gular scales; anterior postmentals bordered each by mental, by first and in part second infralabial, and by anterior and posterior postmentals; medially, both postmentals are followed in total by 3 rounded gular scales; posterior postmentals posteriorly followed each by a series of 4–5 round gular scales. 8 (right) and 9 (left) enlarged supralabials until angle of jaw, with supralabials 7 (right) and 6 (left) in midorbital position; 7 (right) to 8 (left) infralabials; 9 interorbital scale rows at narrowest point between eyes.

Body slender elongate without ventrolateral folds. Dorsal scales heterogeneous: small, irregular, conical to weakly keeled scales interspersed among larger ones (4–6 times the size of adjacent scales); strongly-keeled subimbricate tubercles arranged in 11 regular longitudinal rows extending on to tail; 46 paravertebral scales from first scale posterior to parietal scale to last scale at the level of vent opening, and 31 paravertebral scales

between limb insertions; scales strongly keeled and obliquely oriented to the body axis, smallest on parietal region, largest at midbody, posteriorly getting smaller; flanks covered with irregularly serrated, smooth round scales; ventral scales equal in size to dorsal scales, with round, serrated edges, smooth, subimbricate, tinged with some minute dark spots; ventrals increasing in size from throat to chest to abdomen, decreasing in size towards precloacal region; 18 longitudinal ventral scale rows across belly until outermost dorsal rows; gular scales relatively homogeneous, granular; five precloacal pores in angular series; enlarged femoral scales absent.

Forelimbs and hindlimbs short, relatively slender; scales on palm, elbow, and sole subimbricate, round, slightly keeled, with serrate edges; dorsal forelimb scales biggest on hand, smallest on finger dorsum, smooth with serrated edges; dorsal hindlimb scales large, subimbricate, with serrated edges, getting smaller in the shank region; scales beneath thigh and shank enlarged, subimbricate, with serrated edges; digits slender, dilated distally, all bearing small slightly recurved claws; enlarged lamellae on manus I (2 + 7), II (10), III (11), IV (10), and V (8), on pes I (9), II (10), III (12), IV (13), and V (12); setae bearing lamellae relatively large, distal “leaf-like” scanzors; interdigital webbing absent. Relative length of digits is III > IV > II > V > I for manus, and IV > III > V > II > I for pes.

Original (unregenerated) tail length is 37.1 mm; tail is slender, tapering to tip, longer than snout-vent length; scales on upper side of tail subimbricate; 7 whorls present, consisting each of three rows of keeled scales; dorsal tail scales getting gradually smaller, unkeeled towards tail tip; lateral tail scales unkeeled; ventral tail scales consisting of 7 rows of rounded scales posterior to vent, followed by 47 transversely enlarged plates; each side of tailbase with two small, smooth postcloacal spurs.

Proportions are as follows: HL/SVL = 0.25; HW/HL = 0.63; HH/HL = 0.42; SnEye/HL = 0.36; ED/SnEye = 0.62; ED/HL = 0.22; EarL/HL = 0.05; TrunkL/SVL = 0.40; ForeaL/SVL = 0.11; CrusL/SVL = 0.14; TailL/SVL = 1.17.

Colour in life. The dorsal ground colour in life is yellowish-orange to bright orange from head to tail tip (Fig. 1); in the stressed animal, the dorsal ground colouration appears more brownish-yellow; dorsum of the limbs is yellowish-brown, with darker manus and pes; the flanks are scattered with small dark dots; head sides with distinct black canthus stripe from snout tip over eye to anterior edge of ear; cream yellow tubercles scattered on the upper edge of the posterior canthus stripe (between eye and ear); eyes with light ring; supralabials cream white, as are infralabials, chin and ventral region; lips with dark vertical bars.

Colour in preservative. Preserved in ethanol, the dorsum of the type series appears more light brown, except for the still prominent black canthus stripe and dark bars on the lighter lip region. Also the lighter eye-ring is still visible after preservation in ethanol.

*Paratypes.* UNS 0282, an adult female, ZFMK 87274, an adult male (Fig. 2), and ZMB 70653, an adult female (Fig. 3), Binh Tien forest station, Ninh Hai District, Nui Chua National Park, Ninh Thuan Province, southern Vietnam, 11°46' N 109°11' E, 4–5 m a.s.l.; collected by Ngo Van Tri on 19 September 2003 (UNS 0282) and 22 April 2006 (ZFMK 87274, ZMB 70653).

*Variation of paratypes.* Concerning the colour pattern, all paratypes corresponded well with the description of the holotype. Dark lip bars were more or less developed. With respect to scalation, the female paratype UNS 0282 differed by showing a relatively smaller left scale of the anteriormost pair of postmentals. For varia-

tion in measurements and scalation features see Tables 2–3.

*Comparisons.* *D. aaronbaueri* sp. n. differs from *D. siamensis* by its smaller size (maximum SVL 38.6 mm vs. 57 mm), the presence of a bold dark stripe through the eye (vs. absent canthal stripe in *D. siamensis*), a patternless yellowish-orange dorsum with a yellowish-orange tail (vs. pale grey or greyish brown above, with irregular blackish spots or blotches which may have whitish centres in *D. siamensis*). These features would also diagnose the new species from *D. paviei* Mocquard, 1904 (type locality “Vatana” north of Bangkok, Thailand) and *D. burmanicus* Annandale, 1905 (type locality Dawei, southern Myanmar), which were treated

**Table 2.** Sex and measurements (in mm) of the type series of *Dixonius aaronbaueri* sp. n.; for abbreviations see Table 1.

Sex	UNS 0284 Holotype Male	UNS 0282 Paratype Female	ZFMK 87274 Paratype Male	ZMB 70653 Paratype Female	Range
SVL	31.8	38.6	35.6	35.5	31.8–38.6
HL	8.1	9.8	9.6	9.1	8.1–9.8
HW	5.1	6.2	5.8	5.5	5.1–6.2
HH	3.4	4.1	3.6	3.7	3.4–4.1
ED	1.8	2.2	1.9	1.9	1.8–2.2
NarEye	1.9	2.2	2.1	2.1	1.9–2.2
SnEye	2.9	3.2	3.0	2.9	2.9–3.2
EyeEar	2.4	2.7	2.6	2.6	2.4–2.7
EarL	0.4	0.5	0.4	0.4	0.4–0.5
Internar	0.9	0.9	0.9	0.9	0.9
Interorb	2.9	2.9	3.3	3.3	2.9–3.3
TrunkL	12.8	15.0	14.3	14.2	12.8–15.0
ForeaL	3.5	4.1	3.9	4.0	3.5–4.1
CrusL	4.6	6.0	5.1	5.6	4.6–6.0
TailL	37.1	0	33.1	27.7	27.7–37.1
TailW	2.6	3.0	2.7	2.8	2.6–3.0

**Table 3.** Scalation and tail coloration of the type series of *Dixonius aaronbaueri* sp. n.; for abbreviations see Table 1.

	UNS 0284 Holotype	UNS 0282 Paratype	ZFMK 87274 Paratype	ZMB 70653 Paratype	Range
SL (MO)	9/8 (7/6)	8/8 (6/6)	8/8 (6/7)	9/9 (6/7)	8–9 (6–7)
IL	7/6	7/7	7/7	8/7	6–8
IO	9	10	8	9	8–10
MD	18	19	19	19	18–19
PV	46	49	45	50	45–50
PV'	31	32	29	31	29–32
PP	5	0	5	0	5
TubR	11	11	11	11	11
T4	13	14	13	15/14	13–15
Tail	orange	broken	regenerated	regenerated	



**Figures 1–3.** *Dixonius aaronbaueri* sp. n.; **1.** Holotype of *Dixonius aaronbaueri* sp. n. (UNS 0284) in life; **2.** Male paratype of *Dixonius aaronbaueri* sp. n. (ZFMK 87274) in life (note the regenerated tail); **3.** Female paratype of *Dixonius aaronbaueri* sp. n. (ZMB 70653) in life. Photographs by Ngo Van Tri.

as synonymous with *D. siamensis* by Smith (1930), and followed by subsequent workers (Wermuth 1966; Kluge 1993; 2001), should future revisions revalidate these forms (see Bauer et al. 2004; Das 2004); *D. aaronbaueri* sp. n. further differs from *D. siamensis* in having 5 preloacal pores instead of 6–7, and by having the supranasals in broad contact, which are separated by two granules in *D. siamensis* (Smith 1935; Das 2004).

*D. aaronbaueri* sp. n. differs from *D. melanostictus* by its smaller size (maximum SVL 38.6 mm vs. 50 mm), by its canthal stripe terminating at back of head (vs. extending along flanks in *D. melanostictus*), by a patternless yellowish-orange dorsum with a yellowish-orange tail (vs. an essentially unpatterned dorsum which may have pale stripes or longitudinal series of light spots), by 18–19 vs. 22 ventral scale rows at midbody and by 5 versus 9 preloacal pores (Taylor 1963; Bauer et al. 2004; Das 2004).

*D. aaronbaueri* sp. n. differs from *D. hangseesom* by a patternless yellowish-orange dorsum (vs. a more brownish dorsum with dark transverse bands or blotches), an unpatterned yellowish-orange tail dorsum (vs. orange brown or yellow-orange with dark bars), by 18–19 vs. 22–26 ventral scale rows at midbody, and by having 5 versus 7–8 preloacal pores (Bauer et al. 2004).

*D. aaronbaueri* sp. n. differs from *D. vietnamensis* by having a patternless yellowish-orange dorsum with a yellowish-orange tail (vs. brownish olive dorsum of body and tail, with dark blotches in *D. vietnamensis*), and in having 8–9 supralabials, with supralabials six or seven in midorbital position (vs. 7 supralabials, usually with supralabial five, rarely supralabial 6, in midorbital position), see Das (2004). According to Das (2004) *D. aaronbaueri* sp. n. further differs by having more or less dark barred lips (vs. being unbarred in *D. vietnamensis*), but Stuart et al. (2006) noted dark blotches on the lips in adult *D. vietnamensis* from Cambodia. In addition, Stuart et al. (2006) reported two distinct colour morphs in Cambodian *D. vietnamensis* represented by both sexes (uniform greyish brown versus greyish brown with irregular black blotches on the dorsum), which should be focus of further research.

**Etymology.** We name this new species in honor of Professor Dr. Aaron M. Bauer (Villanova University, Department of Biology, USA), in recognition of his outstanding contributions towards gekkonid lizard systematics in a world wide scale. We propose the standard name “Bauer’s leaf-toed gecko” (English) and “Than Lan chan la Bauer” (Vietnamese).

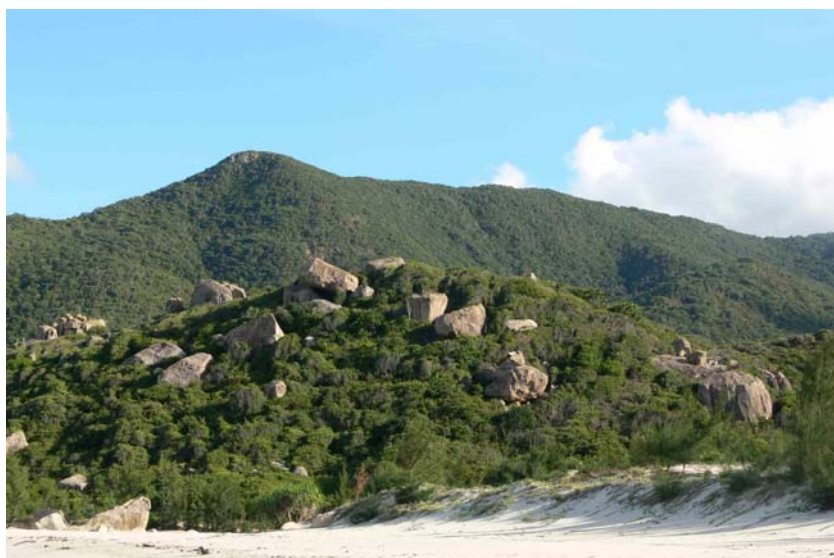
**Distribution.** The new species is known only from the type series originating from Nui Chua National Park, Ninh Thuan Province, southern Vietnam (Fig. 4).

**Natural history.** The type series was collected from April to September, which normally covers the period of the dry season. Specimens were caught during the evening time, between 20:45 and 21:15. All specimens were found inside “Elfin forest” close to the Cha La

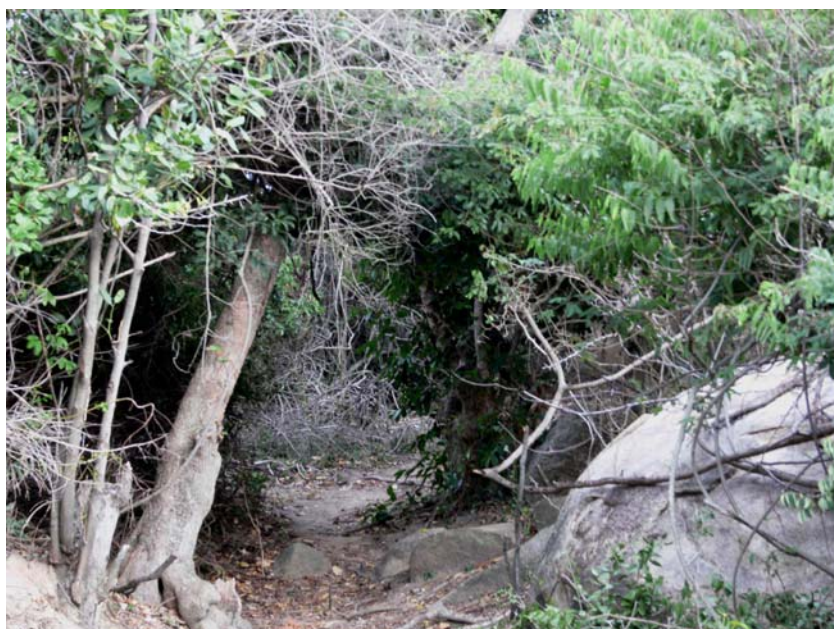


**Figure 4.** Type locality (black dot) of *Dixonius aaronbaueri* sp. n. in Nui Chua National Park within coastal Ninh Thuan province, southern Vietnam. Drawing by Thomas Ziegler

stream, a permanent water body in Ninh Hai District, Ninh Thuan Province (Figs 5–6). The “Elfin forest” stretches from the coast to approximately 400–500 m a.s.l. The area is characterized by a semi-arid climate with precipitations less than 750 mm per year, and is additionally affected by strong winds from the East Sea in the wet season, usually from October onwards. Among the other lizards observed sympatrically with the type series of *D. aaronbaueri* sp. n. were four additional gecko species (*Cyrtodactylus caovansungi* Orlov, Nguyen, Nazarov, Ananjeva & Nguyen, 2007, *Dixonius* cf. *vietnamensis*, *Gehyra* cf. *mutilata* [Wiegmann, 1834], and *Gekko grossmanni* Günther, 1994), four skink species (*Eutropis multifasciata* [Kuhl, 1820], *E. macularia* [Blyth, 1853], *Lipinia vittigera* [Boulenger, 1894], and *Lygosoma quadrupes* [Linnaeus, 1766]), and three agamid species (*Calotes mystaceus* Duméril & Bibron, 1837, *Leiolepis guttata* Cuvier, 1829, and *Physignathus cocincinus* Cuvier, 1829). Compared with *D. aaronbaueri* sp. n., *D. cf. vietnamensis* was more commonly observed in the dry season along the coastal zone of Nui Chua National Park. With respect to snakes, four species could be observed by the senior author in the habitat of the new *Dixonius* species, too: *Python reticulatus* (Schneider, 1801), *Chrysopelea ornata* (Shaw, 1902), *Dryocalamus davisonii* (Blanford, 1878), *Lycodon capucinus* Boie, 1827, and *Cryptelytrops albolabris* (Gray, 1842).



**Figure 5.** Semi-arid landscape with granitic outcrops in coastal Nui Chua National Park, Ninh Thuan province, Vietnam: the habitat of *Dixonius aaronbaueri* sp. n. Photograph by Ngo Van Tri.



**Figure 6.** Microhabitat of *Dixonius aaronbaueri* sp. n. inside “Elfin forest”. Photograph by Ngo Van Tri.

## Discussion

With the discovery of *D. aaronbaueri* sp. n., five species of *Dixonius* are known from Southeast Asia. Three species, *D. siamensis*, *D. vietnamensis* and *D. aaronbaueri* sp. n., are known to occur in Vietnam, whereas Vietnamese records of *D. melanostictus* still have to be

verified. Further field work and taxonomic research including molecular approaches is badly needed in the future to learn more about the actual distribution and phylogenetic relations of the different *Dixonius* representatives. In the following, we provide a key to the known species of *Dixonius*:

- 1 Canthal stripe absent ..... *D. siamensis*
- Canthal stripe present ..... 2
- 2 Canthal stripe extending along flanks; 9 precloacal pores. .... *D. melanostictus*
- Canthal stripe terminating at back of head (and may be fusing with dorsal dark brown markings on side of neck); 5–9 precloacal pores. . . . . 3
- 3 Body dorsum yellowish-orange, patternless; 5 precloacal pores ..... *D. aaronbaueri* sp. n.
- Body dorsum greyish-brown, usually with dark pattern; 5–9 precloacal pores ..... 4
- 4 Dorsum usually with dark transverse bands; tail orange. .... *D. hangseesom*
- Dorsum with dark blotches (which may be absent in Cambodian representatives, see Stuart et al. 2006); tail olive grey. .... *D. vietnamensis*

**Table 4.** Snout-vent and tail lengths (in mm) as well as some scalation characters of the female *Dixonius* cf. *vietnamensis* from Nui Chua National Park, Ninh Thuan Province, southern Vietnam; for abbreviations see Table 1.

ZFMK 87273	
SVL	42
TailL	49
SL (MO)	7 (5/6)
IL	6
IO	9
MD	20
PP	0
T4	17/16

As already mentioned above, *D. aaronbaueri* sp. n. occurs in sympatry with *D. cf. vietnamensis* in Nui Chua National Park. The latter species was formerly only known from Khanh Hoa Province, and thus represents the first record of the species for the Ninh Thuan Province, ca. 50 km distant from the type locality of *D. vietnamensis*. The collected female ZFMK 87273 largely corresponded with the original description given by Das (2004), except for its unusual high subdigital lamellar counts. In addition, the female specimen from Nui Chua represents the first adult specimen of the latter species with original tail (see Tab. 4, Fig. 7). Without doubt, future studies on more specimens must add to the knowledge about intraspecific variation in *D. vietnamensis* (see also Stuart et al. 2006). The discovery of *D. aaronbaueri* sp. n. together with the first provincial record of the just recently described and still barely known *D. vietnamensis* serves to further highlight the importance of Nui Chua National Park as a center of diversity and endemism within Vietnam. However, both *Dixonius* representatives seem to be

threatened by the building of new roads and dams in the coastal areas, so that ecological fieldwork combined with further conservation measures are suggested.

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## References

- Bauer, A. M., Good, D. A. & Branch, W. R. 1997. The taxonomy of the Southern African leaf-toed geckos (Squamata: Gekkonidae), with a review of Old World "*Phyllodactylus*" and the description of five new genera. – Proceedings of the Californian Academy of Sciences 49: 447–497.
- Bauer, A. M., Sumontha, M., Grossmann, W., Pauwels, O. S. G. & Vogel, G. 2004. A new species of *Dixonius* (Squamata: Gekkonidae) from Kanchanaburi Province, Western Thailand. – Current Herpetology 23: 17–26.
- Bobrov, V. V. 1992. Notes on lizards (Reptilia, Sauria) from southern Vietnam. – Journal of Bengal Natural History Society NS 11: 17–24.
- Cox, M. J., Van Dijk, P. P., Nabhitabhata, J. & Thirakhupt, K. 1998. A Photographic Guide to Snakes and Other Reptiles of Peninsular Malaysia, Singapore and Thailand. – Ralph Curtis Publishing, FL, United States: 144 pp.
- Das, I. 2004. A new species of *Dixonius* (Sauria: Gekkonidae) from southern Vietnam. – The Raffles Bulletin of Zoology 52: 629–634.
- Grismer, L. L., Chav, T., Neang, T., Ferry, F., Wood, L. Jr., Grismer, J. L., Youmans, T., Ponce, A., Daltry, J. C. & Kaiser, H. 2007. The herpetofauna of the Phnom Aural wildlife sanctuary and checklist of the herpetofauna in the Cardamom Mountains, Cambodia. – Hamadryad 31 (2): 216–241.



**Figure 7.** *Dixonius* cf. *vietnamensis* (ZFMK 87273) occurs in syntopy with *D. aaronbaueri* sp. n. in coastal Nui Chua National Park. Photograph by Ngo Van Tri.



- Kluge, A. G. 1993. Gekkonoid lizard taxonomy. – International Gecko Society, San Diego: 245 pp.
- Kluge, A. G. 2001. Gekkotan lizard taxonomy. – *Hamadryad* 26: 1–209.
- Ngo, T. V. 2006. Primary results on herpetological diversity in Nui Chua National Park. ITB Report.
- Nguyen, S. V., Ho, C. T. & Nguyen, T. Q. 2005. A checklist of amphibians and reptiles of Vietnam. – *Nha xuat ban nong nghiep, Hanoi*: 180 pp.
- Ota, H., Hikida, T., Nabhitabhata, J. & Panha, S. 2001. Cryptic taxonomic diversity in two broadly distributed lizards of Thailand (*Mabuya macularia* and *Dixonius siamensis*) as revealed by chromosomal investigations. – *Natural History Journal Chulalongkorn University* 1: 1–7.
- Rösler, H. 2000. Kommentierte Liste der rezent, subrezent und fossil bekannten Geckotaxa (Reptilia: Gekkonomorpha). – *Gekkota* 2: 28–153.
- Smith, M. A. 1930. Reptilia and amphibia of the Malay peninsula. – *Bulletin of the Raffles Museum* 3: 1–149.
- Smith, M. A. 1935. The Fauna of British India, Ceylon and Burma. Reptilia and Amphibia. Vol. II. Sauria. Taylor and Francis, London: xiii + 440 pp.
- Stuart, B. L. 1999: Amphibians and reptiles. In Duckworth, J. W., Salter, R. E. & Khounboline, K. (eds). *Wildlife in Lao PDR: 1999 status report*. IUCN, WCS & CPAWM: pp. 43–67.
- Stuart, B. L., Sok, K. & Neang, T. 2006. A collection of Amphibians and reptiles from hilly eastern Cambodia. – *The Raffles Bulletin of Zoology* 54: 129–155.
- Taylor, E. H. 1963. The lizards of Thailand. – *Kansas University Science Bulletin, Lawrence* 44: 687–1077.
- Wermuth, H. 1966. Liste der rezenten Amphibien und Reptilien. Gekkonidae, Pygopodidae, Xantusiidae. In Mertens, R. & Hennig, W. (eds). *Das Tierreich*, 80. Walter de Gruyter, Berlin: pp. 1–246.